James J. Copeland, P.Eng., RSP1
GRIFFIN transportation group inc.
30 Bonny View Drive
Fall River, NS B2T 1R2

November 17, 2023

Att: Mr. Trevor Adams, P.Eng.
Arch Developments Ltd.
1100-1645 Granville Street
Halifax, NS B3J 1X3

RE: A Stage 1 Traffic Impact Statement for a proposed development at #1491 Sackville Dr

1.0 INTRODUCTION

1.1 – Overview

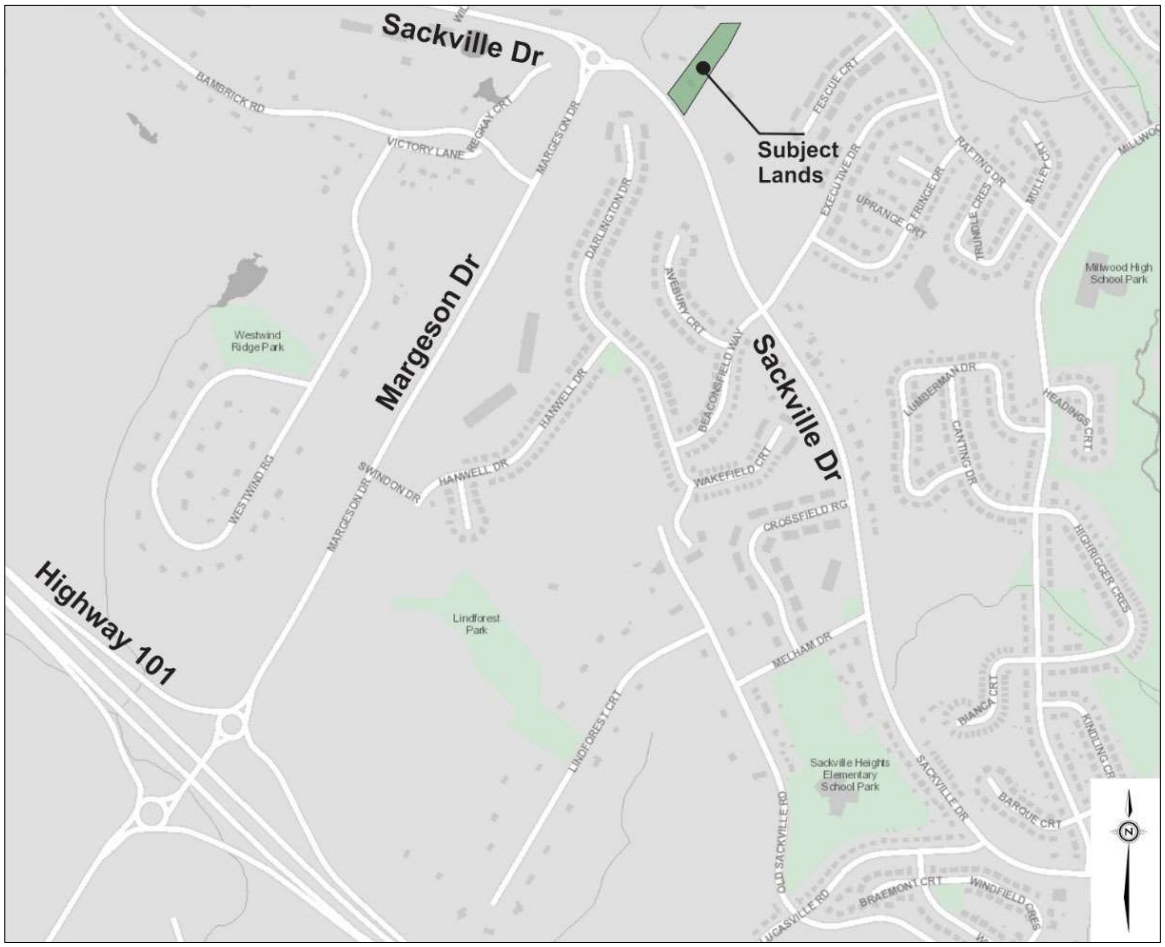
At the request of *Arch Developments Ltd. (Arch Developments)*, the GRIFFIN transportation group inc. (GRIFFIN) has carried out a qualitative Stage 1 Traffic Impact Assessment in support of the planning application process for a proposed Mixed Use development at civic #1491 Sackville Drive, in the community of Middle Sackville, Halifax Regional Municipality (HRM). The proposed development will occur on an assembly of properties that include PID's #41516030 and a portion of #41215419. The total developable area of the property measures about 3.5 acres and appears to have a Rural Residential (R-6) zone designation, within the *Sackville Land Use By-Law* area. The location of the subject lands are contained in *Figure 1*.

It is understood the proposed Mixed Use development will be comprised of up to 125 apartment-style units contained within a six-floor multi-unit residential building, plus up to 14,970 ft^2 of leasable space contained within a three-floor commercial building. Vehicle access will be provided by one driveway connecting to Sackville Drive – at the same location as the existing residential driveway near the west property boundary. Therefore, no new driveway connections will be added to Sackville Drive and the driveway density will remain unchanged. The proposed site layout is conceptually shown in *Figure 2*.

1.2 – Terms of Reference

The qualitative Stage 1 traffic impact assessment associated with the proposed development is discussed in the following Sections. Throughout the completion of this assessment GRIFFIN has followed HRM traffic impact study guidelines for a new development located in a suburban area, as well as Institute of Transportation Engineers (ITE), and Transportation Association of Canada (TAC) guiding principles.

Figure 1: Location of Subject Lands



Source: HRM GIS Map

2.0 STUDY AREA AND SITE CONTEXT

2.1 – Street Layout Overview

Sackville Drive is generally aligned in an east-west direction, has a two-lane two-way configuration, and a rural open ditch cross-section. HRM has designated this section of the corridor as an arterial class street. It accommodates multiple travel modes including vehicles as well as active transportation users within the marked bicycle lanes. This corridor appears to provide a balance of multi-modal mobility as well as access to numerous residential driveways.

Sackville Drive is an important mobility corridor in this area of HRM. The Sackville Drive / Margeson Drive multi-lane roundabout is located about 125 m to the west of the subject lands which provides convenient access to Highway 101 and the future commercial node at the Margeson Drive interchange. In addition, the service area for local residents (i.e. grocery, banks, pharmacy, etc.) is generally located to the east along Sackville Drive.

2.2 – Existing Traffic Volume Review

GRIFFIN installed an automatic traffic recording (ATR) device on Sackville Drive immediately west of the existing civic #1491 access. The ATR unit captured weekday two-way traffic volumes and vehicle speeds along the frontage of the proposed development. Data was recorded from Monday March 20th to Friday March 24th, 2023. During this time, schools were open and there were no significant weather events that would have changed travel patterns. Thus, the recorded traffic volume data were considered to be representative of typical weekday conditions. A summary of the recorded weekday peak hour volumes is provided in *Table 1*.

Table 1: Weekday Peak Hour Traffic Volumes on Sackville Drive – March 2023

	Eastbound (inbound)	**Westbound** (outbound)	**Two-way Peak Hour Volumes**
Weekday AM Peak Hour[A]	518	448	966 vph
Weekday PM Peak Hour[A]	580	591	1,171 vph

vph – vehicles per hour

The highest two-way volumes occurred during the weekday afternoon peak period and were observed to be 1,171 vehicles / hour (vph). Following industry best practices to convert these weekday peak hour volumes to average daily traffic (ADT) volumes, we would expect a volume of this magnitude equates to about 11,500-12,000 vehicles / day (vpd). The data gathered by GRIFFIN's ATR unit indicates the average two-way daily weekday volume to be about 12,590 vpd. Of course, these ATR volumes are representative of higher weekday volumes and do not consider all days of the week – nor are they seasonally adjusted. Therefore, the estimate of 11,500-12,00 vpd is considered to be a more accurate representative of the ADT along this section of Sackville Drive.

