Appendix C

GRIFFIN
transportation group inc.
traffic engineering | transportation planning

Proposed Sackville Drive Mixed Use Development

Halifax Regional Municipality

Traffic Impact Study

Final Report

Prepared by:

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Prepared for:

JP Sun Developments

March 2025

March 6, 2025

Att: Mr. JP Sun
JP Sun Developments
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RE: Traffic Impact Study - Proposed Mixed Use development on Sackville Drive

The GRIFFIN transportation group inc. is pleased to present the results of the enclosed Stage 2 traffic impact study carried out in support of the planning approval process for a proposed Mixed Use development on civics #143 and #153 Sackville Drive – in the community of Lower Sackville, Halifax Regional Municipality (HRM). It is understood the proponent is submitting a planning application to obtain approval to construct a new Mixed Use building in the southeast quadrant of the Sackville Drive/ Hillcrest Avenue intersection. The existing buildings will be removed and replaced with one new building occupying both properties. The new building will have a large ground-floor podium accommodating up to 12,009 ft^2 of ground floor commercial space, and two separate towers with up to 14 floors each, and containing a total of 301 apartment-style units.

GRIFFIN has completed the enclosed comprehensive traffic operational assessment to understand the future impacts of a full build-out scenario. Our study methodology has followed HRM mobility analysis and traffic impact study guidelines for this established suburban area. The results flowing from our analysis suggest that the traffic generated by the proposed Mixed Use development can be accommodated on the study area road network with the enclosed study recommendations in place.

It has been a pleasure working with the project team in completing this study. Feel free to contact the undersigned anytime to further discuss the details of this project.

Sincerely,

[redacted]

[redacted]

James J. Copeland, P.Eng., RSP1
Managing Principal – Traffic & Road Safety Engineer
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1. INTRODUCTION

1.1 Background

The GRIFFIN transportation group inc. (GRIFFIN) has been engaged to carry out a traffic impact study assessment for a proposed Mixed Use development located in the southeast quadrant of the Sackville Drive / Hillcrest Avenue intersection. The proposed development will occur on an assembly of properties that include civics #143 and #153 Sackville Drive. These lands measure about 2.2 acres in size and their location is contained in *Figure 1*.

The proponent's planning application includes two individual properties, PID's #40010050 (civic #143) and #41510256 (civic #153). Currently, the civic #153 property contains a single-floor commercial building that once contained multiple small businesses – but which appear to be closed – while the civic #143 property contains a detached residential dwelling that appears to be unoccupied.

It is understood the proponent is submitting a planning application to HRM to obtain approval to remove the existing building structures and construct a new Mixed Use building. The new building will occupy both properties and will have a large ground-floor podium accommodating up to 12,009 ft^2 of ground floor commercial space, and two separate towers with up to 14 floors each, and will contain a total of 301 apartment-style units.

Figure 1: Key Map and Site Location

Source: Google Maps

1.2 Context

In January 2024, GRIFFIN completed a Stage 1 qualitative traffic impact assessment and submitted an impact statement letter to HRM as part of the initial planning application process for this development. At that time, GRIFFIN concluded the expected increase of site-generated traffic volumes during the weekday peak periods could be accommodated in the immediate vicinity of this development without any significant impact on operations, and thus no infrastructure improvements were anticipated. HRM reviewed GRIFFIN's January 2024 traffic impact statement letter and requested that additional quantitative analysis be carried out to verify GRIFFIN's conclusions. The additional scope items were provided by HRM in their March 2024 comments.

As such, GRIFFIN has completed a more comprehensive analysis of the future potential impacts the proposed development may have on the local street network. Our analysis, results, conclusions, and recommendations are provided in the next sections of this report.

Generally, the terms of reference for this impact study were developed based on the following:

- A traffic impact statement letter prepared by GRIFFIN (January 2024).
- The latest version of HRM's Traffic Impact Study Guidelines document.
- A draft version of HRM's Mobility Analysis Guidelines
- A site plan concept sketch provided by the proponent.
- Site reviews carried out by GRIFFIN in January and April 2024.
- Peak Hour traffic volume data gathered by GRIFFIN in April 2024.

The approach and technical findings of this traffic impact study are discussed in the following sections of this report.

2. EXISTING CONDITIONS

This chapter describes the roadway network, traffic volumes, operating conditions, and other notable characteristics under the baseline conditions.

2.1 Roadway Layout Overview

The subject lands have direct frontage along Sackville Drive and Hillcrest Avenue. Sackville Drive is generally aligned in a north-south direction in the vicinity of the site and has been classified by HRM as an urban arterial. It has a four-lane, two-way urban cross-section that accommodates vehicle traffic, public transit, and active transportation via the pedestrian sidewalks. The regulatory speed limit is 50 km/h.

Hillcrest Avenue has a local street classification and predominantly serves a small residential neighbourhood of detached residential dwellings located north and east of the subject property. It is generally aligned in an east-west direction and has a two-lane, two-way urban cross-section with a pedestrian sidewalk along the south side (i.e. along the civic #153 frontage). It connects with Sackville Drive as a stop-controlled t-intersection. The regulatory speed limit is 50 km/h. A large Canada Post mailbox system serving the local neighbourhood is also located in the southeast quadrant of the intersection.

2.2 Travel Mode Options and HRM's Integrated Mobility Plan (IMP)

2.2.1 Overview

In 2017, HRM Council adopted the Integrated Mobility Plan (IMP) policy providing future direction for the Municipality to offer more cost-effective mobility options that better meet the needs of residents across the region. This includes increased use of active transportation and public transit modes of travel, along with the provision of convenient and safe options for travelers. As such, we have reviewed the mobility options that are available in the immediate vicinity of the proposed development.

2.2.2 Active Transportation Facilities

Pedestrian sidewalk facilities are currently provided along both sides of Sackville Drive and the south side of Hillcrest Avenue. Therefore, the HRM sidewalk network is adjacent to, and surrounds, the proposed development offering well connected and convenient walking facilities throughout this neighbourhood. It should be noted that there are a limited number of crosswalks available for pedestrians to move across Sackville Drive. The nearest signalized crossings are located about 550m to the north at Skyridge Avenue and about 570m to the south at Cobequid Road.

There are no dedicated or marked/signed bicycle facilities in the study area. The local street network including Hillcrest Avenue appears to offer a low-risk environment (low vehicle speeds, low vehicle volumes) such that cyclists can share road space with vehicles. The Sackville Drive

corridor; however, appears to be a high-risk environment for cyclists to share road space with vehicles.

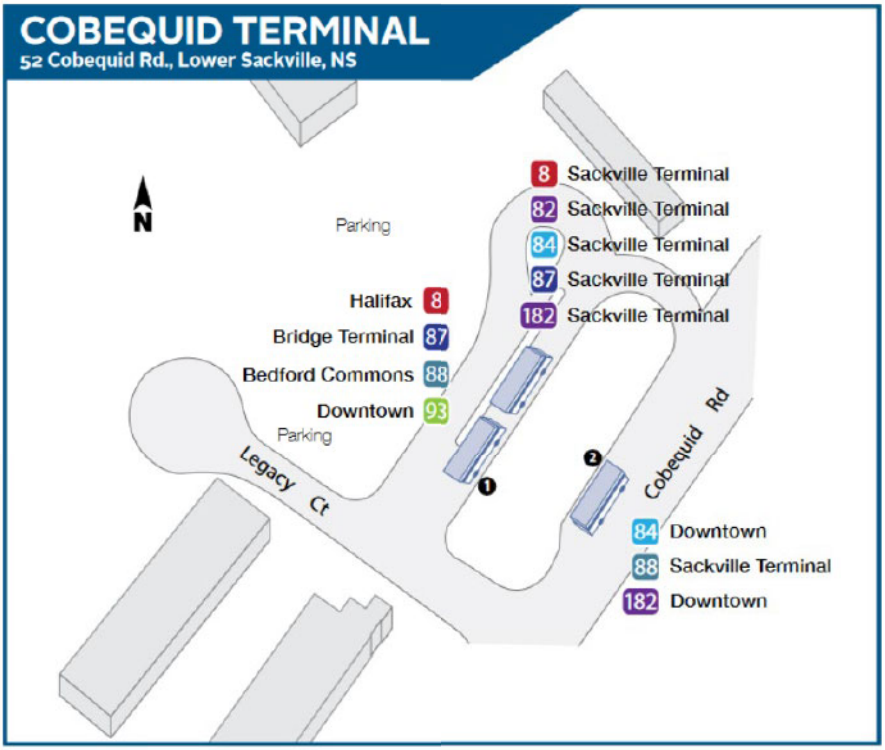
2.2.3 *Public Transit Service*

HRM offers public transit bus service through the study area along Sackville Drive. Bus stops are currently in place immediately north of the Hillcrest Avenue intersection for northbound (outbound) buses, and immediately south of the Hillcrest Avenue for southbound (inbound) buses. As noted in the previous section, there are no marked or signed crosswalks for pedestrians – in the vicinity of the Hillcrest Avenue intersection – to move across Sackville Drive which presents a challenge for pedestrians that are either elderly, young children, or those with mobility limitations.

The existing bus stops at the Hillcrest Avenue intersection are very close to – and well within HRM's walking threshold for transit stops – and this is particularly important for the new residents of the proposed development. These stops are currently serviced by Route #8 and Route #87.

The HRM Cobequid Transit Terminal is located to the southeast of the proposed development. This terminal will provide access to multiple travel options via public transit and is only a 480m walking distance from the new development. As HRM continues to invest and expand their public transit system, consideration should be given to extending the planned Bus Rapid Transit (BRT) service to the Cobequid Transit Terminal in the short to medium term timeframe.

Figure 2: HRM Cobequid Transit Terminal Bus Routes



Source: HRM Transit Route Map, March 2025

2.2.4 *Mobility Summary*

Our evaluation of the available mobility options in the study area has allowed us to conclude the proposed Mixed Use development is strategically located to optimize the use of HRM's existing and planned transportation infrastructure investments in this area of Lower Sackville – including the Cobequid Transit Terminal immediately to the southeast. HRM could also give consideration to providing a facility to accommodate bicycles and other small-wheeled devices by investing in a multi-use path (MUP) along the Sackville Drive corridor with connectivity to the existing Cobequid Transit Terminal.

Future residents and patrons of the proposed development will have multiple travel options which are expected to significantly reduce the demand for travel via commuter car. We have determined that 100% of the new residential units will be situated less than 100 m walking distance from public transit stops and routes – and within HRM's walking threshold to the Cobequid transit Terminal.

2.3 Existing Mobility and Peak Travel Demand Data

Following industry best practices, specific hours that experience the highest traffic volumes on the roadway are applied to the analysis steps in the traffic impact study process to identify the capacity needs required to accommodate peak vehicle demands. Historical traffic data for this suburban area of HRM indicates there is a notable peak in traffic demand during the typical weekday commuter peak times. In addition, the Mixed Use development proposed for this area typically experiences peak traffic demand during the weekday commuter peak times. Therefore, GRIFFIN has elected to evaluate the weekday peak periods as part of this study.

To facilitate an assessment of the existing and future traffic operations there was a need to develop a set of baseline traffic volumes. HRM defined in their March 2024 comments sent to the proponent the two key intersections that they wanted explicitly evaluated in this study. As such, GRIFFIN gathered current peak period transportation data in April 2024 at these locations. As summary of the data collection is contained in *Table 1*.

Table 1: Mobility Data Collection – April 2024

	AM Peak Period Counts	PM Peak Period Counts	24-hour Counts
Sackville Dr / Cobequid Rd Intersection	✔	✔	⊘
Sackville Dr / Hillcrest Ave Intersection	✔	✔	⊘
Hillcrest Avenue Corridor	✔	✔	✔

A – Intersection counts included separate recordings for cars/light trucks, single-unit trucks/busses, large truck/trailer combinations, bicycles, and pedestrians.

The sets of data noted in *Table 1* were assembled and reviewed. Generally, it was concluded that the observed peak hour travel demand data were reasonable and representative of current travel patterns. Our final set of 2024 Baseline weekday AM and PM peak hour volumes applied to our analysis is contained in *Figure 3*.

Figure 3: Baseline 2024 Peak Hour Volumes

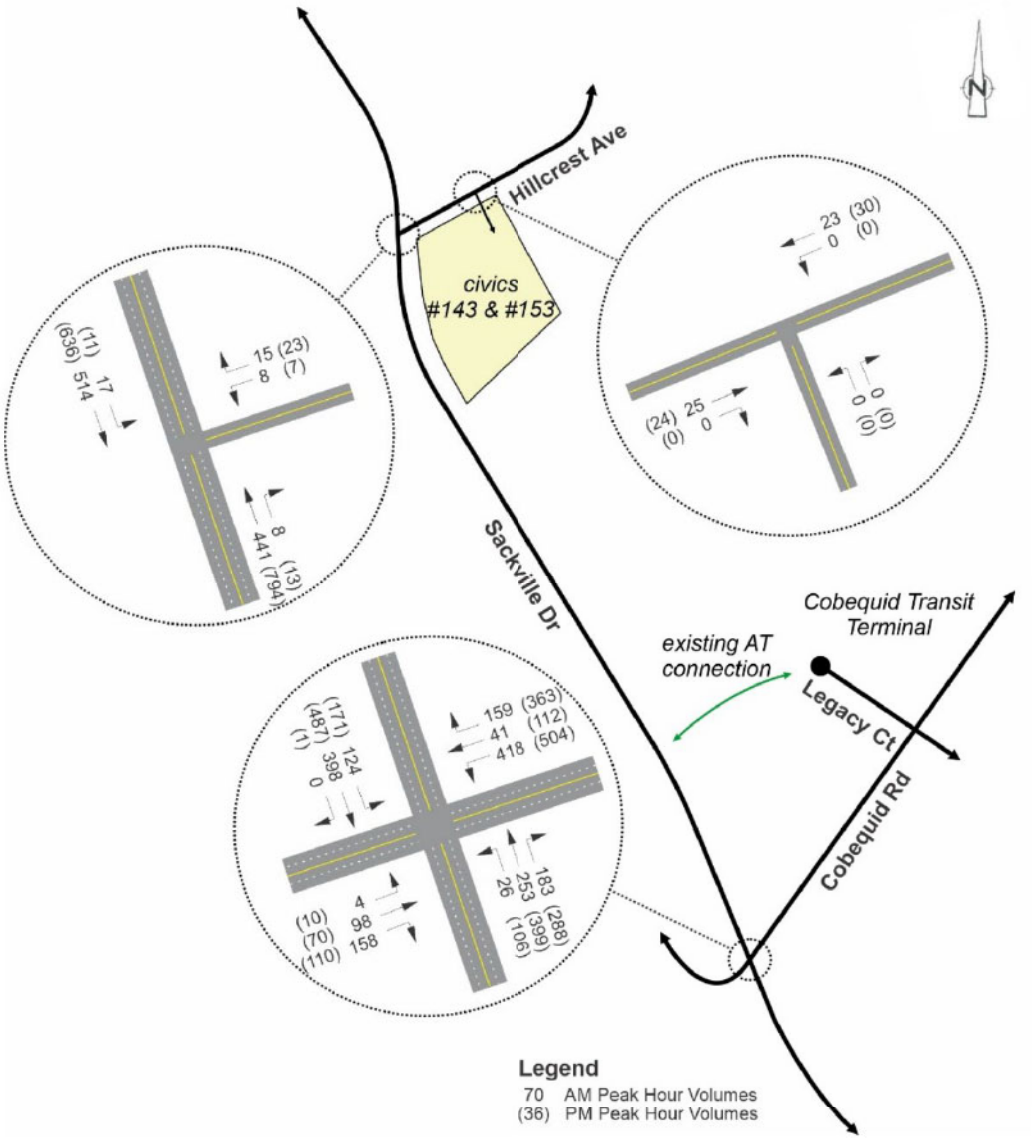
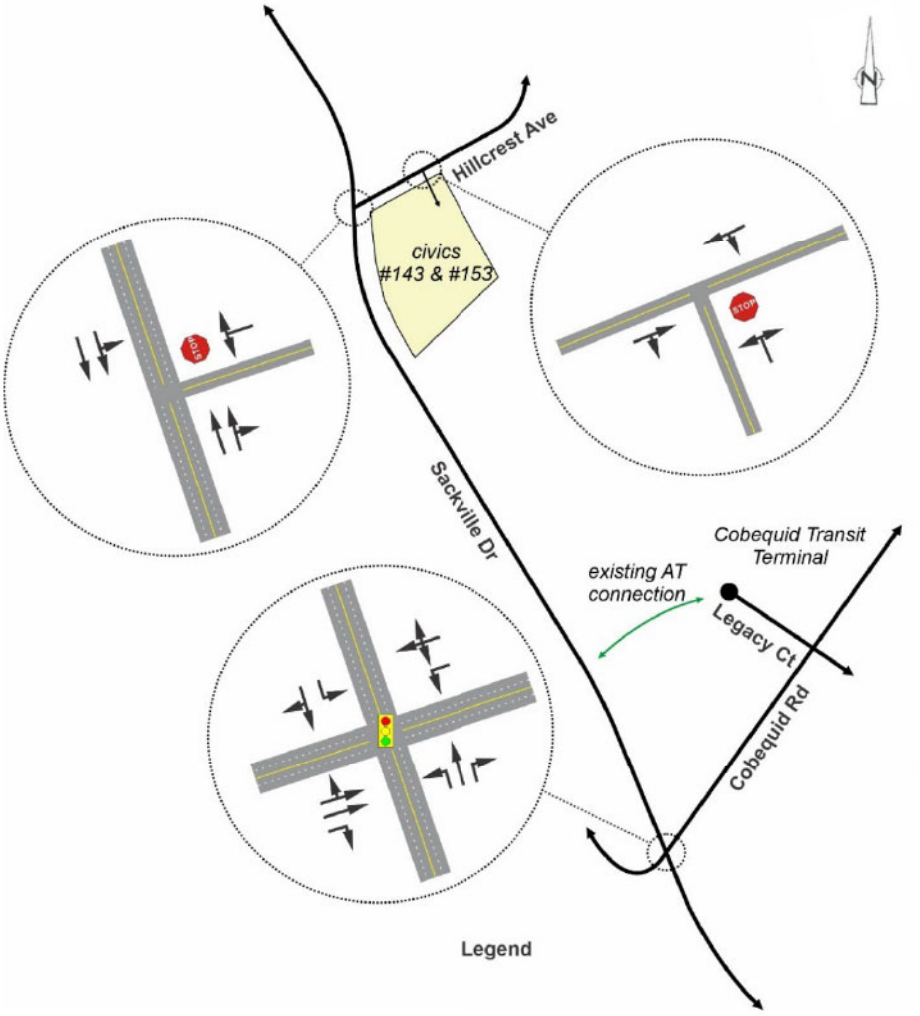


Figure 4: Baseline 2024 Intersection Lane Configurations and Traffic Control



2.4 Baseline 2024 Roadway Intersection Assessment

An intersection capacity analysis process was carried out using the Baseline 2024 traffic volumes (*Figure 3*) as well as the existing lane configurations and traffic control at the following intersections:

1. Sackville Drive / Cobequid Road
2. Sackville Drive / Hillcrest Avenue

Our analysis process used Trafficware's *Synchro 11* software tool following the Transportation Research Board's *Highway Capacity Manual* (HCM) methodology for both signalized and unsignalized intersections. The results have been summarized in *Table 2*. An expanded summary of results are provided in *Appendix III*. Following HRM TIS guidelines, the measures of effectiveness used to describe the operational performance of the intersections included the average vehicle delay, volume-to-capacity ratio (v/c ratio), and 95th percentile queue length (metres) for each movement at each of the study area intersections.

