BANK STREET DEVELOPMENT
1050 - 1060 BANK STREET
OTTAWA, ONTARIO

TRANSPORTATION IMPACT ASSESSMENT STRATEGY REPORT
REVISED

June 23, 2020

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Consulting Transportation Engineers
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Prepared for:

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INTRODUCTION

The parcel of land at 1050-1060 Bank Street is proposed to be redeveloped as a mixture of residential apartment units and retail space. The six storey building will have retail on the ground floor and 44 rental apartment units on floors 2 to 6. The development will contain an underground parking garage for tenants.

A Transportation Impact Assessment (TIA) report dated May 4, 2020 was prepared for the development which examined the operation of the adjacent streets and intersections, and also provided a supply/demand analysis for on-street parking. The TIA report was submitted to the City as part of the Minor Zoning By-law Amendment and Site Plan Control for the property. The City staff comments from the submission and the consultant's response are provided in the Appendix as Exhibit A.1. The comments have been incorporated into this TIA document.

STEP 1 - SCREENING

A Screening Form has been prepared which is included as Exhibit 1.1 in the Appendix. The Screening Form was submitted to the City of Ottawa which determined that the location and safety triggers were met and a Transportation Impact Assessment (TIA) study must continue onto the next stage. The following will address the requirements of the Scoping Document.

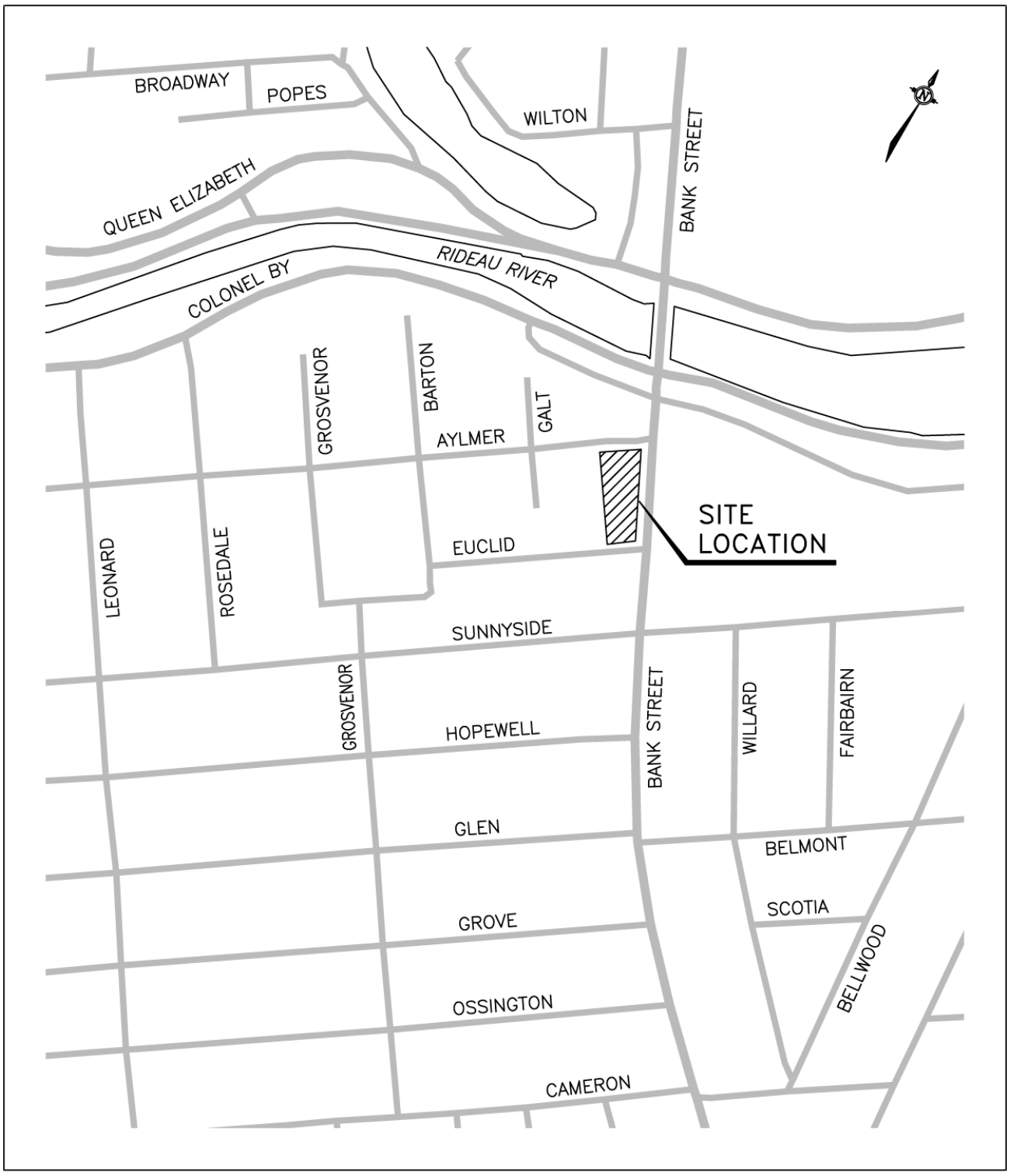
STEP 2 - SCOPING

MODULE 2.1 – Existing and Planned Conditions

Element 2.1.1 – Proposed Development

The redevelopment of lands at 1050 - 1060 Bank Street has been proposed which would replace the existing retail uses with a mixed-use comprising of retail and rental apartments. The property is 1,757 m^2 in size and is located on the west side of Bank Street between Aylmer Avenue and Euclid Avenue in the south portion of Ottawa. Figure 2.1 provides a site location plan of the development.

FIGURE 2.1
SITE LOCATION PLAN



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The development will consist of a six storey building with 825 m^2 of mixed-use retail on the ground floor, with floors 2 to 6 containing 44 rental apartments. The mixed-use retail may consist of a restaurant with an outside patio, coffee shop and general retail. The site will have an underground parking garage with an access onto Aylmer Avenue. The garage will provide 17 vehicle parking spaces with 4 surface spaces at the rear of the building. There is space for 22 bicycles in the garage and 4 bicycles in racks at the rear of the building. The Site Plan will eliminate the existing four accesses to the site from Bank Street (depressed curb), and replace the parking with one underground garage access to/from Aylmer Avenue. Figure 2.2 provides a conceptual site plan.

The property is currently zoned TM2 H(15) - Traditional Mainstreet Subzone 2. The owner of the property is applying for the Applications for Zoning By-law Amendment and Site Plan which would allow for the proposed increase in building height. Existing development in the immediate area consists of the Southminster United Church to the north on Aylmer Avenue, retail to the south on Bank Street (Mayfair Theatre), retail and Ottawa Library to the east on the east side of Bank Street across from the site, and residential to the west behind the site. The development is expected to be completed and substantially occupied by the year 2024.

Element 2.1.2 – Existing Conditions

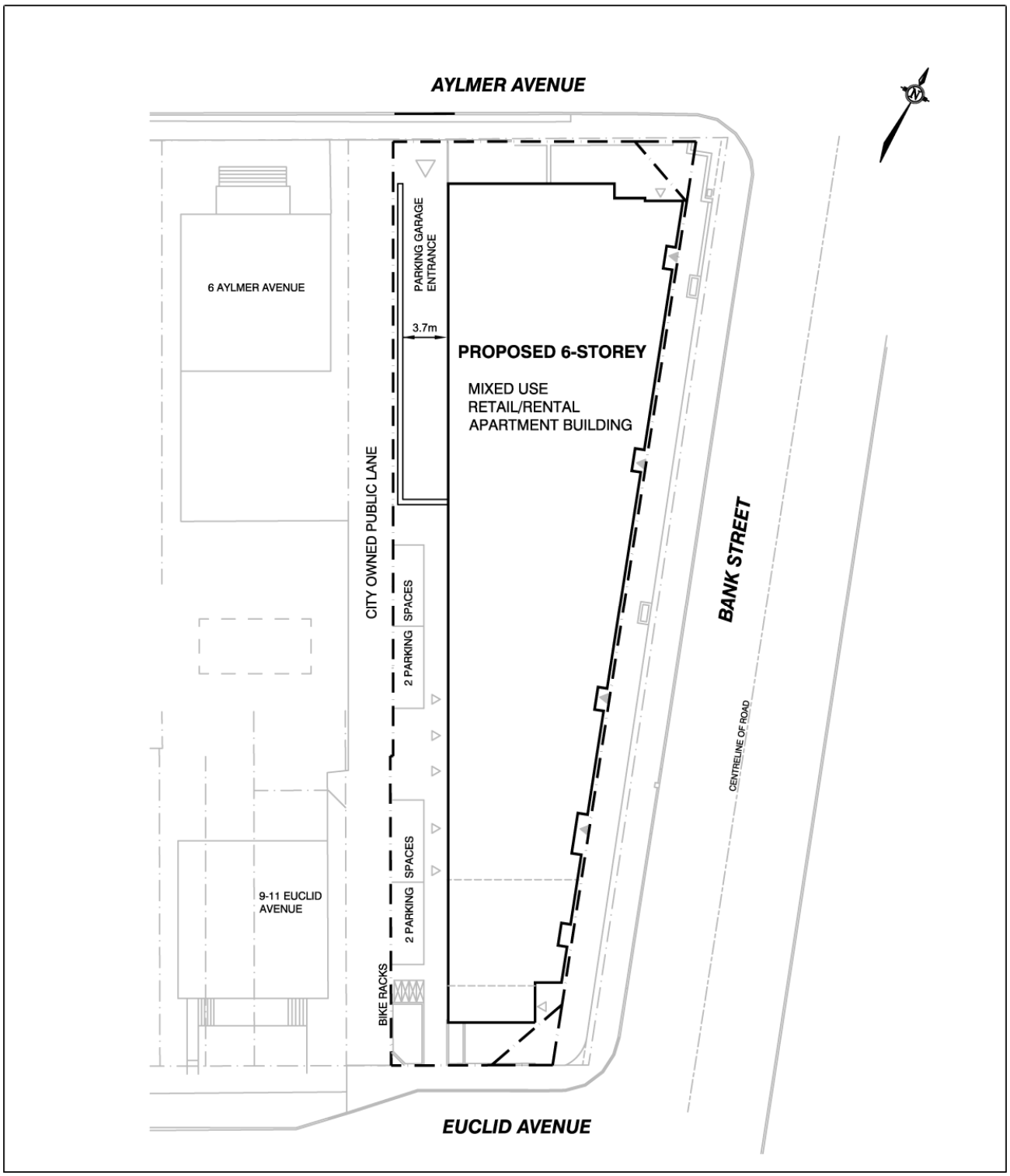
The development will be fronting onto Bank Street. Bank Street is a four lane road under the jurisdiction of the City of Ottawa and is designated in the *Ottawa 20/20 – Transportation Master Plan* (TMP) as a north-south arterial road. Bank Street in the vicinity of the site is identified in the *Ottawa Cycling Plan* as a local cycling route. The speed limit along Bank Street in the vicinity of the site is posted at 40 km./h. The roadway has a pavement width of approximately 12.5 m with sidewalks along both the east and west side. Parking along the west side of Bank Street is prohibited, and stopping is prohibited (3:30 PM - 5:30 PM M-F) between Aylmer Avenue and Sunnyside Avenue. Along the east side of Bank Street across from the site parking is prohibited, and stopping is prohibited (7:00 AM - 9:00 AM M-F) between Euclid Avenue and Aylmer Avenue. Parking is allowed (1 hour from 9:00 AM - 7:00 PM) and stopping is prohibited (7:00 AM - 9:00 AM M-F) between Sunnyside Avenue and Euclid Avenue with the exception of within the zone of the bus stops which prohibits all parking and stopping.

There is a City owned lane along the west property limit of the site connecting Euclid Avenue to Aylmer Avenue. The lane is currently not open to vehicular traffic.

Aylmer Avenue is located adjacent to the north limit of the site. Aylmer Avenue is a local street with a pavement width of 8.5 m and sidewalks along both sides of the street. Aylmer Avenue between Bank Street and Canal Woods Terrace is identified as a local cycling route. Parking is allowed along the north side of the street (3 hours from 7:00 AM - 7:00 PM) with parking prohibited at the church entrance. Parking is prohibited along the south side of the street between Bank Street and Barton Street.

Euclid Avenue is adjacent to the south limit of the site. Euclid Avenue is a two-way local street from Bank Street to a point approximately 20 m west of the eastbound

FIGURE 2.2
CONCEPTUAL SITE PLAN



NOT TO SCALE

Bank/Euclid stop bar. From that point west to Barton Street, Euclid Avenue is an eastbound one-way street. The street has a pavement width of approximately 8.0 m with sidewalks along both sides of the street. Parking is allowed along the north side of the street and prohibited along the south side of the street.

The intersection of Bank Street and Aylmer Avenue is a "T" intersection with Bank Street forming the northbound and southbound approaches, and Aylmer Avenue the eastbound approach. The intersection is controlled by traffic signals, with the signal timing plan obtained from the City of Ottawa and presented as Exhibit 2.1. The intersection has the following lane configuration:

Northbound Bank Street Approach	One through lane
	One shared left/through lane
Southbound Bank Street Approach	One through lane
	One shared through/right lane
Eastbound Aylmer Ave. Approach	One shared left/right turn lane

Euclid Avenue is located adjacent to the south side of the site. The intersection is a two-way stop controlled "T" intersection with the stop sign at the eastbound Euclid Avenue approach. The eastbound approach allows two-way traffic for 20 m from the stop bar which provides access to on-site parking from a city owned public lane at the rear of the development. Beyond the 20 m point, Euclid Avenue is a one-way street eastbound from Barton Street. The intersection has the following lane configuration:

Northbound Bank Street Approach	One through lane
	One shared left/through lane
Southbound Bank Street Approach	One through lane
	One shared through/right lane
Eastbound Euclid Avenue Approach	One shared left/right turn lane (Stop Sign)

Figure 2.3 shows the weekday peak AM and PM hour traffic counts obtained from the City of Ottawa at the intersection of Bank Street and Aylmer Avenue. The traffic counts were taken on March 7, 2019 with the counts provided in the Appendix as Exhibit 2.2.

Collision reports were obtained from the City of Ottawa through Open Data Ottawa for the five year time period between the years January 1, 2014 and December 31, 2018. The collision reports were for the Aylmer/Bank intersection and Bank Street segment. Over the five year period there were 16 collisions at the Bank/Aylmer intersection and 11 along Bank Street. Table 2.1 summarizes the type and year of each collision.

Element 2.1.3 – Planned Conditions

The City of Ottawa *Transportation Master Plan 2013* was reviewed to identify transit and roadway projects in the vicinity of the development. The document identified a transit signal priority project along Bank Street between Highway 417 and Billings Bridge Station under the affordable network projects. The project may include the limited installation of queue jump lanes at selected intersections. There were no road modification projects identified in the TMP in the vicinity of the site.

FIGURE 2.3
2019 WEEKDAY PEAK AM AND PM HOUR TRAFFIC COUNTS

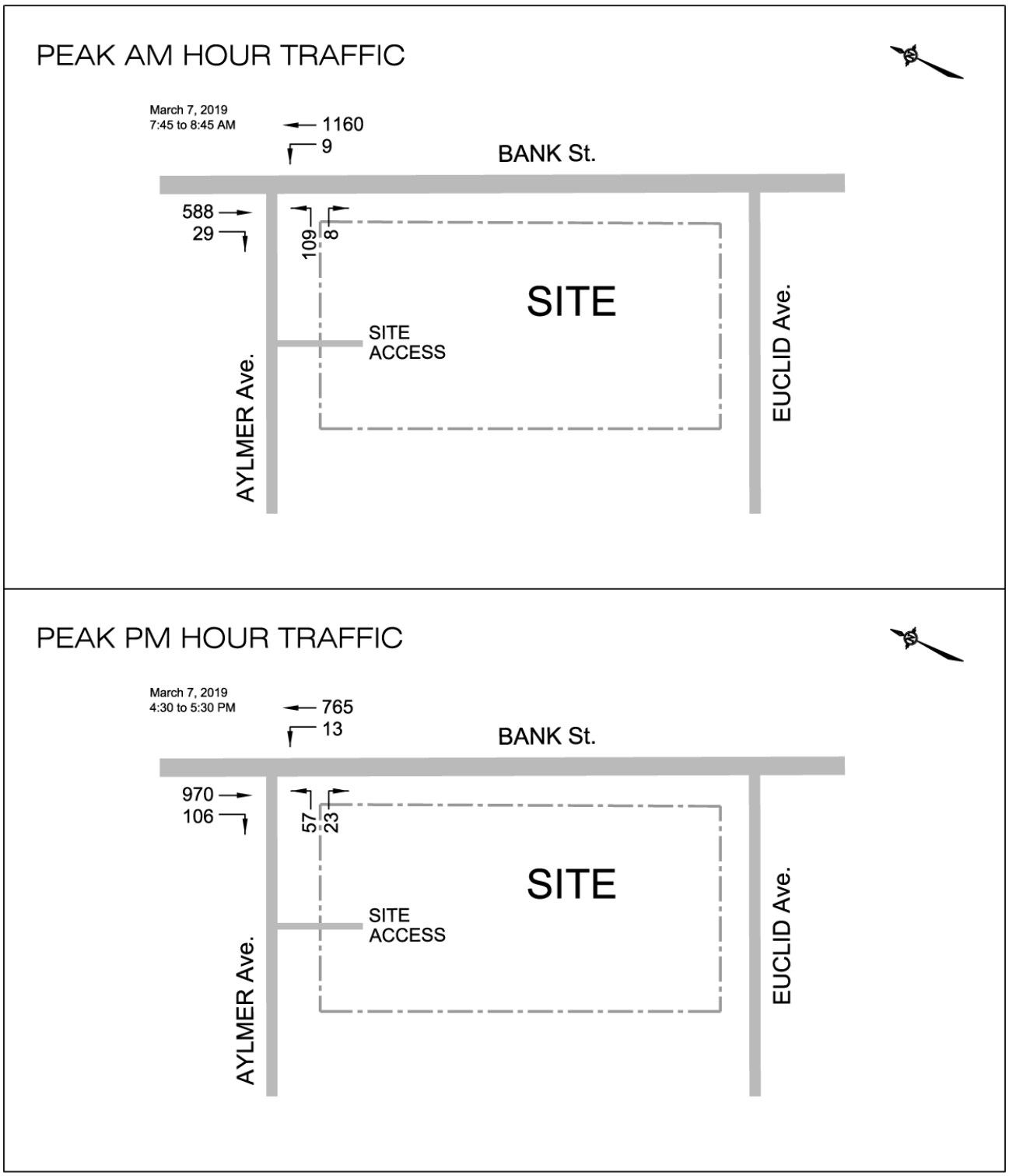


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TABLE 2.1
COLLISION SUMMARY

YEAR	COLLISION TYPE					TOTAL
	REAR END	ANGULAR	TURNING	SIDESWIPE	OTHER (SMV)	
Bank Street and Aylmer Avenue Intersection						
2014	0	0	1	1	2	4
2015	2	0	0	0	0	2
2016	2	0	0	1	1	4
2017	4	0	0	0	1	5
2018	0	1	0	0	0	1
TOTAL	8	1	1	2	4	16
Bank Street Road Segment between Aylmer Avenue and Euclid Avenue						
2014	1	0	1	0	0	2
2015	1	0	0	0	2	3
2016	0	0	2	1	0	3
2017	0	0	0	0	0	0
2018	0	1	0	1	1	3
TOTAL	2	1	3	2	3	11

MODULE 2.2 – Study Area and Time Periods

Element 2.2.1 – Study Area

The number of site generated trips would be low with the TIA triggered by the Location Trigger with the site being in a Design Priority Area (DPA), and the Safety Trigger by being within 150 m of a signalized intersection. Correspondence with City of Ottawa staff has determined the scope of the study to comprise of the number of peak hour multimodal trips generated by the development, and the operation of the Aylmer Avenue and Bank Street intersection. Off-site parking in the immediate area will also be examined to determine the impact of the development on the surrounding neighbourhood.

The study will examine the intersection geometry and roadway segments in accordance with the City of Ottawa *Transportation Impact Assessment Guidelines (2017).*

Element 2.2.2 – Time Periods

The time periods for the analysis would be determined from the background traffic from the traffic counts obtained from the City of Ottawa at the Aylmer/Bank intersection. The peak hours for the analysis would be the weekday peak AM and PM hours which would coincide with the trips from the residential portion of the development.

Element 2.2.3 – Horizon Years

The mixed-use development is expected to be completed and substantially occupied by the year 2024. The TIA study will examine the operation of the Aylmer/Bank intersection for the 2024 background traffic, and at the year 2024 following full development of the site. The study will also examine the impact of the development traffic at five years beyond completion at the year 2029.

MODULE 2.3 – Exemptions Review

The exemptions, which provide possible reductions to the scope of work of the TIA Study, were examined using Table 4: Possible Exemptions which is provided in the City's *Transportation Impact Assessment Guidelines (2017).* Utilizing the table, the following lists the possible exemptions proposed for the TIA Study report:

MODULE	ELEMENT	EXEMPTION CONSIDERATIONS
Design Review Component		
4.1 Development Design	4.1.2 Circulation and Access	No - The rear public lane delivery access will be examined to determine how it will function.
	4.1.3 New Street Networks	Yes – The development does not propose any new municipal streets.
4.2 Parking	4.2.1 Parking Supply	No – The study will determine the number of parking spaces proposed and the number required under the zoning by-law.
	4.2.2 Spillover Parking	No - Off-site parking will be examined for the retail use.
Network Impact Component		
4.5 Transportation Demand Management	All Elements	No – The site would not generate many development related trips, but the study will examine TDM measures.
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	No – The study will examine site access and any impact on the surrounding neighbourhood.
4.8 Network Concept		Yes - The site would not generate more than 200 person-trips per peak hour in excess of the volume permitted by established zoning.

