Half Moon Bay North Apartment Block Transportation Impact Assessment

Full Report

March 15, 2018

Prepared for:

Mattamy Homes

Prepared by:

Stantec Consulting Ltd.

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[1] professional in good standing, whose field of expertise is either transportation engineering or transportation planning.

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

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[1] 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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1.0 SCREENING

1.1 SUMMARY OF DEVELOPMENT

Municipal Address	
Description of Location	Residential Development
Land Use Classification	Stacked Houses (LUC 231 - Low-rise condominiums (1 to 2 floors)
Development Size (units)	60
Development Size (m^2)	7603 (Total Site Area)
Number of Accesses and Locations	2 Total (1 Access to Watercolours Way, 1 Access to Seeley's Bay Street)
Phase of Development	1
Buildout Year	2019

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

1.2 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.

1.3 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.

1.4 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.

1.5 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).

2.0 SCOPING

2.1 EXISTING AND PLANNED CONDITIONS

2.1.1 Proposed Development

Figure 1 illustrates the location of the subject development as well as the location of the two proposed site accesses.

The proposed development is located at 2444 Watercolours Way in the Barrhaven South community of Ottawa; the site is anticipated to be occupied in 2019. The site is bound by Watercolours way to the north, future Realigned Greenbank Road to the west, a vacant land parcel to the south, and Seeley's Bay Street to the east. The proposed site plan indicates that a total of two site accesses are proposed; one access to Watercolours Way and one access to Seeley's Bay Street. There are no physical restrictions at the access points. Multiple existing Single-House driveways are currently provided within 200m from the proposed site access to Seeley's Bay Street. Similarly, it is anticipated that the proposed site access to Watercolours Way will be opposite driveways to future single-family homes.

Figure 1 Site Location and Proposed Site Accesses

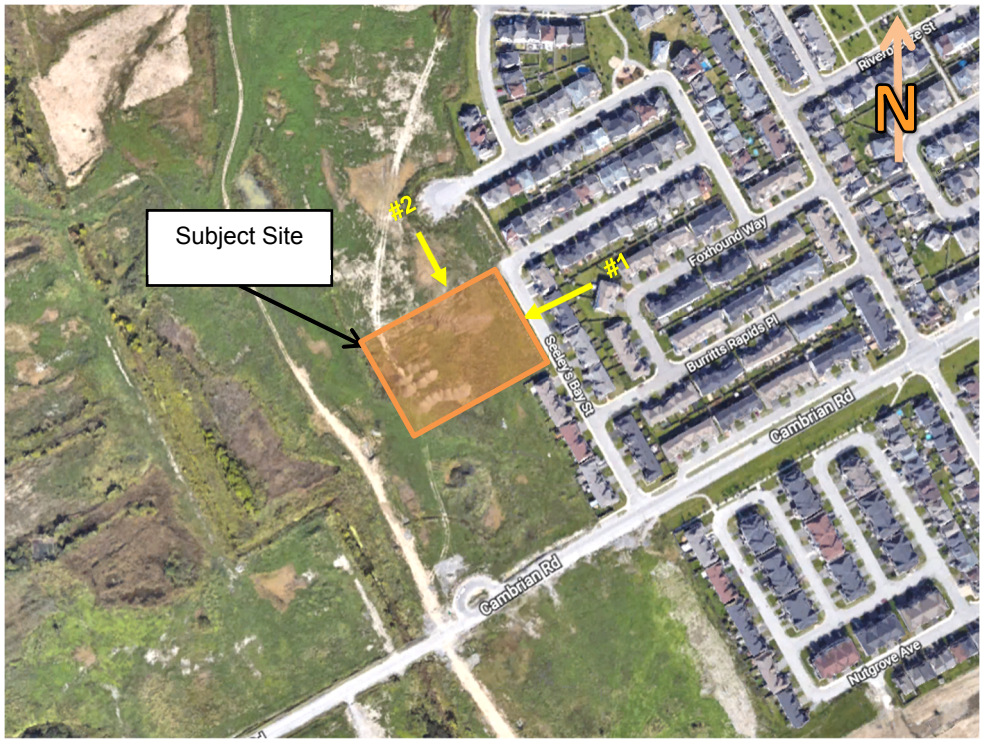


Figure 2 depicts the proposed site plan.

The City of Ottawa designates the subject site as a General Mixed Use Zone which allows residential developments amongst other types of developments. As can be seen in the site plan, this residential development consists of one phase and includes 60 stacked townhouses and 84 parking spaces. Land Use Code 231 - Low-rise condominiums (1 to 2 floors) is thought to be the most representative of the proposed land use.

Figure 2 Proposed Site Plan

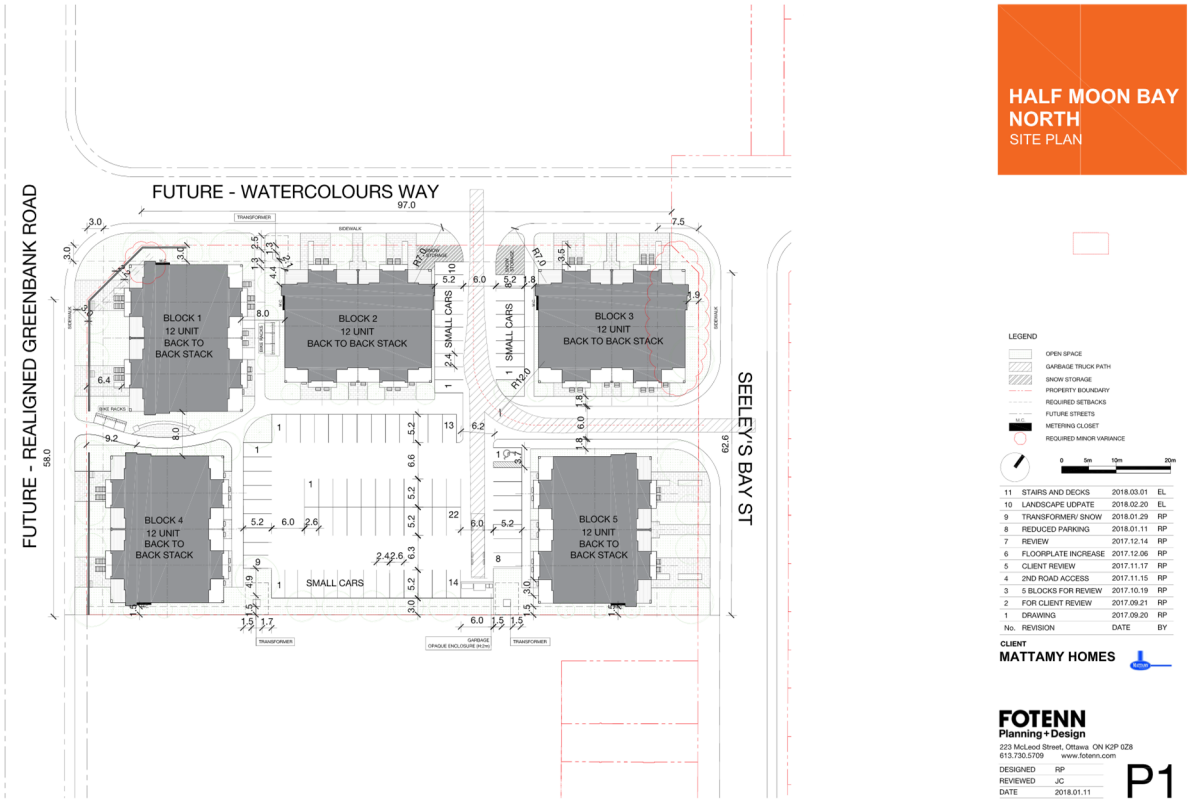


Table 1 outlines the trip generation rates, which were obtained from Table 6.3 in the *2009 TRANS Trip Generation Study for Residential Rates*.

Table 1 TRANS Trip Generation Rates for the Proposed Development

Land Parcel	Land Use Code	Units	AM Peak Hour			PM Peak Hour		
			In	Out	Rate	In	Out	Rate
Residential – Stacked Townhouses	231 - Low-rise condominiums (1 to 2 floors)	60	30%	70%	0.60	56%	44%	0.66

2.1.2 Existing Conditions

2.1.2.1 Roads and Traffic Control

The roadways under consideration in the study area are described as follows:

Seeley's Bay Street — Seeley's Bay Street is a municipally-owned, two-lane local road with a sidewalk along the west side and the intersection with Cambrian Road is stop-controlled along Seeley's Bay Street. Given that no posted speed limit is currently provided, the default speed is 50 kph. There are no parking restrictions on Seeley's Bay Street.

Watercolours Way — Watercolours Way is a municipally-owned, two-lane local road with a sidewalk along the south side. Given that no posted speed limit is currently provided, the default speed is 50 kph. There are no parking restrictions on Watercolours Way.

2.1.2.2 Walking and Cycling

Sidewalks are currently provided along the west side of Seeley's Bay Street and along the south side of the Watercolours Way. There are currently no existing bicycle lanes in the immediate vicinity of the site.

