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Mr. Chris Markides, MCIP, LPP Urban Planner
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RE: A Traffic Impact Statement for a proposed development at civic #1 Circassion Drive

1.0 INTRODUCTION

1.1 Overview

At the request of *ZZAP Architecture and Planning (ZZAP)*, and on behalf of their client *Dartmouth Housing Authority*, the GRIFFIN transportation group inc. has completed a qualitative Stage 1 Traffic Impact Assessment in support of the planning approval process for a proposed residential development located at civic #1 Circassion Drive, in the community of Cole Harbour, Halifax Regional Municipality (HRM). The subject property is located in the northwest quadrant of the Forest Hills Parkway / Circassion-Merrimac Drive signalized intersection. The property measures about 0.6 acres in size and currently has a P-2 (Community Facility) zoning designation within the Cole Harbour/Westphal Land Use By-Law area. A key map illustrating the location of the site is provided in *Figure 1*.

It is understood that ZZAP is preparing a Development Agreement planning application that will be submitted to HRM's Planning Department. The proponent proposes up to 18 new affordable housing units will be contained within a three floor multi-unit building. Vehicle access to this development is proposed via the existing driveway that connects to Circassion Drive, along the south property line.

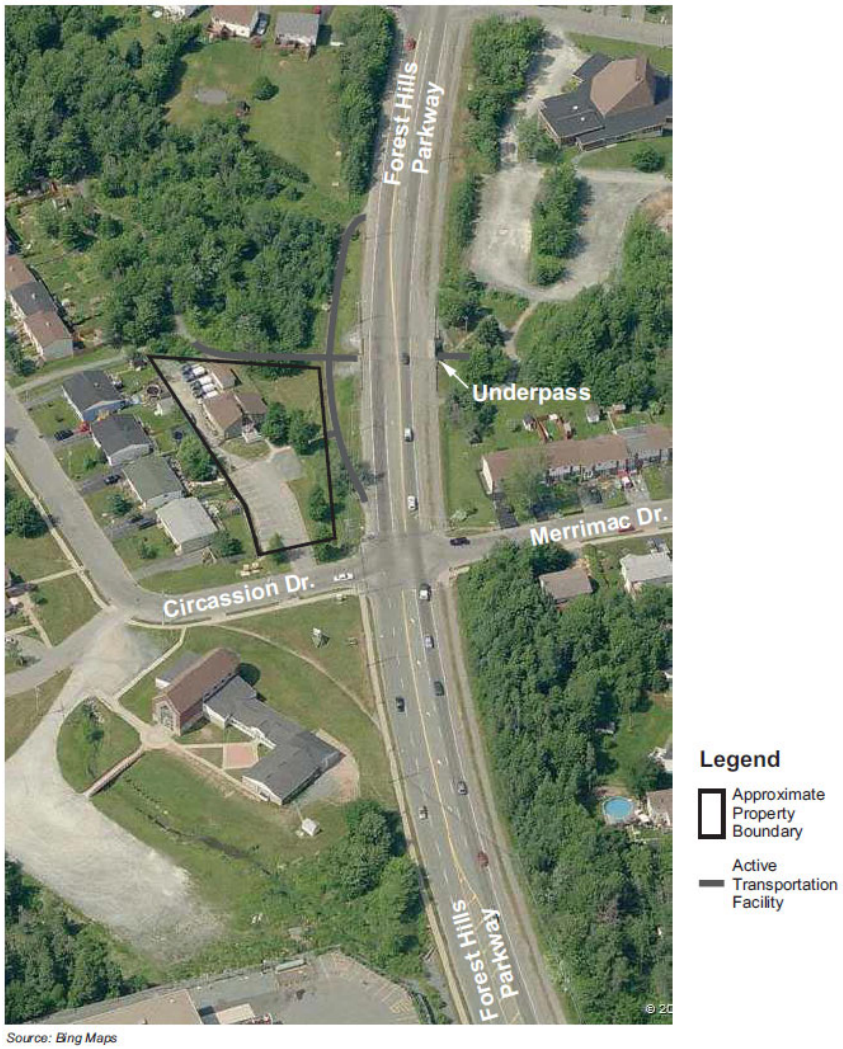
This traffic impact statement letter has been prepared to support the proponent's planning application. A qualitative discussion of the future traffic impacts associated with the proposed development is contained in the following pages.