STEP 3 - FORECASTING

MODULE 3.1 - Development-generated Travel Demand

Element 3.1.1 – Trip Generation and Mode Shares

The 1050 - 1060 Bank Street development will be a mixed-use development comprising of a residential portion with an underground parking garage, and a commercial/retail portion on the ground floor comprising of a sit-down restaurant and retail. The site generated trips between the residential and commercial uses will be examined separately since the vehicles for the residential units will park on-site in the underground parking garage and will enter and exit by way of the garage access onto Aylmer Avenue. The trips to and from the retail and restaurant uses will have vehicle parking along the adjacent streets or parking lots, and would rely heavily on other modes of travel or shared trips with other retail and commercial uses within the Glebe community.

Residential Land Use

The development will consist of 44 rental apartments. The number of expected site generated trips utilized the trip statistical data documented in the *2009 TRANS Trip Generation Study* report. The analysis used the Blended Vehicle Trip Generation Rates from Table 3.16 of the TRANS document for ITE Land Use 223, “Mid-rise apartments (3-10 floors)”. The number of site generated trips was proportioned inbound/outbound to the directional distribution shown in Table 3.17 of the document. The trips rates and distribution are shown below in Table 3.1.

TABLE 3.1
VEHICLE TRIP GENERATION RATES - Residential Land Use

Trip Rate	Peak AM Hour		Peak PM Hour	
Blended Trip Rate	0.23 T/Dwelling Units		0.26 T/Dwelling Units	
Directional Distribution	24% Entering	77% Exiting	62% Entering	39% Exiting

The site generated trips were determined by the product of the number of dwelling units (44 apartment units) and the trip rates during the peak hour as shown in Table 3.1. The total number of auto-trips is shown in Table 3.2. The person-trips were determined by the number of auto-trips divided by the mode share for the number of vehicle-trips. The mode share used was from Table 3.13 of the *2009 TRANS Trip Generation Study* report for an apartment development in an urban area (within the greenbelt). The mode share is 0.37 vehicle-trips for the peak AM hour and 0.40 vehicle-trips for the peak PM hour. Table 3.2 shows the future peak hour person-trips.

TABLE 3.2
TOTAL PEAK HOUR SITE GENERATED TRIPS - Residential Land Use

Apartment Units	AUTO-TRIP GENERATION		FUTURE PERSON-TRIPS	
	Peak AM Hr.	Peak PM Hr.	Peak AM Hr.	Peak PM Hr.
44 Dwellings	10 veh.	11 veh.	27 per.	28 per.

The modal split of trips was determined from the City of Ottawa document, *2011 NCR Household Origin-Destination Survey*, January 2013. The modal share used the demographic characteristics for the Ottawa Inner Area (Page 89) for trips from the district, and the location of the development with respect to employment, amenities, and transit routes. Table 3.3 presents the modal share summary which will be used in the TIA study for the residential land use.

TABLE 3.3
MODE SHARE SUMMARY (Person-Trips) - Residential Land Use

Future Mode Share Targets for the Development			
Travel Mode	**AM**	**PM**	**Rationale**
Auto Driver	40%	45%	Consistent with modal share targets and proximity to employment areas
Auto Passenger	7%	11%	
Transit	25%	33%	Consistent with the 2009 TRANS and 2011 TRANS-OD reports and the local retail and commercial area
Bicycle	6%	5%	
Walk/Other	23%	7%	

OC Transpo provides frequent Route 6 (Rockcliffe to Greenboro) and frequent Route 7 (Carleton to St. Laurent) which travel past the site through the downtown core. The bus stops are in close proximity as northbound and southbound nearside stops to the Aylmer/Bank intersection. Both Bank Street and Aylmer Avenue are identified in the *Ottawa Cycling Plan* as local cycling routes. Pedestrian sidewalks are provided on both sides of the street along Bank Street, Aylmer Avenue and Euclid Avenue.

The trips by primary travel mode in the 2011 TRANS-OD Survey Report were taken for the peak AM and PM hours travelling from the district since the apartment building is the origin of site generated trips. The large variation of walk/other trips between the peak AM and PM hours would be due to the concentration of time with which tenants of the

apartment building would be travelling to work and the variation of time with which tenants travel home from work.

The peak hour person-trips per mode were determined by the product of the peak hour future person-trips from Table 3.2 and the future mode share from Table 3.3. The results are shown in Table 3.4 for the residential portion of the development.

TABLE 3.4
FUTURE SITE GENERATED PERSON-TRIPS - Residential Land Use

TRAVEL MODE	DEVELOPMENT GENERATED PERSON-TRIPS	
	PEAK AM HR.	PEAK PM HR.
Auto Driver	11 per. trips	13 per. trips
Auto Passenger	2 per. trips	3 per. trips
Transit	7 per. trips	9 per. trips
Bicycle	2 per. trips	1 per. trips
Walk/Other	5 per. trips	2 per. trips
Total Trips	27 per. trips	28 per. trips

The TIA Guidelines allow for three Trip Reduction Factors. The three trip reductions would consist of trips from existing development on site, pass-by trips, and shared trips within the site between two or more uses.

1. There are existing commercial uses on site which comprise of two restaurants and a children's clothing store. Site trips generated by these uses would not be associated with the residential use and therefore the residential site generated trips were not adjusted.
2. There would be no pass-by trips associated with the residential use.
3. There would be no trips which would be shared between the residential use and the proposed restaurant and retail use. The three trip reduction factors would not be applied to the residential use.

Commercial/Retail Land Use

The ground floor of the development would be occupied by 825 m^2 of mixed-use. The mixed-use would consist of an 80 seat sit-down restaurant and 593 m^2 (6,386 ft^2) of retail space with a tenant and use which has not been determined at this time. The retail space may include a coffee shop with no seating or drive-through window and would occupy 105 m^2 of the retail space at the south portion of the building. The coffee shop would cater to pass-by pedestrian traffic. There will be no parking provided on-site for the restaurant or retail.

The number of expected site generated trips utilized the trip statistical data in the Institute of Transportation Engineers (ITE) document, *Trip Generation Manual 10th Edition*. For the restaurant use, the study will utilize the average trip rate for a "Quality Restaurant" ITE 931 Land Use. The trips were determined for the peak PM hour of the adjacent roads, but were not calculated for the peak AM hour as the restaurant would likely be open for lunch and evening dining and closed during the peak AM hour of the adjacent roads. The remaining portion of the ground floor would be occupied by retail which may also include a coffee shop. The retail trips were determined from the average trip rates for a "Variety Store" ITE 814 Land Use, which may include kitchen supplies, home office supplies, food products, household goods, etc. The trip rates for the commercial/retail uses are shown in Table 3.5 with the ITE trip data graphs provided in the Appendix as Exhibit 3.1 for the restaurant peak PM hour, and Exhibit 3.2 for the retail peak AM hour and Exhibit 3.3 for the retail peak PM hour.

The auto-trips are shown in Table 3.6 and are the product of the number of seats and trips rate (Table 3.5) for the restaurant use, and the gross floor area and trip rates for the retail use. The person-trips were determined by the number of auto-trips calculated from the ITE trip rates, multiplied by 1.28 (TIA Guidelines) to convert auto-trips to person-trips. Table 3.6 shows the future peak hour auto-trips and person-trips.

TABLE 3.5
VEHICLE TRIP GENERATION RATES - Commercial/Retail Land Use

Land Use	Peak AM Hour		Peak PM Hour	
Restaurant Trip Rate	-		0.28 T/Seat	
Directional Distribution	-	-	67% Entering	33% Exiting
Variety Store Trip Rate	3.18 T/1000 ft^2		6.84 T/1000 ft^2	
Directional Distribution	57% Entering	43% Exiting	52% Entering	48% Exiting

TABLE 3.6
TOTAL PEAK HOUR SITE GENERATED TRIPS - Commercial/Retail Land Use

Trips	AUTO-TRIP GENERATION		FUTURE PERSON-TRIPS	
	Peak AM Hr.	Peak PM Hr.	Peak AM Hr.	Peak PM Hr.
Restaurant	-	22 veh.	-	28 per.
Variety Store	20 veh.	44 veh.	26 per.	56 per.
60% Trip Reduction	-12 veh.	-40 veh.	-16 per.	-50 per.
Total Trips	8 veh.	26 veh.	10 per.	34 per.

The modal split of trips used the demographic characteristics for the Ottawa Inner Area (Page 89) for trips to the district, which would represent trips to the retail area of the Glebe community. Table 3.7 presents the modal share summary.

TABLE 3.7
MODE SHARE SUMMARY (Person-Trips) - Commercial/Retail Land Use

Future Mode Share Targets for the Development			
Travel Mode	**AM**	**PM**	**Rationale**
Auto Driver	41%	43%	Consistent with modal shares expected for travel to/from a retail community
Auto Passenger	9%	11%	
Transit	41%	22%	Consistent with the expected transit and pedestrian share for the community
Bicycle	4%	6%	
Walk/Other	5%	18%	

The commercial trips by primary travel mode in the 2011 TRANS-OD Survey Report were taken for the peak AM and PM hours travelling to the district with the Glebe community the destination for restaurant and retail trips. The large variation of walk/other trips between the peak AM and PM hours would be due to more walking travel taking place during the peak PM hours when more commercial uses are open.

The peak hour person-trips per mode were determined by the product of the future person-trips from Table 3.6 and the future mode share from Table 3.7. The results are shown in Table 3.8 for the restaurant and retail portion of the development. Since there is no on-site parking, the vehicular trips which are generated would use on-street parking in the area.

The three Trip Reduction Factors from the TIA Guidelines would consist of a reduction due to existing development on site, pass-by trips, and shared trips between uses within the site.

1. The existing site contains two buildings with approximately 30 parking spaces for two restaurants and retail having a total gross floor area of 490 m^2. With the existing buildings replaced by the 825 m^2 of the same type of land use, the site generated trips utilized a 60 percent reduction in trips based on the gross floor area. Table 3.6 incorporates the reduction due to existing development trips.
2. The pass-by trip share would only apply to the restaurant and retail and would be dependent on the nearby retail in the area. If the coffee shop were to be constructed, the shop (17.7% GFA of the retail) which provides only a counter with no tables or seating, drive-through window or parking, would experience approximately 100 percent pass-by trips from patrons shopping along Bank Street. With the coffee shop not confirmed as a tenant, all retail was expected to be a variety store use. All parking

relating to the commercial portion of the site would be on-street with the actual route dependent on available parking. The study has taken a conservative approach and has not applied a pass-by trip reduction factor to the restaurant/retail trips, and assumed that all trips would be primary trips to the site.

3. The number of trips generated by the restaurant/retail is expected to be shared with other commercial uses in the area but not within the site. The study has not applied a reduction due to synergy or internalization.

TABLE 3.8
FUTURE SITE GENERATED PERSON-TRIPS - Commercial/Retail Land Use

TRAVEL MODE	DEVELOPMENT GENERATED PERSON-TRIPS	
	PEAK AM HR.	PEAK PM HR.
Auto Driver	4 per. trips	15 per. trips
Auto Passenger	1 per. trips	4 per. trips
Transit	4 per. trips	7 per. trips
Bicycle	0 per. trips	2 per. trips
Walk/Other	1 per. trips	6 per. trips
Total Trips	10 per. trips	34 per. trips

The total expected person-trips are the addition of the residential trips (Table 3.4) and the restaurant/retail trips (Table 3.8). Table 3.9 presents the total trips generated by the development.

TABLE 3.9
TOTAL SITE GENERATED PERSON-TRIPS - Residential & Commercial Use

TRAVEL MODE	DEVELOPMENT GENERATED PERSON-TRIPS	
	PEAK AM HR.	PEAK PM HR.
Auto Driver	15 per. trips	28 per. trips
Auto Passenger	3 per. trips	7 per. trips
Transit	11 per. trips	16 per. trips
Bicycle	2 per. trips	3 per. trips
Walk/Other	6 per. trips	8 per. trips
Total Trips	37 per. trips	62 per. trips

Element 3.1.2 – Trip Distribution

The distribution of site generated vehicle trips for the proposed apartment portion of the development was determined by examining the *2011 NCR Household Origin-Destination Survey* for the travel patterns for the Ottawa Inner Area. The travel patterns for trips from the district were applied to the surrounding roads to determine the shortest and most convenient routes to the destination. The trip distribution for the residential trips during the weekday peak AM and PM hours is as follows:

To/From the north along Bank Street	50%	(Downtown and to Hwy 417)
To/From the south along Bank Street	35%	
To/From the east along Colonel By Drive [1]	10%	
To/From the west along Colonel By Drive [1]	5%	

[1] Trips to Colonel Drive are along Aylmer Avenue and Rosedale Avenue, and trips from Colonel By Drive are along Echo Drive and Bank Street

The commercial/retail portion of the site would have approximately 65 percent of the vehicle trips originating from and destined to the north along Bank Street past the site which was determined from the *2011 NCR Household Origin-Destination Survey* for the travel patterns of the Ottawa Inner Area for trips to the district. Approximately 35 percent would be originating from or destined to the south along Bank Street. With no parking on the site, the new vehicle trips to/from the north would be assigned along Bank Street adjacent to the site, and the trips to/from the south would utilize available parking in the area south of the site and would not travel past the site. The peak AM and PM hour of the restaurant and retail trips would be the following:

To/From the north along Bank Street	65%

Element 3.1.3 – Trip Assignment

The trip assignment has examined the site generated residential and commercial/retail trips with respect to the shortest and most convenient routes to/from the development. The trip distribution, as discussed in Element 3.1.2, was applied to the peak AM and PM peak hour auto driver trips shown in Table 3.4 for the residential trips and Table 3.8 for the commercial/retail trips. Figure 3.1 presents the peak hour residential trips to/from the site. Figure 3.2 presents the commercial/retail trips which travel past the site.

MODULE 3.2 - Background Network Travel Demands

Element 3.2.1 – Transportation Network Plans

The City of Ottawa *Transportation Master Plan (TMP) 2013* was reviewed to identify transit and roadway projects in the vicinity of the development. The document identified the provision of Transit Signal Priority at selected intersections along Bank Street between Billings Bridge and Wellington Street. The project is listed in the TMP Rapid Transit and Transit Priority projects in the “2031 Affordable RTTP Network Projects”. The project would reduce travel time and improve reliability on OC Transpo local routes.

FIGURE 3.1
PEAK AM AND PM HOUR SITE GENERATED TRIPS - Residential

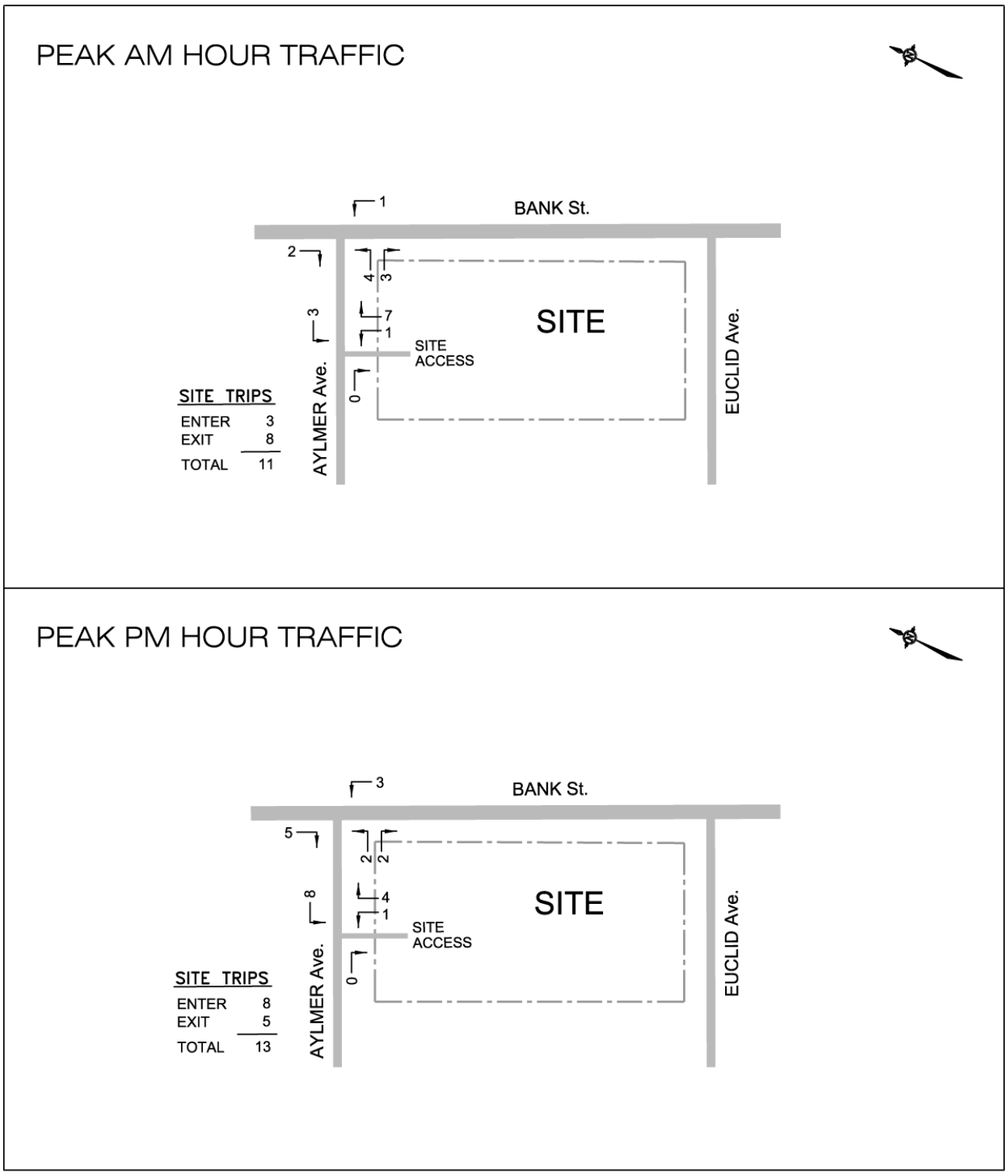
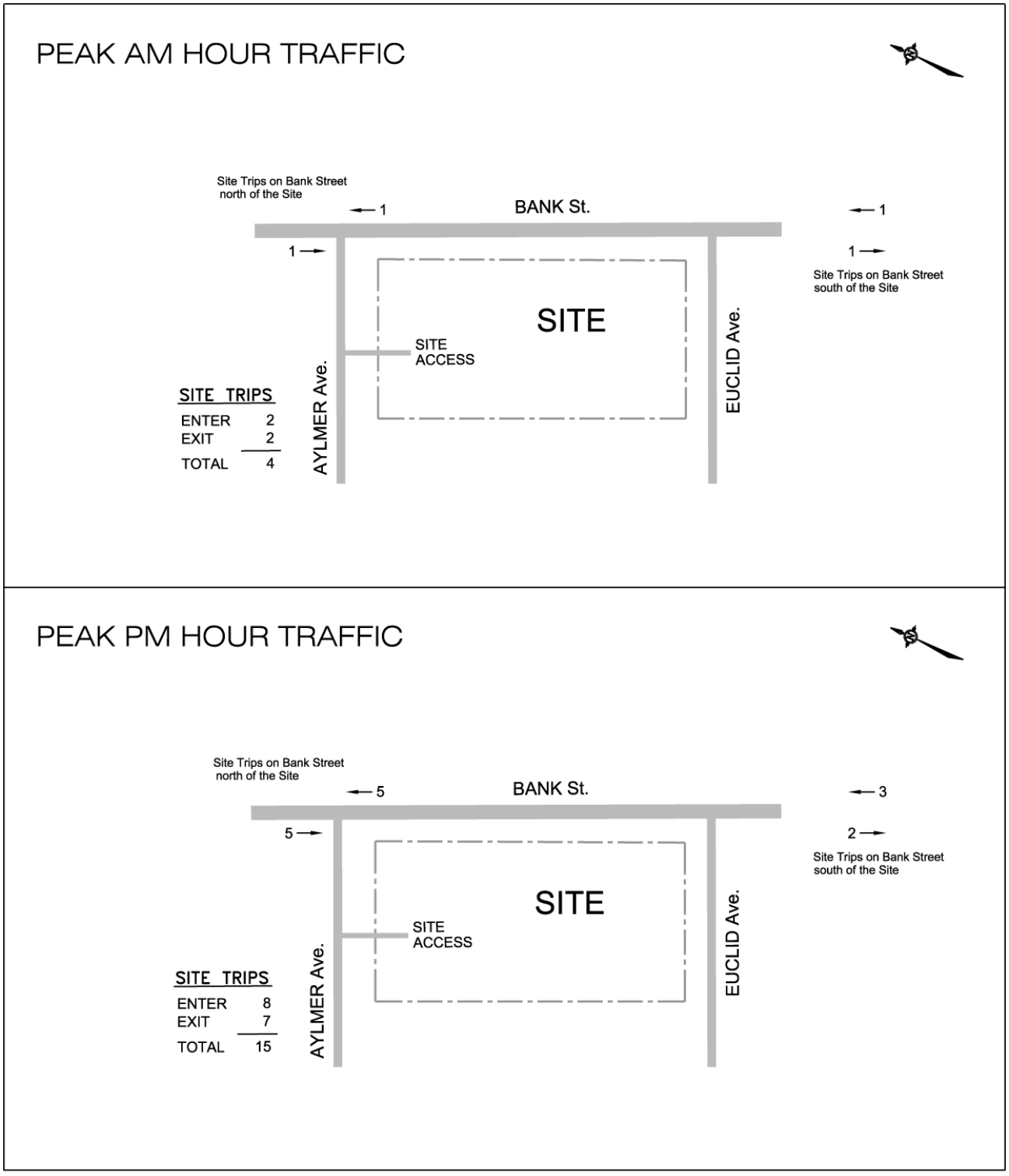


FIGURE 3.2
PEAK AM AND PM HOUR SITE GENERATED TRIPS - Restaurant/Retail



Element 3.2.2 – Background Growth

The background growth in traffic represents the increase or decrease in traffic due to development outside the study area. The trip trend of trips to/from the Ottawa Inner Area for auto driver trips was examined in the *National Capital Region Travel Trends* document prepared by the IBI Group. The document showed that trips from the Ottawa Inner Area decreased at an annual compounded rate of -0.4 percent, and trips to the Ottawa Inner Area decreased at an annual compounded rate of -1.6 percent between the years of 1995 and 2011.