GRIFFIN reviewed the Transportation Association of Canada (TAC) Geometric Design Guidelines to help put the observed vehicle demand on Sackville Drive into perspective. Although TAC does not provide guidance with respect to the absolute maximum capacity of streets, they provide typical volumes expected for several roadway classification types. The latest TAC guidelines suggest that minor arterial streets typically accommodate up to 20,000 vpd. Again these are guidelines for typical volumes and the maximum capacity values would be higher.

In conclusion, the comparison of the observed demand of about 11,500-12,000 vpd on Sackville Drive is well below the expected capacity of more than 20,000 vpd. This suggests there is a notable amount of residual capacity in the Sackville Drive corridor to accommodate future traffic growth.

2.3 – Vehicle Operating Speeds

As noted above, GRIFFIN installed an ATR device to gather vehicle data along Sackville Drive in the vicinity of the subject property frontage. The device recorded vehicle speeds in March 2023 which were used to calculate the 85th percentile vehicle operating speed by direction. As summary of the measured 85th percentile and selected operating speed for the stopping sight distance review are summarized in *Table 2*.

Table 2: Sackville Drive Vehicle Operating Speeds

Travel Direction		Near Site Access
Westbound Traffic (outbound)	Measured 85th Percentile Speed	67 km/h
	Operating Speed[B]	70 km/h
Eastbound traffic (inbound)	Measured 85th Percentile Speed	54 km/h[A]
	Operating Speed[B]	50 km/h

A – Operating speeds for eastbound vehicles exiting the roundabout.
B – Following TAC guidelines, vehicle operating speed selected by GRIFFIN and applied to the stopping sight distance review.

The regulatory speed limit along this section of Sackville Drive is 60 km/h. The observed 85th percentile speed measurements were generally higher in the westbound (outbound direction), at 67 km/h. In the eastbound (inbound) direction speeds appeared to be influenced by the roundabout. Vehicles exiting the roundabout were measured to be 54 km/h – this is important as this is the location where eastbound drivers would identify a potential hazard situation at the new site access – rather than the eastbound speeds recorded by the ATR across the property frontage. Eastbound vehicle speeds increased from 54 km/h exiting the roundabout to 63 km/h near the east end of the property frontage.

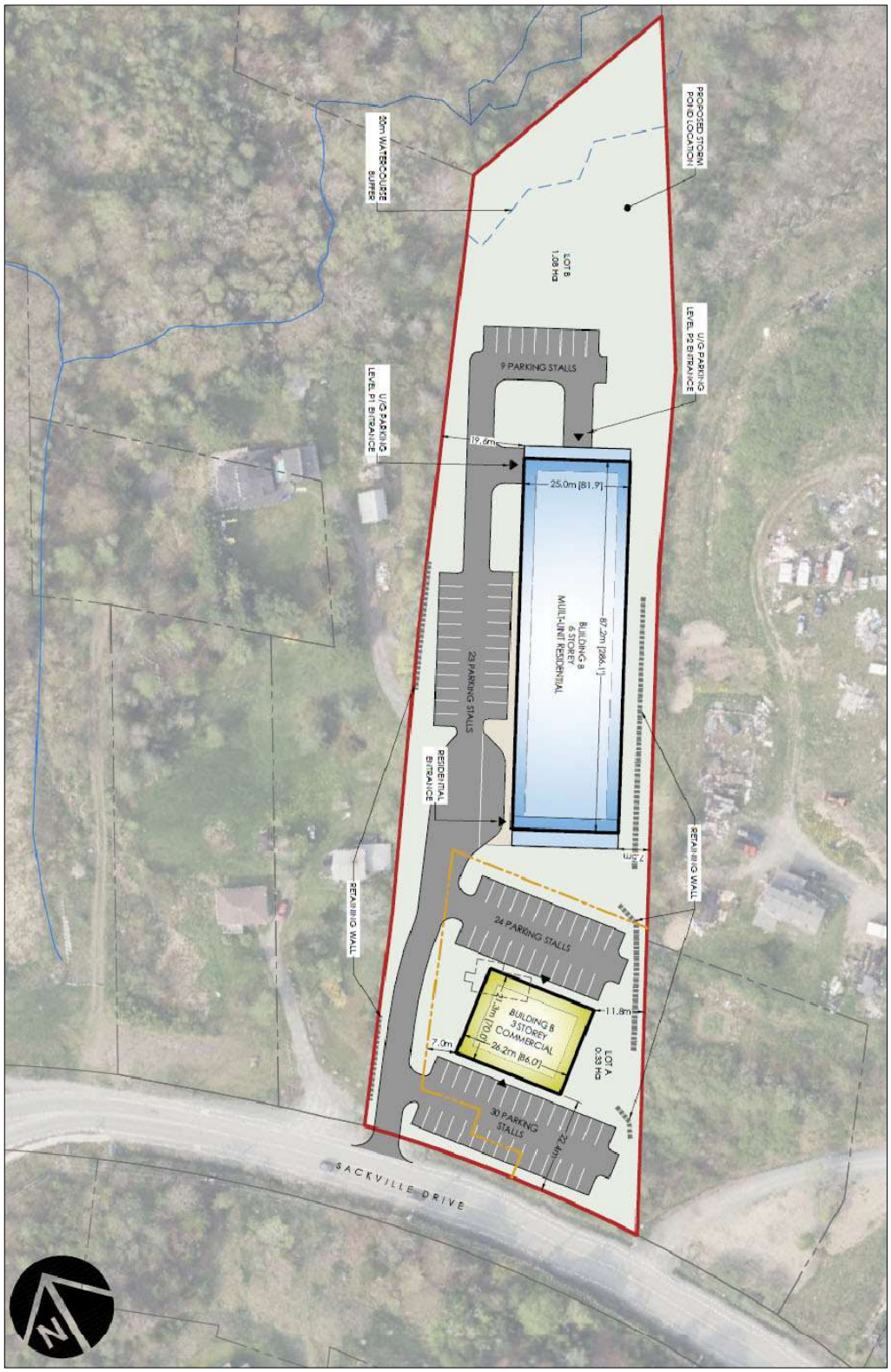
The findings of our vehicle operating speed assessment were applied to our access visibility review discussed later in Section 3.2.

3.0 THE PROPOSED DEVELOPMENT

3.1 - Overview

The proposed Mixed Use development will be comprised of two new buildings that will include a three-floor commercial building (14,970 ft^2), and a six-floor 125-unit residential building. The subject property is considered to be a narrow and deep lot. Thus, the commercial building is located near the Sackville Drive property frontage, while the taller residential building will be located near the rear of the lot. A conceptual site layout is provided in *Figure 2*.

Figure 2: Proposed Site Plan and Access Location



Source: ZZAP Architects

3.2 – Conforming with HRM Integrated Mobility Plan

In 2017, HRM Council adopted the Integrated Mobility Plan (IMP) policy providing direction for implementation of more cost-effective mobility options to meet the needs of residents across the region. This includes increased access to alternative modes such as active transportation and public transit to provide convenient and safe travel options for travelers.