Table 2: Baseline 2024 Intersection Operational Analysis Results

1. Sackville Dr / Cobequid Rd	AM Peak Hour			PM Peak Hour		
	Approach: Delay	**V/C**	**Queue[A]**	**Approach: Delay**	**V/C**	**Queue[A]**
Existing 2024	NB Entry: 21.8s	0.59	75m	NB Entry: 34.4s	0.76	155m
Traffic signals	SB Entry: 33.0s	0.73	130m	SB Entry: 60.8s	**0.91**	210m
existing lanes	EB Entry: 24.2s	0.54	20m	EB Entry: 43.6s	0.59	25m
	WB Entry: 36.2s	0.75	100m	WB Entry: 54.9s	**0.93**	230m

2. Sackville Dr / Hillcrest Ave	AM Peak Hour			PM Peak Hour		
	Approach: Delay	**V/C**	**Queue[A]**	**Approach: Delay**	**V/C**	**Queue[A]**
Existing 2024	NB Th-Rt: n/a[B]	-	-	NB Th-Rt: n/a[B]	-	-
Stop-control	SB Lt-Th: 8.5s	0.02	<10m	SB Lt-Th: 9.9s	0.02	0m
existing lanes	WB Lt-Rt: 12.7s	0.05	<10m	WB Lt-Rt: 16.4s	0.09	<10m

3. Hillcrest Ave / Site Driveway	AM Peak Hour			PM Peak Hour		
	Approach: Delay	**V/C**	**Queue[A]**	**Approach: Delay**	**V/C**	**Queue[A]**
Existing 2024 *Stop-control existing lanes*	*No site traffic moving in/out of property*			*No site traffic moving in/out of property*		

A – 95th percentile queue length.
B – HCM methodology assumes no delay for this higher order intersection movement. No results calculated.

The analysis results contained in *Table 2* suggest the existing Hillcrest Avenue intersection operates during peak periods with average delays of 16 seconds per vehicle or less, and volume to capacity ratios of 0.09 or less. The vehicle queue lengths at this unsignalized intersection are considered to be negligible.

The Sackville Drive / Cobequid Road intersection; however, has specific directional movements that appear to be operating near capacity during peak times. The critical time period occurs during the weekday afternoon commuter peak where volume/capacity (v/c) ratios are about 0.91-0.93 and 95th percentile queues lengths extend 210-230m. Generally, the long queue lengths cleared and dissipated with each signal cycle and all demand appeared to be serviced; however, the existing v/c ratios exceed HRM's acceptable threshold. Generally, the calculated results appeared to be consistent with the operating conditions, driver delays, and queue lengths observed during the field review.

3. THE PROPOSED DEVELOPMENT

This chapter describes the existing properties, proposed changes to the properties, and the development of the site generated traffic.

3.1 The Proposed Development

The proponent has plans to remove the existing buildings on site and replace them with one new Mixed Use building that will occupy the majority of the combined land area within the civic #143 and civic #153 properties. The new building is expected to have a common podium plus two towers with a height of about 14 floors above ground. There will also be two underground levels that will accommodate parking for vehicles. The building details are provided in *Table 3*.

Table 3: Proposed New Building Configuration

Building Component	Type / Use of Space	Size
Levels P1 & P2	Underground Parking	244 vehicle spaces
Level 1 – Ground Floor	Indoor Parking	25 vehicle spaces
	Commercial Floor Space	12,009 ft^2
Levels 2 to 14	Residential Units	301 units

The proposed site layout concept plan is shown in *Figure 5*. Once complete, this development will increase the residential density of the surrounding area. This generally conforms with HRM's latest planning policies and is imperative if HRM is to achieve the mobility goals established in HRM's Integrated Mobility Plan. It is also important to note the proposed changes are considered to be transit-supportive, transit-oriented, adjacent to an existing transit terminal, and generally aligns with the Institute of transportation Engineers (ITE) smart growth principles.

3.2 New Peak Hour Mobility Demands – Full Build-out Scenario

3.2.1 Overview

HRM has shifted their planning-level assessment of future developments away from the traditional traffic impact study process – a vehicle-centric examination – to a transportation mobility impact study process which looks at the key travel modes identified in HRM's Integrated Mobility Plan (IMP). Therefore, our approach to examining the mobility impacts of the proposed development attempts to align w/ HRM's multi-modal policies. Since the redevelopment of this property will create a more dense urban environment – with good connectivity between several travel modes – we can expect a reduced vehicle travel demand forecast during peak periods relative to past methodologies.

As such, our trip generation analysis step follows ITE's latest information and guidelines and begins with the overall movement of person-trips, by land use type, then examines the amount of trip making by mode (i.e. vehicle, walking, cycling, transit, etc.). The apportioning of modal travel was based on the empirical data contained in the ITE's *Trip Generation Manual, 11th Edition*.

Figure 5: Conceptual Site Plan and Internal Street Layout

3.2.2 *Site Trip Generation – Person Trips*

GRIFFIN reviewed the ITE's latest documentation and identified that the most appropriate trip rates for the proposed development are those contained in Volumes 3 and 4 of the Trip Generation Manual. A more detailed review of the Volume 3 document indicated that there is no empirical data available for a high-rise Mixed Use building in a suburban area. Thus, GRIFFIN elected to quantify the new site-generated trips for the residential and commercial land use types separately. GRIFFIN utilized the following ITE trip rates:

- *Residential*: Multifamily Housing (High-Rise) Not Close to Rail Transit – Land Use Code 222
- *Commercial*: General Office Building – Land Use Code 710

The first step in the trip generation calculation process identified the total trips – by all modes of travel – that are expected to be moving to/from the new development during the two weekday peak hours. These are referred to as person-trips and a summary of our calculations by land use type is summarized in *Table 4*.

Table 4: New Suburban Development Trip Generation – Person Trips per Hour

	Walk/Bike/Transit Trips (trips/hour)	**Person-Trips by Vehicle** (trips/hour)[A]	**Total Person Trips** (trips/hour)
AM Peak Hour			
Residential: Multifamily (High Rise) (not close to rail transit) (ITE Code 222)	30	102	**132**
Commercial - Office: General Office Building (ITE Code 710)	2	32	**34**
Total Person Trips - AM Peak	**32 (19%)**	**134 (81%)**	**166**
PM Peak Hour			
Residential: Multifamily (High Rise) (not close to rail transit) (ITE Code 222)	30	121	**151**
Commercial - Office: General Office Building (ITE Code 710)	3	35	**38**
Total Person Trips - PM Peak	**33 (17%)**	**156 (83%)**	**189**

A – Assumes an average vehicle occupancy factor of 1.2 persons per vehicle.

Using ITE's empirical data we can expect that about 80-85% of all new person trips will be made via the vehicle mode in this suburban area of HRM. The remaining 15-20% person trips are expected to be made by some combination of walking, cycling or public transit – including trips moving to/from the Cobequid Transit Terminal located a short distance to the southeast. It is expected that future investments in active transportation facilities in this area will improve connectivity and offer new travel options (i.e. cycling facilities) and these opportunities will help reduce the percentage of commuter vehicle use in the future.

3.2.3 *Site Trip Generation – Vehicle Trips*

GRIFFIN examined in more detail the number of person trips that are expected to travel via the private automobile. The research literature suggests that a reasonable and typical peak hour vehicle occupancy rate is 1.2 persons/vehicle. Therefore, GRIFFIN applied this vehicle occupancy factor to quantify the number of vehicle trips added to the road system. These results are presented in *Table 5* for the AM and PM peak hours, respectively.

Table 5: New Suburban Development Trip Generation – Vehicle Trips per Hour

	Size	Vehicle Trip Rate	Inbound (trips/hour)	Outbound (trips/hour)	Total Trips (trips/hour)
AM Peak Hour					
Residential: Multifamily (High Rise) (not close to rail transit) (ITE Code 222)	301 units	0.28 / unit[A]	22 (26%)	63 (74%)	85
Commercial - Office: General Office Building (ITE Code 710)	12.01k ft^2	2.25 / 1k ft^2 [A]	24 (88%)	3 (12%)	27
Total Vehicle Trips - AM Peak			**46**	**66**	**112**
PM Peak Hour					
Residential: Multifamily (High Rise) (not close to rail transit) (ITE Code 222)	301 units	0.34 / unit[A]	63 (62%)	38 (38%)	101
Commercial - Office: General Office Building (ITE Code 710)	12.01k ft^2	2.41 / 1k ft^2 [A]	5 (17%)	24 (83%)	29
Total Vehicle Trips - PM Peak			**68**	**62**	**130**

A – Rates calculated using ITE's regression formula.

The total forecast site-generated vehicle trips associated with the Mixed Use development during the peak hours of a typical weekday are expected to be:

- *AM Peak Hour:* Forecast total trips are comprised of **112** two-way vehicle trips, including 46 inbound and 66 outbound from the site.
- *PM Peak Hour:* Forecast total trips are comprised of **130** two-way vehicle trips, including 68 inbound and 62 outbound from the site.

Typically, Mixed Use developments experience some degree of pass-by trips and shared trip-making between land use types or between multiple businesses on the same property. For example, a driver may travel to this development, patronize two separate businesses, then leave. GRIFFIN's experience with Mixed Use developments has been that approximately 10% of total vehicle trips are actually shared trips – and depending on the business type pass-by trips can range between 10% and 50% of new traffic. For this study; however, GRIFFIN has elected not to apply any vehicle trip reduction factors. This provides higher vehicle volumes on the future road system and yields a slightly worse-than-expected set of analysis results.

3.3 Distribution of Site-Generated Vehicle Trips

The distribution of the new site-generated traffic requires the practitioner to correlate the origins/destinations of these trips to a point outside of the study area. Typically, this would be a location where the major roads cross the study area cordon line. In the case of this particular project, the road connections to the outer cordon line are limited to Sackville Drive (north and south), as well as Cobequid Road and Hillcrest Avenue (to the east).

There were two key factors taken into consideration when developing the expected distribution patterns of the new site-generated trips. This included the following:

- The proximity of the community services located in Lower Sackville to the north and large employment areas throughout HRM; and
- A review of the current traffic flow directional split for drivers turning to/from Hillcrest Avenue at Sackville Drive.

Information and data associated with these factors were reviewed and the selected distribution percentages for both proposed land use types are summarized in *Table 6*.

Table 6: Vehicle Trip Distribution Assumptions

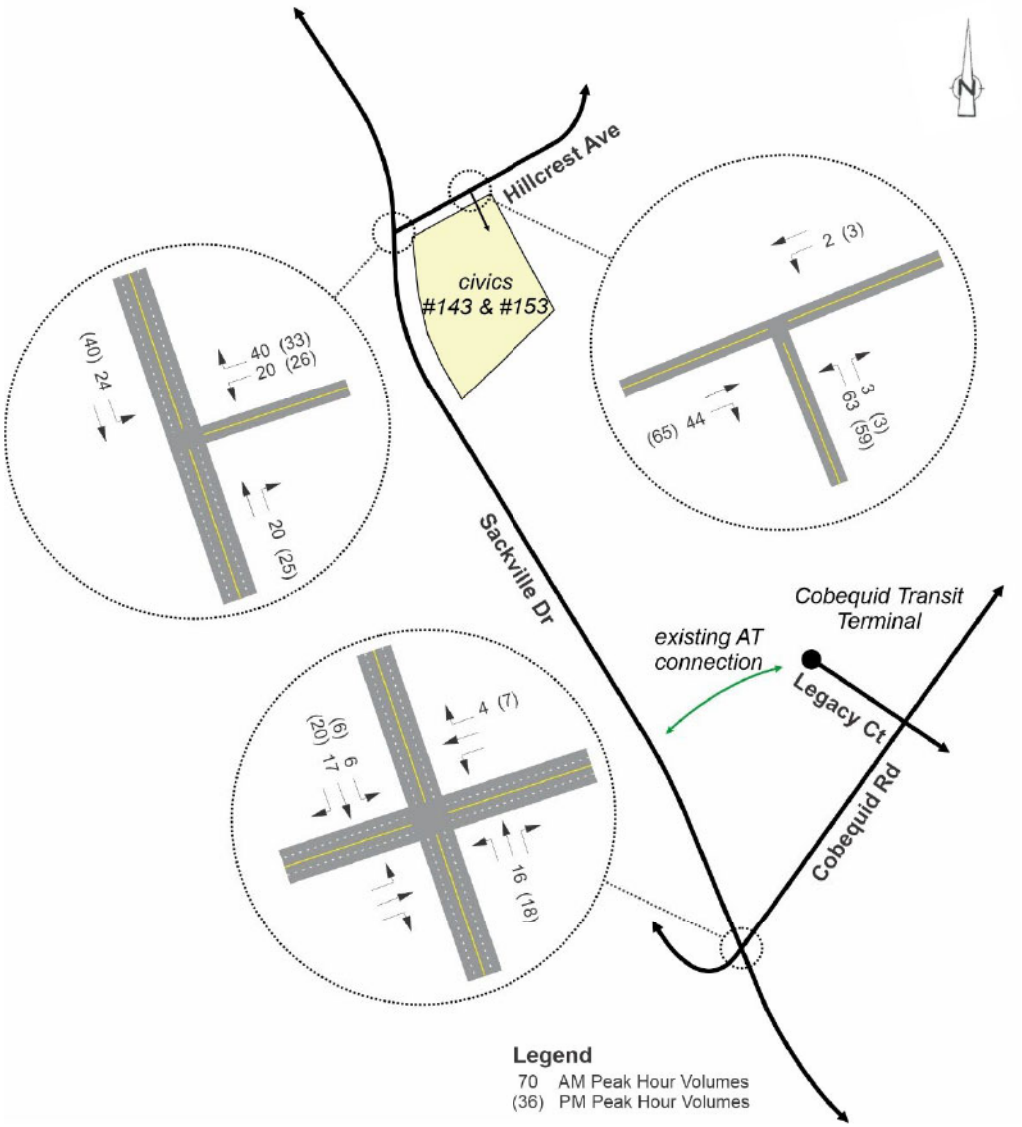
Direction	Via	AM/PM Residential Distribution	AM/PM Commercial Distribution
North	Sackville Drive	60%	50%
East	Cobequid Road	10%	10%
	Hillcrest Avenue	5%	5%
South	Sackville Drive	25%	40%
Total		**100%**	**100%**

It should be noted that our analysis assumed all site-generated vehicle trips would be external trips and would move in/out of the study area via road gateways identified in *Table 6*. To provide a conservative, slightly worse case assessment, it was assumed that no site-generated trips would start and end their route within the development.

3.4 Summary of Site-Generated Vehicle Trips

The distribution and assignment of the future site-generated vehicle trips for the proposed development was completed using the assumptions and techniques described in the previous Sections. These vehicle trips are shown graphically in *Figure 6*.

Figure 6: Site-Generated Peak Hour Vehicle Trips



It should be noted that although there are two existing building structures that occupy the subject properties, they appeared to be unoccupied at the time of our traffic data collection. Therefore, no existing site-generated vehicle trips were quantified and thus no existing site-generated trips were removed from our future year traffic forecasts.

3.5 New Site Driveway on Hillcrest Avenue

3.5.1 Overview

Currently there are two existing site driveways serving the two subject properties. The civic #143 residential driveway connects to Sackville Drive near the southwest corner of the property. This driveway will be closed. Therefore, all new site-generated traffic is assumed to move in/out via the civic #153 property connecting to Hillcrest Avenue.

The existing civic #153 driveway connects to Hillcrest Avenue about 35 m east of Sackville Drive. The proponent plans to close this driveway and build a new vehicle access further east near the northeast corner of the property – about 50m from Sackville Drive. This increases and maximizes the available corner clearance distance to the Sackville Drive intersection. The new driveway will provide the only access to underground parking, surface parking, loading/unloading, delivery vehicles, and so forth.

In summary, there will be a net reduction in the number of driveways serving these lands.

3.5.2 Driver Visibility at New Hillcrest Access

Typically, a driver sight distance review is carried out as part of the traffic impact assessment process to identify any driver sight distance or visibility limitations up and downstream of a new site access. GRIFFIN completed the visibility review process following the latest Transportation Association of Canada's (TAC) *Geometric Design Guide for Canadian Roads* document (2017) as well as the Nova Scotia Department of Public Work's field measurement best practices. At this early planning stage, GRIFFIN only assessed the minimum requirement for vehicles approaching the new access which is referred to as stopping sight distance (SSD). The provision of adequate SSD for vehicles traveling on the main roadway ensures drivers have sufficient forward visibility to identify a hazard in the roadway, and if needed, bring their vehicle to a stop.

The regulatory speed limit along Hillcrest Avenue is 50 km/h and this was used as the free-flow operating speed in the westbound direction. Given the relatively short distance between Sackville Drive and the new site driveway, eastbound drivers were not expected to reach operating speeds of 50 km/h and a 45 km/ operating speed was used in our analysis. The visibility assessment and results are summarized in *Table 7*.

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Table 7: Summary of Stopping Sight Distance Measurements – Proposed Driveways

Measurement Location	Travel Direction	Available SSD	TAC Required SSD		Does Available Exceed Required?
			Base[A]	Slope Adjusted	
2. Northeast Access (Hillcrest Ave)	Eastbound (away from Sackville Dr)	60 m	57.5 m (45 km/h)[C]	57.5 m (0%)[B]	YES
	Westbound (toward Sackville Dr)	80 m	65 m (50 km/h)	65 m (0%)[B]	YES

A – 2017 TAC Chapter 2, Table 2.5.2, driver eye height of 1.05m, hazard object height of 0.6m.

B – An estimate of the actual slope along Hillcrest Avenue on the approaches to the new access.

C – A design speed of 45 km/h was selected for EB driver speed as they turn at Sackville Drive.

In conclusion, there appears to be sufficient stopping sight distances to/from the proposed new driveway on Hillcrest Avenue which exceed TAC minimum guidelines.

3.5.3 *Intersection Corner Clearance to New Access*

GRIFFIN conducted a review of the available intersection corner clearance distance between the Sackville Drive / Hillcrest Avenue intersection and the new northeast driveway. Providing adequate corner clearance distances minimizes the risk of conflicts between vehicles turning at the intersection and turning at the nearest driveway. Typically, the corner clearance distance is measured along the tangent between the two corner radii / curb returns. This is the method utilized by GRIFFIN for this review.

Along Hillcrest Avenue there is about 35m of corner clearance distance to the existing civic #153 driveway. This existing driveway will be closed and shifted further away from the Sackville Drive intersection, to the northeast corner of the property. This will result in an increased corner clearance distance of about 50 m, exceeding the HRM requirement of 30 m. This is expected to improve traffic flow and operating conditions along Hillcrest Avenue.