The study has assumed that the background traffic would experience an annual average compounded increase of 1.0 percent which translates to the following growth factors which were applied to all approaches of the Aylmer/Bank intersection:

Growth Factor at the Aylmer/Bank Intersection

2019 → 2024 = 1.051 Completion
2019 → 2029 = 1.105 Completion + 5 Years

Element 3.2.3 – Other Developments

Proposed development in the area would consist of the redevelopment of lands at the Southminster Church located at 1040 Bank Street at the northwest corner of the Aylmer/Bank intersection. The project would consist of the construction of a 21 unit condominium apartment building which would have an access onto Galt Street.

Figure 3.3 presents the 2024 peak AM and PM peak hour background vehicle traffic (does not include trips from the proposed 1050 - 1060 Bank Street development). Figure 3.4 shows the expected 2029 peak hour background traffic which represents five years beyond completion of the development. All background traffic includes the 1.0 percent annual average compounded increase in traffic, and the expected trips from the 21 unit development at 1040 Bank Street.

MODULE 3.3 - Demand Rationalization

There are no areas or intersections within the study area which are identified as having travel capacity issues. The proposed mixed-use site will provide a restaurant and retail which will replace similar restaurants and retail currently occupying the site. The site will also contain a residential component which will comprise of 44 rental apartments. There are no capacity issues expected at the Aylmer/Bank intersection.

The total vehicular traffic is the sum of the peak hour site generated trips and the peak hour background traffic. The site generated trips would be the addition of the residential trips from Figure 3.1 and restaurant/retail trips from Figure 3.2, and the background traffic (Figure 3.3 for the year 2024 and Figure 3.4 for the year 2029). Figure 3.5 presents the total 2024 peak hour vehicular traffic and Figure 3.6 the total 2029 peak hour vehicular traffic.

FIGURE 3.3
2024 WEEKDAY PEAK AM AND PM HOUR BACKGROUND TRAFFIC

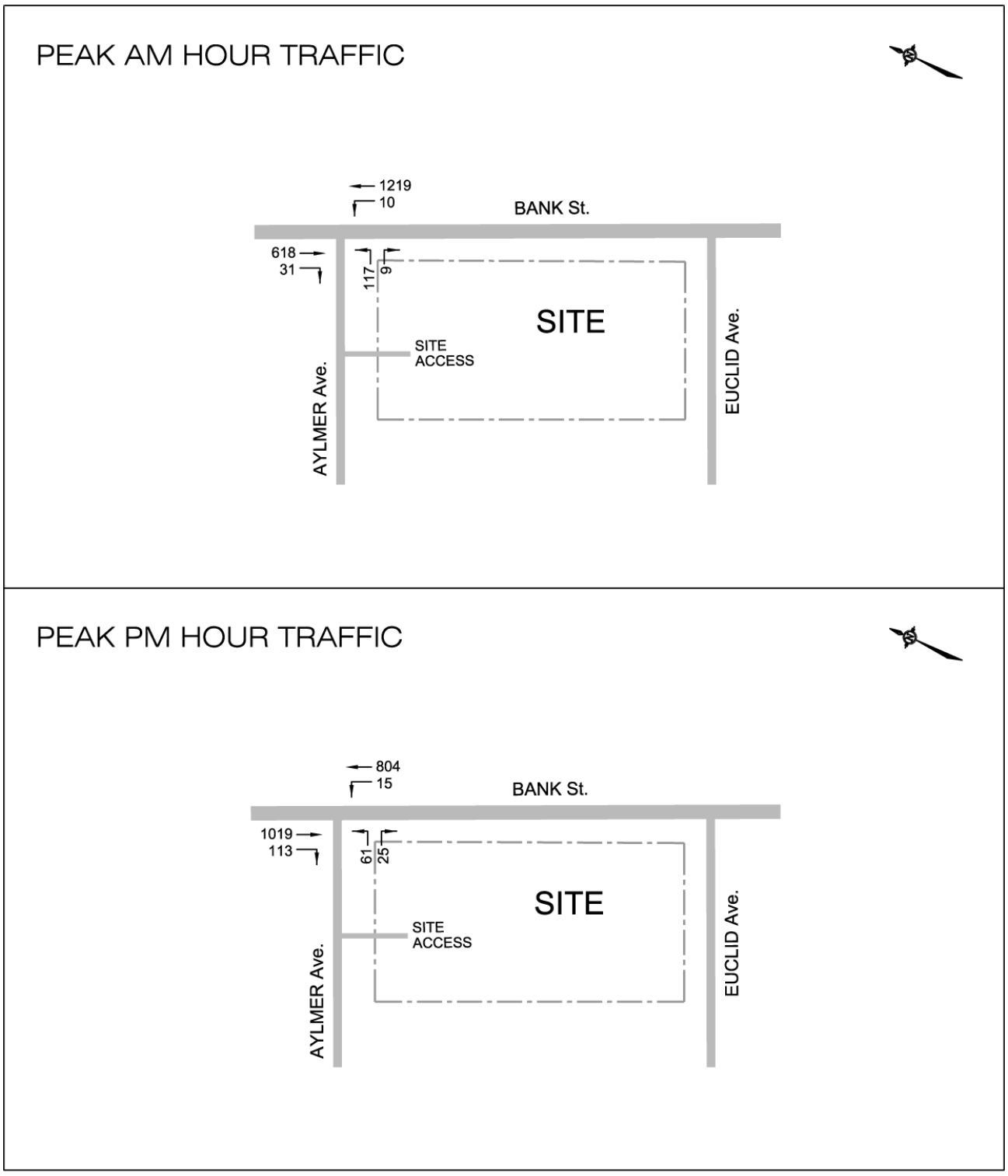


FIGURE 3.4
2029 WEEKDAY PEAK AM AND PM HOUR BACKGROUND TRAFFIC

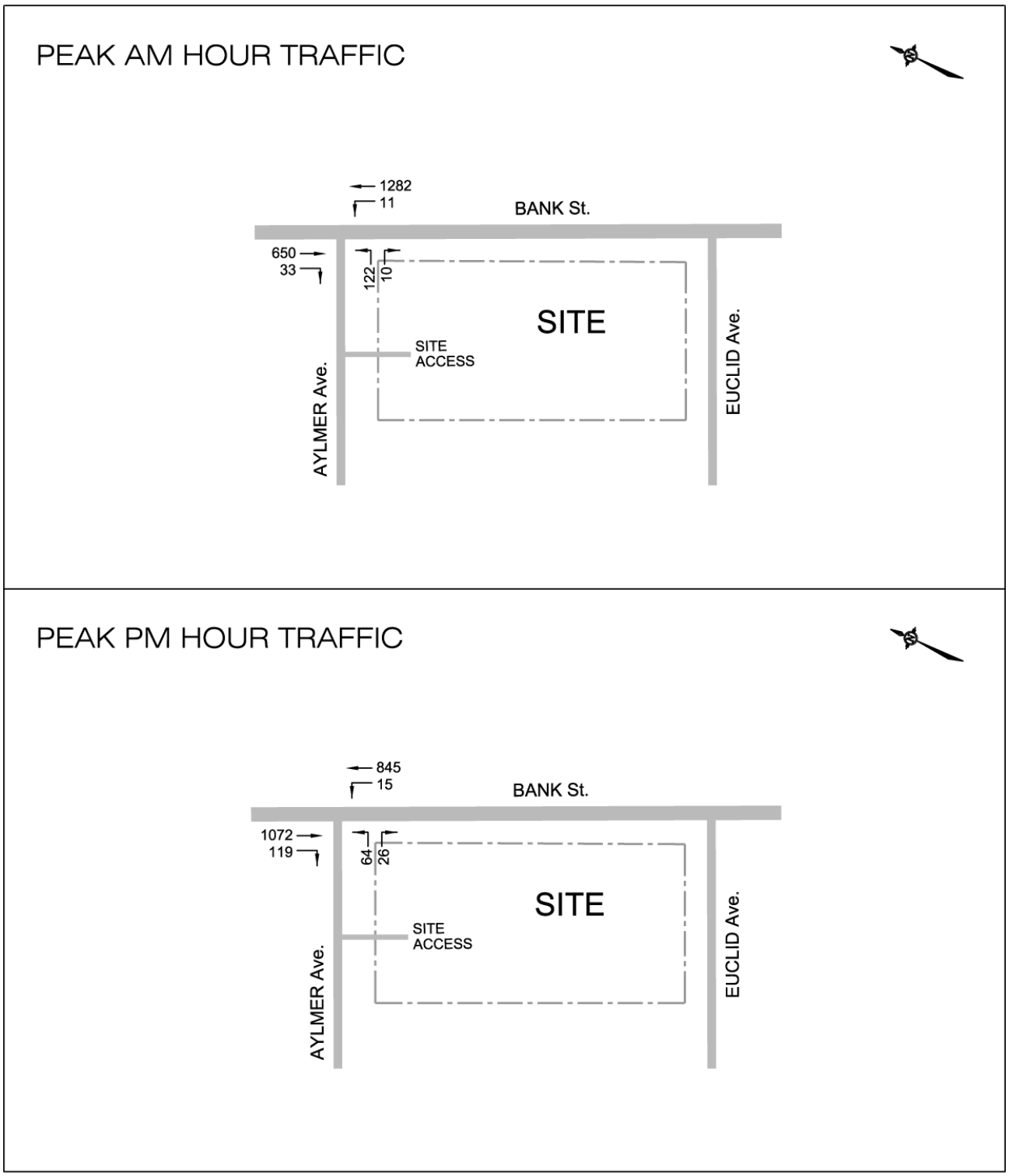


FIGURE 3.5
2024 WEEKDAY PEAK AM AND PM HOUR TOTAL TRAFFIC

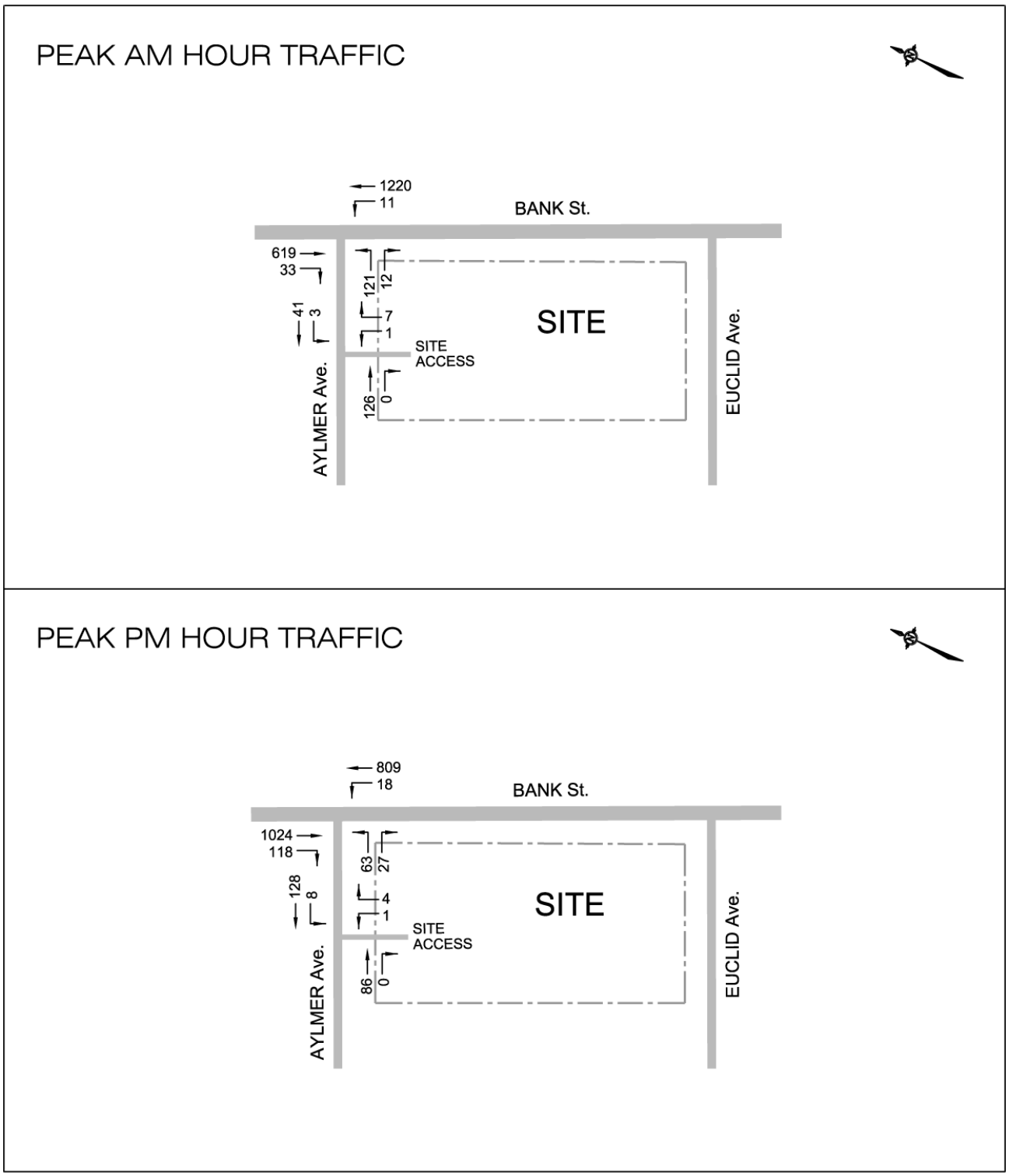
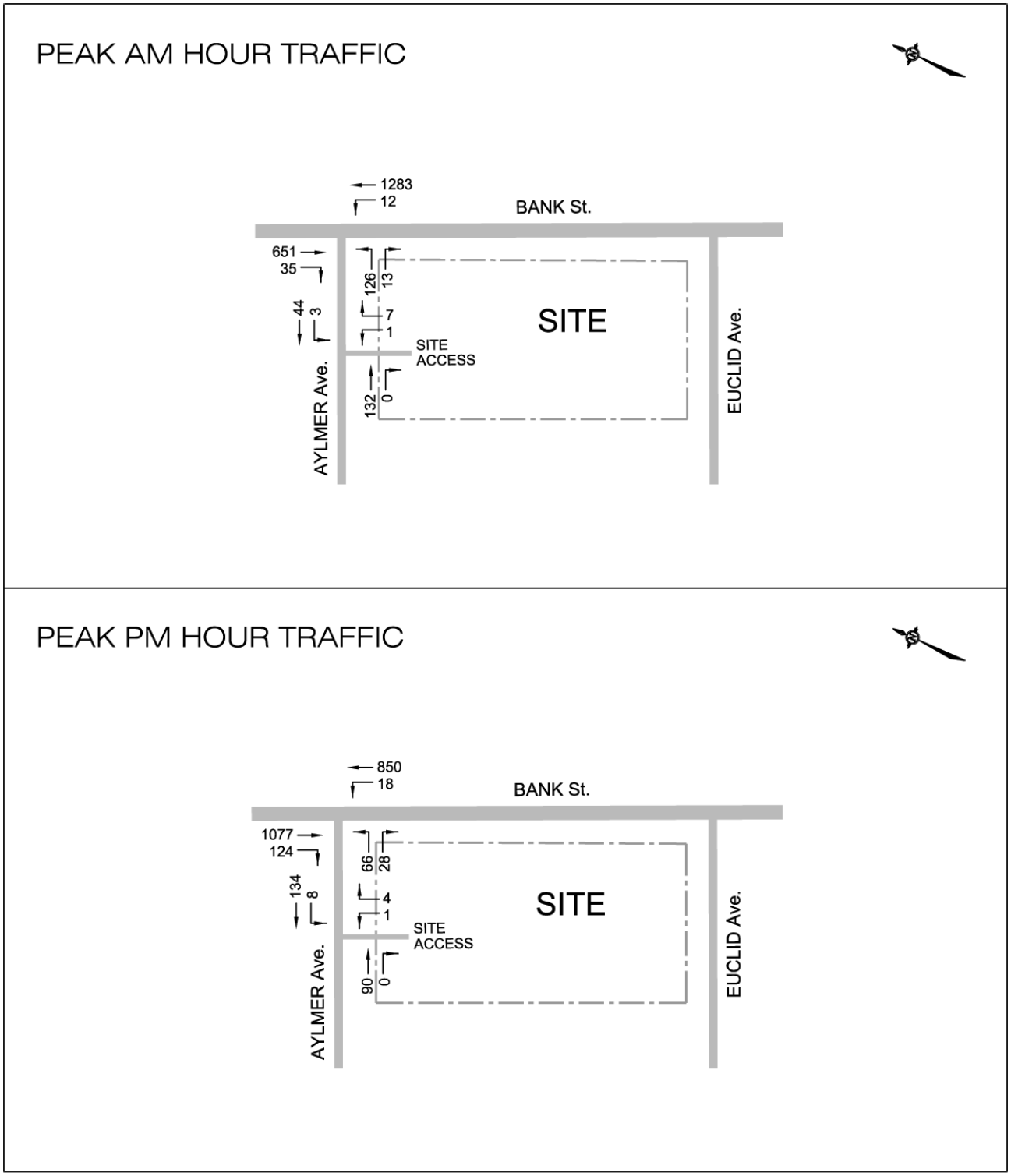


FIGURE 3.6
2029 WEEKDAY PEAK AM AND PM HOUR TOTAL TRAFFIC



STEP 4 – ANALYSIS

MODULE 4.1 – Development Design

Element 4.1.1 – Design for Sustainable Modes

The Site Plan provides on-site parking for residents of the apartment building. There are 17 spaces including 1 barrier free space in the underground parking garage which has an access onto Aylmer Avenue. There are 4 additional parking spaces located at the rear of the building as parallel spaces next to the city owned public lane which would be available to residents or patrons and employees of the restaurant and retail. The development proposes a total of 21 available parking spaces on the site.

There is storage space (racks) for 26 bicycles on site. These would comprise of bike racks for 22 bikes in the secured underground garage, and 4 bikes in racks at the rear of the retail building. Within the municipal road allowance there are four bike racks along Bank Street across the frontage of the site which can store an additional 8 bicycles.

The site is serviced by Regular Route 6 (Rockcliffe to Greenboro) and Regular Route 7 (Carleton to St. Laurent). The routes are frequent routes with nearside bus stops at the Aylmer/Bank intersection. The walking distance from the development would be approximately 45 m to the southbound Bank Street bus stop, and 75 m to the northbound bus stop.

The pedestrian sidewalk network is extensive with sidewalks provided along both sides of Bank Street and all local and collector roads in the vicinity of the site.

The study has utilized the *TDM - Supportive Development Design and Infrastructure Checklist* for both a Residential Development and Non-Residential Development provided below. The checklist examines the opportunity to implement facilities which are supportive of sustainable modes.