We have reviewed alternative mobility options that are available in the immediate vicinity of the proposed development. These include:

- *Active Transportation*: HRM has installed managed bicycle lanes along both sides of Sackville Drive – across the subject property frontage. This provides future residents, employees, and business patrons with the option to move to/from the site via bicycle or other small-wheeled devices. However, the existing rural cross-section of this section of Sackville Drive makes it challenging to install pedestrian facilities, such as sidewalk.
- *Public Transit*: HRM currently provides public transit bus service in the study area via Bus Route #83 (Springfield). The current bus route alignment does not travel along the property frontage; however, it does travel through the Margeson Drive / Sackville Drive roundabout, about 125m west of the subject property. Walking distances to/from transit stops of less than 500m are considered acceptable and within industry guidelines.

In summary, HRM currently provides active transportation facilities and public transit service in the study area. Therefore, future patrons and residents of the proposed development potentially have multiple travel options which could reduce the demand for travel via commuter car.

3.3 – Vehicle Access and Driver Visibility

It is understood the proponent has plans to provide one vehicle driveway that will connect to Sackville Drive. This access will be approximately located where the existing civic #1491 residential driveway is situated.

Typically, a driver sight distance review is conducted as part of the traffic impact assessment process to identify any driver sight distance or visibility limitations up and down stream of a new site access. Thus, GRIFFIN carried out 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 Works' field measurement best practices.

At this early planning stage, GRIFFIN only assessed the minimum requirement for vehicles approaching the access along the major roadway – which is referred to as stopping sight distance (SSD). The provision of adequate SSD for vehicles traveling on the major roadway ensures drivers have sufficient forward visibility to identify a hazard in the roadway, and if needed, bring their vehicle to a stop.

GRIFFIN completed the field measurements during the morning of Tuesday March 14th, 2023 following NSDPW best practices and TAC guidelines. A hazard object height of 0.6m and a driver eye height of 1.05 m were used to obtain the field measurements. Measurements were recorded at the proposed future access location – the same location as the existing civic #1497 residential driveway. A summary of the SSD assessment is provided in *Table 3*.

Table 3: Summary of Stopping Sight Distance Measurements – Proposed Accesses

Measurement Location	Travel Direction	Available SSD	TAC Required SSD		**Does Available Exceed Required?**
			Base[A]	Slope Adjusted	
New Access *(centre of existing access for civic #1497)*	Westbound (outbound)	158.5 m	105 m	100m (+3%)[B]	YES
	Eastbound (inbound)	81.0 m[C]	65 m[D]	65 m (0%)[B]	YES

A – 2017 TAC Chapter 2, Table 2.5.2

B – An estimate of the actual slope along Sackville Drive on the approaches to the new access.

C – Visibility limited by roundabout, roundabout geometry reduces vehicle operating speeds below speed limit.

D – A 50 km/h vehicle operating speed was applied to the vehicles exiting the roundabout.

The driveway serving the proposed development will be located on the outside of a horizontal curve in the Sackville Drive alignment, which offers good driver visibility in both directions. Further, the field measured sight distances exceed TAC minimum distance requirements for the expected operating speeds. This suggests the proposed driveway location is in a suitable location. It should also be noted there is acceptable driver visibility at other locations along the property frontage – should there be a need to shift the driveway during the design and/or construction phases of this project. The existing driver visibility approaching the proposed driveway is shown in *Figure 3*.

Figure 3: Driver Views Along Sackville Drive – Proposed Access Location

Looking Left (inbound)

Looking Right Toward Roundabout (outbound)

4.0 VEHICLE TRIP GENERATION

4.1 – Estimate of New Vehicle Trips

To assess the change in traffic volumes on the study area streets under future conditions, there was a need to determine the expected number of new vehicles that would be added to the study area roads and intersections, explicitly associated with the proposed development. This is referred to as the trip generation calculation process. Typically, traffic engineers use trip generation rates published by the Institute of Transportation Engineers (ITE) to forecast site-generated volumes for specific land use types, if considered appropriate.

As noted earlier in this letter, the proponent has plans to build a Mixed Use development which is planned to include a six-floor (mid-rise) 125-unit residential building, as well as a three-floor commercial building containing up to 14,970 ft^2 of leaseable space. GRIFFIN reviewed the ITE's latest *Trip Generation Manual, 11th Edition (Volume 3)* document to identify the most appropriate trip generation rates to apply to this type of development. Our review of the available rates indicated there was only one appropriate residential land use type - ITE's *Multifamily Housing (Mid-Rise) – Land Use Code 221*.

However, there were several potential commercial uses that could occupy the new three-floor building. In addition, HRM's Planning Department requested that a higher vehicle trip generating land use type be applied to our analysis. As such we summarized the vehicle trip rates for a number of reasonable commercial uses in *Table 4*.

Table 4: Candidate Commercial Land Use Types

Commercial Use	ITE's Land Use Code	AM Peak Hour (avg vehicle trip rate)	PM Peak Hour (avg vehicle trip rate)
General Office	710	2.11	2.22
Small Office (<10k ft^2)	712	1.67	2.16
Corporate Headquarters	714	1.45	1.30
Single-Tenant Office Building	715	1.85	1.76
Medical-Dental Office[B]	720	3.10	3.93
Government Office Building	730	3.34	1.71

A – Vehicle trip rates are per 1,000 ft^2

B – Stand alone medical-dental office space

Based on the summary of trip rates in *Table 4*, GRIFFIN identified ITE's Medical-Dental office space (720) and General Office space (710) as yielding higher-than-average vehicle traffic. Therefore, GRIFFIN assumed a general office space on the ground floor, plus a medical-dental type business occupying floors two and three. The resulting trip generation calculations are provided in *Table 5*. Our discussions with the proponent indicated this is a likely mix of business types that will occupy the new commercial building.

Table 5: Vehicle Trip Generation for the Proposed Development

	Size	Trip Rate	New Vehicle Trips / Hour		
			In	Out	Total
AM Peak Hour					
Multifamily Housing (Mid-Rise) (ITE Code 221)	125 units	0.34/unit[A]	9 (23%)	32 (77%)	41[B]
General Office Space (ITE Code 710)	4,523 ft^2	2.65/1k ft^2 [A]	11 (88%)	1 (12%)	12
Medical-Dental Office (Stand Alone) (ITE Code 720)	10,447 ft^2	3.06/1k ft^2 [A]	23 (79%)	5 (21%)	28[C]
AM Peak Total Trips			**43**	**38**	**81**
PM Peak Hour					
Multifamily Housing (Mid-Rise) (ITE Code 221)	125 units	0.39/unit[A]	29 (61%)	18 (39%)	47[B]
General Office Space (ITE Code 710)	4,523 ft^2	2.87/1k ft^2 [A]	2 (17%)	11 (83%)	13
Medical-Dental Office (Stand Alone) (ITE Code 720)	10,447 ft^2	3.73/1k ft^2 [A]	10 (30%)	25 (70%)	35[C]
PM Peak Total Trips			**41**	**54**	**95**

A – ITE's regression formula was used to calculate total vehicle trip rates.

B – A 5% on-site synergy rate was applied to account for internal mobility among the various land uses.

C – A 10% vehicle pass-by rate was applied to account for patrons already traveling along Sackville Drive.

Based on the results contained in *Table 5*, the proposed development is expected to generate the following new peak hour vehicle trips:

- *Weekday AM Peak Hour*: 81 new vehicle trips/hour (43 inbound and 38 outbound)
- *Weekday PM Peak Hour*: 95 new vehicle trips/hour (41 inbound and 54 outbound)

This generally equates to adding one to two new vehicle trips to the study area streets and intersections every minute. This is a small change in traffic volume along a suburban arterial corridor such as Sackville Drive and is expected to be less than the variation / fluctuation in traffic volumes that is experienced from one day to the next. The technical results flowing from our calculations suggest there is not expected to be any measurable change in operations on the study area streets and intersections explicitly associated with the proposed development.

