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30 Bonny View Drive
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January 5, 2024

Att: Stephen Adams
Stephen Adams Consulting Services Inc.
410 McCabe Lake Drive
Middle Sackville, NS B4E 0N6

RE: A Traffic Impact Statement for a proposed development on Sackville Drive

1.0 INTRODUCTION

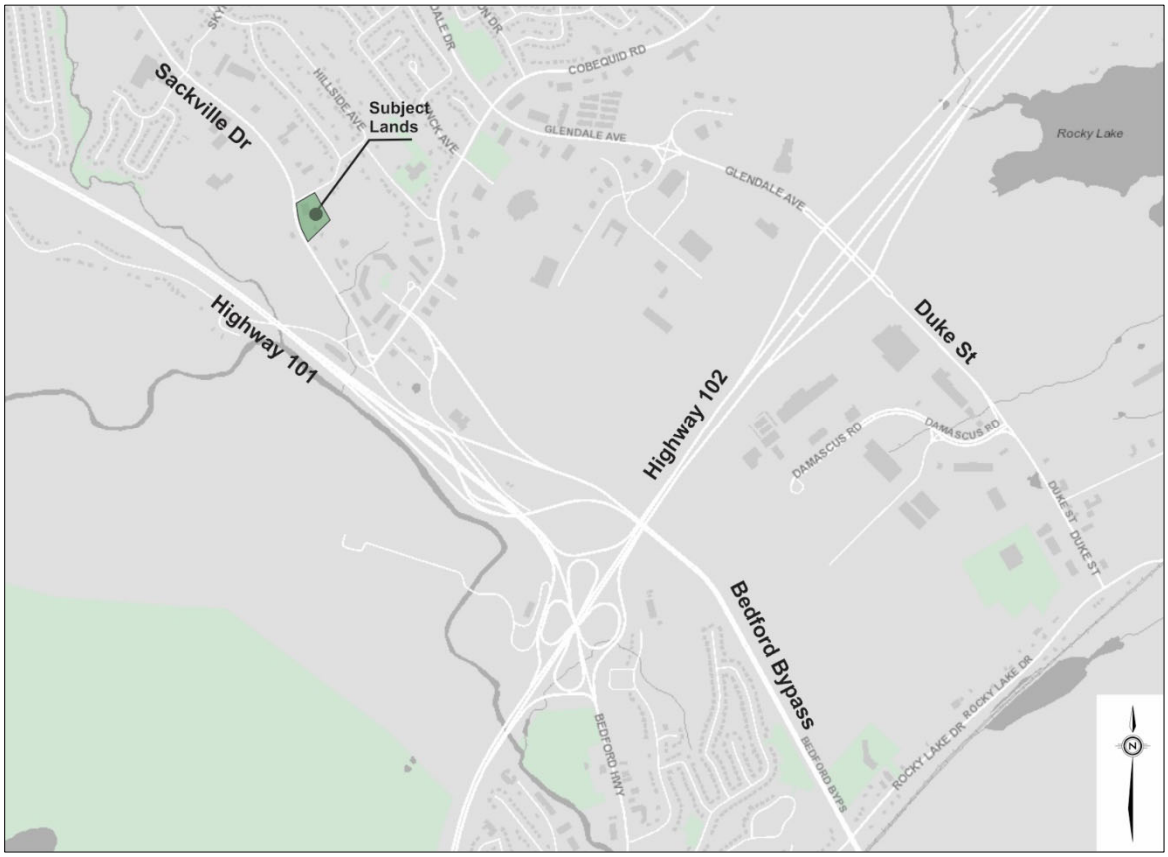
1.1 – Overview

At the request of *Stephen Adams Consulting Services Inc.*, the GRIFFIN transportation group inc. (GRIFFIN) has carried out a qualitative Stage 1 - Traffic Impact Assessment in support of the planning application being submitted to Halifax Regional Municipality (HRM) for a new Mixed Use development in the southeast quadrant of the Sackville drive / Hillcrest Avenue intersection, in the community of Lower Sackville, Halifax Regional Municipality (HRM). 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 accommodating space for multiple small businesses, 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 construct a new Mixed Use building. The existing buildings will be removed and replaced with one new building that will occupy both properties. The new building will have a large ground-floor podium accommodating up to 15,555 ft^2 of ground floor commercial space, and two separate towers with up to 14 floors which will contain 294 apartment-style units.