3.5.4 *Off-Street Parking*

A mix of off-street parking will be provided on site for residents, patrons, and employees. Up to 40 surface vehicle parking spots will be available outside the building and up to 269 vehicle parking spaces within the building.

It should also be noted that bicycle parking spaces are also being planned as part of the new development. It is understood that about 24 bicycle spaces will be provided outside of the building – as shown on the proposed site layout concept plan.

4. DEVELOPING FUTURE TRAFFIC VOLUMES

This chapter summarizes the process and assumptions used to develop the future year traffic volumes.

4.1 Overview

The future planning horizon chosen for a traffic impact study represents a milestone in the development process. GRIFFIN has assumed the planning, design and construction will require up to three years to complete. As required by HRM guidelines, an additional 5 years post-opening is to be added to identify the future planning horizon. Thus, the future planning is estimated to occur 8 years from now, or by 2032. Using these expected timelines GRIFFIN has provided a summary of the planning horizons and roadway network layouts in *Table 8*.

Table 8: Development Completion Dates and Study Horizon Years

Planning Horizons	Development / Traffic Scenario	Roadway Network
2024 Planning Horizon	2024 Existing Traffic Conditions	Existing roadway network (no development)
2032 Planning Horizon	2032 Future Background Conditions - General traffic growth.	Existing roadway network (no development)
	2032 Future Total Conditions - General traffic growth, - Traffic generated by proposed development (full build-out).	Existing roadway network (with new development)

Following traffic impact study best practices, the analysis process carried out for the future planning horizon includes two sets of assessments. The first is referred to as the future background traffic scenario which excludes the proposed site-generated traffic (*i.e.,* future status quo). The second is referred to as the future total traffic scenario which adds the proposed site-generated traffic to the street network. It is through this process that the practitioner can identify the impacts explicitly associated with the new site-generate traffic added to the roadway network by comparing the two sets of results.

The assembly of both sets of future 2032 peak hour traffic volumes is discussed in the following Sections.

4.2 Future Background Traffic Volumes

4.2.1 General Traffic Growth

The general background traffic growth rate from 2024 out to the 2032 planning horizon represents a reasonable measure of the expected increase in travel by vehicle in this established

area of HRM. GRIFFIN has elected to utilize a 1% compounding growth factor to provide a reasonable future traffic volume estimate, given the vision and goals of HRM's Integrated Mobility Plan (IMP) and associated policy. The assumed average traffic growth yields a factor of 1.083 which was applied to the Baseline 2024 peak hour volumes contained in *Figure 3*.

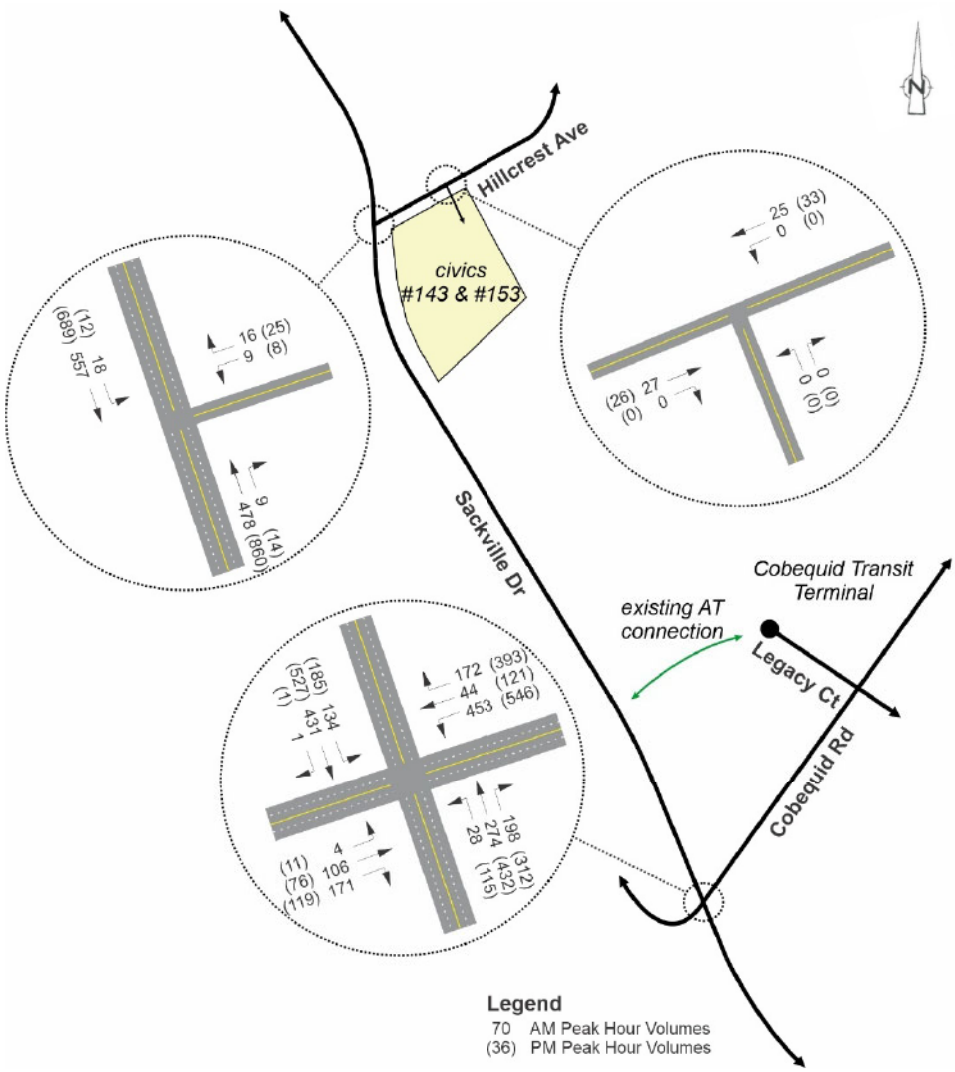
4.2.2 *Summary of Future Background 2032 Volumes*

The assembly of the future 2032 background traffic was completed by GRIFFIN and included in the following:

- Baseline 2024 volumes (*Figure 3*), plus
- Growth factor (1% per year) from 2024 to 2032.

The resulting future Background 2032 peak hour volumes are contained in *Figure 7*.

Figure 7: Future Background 2032 Peak Hour Volumes



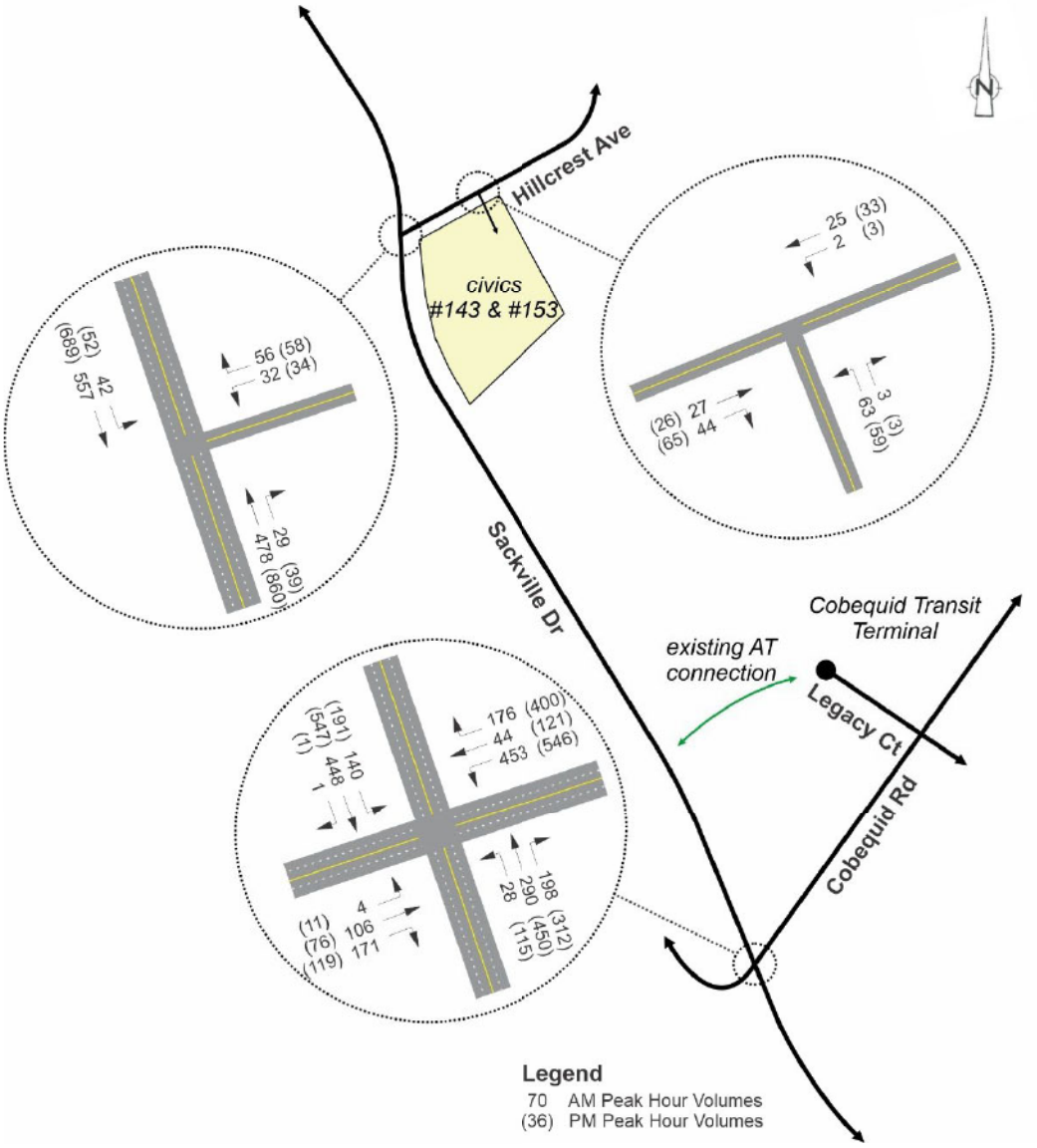
4.3 Future Total Traffic Volumes

Under the future Total 2032 traffic scenario, the proposed development is expected to be fully constructed and occupied. The traffic volumes for this scenario were developed using the following assumptions:

- Baseline 2024 volumes (*Figure 3*), plus
- Growth factor (1% per year) from 2024 to 2032, plus
- New site-generated traffic (*Figure 6*).

The future Total 2032 traffic volumes used in the analysis are shown in *Figure 8*.

Figure 8: Future Total 2032 Peak Hour Volumes



5. FUTURE 2032 TRAFFIC OPERATIONAL ANALYSIS

This chapter summarizes the results of the future year traffic operations analysis, including the auxiliary turn lane warrants, and intersection capacity review.

5.1 Analysis Step #1 - Traffic Signal Warrant Review

The initial step in the analysis process identified the need for signalized traffic control by using the Transportation Association of Canada's (TAC) signal warrant procedure. This methodology is widely used by road agencies across Canada and is a recognized procedure by HRM. The TAC calculation process uses average intersection volumes measured over the six highest hours of a typical day. The results of this calculation process include a number of priority points to indicate whether a traffic signal is warranted. When the minor street peak hour traffic volume exceeds 75 vehicles/hour and the number of priority points exceeds 100, the traffic signal warrant is met.

GRIFFIN used the observed April 2024 hourly traffic volume profile recorded on Hillcrest Avenue to establish the temporal profile and identify the six highest hours of the day. These data were considered to be representative of current HRM traffic flow patterns and were applied to the TAC warrant calculations. Our assessment was focused on the Sackville Drive / Hillcrest Avenue intersection as it was the critical unsignalized junction adjacent to the proposed development. The analysis results are contained in *Table 9* and detailed calculations are contained in *Appendix II*.

Table 9: Summary of Traffic Signal Warrant Results

Development Scenario	Sackville / Hillcrest
Baseline 2024- Existing Lanes	14 points
Background 2032- Existing Lanes	19 points
Total 2032 - Existing Lanes	56 points

The results contained in *Table 9* suggest that the Hillcrest Avenue intersection can function adequately with the existing stop-control well beyond the 2032 planning horizon.

5.2 Analysis Step #2 - Future 2032 Intersection Capacity Analysis

A capacity and operational performance analysis effort was carried for each study area intersection using the future 2032 forecast traffic volumes. The analysis process used the industry-accepted Trafficware *Synchro 11* software tool for unsignalized intersections, which is based on the methodologies contained in the Transportation Research Board's (TRB) *Highway Capacity Manual*. A summary of results for the critical intersection movements are contained in *Table 10* and the detailed capacity reports are contained in *Appendix III*.

Table 10: Future 2032 Intersection Operational Analysis Results

1. Sackville Dr / Cobequid Rd						
	AM Peak Hour			PM Peak Hour		
	Approach: Delay	V/C	Queue[A]	Approach: Delay	V/C	Queue[A]
Existing 2024	NB Entry: 21.8s	0.59	75m	NB Entry: 34.4s	0.76	155m
Traffic signals	SB Entry: 33.0s	0.73	130m	SB Entry: 60.8s	**0.91**	210m
existing lanes & timing plan	EB Entry: 24.2s	0.54	20m	EB Entry: 43.6s	0.59	25m
	WB Entry: 36.2s	0.75	100m	WB Entry: 54.9s	**0.93**	230m
Background 2032	NB Entry: 23.4s	0.64	80m	NB Entry: 39.6s	0.79	170m
Traffic signals	SB Entry: 37.3s	0.80	150m	SB Entry: 73.3s	**0.96**	240m
existing lanes & timing plan	EB Entry: 24.5s	0.56	20m	EB Entry: 45.6s	0.62	25m
	WB Entry: 37.9s	0.78	110m	WB Entry: 62.6s	**0.97**	260m
Background 2032	NB Entry: 17.8s	0.53	45m	NB Entry: 23.4s	0.70	70m
Traffic signals	SB Entry: 29.9s	0.71	125m	SB Entry: 35.0s	0.84	135m
new lanes & timing plan	EB Entry: 27.1s	0.60	25m	EB Entry: 41.9s	0.66	25m
	WB Entry: 34.1s	0.70	85m	WB Entry: 40.8s	0.83	140m
Total 2032	NB Entry: 18.8s	0.54	45m	NB Entry: 24.8s	0.72	75m
Traffic signals	SB Entry: 30.4s	0.73	130m	SB Entry: 35.5s	0.85	140m
new lanes & timing plan	EB Entry: 27.5s	0.60	25m	EB Entry: 41.9s	0.66	25m
	WB Entry: 34.5s	0.70	85m	WB Entry: 40.9s	0.83	140m

2. Sackville Dr / Hillcrest Ave						
	AM Peak Hour			PM Peak Hour		
	Approach: Delay	V/C	Queue[A]	Approach: Delay	V/C	Queue[A]
Existing 2024	NB Th-Rt: n/a[B]	-	-	NB Th-Rt: n/a[B]	-	-
Stop-control	SB Lt-Th: 8.5s	0.02	<10m	SB Lt-Th: 9.9s	0.02	0m
existing lanes	WB Lt-Rt: 12.7s	0.05	<10m	WB Lt-Rt: 16.4s	0.09	<10m
Background 2032	NB Th-Rt: n/a[B]	-	-	NB Th-Rt: n/a[B]	-	-
Stop-control	SB Lt-Th: 8.7s	0.02	<10m	SB Lt-Th: 10.3s	0.02	<10m
existing lanes	WB Lt-Rt: 13.6s	0.06	<10m	WB Lt-Rt: 18.6s	0.12	<10m
Total 2032	NB Th-Rt: n/a[B]	-	-	NB Th-Rt: n/a[B]	-	-
Stop-control	SB Lt-Th: 8.9s	0.05	<10m	SB Lt-Th: 10.9s	0.09	<10m
existing lanes	WB Lt-Rt: 16.5s	0.24	10m	WB Lt-Rt: 39.4s	0.50	20m

Table 10 - Continued

3. Hillcrest Ave / Site Driveway						
	AM Peak Hour			**PM Peak Hour**		
	Approach: Delay	**V/C**	**Queue[A]**	**Approach: Delay**	**V/C**	**Queue[A]**
Existing 2024 *Stop-control existing lanes*	*No site traffic moving in/out of property*			*No site traffic moving in/out of property*		
Background 2032 *Stop-control existing lanes*	*No site traffic moving in/out of property*			*No site traffic moving in/out of property*		
Total 2032 *Stop-control existing lanes*	EB Th-Rt: n/a[B] WB Lt-Th: 7.4s NB Lt-Rt: 9.4s	- <0.01 0.08	- 0m <10m	EB Th-Rt: n/a[B] WB Lt-Th: 7.5s NB Lt-Rt: 9.5s	- <0.01 0.08	- 0m <10m

A – 95th percentile queue length.
B – HCM methodology assumes no delay for this higher order intersection movement. No results calculated.