It should be noted that our vehicle trip generation assumptions did account for very minor reductions in trip making to account for a more realistic representation of the site-generated vehicle trips. Based on the mixture of land use types on-site, a 5% on-site synergy was applied to the residential trips – which impacts only one resident. As well, a 10% pass-by trip rate was applied to the medical-dental trips equating to only 2 patrons – a very low assumption given the peak hour commuter traffic traveling along this section of Sackville Drive.

GRIFFIN also considers the vehicle trips quantified in *Table 4* to be higher than expected. As HRM moves toward meeting their goals and mode share targets established in the Integrated Mobility

Plan (IMP) the future rate of commuter vehicle use will be diminished. Therefore, the number of new vehicle trips presented in *Table 4* are considered to be worst-case / conservative estimates under a future full build-out scenario.

4.2 – Estimate of Future Travel Patterns

It is expected that the majority of drivers (60-80%) will turn to/from the west (outbound) along Sackville Drive as drivers gain access to Margeson Drive and the Highway 101 corridor. This reflects current commuter travel patterns as drivers move between their place of residence and place of work. The remaining drivers (20-40%) are expected to turn to/from the east (inbound) as they access the community services and retail businesses along Sackville Drive.

4.3 – Additional Traffic Considerations

At the request of HRM, GRIFFIN reviewed existing travel patterns as well as the expected increases in traffic volumes associated with a number of other adjacent developments in the study area, including:

- Civic #1652 Sackville Drive (HRM Case No. 23327)
- Twin Brooks Phase 4 Residential Development (HRM Case No. 24203)
- Sunset Ridge Residential Development (TIS Letter January 12, 2023)

We also concluded earlier in this letter that weekday volumes on Sackville Drive currently only utilize approximately half of the corridor capacity. Therefore, the combined traffic increases – including the above-noted adjacent developments – are expected to be accommodated within the existing available corridor capacity. Accommodating these traffic increases will provide time for HRM to plan, design, and implement mobility services that off-set vehicle traffic demands in this area as they attempt to meet the goals of their IMP policy.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 - Conclusions

The following conclusions were gleaned from the qualitative traffic impact assessment of the proposed development:

- The proponent has plans to assemble PID's #41516030 and a portion of #41215419 to create a new 3.5-acre Mixed Use development on Sackville Drive, east of the Margeson Drive roundabout. The proposed development will be comprised of up to 125 apartment-style residential units contained within a six-floor building, plus up to 14,970 ft^2 of leasable commercial space contained within a three-floor commercial building.

- GRIFFIN held discussions with the proponent and reviewed permitted commercial uses under the proposed planning agreements for these lands. A mix of commercial uses were selected such that they yielded a conservative and higher than expected amount of new traffic. This included the following:
    - *Ground Floor*: Leasable floor area utilized as office space for a local business. Thus, GRIFFIN applied ITE's trip rates for general office space (LUC 710). The trip rates utilized by GRIFFIN are considered to be above-average for office use (as demonstrated earlier in *Table 4*).
    - *Floors 2 and 3*: Leasable space occupied by a medical-dental business(es). Thus, GRIFFIN applied ITE's trip rates for this type of business (LUC 720). The trip rates applied to this space are higher than office space rates which again yielded a worse case traffic scenario.
- The vehicle trip generation calculations were completed using the latest ITE trip generation rates contained in their *Trip Generation Manual, 11th Edition (Volume 3)*. A development of this scale is expected to generate up to **81 trips/hour** (43 inbound and 38 outbound) during the weekday morning peak period, and **95 trips/hour** (41 inbound and 54 outbound) during the weekday afternoon peak period. This equates to an average increase of only one to two new vehicles added to the study area roads every minute.
- GRIFFIN expects there will only be a minor and acceptable traffic operational impact on the study area streets and intersections associated with the completion of the proposed development. This conclusion is based on the fact there is residual capacity along the adjacent section of Sackville Drive, and the proposed development will only generate a small number of new vehicle trips during peak travel periods.
- The available stopping sight distances (SSD) at the proposed site driveway appears to meet TAC minimum requirements for the measured vehicle operating speeds. Thus, drivers traveling along Sackville Drive appear to be provided with sufficient forward visibility for the expected operating speed. Once the final access location has been established the provision of adequate driver visibility will need to be confirmed (by others) during the detailed geometric design stage of this project.

In summary, the traffic generated by the proposed 125 residential units and 14,970 ft^2 commercial space is expected to have an acceptable level of impact on the traffic operating conditions along Sackville Drive.

5.2 – Recommendations

Based on the findings of this qualitative review the following steps are recommended:

1. *Access Design and Design Vehicle*: That an engineering review be carried out to ensure the proposed access and internal laneway can accommodate an appropriate design vehicle (i.e. garbage truck or emergency vehicle). The design of the intersection between the new access and Sackville Drive (carried out by others) will need to follow the latest HRM and Transportation Association of Canada (TAC) geometric design guidelines. One inbound lane and one outbound lane will provide sufficient capacity to accommodate the future traffic moving in/out of the subject lands.
2. *By-Law Requirements*: That all municipal By-law/Policy requirements for corner clearance, sight triangles and driver visibility are met to ensure driver sight distances to/from the proposed access is maintained throughout the design, construction, and final opening phases of the project.
3. *Signs and Pavement Markings*: That all new or changed signs and/or pavement markings along the study area roads and intersections should follow the latest guidelines contained in TAC's Manual of Uniform Traffic Control Devices for Canada (MUTCDC) document.
4. *Manage drainage at new driveways:* Due to the varied topography of the subject property and grades that slope towards Sackville Drive, the site design process should consider surface water drainage needs to ensure water does not run onto Sackville Drive via the new driveways. Standing or ponding water on asphalt has the potential to increase road safety risks – particularly during the winter months.
5. *New Public Transit Stop:* If not already in place, that HRM give future consideration to installing a new public transit bus stop on Route #83 in the vicinity of the Margeson Drive / Sackville Drive intersection to better accommodate the future residents and employees of this area as it continues to grow. Alternatively, HRM could review the alignment of Route #83 to optimize public transit capture rates in this growing area of HRM.
6. *Speed Management:* That HRM review the regulatory speed limit along this section of Sackville Drive. Although it has been designated by HRM as an arterial class street, it's service function is a balance between land access and mobility. In addition, the provision of on-street bicycle lanes with no buffer space in an area with vehicle operating speeds of about 70 km/h creates a high-risk environment for cyclists. Given these site-specific characteristics, it is recommended that a lower regulatory speed limit be considered to create a more human-scale, active transportation friendly corridor, that minimizes road safety risks.

6.0 CLOSING

The findings flowing from this qualitative traffic impact statement suggest the new vehicle trips generated by the proposed Mixed Use development – comprised of up to 125 apartment units and 14,970 ft^2 of commercial space – is expected to have an acceptable impact on the traffic operational performance of the study area streets and intersections. HRM has already installed managed bicycle lanes along Sackville Drive, and operates an existing public transit route located within a short walking distance connecting the new development. However, there are more opportunities for HRM to expand mobility services in this growing area of HRM and move toward meeting their goals stated in the Integrated Mobility Plan (IMP) policy.

I would be happy to provide you with additional information or clarification regarding these matters and can be reached anytime by phone at (902) 266-9436 or by email at jcopeland@griffininc.ca.

Sincerely,

[redacted]

James J. Copeland, P.Eng., RSP1
Managing Principal – Traffic & Road Safety Engineer
GRIFFIN transportation group inc.