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	☒ The building has an underground parking garage
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☒ The building and entrances are adjacent to the street
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)*	☒ OC Transpo bus stops are on close proximity to the site with routes providing service to the Greenboro Transit Station and St. Laurent Transit Station
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)*	☒ The building entrances are close to the public sidewalk providing a short walk to transit stops and pedestrian facilities

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)*	☒ Areas along Bank Street, Aylmer Avenue and Euclid Avenue adjacent to the building are landscaped as paver walkways.
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	☒ The building entrances are close to the public sidewalk
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☒ All walking routes are along an arterial road with street lighting
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	☒ Providing lighted paved landscape areas between the building and sidewalk
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)*	☒ For the residential, there are bike spaces in the underground parking garage
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)*	☒ The residential portion will provide 22 bicycle parking spaces in the garage
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	☒ The number of bike storage spaces meet City By-laws. Bike racks are located at the front of the building within the ROW for visitors
	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
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	☒ The parking is located within the garage with the number meeting By-law requirements
	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	☐ N/A
BASIC	3.1.2	Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	☐ N/A
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐ N/A

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses *(see Zoning By-law Section 94)*	☐
	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	☒ The Site Plan provides 17 spaces in the garage and 4 surface spaces for the total mixed-use. The By-law requires 19 spaces
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)*	☒ The 21 parking spaces are for the mixed-use building
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	☐

TDM-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	☒ On-street parking will service the retail use
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☒ The building and entrances are adjacent to the street
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)*	☒ OC Transpo bus stops are on close proximity to the site with routes providing service to the Greenboro Transit Station and St. Laurent Transit Station
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)*	☒ The building entrances are close to the public sidewalk providing a short walk to transit stops and pedestrian facilities

		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)*	☒ Areas along Bank Street, Aylmer Avenue and Euclid Avenue adjacent to the building are landscaped as paver walkways.
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	☒ The building entrances are close to the public sidewalk
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☒ All walking routes are along an arterial road with street lighting
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	☒ Providing lighted paved landscape areas between the building and sidewalk
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)*	☒ There is bike parking at the rear of the building and bike racks along the Bank Street ROW
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)*	☒ The retail portion provides 4 spaces at the rear of the building and 8 spaces along the Bank Street ROW
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	☒ There are a total of 12 bike spaces available for a calculated 3 peak PM hour person trips (total mixed-use site
	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
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	☐ N/A
BASIC	3.1.2	Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	☐ N/A
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐ N/A
	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	☒ There are only 4 on-site parking spaces at the rear of the building for the retail use. This conforms to the zoning
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	☒ There are only 4 on-site parking spaces for the retail use.. On-street parking is available
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)*	☒ The 21 parking spaces are for the mixed-use building
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	☐

Element 4.1.2 – Circulation and Access

The development will have an underground parking garage with an access onto Aylmer Avenue. The garage access will have a width on 3.7 m and would be located approximately 35 m (centreline to centreline) west of the Aylmer/Bank intersection. The garage access will be a two-way full movement access onto Aylmer Avenue.

There is a city owned public lane adjacent to the west property limit of the building site. The lane would provide passage between Euclid Avenue and Aylmer Avenue. The lane would have a pavement width of approximately 3.65 m and would be used for access to the 4 parallel parking spaces along the west side of the site, and for service and delivery vehicles associated with the proposed development. The lane would be signed as northbound (Euclid Avenue to Aylmer Avenue) for service vehicles for the proposed building. Truck turning templates showed that a single unit truck (SU 9 or MSU) could make the turning maneuver onto the public lane from Euclid Avenue. The truck may need to encroach onto the opposing lane to make the turning maneuver onto the lane. The public lane would allow two-way traffic movement providing access to the rear parking area to the residential building at 6 Aylmer Avenue.

The existing four entrances (depressed curb) onto Bank Street and one Euclid Avenue entrance which accessed the parking lot for the existing buildings will be removed under the proposed Site Plan.

Element 4.1.3 – New Street Networks

Exempt as determined in the Scoping Document.

MODULE 4.2 – Parking

Element 4.2.1 – Parking Supply

The on-site parking will comprise of 17 parking spaces in the underground parking garage and the 4 parallel parking spaces along the city owned public lane at the rear of the building for a total of 21 parking spaces. The parking includes 3 visitor and 1 barrier free parking spaces. The Zoning By-law requires 19 parking spaces for the residential development, and 0 parking for the restaurant/retail development.

The site provides bike racks for the storage of 22 bicycles in the underground parking garage and racks for 4 bikes at the rear of the site next to Euclid Avenue for a total of 26 bike spaces. The Zoning By-laws require storage for 22 bikes for the residential development and 3 for the retail/restaurant use for a total storage for 25 bikes. In addition there are four bike racks for 8 bikes along Bank Street within the municipal right-of-way adjacent to the site.

The Site Plan provides sufficient parking and storage for vehicles and bicycles which meet or exceed City of Ottawa By-law requirements.

Element 4.2.2 – Spillover Parking

The development comprises of both a residential and retail component. The residential use consists of 44 rental apartment units with an underground parking garage. The parking provided for the residential component meets the City of Ottawa Zoning By-law.

The ground floor contains a restaurant/retail component which will comprise of an 80 seat restaurant with a gross floor area of 232 m^2, and two retail components with a gross floor area of 488 m^2 and 105 m^2, for a total of 825 m^2. The existing restaurant/retail currently has 31 parking spaces on site with four access points from Bank Street which cross the Bank Street sidewalk at a depressed curb, and one access from Euclid Avenue. The existing on-site restaurant/retail parking will be eliminated under the proposed Site Plan, with parking to be accommodated along the adjacent streets. The City of Ottawa Zoning By-law does not require any on-site parking for the restaurant/retail component.

The spillover parking analysis will comprise of a survey of the available on-street parking within a 400 m walking distance of the site, and a survey of the number of occupied parking spaces. The number of occupied parking spaces was determined from the average of the occupied spaces observed in the geoOttawa aerial photos for the years 2017, 2015, 2014 and 2011, and the Google Maps Street View of the surrounding streets.

Parking Supply

Figure 4.1 shows the available on-street parking, along with any parking restrictions along the road. The survey determined that there were 112 available parking spaces, some with restrictions to time and duration.

The survey of occupied parking spaces was conducted and the average of the occupied spaces for the five time periods is shown in Figure 4.2. The survey determined that 76 of the available spaces were occupied.

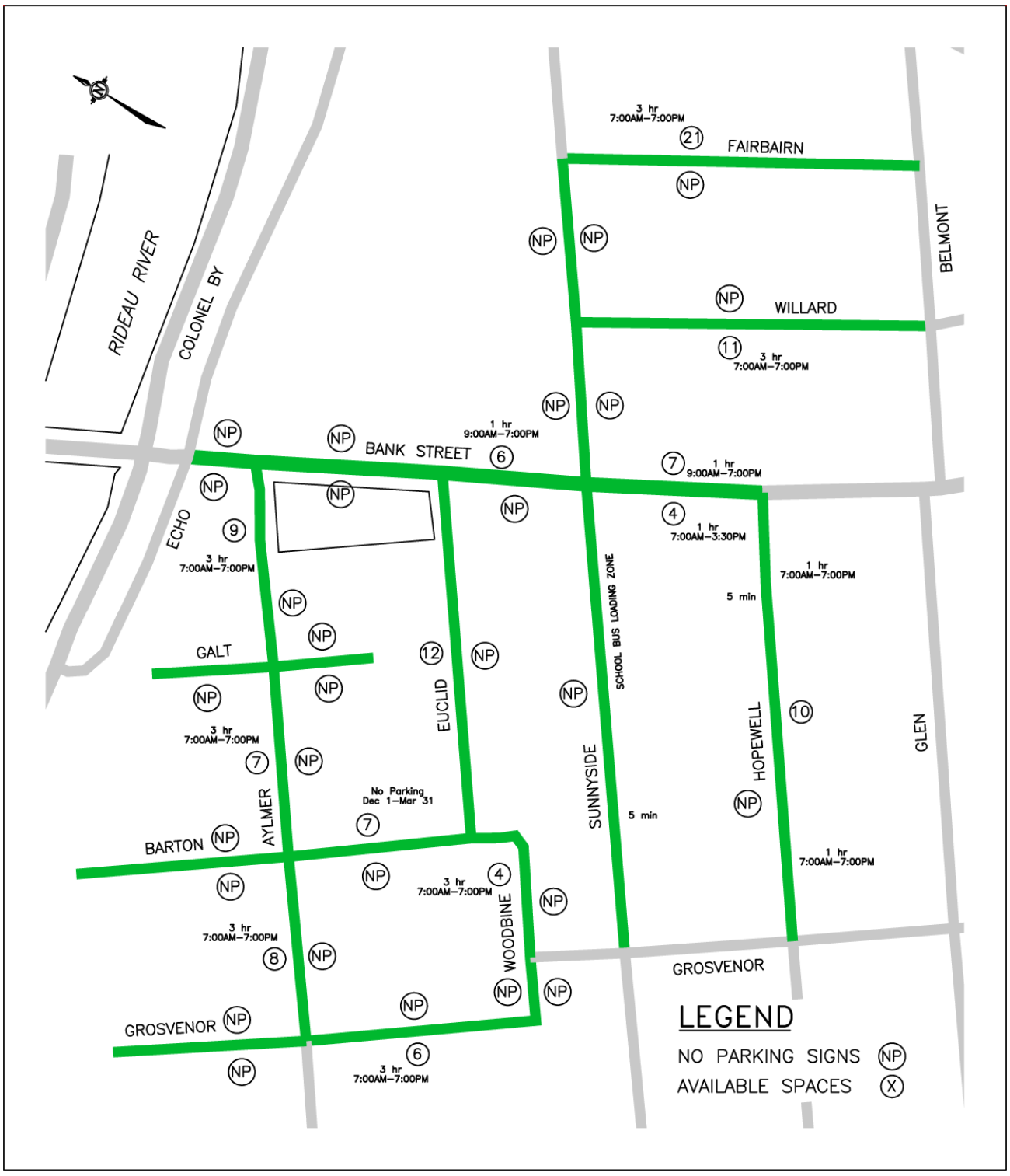
The parking survey determined that the surrounding streets within a 400 m walking distance of the site would experience a utilization of 67.9 percent of the available spaces as shown below prior to the development of the site.

Parking Utilization = occupied parking/available parking
= 76/112
= 67.9 %

Parking Demand

The parking demand was determined for the entire restaurant/retail portion of the development which has a gross floor area of 825 m^2 (8,886 ft^2). The parking demand for the development used the statistical data published in the Institute of Transportation Engineers (ITE) document, *Parking Generation, 3rd Edition*. The analysis used the ITE

FIGURE 4.1
ON-STREET PARKING SUPPLY



NOT TO SCALE

FIGURE 4.2
ON-STREET AVERAGE OF OCCUPIED PARKING SPACES

NOT TO SCALE

Land Use: 820 “Shopping Center” which used the data which was taken from strip, neighbourhood, and community shopping centres. The calculation used the average peak period parking demand on a Saturday (Non-December). The parking demand was determined using the following peak period parking demand and the total gross floor area of the restaurant/retail area. The study has also assumed the on-street parking spaces would experience 20 percent shared trips between uses on site, and with other restaurant/retail uses in the surrounding area.

P = X (A)

Where P = Parking Demand
X = Average Peak Period Parking Demand (2.97 veh/1,000 ft^2)
A = Gross Floor Area (8,886 ft^2)

= 2.97 (8,886/1000)

= 26.4 or 26 parking spaces

P = 26 parking spaces - 20% shared trips

= 26 - 5 = 21 parking spaces

The restaurant/retail portion of the development would not provide parking within the site and would depend on on-street parking. The parking survey determined that the area within approximately a 400 m walking distance of the site would provide 112 parking spaces of which an average of 76 spaces would be occupied. The on-street parking analysis determined that the on-street parking would experience a 67.9 percent utilization of parking spaces leaving an average of 36 unoccupied spaces. The parking generation determined that the restaurant/retail portion of the site would place 21 additional vehicles onto the on-street parking. The surrounding roads would have available parking spaces and would have the capacity to accommodate the expected on-street parking from the development.

MODULE 4.3 – Boundary Street Design

The City of Ottawa Complete Streets concept allows for the safe movement of everyone whether they choose to walk, bike, drive, or take public transit. The boundary roads to the site would consist of Bank Street bordering the east limit of the site, Aylmer Avenue the north limit, and Euclid Avenue the south limit.

Bank Street is an arterial road with pedestrian sidewalks along both sides of the road adjacent to the curb, and a posted speed limit of 40 km./h. Frequent transit service routes pass along Bank Street adjacent to the site providing transit service to the downtown core and linking service to transit stations.

The multi-modal level of service for the Bank Street road segment between Aylmer Avenue and Euclid Avenue was determined utilizing the City of Ottawa publication, *Multi-Modal Level of Service (MMLOS) Guidelines*. The following examined the MMLOS for the various modes of travel along the Bank Street road segment.

PEDESTRIAN LEVEL OF SERVICE (PLOS)

There are sidewalks along both sides of Bank Street. The sidewalks are approximately 2.5 m in width and are adjacent to the curb. Table 4.1 presents the level of service for the street segment adjacent to the site, with the analysis sheets provided in the Appendix.

TABLE 4.1
PEDESTRIAN LEVEL OF SERVICE (PLOS) – Street Segment

Street	Segment	Level of Service	Analysis
Bank Street	Between Aylmer Ave. and Euclid Ave.	C	Exhibit 4.1

BICYCLE LEVEL OF SERVICE (BLOS)

Bank Street in the vicinity of the site and Aylmer Avenue between Bank Street and Canal Woods Terrace are both identified in the *Ottawa Cycling Plan* as a local cycling route. Neither streets have dedicated bike lanes, but Bank Street across the frontage of the site is designated as a "Bicycle Priority" lane. Table 4.2 presents the level of service for the Bank Street road segment with the analysis sheets provided in the Appendix.

TABLE 4.2
BICYCLE LEVEL OF SERVICE (BLOS) – Street Segment

Street	Segment	Level of Service	Analysis
Bank Street	Between Aylmer Ave. and Euclid Ave.	D	Exhibit 4.2

TRANSIT LEVEL OF SERVICE (TLOS)

OC Transpo provides transit service along Bank Street past the site with frequent service routes, Route 6 and Route 7. These routes provide service between Rockcliffe and Greenboro Transit Station, and Carleton University and the St. Laurent Transit Station. Both routes provide service to the downtown core. The TMP has identified a transit signal priority project along Bank Street between Highway 417 and Billings Bridge Station which would improve transit service. Table 4.3 presents the level of service along the Bank Street road segment between Aylmer Avenue and Euclid Avenue. The analysis sheets are provided in the Appendix.

TABLE 4.3
TRANSIT LEVEL OF SERVICE (TLOS) – Street Segment

Street	Segment	Level of Service	Analysis
Bank Street	Between Aylmer Ave. and Euclid Ave.	D	Exhibit 4.3

TRUCK LEVEL OF SERVICE (TkLOS)

The truck LoS was determined for the Bank Street road segment adjacent to the site. Bank Street is designated as an urban truck route. Table 4.4 presents the truck level of service with the analysis sheets provided in the Appendix.

TABLE 4.4
TRUCK LEVEL OF SERVICE (TkLOS) – Street Segment

Street	Segment	Level of Service	Analysis
Bank Street	Between Aylmer Ave. and Euclid Ave.	A	Exhibit 4.4

Aylmer Avenue is a local street with sidewalks along both sides of the street. The sidewalk network connects to Bank Street and has a pathway connection to the multiuse paths along Colonel By Drive.

Euclid Avenue is a local one-way street with sidewalks along both sides of the road adjacent to the curb. The street is designated for two-way traffic for a 20 m length west of the eastbound stop bar at the Euclid/Bank intersection. Pedestrian travel is accommodated by the sidewalk network along the streets within the Glebe community.

Traffic collisions along the Bank Street road segment between Aylmer Avenue and Euclid Avenue are shown in Table 2.1 in Element 2.1.2. Over the five year period between January 1, 2014 and December 31, 2018, 11 collisions were recorded along the Bank Street road segment across the frontage of the site. The pattern of collisions did not identify any measures which could be taken to reduce the number of collisions.

The Bank Street road segment was analyzed to determine the level of service which was compared to the MMLOS targets for pedestrians, bicycles, transit and trucks. The calculated Level of Service (LoS) as shown in Tables 4.1 to 4.4 is compared to the LoS targets for all modes of travel for a Traditional Mainstreet Zoning. The LoS targets were obtained from Exhibit 22 of the *Multi-Modal Level of Service (MMLOS) Guidelines*. Table 4.5 summarizes the MMLOS results for the road segments and targets.

TABLE 4.5
MULTI-MODAL (MMLOS) SEGMENT SUMMARY TABLE - Street Segment

SEGMENTS	Level of Service (LoS) – 2029				
	Pedestrian	Bicycle	Transit	Auto	Truck
SEGMENT					
Calculated Bank Street	C	D	D	-	A
Target	B	C	D		D

Road Segment - Bank Street between Aylmer Avenue and Euclid Avenue

The pedestrian LoS did not meet the target due to the lack of a boulevard between the sidewalk and road, and the "No Parking" designated along Bank Street adjacent to the site. The proposed site plan provides for a wider paved walkway between the road and the building which will improve the LoS for pedestrian movement.

The bicycle LoS target was not met because of the mixed traffic and number of travel lanes. Designated cycling lanes and reduced street parking could increase the LoS, but would reduce the number of available on-street parking as well as possibly increasing the operating speed of traffic along Bank Street.

MODULE 4.4 – Access Intersection Design

Element 4.4.1 – Location and Design of Access

The development proposes an underground parking garage which would provide parking for 17 vehicles. The garage would have one access onto Aylmer Avenue which would be 3.7 m in width and provide two-way traffic entering and exiting the garage. The site will also provide 4 above ground parking spaces which would be located as parallel spaces along the city owned public lane at the rear of the building. The rear lane would have a width of approximately 3.65 m and would be mainly used by delivery and service vehicles. The 4 surface parking spaces along the lane would be used by employees of the restaurant/retail uses.

The garage access would be along the south side of Aylmer Avenue, with the centreline of the access located approximately 23 m west of the stop bar for the eastbound Aylmer Avenue approach to the Aylmer/Bank intersection. The eastbound Aylmer Avenue approach is configured as a single shared left/right turn lane.

The Southminster United Church is located along the north side of Aylmer Avenue across from the site. The church has no direct accesses or driveways from Aylmer Avenue. Accesses along the south side of Aylmer Avenue would comprise of private residential driveways.

Element 4.4.2 – Intersection Control

The access to the underground parking garage would be controlled by a stop sign at the northbound garage exit, and the one exit lane to have shared left/right turning movements. Traffic entering and exiting the garage along the 3.7 m garage access would be controlled by signage and mirrors.

Element 4.4.3 – Intersection Design

The analysis of the intersection of Aylmer Avenue and Bank Street was completed for all modes using the *Multi-Modal Level of Service (MMLOS) Guidelines* and the *Highway Capacity Manual (HCM) 2010*. Each mode will be addressed in the following sections:

VEHICLE LEVEL OF SERVICE (LoS) – Intersection Capacity Analysis

The analysis of the Aylmer Avenue and Bank Street intersection will use the *Highway Capacity Software, Version 7.8.5,* which uses the capacity analysis procedure as documented in the *Highway Capacity Manual (HCM) 2010 and HCM 6th Edition*.

For a signalized intersection, the operation or level of service of an intersection is determined from the volume to capacity ratio (v/c) for each lane movement as documented by the City of Ottawa in the *Transportation Impact Assessment Guidelines (2017)*. The following relates the level of service with the volume to capacity ratio at each lane movement.

LEVEL OF SERVICE	VOLUME TO CAPACITY RATIO
Level of Service A	0 to 0.60
Level of Service B	0.61 to 0.70
Level of Service C	0.71 to 0.80
Level of Service D	0.81 to 0.90
Level of Service E	0.91 to 1.00
Level of Service F	> 1.00

The intersection of Aylmer Avenue and Bank Street is a “T” intersection with Bank Street forming the northbound and southbound approaches, and Aylmer Avenue the eastbound approach. The intersection is controlled by traffic signals and has the following intersection geometry:

Northbound Bank Street Approach	One through lane One shared left/through lane
Southbound Bank Street Approach	One through lane One shared through/right lane
Eastbound Aylmer Ave. Approach	One shared left/right turn lane

The operational analysis using the March 7, 2019 traffic counts obtained from the City of Ottawa (Exhibit 2.2) determined that all movements functioned at an acceptable level of service of either a Level of Service (LoS) “A” or “B” during both the peak AM and PM

hours. Table 4.6 summarizes the 2019 operation of the intersection using the existing traffic counts which represents the operation of the intersection prior to development. The analysis sheets are provided as Exhibit 4.5 for the peak AM hour and Exhibit 4.6 for the peak PM hour.

TABLE 4.6
AYLMER/BANK INTERSECTION – LoS & v/c Ratio

INTERSECTION APPROACH	**WEEKDAY PEAK AM HOUR** 2019 Existing **2024 Background** *2024 Total* (2029 Total)		**WEEKDAY PEAK PM HOUR** 2019 Existing **2024 Background** *2024 Total* (2029 Total)	
	LoS	**v/c Ratio**	**LoS**	**v/c Ratio**
EB Left/Right – Aylmer	A **A** *A* (A)	0.334 **0.359** *0.381* (0.398)	A **A** *A* (A)	0.256 **0.276** *0.289* (0.302)
NB Left – Bank	B **B** *B* (B)	0.618 **0.651** *0.652* (0.687)	A **A** *A* (A)	0.396 **0.419** *0.425* (0.446)
NB Through – Bank	B **B** *B* (C)	0.649 **0.683** *0.684* (0.720)	A **A** *A* (A)	0.414 **0.438** *0.445* (0.467)
SB Through – Bank	A **A** *A* (A)	0.330 **0.347** *0.349* (0.368)	A **A** *A* (B)	0.556 **0.585** *0.590* (0.620)
SB Right – Bank	A **A** *A* (A)	0.331 **0.348** *0.350* (0.368)	A **A** *A* (B)	0.557 **0.587** *0.593* (0.625)

For the 2024 background traffic which does not include the expected trips from the proposed mixed-use site, the level of service at the intersection remained unchanged when compared to the existing results. Table 4.6 summarizes the operation of the intersection with the analysis sheets provided as Exhibit 4.7 and 4.8.

Following the completion of the residential/commercial development in 2024, the intersection would function at an acceptable level of service with all approaches functioning at either a LoS “A” or LoS “B”. The operation of the intersection is presented in Table 4.6 with the analysis sheets provided as Exhibit 4.9 and Exhibit 4.10.

