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February 11, 2020

A.J. Giles Investments Ltd.
799 West Lawrencetown Road
Dartmouth, NS B2Z 1S7

RE: A Traffic Impact Statement for a proposed Re-zoning of #1268 Cole Harbour Road

Dear Mr. Giles:

1.0 INTRODUCTION

At the request of *A.J. Giles Investments Ltd. (Giles)*, the GRIFFIN transportation group inc. has completed a qualitative Stage 1 - Traffic Impact Assessment in support of the planning application process for a proposed re-zoning of civic #1268 Cole Harbour Road, in the community of Cole Harbour, Halifax Regional Municipality (HRM).

The subject property (PID #00406702 and #41217431) is generally located in the southeast quadrant of the Cole Harbour Road / Bissett Lake Road intersection and it measures approximately 1 acre in size. These lands are located in the Cole Harbour/Westphal Land Use By-Law area. Currently, the front (north) portion of the lands facing Cole Harbour Road have a C-2 (Commercial General Business) zone designation, while the rear (south) portion of the property has a R-2 (Residential Two-unit Dwelling) zone designation.

There are two buildings located on the property which include the following:

- A detached home that has been re-purposed into office space for an interior decorating business, and
- A small accessory storage building.

Vehicle access to the property is provided via a single driveway connecting to Cole Harbour Road. There are 8 parking spaces serving the existing commercial business. The driveway for the storage building connects to the asphalt parking area and is only used infrequently (about once per week).

The site context is generally illustrated in *Figure 1*.

Figure 1: Study Area and Site Context



Source: ZZAP Architecture and Planning

The planning application being submitted to HRM is to simply attain a uniform and consistent zone designation for the entire civic #1268 property. It is being requested that the entire property be zoned C-2. It should also be noted that there are no proposed changes to the existing commercial activities on site, and the existing buildings and businesses will continue to be used in the same manner following the proposed zoning change.

2.0 STUDY AREA AND SITE CONEXT

It is understood this section of Cole Harbour Road is under the jurisdiction of HRM and is generally aligned in an east-west direction. In the vicinity of the site access it has one travel lane in each direction. It is also located within the taper of a centre left turn lane for the adjacent Bissett Road intersection thus the pavement width is approximately 11.0m wide – comprised of two 4.6m travel lanes and a 2.5m painted centre median/taper. Immediately west of the existing site access the cross section is considered to be urban in nature with concrete curb and gutter, and sidewalks provided on both sides. Immediately east of the site access a full urban cross-section is provided on the north side of Cole Harbour Road while the south side transitions to a semi rural cross-section with a mountable asphalt swale, wide gravel shoulder and an asphalt sidewalk.

Through the study area, the horizontal alignment of Cole Harbour Road is generally straight but is located on a long slope. A combined sag/crest vertical curve is located west of Bissett Road which

limits driver visibility to some degree. East of the site access there appears to be good visibility. A driver sight distance review of existing conditions was carried out and is discussed further in Section 4.

The existing vehicle access serving the subject lands is located about 67m (centre to centre) east of the Bissett Road intersection and has a corner clearance / intersection setback distance of about 52m. The existing corner clearance exceeds the typical commercial driveway minimum requirement of 30m. Again, there are no proposed changes to the site access location or layout as part of the proposed re-zoning of the rear (south) portion of the property.

3.0 EXISTING TRAFFIC CONDITIONS

3.1 Traffic Volume Data

A site visit was carried out on Friday January 31st, 2020 to observe traffic volumes, driver behavior, pedestrian activity, existing signage and so forth. During this site visit GRIFFIN gathered two-way traffic volumes on Cole Harbour Road in the vicinity of the site access during a late morning off-peak time period to better understand the existing vehicle demand in this travel corridor. The recorded data indicated the two-way hourly vehicle flows are 764 vehicles/hour (vph), including 324 vph eastbound and 340 vph westbound.

In addition, historical traffic data along Cole Harbour Road was obtained from HRM to understand hourly traffic profiles over the course of a typical weekday in the vicinity of the site access. HRM had recently conducted an intersection turning movement count at the Cole Harbour Road / Bissett Road intersection in November 2019 and a summary of these weekday morning and afternoon peak hour volumes along Cole Harbour Road, east of Bissett Road are contained in *Table 1*.