APPENDIX

Traffic Volumes & Speeds

For Project:	1491 Sackville Dr				
Project Notes:	Civic #1491 Sacvville Dr, Middle Sackville				
Location/Name:	Westbound (Incoming)				
Report Generated:	3/27/2023	13:34			
Speed Intervals	1 km/h				
Time Intervals	Instant				
Traffic Report From	3/20/2023	11:00:00	through	3/24/2023	19:59:59
85th Percentile Speed	67 km/h				
85th Percentile Vehicles	23506				
Max Speed	98 km/h	on	3/23/2023	07:22:01	
Total Vehicles	27654				
AADT:	6320				

Volumes - weekly counts

	Time	5 Day	7 Day
Average Daily		5530	5530
AM Peak	08:00	407	407
PM Peak	04:00	579	579

Speed

Speed Limit:	60						
85th Percentile Speed:	67						
50th Percentile Speed:	61						
10 km/h Pace Interval:	56.0 km/h	to	66.0 km/h				
Average Speed:	60.72						
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**	**Sunday**
Count over limit	2144	3242	3226	3159	2930	N/A	N/A
% over limit	55.2	53.9	51.7	53.7	52.1	N/A	N/A
Avg Speeder	65.5	65.6	65.6	65.6	65.6	N/A	N/A
Avg Speed	61.0	60.9	60.5	60.7	60.6	N/A	N/A

Class Counts

	Number	%
VEH_SM	374	1.4
VEH_MED	26311	95.1
VEH_LG	969	3.5

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

Westbound (Incoming) Summary
1491 Sackville Dr
Civic #1491 Sacvville Dr, Middle Sackville

from Mon-Mar-20-2023-11-00-AM to Fri-Mar-24-2023-07-59-PM

Day/Time Ending	85th pctl (km/h)	85th pctl cnts	Total Cnts	Max Speed	Avg Speeder	% Speeders	Avg Speed
3/20/2023 12:00:00 PM	69.0	100	118	74	66.3	62.7%	62.1
3/20/2023 01:00:00 PM	68.0	332	390	82	66.3	54.9%	61.4
3/20/2023 02:00:00 PM	68.0	274	322	85	66.0	64.6%	62.3
3/20/2023 03:00:00 PM	67.0	345	406	78	65.3	54.7%	61.3
3/20/2023 04:00:00 PM	66.0	400	471	89	65.5	49.7%	60.2
3/20/2023 05:00:00 PM	66.0	452	532	87	65.0	48.3%	59.6
3/20/2023 06:00:00 PM	68.0	420	494	79	65.6	57.3%	61.4
3/20/2023 07:00:00 PM	68.0	298	350	78	65.2	61.8%	61.5
3/20/2023 08:00:00 PM	67.0	260	306	79	65.6	59.8%	61.4
3/20/2023 09:00:00 PM	66.0	185	218	84	64.9	50.5%	59.7
3/20/2023 10:00:00 PM	66.0	128	150	78	65.2	46.0%	60.5
3/20/2023 11:00:00 PM	69.0	76	89	83	66.3	58.4%	62.2
3/21/2023 12:00:00 AM	67.0	32	38	82	66.4	55.3%	61.3
3/21/2023 01:00:00 AM	65.0	16	19	71	67.2	26.3%	56.1
3/21/2023 02:00:00 AM	58.0	3	4	61	61.0	25.0%	56.3
3/21/2023 03:00:00 AM	72.0	6	7	74	67.0	85.7%	66.0
3/21/2023 04:00:00 AM	72.0	7	8	78	69.0	62.5%	62.8
3/21/2023 05:00:00 AM	72.0	7	8	73	69.0	37.5%	60.4
3/21/2023 06:00:00 AM	69.0	33	39	77	67.3	59.0%	62.5
3/21/2023 07:00:00 AM	69.0	141	166	84	66.4	57.2%	61.8
3/21/2023 08:00:00 AM	67.0	353	415	82	65.5	53.5%	60.7
3/21/2023 09:00:00 AM	68.0	327	385	79	65.6	55.1%	61.2
3/21/2023 10:00:00 AM	67.0	261	307	81	65.6	51.8%	60.7
3/21/2023 11:00:00 AM	69.0	208	245	80	66.3	58.4%	61.7
3/21/2023 12:00:00 PM	68.0	263	309	76	65.8	53.1%	61.0
3/21/2023 01:00:00 PM	68.0	343	404	87	66.0	60.4%	61.6
3/21/2023 02:00:00 PM	67.0	311	366	79	65.8	53.0%	60.9
3/21/2023 03:00:00 PM	67.0	382	449	89	65.3	52.8%	61.0
3/21/2023 04:00:00 PM	66.0	398	468	86	65.5	45.7%	60.1
3/21/2023 05:00:00 PM	67.0	502	591	83	65.4	52.1%	60.2
3/21/2023 06:00:00 PM	67.0	476	560	84	65.1	53.2%	60.5
3/21/2023 07:00:00 PM	69.0	348	410	83	66.3	65.1%	62.7
3/21/2023 08:00:00 PM	66.0	292	344	82	65.2	49.7%	60.1
3/21/2023 09:00:00 PM	66.0	189	222	78	65.0	52.3%	60.2
3/21/2023 10:00:00 PM	67.0	150	176	77	65.2	52.0%	60.6
3/21/2023 11:00:00 PM	66.0	69	81	72	64.3	56.8%	60.9
3/22/2023 12:00:00 AM	69.0	31	36	78	67.4	47.2%	61.3
3/22/2023 01:00:00 AM	68.0	13	15	74	67.1	46.7%	60.4
3/22/2023 02:00:00 AM	71.0	6	7	78	66.8	85.7%	65.1
3/22/2023 03:00:00 AM	67.0	2	2	67	67.0	50.0%	63.5
3/22/2023 04:00:00 AM	63.0	3	3	63	63.0	33.3%	55.7
3/22/2023 05:00:00 AM	62.0	3	4	69	65.5	50.0%	60.3
3/22/2023 06:00:00 AM	69.0	40	47	72	66.2	57.4%	61.2
3/22/2023 07:00:00 AM	70.0	142	167	91	66.5	57.5%	62.0
3/22/2023 08:00:00 AM	68.0	320	376	84	65.7	52.9%	60.8

Westbound (Incoming) Summary
1491 Sackville Dr
Civic #1491 Sacvville Dr, Middle Sackville

