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30 Bonny View Drive
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September 14, 2021

Att: Ms. Janice Bayers
A.J. Giles Investments Ltd.
799 West Lawrencetown Road
Dartmouth, NS B2Z 1S7

RE: A Traffic Impact Statement for a proposed development at #1268 Cole Harbour Road

Dear Ms. Bayers:

1.0 INTRODUCTION

1.1 - Overview

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 Development Agreement application being submitted to the Halifax Regional Municipality's (HRM) Planning Department. *Giles* is proposing to re-develop the civic #1268 Cole Harbour Road property from its existing commercial use to a medium density residential development comprised of 16 stacked townhome units plus a four-story building containing 30 apartment units.

The subject properties (PID #00406702 and #41217431) are generally located in the southeast quadrant of the Cole Habour Road / Bissett Lake Road intersection and measure 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. The subject properties are shown in *Figure 1.*

Currently, 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.

Figure 1: Existing Site Layout and Location

Source: ZZAP Architecture and Planning

There is one vehicle access serving the subject property. It is understood that the single access will remain; however, it will shift to the east slightly. A more detailed discussion associated with the existing and proposed site driveway is provided later in Section 3.

1.2 – Study Area and Site Context

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 plus the taper for the centre left turn lane associated with the adjacent Bissett Road intersection. Thus, the existing pavement width in the vicinity of the site driveway is approximately 11.0m wide – which is 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 of the street. Immediately east of the site access a full urban cross-section is provided on the north side of Cole Habour 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 was carried out and is discussed further in Section 3.1.

The existing vehicle access serving the subject lands is located about 67m (centre to centre) east of the Bissett Road intersection. The existing corner clearance tangent distance is about 50m and appears to exceed HRM's minimum requirement. A more detailed discussion regarding the proposed driveway location and corner clearance is provided in Section 3.2.

2.0 EXISTING TRAFFIC CONDITIONS

2.1 – 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 Habour 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. These two-way hourly volumes were recorded to be 764 vehicles/hour (vph), including 324 vph eastbound and 340 vph westbound. It should be noted that these off-peak volumes were recorded prior to the start of the Provincial state of emergency, and therefore, appear to be representative of current and typical traffic volumes and travel patterns.

Historical traffic data was also obtained from HRM to understand hourly traffic profiles over the course of a typical weekday in the vicinity of the site access. These data included HRM's recently conducted intersection turning movement counts at the Cole Harbour Road / Bissett Road intersection in November 2019. A summary of these weekday morning and afternoon peak hour volumes along Cole Habour 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.

The November 2019 peak hour volumes gathered by HRM suggest this corridor is operating under-capacity. This two-lane, two-way section of Cole Harbour Road has an expected capacity of about 1,200 vph (12,000 vpd)[1] or more which exceeds the peak hour volumes contained in *Table 1*.

[1] HRM Municipal Design Guidelines, Table 4.1. Arterial and collector street class 12,000 vpd or more.

2.2 Vehicle Speed Data

GRIFFIN gathered vehicle operating speeds 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 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. Following national design guidelines, 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. The posted regulatory speed limit is 60 km/h.

3.0 THE SITE ACCESS

3.1 – Driver Stopping Sight Distance Review

A driver sight distance review was carried out to ensure minimum visibility requirements would be available at the proposed 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 on January 31st, 2020 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*.

It was concluded that the available stopping sight distances at the existing site driveway meet or exceed TAC minimum stopping sight distance 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.

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 our review of the proposed site plan contained in *Figure 2*, the site driveway will shift about 5-6 m to the east. Therefore, the visibility for eastbound drivers will increase slightly and the results of the stopping sight distance review remain unchanged for the proposed new driveway location.

3.2 – New Driveway Corner Clearance Review

A corner clearance review was carried out to ensure the proposed site access was located a sufficient distance away from the nearest intersection – the Cole Harbour Road / Bissett Road intersection. Providing adequate space between an intersection and the nearest driveway reduces road safety risks and the likelihood of vehicle-to-vehicle conflicts associated with vehicles turning to/from the driveway.

Both the Transportation Association of Canada (TAC) and the HRM provide guidance with respect to minimum corner clearance guidelines and the requirements identified by these two sources vary. The minimum required distance is based on site-specific conditions and a summary of the existing street characteristics is contained in *Table 3*.

Table 3: Summary of Corner Clearance Characteristics

Site Characteristic	Description
Predominant Land Use Type	Appears to be a mix of commercial and residential.
Street Classification	Appears to function as a major collector / minor arterial.
Street Width	Cole Harbour Road only has one vehicle travel lane in each direction at the proposed driveway location.
Intersection Type	Appears to be a “minor intersection” as defined by TAC (stop-controlled) with no queues that could impact turns in/out of the proposed driveway.