1.2 Background

In June 2013, GRIFFIN submitted a Stage 1 traffic impact statement letter for a similar residential development being proposed at civic #1 Circassion Drive. At that time, up to 8 affordable townhome units were being proposed with a vehicle access connecting to Circassion Drive immediately west of Forest Hills Parkway. GRIFFIN concluded that the proposed 8 townhome-unit development would only generate a very small volume of peak hour traffic volumes and the available residual capacity along Forest Hills Parkway and Circassion Drive could accommodate this marginal increase in traffic beyond the 2020 planning horizon.

As part of this earlier work, GRIFFIN also carried out a detailed analysis of the adjacent signalized intersection under current 2013 and future 2020 peak hour traffic conditions. It was determined that there would be no additional traffic operational issues associated with the proposed development. This background information was used as a reference in preparing this current TIS letter.

Figure 1: Site Location



Source: Bing Maps

2.0 STUDY AREA AND SITE CONEXT

2.1 Study Area Roads

Forest Hills Parkway forms the east property boundary and is generally aligned in a north-south direction. This facility functions as a key urban arterial in HRM's roadway system. North of Circassion Drive it has a basic two-lane cross-section with localized widening at intersections. South of Circassion Drive the roadway cross-section is comprised of one northbound lane and two southbound lanes. The regulatory speed limit in this corridor is 70 km/h.

Circassion Drive is generally aligned in an east-west direction and appears to function as a minor collector street serving the residential neighbourhood west of the subject property. It intersects with Forest Hills Parkway as a four-leg signalized intersection. The asphalt width measures 9.1 m wide (curb to curb) and this street has a regulatory speed limit of 50 km/h. However, the close proximity of the signalized intersection and sharp horizontal curve limit the ability for drivers to reach 50 km/h in the vicinity of the site driveway.

The existing site driveway connects to Circassion Drive immediately west of the signalized intersection. The driveway measures about 6.4 m wide and has the ability to serve two-way traffic (*i.e.* one lane inbound, one lane outbound).

2.2 Existing Traffic Volume Review

As noted earlier in this letter, GRIFFFIN had completed a traffic impact review in May 2013 for this same property. At the time, HRM provided an intersection turning movement traffic count at the adjacent Forest Hills Parkway / Circassion-Merrimac Drive intersection. For this current assessment, HRM provided more recent traffic volume counts from 2015 and 2017 - prior to the provincial state of emergency associated with the COVID-19 pandemic which negatively impacted travel behaviour and travel demand.

GRIFFIN carried out a review of these sets of peak hour traffic counts to help identify the change in traffic volumes over this time period. A summary is provided in *Table 1*.

Table 1: Comparison of Historical Peak Hour Traffic Volumes – Critical PM Peak Hour Two-way Trips

	Two-way PM Peak Hour Volumes[A]	
	Circassion Drive West of intersection	**Forest Hills Parkway** South of intersection
2013 (May)	208 vph	1,743 vph
2015 (July)	-	1,328 vph
2017 (August)	88 vph	1,473 vph
Change	⬇	⬇

A – Peak hour traffic volumes recorded by HRM

Our review of the available historical traffic volumes suggests that the study area traffic demand declined from 2013 and 2017. One caveat to this conclusion is the fact that the higher 2013 volumes were recorded in May – a month that generally experiences average travel demand. While the summer months of July and August generally experience lower travel demand due to closed schools, employee vacations, and so forth.