from Mon-Mar-20-2023-11-00-AM to Fri-Mar-24-2023-07-59-PM

3/22/2023 09:00:00 AM	66.0	381	448	77	64.9	46.7%	59.5
3/22/2023 10:00:00 AM	68.0	270	318	83	65.6	58.2%	61.5
3/22/2023 11:00:00 AM	68.0	265	312	82	65.5	53.8%	60.6
3/22/2023 12:00:00 PM	67.0	279	328	89	65.8	61.3%	61.6
3/22/2023 01:00:00 PM	69.0	317	373	79	66.0	63.0%	62.4
3/22/2023 02:00:00 PM	68.0	337	396	92	65.8	62.6%	62.0
3/22/2023 03:00:00 PM	66.0	390	459	82	65.6	42.0%	59.0
3/22/2023 04:00:00 PM	65.0	483	568	83	65.0	35.9%	57.8
3/22/2023 05:00:00 PM	66.0	494	581	77	65.1	46.6%	59.5
3/22/2023 06:00:00 PM	67.0	476	560	77	65.5	53.2%	60.8
3/22/2023 07:00:00 PM	67.0	320	376	86	65.9	55.1%	61.3
3/22/2023 08:00:00 PM	68.0	253	298	86	66.0	57.7%	61.7
3/22/2023 09:00:00 PM	66.0	235	276	84	65.2	49.3%	60.0
3/22/2023 10:00:00 PM	67.0	147	173	87	66.0	48.6%	60.6
3/22/2023 11:00:00 PM	67.0	85	100	79	65.9	48.0%	60.7
3/23/2023 12:00:00 AM	69.0	46	54	81	66.5	51.9%	60.0
3/23/2023 01:00:00 AM	66.0	13	15	74	65.7	46.7%	60.9
3/23/2023 02:00:00 AM	68.0	3	4	73	70.5	50.0%	64.8
3/23/2023 03:00:00 AM	66.0	3	3	66	66.0	66.7%	61.7
3/23/2023 04:00:00 AM	60.0	4	5	70	70.0	20.0%	59.0
3/23/2023 05:00:00 AM	66.0	6	7	75	67.0	57.1%	62.1
3/23/2023 06:00:00 AM	71.0	38	45	78	66.8	71.1%	63.1
3/23/2023 07:00:00 AM	69.0	139	163	79	66.1	63.8%	62.5
3/23/2023 08:00:00 AM	68.0	326	383	98	65.9	59.5%	61.7
3/23/2023 09:00:00 AM	67.0	357	420	77	65.5	56.7%	61.3
3/23/2023 10:00:00 AM	69.0	282	332	89	66.3	60.2%	62.1
3/23/2023 11:00:00 AM	69.0	239	281	80	66.5	60.9%	62.2
3/23/2023 12:00:00 PM	68.0	273	321	79	65.5	56.1%	61.4
3/23/2023 01:00:00 PM	67.0	337	396	92	65.3	58.4%	60.9
3/23/2023 02:00:00 PM	68.0	303	356	82	65.8	57.6%	61.4
3/23/2023 03:00:00 PM	67.0	353	415	90	65.7	54.7%	61.0
3/23/2023 04:00:00 PM	68.0	417	491	87	65.7	57.5%	61.4
3/23/2023 05:00:00 PM	67.0	491	578	78	65.3	50.2%	60.1
3/23/2023 06:00:00 PM	67.0	440	518	78	65.3	53.5%	60.6
3/23/2023 07:00:00 PM	67.0	289	340	83	65.4	55.6%	60.4
3/23/2023 08:00:00 PM	63.0	224	264	73	63.7	34.8%	57.4
3/23/2023 09:00:00 PM	62.0	213	251	80	63.7	24.3%	55.3
3/23/2023 10:00:00 PM	65.0	124	146	81	65.2	38.4%	58.3
3/23/2023 11:00:00 PM	67.0	94	110	80	65.0	59.1%	61.1
3/24/2023 12:00:00 AM	65.0	32	38	74	65.3	39.5%	59.4
3/24/2023 01:00:00 AM	66.0	14	17	73	67.3	41.2%	59.4
3/24/2023 02:00:00 AM	63.0	3	4	67	65.0	50.0%	61.3
3/24/2023 03:00:00 AM	77.0	3	4	82	73.3	75.0%	70.0
3/24/2023 04:00:00 AM	58.0	3	4	64	64.0	25.0%	58.0
3/24/2023 05:00:00 AM	67.0	12	14	71	65.0	42.9%	57.4
3/24/2023 06:00:00 AM	67.0	33	39	90	66.0	46.2%	60.5

Westbound (Incoming) Summary
1491 Sackville Dr
Civic #1491 Sacvville Dr, Middle Sackville

from Mon-Mar-20-2023-11-00-AM to Fri-Mar-24-2023-07-59-PM

3/24/2023 07:00:00 AM	67.0	154	181	87	65.4	55.2%	61.0
3/24/2023 08:00:00 AM	68.0	286	337	81	65.8	61.7%	62.2
3/24/2023 09:00:00 AM	68.0	319	375	82	65.8	54.9%	61.6
3/24/2023 10:00:00 AM	67.0	272	320	86	65.7	50.9%	60.5
3/24/2023 11:00:00 AM	67.0	305	359	81	65.5	61.6%	61.6
3/24/2023 12:00:00 PM	67.0	290	341	79	65.6	54.5%	61.0
3/24/2023 01:00:00 PM	67.0	364	428	78	65.4	55.6%	61.4
3/24/2023 02:00:00 PM	67.0	305	359	83	65.2	52.9%	60.7
3/24/2023 03:00:00 PM	66.0	444	522	82	65.4	44.3%	59.1
3/24/2023 04:00:00 PM	66.0	463	545	77	65.2	42.8%	59.4
3/24/2023 05:00:00 PM	67.0	524	616	83	65.5	48.5%	59.8
3/24/2023 06:00:00 PM	67.0	449	528	84	66.0	45.5%	59.9
3/24/2023 07:00:00 PM	68.0	308	362	86	65.6	65.5%	62.4
3/24/2023 08:00:00 PM	67.0	232	273	76	65.4	51.6%	60.6

Westbound (Incoming) Summary
1491 Sackville Dr
Civic #1491 Sacvville Dr, Middle Sackville

from Mon-Mar-20-2023-11-00-AM to Fri-Mar-24-2023-07-59-PM

Day/Time Ending	85th pctl (km/h)	85th pctl cnts	Total Cnts	Max Speed	Avg Speeder	% Speeders	Avg Speed
3/21/2023 12:00:00 AM	67.0	3301	3884	89	65.5	55.2%	61.0
3/22/2023 12:00:00 AM	67.0	5116	6019	89	65.6	53.9%	60.9
3/23/2023 12:00:00 AM	67.0	5305	6241	92	65.6	51.7%	60.5
3/24/2023 12:00:00 AM	67.0	5000	5882	98	65.6	53.7%	60.7
3/24/2023 07:59:59 PM	67.0	4784	5628	90	65.6	52.1%	60.6

For Project:	1491 Sackville Dr				
Project Notes:	Civic #1491 Sacvville Dr, Middle Sackville				
Location/Name:	Eastbound (Outgoing)				
Report Generated:	3/27/2023	13:34			
Speed Intervals	1 km/h				
Time Intervals	Instant				
Traffic Report From	3/20/2023	11:00:00	through	3/24/2023	19:59:59
85th Percentile Speed	63 km/h				
85th Percentile Vehicles	23316				
Max Speed	98 km/h	on	3/20/2023	18:19:15	
Total Vehicles	27431				
AADT:	6269				

Volumes - weekly counts

	Time	5 Day	7 Day
Average Daily		5486	5486
AM Peak	08:00	488	488
PM Peak	04:00	561	561

Speed

Speed Limit:	60						
85th Percentile Speed:	63						
50th Percentile Speed:	57						
10 km/h Pace Interval:	52.0 km/h	to	62.0 km/h				
Average Speed:	57.6						

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Count over limit	1124	1603	1766	1426	1696	N/A	N/A
% over limit	30.9	26.6	28.1	24.0	30.4	N/A	N/A
Avg Speeder	64.9	64.4	64.3	64.4	64.5	N/A	N/A
Avg Speed	58.4	57.4	57.6	56.9	58.0	N/A	N/A