Figure 1: Location of Subject Lands



Source: HRM GIS Maps

1.2 – Terms of Reference

Our qualitative Stage 1 traffic impact assessment of the proposed development is discussed in the following Sections. Throughout the completion of this assessment GRIFFIN has followed HRM traffic impact study and mobility analysis guidelines as well as their Integrated Mobility Plan (IMP) policy for a new development in an established suburban area. In addition, GRIFFIN has applied the latest guiding principles published by the Institute of Transportation Engineers (ITE), and Transportation Association of Canada (TAC).

2.0 STUDY AREA AND SITE CONTEXT

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 with pedestrian sidewalks and also accommodates public transit service. 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 IMP

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, such that residents are offered convenient and safe travel options other than single-occupant vehicle trips.

In the immediate vicinity of the proposed development there are several mobility options currently available, including:

- *Active Transportation*: Pedestrian sidewalk facilities are provided along the south side of Hillcrest Avenue and along both sides of Sackville Drive offering a well-connected system in the immediate vicinity of the site. There are no signalized crosswalks in the area to assist pedestrians crossing the four-lane Sackville Drive and it appears the unsignalized crosswalks require upgrades to better accommodate users with mobility challenges. Further there are no marked or managed bicycle lanes in the area. In the future, the Sackville Drive corridor could benefit from active transportation investments such as a multi-use path (MUP) serving many active transportation modes within a single facility.
- *Public Transit*: Halifax Transit provides public transit service along Sackville Drive, including local routes #8 and #87. Bus stops are currently provided at the Hillcrest Avenue intersection – conveniently located adjacent to the proposed development. In addition, the Cobequid Road Transit Terminal is located about 470 m to the southeast and is within HRM's acceptable walking distance threshold of 500 m. In the future, the Sackville Drive corridor could benefit from transit investments such as higher-order bus rapid transit service to/from the Cobequid Terminal.

In summary, there are multiple travel mode options in this area for existing and future residents, employees, and patrons. Thus, the subject lands are well situated and in close proximity to a number of key amenities that help to reduce single-occupant vehicle trips. Further, there are numerous local businesses and services along the Sackville Drive corridor that are only a short walking distance away from the proposed development.

3.0 THE PROPOSED DEVELOPMENT

3.1 - Overview

The proposed new Mixed Use building 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 height of 14 floors above ground, as well as at least two underground levels that will accommodate parking for vehicles. The building details are provided in *Table 1*.

Table 1: Proposed New Building Configuration

Building Component	Type / Use of Space	Size
Levels P1 & P2	Underground Parking	276 vehicle spaces
Level 1 – Ground Floor	Commercial Space	15,555 ft²
Levels 2 to 14	Residential Units	294 units

The proposed site layout concept plan is shown in *Figure 2*.

Figure 2: Proposed Site Layout

Source: Paul Skerry Associates Ltd.

3.2 – New Site-Generated Trips

To assess the change in traffic volumes on the study area roads under future conditions, there was a need to determine the number of new vehicles added by completing the proposed Mixed Use building. 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), in the most recent *Trip Generation Manual, 11th Edition* document.

GRIFFIN reviewed the ITE's latest documentation and identified the most appropriate land use area was suburban and thus ITE trip rates contained in the Volume 3 document were applied. A more detailed review of the Volume 3 document indicated that a 14-floor building is considered to be a high-rise – more than 10 floors; however, there is no empirical data available for a high-rise Mixed Use building in a suburban area. Therefore, GRIFFIN utilized the residential high-rise rates which ITE describes as *Multifamily Housing (High-Rise) Not Close to Rail Transit – Land Use Code 222*, and assumed that traffic patronizing the new ground floor businesses would be comprised of pass-by traffic and/or on-site shared trips.

Although there is good potential for this area of Lower Sackville to become more densely populated and be serviced by HRM's higher-order transit service, only the more conservative suburban trip rates were applied to provide a slightly worse-case scenario.

The detailed trip generation calculations are provided in *Table 2*.