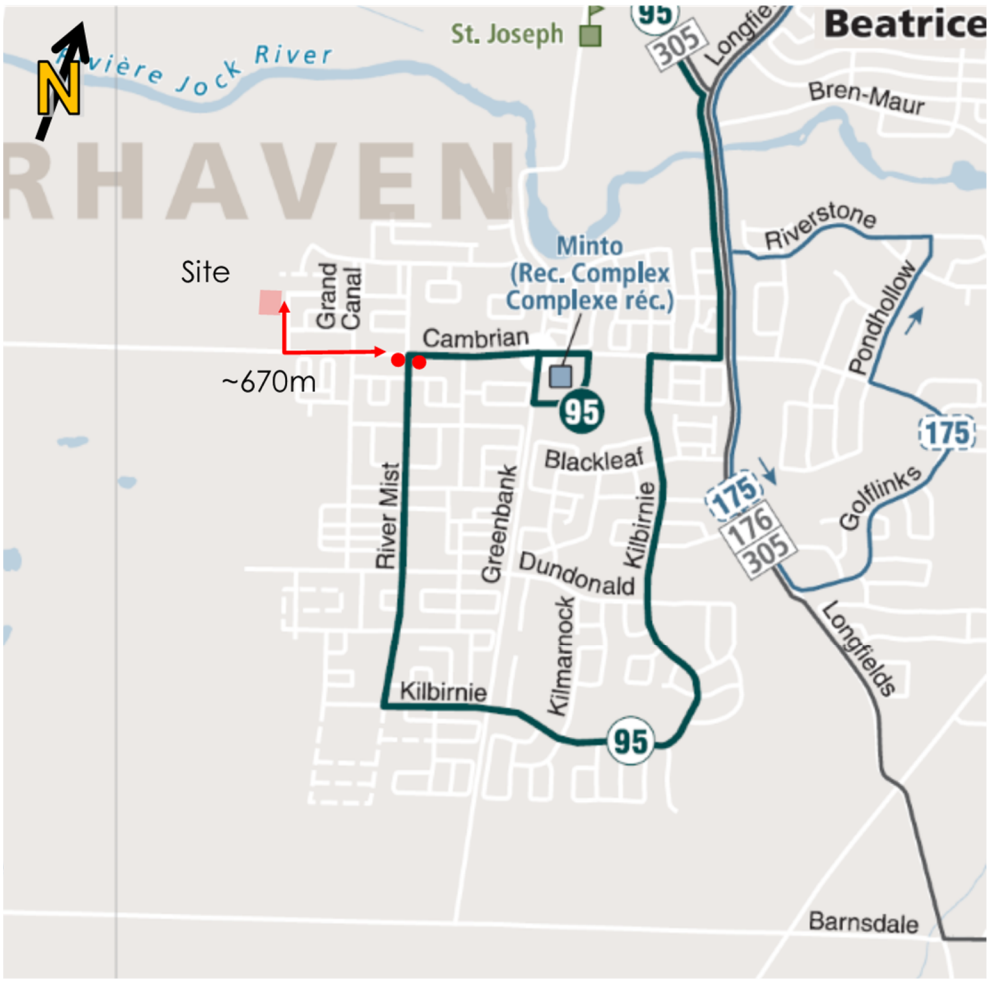
2.1.2.3 Transit

Transit service is currently provided via route 95. Route 95 is a regular bus route that runs from the Minto Centre Recreation Complex to Trim Road and operates on a 15-minute headway during the morning peak period northbound and during the afternoon peak period southbound. The closest transit stops to the site are located at the intersection of Cambrian Road and River Mist Road, approximately 670 metres away.

As part of the 2031 Network Concept, the City of Ottawa's 2013 Transportation Master Plan (TMP) identifies a new at-grade Bus Rapid Transit (BRT) on Realigned Greenbank Road; however, it is not within the 2031 Affordable Network meaning there is no implementation timeline.

Figure 3 illustrates the transit routes and stops near the study area.

Figure 3 Study Area Transit Routes and Stops



Source: OC Transpo System Map, Accessed January 2018

2.1.2.4 Traffic Management Measures

No traffic management measures are currently provided near the subject site.

2.1.2.5 Traffic Volumes

Existing (2017) traffic counts were provided by the City of Ottawa at the Cambrian Road at Seeley's Bay Street intersection. These volumes were used to derive the northbound and southbound through volumes at the Seeley's Bay Street at site access #1 intersection.

Figure 4 and **Figure 5** illustrate the existing traffic volumes at the study area intersections during the AM and PM peak hour, respectively.

Figure 4 Existing AM Peak Hour Traffic Volumes

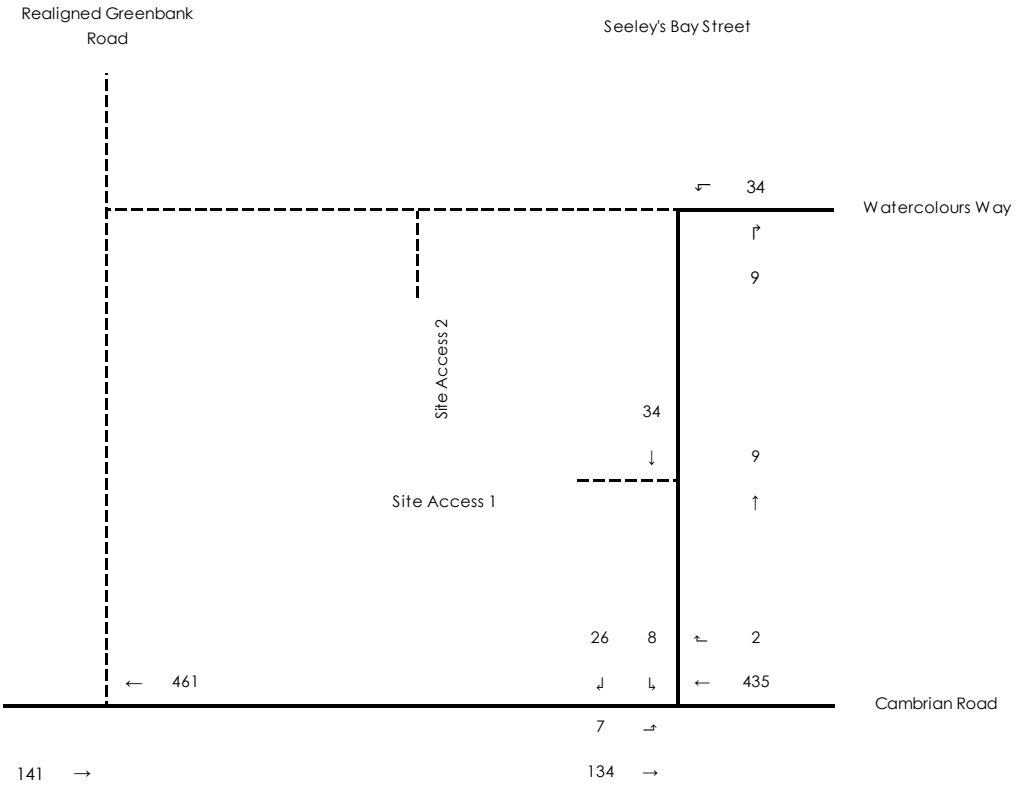
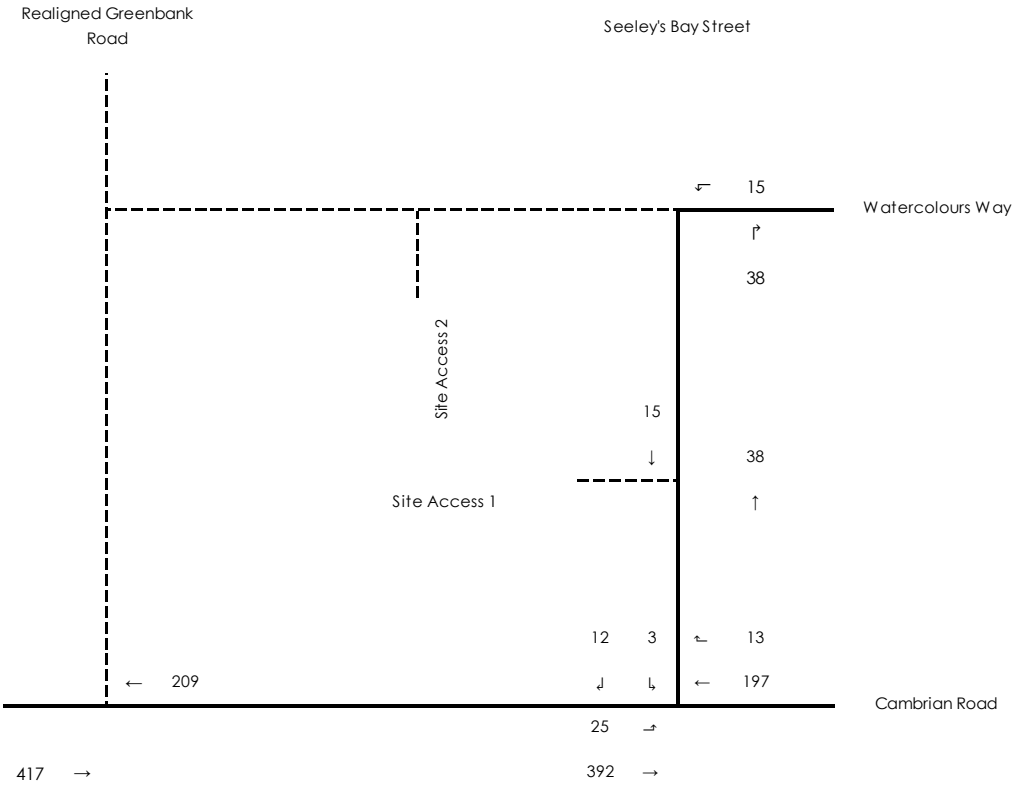


Figure 5 Existing PM Peak Hour Traffic Volumes



2.1.2.6 Collision History

Collision statistics from the City of Ottawa's *Open Data* database was reviewed to determine if the streets or intersections surrounding the subject site exhibited any identifiable collision patterns.