Class Counts

	Number	%
VEH_SM	10	0
VEH_MED	26604	97
VEH_LG	817	3

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

Eastbound (Outgoing) Summary
1491 Sackville Dr
Civic #1491 Sacvville Dr, Middle Sackville

from Mon-Mar-20-2023-11-00-AM to Fri-Mar-24-2023-07-59-PM

Day/Time Ending	85th pctl (km/h)	85th pctl cnts	Total Cnts	Max Speed	Avg Speeder	% Speeders	Avg Speed
3/20/2023 12:00:00 PM	63.0	94	111	77	64.7	27.9%	57.9
3/20/2023 01:00:00 PM	64.0	288	339	80	64.4	32.2%	58.0
3/20/2023 02:00:00 PM	63.0	292	344	76	64.8	23.8%	57.4
3/20/2023 03:00:00 PM	64.0	302	355	89	65.6	33.8%	59.1
3/20/2023 04:00:00 PM	63.0	371	436	76	64.6	29.1%	58.3
3/20/2023 05:00:00 PM	65.0	459	540	86	65.0	33.3%	59.0
3/20/2023 06:00:00 PM	65.0	402	473	81	64.8	35.5%	58.9
3/20/2023 07:00:00 PM	64.0	303	357	98	65.0	33.1%	58.7
3/20/2023 08:00:00 PM	64.0	225	265	82	65.0	32.0%	58.4
3/20/2023 09:00:00 PM	63.0	162	191	73	64.0	25.1%	57.4
3/20/2023 10:00:00 PM	62.0	105	124	86	65.4	21.8%	57.3
3/20/2023 11:00:00 PM	64.0	52	61	86	66.5	29.5%	57.9
3/21/2023 12:00:00 AM	64.0	31	36	73	65.3	33.3%	58.5
3/21/2023 01:00:00 AM	60.0	11	13	76	70.5	15.4%	54.4
3/21/2023 02:00:00 AM	58.0	6	7	60	0.0	0.0%	52.4
3/21/2023 03:00:00 AM	63.0	3	4	68	64.0	75.0%	60.0
3/21/2023 04:00:00 AM	56.0	8	10	56	0.0	0.0%	52.6
3/21/2023 05:00:00 AM	66.0	8	9	71	67.0	33.3%	55.2
3/21/2023 06:00:00 AM	62.0	67	79	79	65.4	19.0%	56.1
3/21/2023 07:00:00 AM	62.0	160	188	72	64.4	21.3%	56.7
3/21/2023 08:00:00 AM	63.0	356	419	74	64.0	27.0%	57.1
3/21/2023 09:00:00 AM	63.0	387	455	75	64.5	26.6%	57.3
3/21/2023 10:00:00 AM	63.0	299	352	77	64.0	28.1%	57.6
3/21/2023 11:00:00 AM	63.0	298	350	76	63.9	24.3%	57.1
3/21/2023 12:00:00 PM	62.0	282	332	71	63.5	25.6%	57.1
3/21/2023 01:00:00 PM	63.0	320	376	82	64.5	30.6%	57.7
3/21/2023 02:00:00 PM	62.0	300	353	83	63.6	24.9%	57.2
3/21/2023 03:00:00 PM	61.0	358	421	74	63.6	17.1%	56.1
3/21/2023 04:00:00 PM	63.0	382	449	79	64.6	27.8%	58.0
3/21/2023 05:00:00 PM	64.0	481	566	77	64.2	31.1%	58.1
3/21/2023 06:00:00 PM	63.0	411	484	82	64.6	29.8%	58.3
3/21/2023 07:00:00 PM	64.0	336	395	92	65.2	30.4%	58.5
3/21/2023 08:00:00 PM	63.0	243	286	78	64.6	28.3%	57.4
3/21/2023 09:00:00 PM	61.0	176	207	84	66.0	18.8%	56.4
3/21/2023 10:00:00 PM	63.0	125	147	73	64.9	23.8%	57.4
3/21/2023 11:00:00 PM	64.0	68	80	74	65.1	36.3%	58.5
3/22/2023 12:00:00 AM	65.0	30	35	72	65.5	37.1%	58.4
3/22/2023 01:00:00 AM	66.0	14	16	76	67.3	25.0%	54.4
3/22/2023 02:00:00 AM	65.0	7	8	67	66.0	25.0%	54.3
3/22/2023 03:00:00 AM	60.0	4	5	61	61.0	20.0%	57.2
3/22/2023 04:00:00 AM	62.0	6	7	72	67.0	28.6%	56.6
3/22/2023 05:00:00 AM	59.0	10	12	66	64.0	16.7%	56.5
3/22/2023 06:00:00 AM	62.0	51	60	70	63.4	23.3%	56.4
3/22/2023 07:00:00 AM	63.0	178	209	72	64.5	27.3%	57.0
3/22/2023 08:00:00 AM	63.0	357	420	73	63.6	27.1%	57.1

Eastbound (Outgoing) Summary
1491 Sackville Dr
Civic #1491 Sacvville Dr, Middle Sackville

from Mon-Mar-20-2023-11-00-AM to Fri-Mar-24-2023-07-59-PM

3/22/2023 09:00:00 AM	62.0	440	518	75	63.8	26.1%	57.0
3/22/2023 10:00:00 AM	62.0	328	386	81	64.2	25.6%	57.5
3/22/2023 11:00:00 AM	63.0	264	310	77	64.6	24.2%	57.0
3/22/2023 12:00:00 PM	63.0	325	382	84	64.9	25.7%	57.5
3/22/2023 01:00:00 PM	63.0	336	395	80	64.2	29.1%	57.6
3/22/2023 02:00:00 PM	62.0	324	381	77	64.0	22.6%	57.0
3/22/2023 03:00:00 PM	62.0	363	427	77	63.5	21.3%	56.8
3/22/2023 04:00:00 PM	64.0	388	456	76	64.7	28.9%	58.0
3/22/2023 05:00:00 PM	64.0	493	580	77	64.1	31.5%	57.8
3/22/2023 06:00:00 PM	64.0	468	551	82	64.3	35.9%	58.8
3/22/2023 07:00:00 PM	64.0	309	363	77	64.2	36.4%	58.7
3/22/2023 08:00:00 PM	64.0	246	289	83	64.7	31.8%	58.0
3/22/2023 09:00:00 PM	62.0	189	222	81	64.2	24.3%	57.1
3/22/2023 10:00:00 PM	62.0	126	148	75	64.1	22.8%	57.5
3/22/2023 11:00:00 PM	65.0	72	85	79	65.9	37.6%	59.2
3/23/2023 12:00:00 AM	64.0	37	44	91	66.6	34.1%	58.7
3/23/2023 01:00:00 AM	73.0	12	14	78	67.5	71.4%	63.7
3/23/2023 02:00:00 AM	65.0	4	5	68	65.7	60.0%	58.2
3/23/2023 03:00:00 AM	60.0	7	8	64	64.0	12.5%	56.6
3/23/2023 04:00:00 AM	57.0	4	5	60	0.0	0.0%	54.6
3/23/2023 05:00:00 AM	66.0	14	16	72	66.7	37.5%	58.5
3/23/2023 06:00:00 AM	61.0	60	71	73	65.4	19.7%	56.2
3/23/2023 07:00:00 AM	63.0	165	194	77	64.3	26.8%	57.2
3/23/2023 08:00:00 AM	63.0	377	443	76	64.6	23.0%	56.7
3/23/2023 09:00:00 AM	62.0	430	506	74	63.7	22.9%	57.0
3/23/2023 10:00:00 AM	63.0	309	363	80	64.3	24.0%	57.0
3/23/2023 11:00:00 AM	63.0	265	312	73	64.3	26.3%	57.2
3/23/2023 12:00:00 PM	62.0	323	380	82	64.2	24.4%	57.1
3/23/2023 01:00:00 PM	63.0	314	370	77	64.3	26.2%	57.3
3/23/2023 02:00:00 PM	63.0	319	375	73	64.1	23.1%	56.7
3/23/2023 03:00:00 PM	62.0	346	407	72	64.6	21.4%	56.6
3/23/2023 04:00:00 PM	63.0	400	471	77	64.4	25.9%	57.7
3/23/2023 05:00:00 PM	64.0	479	564	77	64.8	31.2%	58.1
3/23/2023 06:00:00 PM	64.0	434	510	79	64.8	28.8%	58.1
3/23/2023 07:00:00 PM	62.0	279	328	72	63.9	25.5%	57.5
3/23/2023 08:00:00 PM	58.0	195	229	67	63.0	6.6%	52.1
3/23/2023 09:00:00 PM	60.0	146	172	80	65.0	13.4%	53.9
3/23/2023 10:00:00 PM	60.0	85	100	68	64.5	11.0%	54.0
3/23/2023 11:00:00 PM	60.0	54	64	68	64.1	14.1%	55.2
3/24/2023 12:00:00 AM	60.0	21	25	68	63.3	12.0%	56.5
3/24/2023 01:00:00 AM	62.0	8	9	67	64.5	22.2%	53.7
3/24/2023 02:00:00 AM	64.0	6	7	65	62.8	57.1%	58.6
3/24/2023 03:00:00 AM	55.0	5	6	62	62.0	16.7%	53.8
3/24/2023 04:00:00 AM	61.0	7	8	71	66.0	25.0%	57.3
3/24/2023 05:00:00 AM	57.0	9	11	75	69.0	18.2%	52.9
3/24/2023 06:00:00 AM	62.0	53	62	71	65.2	21.0%	56.3