Table 2: Site Trip Generation for the Proposed Mixed Use Development

	Size	Trip Rate	New Trips / Hour		
			In	Out	Total
AM Peak Hour					
Person Trips: ITE LUC 222 (Volume 3 – Suburban)	294 units	n/a[A]	-	-	-
Vehicle Trips: ITE LUC 222 (Volume 3 – Suburban)	294 units	0.29/unit[B]	22 (26%)	62 (74%)	84
AM Peak Total Vehicle Trips			**22**	**62**	**84**
PM Peak Hour					
Person Trips: ITE LUC 222 (Volume 3 – Suburban)	294 units	n/a[A]	-	-	-
Vehicle Trips: ITE LUC 222 (Volume 3 – Suburban)	294 units	0.34/unit[A]	62 (62%)	38 (38%)	100
PM Peak Total Vehicle Trips			**62**	**38**	**100**

A – No empirical ITE data available to quantity person trips, only vehicle trips.

B – ITE's regression formula used to determine the per unit trip rate.

Based on the results contained in *Table 2*, the proposed development is expected to generate the following new peak hour vehicle trips:

- *Weekday AM Peak Hour*: 84 new vehicle trips/hour (22 inbound and 62 outbound)
- *Weekday PM Peak Hour*: 100 new vehicle trips/hour (62 inbound and 38 outbound)

This generally equates to adding one new vehicle trip every one to two minutes to the study area streets and intersections and is considered to be a relatively low vehicle traffic demand generated by the proposed development.

It should also be noted that GRIFFIN has not reduced the ITE vehicle trip rates to account for various phenomenon such as mode share (i.e. transit trips). Following ITE best practices, the published vehicle trip rates were applied directly to quantify the number of new vehicle trips. The published rates for walking / biking / transit would be used separately to quantify peak hour trips for these specific modes.

3.3 – Existing Site-Generated Trips

As noted earlier in this letter there are existing buildings occupying the two subject properties. The residential dwelling on civic #143 appears unoccupied and likely does not generate any vehicle trips. Conversely, the civic #153 property contains an active commercial building that contains about 9,600 ft^2 of commercial office space. Therefore, GRIFFIN quantified an estimate of vehicle traffic that currently moves to/from this building to understand the reduction in traffic volumes once this building is removed.

There are several small businesses that occupy the civic #153 building which includes general office space and medical-related businesses (eg. physiotherapy clinic). Medical related businesses typically generate slightly higher trip rates than general office space. To remain conservative in our estimates GRIFFIN elected to use the lower trip rate associated with general office use for the purposes of our review and these rates were taken from ITE's Trip Generation Manual, 11th Edition, Volume 4, *Small Office Building – Land Use Code 712*. The resulting estimate of the current site-generated traffic for civic #153 is contained in *Table 3*.

Table 3: Current Estimate of Vehicle Traffic – Civic #153

	Size	Trip Rate	New Trips / Hour		
			In	Out	Total
AM Peak Hour – Vehicle Trips					
Small Office Building - LUC 712 (Volume 4 – Suburban)	9,600 ft^2	1.67/1k ft^{2A}	13 (82%)	3 (18%)	16
AM Peak Total Vehicle Trips			**13**	**3**	**16**
PM Peak Hour – Vehicle Trips					
Small Office Building - LUC 712 (Volume 4 – Suburban)	9,600 ft^2	2.16/1k ft^{2A}	7 (34%)	14 (66%)	21
PM Peak Total Vehicle Trips			**7**	**14**	**21**

A – ITE's regression formula used to determine the per unit trip rate.

In summary, the current estimated peak hour vehicle traffic moving in/out of the civic #153 property is estimated to be 16 two-way trips/hour during the weekday morning peak hour, and 21 two-way trips in the afternoon peak hour. These volumes were used to determine the future net difference in vehicle traffic, discussed in the next section.

3.4 – Net New Vehicle Trips

The net change in vehicle traffic moving in/out of the subject properties was estimated to provide a more accurate assessment of the future traffic operating conditions along the adjacent streets. This process requires the practitioner to remove the existing traffic moving in/out of the site and add the new site-generated traffic associated with the new building. The results are provided in *Table 4*.

Table 4: Net Difference - New Peak Hour Traffic Volumes

	Add New Two-way Vehicle Trips (Table 2)	**Remove Existing Two-way Vehicle Trips** (Table 3)	**Net Change in Two-way Site-Generated Trips**
Weekday AM Peak Hour	84 vph	-16 vph	**68 vph**
Weekday PM Peak Hour	100 vph	-21 vph	**79 vph**

Although there is expected to be about 100 new two-way vehicles/hour (vph) generated by the proposed development during a typical weekday afternoon, the actual net change in site-generated traffic between now and the future full build-out is only expected to be 79 vph, two-way. This level of traffic demand adds approximately one new vehicle trip to the study area intersections every 45 to 60 seconds – a relatively low volume of new traffic.