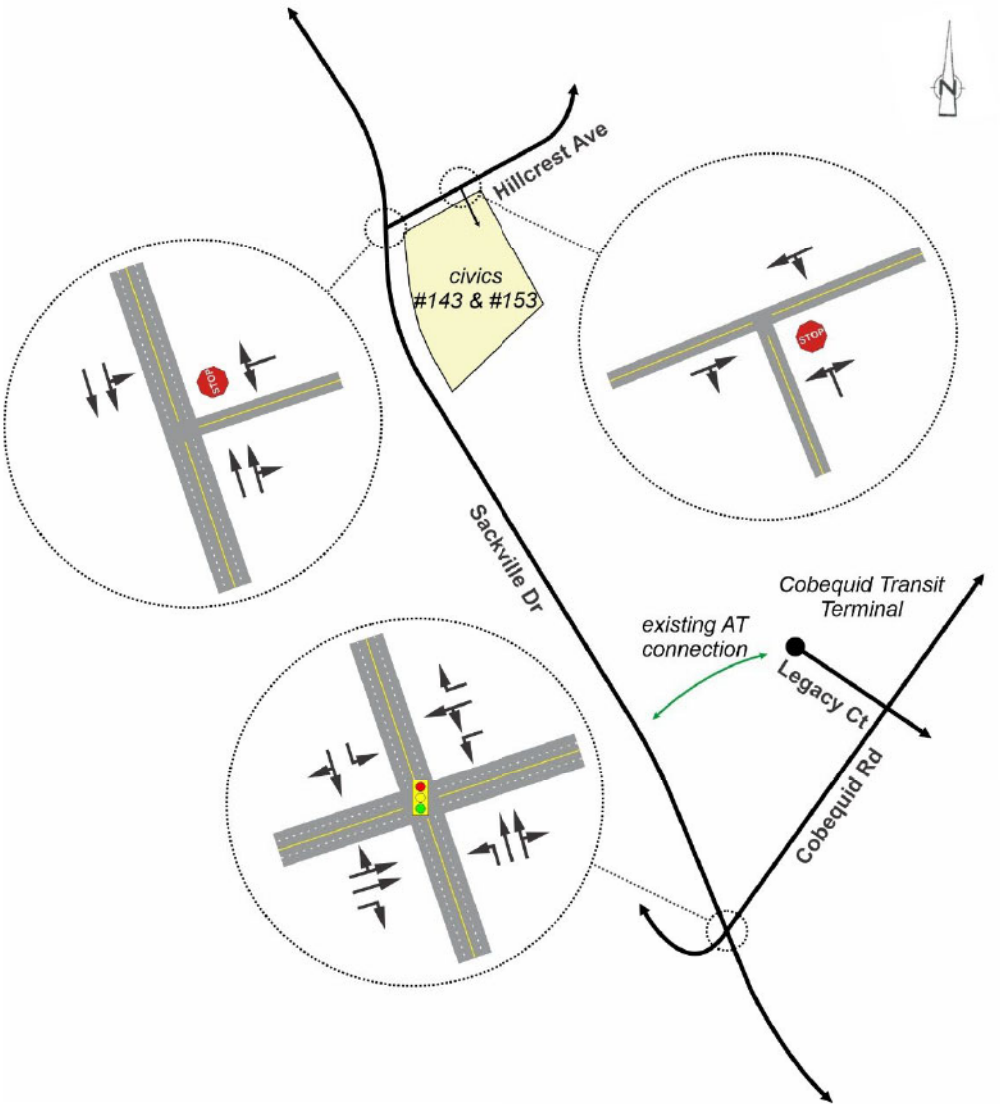
The results contained in *Table 10* suggest that all future traffic movements at the study area intersections are forecast to operate within HRM's acceptable thresholds for delay times and volume-to-capacity ratios[1] – with the necessary infrastructure changes in place that include:

1. *Sackville Drive / Cobequid Road*: Our analysis has demonstrated that the assumed traffic growth under a future background traffic scenario will result in v/c ratios approaching 1.0. Thus, GRIFFIN tested various signal timing adjustments and lane configuration changes at this intersection to determine the necessary upgrades that meet or exceed HRM performance thresholds. It was concluded that a new optimized signal timing plan, two northbound through lanes, and a westbound auxiliary right turn lane would be required to allow the intersection to function adequately with v/c ratios of 0.85 or better. These changes will allow this intersection to operate better in 2032 than it does today.
2. *Sackville Drive / Hillcrest Avenue:* Our analysis has demonstrated that the existing stop-controlled intersection and existing lane configuration can adequately accommodate traffic volume increases associated with the full build-out scenario assumed in this study. No road infrastructure changes are required to accommodate vehicles at this intersection, well beyond the 2032 planning horizon.

The future lane configuration and traffic control upgrades are illustrated in *Figure 9*.

[1] HRM's TIS guidelines require identification of through or shared through/turning lanes that have v/c ratios exceeding 0.85, and when exclusive turn lanes exceed 1.0. A v/c ratio greater than 0.85 but less than 1.0 can still function adequately in the short-term but is nearing capacity.

Figure 9: Future Lane Configuration (Full Build-out Scenario)



6. CONCLUSIONS AND RECOMMENDATIONS

This chapter summarizes the salient findings of the analysis and identifies any necessary changes to the transportation infrastructure.

6.1 Conclusions

The following conclusions were gleaned from this traffic impact assessment:

- *Proposed Development*: The proponent is proposing to assemble the civic # 143 and #153 Sackville Drive properties, in the southeast quadrant of the Sackville Drive / Hillcrest Avenue intersection, in the community of Lower Sackville. The existing building structures are proposed to be removed and one new Mixed Use building will be constructed. The new building will have a common podium level that will contain about 12,009 ft^2 of ground floor commercial space, plus two residential towers comprised of 14 floors each, and containing up to 301 residential apartment-style units. Only one vehicle access is proposed to service the new development and it will connect to Hillcrest Avenue near the northeast corner of the civic #153 property.
- *New Traffic Volumes*: The proposed development is forecast to generate walking, biking, public transit, and vehicle trips. The volume of new site-generated trips was estimated using the latest Institute of Transportation Engineers (ITE) rates associated with the commercial and residential land uses being proposed. GRIFFIN applied ITE's empirically-generated formulas for similar developments in a suburban area. The proposed development is expected to generate the following new vehicle trips:
  - *Weekday AM Peak Hour*: **112 vph** (46 inbound, 66 outbound)
  - *Weekday PM Peak Hour*: **130 vph** (68 inbound, 62 outbound)
- *Future Intersection Performance*: HRM defined the intersections to be explicitly evaluated in this study, which included the Cobequid Road and Hillcrest Avenue intersections along the Sackville Drive corridor. In addition, GRIFFIN evaluated the site driveway connecting to Hillcrest Avenue. The results showed that a new Mixed Use development of this scale can function adequately with only one driveway.
  - *Sackville Drive / Hillcrest Avenue*: The existing stop-control and lane configuration can sufficiently accommodate future peak hour volumes beyond the 2032 planning horizon. No traffic control upgrades and no new auxiliary turn lanes are required at this intersection within the planning horizon of this study.
  - *Sackville Drive / Cobequid Road*: Our existing conditions intersection performance assessment demonstrated that certain movements at this intersection are operating near capacity and exceed HRM's acceptable performance thresholds. A future scenario with background traffic growth (i.e. the proposed development is not built), results in worsening operational performance. Our analysis identified the need for a new optimized signal timing plan, two northbound through lanes, and an exclusive westbound right turn lane. These improvements are expected to

add capacity to this intersection which will allow it to function adequately well beyond the planning horizon of this study.

In summary, GRIFFIN has determined that the future 2032 peak hour traffic volumes – including new site-generated traffic associated with the proposed development – can be accommodated at the study area intersections and streets with the above-noted upgrades.

6.2 Recommendations

The following recommendations were developed based on the findings flowing from this study:

1. *Geometric Design Process*: That the geometric design process for a new vehicle driveway associated with the proposed development follow the most recent HRM and TAC geometric design guidelines. In addition, minimum required driver sight distances, corner sight triangles and corner clearances should be confirmed and maintained throughout the design and construction phases of the project. Prior to the start of any roadway or intersection design process, the proponent and their geometric design team will need to identify and confirm an appropriate design vehicle (eg. emergency vehicle or garbage truck).
2. *Signs and Pavement Markings*: That all new signage and pavement markings associated with any new intersections or roads be installed in accordance with the latest version of the Transportation Association of Canada's (TAC) *Manual of Uniform Traffic Control Devices of Canada* (MUTCDC).
3. *Sackville Drive / Cobequid Road Intersection*: That HRM begin the planning process to provide additional capacity at this intersection. Consideration could be given to the inclusion of transit bus priority measures. Infrastructure upgrades at this intersection will be required regardless if the proposed development proceeds, or not.
4. *Active Transportation*:
    - That the HRM explore the feasibility of providing an active transportation corridor along the east side of Sackville Drive. This could be in the form of a multi-use path (MUP) to efficiently accommodate various active modes. It would be prudent to provide connectivity to the Cobequid Transit Terminal.
    - That a pedestrian crosswalk be provided across Sackville Drive at the Hillcrest Avenue intersection to provide a more visible crossing to/from the existing transit bus stop on the west side of Sackville Drive. The design of the crosswalk should follow TAC's latest pedestrian crossing guidelines to ensure the required signs, pavement markings, and any supplementary traffic control devices are installed.
    - That accessible features be added to the Sackville Drive / Hillcrest Avenue intersection crosswalks and connecting sidewalks. These features could include tactile walking surface indicators, high visibility pavement markings, wide curb ramps, and so forth. The design of these features should follow the latest public right-of-way accessibility guidelines (PROWAG).

APPENDIX I

Observed 2024 Transportation Data

Intersection		Sackville Dr / Hillcrest Ave
Date	AM:	Wed Apr 24, 2024
	PM:	Wed Apr 24, 2024
	Sat:	-

					Hillcrest			Sackville Dr			Sackville Dr						
	Time	Eastbound			Westbound			Northbound			Southbound			15- min	Hourly			
	(Start)	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total	Total			
Wkday AM	7:00				3		2		54	1	1	136		197	-			
	7:15				4		0		55	1	3	118		181	-			
	7:30				2		3		85	1	5	129		225	-			
	7:45				8		9		104	1	1	138		261	864			
	8:00				2		3		97	2	2	117		223	890	8:00-9:00	Peak Hour	
	8:15				1		4		126	1	3	138		273	982	0.91	PHF	
	8:30				3		7		103	3	3	112		231	988			
	8:45				2		1		115	2	9	147		276	1003			
	2 hr Total	0	0	0	25	0	29	0	739	12	27	1035	0					
	Pk Hour	0	0	0	8	0	15	0	441	8	17	514	0		1003	check		
Wkday PM	16:00				1		4		193	7	1	188		394	-			
	16:15				2		9		193	5	4	149		362	-			
	16:30				1		5		199	2	3	166		376	-			
	16:45				0		3		199	3	3	143		351	1483			
	17:00				4		6		203	3	1	178		395	1484			
	17:15				2		3		194	2	2	134		337	1459	16:15-17:15	Peak Hour	
	17:30				5		4		185	7	1	152		354	1437	0.94	PHF	
	17:45				0		6		148	4	2	117		277	1363			
	2 hr Total	0	0	0	15	0	40	0	1514	33	17	1227	0					
	Pk Hour	0	0	0	7	0	23	0	794	13	11	636	0		1484	check		
Sat Midday	12:00													0	-			
	12:15													0	-			
	12:30													0	-			
	12:45													0	0			
	13:00													0	0			
	13:15													0	0			
	13:30													0	0			
	13:45													0	0			
	2 hr Total	0	0	0	0	0	0	0	0	0	0	0	0					
	Pk Hour	0	0	0	0	0	0	0	0	0	0	0	0					

Intersection		Sackville Dr / Cobequid Rd
Date	AM:	Thurs Apr 25, 2024
	PM:	Thurs Apr 25, 2024
	Sat:	-

		Old Sackville Rd			Cobequid Rd			Sackville Dr			Sackville Dr						
	Time	Eastbound			Westbound			Northbound			Southbound			15- min	Hourly		
	(Start)	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total	Total		
Wkday AM	7:00	1	25	41	98	5	25	6	29	24	24	107	0	385	-		
	7:15	1	18	43	117	4	38	7	37	31	21	94	0	411	-		
	7:30	0	26	44	124	7	40	4	48	35	30	113	0	471	-		
	7:45	1	23	43	112	13	49	11	58	48	36	106	0	500	1767		
	8:00	0	23	40	85	6	32	8	50	55	25	91	0	415	1797	7:30-8:30	Peak Hour
	8:15	3	26	31	97	15	38	3	67	45	33	117	0	475	1861	0.93	PHF
	8:30	0	18	25	105	7	39	6	57	52	37	97	1	444	1834		
	8:45	1	15	20	103	11	60	8	76	44	40	87	0	465	1799		
	2 hr Total	7	174	287	841	68	321	53	422	334	246	812	1				
	Pk Hour	4	98	158	418	41	159	26	223	183	124	427	0		1861	check	
Wkday PM	16:00	4	14	26	114	22	88	26	112	67	43	98	0	614	-		
	16:15	3	14	16	142	32	95	14	109	57	42	122	0	646	-		
	16:30	2	21	20	141	30	87	34	97	77	49	127	0	685	-		
	16:45	5	19	24	105	26	82	19	93	63	36	109	1	582	2527		
	17:00	2	17	34	119	30	102	15	87	72	40	157	0	675	2588		
	17:15	1	13	32	139	26	92	38	92	76	46	124	0	679	2621	16:30-17:30	Peak Hour
	17:30	3	16	20	110	25	97	20	92	62	35	114	0	594	2530	0.96	PHF
	17:45	2	17	20	66	17	58	13	88	67	33	107	0	488	2436		
	2 hr Total	22	131	192	936	208	701	179	770	541	324	958	1				
	Pk Hour	10	70	110	504	112	363	106	369	288	171	517	1		2621	check	
Sat Midday	12:00													0	-		
	12:15													0	-		
	12:30													0	-		
	12:45													0	0		
	13:00													0	0		
	13:15													0	0		
	13:30													0	0		
	13:45													0	0		
	2 hr Total	0	0	0	0	0	0	0	0	0	0	0	0				
	Pk Hour	0	0	0	0	0	0	0	0	0	0	0	0				

For Project:	HillcrestAve Apr 2024				
Project Notes:	civic 7 Hillcrest Lower Sackville				
Location/Name:	Westbound (in)				
Report Generated:	4/26/2024	1:45:06 PM			
Speed Intervals	1 km/h				
Time Intervals	Instant				
Traffic Report From	4/24/2024	6:00:00 AM	through	4/25/2024	8:59:59 PM
85th Percentile Speed	46 km/h				
85th Percentile Vehicles	475				
Max Speed	61 km/h	on	4/25/2024	1:26:38 PM	
Total Vehicles	559				
AADT:	344				

Volumes - weekly counts

	Time	5 Day	7 Day
Average Daily		279	279
AM Peak	8:00 AM	23	23
PM Peak	2:00 PM	26	26

Speed

Speed Limit:	50						
85th Percentile Speed:	46						
50th Percentile Speed:	40						
10 km/h Pace Interval:	35.0 km/h	to	45.0 km/h				
Average Speed:	38.89						

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Count over limit	N/A	N/A	9	14	N/A	N/A	N/A
% over limit	N/A	N/A	3.3	4.9	N/A	N/A	N/A
Avg Speeder	N/A	N/A	52.4	53.6	N/A	N/A	N/A
Avg Speed	N/A	N/A	38.7	39.1	N/A	N/A	N/A

Class Counts

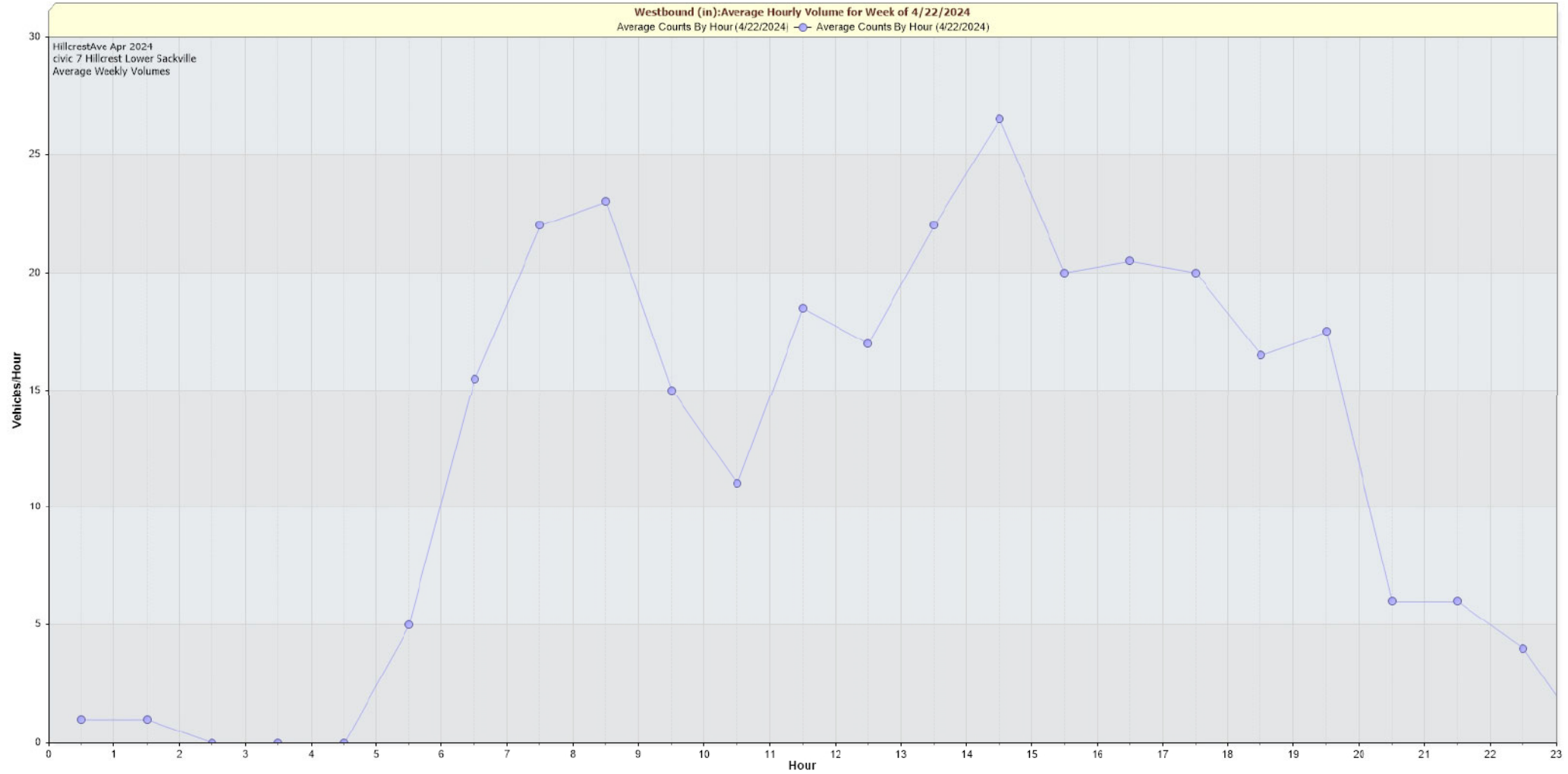
	Number	%
VEH_SM	1	0.2
VEH_MED	546	97.7
VEH_LG	12	2.1