Eastbound (Outgoing) Summary
1491 Sackville Dr
Civic #1491 Sacvville Dr, Middle Sackville

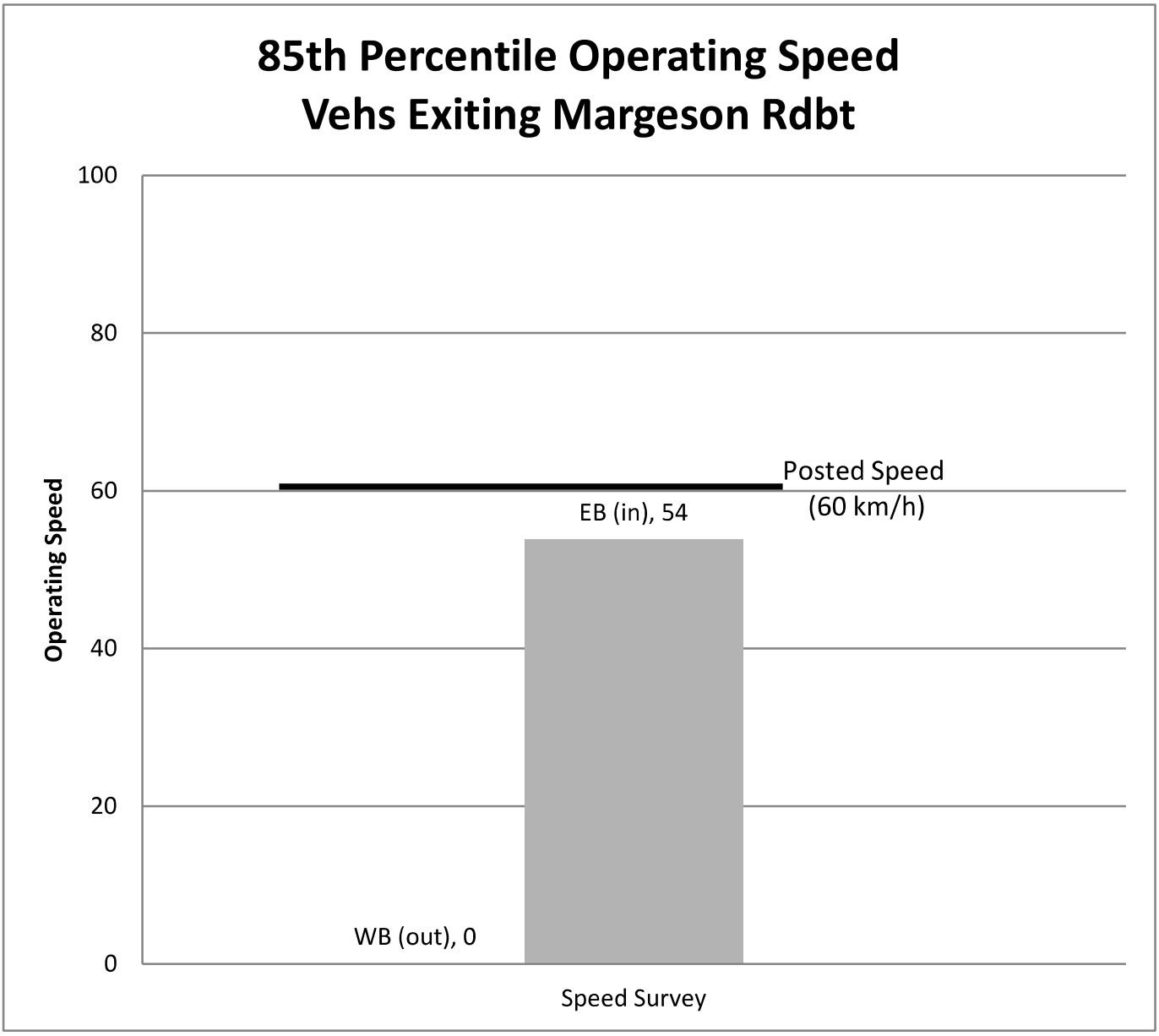
from Mon-Mar-20-2023-11-00-AM to Fri-Mar-24-2023-07-59-PM

3/24/2023 07:00:00 AM	62.0	173	204	76	64.2	21.6%	56.2
3/24/2023 08:00:00 AM	63.0	322	379	85	64.2	28.8%	57.9
3/24/2023 09:00:00 AM	62.0	402	473	84	64.2	23.9%	57.0
3/24/2023 10:00:00 AM	63.0	294	346	81	65.5	26.6%	57.8
3/24/2023 11:00:00 AM	63.0	308	362	82	64.3	27.1%	57.6
3/24/2023 12:00:00 PM	63.0	326	383	80	64.4	27.7%	57.6
3/24/2023 01:00:00 PM	63.0	306	360	79	64.3	30.0%	58.1
3/24/2023 02:00:00 PM	63.0	330	388	85	64.2	30.4%	58.2
3/24/2023 03:00:00 PM	63.0	359	422	80	64.5	27.0%	57.7
3/24/2023 04:00:00 PM	64.0	403	474	82	64.8	32.3%	58.5
3/24/2023 05:00:00 PM	64.0	474	558	75	64.2	36.4%	58.9
3/24/2023 06:00:00 PM	65.0	428	503	84	64.7	40.0%	59.2
3/24/2023 07:00:00 PM	64.0	314	370	77	64.5	37.8%	59.0
3/24/2023 08:00:00 PM	64.0	213	251	75	64.6	29.1%	57.7

Eastbound (Outgoing) Summary
1491 Sackville Dr
Civic #1491 Sacvville Dr, Middle Sackville

from Mon-Mar-20-2023-11-00-AM to Fri-Mar-24-2023-07-59-PM

Day/Time Ending	85th pctl (km/h)	85th pctl cnts	Total Cnts	Max Speed	Avg Speeder	% Speeders	Avg Speed
3/21/2023 12:00:00 AM	64.0	3087	3632	98	64.9	30.9%	58.4
3/22/2023 12:00:00 AM	63.0	5114	6017	92	64.4	26.6%	57.4
3/23/2023 12:00:00 AM	63.0	5333	6274	91	64.3	28.1%	57.6
3/24/2023 12:00:00 AM	63.0	5042	5932	82	64.4	24.0%	56.9
3/24/2023 07:59:59 PM	64.0	4740	5576	85	64.5	30.4%	58.0


85th Percentile Operating Speed
Vehs Exiting Margeson Rdbt
100
80
60
40
20
0
Operating Speed
Posted Speed
(60 km/h)
EB (in), 54
WB (out), 0
Speed Survey