A review of the three-year collision history showed that there are no existing safety concerns related to the boundary streets to the proposed site. Only two property-damage-only collisions were recorded vicinity of the subject site in the last three years. The first collision took place on Seeley's Bay Street between Burritts Rapids Place and Watercolours Way, and the second took place on Watercolours Way between Freshwater Way and Seeley's Bay Street.

2.1.3 Planned Conditions

2.1.3.1 Road Network Improvements

Table 2 outlines several significant transportation improvements near the proposed site.

Table 2 City of Ottawa Scheduled Transportation Upgrades

Project	Description	TMP Phase
Strandherd Drive Widening	Widen from two to four lanes between Fallowfield Road and Maravista Drive	Phase 1 (2014 – 2019)
Strandherd Drive Widening	Widen from two to four lanes between Maravista Drive and Jockvale Road	Phase 2 (2020 – 2025)
Chapman Mills Drive	New four lane arterial road from Longfields Drive to Strandherd Drive, includes Bus Rapid Transit	Phase 2 (2020 – 2025)
Longfields Drive Widening	Widen from two to four lanes between Cambrian Road to Prince of Wales Drive	Phase 3 (2026 – 2031)
Realigned Greenbank Road	New four lane road from near Jockvale Road to Cambrian Road, includes Jock River Bridge	Phase 3 (2026 – 2031)

Realigned Greenbank Road

The most noteworthy improvement identified in the above table is the Realigned Greenbank Road project given that it abuts the western limits of the subject site.

Although the TMP suggests that Realigned Greenbank Road will be constructed during Phase 1 (2014 – 2019) of the TMP, based on the current status of the project, the City of Ottawa has indicated that the timing has been changed and that this section of Realigned Greenbank Road will be constructed and operational by Phase 3 (2026 – 2031).

In 2014 Stantec prepared the *Half Moon Bay North Draft Plan #2 Transportation Impact Study* to support Mattamy's draft plan application which was approved by the City. Within the 2014 study a sensitivity analysis was performed which determine that the development could proceed in advance of the construction of Realigned Greenbank Road.

For the purposes of this Transportation Impact Assessment, it is proposed that the transportation forecasts within the original 2014 TIS – and particularly the forecasts along Realigned Greenbank Road – would be utilized within the subject site plan application for assessing the Realigned Greenbank Road at Watercolours Way intersection. New forecasts that explicitly accounts for future background developments, discussed in **section 2.1.3.2**, will be will be used to assess all the other study area intersections.

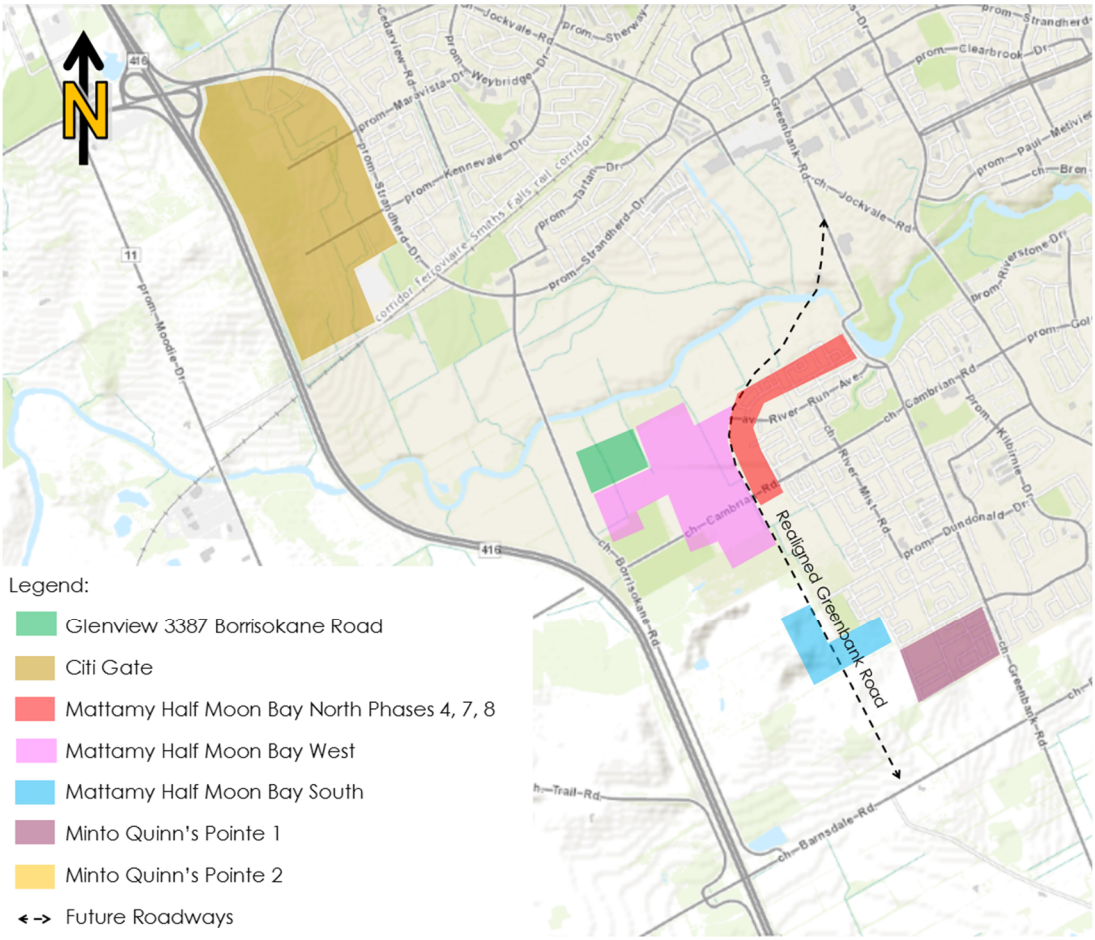
2.1.3.2 Future Background Developments

The Barrhaven South community has experienced substantial growth over the past few years and that growth is anticipated to continue well into the future. There are numerous developments scheduled to occur near the subject site, as outlined in **Table 3** and as illustrated in **Figure 6** below.

Table 3 Background Developments

Development	Location	Size	Build-Out
Mattamy's Half Moon Bay South Phase 4	South of Half Moon Bay South Phase 3, between Realigned Greenbank Road and Existing Greenbank Road	265 residential units	2018
Mattamy's Half Moon Bay North Phases 7, 8	North of Half Moon Bay North Phase 5 and 6, south/east of Realigned Greenbank Road	471 residential units	2019
Minto's Quinn's Pointe 1	West of Existing Greenbank Road, South of Half Moon Bay South	475 residential units	2019
Glenview's 3387 Borrisokane Road	North of Cambrian Road between Borrisokane Road and Mattamy's Half Moon Bay West	288 residential units	2022
Mattamy's Half Moon Bay West	North of Cambrian Road between Borrisokane Road and Realigned Greenbank Road	945 residential units	2024
Citi Gate's Highway 416 Employment Lands	Between Highway 416 and Strandherd Drive, south of Fallowfield, north of the train tracks	350k ft^2 GFA (95 ha.) business park	Interim phase: 2019 Ultimate phase: 2029
Mattamy's Half Moon Bay South	South of Half Moon Bay South Phase 4, north of Quinn's Pointe 2, west of Existing Greenbank Road, east of Realigned Greenbank Road	270 residential units and 69k sq.ft. GFA specialty retail	Interim: 2025 Ultimate: 2031
Minto's Quinn's Pointe 2	North of Barnsdale, between existing and Realigned Greenbank Road.	1,200 residential units 59k sq.ft. GFA schools	Interim phase: 2025 Ultimate phase: 2031

Figure 6 Background Developments



2.2 STUDY AREA AND TIME PERIODS

2.2.1 Study Area

Given that the development proposal is only expected to trigger the "Design Review Component" of the City's 2017 Transportation Impact Assessment Guidelines, the scope of the transportation assessment is proposed to include the following study area intersections:

- Cambrian Road at Seeley's Bay Street;
- Seeley's Bay Street at Watercolours Way;
- Seeley's Bay Street at Site Access 1 (full movements);
- Watercolours Way at Site Access 2 (full movements); and
- Realigned Greenbank Road at Watercolours Way.

2.2.2 Time Periods

The scope of the transportation assessment includes the following analysis time periods:

- Weekday AM peak hour; and
- Weekday PM peak hour.

2.2.3 Horizon Years

The scope of the transportation assessment includes the following horizon years:

- Existing conditions;
- 2019 future background conditions;
- 2019 total future conditions (site build-out); and
- 2024 total future conditions (5 years beyond build-out).

2.3 EXEMPTIONS REVIEW

Table 4 summarizes the Exemptions Review table from the City of Ottawa's *2017 Transportation Impact Assessment Guidelines*.

Table 4 Exemptions Review

Module	Element	Exemption Considerations	Exempted?
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plans	No
	4.1.3 New Street Networks	Only required for plans of subdivision	Yes
4.2 Parking	4.2.1 Parking Supply	Only required for site plans	No
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	Yes
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	Yes
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	Yes
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of the equivalent volume permitted by established zoning	Yes
4.9 Intersection Design	All Elements	Not required if site generation trigger is not met	Yes

3.0 FORECASTING

3.1 DEVELOPMENT-GENERATED TRAVEL DEMAND

3.1.1 Trip Generation and Mode Shares

The construction timing of Realigned Greenbank is not currently known; however, it is unlikely to occur within 5 years of the build-out of the subject development. Notwithstanding this, based on the proximity of the site to future Realigned Greenbank Road, and based on the notion that Watercolours Way is planned to have an intersection with Realigned Greenbank Road, analysis was completed for scenarios with and without Realigned Greenbank Road in the transportation network. Under the status quo scenario (i.e. without Realigned Greenbank Road), the transit modal share is assumed to be low given that the nearest transit stop is approximately 670 metres away (Cambrian Road / River Mist Road), and being serviced by route 95 which meanders through Barrhaven South. With Realigned Greenbank Road extended to Cambrian Road and including the Bus Rapid Transit component of the facility, the transit share is anticipated to be much higher given that dedicated higher-order transit facilities will be located immediately adjacent to the site.