At the year 2029 which represents five years beyond completion, the Aylmer/Bank intersection would continue to function at an acceptable level of service. All approaches would function between a LoS “A” and “C”. Table 4.6 summarizes the 2029 operation of the Aylmer/Bank intersection with the analysis sheets provided as Exhibit 4.11 for the peak AM hour and Exhibit 4.12 for the peak PM hour.

Using the 2029 total peak hour volume of traffic at the eastbound Aylmer Avenue approach, the lane would require 29.0 m of vehicular storage during the peak AM hour (signal cycle 70 sec.), and 20.6 m of storage (signal cycle 75 sec.) during the peak PM hour traffic. The access to the parking garage is located approximately 23 m from the centreline of the garage access to the stop bar at the eastbound Aylmer Avenue approach. During the weekday peak AM hour the eastbound queue at the Aylmer/Bank

intersection may periodically block access/egress to the parking garage, but the queue would subside at the end of each signal cycle (70 sec.)

There would not be any requirements for modifications to the intersection of Aylmer Avenue and Bank Street due to the traffic generated by the proposed Bank Street development.

PEDESTRIAN LEVEL OF SERVICE (PLOS)

The pedestrian level of service was determined utilizing the City of Ottawa publication, *Multi-Modal Level of Service (MMLOS) Guidelines*. There are sidewalks along both sides of Bank Street. The sidewalks are approximately 2.5 m in width and are adjacent to the curb. Table 4.7 presents the level of service for the Aylmer/Bank intersection adjacent to the site, with the analysis sheets provided in the Appendix.

TABLE 4.7
PEDESTRIAN LEVEL OF SERVICE (PLOS) – Intersection

Intersection	Level of Service	Analysis
Bank Street and Aylmer Avenue	D	Exhibit 4.13

BICYCLE LEVEL OF SERVICE (BLOS)

The bicycle level of service (BLOS) was determined for the intersection of Bank Street and Aylmer Avenue. There are no dedicated cycling lanes or cycling pockets at the intersection approaches. Table 4.8 presents the level of service for the Aylmer/Bank intersection with the analysis sheets provided in the Appendix.

TABLE 4.8
BICYCLE LEVEL OF SERVICE (BLOS) – Intersection

Intersection	Level of Service	Analysis
Bank Street and Aylmer Avenue	D	Exhibit 4.14

TRANSIT LEVEL OF SERVICE (TLOS)

OC Transpo provides transit service along Bank Street past the site with frequent service routes, Route 6 and Route 7. The TMP has identified a transit signal priority project along Bank Street between Highway 417 and Billings Bridge Station which would improve transit service. Table 4.9 presents the level of service at the

Aylmer/Bank intersection which was determined from the evaluation tables provided in the City of Ottawa publication, *Multi-Modal Level of Service (MMLOS) Guidelines*. The analysis sheets are provided in the Appendix.

TABLE 4.9
TRANSIT LEVEL OF SERVICE (TLOS) – Intersection

Intersection	Level of Service	Analysis
Bank Street and Aylmer Avenue	C	Exhibit 4.15

MODULE 4.5 – Transportation Demand Management

Element 4.5.1 – Context for TDM

The site is located in an urban area well serviced by transit and pedestrian sidewalks. The number of residential trips would be low due to the number of units and available multimodal travel options. With Bank Street designated as a four lane arterial road, higher than expected site trips would not have a detrimental impact on the surrounding land uses.

The commercial uses would experience pass-by trips due to the number of retail/commercial uses in the area. In the Glebe community the pass-by trips would be dependent on retail in the area and on-street parking, with the study taking a conservative approach by not applying a pass-by trip reduction factor. Higher than expected site related trips would benefit the adjacent commercial/retail in the area due to pass-by traffic, with little impact on the operation of the surrounding roads. Higher than expected site generated primary trips would result in more demand for on-street parking.

Element 4.5.2 – Need and Opportunity

The residential component of the development would not require a program to promote various mode shares as the available multiuse pathways along Colonel By Drive and Queen Elizabeth Driveway along with transit routes to the downtown core and transit stations would promote the use of alternative modes of travel. With the site located in an urban area and within walking distance of Carleton University, many tenants of the apartment building would not own a vehicle.

It would be difficult for the restaurant/retail component to promote a program to increase alternate modes of transportation. Not meeting the sustainable mode share target may result in an increase use of on-street parking.

Element 4.5.3 – TDM Program

TDM measures could be implemented to encourage travel by sustainable modes which would be applied to the residential component of the development. The TDM measures which would reduce the number of vehicle trips would mainly be the encouragement of transit and bicycle use. The programs would mainly be that of providing information in the form of transit schedules/routes, and maps showing designated bike routes.

The study has utilized the TDM Measures Checklist for both a Residential Development and Non-Residential Development which examines the implementation of facilities that are supportive of sustainable modes. The following provides the two checklists which examine the Site Plan and transportation components for the proposed residential and restaurant/retail development at 1050 - 1060 Bank Street.

TDM Measures Checklist:

Residential Developments (multi-family, condominium or subdivision)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

		TDM measures: *Residential developments*	Check if proposed & add descriptions
	1.	**TDM PROGRAM MANAGEMENT**	
	1.1	**Program coordinator**	
BASIC ★	1.1.1	Designate an internal coordinator, or contract with an external coordinator	☐
	1.2	**Travel surveys**	
BETTER	1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
	2.	**WALKING AND CYCLING**	
	2.1	**Information on walking/cycling routes & destinations**	
BASIC	2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances *(multi-family, condominium)*	☒ Area maps for walking/cycling can be displayed on an information board in the lobby
	2.2	**Bicycle skills training**	
BETTER	2.2.1	Offer on-site cycling courses for residents, or subsidize off-site courses	☐

			TDM measures: *Residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	☒ Transit schedules can be displayed on an information board in the lobby
BETTER		3.1.2	Provide real-time arrival information display at entrances *(multi-family, condominium)*	☐
		3.2	**Transit fare incentives**	
BASIC	★	3.2.1	Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	☐
BETTER		3.2.2	Offer at least one year of free monthly transit passes on residence purchase/move-in	☐
		3.3	**Enhanced public transit service**	
BETTER	★	3.3.1	Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels *(subdivision)*	☐
		3.4	**Private transit service**	
BETTER		3.4.1	Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	☐
		4.	**CARSHARING & BIKESHARING**	
		4.1	**Bikeshare stations & memberships**	
BETTER		4.1.1	Contract with provider to install on-site bikeshare station (*multi-family)*	☐
BETTER		4.1.2	Provide residents with bikeshare memberships, either free or subsidized *(multi-family)*	☐
		4.2	**Carshare vehicles & memberships**	
BETTER		4.2.1	Contract with provider to install on-site carshare vehicles and promote their use by residents	☐
BETTER		4.2.2	Provide residents with carshare memberships, either free or subsidized	☐
		5.	**PARKING**	
		5.1	**Priced parking**	
BASIC	★	5.1.1	Unbundle parking cost from purchase price *(condominium)*	☐
BASIC	★	5.1.2	Unbundle parking cost from monthly rent *(multi-family)*	☒ Unbundling parking from apartment rent will be considered

TDM measures: *Residential developments*				Check if proposed & add descriptions
		6.	**TDM MARKETING & COMMUNICATIONS**	
		6.1	**Multimodal travel information**	
BASIC	★	6.1.1	Provide a multimodal travel option information package to new residents	☒ A multimodal travel information package can be included with the rental agreement
		6.2	**Personalized trip planning**	
BETTER	★	6.2.1	Offer personalized trip planning to new residents	☐

TDM Measures Checklist:

Non-Residential Developments (office, institutional, retail or industrial)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		1.	**TDM PROGRAM MANAGEMENT**	
		1.1	**Program coordinator**	
BASIC	★	1.1.1	Designate an internal coordinator, or contract with an external coordinator	☐
		1.2	**Travel surveys**	
BETTER		1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
		2.	**WALKING AND CYCLING**	
		2.1	**Information on walking/cycling routes & destinations**	
BASIC		2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances	☒ Local area map and walking/cycling facilities can be displayed on a common information board
		2.2	**Bicycle skills training**	
			Commuter travel	
BETTER	★	2.2.1	Offer on-site cycling courses for commuters, or subsidize off-site courses	☐
		2.3	**Valet bike parking**	
			Visitor travel	
BETTER		2.3.1	Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	☐

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances	☒ Bus schedules and route maps can be displayed on a common information board
BASIC		3.1.2	Provide online links to OC Transpo and STO information	☐
BETTER		3.1.3	Provide real-time arrival information display at entrances	☐
		3.2	**Transit fare incentives**	
			Commuter travel	
BETTER		3.2.1	Offer preloaded PRESTO cards to encourage commuters to use transit	☐
BETTER	★	3.2.2	Subsidize or reimburse monthly transit pass purchases by employees	☐
			Visitor travel	
BETTER		3.2.3	Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	☐
		3.3	**Enhanced public transit service**	
			Commuter travel	
BETTER		3.3.1	Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	☐
			Visitor travel	
BETTER		3.3.2	Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	☐
		3.4	**Private transit service**	
			Commuter travel	
BETTER		3.4.1	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	☐
			Visitor travel	
BETTER		3.4.2	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
	4.	**RIDESHARING**	
	4.1	**Ridematching service**	
		Commuter travel	
BASIC	★ 4.1.1	Provide a dedicated ridematching portal at OttawaRideMatch.com	☐
	4.2	**Carpool parking price incentives**	
		Commuter travel	
BETTER	4.2.1	Provide discounts on parking costs for registered carpools	☐
	4.3	**Vanpool service**	
		Commuter travel	
BETTER	4.3.1	Provide a vanpooling service for long-distance commuters	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Bikeshare stations & memberships**	
BETTER	5.1.1	Contract with provider to install on-site bikeshare station for use by commuters and visitors	☐
		Commuter travel	
BETTER	5.1.2	Provide employees with bikeshare memberships for local business travel	☐
	5.2	**Carshare vehicles & memberships**	
		Commuter travel	
BETTER	5.2.1	Contract with provider to install on-site carshare vehicles and promote their use by tenants	☐
BETTER	5.2.2	Provide employees with carshare memberships for local business travel	☐
	6.	**PARKING**	
	6.1	**Priced parking**	
		Commuter travel	
BASIC	★ 6.1.1	Charge for long-term parking (daily, weekly, monthly)	☐
BASIC	6.1.2	Unbundle parking cost from lease rates at multi-tenant sites	☐
		Visitor travel	
BETTER	6.1.3	Charge for short-term parking (hourly)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
	7.	**TDM MARKETING & COMMUNICATIONS**	
	7.1	**Multimodal travel information**	
		Commuter travel	
BASIC	★ 7.1.1	Provide a multimodal travel option information package to new/relocating employees and students	☐
		Visitor travel	
BETTER	★ 7.1.2	Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	☒ Place a special event and game schedule for Lansdowne Park at the restaurant information board
	7.2	**Personalized trip planning**	
		Commuter travel	
BETTER	★ 7.2.1	Offer personalized trip planning to new/relocating employees	☐
	7.3	**Promotions**	
		Commuter travel	
BETTER	7.3.1	Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	☐
	8.	**OTHER INCENTIVES & AMENITIES**	
	8.1	**Emergency ride home**	
		Commuter travel	
BETTER	★ 8.1.1	Provide emergency ride home service to non-driving commuters	☐
	8.2	**Alternative work arrangements**	
		Commuter travel	
BASIC	★ 8.2.1	Encourage flexible work hours	☐
BETTER	8.2.2	Encourage compressed workweeks	☐
BETTER	★ 8.2.3	Encourage telework	☐
	8.3	**Local business travel options**	
		Commuter travel	
BASIC	★ 8.3.1	Provide local business travel options that minimize the need for employees to bring a personal car to work	☐
	8.4	**Commuter incentives**	
		Commuter travel	
BETTER	8.4.1	Offer employees a taxable, mode-neutral commuting allowance	☐
	8.5	**On-site amenities**	
		Commuter travel	
BETTER	8.5.1	Provide on-site amenities/services to minimize mid-day or mid-commute errands	☐

MODULE 4.6 – Neighbourhood Traffic Management

Element 4.6.1 – Adjacent Neighbourhoods

This module reviews the development's access routes and identifies any required neighbourhood traffic management (NTM) or traffic calming measures which would mitigate the impact of development trips on the surrounding streets.

The site has one access point to/from the parking garage which has direct access onto Aylmer Avenue which is a two lane local street. The majority of the residential site trips would be along Bank Street entering and exiting the site by way of the Aylmer/Bank intersection. The study has assigned 100 percent of the residential trips entering the site to travel through the Aylmer/Bank intersection from Bank Street. The study has assumed 85 percent of the trips exiting the site to travel through the Aylmer/Bank intersection and along Bank Street, and 15 percent to travel west along Aylmer Avenue to Colonel By Drive for east/west travel.

The Aylmer Avenue access point would function better than having an access onto Euclid Avenue which is a local street adjacent to the south limit of the site. With Euclid Avenue restricted to one-way eastbound traffic and the Euclid/Bank intersection controlled by a stop sign at the eastbound approach, access to/from Aylmer Avenue would produce the least impact on the neighbourhood traffic.

Aylmer Avenue is classified as a local street in the City of Ottawa TMP. Traffic counts obtained from the City of Ottawa which were taken on March 7, 2019 at the eastbound approach to the Aylmer/Bank intersection determined that along Aylmer Avenue the peak AM hour count was 155 veh./h., and 198 veh./h. during the peak PM hour. The counts further determined the average 24 hour count to be 2,101 veh./day. The City of Ottawa TIA Guidelines states that the local street traffic threshold is a maximum of 120 vehicles during the peak hour and 1,000 vehicles per day. Although the existing traffic along Aylmer Avenue exceeds that of a local street under the TIA Guidelines, the development-related traffic from the site was determined to be minor during the peak hour for the residential development (Figure 3.1) and would not trigger a change to the existing street classification.

As part of the redevelopment of the site, the existing four accesses from Bank Street to on-site parking will be removed. This would result in less turning conflicts into and out of the site from Bank Street and an improvement to the flow of Bank Street traffic.

MODULE 4.7 - Transit

Element 4.7.1 – Route Capacity

OC Transpo provides two frequent transit routes as Route 6 and Route 7. Route 6 travels between Rockcliffe and Greenboro Transit Station, and Route 7 between Carleton University and St. Laurent Transit Station. Both routes travel through the downtown core.

The low number of transit person trips would produce a minor impact on the capacity of transit in the area and would not trigger the need for additional transit capacity.

Element 4.7.2 – Transit Priority

The City of Ottawa has identified in the TMP a transit signal priority project along Bank Street between Highway 417 and Billings Bridge Station. The plan is identified under the affordable network projects and would reduce transit delays of the buses along Bank Street.

MODULE 4.8 – Review of Network Concept

Exempt as determined in the Scoping Document.

MODULE 4.9 – Intersection Design

Element 4.9.1 – Intersection Control

The main access point to the underground parking garage on site would be from the Aylmer/Bank intersection. The Aylmer/Bank intersection is controlled by traffic signals. Future transit priority signalization is proposed along Bank Street which would reduce transit delays and improve service.

Element 4.9.2 – Intersection Design

The Aylmer/Bank intersection was analyzed to determine the level of service which was compared to the MMLOS targets for pedestrians, bicycles, transit, and autos. The calculated Level of Service (LoS) as shown in Tables 4.6 to 4.9 is compared to the LoS targets for all modes of travel. The LoS targets were obtained from Exhibit 22 of the *Multi-Modal Level of Service (MMLOS) Guidelines*. Table 4.10 summarizes the MMLOS results for the Aylmer/Bank intersection and targets.

TABLE 4.10
MULTI-MODAL (MMLOS) INTERSECTION SUMMARY TABLE - Intersection

INTERSECTION	Level of Service (LoS) – 2029				
	Pedestrian	Bicycle	Transit	Auto	Truck
INTERSECTION					
Calculated Aylmer/Bank	D	D	C	B	-
Target	B	C	D	D	

Intersection of Aylmer Avenue and Bank Street

The pedestrian LoS at the Aylmer/Bank intersection did not meet the target due to the number of lanes crossed. The traffic signal timing plan has provided an exclusive pedestrian crossing phase of Bank Street which would improve the LoS for pedestrian crossings.

The LoS for the bicycle mode of transportation did not meet the target due to the number of lanes crossing for a left turn movement along the four lane Bank Street. The LoS was higher due to the 40 km./h. posted speed limit.

The operation of the Aylmer/Bank intersection was analyzed for the 2019 counts, and expected 2024 and 2029 future traffic as discussed in Element 4.4.3 using the procedure documented in the *Highway Capacity Manual (HCM) 2010.* The existing geometry and expected traffic volumes determined that the Aylmer/Bank intersection would meet the Auto LoS.

There would be no requirement for intersection modifications to the Aylmer/Bank intersection.

SUMMARY

A Site Plan has been prepared for the redevelopment of a 1,757 m^2 parcel of land at 1050 - 1060 Bank Street in the Glebe community. The property fronts on the west side of Bank Street, with Aylmer Avenue bordering the north limit and Euclid Avenue the south limit.

The parcel of land is currently occupied by two buildings, with the north building containing a sit-down restaurant and retail store, and the south building a second sit-down restaurant. The site contains approximately 30 on-site parking spaces with four access points onto Bank Street and one access onto Euclid Avenue.

The Site Plan proposes the replacement of all existing development on the site with a six storey building having a sit-down restaurant and retail on the ground floor, and 44 rental apartment units on the 2^{nd} to 6^{th} floors. The apartment development will provide parking in an underground garage with direct access onto Aylmer Avenue. The restaurant and retail uses will not provide on-site parking. The development is expected to be completed by 2024.

The TIA analysis has examined the modes of transportation along the Bank Street road segment between Aylmer Avenue and Euclid Avenue, and the Aylmer/Bank intersection for the weekday peak AM and PM hour of operation following development of the site. The TIA will also be examining the available on-street parking in the area. The transportation analysis has determined the following:

1. The proposed Bank Street Development would be a mixed-use development consisting of residential apartments with a restaurant/retail use on the ground floor. The total development is expected to generate 5 vehicle trips arriving and 10 vehicle trips departing during the weekday peak AM hour, and 16 vehicle trips arriving and 12 vehicle trips departing during the weekday peak PM hour.

2. The parking garage will provide 17 parking spaces for the residential tenants and 4 surface spaces adjacent to the rear of the building along the city owned public lane linking Euclid Avenue to Aylmer Avenue. There is no on-site parking provided for the restaurant/retail use. The parking meets the Zoning By-law for provided parking for both land uses.

3. The Site Plan provides bicycle racks in the parking garage for 22 bikes, and racks at the rear of the building for 4 additional bicycles which meets the City of Ottawa Zoning By-law. There are four bike racks along Bank Street within the right-of-way adjacent to the site which will provide space for 8 additional bicycles.

4. On-site parking will be provided only for the residential use. The restaurant/retail use would rely on available on-street parking. A parking supply/demand survey and analysis was conducted along the streets within a 400 m walking distance of the site. The survey determined that there were 112 available parking spaces of which the survey determined that an average of 76 spaces were occupied for a total parking utilization of 67.9 percent or 36 vacant parking spaces. The parking space demand calculations determined that the restaurant/retail use would have an average peak period parking demand (Saturday) of 21 parking spaces. The required on-street parking can be accommodated within the available spaces within a 400 m walking distance of the site.

5. The underground parking garage access would be located approximately 23 m from the eastbound Aylmer Avenue approach to the stop bar at the Aylmer/Bank intersection. A queuing analysis utilizing the 2029 peak hour volume of traffic and the traffic signal cycle length determined that during the peak AM hour the queue at the eastbound Aylmer Avenue approach may periodically extend past the garage access. The length of queue would diminish every cycle during the green phase of the eastbound Aylmer Avenue movement.

6. The MMLOS analysis of the Bank Street road segment and Aylmer/Bank intersection determined that the pedestrian and bicycle targets were not met for both the road segment and intersection PLOS and BLOS. The road segment PLOS would be improved by the addition of the proposed paving stone walkway between the building and street, and the intersection PLOS would be improved by the existing pedestrian traffic signal crossing phase on Bank Street. The bicycle BLOS along the Bank Street road segment could be improved by the provision of an exclusive bike lane.

7. The operation of the intersection of Aylmer Avenue and Bank Street was examined for the weekday peak AM and PM hours using the 2019 traffic counts

and the expected traffic following the development of the site in 2024 and 2029. The analysis determined that all approaches operated at an acceptable level of service for the 2019, 2024 and 2029 traffic. There are no recommended modifications to the intersection resulting from the development of the site.

8. The flow of traffic along the Bank Street road segment between Euclid Avenue and Aylmer Avenue would improve following the development of the site by the elimination of the existing four Bank Street site accesses to on-site parking. Removing the accesses would eliminate turning movement conflicts and traffic delay along Bank Street in front of the site.

9. A city owned public lane will be opened at the rear of the building adjacent to the west property limit of the site. The 3.65 m lane connects Euclid Avenue to Aylmer Avenue. The lane will be used by service and delivery vehicles for the site, access to the four surface parking spaces, and access to the rear parking area for the residence at 6 Aylmer Avenue.

Prepared by:

David J. Halpenny

David J. Halpenny, M. Eng., P. Eng.