In conclusion, the existing vehicle demand on the study area roads is expected to be similar to the volume of traffic considered in GRIFFIN's May 2013 traffic impact study assessment. Thus, there continues to be residual capacity along the adjacent street corridors and the adjacent signalized intersection.

2.3 Alternative Modes

The surrounding residential neighbourhood is well-served by facilities that accommodate alternative modes of travel to the traditional commuter vehicle. These include the following:

- *Metro Transit Bus Service*: Public transit service is provided along both adjacent roadway corridors. These include Bus Routes #61, 63, 161, 168 (A and B), and 178 traveling along Forest Hills Parkway, as well as Bus Routes #61 and 161 traveling along Circassion Drive. Bus stops are conveniently located on multiple corners of the adjacent signalized intersection.
- *Active Transportation Facilities*: A pedestrian sidewalk is provided along the south side of Circassion Drive which leads to signalized crossings on all four approaches to the Forest Hills Parkway / Circassion-Merrimac Drive intersection. In the northwest quadrant – adjacent to the subject property – a multi-use active transportation trail parallels the Forest Hills Parkway corridor and provides a convenient connection to the public library, recreational facilities, and a High School north of the study area.

These above-noted transportation services/facilities offer alternative travel mode choices for residents living within the proposed development. As such, our vehicle trip generation forecasts discussed later in this report provide a conservative (i.e. worst case) estimate of the expected increase in volume.

3.0 THE PROPOSED DEVELOPMENT

3.1 Overview

The civic #1 Circassion Drive property was formerly used as the local sales office for new homes in this residential neighbourhood. This business has been closed for some time and based on GRIFFIN's observations made during their May 2013 and August 2022 site visits there is no vehicle traffic entering or exiting the site.

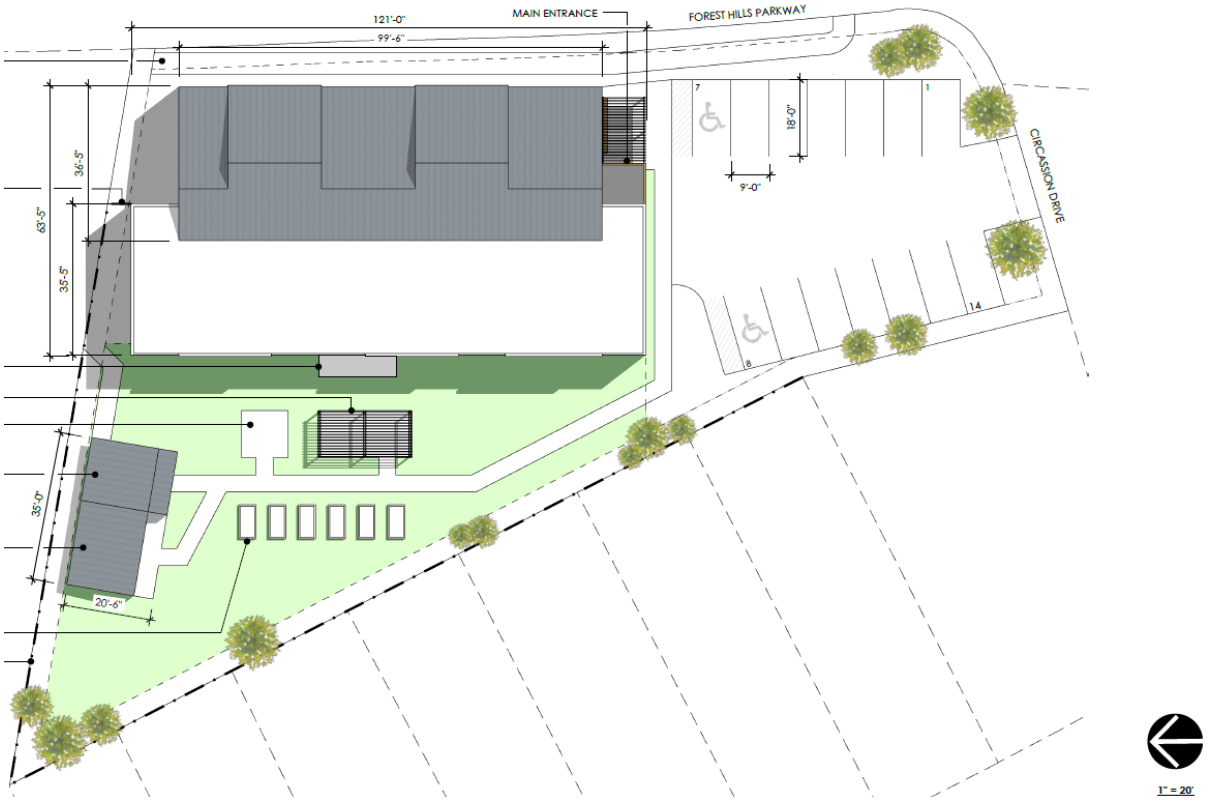
Based on our discussions with ZZAP, it is understood that the site is to be re-developed via a Development Agreement process that will include up to 18 new affordable housing units contained within one multi-unit building. The new building will be situated in the northeast corner of the property, surface vehicle parking for residents will be located to the south of the building, and the vehicle driveway will remain in its existing location.