Table 5 shows the trip generation for the proposed development with under the status quo condition (i.e. without Realigned Greenbank Road). The modal share is consistent with previous reports in the study area that examine a future condition prior to Realigned Greenbank Road being in place.

Table 6 shows the trip generation for the proposed development with Realigned Greenbank Road in place. The modal share is consistent with previous reports that assumed Realigned Greenbank Road within the future network.

Table 5 Trip Generation – Status Quo (i.e. Realigned Greenbank Road not in place)

Land Use		# Units	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Generation Rates								
231 - Low-rise condominiums (TRANS rates)		60	31%	69%	0.60	56%	44%	0.66
Conversion to Person Trips								
231 - Low-rise condominiums	Auto Trip Gen		11	25	36	22	17	40
	Auto Mode Share		44%			44%		
	Person Trip Gen		25	56	82	50	40	90
Modal Share Adjustments								
231 - Low-rise condominiums	Auto	90%	23	51	74	44	36	80
	Passenger	5%	1	3	4	3	2	5
	Walk / Bike	0%	0	0	0	0	0	0
	Transit	5%	1	3	4	3	2	5
	Other	0%	0	0	0	0	0	0

Table 6 Trip Generation – Assuming Realigned Greenbank Road is in place

Land Use		# Units	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Generation Rates								
231 - Low-rise condominiums (TRANS rates)		60	31%	69%	0.60	56%	44%	0.66
Conversion to Person Trips								
231 - Low-rise condominiums	Auto Trip Gen		11	25	36	22	17	40
	Auto Mode Share			44%			44%	
	Person Trip Gen		25	56	82	50	40	90
Modal Share Adjustments								
231 - Low-rise condominiums	Auto	61%	17	33	51	30	25	55
	Passenger	10%	2	6	8	5	4	9
	Walk / Bike	0%	0	0	0	0	0	0
	Transit	26%	6	15	21	13	10	23
	Other	3%	0	2	2	2	1	3

3.1.2 Trip Distribution

The distribution of site trips is consistent with the trip distribution assumptions applied in the *Half Moon Bay North Draft Plan #2 Transportation Impact Study*, February 2014, which was approved by the City.

Table 7 summarizes the trip distribution with under the Status Quo scenario and was used to forecast the trip distribution at study area intersections.

Table 8 summarizes the trip distribution with Realigned Greenbank Road in place and was used to forecast the trip generation at the intersection of Realigned Greenbank Road and Watercolours Way for the 2024 horizon only.

Table 7 Trip Distribution – Status Quo (i.e. Realigned Greenbank Road not in place)

Direction	Via (to/from)				
	Distribution	Borrisokane Road North	Borrisokane Road South	Existing Greenbank Road North	Cambrian Road East
North	45%	33%		12%	
East	5%				5%
South	5%		2%		3%
West	5%	3%		2%	
Internal (South Nepean)	40%	15%		15%	10%
Total	**100%**	**51%**	**2%**	**29%**	**18%**

Table 8 Trip Distribution – Assuming Realigned Greenbank Road is in place

Direction	Via (to/from)				
	Distribution	Borrisokane Road North	Borrisokane Road South	Realigned Greenbank Road North	Cambrian Road East
North	45%	20%		25%	
East	5%				5%
South	5%		2%		3%
West	5%	2%		3%	
Internal (South Nepean)	40%			30%	10%
Total	**100%**	**22%**	**2%**	**58%**	**18%**

3.1.3 Trip Assignment

Figure 7 and **Figure 8** summarize the trip assignment to the study area road network, for the status quo scenario, during the weekday AM and PM peak hours, respectively.

Figure 9 and **Figure 10** summarize the trip assignment to the study area road network, with Realigned Greenbank Road in place, during the weekday AM and PM peak hours, respectively.

Figure 7 Trip Assignment – Weekday AM Peak Hour (Status Quo without Realigned Greenbank Road)

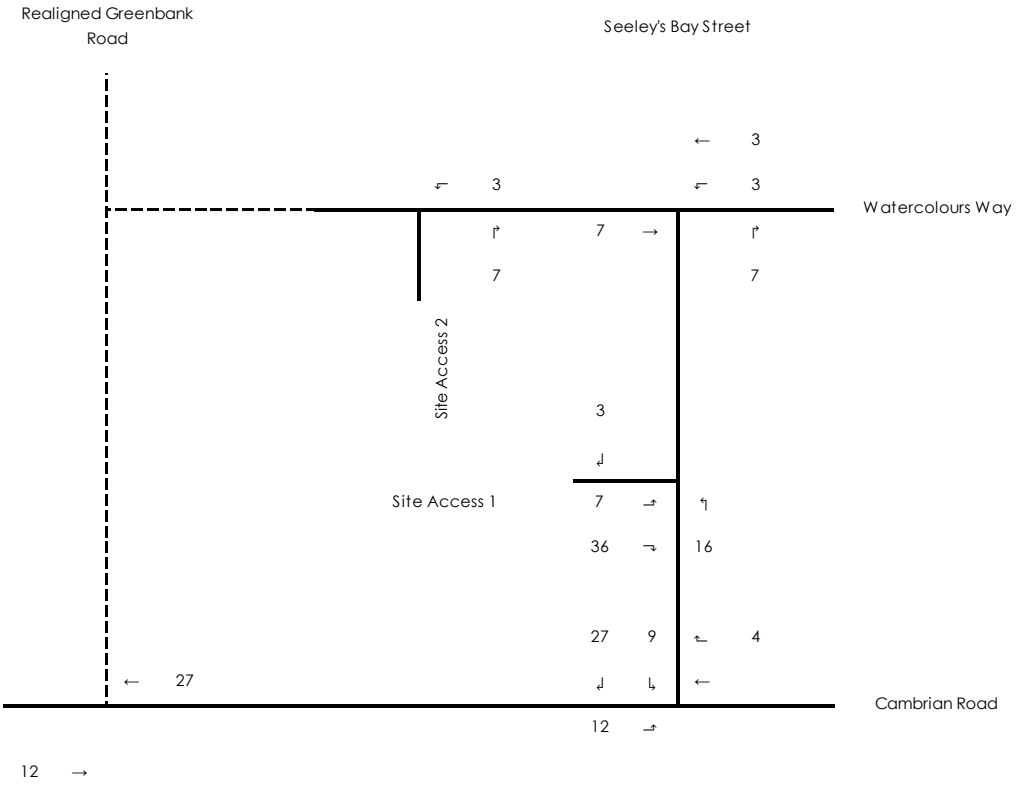


Figure 8 Trip Assignment – Weekday PM Peak Hour (Status Quo without Realigned Greenbank Road)

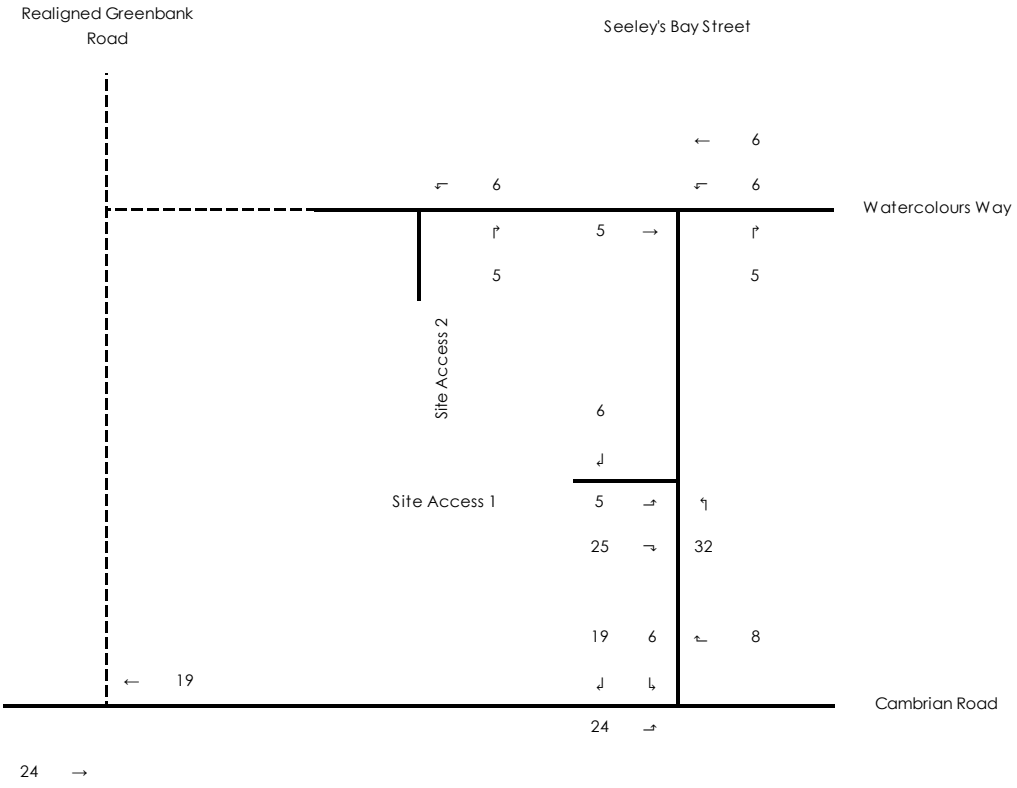


Figure 9 Trip Assignment – Weekday AM Peak Hour (with Realigned Greenbank Road)