GRIFFIN used these site-specific conditions to identify the minimum required corner clearance distance between the Cole Harbour Road / Bissett Road intersection and the proposed driveway. The two key guiding documents suggested the following:

- *HRM Guidelines*: Minimum of 30m between the street line of the nearest intersecting street and the proposed driveway (Source: *HRM’s By-Law Number S-300*).

- *TAC Guidelines*: Minimum of 5m of tangent distance between the corner radii of the intersection and the corner radii of the proposed driveway (Source: TAC's *GDGCR – Chapter 8 – Access, 2017*).

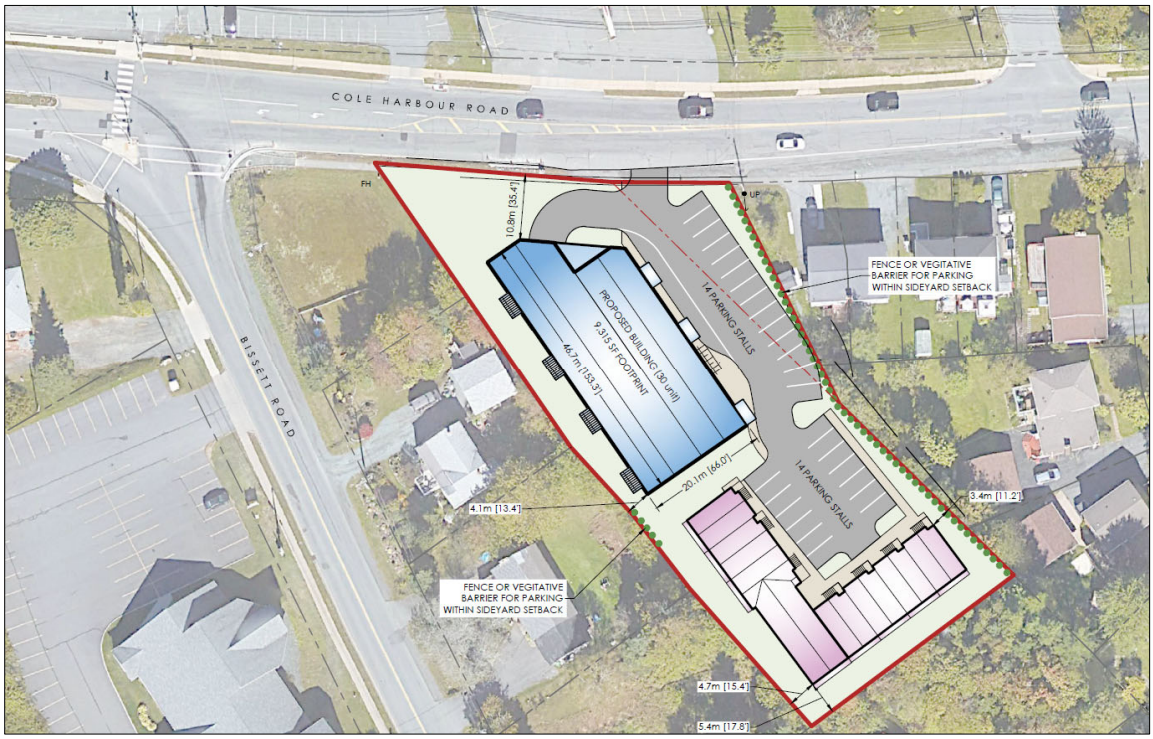
GRIFFIN then compared these minimum requirements to the available corner clearance associated with the proposed driveway location – determined to be about 55 m of tangent distance (*i.e.* excluding corner radii). Thus, the available corner clearance distance exceeds both HRM and TAC minimum requirements. In addition, the proposed driveway is situated further east than the existing driveway which improves the upon the current corner clearance distance.

4.0 SITE TRIP GENERATION

4.1 – The Proposed Development

The civic #1268 property is comprised of two separate PID's (PID #00406702 and #41217431), as shown in *Figure 1*. The proponent is proposing to remove the existing buildings and replace them with a four-floor multi-unit residential building containing 30 apartments, as well as 16 stacked townhome units. This will result in a total of 46 new medium-density residential units on this property. A concept drawing showing the proposed building locations, parking areas and site driveway is contained in *Figure 2*.