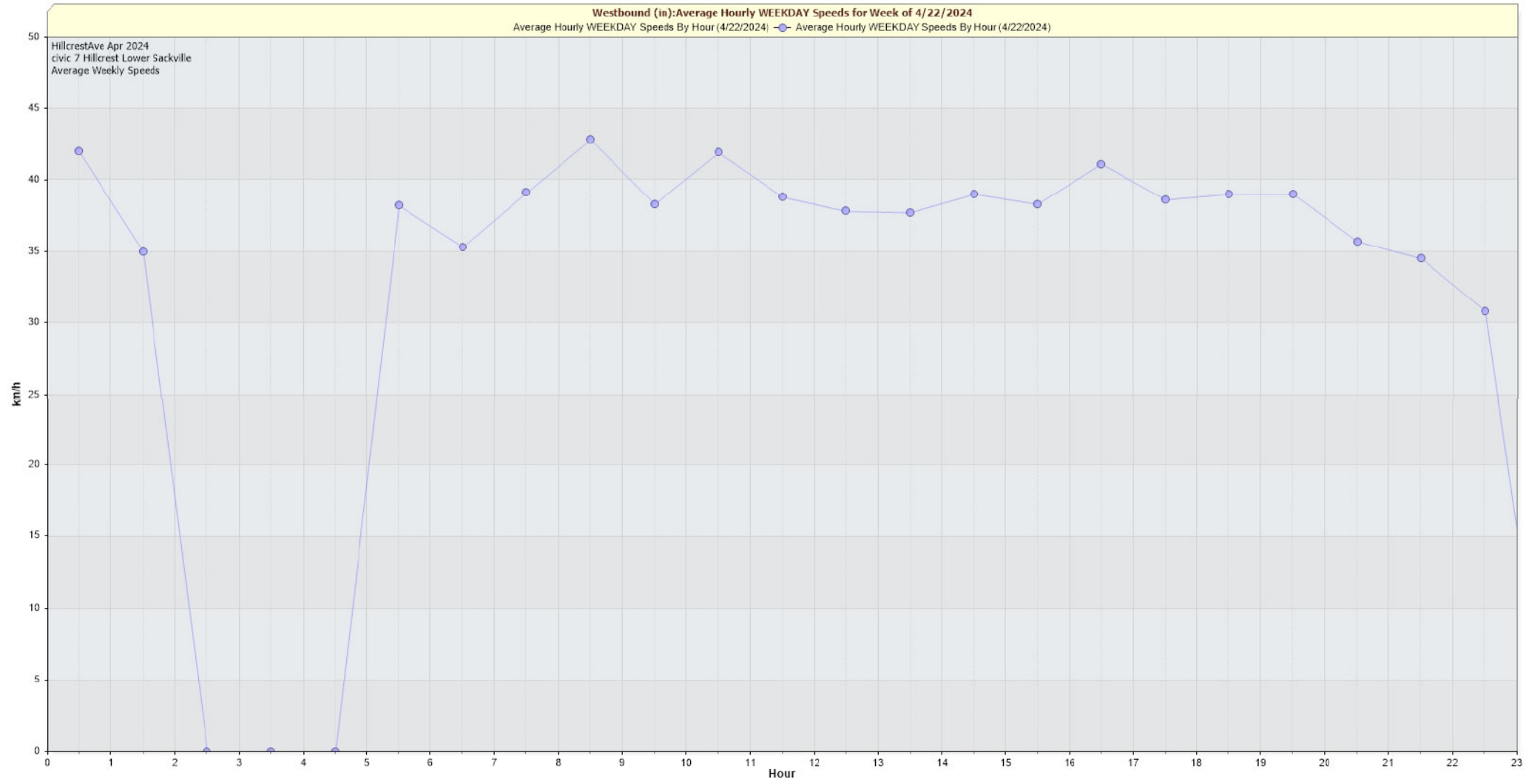
[VEH_SM=motorcycle, VEH_MED = sedan, VEH_LG = truck]

Westbound (in) Weekly Counts
HillcrestAve Apr 2024
civic 7 Hillcrest Lower Sackville

from Wed-Apr-24-2024-06-00-AM to Thu-Apr-25-2024-08-59-PM

	4/22/2024	to	4/28/2024							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week	Weekend	Week Day 85%
Hour	4/22/2024	4/23/2024	4/24/2024	4/25/2024	4/26/2024	4/27/2024	4/28/2024	Day Avg	Avg	Avg Speed
0 - 1	*	*	*	1	*	*	*	1	0	42
1 - 2	*	*	*	1	*	*	*	1	0	35
2 - 3	*	*	*	0	*	*	*	0	0	0
3 - 4	*	*	*	0	*	*	*	0	0	0
4 - 5	*	*	*	0	*	*	*	0	0	0
5 - 6	*	*	*	5	*	*	*	5	0	39
6 - 7	*	*	11	20	*	*	*	15.5	0	42.85
7 - 8	*	*	23	21	*	*	*	22	0	45.75
8 - 9	*	*	25	21	*	*	*	23	0	48.5
9 - 10	*	*	12	18	*	*	*	15	0	44.5
10 - 11	*	*	16	6	*	*	*	11	0	48
11 - 12	*	*	17	20	*	*	*	18.5	0	43.5
12 - 13	*	*	20	14	*	*	*	17	0	44.4
13 - 14	*	*	21	23	*	*	*	22	0	46
14 - 15	*	*	30	23	*	*	*	26.5	0	44.25
15 - 16	*	*	15	25	*	*	*	20	0	44
16 - 17	*	*	19	22	*	*	*	20.5	0	47
17 - 18	*	*	19	21	*	*	*	20	0	44.25
18 - 19	*	*	21	12	*	*	*	16.5	0	44.6
19 - 20	*	*	11	24	*	*	*	17.5	0	43.75
20 - 21	*	*	6	6	*	*	*	6	0	40
21 - 22	*	*	6	*	*	*	*	6	0	42
22 - 23	*	*	4	*	*	*	*	4	0	36
23 - 24	*	*	0	*	*	*	*	0	0	0
Totals	0	0	276	283	0	0	0			
% of Total	0%	0%	49.37%	50.63%	0%	0%	0%			


Westbound (in):Average Hourly Volume for Week of 4/22/2024
Average Counts By Hour (4/22/2024)
Average Counts By Hour (4/22/2024)
HillcrestAve Apr 2024
civic 7 Hillcrest Lower Sackville
Average Weekly Volumes
Vehicles/Hour
Hour
0
5
10
15
20
25
30
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23


Westbound (in):Average Hourly WEEKDAY Speeds for Week of 4/22/2024
Average Hourly WEEKDAY Speeds By Hour (4/22/2024)
Average Hourly WEEKDAY Speeds By Hour (4/22/2024)
HillcrestAve Apr 2024
civic 7 Hillcrest Lower Sackville
Average Weekly Speeds
km/h
Hour
0
5
10
15
20
25
30
35
40
45
50
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
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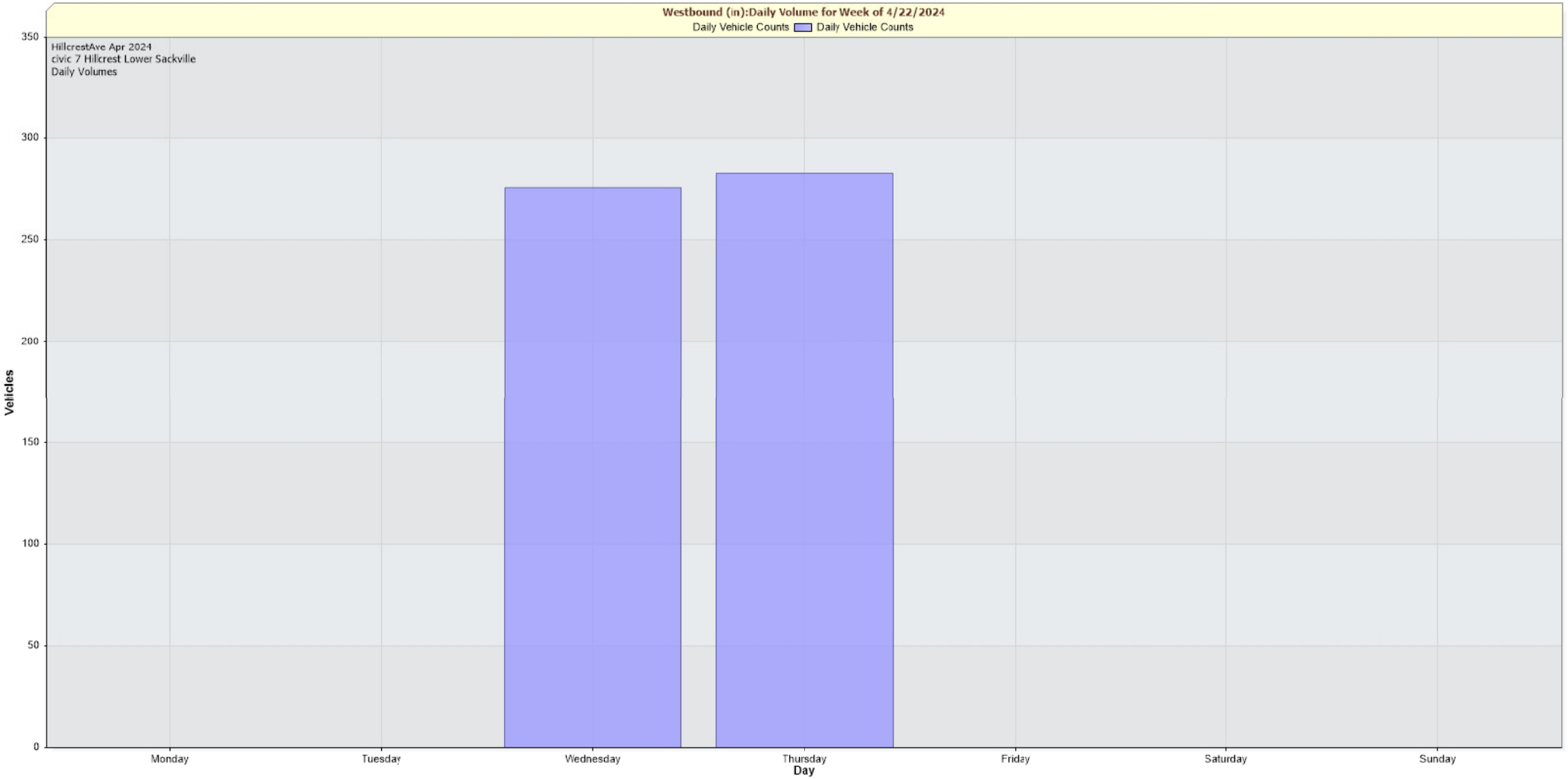
20
21
22
23


Westbound (in):Daily Volume for Week of 4/22/2024
Daily Vehicle Counts
Daily Vehicle Counts
HillcrestAve Apr 2024
civic 7 Hillcrest Lower Sackville
Daily Volumes
350
300
250
200
150
100
50
0
Vehicles
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Day

For Project:	HillcrestAve Apr 2024				
Project Notes:	civic 7 Hillcrest Lower Sackville				
Location/Name:	Eastbound (out)				
Report Generated:	4/26/2024	1:45:06 PM			
Speed Intervals	1 km/h				
Time Intervals	Instant				
Traffic Report From	4/24/2024	6:00:00 AM	through	4/25/2024	8:59:59 PM
85th Percentile Speed	47 km/h				
85th Percentile Vehicles	479				
Max Speed	69 km/h	on	4/24/2024	7:49:38 PM	
Total Vehicles	564				
AADT:	347				

Volumes - weekly counts

	Time	5 Day	7 Day
Average Daily		282	282
AM Peak	11:00 AM	21	21
PM Peak	4:00 PM	29	29

Speed

Speed Limit:	50						
85th Percentile Speed:	47						
50th Percentile Speed:	41						
10 km/h Pace Interval:	36.0 km/h	to	46.0 km/h				
Average Speed:	40.24						

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Count over limit	N/A	N/A	22	22	N/A	N/A	N/A
% over limit	N/A	N/A	8.2	7.4	N/A	N/A	N/A
Avg Speeder	N/A	N/A	54.7	56.0	N/A	N/A	N/A
Avg Speed	N/A	N/A	40.3	40.2	N/A	N/A	N/A

Class Counts

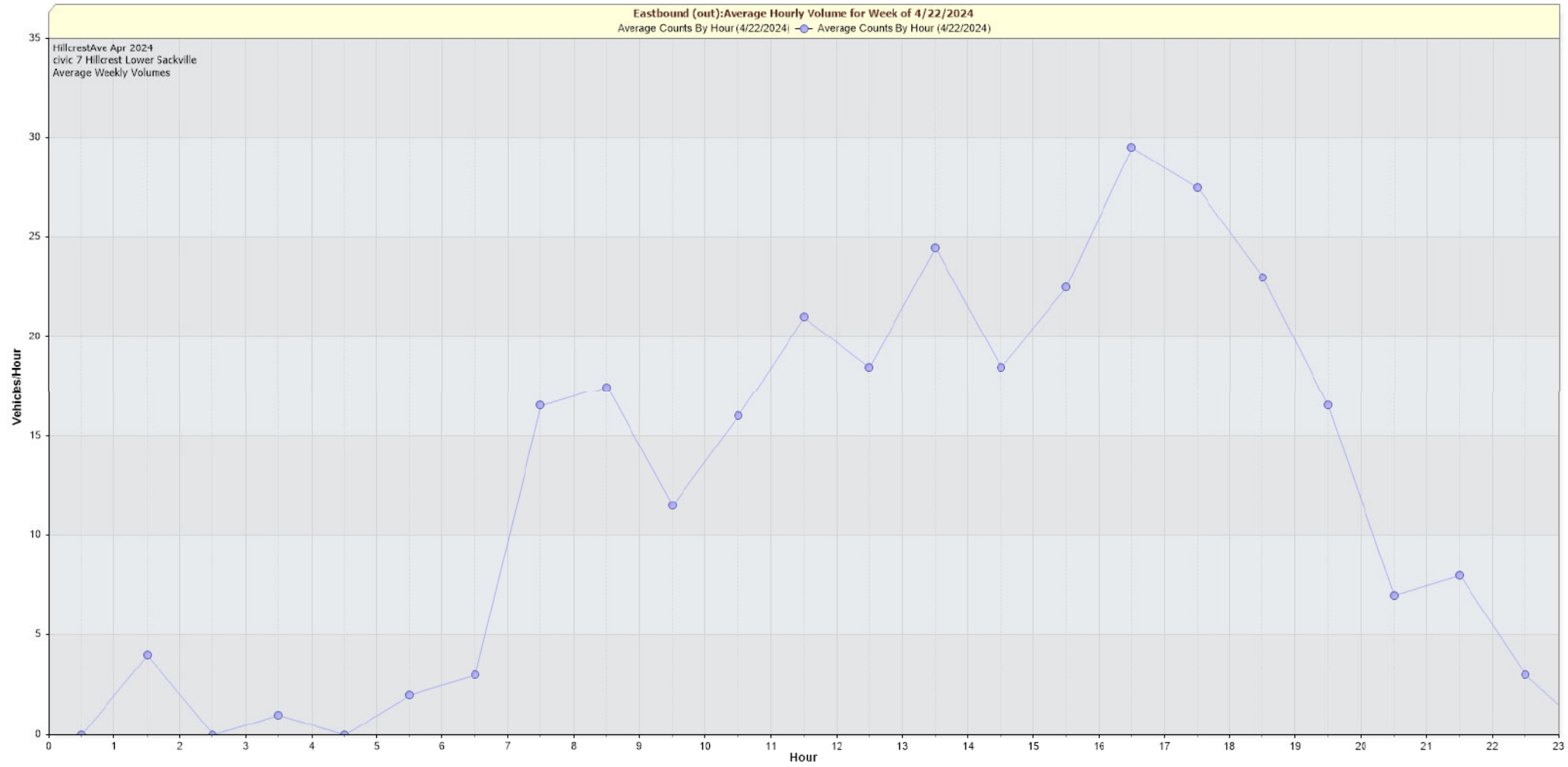
	Number	%
VEH_SM	12	2.1
VEH_MED	541	95.9
VEH_LG	11	2

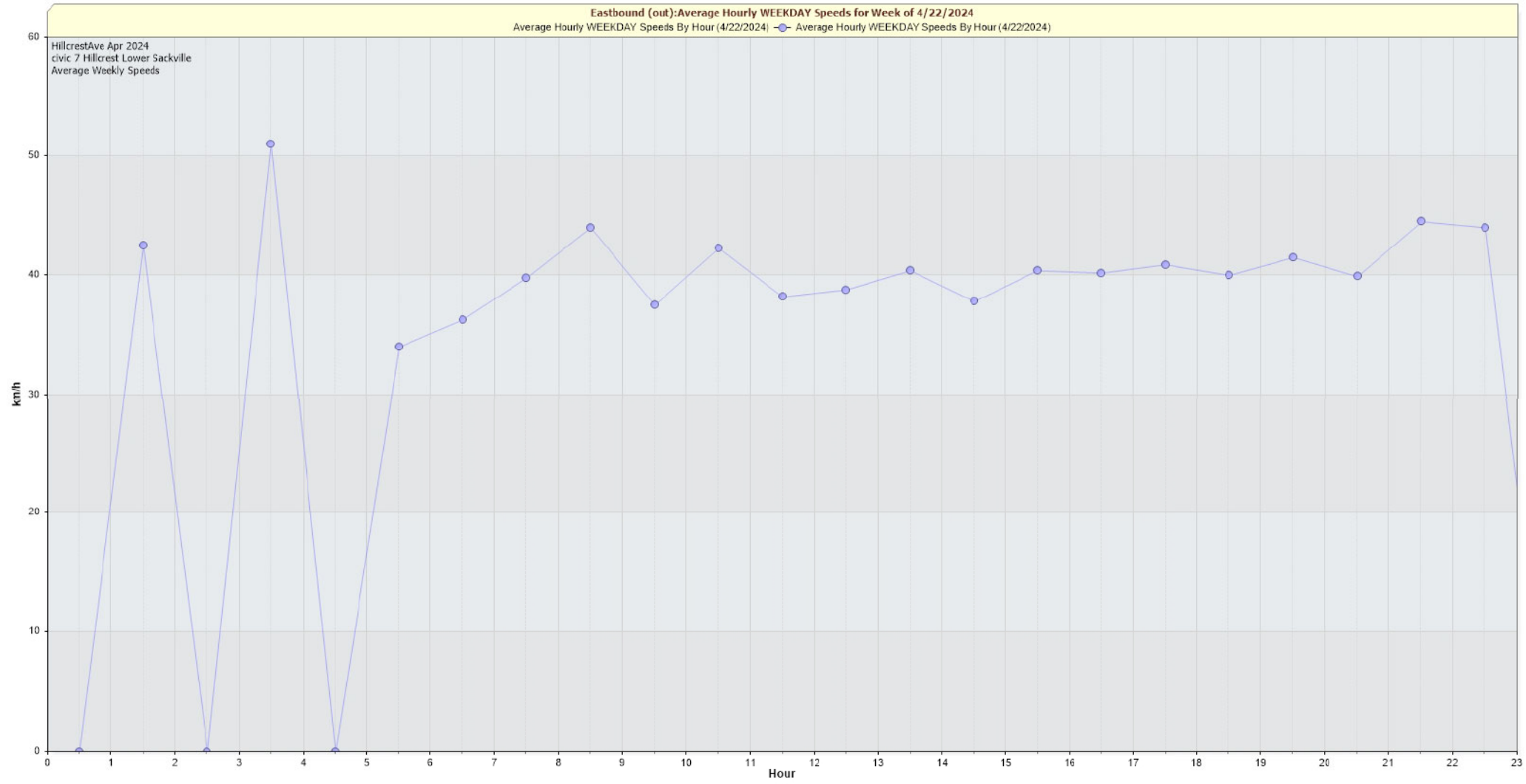
[VEH_SM=motorcycle, VEH_MED = sedan, VEH_LG = truck]