APPENDIX

CITY OF OTTAWA SUBMISSION COMMENTS

SCREENING FORM

TRAFFIC SIGNAL TIMING PLAN

TRAFFIC COUNTS

ITE TRIP GENERATION GRAPHS

ROAD SEGMENT AND INTERSECTION LOS

EXHIBIT A.1
CITY OF OTTAWA SUBMISSION COMMENTS - June 2, 2020

TIA Report

Element 2.1.1 – Proposed Development:

Comment - Update Figure 2.2 to show the latest site plan including the updated location of the parking garage access.

Response - The Conceptual Site Plan in Figure 2.2 has been revised to show the proposed location of the garage entrance onto Aylmer Avenue.

Element 3.1.1 – Trip Generation and Mode Shares:

Comment - Note that for future reports the City encourages estimating existing residential mode shares by calculating the weighted average of from/within trips during the AM peak hour (leaving home) and to/within trips during the PM peak hour (returning home). Similarly, existing retail/commercial mode shares might be estimated by calculating the weighted average of from/to/within trips for both the AM and PM peak periods (to include both trips going to the retail/commercial and returning from the retail/commercial). By including “within district” trips this methodology better accounts for the high walking mode share of short-distance trips to/from the site.

The mode shares used in this TIA report do not need to be modified to account for “within district” trips because such a change would have a minor impact on the overall results given the low total person trips generated by the site; however, note that without including “within district” trips the vehicle mode share is considered high/conservative.

Response - There were no changes made to the mode shares for this TIA report.

Element 4.1.1 – Design for Sustainable Modes and Module 4.3 – Boundary Street Design:

Comment - Assess the opportunity to implement development facilities that are supportive of sustainable modes using the City of Ottawa’s TDM-Supportive Development Design and Infrastructure Checklist.

Response - The TDM-Supportive Development Design and Infrastructure Checklist has been included in Element 4.1.1 for both the Residential Developments and Non-Residential Developments.

Comment - Typically segment MMLOS for boundary streets (discussed in Element 4.4.3 and Element 4.9.2) would be included in Module 4.3.

Response - The MMLOS boundary street segment analysis was moved from Element 4.4.3 and Element 4.9.2 and consolidated into Module 4.3 - Boundary Street Design.

Element 4.1.2 – Circulation and Access:

Comment - Demonstrate that the proposed planter box at the southern end of the public lane (east side) would not prevent service vehicles from turning into the public lane from Euclid Avenue.

Response - The planter box at the southern end of the public lane comprises of a barrier curb with a landscaped interior. The planter curb has been modified to provide a 1m x 1m triangle at the southwest corner which will improve in the turning movements of trucks onto the lane and reduce any damage caused by snow clearing equipment. Truck turning templates showed that a single unit truck, SU 9 or MSU, can make the maneuver but may need to encroach onto the opposing lane on Euclid Avenue to make the turn.

Element 4.4.1 – Location and Design of Access:

Response - There were no changes made to Element 4.4.1. The location and design of the garage access and City owned public lane were discussed in this Element. The site plan in Figure 2.2 has been modified to show the location of the garage access and changes to the curbed landscaped area (Planter box). The truck manoeuvres onto the City owned public lane were discussed in Element 4.1.2 - Circulation and Access.

Element 4.4.3 – Intersection Design and Element 4.9.2 – Intersection Design:

Comment - Intersection analysis should be completed for both future background and future total travel demands so that impacts attributable to the development can be separated from impacts of background growth.

Response - The operational analysis of the Aylmer/Bank intersection was completed for the 2024 background traffic with the analysis sheets provided as Exhibit 4.7 for the peak AM hour and Exhibit 4.8 for the peak PM hour. The intersection analysis is discussed in Element 4.4.3 - Intersection Design and shown in Table 4.6.

Comment - Based on the intersection analysis results (Exhibit 4.5 and Exhibit 4.6), it appears that the average northbound and southbound delay is <20 seconds, and therefore TLOS should be C.

Response - The TLOC has been changed to a C.

Comment - TkLOS analysis at the Bank Street and Aylmer Avenue intersection (i.e. turns to/from Aylmer Avenue) is not required as, per the MMLOS Guidelines, “TkLOS need only be applied along truck routes, arterial roads and key delivery access routes, since trucks are not intended to operate on every street.”

Response - The TkLOS was deleted for the truck level of service at intersections.

Module 4.6 – Neighbourhood Traffic Management:

Comment - Assess whether the addition of development-related traffic would change the existing classification (i.e. role and function) of Aylmer Avenue with respect to the road classification traffic volume thresholds presented in Element 4.6.1 of the TIA Guidelines.

Response - The study has examined the peak hour and daily traffic along Aylmer Avenue and compared the traffic volumes with the traffic and classification of roads as documented in the City of Ottawa TIA Guidelines. The study utilized the 2019 counts obtained from the City of Ottawa and has determined that Aylmer Avenue currently has the volume of traffic to be classified as a collector road. The low number of new site generated trips would not trigger a change in road classification.

EXHIBIT 1.1
SCREENING FORM

Ottawa *Transportation Impact Assessment Guidelines*

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	1050-1060 Bank Street
Description of Location	West side of Bank Street; between Aylmer Ave. and Euclid Ave.
Land Use Classification	Urban development site; mixed use (retail + apartment)
Development Size (units)	49 residential units + 919 sq. m. of ground floor retail
Development Size (m^2)	56,016 sq. m.
Number of Accesses and Locations	One (1) vehicular access to underground garage from rear drive aisle
Phase of Development	One (1)
Buildout Year	2019-2020

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	N/A
Townhomes or apartments	90 units	NO
Office	3,500 m^2	N/A
Industrial	5,000 m^2	N/A
Fast-food restaurant or coffee shop	100 m^2	N/A
Destination retail	1,000 m^2	No
Gas station or convenience market	75 m^2	No

** 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. NOT TRIGGERED

Ottawa *Transportation Impact Assessment Guidelines*

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?		X
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*	X	

**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. TRIGGERED

4. Safety Triggers

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

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

5. Summary

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

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).

EXHIBIT 2.1
TRAFFIC SIGNAL TIMING PLAN - Aylmer/Bank Intersection

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

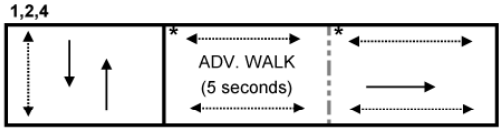
Intersection:	***Main:*** Bank	***Side:***	Aylmer
Controller:	**ATC 3**	**TSD:**	**5470**
Author:	Matthew Anderson	**Date:**	03-Feb-2020

Existing Timing Plans†

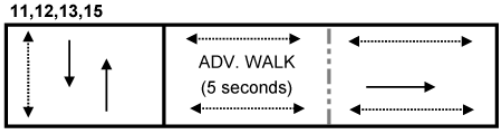
	Plan							Ped Minimum Time		
	AM Early	Evening	Night	AM Peak	Off Peak	PM Peak	Weekend	*Walk*	*DW*	*A+R*
	1	2	4	11	12	13	15			
Cycle	70	60	60	70	60	75	90			
Offset	57	40	X	57	40	37	28			
NB Thru	45	35	35	45	35	50	65	-	-	3.0+2.1
SB Thru	45	35	35	45	35	50	65	22	6	3.0+2.1
EB Thru	25	25	25	25	25	25	25	7	12	3.3+1.8

Phasing Sequence‡

Plan: 1,2,4



Plan: 11,12,13,15



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
7:00	11
9:30	12
15:00	13
18:00	12
19:00	2
20:30	4

Saturday

Time	Plan
0:15	4
6:30	2
9:00	15
18:00	2
20:30	4

Sunday

Time	Plan
0:15	4
6:30	2
9:00	15
12:05	13
18:00	2
20:30	4

Notes

†: Time for each direction includes amber and all red intervals
‡: Start of first phase should be used as reference point for offset
Asterisk (*) Indicates actuated phase
(fp): Fully Protected Left Turn
◄·····► Pedestrian signal

Cost is $58.78 ($52.02 + HST)

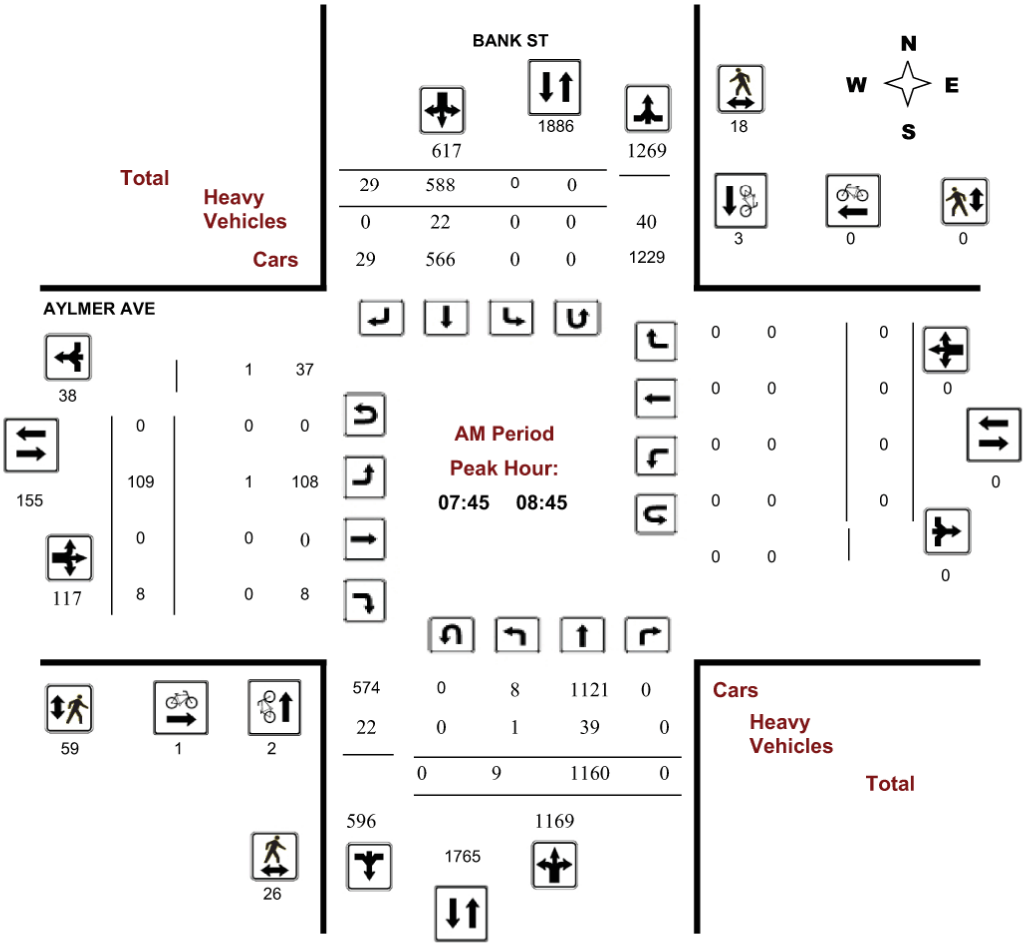
EXHIBIT 2.2
BANK STREET AND AYLMER AVENUE 2019 TRAFFIC COUNTS

Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

AYLMER AVE @ BANK ST

Survey Date: Thursday, March 07, 2019 **WO No:** 38430
Start Time: 07:00 **Device:** Miovision



Comments

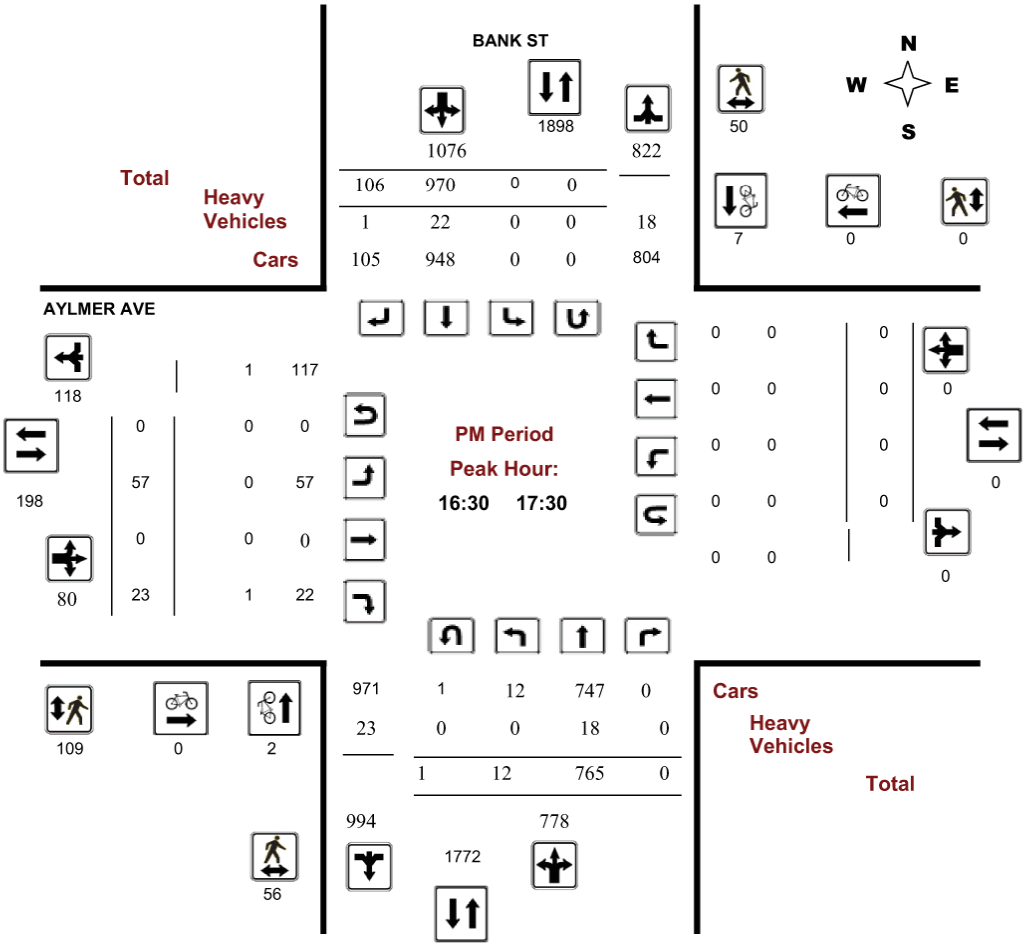
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

AYLMER AVE @ BANK ST

Survey Date: Thursday, March 07, 2019
Start Time: 07:00

WO No: 38430
Device: Miovision



Comments

EXHIBIT 3.1
ITE TRIP GENERATION MANUAL 10th Ed. – Quality Restaurant (931) Peak PM Hour

Quality Restaurant
(931)

Vehicle Trip Ends vs:	**Seats**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	11
Avg. Num. of Seats:	344
Directional Distribution:	67% entering, 33% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.28	0.14 - 0.50	0.11

Data Plot and Equation

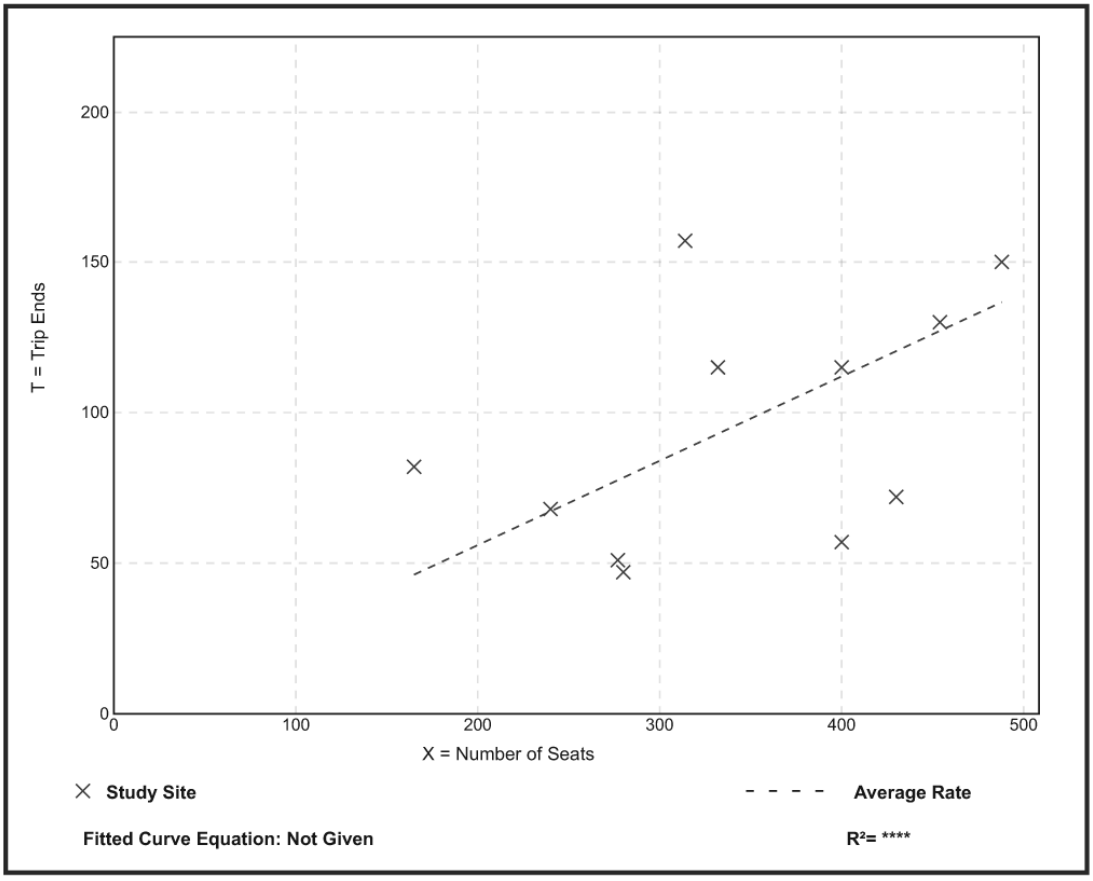


EXHIBIT 3.2
ITE TRIP GENERATION MANUAL 10th Ed. – Variety Store (814) Peak AM Hour

Variety Store
(814)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	25
1000 Sq. Ft. GFA:	9
Directional Distribution:	57% entering, 43% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.18	0.50 - 11.87	2.01

Data Plot and Equation

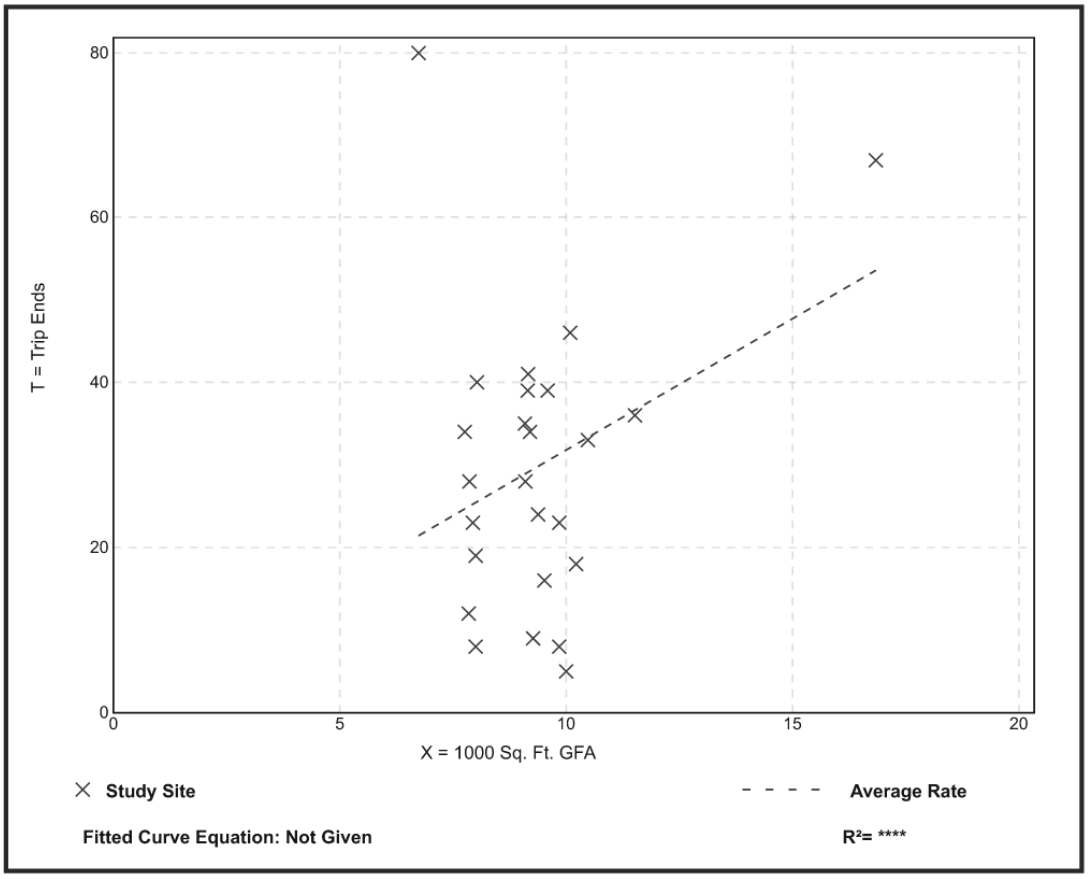


EXHIBIT 3.3
ITE TRIP GENERATION MANUAL 10th Ed. – Variety Store (814) Peak PM Hour