Figure 2: Proposed Site Layout



Source: ZZAP Architecture and Planning

4.2 – Vehicle Trip Generation

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. As noted in the previous Section, a total of 46 medium density residential units are proposed to be built. It is understood there will be a mix of unit types including stacked townhomes (three floors) and apartments in a multi-unit building (four floors). Based on this mix, the most applicable ITE land use codes were determined to be:

- *Stacked Townhome Units*: ITE's Multifamily Housing (Low-Rise) – Land Use Code 220, and
- *Apartment Units*: ITE's Multifamily Housing (Mid-Rise) – Land Use Code 221

GRIFFIN used these ITE published trip rates to calculate the peak hour site-generated vehicle trips for the proposed development and the results are summarized in *Table 4*.

Table 4: Vehicle Trip Generation Calculations

	Units	Trip Rate[A]	Vehicle Trips / Hour		
			In	Out	Total
AM Peak Hour					
Stacked Townhomes: ITE LUC 220 Multifamily Housing (Low-Rise)	16	0.50/unit	2 (23%)	6 (77%)	8
Apartments: ITE LUC 221 Multifamily Housing (Mid-Rise)	30	0.37/unit	3 (26%)	8 (74%)	11
AM Peak Total Trips[B]			**5**	**14**	**19**
PM Peak Hour					
Stacked Townhomes: ITE LUC 220 Multifamily Housing (Low-Rise)	16	0.75/unit	8 (63%)	4 (37%)	12
Apartments: ITE LUC 221 Multifamily Housing (Mid-Rise)	30	0.47/unit	9 (61%)	5 (39%)	14
PM Peak Total Trips[B]			**17**	**9**	**26**

A – Calculated using ITE's formula rate.

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

Based on the results contained in *Table 4*, the proposed 46-unit medium density residential development is expected to generate up to 19 vehicle trips/hour (5 inbound and 14 outbound) during the weekday morning peak hour and 26 vehicle trips/hour (17 inbound and 9 outbound) during the weekday afternoon peak hour. This generally equates to an average increase of about one additional vehicle trip added to the Cole Harbour Road corridor every 2.5-3 minutes during peak times of the day. Traffic volume increases of this magnitude are considered to be small and manageable.

4.3 – A Comment on Parking

As shown in *Figure 2*, the proposed development will provide off-street parking for residents. This will include 28 surface parking stalls as well as underground parking in the multi-unit building. Generally, the location of the surface parking in relation to the vehicle driveway and circulation aisle appears to follow good design principles.

The final site design should ensure that the driveway connection with Cole Harbour Road has sufficient driveway throat length between the driveway stop bar and the nearest parking stall and that good visibility is maintained such that no vehicles are permitted to park in either corner site triangle area that is formed by the intersection of the new driveway and Cole Harbour Road.

5.0 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. It is understood that the proponent is seeking approval through HRM's Development Agreement process and proposes to remove the existing buildings and replace with a four-floor building containing 30 apartments as well as 16 stacked townhomes.
- The trip generation calculations for the proposed 46-unit medium-density residential development is expected to generate up to 19 vehicle trips/hour (5 inbound and 14 outbound) during the weekday morning peak hour and 26 vehicle trips/hour (17 inbound and 9 outbound) during the weekday afternoon peak period.
- The available driver stopping sight distance (SSD) along Cole Harbour Road, looking 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. Visibility at the proposed driveway location – as shown in *Figure 2* – also appears to exceed minimum SSD requirements since it is located about 5-6 m east of the existing location.
- The available driveway corner clearance distance between the proposed driveway location and the Cole Harbour Road / Bissett Road intersection improves upon the existing conditions. The proposed corner clearance distance will increase to about 55 m. This exceeds both HRM and TAC minimum guidelines.
- The qualitative traffic operational assessment has concluded that the new site-generated peak hour trips will have a marginal impact on traffic operations in the Cole Harbour Road corridor. The new vehicle trips were calculated to add - on average - about one vehicle every 2.5-3 minutes. As such, there is expected to be sufficient residual capacity along the

existing street during peak times to accommodate these small number of new site-generated trips.

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

1. That the design of the new site driveway and its intersection with Cole Harbour Road follow the latest HRM and Transportation Association of Canada (TAC) geometric design guidelines. This includes the accommodation of an appropriate design vehicle (i.e. garbage truck or fire truck).
2. 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 driveway are maintained throughout the planning, design, and construction phases of this project.

6.0 CLOSING

The findings flowing from this qualitative traffic impact statement suggest the new trips generated by the proposed 46-unit residential development are expected to have a negligible impact on the existing traffic operations in the Cole Harbour Road corridor. It also appears the new site driveway can function with adequate performance measures without the need for any turn lanes or roadway widening. 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.
Managing Principal – Traffic & Road Safety Engineer
GRIFFIN transportation group inc.