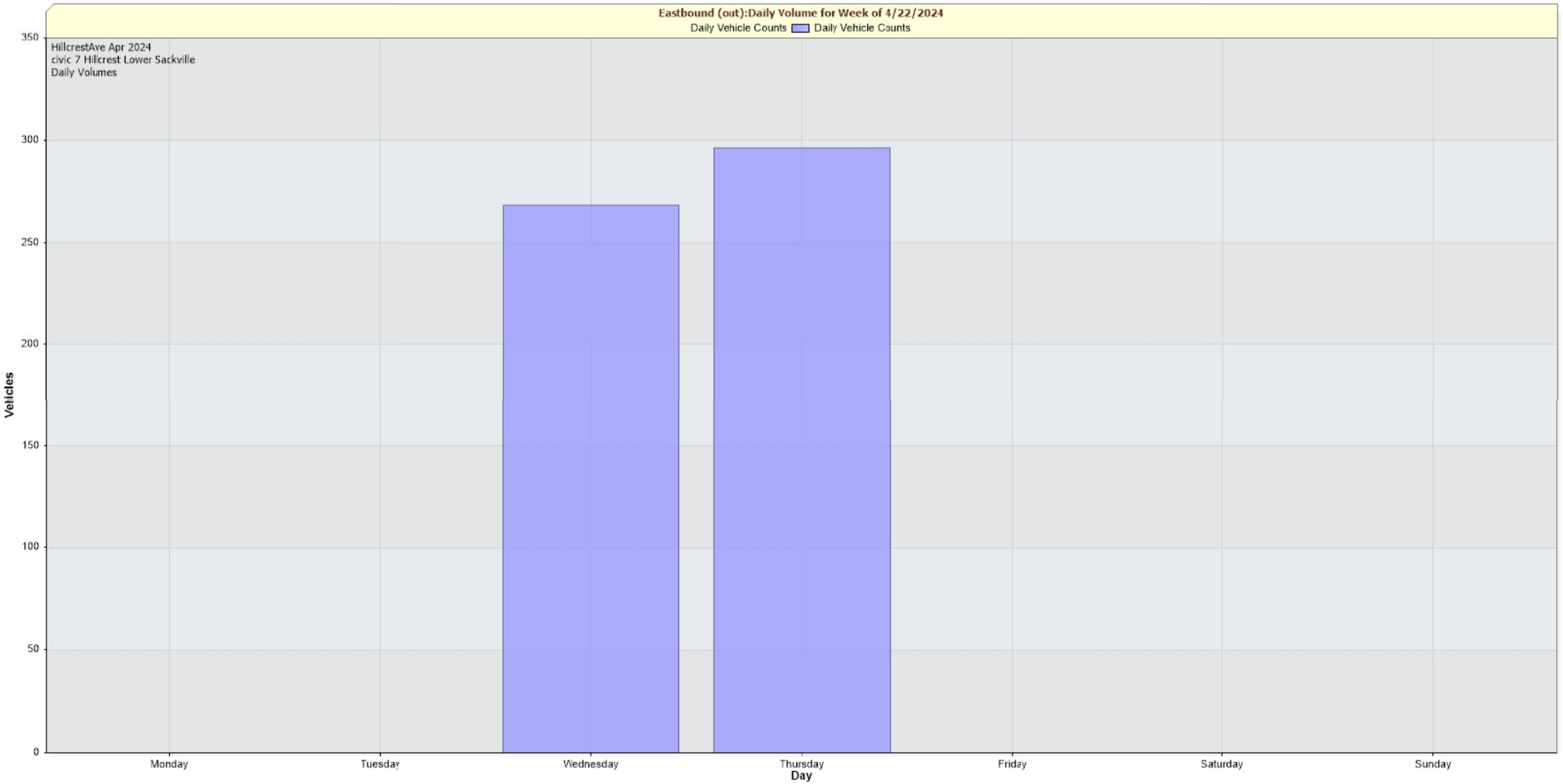
Eastbound (out) Weekly Counts
HillcrestAve Apr 2024
civic 7 Hillcrest Lower Sackville

from Wed-Apr-24-2024-06-00-AM to Thu-Apr-25-2024-08-59-PM

	4/22/2024	to	4/28/2024							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week	Weekend	Week Day 85%
Hour	4/22/2024	4/23/2024	4/24/2024	4/25/2024	4/26/2024	4/27/2024	4/28/2024	Day Avg	Avg	Avg Speed
0 - 1	*	*	*	0	*	*	*	0	0	0
1 - 2	*	*	*	4	*	*	*	4	0	43
2 - 3	*	*	*	0	*	*	*	0	0	0
3 - 4	*	*	*	1	*	*	*	1	0	51
4 - 5	*	*	*	0	*	*	*	0	0	0
5 - 6	*	*	*	2	*	*	*	2	0	40
6 - 7	*	*	3	3	*	*	*	3	0	43
7 - 8	*	*	15	18	*	*	*	16.5	0	47
8 - 9	*	*	18	17	*	*	*	17.5	0	47.5
9 - 10	*	*	7	16	*	*	*	11.5	0	45.75
10 - 11	*	*	12	20	*	*	*	16	0	48.5
11 - 12	*	*	25	17	*	*	*	21	0	44.5
12 - 13	*	*	15	22	*	*	*	18.5	0	46.5
13 - 14	*	*	28	21	*	*	*	24.5	0	45
14 - 15	*	*	23	14	*	*	*	18.5	0	44.5
15 - 16	*	*	22	23	*	*	*	22.5	0	47.5
16 - 17	*	*	26	33	*	*	*	29.5	0	46
17 - 18	*	*	24	31	*	*	*	27.5	0	46.5
18 - 19	*	*	15	31	*	*	*	23	0	46.25
19 - 20	*	*	14	19	*	*	*	16.5	0	43.5
20 - 21	*	*	10	4	*	*	*	7	0	42.5
21 - 22	*	*	8	*	*	*	*	8	0	49
22 - 23	*	*	3	*	*	*	*	3	0	50
23 - 24	*	*	0	*	*	*	*	0	0	0
Totals	0	0	268	296	0	0	0			
% of Total	0%	0%	47.52%	52.48%	0%	0%	0%			


Eastbound (out):Average Hourly Volume for Week of 4/22/2024
Average Counts By Hour (4/22/2024)
Average Counts By Hour (4/22/2024)
HillcrestAve Apr 2024
civic 7 Hillcrest Lower Sackville
Average Weekly Volumes
Vehicles/Hour
Hour
0
5
10
15
20
25
30
35
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23


Eastbound (out):Average Hourly WEEKDAY Speeds for Week of 4/22/2024
Average Hourly WEEKDAY Speeds By Hour (4/22/2024)
Average Hourly WEEKDAY Speeds By Hour (4/22/2024)
HillcrestAve Apr 2024
civic 7 Hillcrest Lower Sackville
Average Weekly Speeds
km/h
Hour
0
10
20
30
40
50
60
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23


Eastbound (out):Daily Volume for Week of 4/22/2024
Daily Vehicle Counts
Daily Vehicle Counts
HillcrestAve Apr 2024
civic 7 Hillcrest Lower Sackville
Daily Volumes
350
300
250
200
150
100
50
0
Vehicles
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Day

APPENDIX II

Traffic Signal Warrant Results

HRM - Traffic Signal Warrant Analysis

Main Street (name)	Sackville Dr	Direction (EW or NS)	NS
Side Street (name)	Hillcrest Ave	Direction (EW or NS)	EW
Quadrant / Int #	1	Comments	Existing Traffic 2024 Volumes No Development
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET		

Road Authority:	HRM
City:	Halifax Regional Municipality
Analysis Date:	2024 May 14, Tue
Count Date:	2024 Apr 24, Wed
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Sackville Dr	NB			1		1		1,860	2
Sackville Dr	SB		1	1				1,820	2
Hillcrest Ave	WB				1				
Hillcrest Ave	EB								
Are the Hillcrest Ave WB right turns significantly impeded by through movements? (y/n)							n		

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	420,000
Central Business District	(y/n)	n

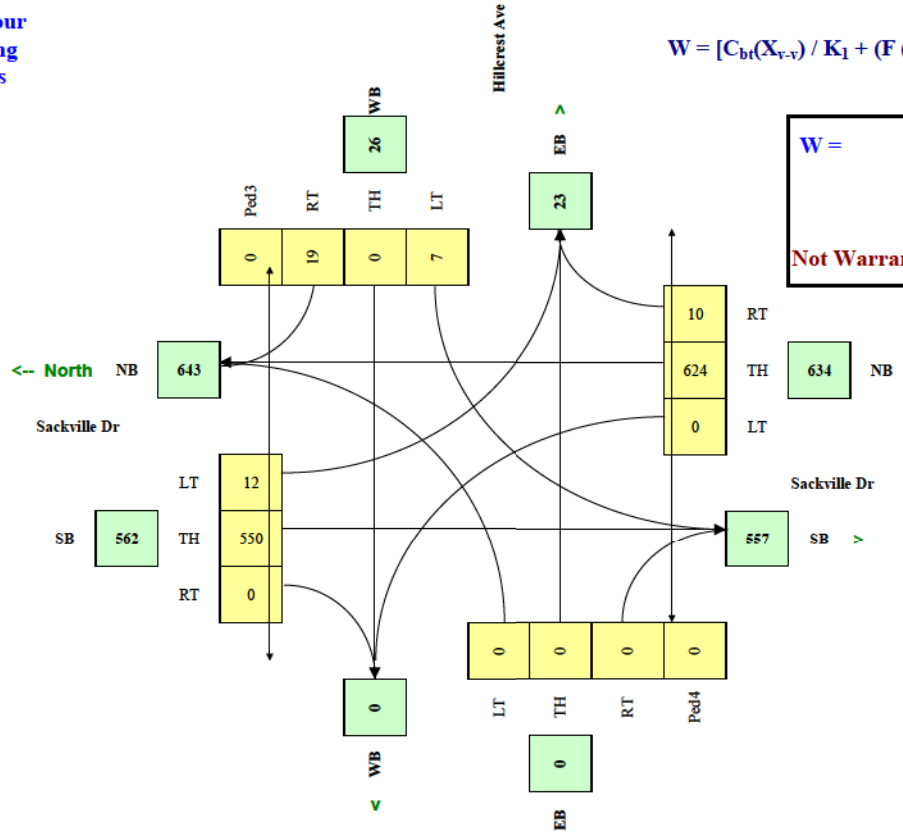
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Sackville Dr	NS	50	5.0%	y	0.0
Hillcrest Ave	EW		2.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	0	390	7	15	454	0	7	0	13	0	0	0	5	5	0	0
8:00 - 9:00	0	441	8	17	514	0	8	0	15	0	0	0	5	5	0	0
11:00 - 12:00	0	741	12	10	594	0	7	0	21	0	0	0	5	5	0	0
12:00 - 13:00	0	618	10	9	495	0	5	0	18	0	0	0	5	5	0	0
16:00 - 17:00	0	794	13	11	636	0	7	0	23	0	0	0	5	5	0	0
17:00 - 18:00	0	759	12	11	608	0	7	0	22	0	0	0	5	5	0	0
Total (6-hour peak)	0	3,743	62	73	3,301	0	41	0	112	0	0	0	30	30	0	0
Average (6-hour peak)	0	624	10	12	550	0	7	0	19	0	0	0	5	5	0	0

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	14	14	0
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

HRM - Traffic Signal Warrant Analysis

Main Street (name)	Sackville Dr
Side Street (name)	Hillcrest Ave
Quadrant / Int #	1
	CHECK SHEET

for Warrant Calculation Results, please hit 'Page Down'

Direction (EW or NS)	NS
Direction (EW or NS)	EW
Comments	Future Background Traffic Scenario 2032 Volumes No Development

Road Authority:	HRM
City:	Halifax Regional Municipality
Analysis Date:	2024 May 14, Tue
Count Date:	2024 Apr 24, Wed
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Sackville Dr	NB			1		1		1,860	2
Sackville Dr	SB		1	1				1,820	2
Hillcrest Ave	WB				1				
Hillcrest Ave	EB								
Are the Hillcrest Ave WB right turns significantly impeded by through movements? (y/n)							n		

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	420,000
Central Business District	(y/n)	n

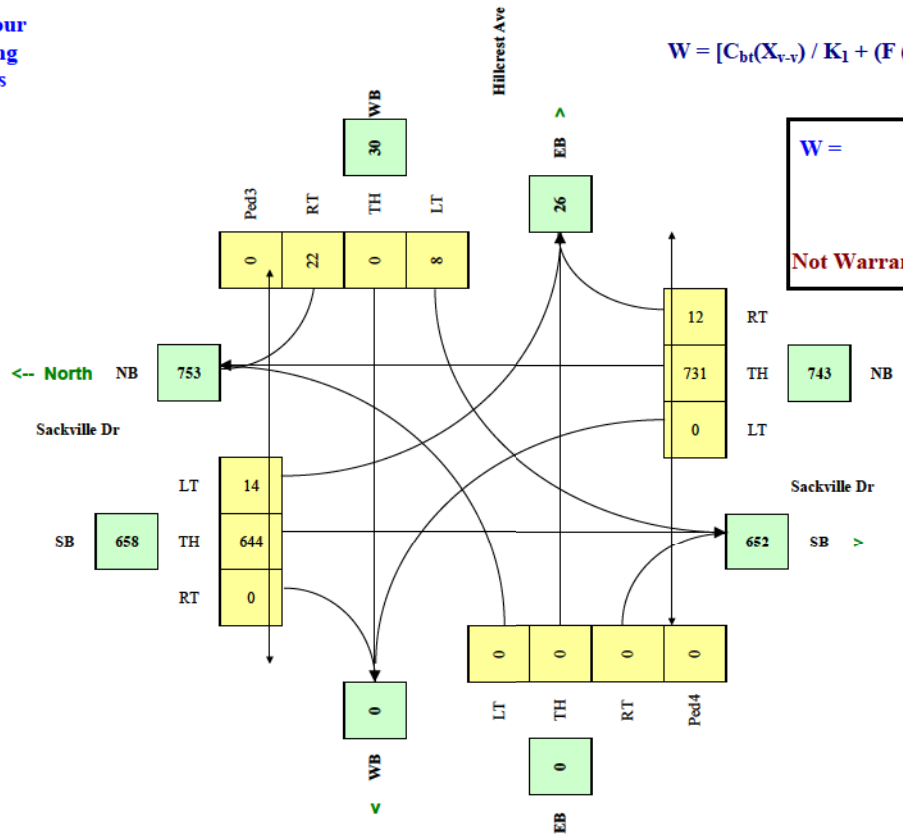
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Sackville Dr	NS	50	5.0%	y	0.0
Hillcrest Ave	EW		2.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	0	457	8	18	532	0	8	0	16	0	0	0	5	5	0	0
8:00 - 9:00	0	517	9	20	602	0	9	0	18	0	0	0	5	5	0	0
11:00 - 12:00	0	868	14	12	695	0	7	0	25	0	0	0	5	5	0	0
12:00 - 13:00	0	723	12	10	579	0	6	0	21	0	0	0	5	5	0	0
16:00 - 17:00	0	930	15	13	745	0	8	0	27	0	0	0	5	5	0	0
17:00 - 18:00	0	889	14	12	712	0	8	0	26	0	0	0	5	5	0	0
Total (6-hour peak)	0	4,384	72	85	3,865	0	46	0	133	0	0	0	30	30	0	0
Average (6-hour peak)	0	731	12	14	644	0	8	0	22	0	0	0	5	5	0	0

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	19	19	0
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

HRM - Traffic Signal Warrant Analysis

Main Street (name)	Sackville Dr	Direction (EW or NS)	NS
Side Street (name)	Hillcrest Ave	Direction (EW or NS)	EW
Quadrant / Int #	1	Comments	Future Total Traffic Scenario 2032 Volumes Full Build-Out
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET		

Road Authority:	HRM
City:	Halifax Regional Municipality
Analysis Date:	2025 Mar 04, Tue
Count Date:	2024 Apr 24, Wed
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Sackville Dr	NB			1		1		1,860	2
Sackville Dr	SB		1	1				1,820	2
Hillcrest Ave	WB				1				
Hillcrest Ave	EB								
Are the Hillcrest Ave WB right turns significantly impeded by through movements? (y/n)							n		
							n		

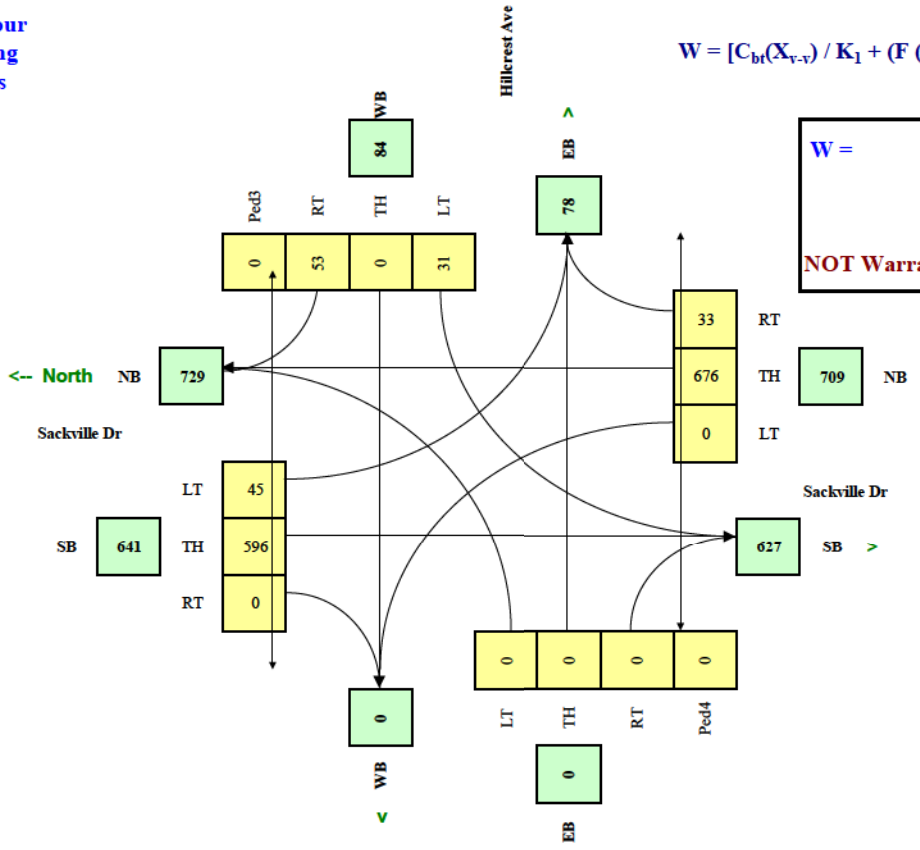
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	420,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Sackville Dr	NS	50	5.0%	y	0.0
Hillcrest Ave	EW		2.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	0	422	26	37	492	0	28	0	49	0	0	0	10	10	0	0
8:00 - 9:00	0	478	29	42	557	0	32	0	56	0	0	0	10	10	0	0
11:00 - 12:00	0	803	36	49	643	0	32	0	54	0	0	0	10	10	0	0
12:00 - 13:00	0	669	30	40	536	0	26	0	45	0	0	0	10	10	0	0
16:00 - 17:00	0	860	39	52	689	0	34	0	58	0	0	0	10	10	0	0
17:00 - 18:00	0	822	37	50	658	0	32	0	55	0	0	0	10	10	0	0
Total (6-hour peak)	0	4,054	197	270	3,575	0	184	0	317	0	0	0	60	60	0	0
Average (6-hour peak)	0	676	33	45	596	0	31	0	53	0	0	0	10	10	0	0