Variety Store
(814)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	25
1000 Sq. Ft. GFA:	9
Directional Distribution:	52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
6.84	1.22 - 13.95	3.19

Data Plot and Equation

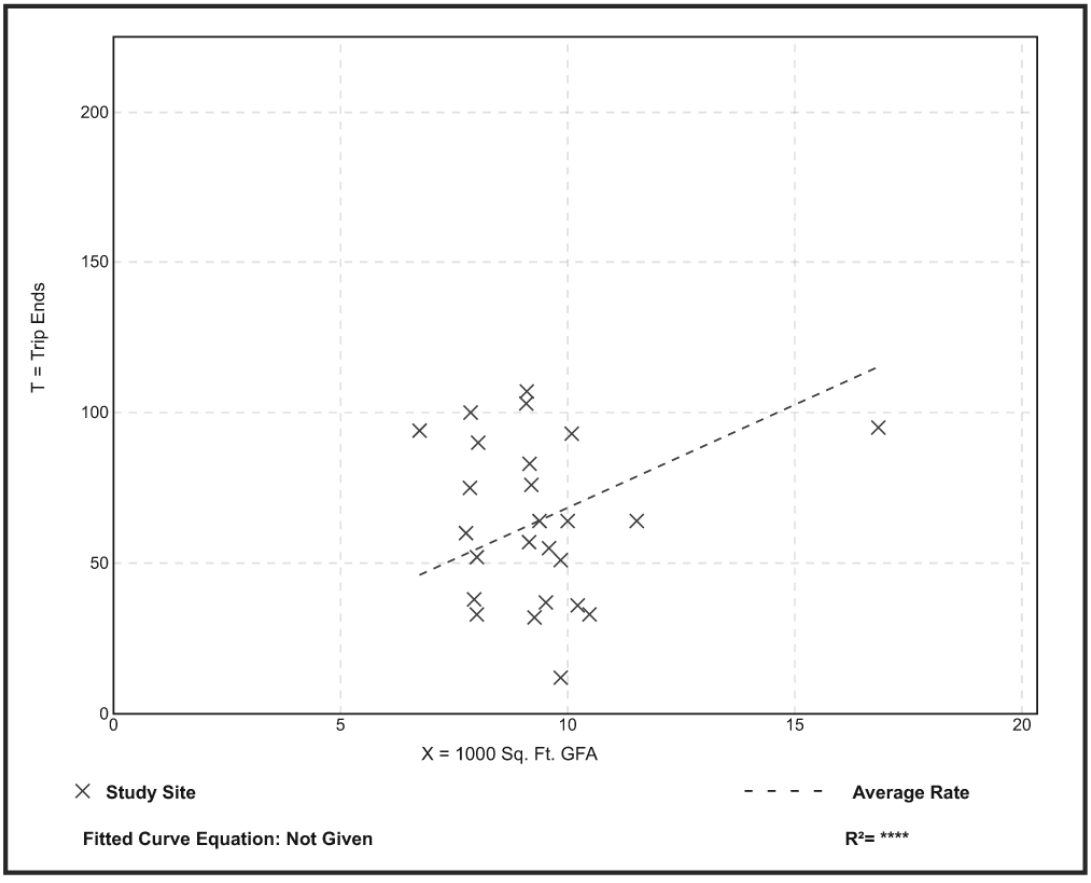


EXHIBIT 4.1
BANK STREET - PLOS SEGMENT EVALUATION

STREET	Bank Street
FROM	Aylmer Avenue
TO	Euclid Avenue
YEAR	2029
DIRECTION	Northbound–Southbound
MMLOS MODE	PLOS

SEGMENT SCORE **C**

Sidewalk Width (m)	Boulevard Width (m)	Motor Vehicle Traffic Volume (AADT)	Presence of On-street Parking	Segment PLOS			
				Operating Speed (km/h)			
				≤30	>30 or 50	>50 or 60	>60 [1]
2.0 or more	> 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	B	N/A
			No	A	B	C	D
	0.5 to 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	C	N/A
			No	A	C	D	E
	0	≤ 3000	NA	A	B	C	D
		> 3000	Yes	B	B	D	N/A
			No	B	C	E	F
1.8	> 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	C	N/A
			No	A	C	D	E
	0.5 to 2	≤ 3000	N/A	A	B	B	D
		> 3000	Yes	A	C	C	N/A
			No	B	C	E	E
	0	≤ 3000	N/A	A	B	C	D
		> 3000	Yes	B	C	D	N/A
			No	C	D	F	F
1.5	> 2	≤ 3000	N/A	C	C	C	C
		> 3000	Yes	C	C	D	N/A
			No	C	D	E	E
	0.5 to 2	≤ 3000	N/A	C	C	C	D
		> 3000	Yes	C	C	D	N/A
			No	D	E	E	E
	0	N/A		D	E	F [2]	F [2]
<1.5	N/A			F [3]	F [3]	F [3]	F [3]
No sidewalk	N/A			C [4]	F [3]	F [3]	F [3]

EXHIBIT 4.2
BANK STREET - BLOS SEGMENT EVALUATION

STREET	Bank Street
FROM	Aylmer Avenue
TO	Euclid Avenue
YEAR	2029
DIRECTION	Northbound–Southbound
MMLOS MODE	BLOS

SEGMENT SCORE **D**

Type of Bikeway		LOS
Physically Separated Bikeway (cycle tracks, protected bike lanes and multi-use paths). Physical separation refers to, but is not limited to, curbs, raised medians, bollards and parking lanes (adjacent to the bike lane along the travelled way i.e. not curbside).		A
Bike Lanes Not Adjacent Parking Lane - Select Worst Scoring Criteria		
No. of Travel Lanes	1 travel lane in each direction	A
	2 travel lanes in each direction separated by a raised median	B
	2 travel lanes in each direction without a separating median	C
	More than 2 travel lanes in each direction	D
Bike Lane Width	≥ 1.8 m wide bike lane (includes marked buffer and paved gutter width)	A
	≥1.5 m to <1.8 m wide bike lane (includes marked buffer and paved gutter width)	B
	≥1.2 m to <1.5 m wide bike lane (includes marked buffer and paved gutter width)	C
Operating Speed	≤ 50 km/h operating speed	A
	60 km/h operating speed	C
	≥ 70 km/h operating speed	E
Bike lane blockage (commercial areas)	Rare	A
	Frequent	C
Bike Lanes Adjacent to curbside Parking Lane - Select Worst Scoring Criteria		
No. of Travel Lanes	1 travel lane in each direction	A
	2 or more travel lanes in each direction	C
Bike Lane and Parking Lane Width	4.5 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	A
	4.25 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	B
	≤ 4.0 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	C
Operating Speed	< 40 km/h operating speed	A
	50 km/h operating speed	B
	60 km/h operating speed	D
	> 70 km/h operating speed	F
Bike lane blockage (commercial areas)	Rare	A
	Frequent	C
Mixed Traffic		
No. of Travel Lanes and Operating Speed	2 travel lanes; ≤ 40 km/h; no marked centerline or classified as residential	A
	2 to 3 travel lanes; ≤ 40 km/h	B
	2 travel lanes; 50 km/h; no marked centerline or classified as residential	B
	2 to 3 travel lanes; 50 km/h	D
	4 to 5 travel lanes; ≤ 40 km/h	D
	4 to 5 travel lanes; ≥ 50 km/h	E
	6 or more travel lanes; ≤ 40 km/h	E
	≥ 60 km/h	F
Unsignalized Crossing along Route: no median refuge		
No. of Travel Lanes on Side Street and Operating Speed	3 or less lanes being crossed; ≤ 40 km/h	A
	4 to 5 lanes being crossed; ≤ 40 km/h	B
	3 or less lanes being crossed; 50 km/h	B
	4 to 5 lanes being crossed; 50 km/h	C
	3 or less lanes being crossed; 60 km/h	C
	4 to 5 lanes being crossed; 60 km/h	D
	6 or more lanes being crossed; ≤ 40 km/h	E
	3 or less lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 50 km/h	F
	4 to 5 lanes being crossed; ≥ 65 km/h	F
Unsignalized Crossing along Route: with median refuge (≥ 1.8 m wide)		
No. of Travel Lanes on Side Street and Operating Speed	5 or less lanes being crossed; ≤ 40 km/h	A
	3 or less lanes being crossed; 50 km/h	A
	6 or more lanes being crossed; ≤ 40 km/h	B
	4 to 5 lanes being crossed; 50 km/h	B
	3 or less lanes being crossed; 60 km/h	B
	6 or more lanes being crossed; 50 km/h	C
	4 to 5 lanes being crossed; 60 km/h	C
	3 or less lanes being crossed; ≥ 65 km/h	D
	6 or more lanes being crossed; 60 km/h	E
	4 to 5 lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 65 km/h	F

NOT APPLICABLE

NOT APPLICABLE

NOT APPLICABLE

NOT APPLICABLE

EXHIBIT 4.3
BANK STREET - TLOS SEGMENT EVALUATION

STREET	Bank Street
FROM	Aylmer Avenue
TO	Euclid Avenue
YEAR	2029
DIRECTION	Northbound–Southbound
MMLOS MODE	TLOS

SEGMENT SCORE **D**

Facility Type		Level/exposure to congestion delay, friction and incidents			Quantitative Measurement	LOS
		Congestion	Friction	Incident Potential		
Segregated ROW		No	No	No	N/A	A
Bus lane	No/limited parking/driveway friction	No	Low	Low	$C_f \leq 60$	B
	Frequent parking/driveway friction	No	Medium	Medium	$C_f > 60$	C
Mixed Traffic	Limited parking/driveway friction	Yes	Low	Medium	Vt/Vp ≥ 0.8	D
	Moderate parking/driveway friction	Yes	Medium	Medium	Vt/Vp ≤ 0.6	E
	Frequent parking/driveway friction	Yes	High	High	Vt/Vp < 0.4	F

Notes:

Cf, Conflict Factor = = (Number of driveways x crossing volume) / 1 km

Vt/Vp is the ratio of average transit travel speed to posted speed limit

EXHIBIT 4.4
BANK STREET - TkLOS SEGMENT EVALUATION

STREET	Bank Street
FROM	Aylmer Avenue
TO	Euclid Avenue
YEAR	2029
DIRECTION	Eastbound–Westbound
MMLOS MODE	TkLOS

SEGMENT SCORE **A**

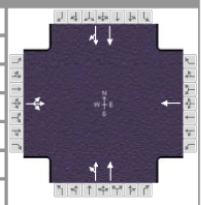
Exhibit 20 – TkLOS Segment Evaluation Table

Curb Lane Width (m)	Only two travel lanes (one in each direction)	More than two travel lanes
>3.7	B	A
≤3.5	C	A
≤3.3	D	C
≤3.2	E	D
≤3	F	E

EXHIBIT 4.5
2019 WEEKDAY PEAK AM HOUR TRAFFIC ANALYSIS - Aylmer/Bank Intersection

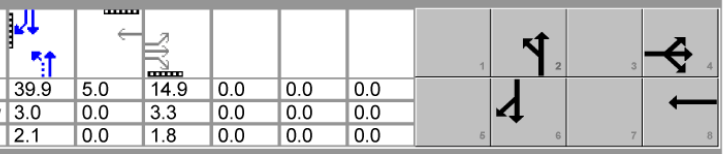
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/21/2020	Area Type	Other
Jurisdiction	City of Ottawa	Time Period	Peak AM Hour	PHF	0.92
Urban Street	Bank Street	Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Aylmer Ave. and Bank St.	File Name	715_ex_2019_am.xus		
Project Description	1050-1060 Bank Street				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	109	0	8		1		9	1160			588	29

Signal Information			
Cycle, s	70.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	39.9	5.0	14.9	0.0	0.0	0.0
Yellow	3.0	0.0	3.3	0.0	0.0	0.0
Red	2.1	0.0	1.8	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		8.0		8.0
Phase Duration, s		20.0		5.0		45.0		45.0
Change Period, (*Y+R c*), s		5.1		0.0		5.1		5.1
Max Allow Headway (*MAH*), s		3.2		3.0		0.0		0.0
Queue Clearance Time (*g s*), s		6.4		2.0				
Green Extension Time (*g e*), s		0.1		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

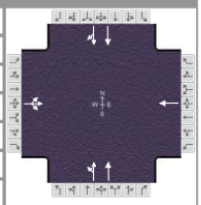
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14		8		5	2			6	16
Adjusted Flow Rate (*v*), veh/h		127			1		664	607			339	331
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1679			1800		1748	1600			1758	1714
Queue Service Time (*g s*), s		4.4			0.0		0.0	16.7			6.9	7.0
Cycle Queue Clearance Time (*g c*), s		4.4			0.0		17.7	16.7			6.9	7.0
Green Ratio (*g/C*)		0.23			0.09		0.58	0.58			0.58	0.58
Capacity (*c*), veh/h		381			154		1073	935			1027	1001
Volume-to-Capacity Ratio (*X*)		0.334			0.007		0.618	0.649			0.330	0.331
Back of Queue (*Q*), ft/ln (50 th percentile)		41.9			0.4		152.3	147.5			59.6	57
Back of Queue (*Q*), veh/ln (50 th percentile)		1.7			0.0		6.1	5.8			2.3	2.3
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.00	0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh		22.6			29.3		9.7	9.7			7.5	7.5
Incremental Delay (*d 2*), s/veh		0.2			0.0		2.7	3.5			0.9	0.9
Initial Queue Delay (*d 3*), s/veh		0.0			0.0		0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh		22.8			29.3		12.4	13.2			8.4	8.4
Level of Service (LOS)		C			C		B	B			A	A
Approach Delay, s/veh / LOS	22.8	C		29.3	C		12.8	B		8.4	A	
Intersection Delay, s/veh / LOS	12.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.11	B	2.13	B	1.65	B	1.65	B
Bicycle LOS Score / LOS	0.70	A	0.49	A	1.54	B	1.04	A

EXHIBIT 4.6
2019 WEEKDAY PEAK PM HOUR TRAFFIC ANALYSIS - Aylmer/Bank Intersection

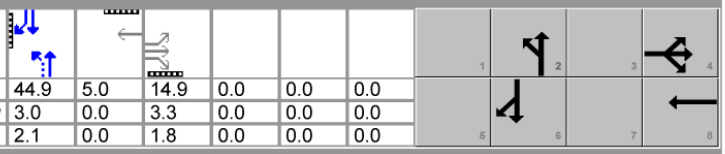
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/21/2020	Area Type	Other
Jurisdiction	City of Ottawa	Time Period	Peak PM Hour	PHF	0.92
Urban Street	Bank Street	Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Aylmer Ave. and Bank St.	File Name	715_ex_2019_pm.xus		
Project Description	1050-1060 Bank Street				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	57	0	23		1		13	765			970	106

Signal Information			
Cycle, s	75.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	44.9	5.0	14.9	0.0	0.0	0.0
Yellow	3.0	0.0	3.3	0.0	0.0	0.0
Red	2.1	0.0	1.8	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		8.0		8.0
Phase Duration, s		20.0		5.0		50.0		50.0
Change Period, ($Y+R_c$), s		5.1		0.0		5.1		5.1
Max Allow Headway (*MAH*), s		3.3		3.0		0.0		0.0
Queue Clearance Time (g_s), s		5.4		2.0				
Green Extension Time (g_e), s		0.1		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

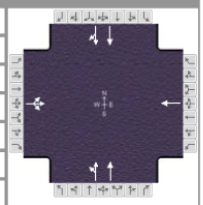
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14		8		5	2			6	16
Adjusted Flow Rate (*v*), veh/h		87			1		437	409			603	567
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1600			1800		1720	1612			1772	1661
Queue Service Time (g_s), s		3.4			0.0		0.0	9.6			14.7	15.1
Cycle Queue Clearance Time (g_c), s		3.4			0.0		9.5	9.6			14.7	15.1
Green Ratio (*g/C*)		0.21			0.08		0.61	0.61			0.61	0.61
Capacity (*c*), veh/h		339			144		1102	987			1084	1017
Volume-to-Capacity Ratio (*X*)		0.256			0.008		0.396	0.414			0.556	0.557
Back of Queue (*Q*), ft/ln (50 th percentile)		31.2			0.4		80.1	77.9			131	122.2
Back of Queue (*Q*), veh/ln (50 th percentile)		1.2			0.0		3.2	3.1			5.2	4.9
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh		24.6			31.8		7.5	7.6			8.6	8.6
Incremental Delay (d_2), s/veh		0.1			0.0		1.1	1.3			2.1	2.2
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh		24.8			31.8		8.6	8.8			10.6	10.8
Level of Service (LOS)		C			C		A	A			B	B
Approach Delay, s/veh / LOS	24.8	C		31.8	C		8.7	A		10.7	B	
Intersection Delay, s/veh / LOS	10.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.12	B	2.13	B	1.64	B	1.64	B
Bicycle LOS Score / LOS	0.63	A	0.49	A	1.19	A	1.45	A

EXHIBIT 4.7
2024 PEAK AM HOUR BACKGROUND ANALYSIS - Aylmer/Bank Intersection

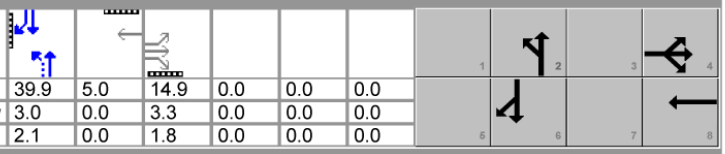
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/21/2020	Area Type	Other
Jurisdiction	City of Ottawa	Time Period	Peak AM Hour	PHF	0.92
Urban Street	Bank Street	Analysis Year	2024 Background	Analysis Period	1> 7:00
Intersection	Aylmer Ave. and Bank St.	File Name	715_bak_2024_am.xus		
Project Description	1050-1060 Bank Street				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	117	0	9		1		10	1219			618	31

Signal Information			
Cycle, s	70.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	39.9	5.0	14.9	0.0	0.0	0.0
Yellow	3.0	0.0	3.3	0.0	0.0	0.0
Red	2.1	0.0	1.8	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		8.0		8.0
Phase Duration, s		20.0		5.0		45.0		45.0
Change Period, ($Y+R_c$), s		5.1		0.0		5.1		5.1
Max Allow Headway (*MAH*), s		3.2		3.0		0.0		0.0
Queue Clearance Time (g_s), s		6.8		2.0				
Green Extension Time (g_e), s		0.1		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

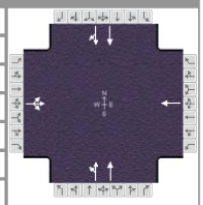
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14		8		5	2			6	16
Adjusted Flow Rate (*v*), veh/h		137			1		698	638			357	349
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1678			1800		1746	1600			1758	1713
Queue Service Time (g_s), s		4.8			0.0		0.0	18.2			7.4	7.4
Cycle Queue Clearance Time (g_c), s		4.8			0.0		19.2	18.2			7.4	7.4
Green Ratio (*g/C*)		0.23			0.09		0.58	0.58			0.58	0.58
Capacity (*c*), veh/h		381			154		1072	935			1027	1001
Volume-to-Capacity Ratio (*X*)		0.359			0.007		0.651	0.683			0.347	0.348
Back of Queue (*Q*), ft/ln (50 th percentile)		45.4			0.4		166.3	161.6			63.6	60.9
Back of Queue (*Q*), veh/ln (50 th percentile)		1.8			0.0		6.7	6.3			2.5	2.4
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh		22.8			29.3		10.0	10.1			7.6	7.6
Incremental Delay (d_2), s/veh		0.2			0.0		3.1	4.0			0.9	1.0
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh		23.0			29.3		13.1	14.1			8.5	8.6
Level of Service (LOS)		C			C		B	B			A	A
Approach Delay, s/veh / LOS	23.0	C		29.3	C		13.6	B		8.5	A	
Intersection Delay, s/veh / LOS	12.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.11	B	2.13	B	1.65	B	1.65	B
Bicycle LOS Score / LOS	0.71	A	0.49	A	1.59	B	1.07	A

EXHIBIT 4.8
2024 PEAK PM HOUR BACKGROUND ANALYSIS - Aylmer/Bank Intersection

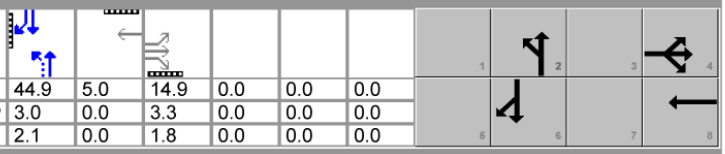
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/21/2020	Area Type	Other
Jurisdiction	City of Ottawa	Time Period	Peak PM Hour	PHF	0.92
Urban Street	Bank Street	Analysis Year	2024 Background	Analysis Period	1> 7:00
Intersection	Aylmer Ave. and Bank St.	File Name	715_bak_2024_pm.xus		
Project Description	1050-1060 Bank Street				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	61	0	25		1		15	804			1019	113