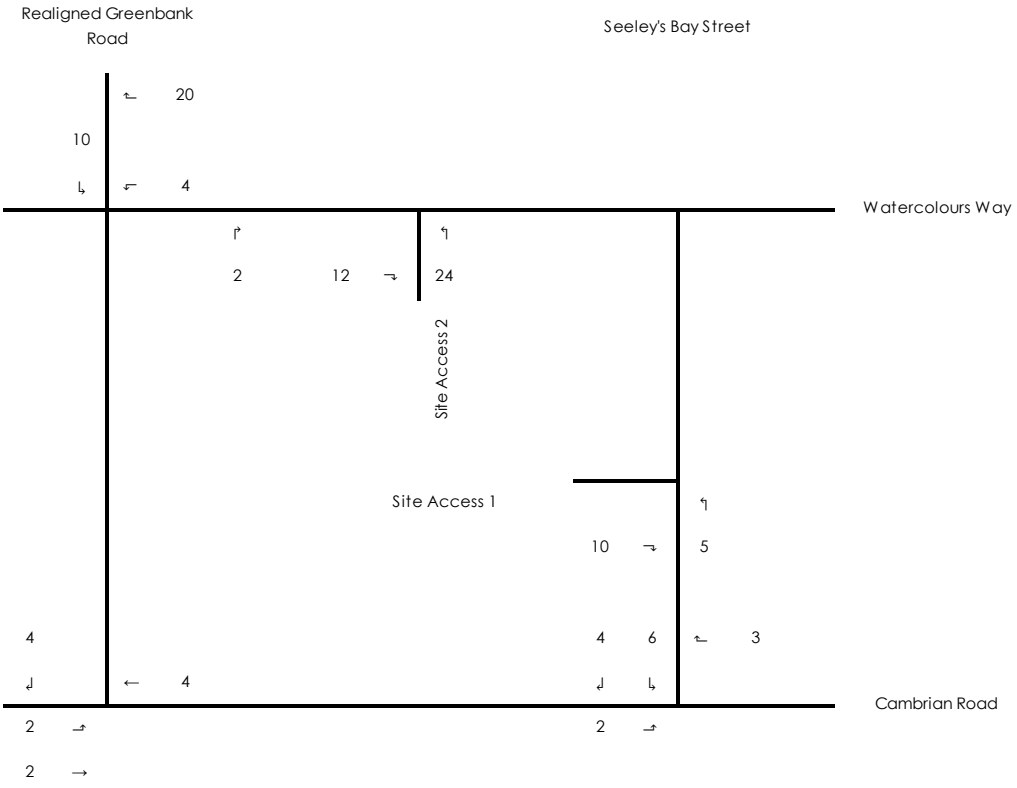
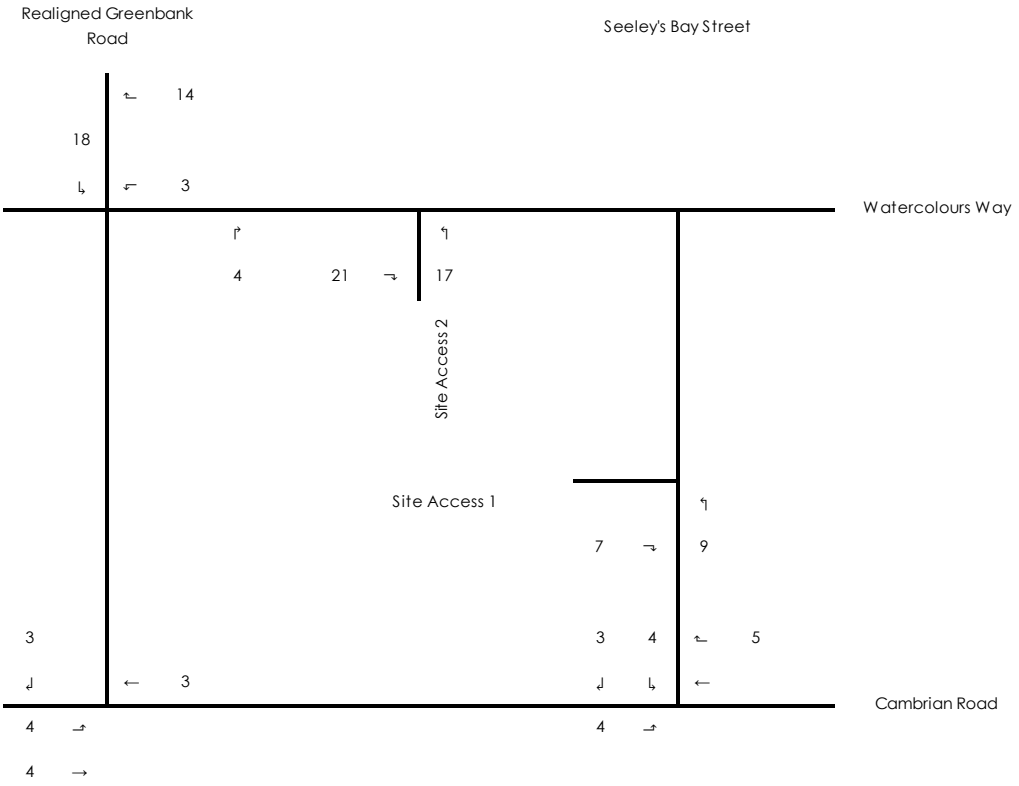


Figure 10 Trip Assignment – Weekday PM Peak Hour (with Realigned Greenbank Road)



3.2 BACKGROUND NETWORK TRAVEL DEMAND

3.2.1 Transportation Network Plans

The City of Ottawa's 2013 *Transportation Master Plan* was reviewed to determine what transportation network modifications will occur in the study area, or may affect study area roadways.

Table 9 lists the transportation network modifications in the study area.

Table 9 Transportation Network Plans

Project	Description	TMP Phase
Strandherd Drive Widening	Widen from two to four lanes between Fallowfield Road and Maravista Drive	Phase 1 (2014 – 2019)
Strandherd Drive Widening	Widen from two to four lanes between Maravista Drive and Jockvale Road	Phase 2 (2020 – 2025)

Project	Description	TMP Phase
Chapman Mills Drive	New four lane arterial road from Longfields Drive to Strandherd Drive, includes Bus Rapid Transit	Phase 2 (2020 – 2025)
Longfields Drive Widening	Widen from two to four lanes between Cambrian Road to Prince of Wales Drive	Phase 3 (2026 – 2031)
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Realigned Greenbank Road

The most noteworthy improvement identified in the above table is the Realigned Greenbank Road project given that it abuts the western limits of the proposed development.

Although the TMP suggests that Realigned Greenbank Road will be constructed during Phase 1 (2014 – 2019) of the TMP, based on the current status of the project, the City of Ottawa has indicated that the timing has been changed and that this section of Realigned Greenbank Road will be constructed and operational by Phase 3 (2026 – 2031).

In 2014 Stantec prepared the *Half Moon Bay North Draft Plan #2 Transportation Impact Study* to support Mattamy's draft plan application which was approved by the City. Within the 2014 study a sensitivity analysis was performed which determined that the development could proceed in advance of the construction of Realigned Greenbank Road.

For the purposes of this Transportation Impact Assessment, it is proposed that the transportation forecasts within the original 2014 TIS – and particularly the forecasts along Realigned Greenbank Road – would be utilized within the subject site plan application for assessing the Realigned Greenbank Road at Watercolours Way intersection. New forecasts that explicitly accounts for future background developments will be will be used to assess all the other study area intersections.

3.2.2 Background Growth

A 2% annual growth rate was applied to through traffic on Cambrian Road, which is consistent with previous reports. This rate is conservative given most growth on Cambrian Road will be explicitly accounted for in **section 3.2.3**.

3.2.3 Other Developments

Table 10 lists the other developments which will impact study area intersections. These background developments are consistent with those being considered by previous TIA's.

Table 10 Other Developments

Development	Location	Size	Build-Out
Mattamy's Half Moon Bay South Phase 4	South of Half Moon Bay South Phase 3, between Realigned Greenbank Road and Existing Greenbank Road	265 residential units	2018
Mattamy's Half Moon Bay North Phases 7, 8	North of Half Moon Bay North Phase 5 and 6, south/east of Realigned Greenbank Road	471 residential units	2019
Minto's Quinn's Pointe 1	West of Existing Greenbank Road, South of Half Moon Bay South	475 residential units	2019
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Citi Gate's Highway 416 Employment Lands	Between Highway 416 and Strandherd Drive, south of Fallowfield, north of the train tracks	350k ft^2 GFA (95 ha.) business park	Interim phase: 2019 Ultimate phase: 2029
Mattamy's Half Moon Bay South	South of Half Moon Bay South Phase 4, north of Quinn's Pointe 2, west of Existing Greenbank Road, east of Realigned Greenbank Road	270 residential units and 69k sq.ft. GFA specialty retail	Interim: 2025 Ultimate: 2031
Minto's Quinn's Pointe 2	North of Barnsdale, between existing and Realigned Greenbank Road.	1,200 residential units 59k sq.ft. GFA schools	Interim phase: 2025 Ultimate phase: 2031

3.3 DEMAND RATIONALIZATION

3.3.1 2019 Background Traffic

Figure 11 and **Figure 12** show the 2019 background traffic forecasts under the status quo scenario during the weekday AM and PM peak hours, respectively. The background traffic includes traffic from the developments listed in Table 10. Realigned Greenbank Road will not be in place by the 2019 horizon and therefore this scenario in was not considered within the 2019 horizon.