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	56	56	0
		Veh	*Ped*

NOT Warranted

RESET SHEET

APPENDIX III

Intersection Performance Analyses

Existing 2024 Results

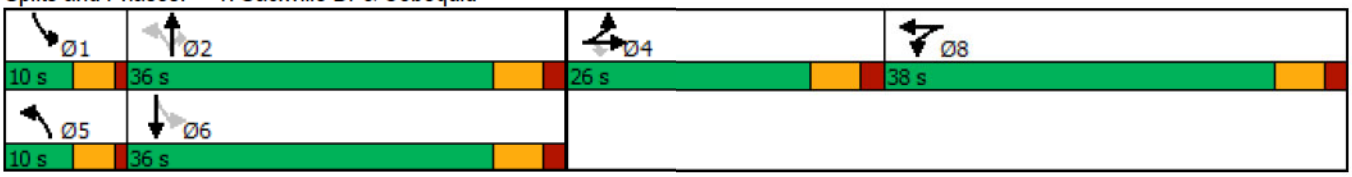
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	98	158	418	41	159	26	253	183	124	398	1
Future Volume (vph)	4	98	158	418	41	159	26	253	183	124	398	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		3%			-3%			3%			-3%	
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	0		1	1		0	1		1	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00	0.97	0.99	0.99		1.00		0.98	1.00	1.00	
Frt			0.850		0.921				0.850			
Flt Protected		0.998		0.950	0.984		0.950			0.950		
Satd. Flow (prot)	0	3380	1515	1658	1561	0	1693	1782	1515	1745	1837	0
Flt Permitted		0.998		0.950	0.984		0.307			0.421		
Satd. Flow (perm)	0	3379	1475	1646	1558	0	545	1782	1479	770	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172		52				199			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		44.2			68.3			68.3			59.7	
Travel Time (s)		3.2			4.9			4.9			4.3	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	4	107	172	454	45	173	28	275	199	135	433	1
Shared Lane Traffic (%)				24%								
Lane Group Flow (vph)	0	111	172	345	327	0	28	275	199	135	434	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4				2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	16.0	16.0	16.0	26.0	26.0		10.0	26.0	26.0	10.0	16.0	
Total Split (s)	26.0	26.0	26.0	38.0	38.0		10.0	36.0	36.0	10.0	36.0	
Total Split (%)	23.6%	23.6%	23.6%	34.5%	34.5%		9.1%	32.7%	32.7%	9.1%	32.7%	
Maximum Green (s)	20.0	20.0	20.0	32.0	32.0		5.5	30.0	30.0	5.5	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0		4.5	6.0	6.0	4.5	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	
Walk Time (s)				8.0	8.0			8.0	8.0			
Flash Dont Walk (s)				12.0	12.0			12.0	12.0			
Pedestrian Calls (#/hr)				5	5			5	5			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		9.5	9.5	23.2	23.2		29.2	21.8	21.8	31.5	27.1	
Actuated g/C Ratio		0.11	0.11	0.28	0.28		0.35	0.26	0.26	0.38	0.32	
v/c Ratio		0.29	0.54	0.75	0.70		0.10	0.59	0.37	0.38	0.73	
Control Delay		40.7	13.6	40.0	32.3		18.0	33.5	6.3	21.7	36.5	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		40.7	13.6	40.0	32.3		18.0	33.5	6.3	21.7	36.5	
LOS		D	B	D	C		B	C	A	C	D	
Approach Delay		24.2			36.2			21.8			33.0	
Approach LOS		C			D			C			C	
Queue Length 50th (m)		9.6	0.0	57.0	44.7		2.7	38.5	0.0	13.8	67.3	
Queue Length 95th (m)		19.1	18.7	95.2	80.4		8.8	70.9	15.6	29.9	#127.3	
Internal Link Dist (m)		20.2			44.3			44.3			35.7	
Turn Bay Length (m)							30.0					
Base Capacity (vph)		842	496	661	653		268	666	677	356	687	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.13	0.35	0.52	0.50		0.10	0.41	0.29	0.38	0.63	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 83.8
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 30.1 Intersection LOS: C
Intersection Capacity Utilization 64.0% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Sackville Dr & Cobequid



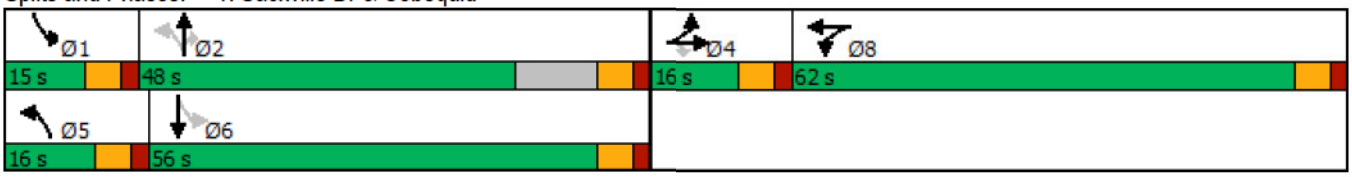
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	70	110	504	112	363	106	399	288	171	487	1
Future Volume (vph)	10	70	110	504	112	363	106	399	288	171	487	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		3%			-3%			3%			-3%	
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	0		1	1		0	1		1	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00	0.95	0.99	0.98				0.97		1.00	
Frt			0.850		0.896				0.850			
Flt Protected		0.994		0.950	0.995		0.950			0.950		
Satd. Flow (prot)	0	3366	1515	1658	1528	0	1693	1782	1515	1745	1837	0
Flt Permitted		0.994		0.950	0.995		0.115			0.241		
Satd. Flow (perm)	0	3364	1439	1641	1526	0	205	1782	1475	443	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120		85				288			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		44.2			68.3			68.3			59.7	
Travel Time (s)		3.2			4.9			4.9			4.3	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	11	76	120	548	122	395	115	434	313	186	529	1
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	87	120	493	572	0	115	434	313	186	530	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4				2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	8.0	8.0		6.0	8.0	8.0	6.0	8.0	
Minimum Split (s)	12.0	12.0	12.0	26.0	26.0		12.0	26.0	26.0	12.0	16.0	
Total Split (s)	16.0	16.0	16.0	62.0	62.0		16.0	48.0	48.0	15.0	56.0	
Total Split (%)	10.7%	10.7%	10.7%	41.3%	41.3%		10.7%	32.0%	32.0%	10.0%	37.3%	
Maximum Green (s)	10.0	10.0	10.0	56.0	56.0		10.0	42.0	42.0	9.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min	Min	Min	Min	
Walk Time (s)				8.0	8.0			8.0	8.0			
Flash Dont Walk (s)				12.0	12.0			12.0	12.0			
Pedestrian Calls (#/hr)				5	5			5	5			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		8.7	8.7	50.7	50.7		53.7	44.1	44.1	52.8	43.7	
Actuated g/C Ratio		0.06	0.06	0.37	0.37		0.39	0.32	0.32	0.38	0.32	
v/c Ratio		0.41	0.59	0.81	0.93		0.62	0.76	0.47	0.72	0.91	
Control Delay		71.6	23.4	51.2	58.1		40.4	51.9	7.7	45.7	66.1	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		71.6	23.4	51.2	58.1		40.4	51.9	7.7	45.7	66.1	
LOS		E	C	D	E		D	D	A	D	E	
Approach Delay		43.6			54.9			34.4			60.8	
Approach LOS		D			D			C			E	
Queue Length 50th (m)		13.2	0.0	135.2	148.2		20.1	111.7	5.0	34.0	146.6	
Queue Length 95th (m)		22.7	20.0	186.4	#227.5		33.4	152.9	28.1	#56.5	#208.3	
Internal Link Dist (m)		20.2			44.3			44.3			35.7	
Turn Bay Length (m)							30.0					
Base Capacity (vph)		250	217	691	686		191	676	738	258	683	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.35	0.55	0.71	0.83		0.60	0.64	0.42	0.72	0.78	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 137.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 49.4 Intersection LOS: D
Intersection Capacity Utilization 81.4% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Sackville Dr & Cobequid



Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	15	441	8	17	514
Future Vol, veh/h	8	15	441	8	17	514
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	9	16	479	9	18	559

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	805	249	0	0	493	0
Stage 1	489	-	-	-	-	-
Stage 2	316	-	-	-	-	-
Critical Hdwy	6.9	7	-	-	4.2	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.55	3.35	-	-	2.25	-
Pot Cap-1 Maneuver	314	742	-	-	1046	-
Stage 1	574	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	305	738	-	-	1041	-
Mov Cap-2 Maneuver	305	-	-	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	685	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	494	1041	-
HCM Lane V/C Ratio	-	-	0.051	0.018	-
HCM Control Delay (s)	-	-	12.7	8.5	0.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	23	794	13	11	636
Future Vol, veh/h	7	23	794	13	11	636
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	8	25	863	14	12	691

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1245	444	0	0	882	0
Stage 1	875	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.9	7	-	-	4.2	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.55	3.35	-	-	2.25	-
Pot Cap-1 Maneuver	162	553	-	-	744	-
Stage 1	361	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	157	550	-	-	740	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	359	-	-	-	-	-
Stage 2	643	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.4	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	347	740	-
HCM Lane V/C Ratio	-	-	0.094	0.016	-
HCM Control Delay (s)	-	-	16.4	9.9	0.1
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

2032 Future Background Scenario Results

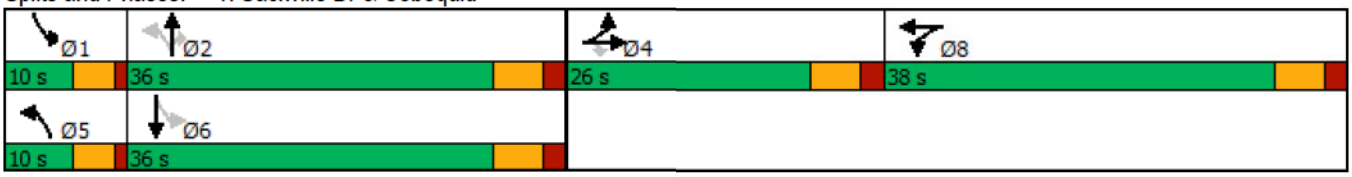
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	106	171	453	44	172	28	274	198	134	431	1
Future Volume (vph)	4	106	171	453	44	172	28	274	198	134	431	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		3%			-3%			3%			-3%	
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	0		1	1		0	1		1	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00	0.97	0.99	0.98				0.97	1.00	1.00	
Frt			0.850		0.921				0.850			
Flt Protected		0.998		0.950	0.984		0.950			0.950		
Satd. Flow (prot)	0	3380	1515	1658	1558	0	1693	1782	1515	1745	1837	0
Flt Permitted		0.998		0.950	0.984		0.248			0.384		
Satd. Flow (perm)	0	3379	1466	1646	1555	0	442	1782	1472	702	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			186		52				215			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		44.2			68.3			68.3			59.7	
Travel Time (s)		3.2			4.9			4.9			4.3	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			10			10			10			10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	4	115	186	492	48	187	30	298	215	146	468	1
Shared Lane Traffic (%)				24%								
Lane Group Flow (vph)	0	119	186	374	353	0	30	298	215	146	469	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4				2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	8.0	8.0	5.0	8.0	
Minimum Split (s)	16.0	16.0	16.0	26.0	26.0		10.0	26.0	26.0	10.0	16.0	
Total Split (s)	26.0	26.0	26.0	38.0	38.0		10.0	36.0	36.0	10.0	36.0	
Total Split (%)	23.6%	23.6%	23.6%	34.5%	34.5%		9.1%	32.7%	32.7%	9.1%	32.7%	
Maximum Green (s)	20.0	20.0	20.0	32.0	32.0		5.5	30.0	30.0	5.5	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.5	4.0	4.0	3.5	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0		4.5	6.0	6.0	4.5	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min	Min	None	Min	
Walk Time (s)				8.0	8.0			8.0	8.0			
Flash Dont Walk (s)				12.0	12.0			12.0	12.0			
Pedestrian Calls (#/hr)				5	5			5	5			

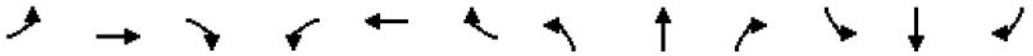
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		9.8	9.8	25.3	25.3		30.0	22.7	22.7	32.3	27.9	
Actuated g/C Ratio		0.11	0.11	0.29	0.29		0.35	0.26	0.26	0.37	0.32	
v/c Ratio		0.31	0.56	0.78	0.72		0.13	0.64	0.40	0.44	0.80	
Control Delay		41.5	13.7	41.7	33.8		19.1	36.1	6.4	24.3	41.4	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		41.5	13.7	41.7	33.8		19.1	36.1	6.4	24.3	41.4	
LOS		D	B	D	C		B	D	A	C	D	
Approach Delay		24.5			37.9			23.4			37.3	
Approach LOS		C			D			C			D	
Queue Length 50th (m)		11.0	0.0	65.2	51.6		3.1	44.7	0.0	16.1	78.8	
Queue Length 95th (m)		20.0	19.2	107.0	90.7		9.4	79.0	16.5	32.9	#146.5	
Internal Link Dist (m)		20.2			44.3			44.3			35.7	
Turn Bay Length (m)							30.0					
Base Capacity (vph)		808	492	634	628		234	639	666	329	659	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.15	0.38	0.59	0.56		0.13	0.47	0.32	0.44	0.71	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 86.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 32.3 Intersection LOS: C
Intersection Capacity Utilization 68.0% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Sackville Dr & Cobequid





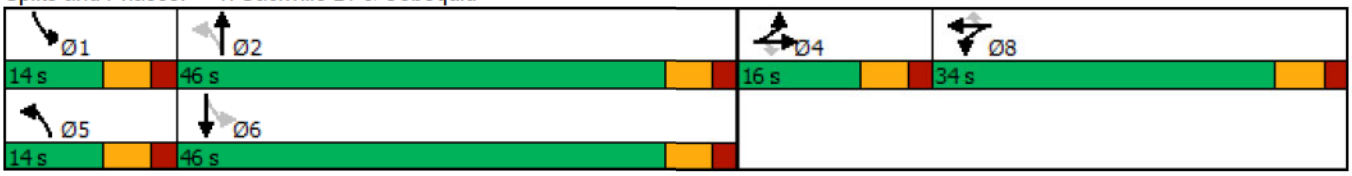
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	106	171	453	44	172	28	274	198	134	431	1
Future Volume (vph)	4	106	171	453	44	172	28	274	198	134	431	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		3%			-3%			3%			-3%	
Storage Length (m)	0.0		0.0	0.0		30.0	30.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		1.00	0.95	0.99	0.99	0.97	1.00	0.99		1.00	1.00	
Frt			0.850			0.850		0.937				
Flt Protected		0.998		0.950	0.961		0.950			0.950		
Satd. Flow (prot)	0	3380	1515	1658	1677	1561	1693	3138	0	1745	1837	0
Flt Permitted		0.998		0.950	0.961		0.317			0.323		
Satd. Flow (perm)	0	3379	1436	1646	1667	1516	563	3138	0	591	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			186			151		187				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		44.2			68.3			68.3			59.7	
Travel Time (s)		3.2			4.9			4.9			4.3	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			10			10			10			10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	4	115	186	492	48	187	30	298	215	146	468	1
Shared Lane Traffic (%)				45%								
Lane Group Flow (vph)	0	119	186	271	269	187	30	513	0	146	469	0
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	8.0	8.0	8.0	6.0	8.0		6.0	8.0	
Minimum Split (s)	12.0	12.0	12.0	26.0	26.0	26.0	12.0	26.0		12.0	16.0	
Total Split (s)	16.0	16.0	16.0	34.0	34.0	34.0	14.0	46.0		14.0	46.0	
Total Split (%)	14.5%	14.5%	14.5%	30.9%	30.9%	30.9%	12.7%	41.8%		12.7%	41.8%	
Maximum Green (s)	10.0	10.0	10.0	28.0	28.0	28.0	8.0	40.0		8.0	40.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	
Walk Time (s)				8.0	8.0	8.0		8.0				
Flash Dont Walk (s)				12.0	12.0	12.0		12.0				
Pedestrian Calls (#/hr)				5	5	5		5				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		8.5	8.5	20.0	20.0	20.0	29.7	22.6		34.5	30.5	
Actuated g/C Ratio		0.10	0.10	0.24	0.24	0.24	0.35	0.27		0.41	0.36	
v/c Ratio		0.35	0.60	0.70	0.68	0.40	0.10	0.53		0.42	0.71	
Control Delay		44.6	16.0	42.3	41.5	11.4	15.4	17.9		19.3	33.2	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		44.6	16.0	42.3	41.5	11.4	15.4	17.9		19.3	33.2	
LOS		D	B	D	D	B	B	B		B	C	
Approach Delay		27.1			34.1			17.8			29.9	
Approach LOS		C			C			B			C	
Queue Length 50th (m)		10.2	0.0	44.1	43.6	4.8	2.7	22.8		14.2	72.9	
Queue Length 95th (m)		22.2	21.1	84.1	83.2	23.9	8.2	40.2		28.5	122.2	
Internal Link Dist (m)		20.2			44.3			44.3			35.7	
Turn Bay Length (m)						30.0	30.0					
Base Capacity (vph)		426	343	585	591	632	320	1674		356	926	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.28	0.54	0.46	0.46	0.30	0.09	0.31		0.41	0.51	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 85
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 27.9 — Intersection LOS: C
Intersection Capacity Utilization 63.1% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Sackville Dr & Cobequid