Table 1: Hourly Traffic Volumes on Cole Harbour Road

HRM Traffic Data November 2019 Traffic Count	Hourly Volumes (vph)		
	Eastbound (outbound)	Westbound (inbound)	Two-way
Weekday Morning (AM) Peak Hour ^A	173	794	967
Weekday Afternoon (PM) Peak Hour ^A	634	403	1,037

*A – Volume on Cole Harbour Road at site access.
vph – vehicles per hour.*

3.2 Vehicle Speed Data

GRIFFIN gathered vehicle operating speed data along Cole Harbour Road immediately east of the Bissett Road intersection on January 31st, 2020. These data only included free-flow vehicle speeds not influenced by slowing/turning vehicles at adjacent intersections or driveways. All of the speed recordings were assembled and an 85th percentile vehicle operating speed was calculated. This value has been identified as a reasonable “design” speed that is used by many road agencies across North America to set regulatory speed limits on roadways. In the case of this assessment, the 85th percentile vehicle operating speed was used for the stopping sight distance review.

The calculated 85th percentile vehicle operating speed on Cole Harbour Road was determined to be 70 km/h and included vehicles traveling in both directions. Following national design guidelines, a 70 km/h was chosen as the design speed for the sight distance assessment discussed below. The posted regulatory speed limit is 60 km/h.

4.0 DRIVER STOPPING SIGHT DISTANCE REVIEW

A driver sight distance review was carried out to ensure minimum visibility requirements are available at the existing vehicle access serving civic #1268. The sight distance review was based on the guidelines contained in the latest Transportation Association of Canada’s (TAC) Geometric Design Guide for Canadian Roads document (2017). At this early stage of the planning process only the minimum requirement for vehicles approaching the existing access was assessed. This is referred to as stopping sight distance (SSD). The provision of adequate SSD for vehicles traveling on the main roadway – in this case Cole Harbour Road – ensures that drivers have sufficient forward visibility to identify a hazard in the roadway, and if needed, bring their vehicle to a stop.

The field measurements were carried out by GRIFFIN and followed the latest TAC guidelines including a driver eye height of 1.05 m and an object/hazard height of 0.60 m. The 0.60 m object was placed at the existing access to civic #1268, on the edge of the eastbound (outbound) travel lane. A summary of the field measured sight distances relative to the minimum requirements for a 70 km/h operating speed is provided in *Table 2*.

Table 2: Summary of Stopping Sight Distance Measurements (70 km/h)

Access	Travel Direction	Available SSD	TAC Required SSD		Does Available Exceed Required?
			Base ^A	Slope Adjusted	
Civic #1268 Access	Eastbound (outbound)	106 m	105 m (70 km/h)	100 m (+3%) ^B	Yes
	Westbound (inbound)	244 m		112 m (-4%) ^B	Yes

A – 2017 TAC Chapter 2, Table 2.5.2

B – An estimate of the actual slope along Cole Harbour Road on the approaches to the site access.

Based on the site conditions, the available stopping sight distances along Cole Harbour Road meet or exceed TAC minimum requirements for a 70 km/h vehicle operating speed. As such, the existing vehicle access at civic #1268 is in a location that meets minimum design guidelines for stopping sight distance.

5.0 SITE TRIP GENERATION

Typically, traffic impact assessments attempt to evaluate the change in traffic volumes on the study area streets under the proposed future conditions, which could include additional traffic generated by a new business or a change in business operations. However, as noted earlier, the proposed re-zoning application for civic #1268 only applies to the rear (south) portion of the property and there are no plans to change or expand the existing business operations, or the use of the accessory storage building. As such, the existing traffic volumes moving in/out of the site will continue to remain the same under the future proposed conditions which would see a uniform and consistent zone designation for the entire property. A discussion of the existing traffic demand generated by civic #1268 is discussed below.

Typically, traffic engineers estimate future traffic volumes using trip generation rates that are published by the Institute of Transportation Engineers (ITE) in the most recent *Trip Generation, 10th Edition* document. However, since there is only one business on-site with a relatively small number of employees, a first principles approach was taken to determine a more accurate estimate of the existing vehicle activity. GRIFFIN held discussions with *Giles* to obtain information regarding the existing business operations. From these discussions it was determined that the interior design business can be characterized as a service-based or consultant type of operation, and unlike a retail business, there are limited number of client or customer trips moving in/out of the site. Therefore, the vehicle activity is predominantly comprised of employees/office staff trips, infrequent customer trips (by appointment), as well as infrequent courier truck trips. Further, the accessory storage building has the potential to add a very small number of vehicle trips which is assumed to be a worst-case scenario of 1 vehicle per week.