3.5 – Expected Distribution of New Vehicle Trips

The site-generated trips will be split between the two proposed driveways. All vehicles moving to/from the underground parking will utilize the southwest driveway connecting to Sackville Drive. The remaining site traffic will utilize the northeast driveway connecting to Hillcrest Avenue. Therefore, the site-generated traffic will be split between the two driveways, divided between inbound and outbound movements, and further split between each direction along Sackville Drive. In conclusion, it appears the site-generated traffic will not be concentrated in one single location and the impacts on operations will be diminished.

Generally, we anticipate the site-generated traffic will follow existing travel patterns in the Sackville Drive corridor. Thus, most vehicles will turn to/from the south as employees travel to the

large employment areas in HRM. A smaller number of trips will turn to/from the north as residents access shopping, restaurants, and services along the Sackville Drive corridor.

4.0 VEHICLE ACCESS

4.1 – Overview of Driveway Configurations

Currently, there is only one vehicle access serving each of the civic #143 and #153 properties and they are described as follows:

- *Sackville Drive*: The existing civic #143 residential driveway connects to Sackville Drive near the southwest corner of the property. This location maximizes the corner clearance distance to/from the Hillcrest Avenue intersection. The proponent plans to utilize this same driveway location to provide the only access to underground parking.
- *Hillcrest Avenue*: The existing access serving civic #153 currently connects to Hillcrest Avenue about 35 m from Sackville Drive. The proponent plans to close this driveway and build a new vehicle access near the northeast corner of the property – about 50m from Sackville Drive. This increases, and maximizes, the available corner clearance distance. The new driveway will provide the only access to surface parking, loading/unloading, delivery vehicles and so forth.

It should be noted there will be no interconnectivity between the two proposed driveways. A summary of the existing and proposed driveway changes are contained in *Table 5*.

Table 5: Driveways Serving the Subject Lands – Current Versus Proposed

	Sackville Drive Accesses	Hillcrest Avenue Accesses
Existing (Before)	1	1
Proposed (After)	1	1
Net Change in Driveways	**No change**	**No change**

In summary, there will not be an increase, or decrease, in the number of driveways once the proposed development is complete. There will continue to be only one driveway connection to Sackville Drive and one driveway connection to Hillcrest Avenue. GRIFFIN has concluded the proposed vehicle access plan aligns with access management guidelines since the driveway density and number of accesses is not expected to increase, thus the potential for operational issues is not expected to increase.

4.2 – Driver Visibility at New Vehicle 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 both street corridors is 50 km/h. GRIFFIN applied a higher operating speed estimate of 60 km/h for Sackville Drive, and a 50 km/h speed along Hillcrest Avenue. It should be noted that adjacent intersections were considered to limit the ability for drivers to reach these speeds in some locations. The visibility assessment and results are summarized in *Table 6*.

Table 6: 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	
1. Southwest Access (Sackville Dr)	Northbound (toward Hillcrest Ave)	250 m	85 m (60 km/h)	80 m (+3%)[B]	YES
	Southbound (toward Cobequid Rd)	88 m	85 m (60 km/h)	87 m (-3%)[B]	YES
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 Bruce Street 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 driveways which exceed TAC minimum guidelines.

4.3 – Intersection Corner Clearance to New Accesses

GRIFFIN carried out a review of the available intersection corner clearance distances between the Sackville Drive / Hillcrest Avenue intersection and the two proposed driveways. 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 Sackville Drive*: The existing driveway will remain in place, near the southwest corner of the civic #143 property. However, a slightly wider driveway opening is likely to be needed to meet current design requirements and will reduce the corner clearance

distance slightly. Currently there is about 115 m of clear distance which could be reduced to about 110 m. Despite the need to reduce the corner clearance distance, the proposed conditions will greatly exceed the HRM minimum requirement of 30 m.

- *Along Hillcrest Avenue*: Currently, 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 Dive 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.