The background traffic demands are not expected to exceed capacity and therefore demand rationalization was not required.

Figure 11 2019 Background Traffic – Weekday AM Peak Hour (Status Quo without Realigned Greenbank Road)

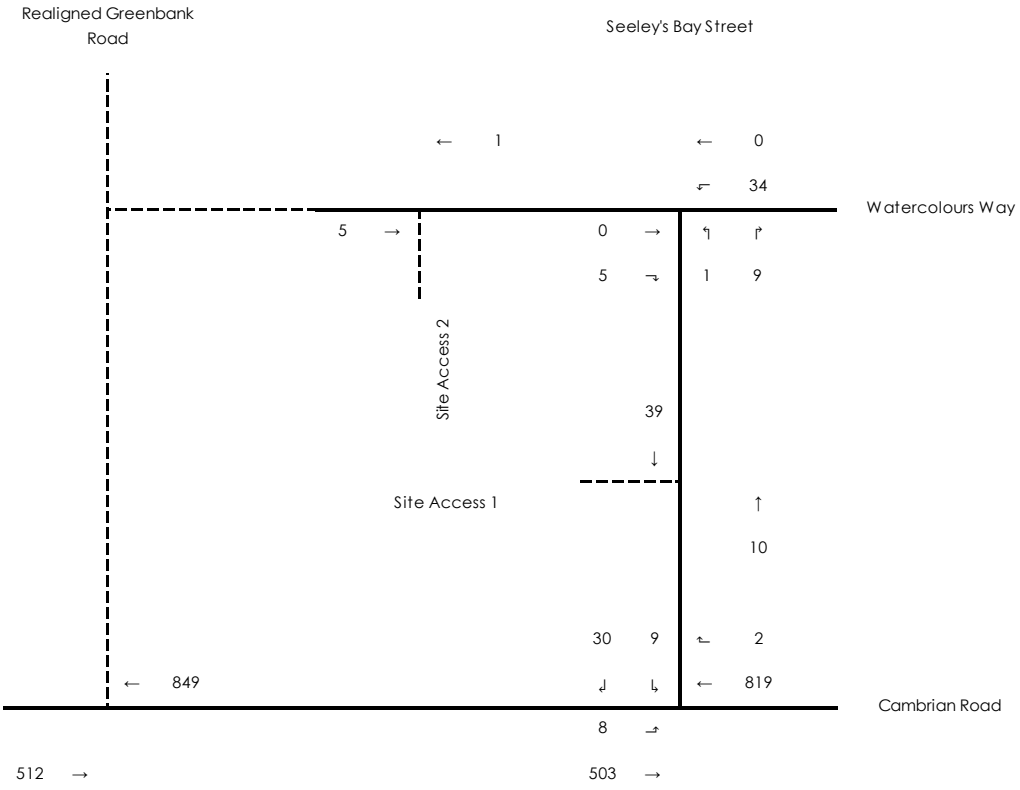
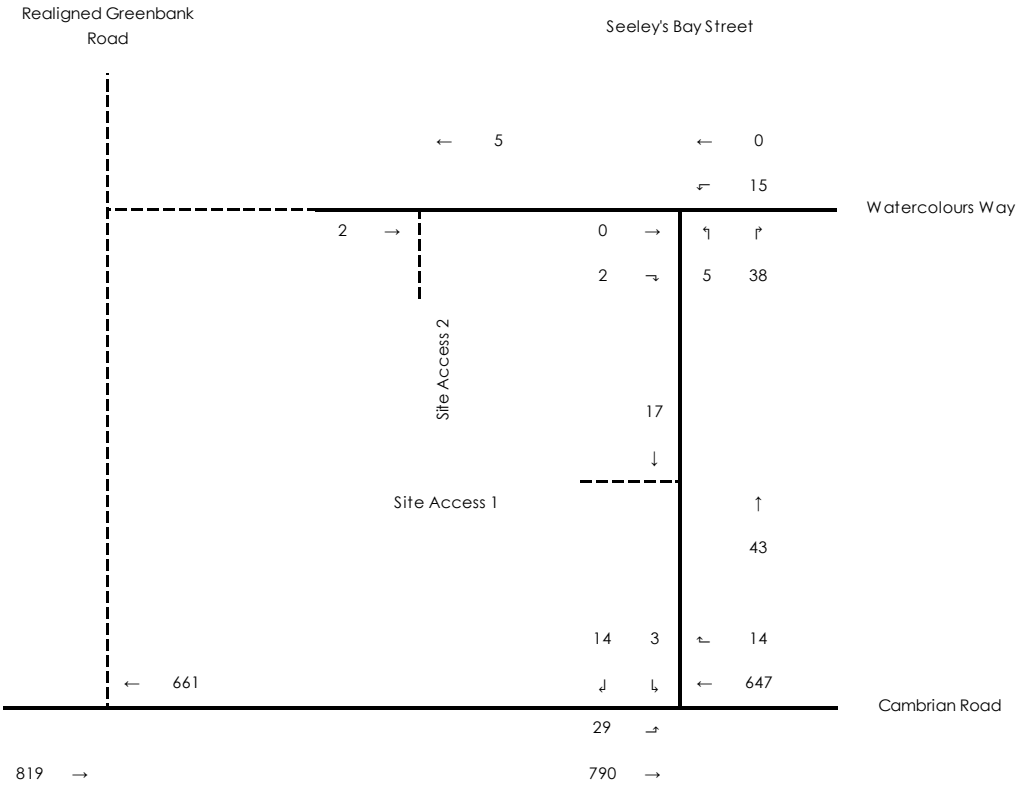


Figure 12 2019 Background Traffic – Weekday PM Peak Hour (Status Quo without Realigned Greenbank Road)



3.3.2 2019 Total Traffic

Figure 13 and **Figure 14** show the 2019 total traffic with under the status quo scenario (i.e. without Realigned Greenbank Road) during the weekday AM and PM peak hours, respectively.

The total traffic demands are not expected to exceed capacity and therefore demand rationalization was not required.

Figure 13 2019 Total Traffic – Weekday AM Peak Hour (Status Quo without Realigned Greenbank Road)

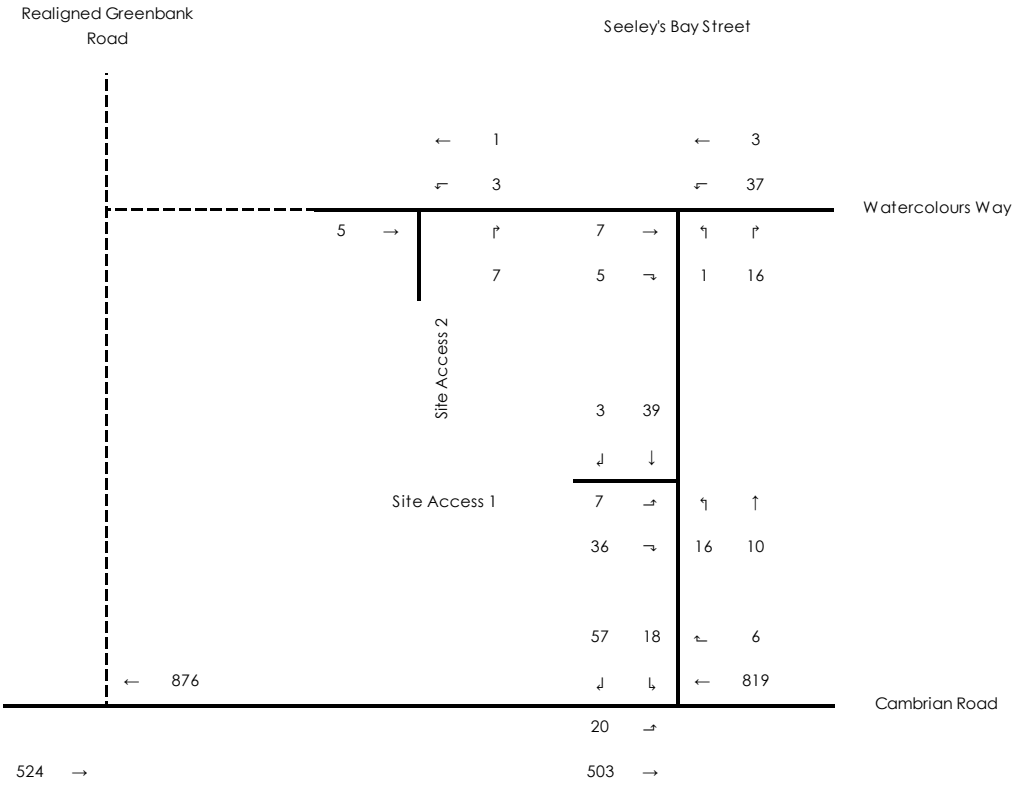
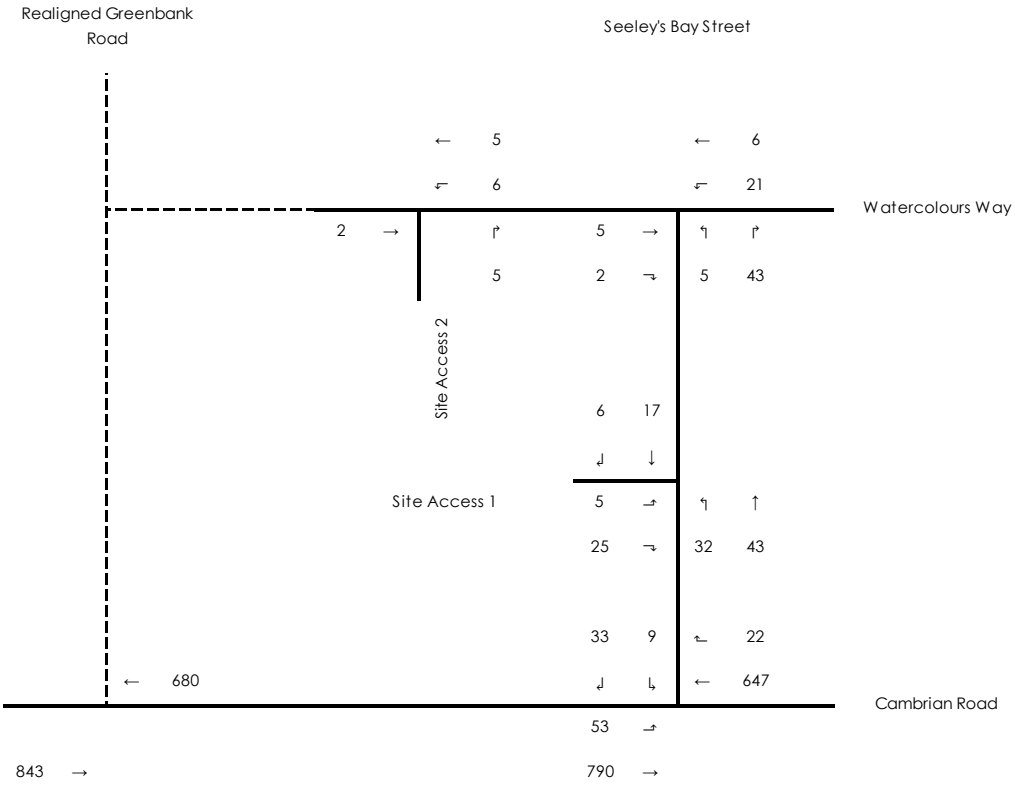