Signal Information			
Cycle, s	75.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	44.9	5.0	14.9	0.0	0.0	0.0
Yellow	3.0	0.0	3.3	0.0	0.0	0.0
Red	2.1	0.0	1.8	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		8.0		8.0
Phase Duration, s		20.0		5.0		50.0		50.0
Change Period, (*Y+R c*), s		5.1		0.0		5.1		5.1
Max Allow Headway (*MAH*), s		3.3		3.0		0.0		0.0
Queue Clearance Time (*g s*), s		5.7		2.0				
Green Extension Time (*g e*), s		0.1		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14		8		5	2			6	16
Adjusted Flow Rate (*v*), veh/h		93			1		458	432			634	597
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1598			1800		1706	1612			1772	1660
Queue Service Time (*g s*), s		3.7			0.0		0.0	10.4			15.9	16.3
Cycle Queue Clearance Time (*g c*), s		3.7			0.0		10.1	10.4			15.9	16.3
Green Ratio (*g/C*)		0.21			0.08		0.61	0.61			0.61	0.61
Capacity (*c*), veh/h		339			144		1094	987			1084	1016
Volume-to-Capacity Ratio (*X*)		0.276			0.008		0.419	0.438			0.585	0.587
Back of Queue (*Q*), ft/ln (50 th percentile)		33.7			0.4		85.6	84.2			142	133.1
Back of Queue (*Q*), veh/ln (50 th percentile)		1.3			0.0		3.4	3.3			5.6	5.3
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.00	0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh		24.7			31.8		7.6	7.7			8.8	8.8
Incremental Delay (*d 2*), s/veh		0.2			0.0		1.2	1.4			2.3	2.5
Initial Queue Delay (*d 3*), s/veh		0.0			0.0		0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh		24.9			31.8		8.8	9.1			11.1	11.3
Level of Service (LOS)		C			C		A	A			B	B
Approach Delay, s/veh / LOS	24.9	C		31.8	C		9.0	A		11.2	B	
Intersection Delay, s/veh / LOS	10.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.12	B	2.13	B	1.64	B	1.64	B
Bicycle LOS Score / LOS	0.64	A	0.49	A	1.22	A	1.50	B

HCS™ Streets Version 7.8.5

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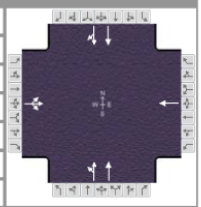
EXHIBIT 4.9
2024 WEEKDAY PEAK AM HOUR TRAFFIC ANALYSIS - Aylmer/Bank Intersection

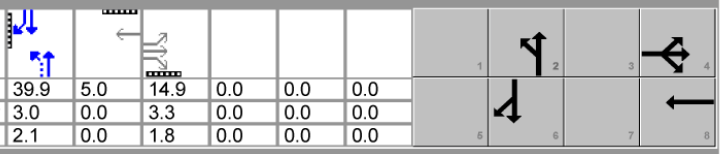
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/21/2020	Area Type	Other
Jurisdiction	City of Ottawa	Time Period	Peak AM Hour	PHF	0.92
Urban Street	Bank Street	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	Aylmer Ave. and Bank St.	File Name	715_tot_2024_am.xus		
Project Description	1050-1060 Bank Street				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	121	0	12		1		11	1220			619	33

Signal Information			
Cycle, s	70.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	39.9	5.0	14.9	0.0	0.0	0.0
Yellow	3.0	0.0	3.3	0.0	0.0	0.0
Red	2.1	0.0	1.8	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		8.0		8.0
Phase Duration, s		20.0		5.0		45.0		45.0
Change Period, (*Y+R c*), s		5.1		0.0		5.1		5.1
Max Allow Headway (*MAH*), s		3.2		3.0		0.0		0.0
Queue Clearance Time (*g s*), s		7.1		2.0				
Green Extension Time (*g e*), s		0.1		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.01		1.00				

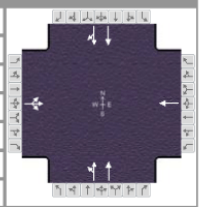
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14		8		5	2			6	16
Adjusted Flow Rate (*v*), veh/h		145			1		699	639			359	350
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1672			1800		1744	1600			1758	1711
Queue Service Time (*g s*), s		5.1			0.0		0.0	18.2			7.4	7.5
Cycle Queue Clearance Time (*g c*), s		5.1			0.0		19.2	18.2			7.4	7.5
Green Ratio (*g/C*)		0.23			0.09		0.58	0.58			0.58	0.58
Capacity (*c*), veh/h		380			154		1071	935			1027	999
Volume-to-Capacity Ratio (*X*)		0.381			0.007		0.652	0.684			0.349	0.350
Back of Queue (*Q*), ft/ln (50 th percentile)		48.2			0.4		167.1	162.5			64	61.4
Back of Queue (*Q*), veh/ln (50 th percentile)		1.9			0.0		6.7	6.3			2.5	2.5
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.00	0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh		22.9			29.3		10.0	10.1			7.6	7.6
Incremental Delay (*d 2*), s/veh		0.2			0.0		3.1	4.1			0.9	1.0
Initial Queue Delay (*d 3*), s/veh		0.0			0.0		0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh		23.1			29.3		13.1	14.1			8.5	8.6
Level of Service (LOS)		C			C		B	B			A	A
Approach Delay, s/veh / LOS	23.1	C		29.3	C		13.6	B		8.6	A	
Intersection Delay, s/veh / LOS	12.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.11	B	2.13	B	1.65	B	1.65	B
Bicycle LOS Score / LOS	0.73	A	0.49	A	1.59	B	1.07	A

EXHIBIT 4.10
2024 WEEKDAY PEAK PM HOUR TRAFFIC ANALYSIS - Aylmer/Bank Intersection

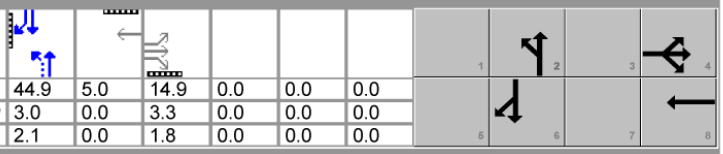
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/21/2020	Area Type	Other
Jurisdiction	City of Ottawa	Time Period	Peak PM Hour	PHF	0.92
Urban Street	Bank Street	Analysis Year	2024	Analysis Period	1> 7:00
Intersection	Aylmer Ave. and Bank St.	File Name	715_tot_2024_pm.xus		
Project Description	1050-1060 Bank Street				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	63	0	27		1		18	809			1024	118

Signal Information			
Cycle, s	75.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	44.9	5.0	14.9	0.0	0.0	0.0
Yellow	3.0	0.0	3.3	0.0	0.0	0.0
Red	2.1	0.0	1.8	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		8.0		8.0
Phase Duration, s		20.0		5.0		50.0		50.0
Change Period, (*Y+R c*), s		5.1		0.0		5.1		5.1
Max Allow Headway (*MAH*), s		3.3		3.0		0.0		0.0
Queue Clearance Time (*g s*), s		5.9		2.0				
Green Extension Time (*g e*), s		0.1		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

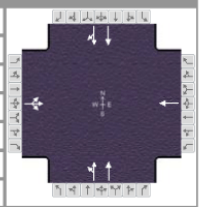
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14		8		5	2			6	16
Adjusted Flow Rate (*v*), veh/h		98			1		460	439			640	601
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1595			1800		1687	1612			1772	1656
Queue Service Time (*g s*), s		3.9			0.0		0.0	10.7			16.1	16.6
Cycle Queue Clearance Time (*g c*), s		3.9			0.0		10.2	10.7			16.1	16.6
Green Ratio (*g/C*)		0.21			0.08		0.61	0.61			0.61	0.61
Capacity (*c*), veh/h		338			144		1083	987			1084	1014
Volume-to-Capacity Ratio (*X*)		0.289			0.008		0.425	0.445			0.590	0.593
Back of Queue (*Q*), ft/ln (50 th percentile)		35.4			0.4		86.2	86			144.5	135.3
Back of Queue (*Q*), veh/ln (50 th percentile)		1.4			0.0		3.4	3.4			5.7	5.4
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.00	0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh		24.8			31.8		7.6	7.8			8.8	8.9
Incremental Delay (*d 2*), s/veh		0.2			0.0		1.2	1.5			2.4	2.6
Initial Queue Delay (*d 3*), s/veh		0.0			0.0		0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh		25.0			31.8		8.8	9.2			11.2	11.4
Level of Service (LOS)		C			C		A	A			B	B
Approach Delay, s/veh / LOS	25.0	C		31.8	C		9.0	A		11.3	B	
Intersection Delay, s/veh / LOS	11.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.12	B	2.13	B	1.64	B	1.64	B
Bicycle LOS Score / LOS	0.65	A	0.49	A	1.23	A	1.51	B

EXHIBIT 4.11
2029 WEEKDAY PEAK AM HOUR TRAFFIC ANALYSIS - Aylmer/Bank Intersection

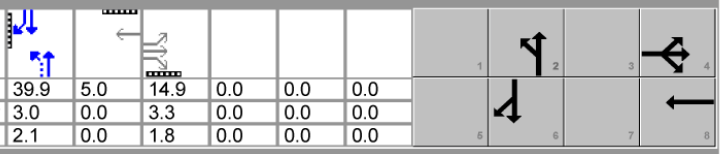
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/21/2020	Area Type	Other
Jurisdiction	City of Ottawa	Time Period	Peak AM Hour	PHF	0.92
Urban Street	Bank Street	Analysis Year	2029	Analysis Period	1> 7:00
Intersection	Aylmer Ave. and Bank St.	File Name	715_tot_2029_am.xus		
Project Description	1050-1060 Bank Street				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	126	0	13		1		12	1283			651	35

Signal Information			
Cycle, s	70.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	39.9	5.0	14.9	0.0	0.0	0.0
Yellow	3.0	0.0	3.3	0.0	0.0	0.0
Red	2.1	0.0	1.8	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		8.0		8.0
Phase Duration, s		20.0		5.0		45.0		45.0
Change Period, (*Y+R c*), s		5.1		0.0		5.1		5.1
Max Allow Headway (*MAH*), s		3.2		3.0		0.0		0.0
Queue Clearance Time (*g s*), s		7.4		2.0				
Green Extension Time (*g e*), s		0.1		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.01		1.00				

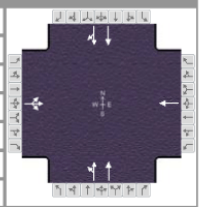
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14		8		5	2			6	16
Adjusted Flow Rate (*v*), veh/h		151			1		735	673			378	368
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1670			1800		1742	1600			1758	1710
Queue Service Time (*g s*), s		5.4			0.0		0.0	19.9			7.9	8.0
Cycle Queue Clearance Time (*g c*), s		5.4			0.0		20.9	19.9			7.9	8.0
Green Ratio (*g/C*)		0.23			0.09		0.58	0.58			0.58	0.58
Capacity (*c*), veh/h		379			154		1070	935			1027	999
Volume-to-Capacity Ratio (*X*)		0.398			0.007		0.687	0.720			0.368	0.368
Back of Queue (*Q*), ft/ln (50 th percentile)		50.6			0.4		183.3	179.1			68.4	65.5
Back of Queue (*Q*), veh/ln (50 th percentile)		2.0			0.0		7.3	7.0			2.7	2.6
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.00	0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh		23.0			29.3		10.4	10.4			7.7	7.7
Incremental Delay (*d 2*), s/veh		0.3			0.0		3.6	4.8			1.0	1.0
Initial Queue Delay (*d 3*), s/veh		0.0			0.0		0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh		23.2			29.3		14.0	15.2			8.7	8.8
Level of Service (LOS)		C			C		B	B			A	A
Approach Delay, s/veh / LOS	23.2	C		29.3	C		14.6	B		8.7	A	
Intersection Delay, s/veh / LOS	13.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.11	B	2.13	B	1.65	B	1.65	B
Bicycle LOS Score / LOS	0.74	A	0.49	A	1.65	B	1.10	A

EXHIBIT 4.12
2029 WEEKDAY PEAK PM HOUR TRAFFIC ANALYSIS - Aylmer/Bank Intersection

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/21/2020	Area Type	Other
Jurisdiction	City of Ottawa	Time Period	Peak PM Hour	PHF	0.92
Urban Street	Bank Street	Analysis Year	2029	Analysis Period	1> 7:00
Intersection	Aylmer Ave. and Bank St.	File Name	715_tot_2029_pm.xus		
Project Description	1050-1060 Bank Street				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	66	0	28		1		18	850			1077	124

Signal Information					EB			WB			NB			SB		
Cycle, s	75.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	0	Reference Point	End	Green	44.9	5.0		14.9	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.0	0.0		3.3	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.1	0.0		1.8	0.0	0.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		8.0		8.0
Phase Duration, s		20.0		5.0		50.0		50.0
Change Period, (*Y+R c*), s		5.1		0.0		5.1		5.1
Max Allow Headway (*MAH*), s		3.3		3.0		0.0		0.0
Queue Clearance Time (*g s*), s		6.0		2.0				
Green Extension Time (*g e*), s		0.1		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14		8		5	2			6	16
Adjusted Flow Rate (*v*), veh/h		102			1		483	461			672	633
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1596			1800		1685	1612			1772	1656
Queue Service Time (*g s*), s		4.0			0.0		0.0	11.5			17.4	18.0
Cycle Queue Clearance Time (*g c*), s		4.0			0.0		10.9	11.5			17.4	18.0
Green Ratio (*g/C*)		0.21			0.08		0.61	0.61			0.61	0.61
Capacity (*c*), veh/h		338			144		1081	987			1084	1014
Volume-to-Capacity Ratio (*X*)		0.302			0.008		0.446	0.467			0.620	0.625
Back of Queue (*Q*), ft/ln (50 th percentile)		37.1			0.4		92.1	92.4			157	147.5
Back of Queue (*Q*), veh/ln (50 th percentile)		1.5			0.0		3.7	3.6			6.2	5.9
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.00	0.00			0.00	0.00
Uniform Delay (*d 1*), s/veh		24.9			31.8		7.8	7.9			9.1	9.1
Incremental Delay (*d 2*), s/veh		0.2			0.0		1.3	1.6			2.7	2.9
Initial Queue Delay (*d 3*), s/veh		0.0			0.0		0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh		25.1			31.8		9.1	9.5			11.8	12.0
Level of Service (LOS)		C			C		A	A			B	B
Approach Delay, s/veh / LOS	25.1	C		31.8	C		9.3	A		11.9	B	
Intersection Delay, s/veh / LOS	11.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.12	B	2.13	B	1.64	B	1.64	B
Bicycle LOS Score / LOS	0.66	A	0.49	A	1.27	A	1.56	B

EXHIBIT 4.13
AYLMER/BANK - PLOS INTERSECTION EVALUATION

MAIN STREET	Bank Street
MINOR STREET	Aylmer Avenue
APPROACHES	All
YEAR	2029
DIRECTION	All
MMLOS MODE	PLOS

	North Approach		South Approach		East Approach		West Approach	
	Comment	Points	Comment	Points	Comment	Points	Comment	Points
5.1 Crossing Distance & Conditions								
Median?	No		No				No	
Total Travel Lanes Crossed	4	88	4	88			2	120
5.2 Signal Phasing & Timing Features								
Left Turn Conflict	Permissive	−8	Permissive	−8			Permissive	−8
Right Turn Conflict	Permissive or Yield Control	−5	Permissive or Yield Control	−5			Permissive or Yield Control	−5
Right Turns on Red	RTOR Allowed	−3	RTOR Allowed	−3			RTOR Allowed	−3
Leading Ped Interval	No	−2	No	−2			Yes	0
5.3a Corner Radius	> 10m to 15m	−6	> 10m to 15m	−6			> 10m to 15m	−6
5.3b Right Turn Channel	No Right Turn Channel	−4	No Right Turn	0			No Right Turn Channel	−4
5.4 Crosswalk Treatment	Zebra Stripe Hi−visibility Markings	−4	Zebra Stripe Hi−visibility Markings	−4			Zebra Stripe Hi−visibility Markings	−4
TOTAL PETSI SCORE		56		60				90
DELAY SCORE								
Cycle length		75		75				75
From Signal Timing Plan		29		29				22
PETSI SCORE		**D**		**C**				**A**
DELAY SCORE		**C**		**C**				**C**
OVERALL APPROACH SCORE		**D**		**C**				**C**

OVERALL INTERSECTION SCORE **D**

EXHIBIT 4.14
AYLMER/BANK - BLOS INTERSECTION EVALUATION

MAIN STREET	Bank Street
MINOR STREET	Aylmer Avenue
APPROACHES	Northbound–Southbound
YEAR	2029
DIRECTION	North/South
MMLOS MODE	BLOS

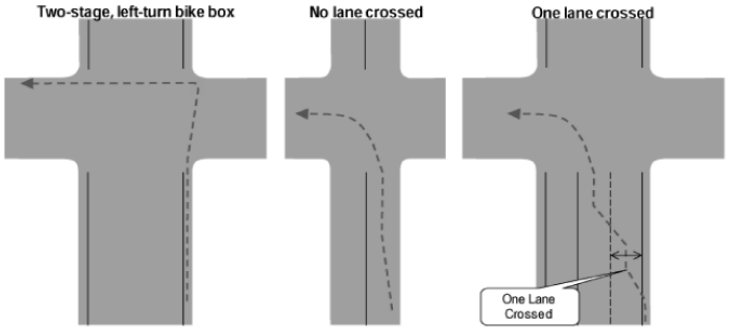
INTERSECTION SCORE **D**

Bikeway and Intersection Type		LOS
Bike Lanes or higher order facility on a Signalized Intersection Approach		
Right-turn Lane and Turning Speed of Motorists	No impact on LTS (as long as cycling facility remains to the right of any turn lane - otherwise see pocket bike lanes below)	
Cyclist Making a Left-turn and Operating Speed of Motorists (refer to figure)	Two-stage, left-turn bike box; ≤ 50 km/h	A
	No lane crossed, ≤ 50 km/h	B
	1 lane crossed, ≤ 40 km/h	B
	No lane crossed, ≥ 60 km/h	C
	1 lane crossed, 50 km/h	C
	2 or more lanes crossed, ≤ 40 km/h	D
	1 lane crossed, ≥ 60 km/h	E
	2 or more lanes crossed, ≥ 50 km/h	F
	All other single left-turn lane configurations	F
	Dual left-turn lanes (shared or exclusive)	F
Pocket Bike Lanes on a Signalized Intersection Approach		
Right-turn Lane and Turning Speed of Motorists	Right-turn lane introduced to the right of the bike lane and ≤ 50 m long, turning speed ≤ 25 km/h (based on curb radii and angle of intersection)	B
	Right-turn lane introduced to the right of the bike lane and > 50 m long, turning speed ≤ 30 km/h (based on curb radii and angle of intersection)	D
	Bike lane shifts to the left of the right-turn lane, turning speed ≤ 25 km/h (based on curb radii and angle of intersection)	D
	Right-turn lane with any other configurations	F
	Dual right-turn lanes (shared or exclusive)	F
Cyclist Making a Left-turn and Operating Speed of Motorists (refer to figure)	Two-stage, left-turn bike box; ≤ 50 km/h	A
	No lane crossed, ≤ 50 km/h	B
	1 lane crossed, ≤ 40 km/h	B
	No lane crossed, ≥ 60 km/h	C
	1 lane crossed, 50 km/h	C
	2 or more lanes crossed, ≤ 40 km/h	D
	1 lane crossed, ≥ 60 km/h	E
	2 or more lanes crossed, ≥ 50 km/h	F
	All other single left-turn lane configurations	F
	Dual left-turn lanes (shared or exclusive)	F
Mixed Traffic on a Signalized Intersection Approach		
Right-turn Lane and Turning Speed of Motorists	Right-turn lane 25 to 50 m long, turning speed ≤ 25 km/h (based on curb radii and angle of intersection)	D
	Right-turn lane 25 to 50 m long, turning speed > 25 km/h (based on curb radii and angle of intersection)	E
	Right-turn lane longer than 50 m	F
	Dual right-turn lanes (shared or exclusive)	F
Cyclist Making a Left-turn and Operating Speed of Motorists (refer to figure)	Two-stage, left-turn bike box; ≤ 50 km/h	A
	No lane crossed, ≤ 50 km/h	B
	1 lane crossed, ≤ 40 km/h	B
	No lane crossed, ≥ 60 km/h	D
	1 lane crossed, 50 km/h	E
	2 or more lanes crossed, ≤ 40 km/h	D
	1 lane crossed, ≥ 60 km/h	F
	2 or more lanes crossed, ≥ 50 km/h	F
	All other single left-turn lane configurations	F
	Dual left-turn lanes (shared or exclusive)	F

NOT APPLICABLE

NOT APPLICABLE

Left-turn Configurations



Notes:
1. Pocket bike lanes are defined as bike lanes that develop near intersections between vehicular right turn lanes on the right side and vehicular through or left lanes on the left side. All other configurations of bike lanes or separated facility that remain against the edge of the curb/parking lane and require right turning vehicles to yield to through cyclists will not impact the level of traffic stress (i.e. are considered to be LOS A).

EXHIBIT 4.15
AYLMER/BANK - TLOS INTERSECTION EVALUATION

MAIN STREET	Bank Street
MINOR STREET	Aylmer Avenue
APPROACHES	All
YEAR	2029
MMLOS MODE	TLOS

INTERSECTION SCORE **C**

Delay	Typical Location	LOS
0	Grade Separation	A
≤10 sec	High Level TSP	B
≤20 sec	TSP & short (e.g. <60 sec) to medium (e.g.	C
≤30 sec	60-90 sec) cycle length	D
≤40 sec	TSP & long cycle length (e.g. >90 sec)	E
>40 sec	No TSP & long cycle length (e.g. >90 sec)	F

Note: Delay includes travel time from end of queue to entering the intersection