4.4 – Off-Street Vehicle Parking

A mix of off-street parking will be provided on site for residents, patrons, and employees. Up to 46 surface vehicle parking spots will be provided outside the building and about 276 spaces will be provided within the building. A total of 322 spaces are being planned which essentially provides one parking space per residential unit plus a small number of spaces for the commercial tenants.

It should also be noted that bicycle parking spaces are also being planned as part of the new development. It is understood that about 16 bicycle spaces will be provided outside of the building.

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 is submitting a planning application for an assembly of properties in Lower Sackville that includes civics #143 and #153 Sackville Drive, in the southeast quadrant of the Sackville Drive / Hillcrest Avenue intersection. The existing buildings on these properties will be removed and replaced with a new Mixed Use high-rise building that will occupy both properties. The new building is planned to have a common podium with two towers with up to 14 floors. The building will contain about 15,555 ft^2 of ground-floor commercial space and up to 294 residential apartment-style units.
- HRM provides good connectivity for pedestrians in the immediate vicinity of the subject lands through the provision of sidewalks along both sides of Sackville Drive and the south side of Hillcrest Avenue. These sidewalks offer access to Halifax Transit service, including the existing stops adjacent to the new building and the Cobequid Road Transit Terminal about 470 m to the south. This walking distance is less than HRM's 500 m walking threshold for access to Public Transit.

- GRIFFIN developed future vehicle trip estimates for the proposed changes by removing the existing site-generated peak hour volumes and adding the future expected traffic associated with the new Mixed Use building. GRIFFIN utilized ITE's *11th Edition Trip Generation Manual*, *Volumes 3 and 4* to develop both the existing and future site-traffic moving in/out of the subject lands. In summary, the net change in site-generated vehicle trips was estimated to be **68 new vehicle trips/hour** during the weekday morning peak period, and **79 new vehicle trips/hour** during the weekday afternoon peak period.
- GRIFFIN expects there will be little to no traffic operational impact on the study area streets and intersections associated with the completion of the proposed Mixed Use building as there will only be about one new vehicle trip added every 45 to 60 seconds during peak times of the day. Further, there are good pedestrian facilities and connectivity in this area which will allow residents to access the public transit bus services. This type of neighbourhood is very walkable and with increased density – like the proposed development – will incentivize mobility choices other than travel via commuter vehicle.

In summary, the number of new vehicle trips generated by the proposed Mixed Use development will have an acceptable degree of impact on the study area streets and intersections.

5.2 – Recommendations

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

1. *Vehicle Access:* That the geometric design of the proposed new driveways follow the latest Transportation Association of Canada (TAC) and HRM design guidelines contained in the most recent edition of their Municipal Design Guidelines document. This includes the accommodation of an appropriate design vehicle (i.e. garbage truck or emergency vehicle) – should HRM deem this necessary during the geometric design stage of the project.
2. *By-Law Requirements*: That the municipal By-laws/Policy requirements for corner clearance, sight triangles, and driver visibility are met to ensure acceptable traffic operations are maintained throughout the planning, design, and construction phases of this project.
3. *Active Transportation*: That HRM examines opportunities and benefits associated with providing a well-connected multi-use path (MUP) along the Sackville Drive corridor. A MUP has the ability to accommodate several different active travel modes within a managed space – including pedestrians, cyclists, etc. – away from vehicle traffic.
4. *Pedestrian Infrastructure*: That HRM ensure pedestrians with mobility challenges are better accommodated along the existing sidewalks and crosswalks in this area of Lower Sackville. This could include upgrades to crosswalk curb cut widths, curb ramps, sidewalk widths, crosswalk markings and signs, etc. Upgrades should be consistent with the latest public right-of-way accessibility guidelines (PROWAG).

5. *Signs and Pavement Markings*: Should any new or changed signs and/or pavement markings be installed, that they follow the latest guidelines contained in TAC's Manual of Uniform Traffic Control Devices for Canada (MUTCDC) document.

6.0 CLOSING

The findings flowing from this qualitative traffic impact statement suggest the new vehicle trips generated by a proposed Mixed Use development are expected to have an acceptable impact on the traffic operational performance of the study area streets and intersections. As this area of Lower Sackville becomes more densely populated HRM should continue identifying opportunities for mobility investments – such as improved public transit services and connected active transportation facilities. Future mobility investments will help achieve the goals of the IMP and accommodate the expected shift in mode share.

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,

Original Signed

Original Signed

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