Figure 14 2019 Total Traffic – Weekday PM Peak Hour (Status Quo without Realigned Greenbank Road)



3.3.3 2024 Total Traffic

Figure 15 and **Figure 16** show the 2024 total traffic under the status quo scenario (i.e. without Realigned Greenbank Road in place) during the weekday AM and PM peak hours, respectively.

Figure 17 shows the 2024 total traffic with Realigned Greenbank Road in place during the weekday AM and PM peak hours.

The total traffic demands are not expected to exceed capacity and therefore demand rationalization was not required.

Figure 15 2024 Total Traffic – Weekday AM Peak Hour (Status Quo without Realigned Greenbank Road)

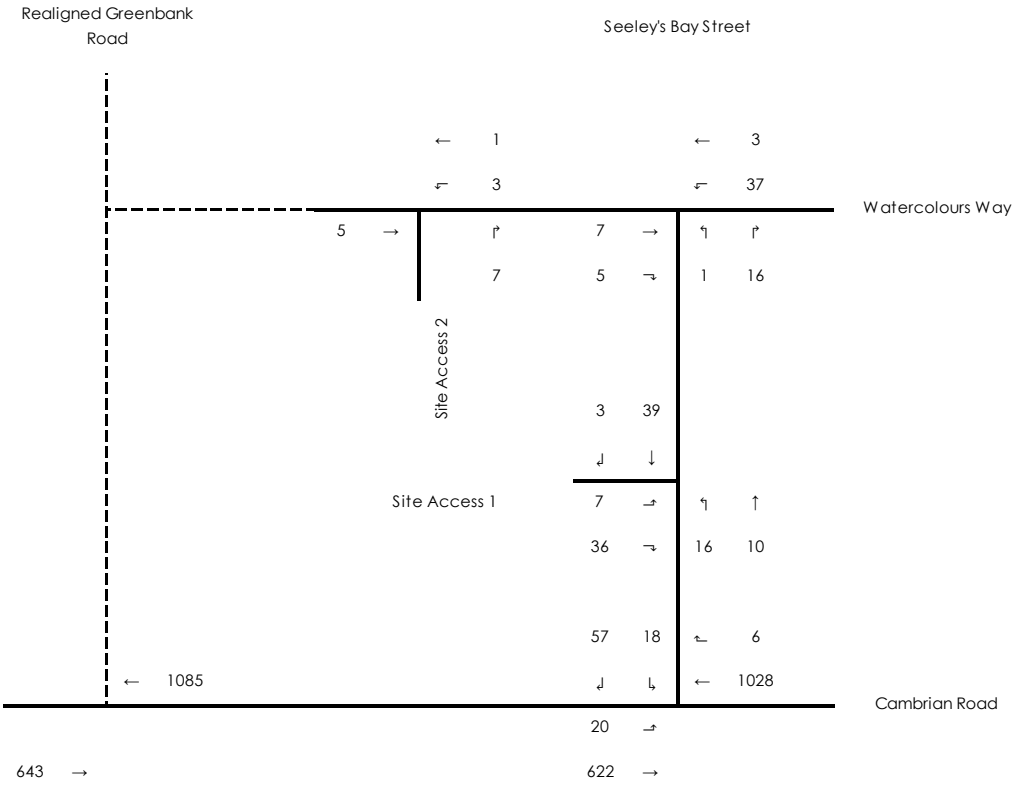


Figure 16 2024 Total Traffic – Weekday PM Peak Hour (Status Quo without Realigned Greenbank Road)

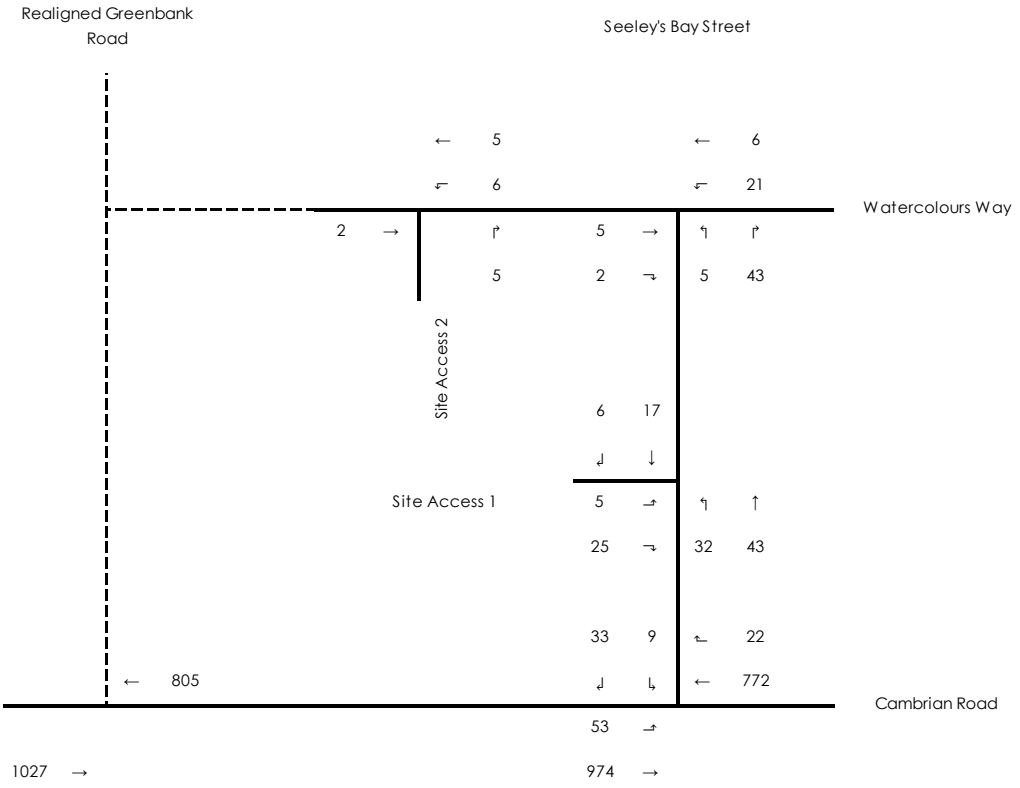
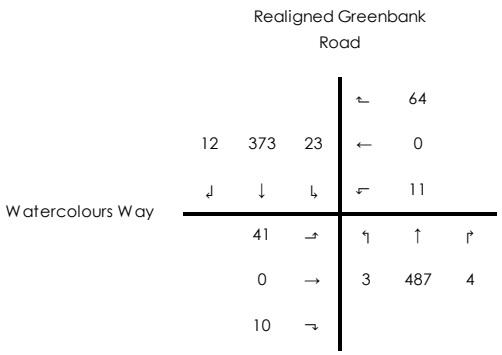
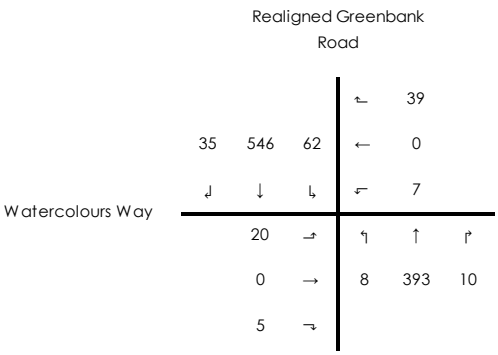


Figure 17 2024 Total Traffic – with Realigned Greenbank Road in Place

Weekday AM Peak Hour



Weekday PM Peak Hour



4.0 ANALYSIS

4.1 DEVELOPMENT DESIGN

4.1.1 Design for Sustainable Modes

Bicycle facilities: the bike racks are located at the west and north-west parts of the site, between block 1 and 2 and block 1 and 4. Pedestrian paths are provided to the other blocks of the development. The location of the bike racks will provide convenient access to Watercolours Way and Realigned Greenbank Road when it is constructed.