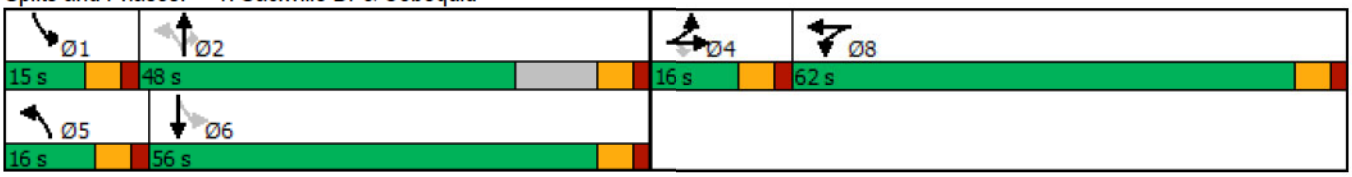
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	76	119	546	121	393	115	432	312	185	527	1
Future Volume (vph)	11	76	119	546	121	393	115	432	312	185	527	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		3%			-3%			3%			-3%	
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	0		1	1		0	1		1	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00	0.93	0.99	0.98				0.97		1.00	
Frt			0.850		0.896				0.850			
Flt Protected		0.994		0.950	0.995		0.950			0.950		
Satd. Flow (prot)	0	3366	1515	1658	1525	0	1693	1782	1515	1745	1837	0
Flt Permitted		0.994		0.950	0.995		0.082			0.208		
Satd. Flow (perm)	0	3364	1415	1641	1523	0	146	1782	1470	382	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			129		86				289			
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		44.2			68.3			68.3			59.7	
Travel Time (s)		3.2			4.9			4.9			4.3	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			10			10			10			10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	12	83	129	593	132	427	125	470	339	201	573	1
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	95	129	534	618	0	125	470	339	201	574	0
Turn Type	Split	NA	Perm	Split	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4				2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	8.0	8.0		6.0	8.0	8.0	6.0	8.0	
Minimum Split (s)	12.0	12.0	12.0	26.0	26.0		12.0	26.0	26.0	12.0	16.0	
Total Split (s)	16.0	16.0	16.0	62.0	62.0		16.0	48.0	48.0	15.0	56.0	
Total Split (%)	10.7%	10.7%	10.7%	41.3%	41.3%		10.7%	32.0%	32.0%	10.0%	37.3%	
Maximum Green (s)	10.0	10.0	10.0	56.0	56.0		10.0	42.0	42.0	9.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min	Min	Min	Min	
Walk Time (s)				8.0	8.0			8.0	8.0			
Flash Dont Walk (s)				12.0	12.0			12.0	12.0			
Pedestrian Calls (#/hr)				5	5			5	5			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		8.9	8.9	56.1	56.1		58.7	48.8	48.8	57.0	48.0	
Actuated g/C Ratio		0.06	0.06	0.38	0.38		0.40	0.33	0.33	0.39	0.33	
v/c Ratio		0.46	0.62	0.84	0.97		0.77	0.79	0.50	0.87	0.96	
Control Delay		74.9	24.1	55.8	68.5		60.7	55.7	9.4	65.1	76.1	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		74.9	24.1	55.8	68.5		60.7	55.7	9.4	65.1	76.1	
LOS		E	C	E	E		E	E	A	E	E	
Approach Delay		45.6			62.6			39.6			73.3	
Approach LOS		D			E			D			E	
Queue Length 50th (m)		14.5	0.0	153.3	172.2		22.1	124.9	10.1	37.2	165.0	
Queue Length 95th (m)		24.5	21.1	#219.7	#258.5		#54.1	169.2	36.5	#74.2	#236.7	
Internal Link Dist (m)		20.2			44.3			44.3			35.7	
Turn Bay Length (m)							30.0					
Base Capacity (vph)		229	216	632	635		163	619	699	231	626	
Starvation Cap Reductn		0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0		0	0	0	0	0	
Storage Cap Reductn		0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio		0.41	0.60	0.84	0.97		0.77	0.76	0.48	0.87	0.92	

Intersection Summary

Area Type: Other
Cycle Length: 150
Actuated Cycle Length: 146.9
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 57.1 Intersection LOS: E
Intersection Capacity Utilization 86.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Sackville Dr & Cobequid



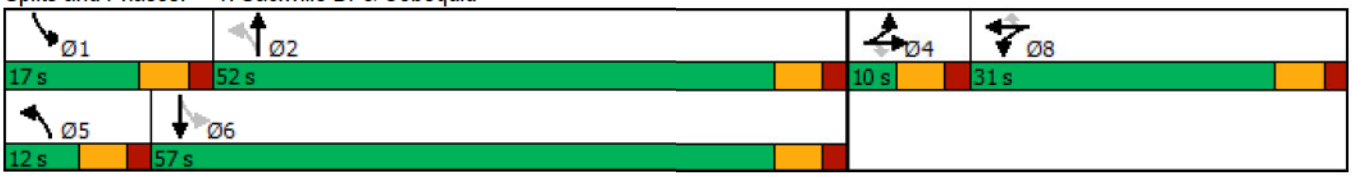
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	76	119	546	121	393	115	432	312	185	527	1
Future Volume (vph)	11	76	119	546	121	393	115	432	312	185	527	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		3%			-3%			3%			-3%	
Storage Length (m)	0.0		0.0	0.0		30.0	30.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		1.00	0.89	0.99	1.00	0.97	1.00	0.99		1.00	1.00	
Frt			0.850			0.850		0.937				
Flt Protected		0.994		0.950	0.969		0.950			0.950		
Satd. Flow (prot)	0	3366	1515	1658	1691	1561	1693	3139	0	1745	1837	0
Flt Permitted		0.994		0.950	0.969		0.194			0.170		
Satd. Flow (perm)	0	3364	1349	1646	1683	1515	345	3139	0	312	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149			246		203				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		44.2			68.3			68.3			59.7	
Travel Time (s)		3.2			4.9			4.9			4.3	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			10			10			10			10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	12	83	129	593	132	427	125	470	339	201	573	1
Shared Lane Traffic (%)				39%								
Lane Group Flow (vph)	0	95	129	362	363	427	125	809	0	201	574	0
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	8.0	8.0	8.0	6.0	8.0		6.0	8.0	
Minimum Split (s)	12.0	12.0	12.0	26.0	26.0	26.0	12.0	26.0		12.0	16.0	
Total Split (s)	10.0	10.0	10.0	31.0	31.0	31.0	12.0	52.0		17.0	57.0	
Total Split (%)	9.1%	9.1%	9.1%	28.2%	28.2%	28.2%	10.9%	47.3%		15.5%	51.8%	
Maximum Green (s)	4.0	4.0	4.0	25.0	25.0	25.0	6.0	46.0		11.0	51.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	Min	Min		Min	Min	
Walk Time (s)				8.0	8.0	8.0		8.0				
Flash Dont Walk (s)				12.0	12.0	12.0		12.0				
Pedestrian Calls (#/hr)				5	5	5		5				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		4.0	4.0	24.8	24.8	24.8	36.7	30.6		45.1	34.8	
Actuated g/C Ratio		0.04	0.04	0.26	0.26	0.26	0.39	0.33		0.48	0.37	
v/c Ratio		0.66	0.65	0.83	0.81	0.74	0.57	0.70		0.66	0.84	
Control Delay		69.4	21.6	52.1	50.5	23.0	23.8	23.4		23.6	39.0	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		69.4	21.6	52.1	50.5	23.0	23.8	23.4		23.6	39.0	
LOS		E	C	D	D	C	C	C		C	D	
Approach Delay		41.9			40.8			23.4			35.0	
Approach LOS		D			D			C			D	
Queue Length 50th (m)		9.0	0.0	64.2	64.1	28.9	11.7	50.7		19.7	93.5	
Queue Length 95th (m)		#24.7	#18.3	#138.8	#137.5	#85.7	20.5	69.6		31.7	133.0	
Internal Link Dist (m)		20.2			44.3			44.3			35.7	
Turn Bay Length (m)						30.0	30.0					
Base Capacity (vph)		144	200	445	454	587	221	1655		321	1007	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.66	0.65	0.81	0.80	0.73	0.57	0.49		0.63	0.57	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 94
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 34.2 Intersection LOS: C
Intersection Capacity Utilization 74.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Sackville Dr & Cobequid



Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	16	478	9	18	557
Future Vol, veh/h	9	16	478	9	18	557
Conflicting Peds, #/hr	0	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	10	17	520	10	20	605

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	878	275	0	0	540	0
Stage 1	535	-	-	-	-	-
Stage 2	343	-	-	-	-	-
Critical Hdwy	6.9	7	-	-	4.2	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.55	3.35	-	-	2.25	-
Pot Cap-1 Maneuver	282	714	-	-	1004	-
Stage 1	543	-	-	-	-	-
Stage 2	681	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	271	707	-	-	994	-
Mov Cap-2 Maneuver	271	-	-	-	-	-
Stage 1	538	-	-	-	-	-
Stage 2	661	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	448	994	-
HCM Lane V/C Ratio	-	-	0.061	0.02	-
HCM Control Delay (s)	-	-	13.6	8.7	0.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	0.6

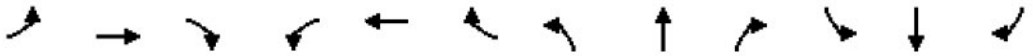
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	25	860	14	12	689
Future Vol, veh/h	8	25	860	14	12	689
Conflicting Peds, #/hr	0	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	9	27	935	15	13	749

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1354	485	0	0	960	0
Stage 1	953	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Critical Hdwy	6.9	7	-	-	4.2	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.55	3.35	-	-	2.25	-
Pot Cap-1 Maneuver	137	520	-	-	694	-
Stage 1	328	-	-	-	-	-
Stage 2	636	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	131	515	-	-	687	-
Mov Cap-2 Maneuver	131	-	-	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	616	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.6	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	301	687	-
HCM Lane V/C Ratio	-	-	0.119	0.019	-
HCM Control Delay (s)	-	-	18.6	10.3	0.2
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

2032 Future Total Scenario Results

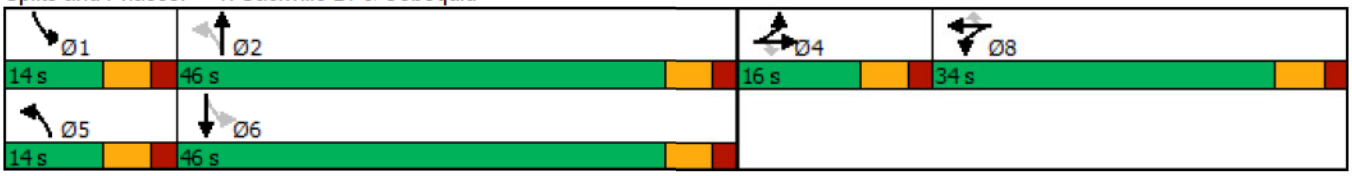


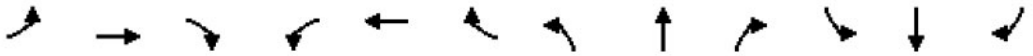
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	106	171	453	44	176	28	290	198	140	448	1
Future Volume (vph)	4	106	171	453	44	176	28	290	198	140	448	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		3%			-3%			3%			-3%	
Storage Length (m)	0.0		0.0	0.0		30.0	30.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		1.00	0.95	0.99	0.99	0.97		0.99		1.00	1.00	
Frt			0.850			0.850		0.939				
Flt Protected		0.998		0.950	0.961		0.950			0.950		
Satd. Flow (prot)	0	3380	1515	1658	1677	1561	1693	3146	0	1745	1837	0
Flt Permitted		0.998		0.950	0.961		0.296			0.315		
Satd. Flow (perm)	0	3379	1436	1646	1667	1516	528	3146	0	577	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			186			154		173				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		44.2			68.3			68.3			59.7	
Travel Time (s)		3.2			4.9			4.9			4.3	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			10			10			10			10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	4	115	186	492	48	191	30	315	215	152	487	1
Shared Lane Traffic (%)				45%								
Lane Group Flow (vph)	0	119	186	271	269	191	30	530	0	152	488	0
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	8.0	8.0	8.0	6.0	8.0		6.0	8.0	
Minimum Split (s)	12.0	12.0	12.0	26.0	26.0	26.0	12.0	26.0		12.0	16.0	
Total Split (s)	16.0	16.0	16.0	34.0	34.0	34.0	14.0	46.0		14.0	46.0	
Total Split (%)	14.5%	14.5%	14.5%	30.9%	30.9%	30.9%	12.7%	41.8%		12.7%	41.8%	
Maximum Green (s)	10.0	10.0	10.0	28.0	28.0	28.0	8.0	40.0		8.0	40.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	
Walk Time (s)				8.0	8.0	8.0		8.0				
Flash Dont Walk (s)				12.0	12.0	12.0		12.0				
Pedestrian Calls (#/hr)				5	5	5		5				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		8.6	8.6	20.2	20.2	20.2	30.7	23.6		35.6	31.5	
Actuated g/C Ratio		0.10	0.10	0.23	0.23	0.23	0.36	0.27		0.41	0.37	
v/c Ratio		0.36	0.60	0.70	0.69	0.40	0.11	0.54		0.44	0.73	
Control Delay		45.3	16.2	43.0	42.2	11.6	15.4	19.0		19.6	33.7	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		45.3	16.2	43.0	42.2	11.6	15.4	19.0		19.6	33.7	
LOS		D	B	D	D	B	B	B		B	C	
Approach Delay		27.5			34.5			18.8			30.4	
Approach LOS		C			C			B			C	
Queue Length 50th (m)		10.5	0.0	45.8	45.4	5.1	2.8	25.7		15.0	78.0	
Queue Length 95th (m)		22.2	21.1	84.1	83.2	24.4	8.2	43.6		29.5	128.3	
Internal Link Dist (m)		20.2			44.3			44.3			35.7	
Turn Bay Length (m)						30.0	30.0					
Base Capacity (vph)		419	341	576	582	627	312	1649		353	912	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.28	0.55	0.47	0.46	0.30	0.10	0.32		0.43	0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 86.3			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 28.4		Intersection LOS: C	
Intersection Capacity Utilization 64.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Sackville Dr & Cobequid





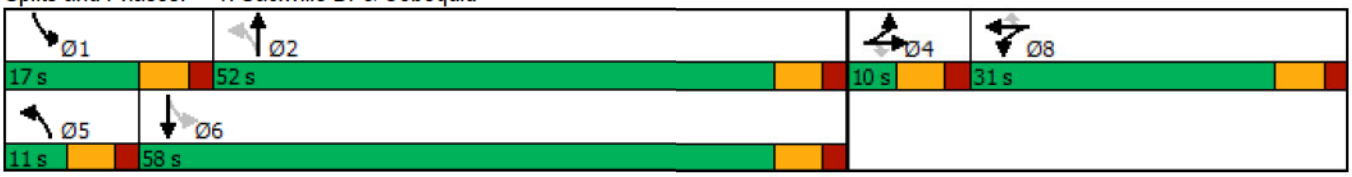
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	76	119	546	121	400	115	450	312	191	547	1
Future Volume (vph)	11	76	119	546	121	400	115	450	312	191	547	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		3%			-3%			3%			-3%	
Storage Length (m)	0.0		0.0	0.0		30.0	30.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor		1.00	0.89	0.99	1.00	0.97	1.00	0.99			1.00	
Frt			0.850			0.850		0.939				
Flt Protected		0.994		0.950	0.969		0.950			0.950		
Satd. Flow (prot)	0	3366	1515	1658	1691	1561	1693	3147	0	1745	1837	0
Flt Permitted		0.994		0.950	0.969		0.191			0.156		
Satd. Flow (perm)	0	3364	1349	1646	1683	1515	339	3147	0	287	1837	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149			251		197				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		44.2			68.3			68.3			59.7	
Travel Time (s)		3.2			4.9			4.9			4.3	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			10			10			10			10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	12	83	129	593	132	435	125	489	339	208	595	1
Shared Lane Traffic (%)				39%								
Lane Group Flow (vph)	0	95	129	362	363	435	125	828	0	208	596	0
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	8.0	8.0	8.0	6.0	8.0		6.0	8.0	
Minimum Split (s)	10.0	10.0	10.0	26.0	26.0	26.0	12.0	26.0		12.0	16.0	
Total Split (s)	10.0	10.0	10.0	31.0	31.0	31.0	11.0	52.0		17.0	58.0	
Total Split (%)	9.1%	9.1%	9.1%	28.2%	28.2%	28.2%	10.0%	47.3%		15.5%	52.7%	
Maximum Green (s)	4.0	4.0	4.0	25.0	25.0	25.0	5.0	46.0		11.0	52.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	Min	Min		Min	Min	
Walk Time (s)				8.0	8.0	8.0		8.0				
Flash Dont Walk (s)				12.0	12.0	12.0		12.0				
Pedestrian Calls (#/hr)				5	5	5		5				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		4.0	4.0	24.8	24.8	24.8	35.7	30.6		46.3	36.0	
Actuated g/C Ratio		0.04	0.04	0.26	0.26	0.26	0.38	0.32		0.49	0.38	
v/c Ratio		0.66	0.65	0.83	0.82	0.74	0.62	0.72		0.69	0.85	
Control Delay		69.4	21.7	52.2	50.7	23.4	28.7	24.3		26.2	38.7	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		69.4	21.7	52.2	50.7	23.4	28.7	24.3		26.2	38.7	
LOS		E	C	D	D	C	C	C		C	D	
Approach Delay		41.9			40.9			24.8			35.5	
Approach LOS		D			D			C			D	
Queue Length 50th (m)		9.0	0.0	64.3	64.2	29.6	11.7	53.4		20.4	96.8	
Queue Length 95th (m)		#25.0	#18.5	#139.8	#139.0	#89.0	20.4	72.5		35.7	137.0	
Internal Link Dist (m)		20.2			44.3			44.3			35.7	
Turn Bay Length (m)						30.0	30.0					
Base Capacity (vph)		144	200	445	454	590	201	1655		315	1026	
Starvation Cap Reductn		0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0		0	0	
Storage Cap Reductn		0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio		0.66	0.65	0.81	0.80	0.74	0.62	0.50		0.66	0.58	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 94.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 34.7 Intersection LOS: C
Intersection Capacity Utilization 75.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Sackville Dr & Cobequid



Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	56	478	29	42	557
Future Vol, veh/h	32	56	478	29	42	557
Conflicting Peds, #/hr	0	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	35	61	520	32	46	605

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	941	286	0	0	562	0
Stage 1	546	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Critical Hdwy	6.9	7	-	-	4.2	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.55	3.35	-	-	2.25	-
Pot Cap-1 Maneuver	256	702	-	-	985	-
Stage 1	536	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	236	695	-	-	975	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	531	-	-	-	-	-
Stage 2	595	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.5	0	0.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	407	975	-
HCM Lane V/C Ratio	-	-	0.235	0.047	-
HCM Control Delay (s)	-	-	16.5	8.9	0.3
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	58	860	39	52	689
Future Vol, veh/h	34	58	860	39	52	689
Conflicting Peds, #/hr	0	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	37	63	935	42	57	749

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1455	499	0	0	987	0
Stage 1	966	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Critical Hdwy	6.9	7	-	-	4.2	-
Critical Hdwy Stg 1	5.9	-	-	-	-	-
Critical Hdwy Stg 2	5.9	-	-	-	-	-
Follow-up Hdwy	3.55	3.35	-	-	2.25	-
Pot Cap-1 Maneuver	117	509	-	-	678	-
Stage 1	323	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	99	504	-	-	671	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	320	-	-	-	-	-
Stage 2	491	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39.4	0	1.4
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	201	671	-
HCM Lane V/C Ratio	-	-	0.498	0.084	-
HCM Control Delay (s)	-	-	39.4	10.9	0.7
HCM Lane LOS	-	-	E	B	A
HCM 95th %tile Q(veh)	-	-	2.5	0.3	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	44	2	25	63	3
Future Vol, veh/h	27	44	2	25	63	3
Conflicting Peds, #/hr	0	10	10	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	29	48	2	27	68	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	87	0	94	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	31	-
Critical Hdwy	-	-	4.15	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.245	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	1490	-	898	993
Stage 1	-	-	-	-	952	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1476	-	888	983
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	892	-	-	1476	-
HCM Lane V/C Ratio	0.08	-	-	0.001	-
HCM Control Delay (s)	9.4	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	26	65	3	33	59	3
Future Vol, veh/h	26	65	3	33	59	3
Conflicting Peds, #/hr	0	10	10	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	28	71	3	36	64	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	109	0	116	74
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	42	-
Critical Hdwy	-	-	4.15	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.245	-	3.545	3.345
Pot Cap-1 Maneuver	-	-	1463	-	873	979
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	973	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1449	-	863	970
Mov Cap-2 Maneuver	-	-	-	-	863	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	971	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	868	-	-	1449	-
HCM Lane V/C Ratio	0.078	-	-	0.002	-
HCM Control Delay (s)	9.5	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-