Based on this information, a worst-case scenario has been prepared for analysis purposes. Although not a typical situation, a worst-case scenario would occur when all three full/casual employees are in the office, a client is attending a meeting, a courier delivery occurs as well as a visit to the accessory storage building. The associated site-generated vehicle trip calculations for this situation are summarized in *Table 3*.

Table 3: Existing Site Trip Generation for the Existing Buildings

	Unit/ Size	Trip Rate ^A	Vehicle Trips / Hour		
			In	Out	Total
AM Peak Hour					
Existing Business - Employees	3 employees	1.0/unit	3 (100%)	0 (0%)	3
Existing Business - Clients	1 Client	2.0/unit	1 (50%)	1 (50%)	2
Existing Business – Courier/Delivery	1 Courier	2.0/unit	1 (50%)	1 (50%)	2
Storage Building ^C	0 visit	2.0/unit	0 (50%)	0 (50%)	0
AM Peak Total Trips ^B			5	2	7
PM Peak Hour					
Existing Business - Employees	3 employees	1.0/unit	0 (0%)	3 (100%)	3
Existing Business - Clients	1 Client	2.0/unit	1 (50%)	1 (50%)	2
Existing Business – Courier/Delivery	1 Courier	2.0/unit	1 (50%)	1 (50%)	2
Storage Building ^C	1 visit	2.0/unit	1 (50%)	1 (50%)	2
PM Peak Total Trips ^B			3	6	9

A – First-principles approach based on known business operations.

B – New trips equal total site trips, no discounts for pass-by traffic applied.

C – Storage building assumed to only be accessed during PM peak hour.

In summary, a worst-case scenario generates a very low number of hourly vehicle trips, including up to 7 trips/hour during a weekday morning peak and 9 trips/hour during a weekday afternoon peak. This generally equates to an average of one vehicle trip entering/exiting the Cole Harbour Road traffic stream every 7-8 minutes – under a worst-case scenario – and this is considered to have a very small impact on the corridor traffic operations. Again, these are existing volumes and there are no new vehicle trips anticipated that would be explicitly associated with the proposed zoning change to the rear (south) portion of the property. Thus, there are no impacts on the Cole Harbour Road corridor associated with the proposed re-zoning.

An existing asphalt parking lot is provided on-site and contains 8 parking stalls. During the January 31st site visit only one employee vehicle was observed on site during the mid-morning period. It was concluded that there is ample parking supply to meet worst-case scenario demands.

6.0 FINDINGS & CONCLUSIONS

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

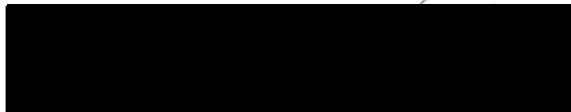
- The current civic #1268 property has a commercial C-2 zone designation on the front (north) portion and a residential R-2 zone designation on the rear (south) portion. The land owner is preparing a planning application to re-zone the rear (south) portion of the property so the entire property has a consistent commercial C-2 zone designation. There are no planned or proposed changes to the existing buildings or business operations explicitly associated with the proposed re-zoning.

- The existing traffic moving in and out of the site is associated with the interior design business and a small accessory storage building. Based on our understanding of the business operations, GRIFFIN determined that a worst-case traffic scenario could see the site access experiencing upwards of 7 trips/hour (5 inbound and 2 outbound) during the weekday morning peak period and 9 trips/hour (3 inbound and 6 outbound) during the weekday afternoon peak period.
- The available driver sight distance along Cole Harbour Road, towards the existing civic #1268 access, exceeds TAC minimum SSD requirements for a 70 km/h vehicle operating speed. The vehicle speed survey carried out by GRIFFIN determined the two-way 85th percentile operating speed to be 70 km/h and the regulatory speed limit is 60 km/h.
- The qualitative traffic operational assessment has concluded that there will be no change in the number of vehicles moving in/out of the civic #1268 property before and after the proposed re-zoning change. Therefore, there will be no impact to the Cole Harbour Road traffic operations and the existing vehicle access can continue to operate as is, without any changes to the layout, design or traffic control.

7.0 CLOSING

The findings flowing from this qualitative traffic impact statement suggest the proposed re-zoning of the civic #1268 property to a commercial zone will have no impact on the existing buildings, use of the buildings or the existing business operations. As such, there are no expected changes to the existing vehicle trips moving in/out of the existing access and there is adequate capacity, driver visibility and corner clearance at the connection to Cole Harbour Road to accommodate the existing vehicle demand. 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,



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