Parking areas: pedestrian paths are provided from the parking area to all blocks of the development.

Transit facilities: transit service is currently provided at the intersection of Cambrian Road and River Mist Road. Pedestrian paths within the proposed development provide convenient access to this transit stop. When Realigned Greenbank Road is constructed and the transitway extended south, all units within the site will be within 400 metres of the transit stop at Realigned Greenbank Road and Cambrian Road.

4.1.2 Circulation and Access

The proposed development will have two accesses; one access to Watercolours Way and one access to Seeley's Bay Street. The two accesses connect to a parking area at the centre of the development; the site has been designed to allow for garbage trucks to access the site without driving over curbs or being blocked by parked vehicles.

4.1.3 New Street Networks

Not applicable; exempted during screening and scoping.

4.2 PARKING

4.2.1 Parking Supply

Auto Parking - As per City of Ottawa Zoning By-law 2016-249 (Sections 101 and 102), the minimum parking space rate and minimum visitor parking space rate is 1.2 and 0.2 parking spaces per dwelling unit, respectively. The proposed development has 60 units and therefore 84 parking must be provided for residents and their guests. The proposed development provides the required 84 parking spaces.

Bicycle Parking – As per City of Ottawa Zoning By-law 2016-249 (Section 111), the minimum bicycle parking rate is 0.5 bicycle parking spaces per dwelling unit. The proposed development has 60 units and therefore 30 bicycle parking spaces must be provided. The proposed development provides required 30 bicycle parking spaces.

4.2.2 Spillover Parking

Not applicable; exempted during screening and scoping.

4.3 BOUNDARY STREET DESIGN

4.3.1 Design Concept

The multi-modal level of service (MMLOS) was evaluated for Cambrian Road, Seeley's Bay Road, and Watercolours Way to assist with developing a design concept that maximizes the achievement of the MMLOS objectives.

The proposed development is located within 600 metres of a future transit station and is therefore subject to different targets for pedestrians and trucks when compared to the targets for a developing community (pedestrian LOS target is A instead of B, truck LOS target is E instead of no target).

The Ultimate Cycling Network from the Ottawa Cycling Plan designates Cambrian Road as a local cycling route and therefore Cambrian Road is subject to a LOS target of B instead of D. Seeley's Bay Road and Watercolours Way are both local roadways and therefore neither transit nor truck LOS is applicable to these road segments.

Table 11 presents the MMLOS conditions for segments between signalized intersections.

Table 11 MMLOS Conditions – Segments

	Criteria	Cambrian Road	Seeley's Bay Road	Watercolours Way	Target
Pedestrian	Sidewalk width	1.8m	1.8m	1.8m	A
	Boulevard width	3.6m	0m	0m	
	AADT > 3000?	Yes	No	No	
	On-Street parking	No	No	No	
	Operating Speed	60 kph	30 kph	30 kph	
	Level of Service	**D**	**A**	**A**	
Cycling	Type of facility	Mixed	Mixed	Mixed	B for Cambrian Road D otherwise
	Number of travel lanes	2	2	2	
	Bike lane width	N/A	N/A	N/A	
	Operating speed	60 kph	40 kph	40kph	
	Centreline (yes/no)	No	No	No	
	Bike lane blockage freq.	N/A	N/A	N/A	
	Level of Service	**F**	**A**	**A**	
Transit	Type of Facility	Mixed	Not applicable	Not applicable	D
	Parking/driveway friction	Limited			
	Level of Service	**D**			
Truck	Curb lane width	> 3.7m	Not applicable	Not applicable	E for Cambrian Road None otherwise
	Number of travel lanes	2			
	Level of Service	**B**			

Notes:
Auto LOS is not considered for segments in the MMLOS Guidelines.
Mixed means either cyclists or transit are mixed with general traffic, i.e. they do not have their own dedicated facilities.
The number of travel lanes is two-way, i.e. in both directions.
Bike lane blockage frequency is only applicable when cycling is in mixed traffic and in a commercial area.

The analysis shows the pedestrian and cycling LOS for Cambrian Road is below the target LOS.

The pedestrian LOS can be improved by increasing the sidewalk width to two metres, which is expected to occur when Cambrian Road is widened to four lanes, as identified in the Cambrian Road Widening Environmental Assessment. However, there is no way to meet the pedestrian LOS target for Cambrian Road without reducing the operating speed below 30 kph or reducing the AADT to below 3,000, which is unlikely to occur.

The cycling LOS can be improved by implementing on-street bike lanes, which is expected to occur when Cambrian Road is widened to four lanes, as identified in the Cambrian Road Widening Environmental Assessment. For the interim, it may be possible to implement on-street bike lanes; there is 10 metres of pavement between curbs, which would allow for 3.5 metre general traffic lanes and 1.5 metre cycling lanes. On-street parking would likely need to be prohibited.

4.4 ACCESS INTERSECTIONS DESIGN

4.4.1 Location and Design of Access

The two site driveways are located on local roadways and are located approximately 30 metres from the intersection of Seeley's Bay Street and Watercolours Way and approximately 80 metres from the intersection of Realigned Greenbank Road and Watercolours Way. This exceeds the City requirement of 18 metres between the private approach and the nearest intersecting street line, as per the Private Approach By-law No. 2003-447, S.25, L.

Both accesses have a width of six metres which is above the minimum of 2.4 metres and below the maximum width of nine metres. The intersections will be two-way stop controlled.

4.4.2 Intersection Control

The two site driveways are low-volume driveways located on low-volume local roadways and therefore two-way stop control is appropriate.

4.4.3 Intersection Design

Table 12 summarizes the Synchro results for the site driveways for 2024 Total Traffic conditions. **Appendix A** contains the intersection performance worksheets. The analysis shows that the intersections will operate well under two-way stop-control.

Table 12 Synchro Results – Site Driveways (2024 Total Traffic)

Intersection	Intersection Control	Approach / Movement		LOS	Delay (s)	Queue 95th (veh)
Seeley's Bay Street at East Access	Two-way stop control	NB	Left / Through / Right	A (A)	7.3 (7.3)	0.0 (0.1)
		EB	Left / Through / Right	A (A)	8.7 (8.6)	0.1 (0.1)
		Overall Intersection			4.4 (3.8)	
Watercolours Way and North Access	Two-way stop control	NB	Left / Through / Right	A (A)	8.4 (8.3)	0.0 (0.0)
		WB	Left / Through / Right	A (A)	7.2 (7.2)	0.0 (0.0)
		Overall Intersection			5.0 (4.7)	

The two site driveways will be two-way stop-controlled intersections and therefore are not subject to the MMLOS guidelines for intersections.

4.5 TRANSPORTATION DEMAND MANAGEMENT

Not applicable; exempted during screening and scoping.

4.6 NEIGHBOURHOOD TRAFFIC MANAGEMENT

Not applicable; exempted during screening and scoping.

4.7 TRANSIT

Not applicable; exempted during screening and scoping.

4.8 REVIEW OF NETWORK CONCEPT

Not applicable; exempted during screening and scoping.

4.9 INTERSECTION DESIGN

Not applicable; exempted during screening and scoping.

5.0 CONCLUSIONS

Based on the transportation evaluation presented in this study, Mattamy Homes' proposed Half Moon Bay North Apartment Block in Barrhaven South should be permitted to proceed from a transportation impact perspective.

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Appendix A INTERSECTION PERFORMANCE WORKSHEETS

Intersection	
Int Delay, s/veh	5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	0	3	1	0	7
Future Vol, veh/h	5	0	3	1	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	3	1	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	5	0	12	5
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	7	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1616	-	1008	1078
Stage 1	-	-	-	-	1018	-
Stage 2	-	-	-	-	1016	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1616	-	1006	1078
Mov Cap-2 Maneuver	-	-	-	-	1006	-
Stage 1	-	-	-	-	1018	-
Stage 2	-	-	-	-	1014	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.4	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1078	-	-	1616	-
HCM Lane V/C Ratio	0.006	-	-	0.002	-
HCM Control Delay (s)	8.4	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	36	16	10	39	3
Future Vol, veh/h	7	36	16	10	39	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	36	16	10	39	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	83	41	42	0	-	0
Stage 1	41	-	-	-	-	-
Stage 2	42	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	919	1030	1567	-	-	-
Stage 1	981	-	-	-	-	-
Stage 2	980	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	910	1030	1567	-	-	-
Mov Cap-2 Maneuver	910	-	-	-	-	-
Stage 1	981	-	-	-	-	-
Stage 2	970	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	4.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1567	-	1008	-	-
HCM Lane V/C Ratio	0.01	-	0.043	-	-
HCM Control Delay (s)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	0	6	5	0	5
Future Vol, veh/h	2	0	6	5	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	0	6	5	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2	0	19	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	17	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1620	-	998	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1006	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1620	-	994	1082
Mov Cap-2 Maneuver	-	-	-	-	994	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1002	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	8.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1082	-	-	1620	-
HCM Lane V/C Ratio	0.005	-	-	0.004	-
HCM Control Delay (s)	8.3	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	25	32	43	17	6
Future Vol, veh/h	5	25	32	43	17	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	25	32	43	17	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	127	20	23	0	-	0
Stage 1	20	-	-	-	-	-
Stage 2	107	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	868	1058	1592	-	-	-
Stage 1	1003	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	850	1058	1592	-	-	-
Mov Cap-2 Maneuver	850	-	-	-	-	-
Stage 1	1003	-	-	-	-	-
Stage 2	898	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	3.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1592	-	1017	-	-
HCM Lane V/C Ratio	0.02	-	0.029	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-