Generally, the proposed medium-density residential development is well-suited to this area based on the following:

- The residential land use is consistent with the surrounding neighbourhood;
- Multiple public transit routes move through the adjacent signalized intersection; and
- Adjacent active transportation trails as well as both a grade-separated trail crossing and signalized crossing of Forest Hills Parkway.

Further, there are numerous community amenities located a short distance away. Retail businesses are located to the south and community facilities such as a library, High School, community centre are located to the north. Their close proximity to the proposed developed is expected to reduce the need / reliance on single-occupant vehicle trips.

Figure 2: Proposed Site Layout



Source: ZZAP Architecture + Planning

3.2 New Vehicle Trip Generation

In order to assess the change in traffic volumes on the study area streets under future conditions, there was a need to determine the number of new vehicles added by the completion of the proposed residential 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), in the most recent *Trip Generation, 11th Edition* document. Based on information provided by the client, a total of up to 18 new residential units will be constructed on the subject property. It is understood these units will be rental apartments contained within one building, with a total of three floors. Based on this information, the most applicable ITE land use code was determined to be:

- *Multifamily Housing (Low-Rise) – ITE Land Use Code 220*: ITE describes this land use as one that includes apartments, townhomes, or condominiums located in the same building with at least three other dwelling units and that have two or three floors.

A review of the ITE survey data graphs was also carried out to identify the most appropriate trip rate calculation method for this land use type. Upon reviewing the graphs for Land Use Code 220, it was determined that the regression formula method yielded an abnormally high trip rate – higher than a detached home – and so the average rate method was applied.

The trip generation calculations for the proposed development are summarized in *Table 2*.

Table 2: Site Trip Generation for the Proposed Residential Development

	Size	Trip Rate	New Vehicle Trips / Hour		
			In	Out	Total
AM Peak Hour					
Multifamily Housing (Low-Rise) (Code 220)	18 Units	0.40/unit[A]	2 (24%)	6 (76%)	8
AM Peak Total Trips[B]			**2**	**6**	**8**
PM Peak Hour					
Multifamily Housing (Low-Rise) (Code 220)	18 Units	0.51/unit[A]	6 (63%)	4 (37%)	10
PM Peak Total Trips[B]			**6**	**4**	**10**

A – ITE's average rate used.

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

Based on the results contained in *Table 2*, an 18-unit apartment building with three floors is expected to generate up to **8 trips/hour** (2 inbound and 6 outbound) during the weekday morning peak period and **10 trips/hour** (6 inbound and 4 outbound) during the weekday afternoon peak period. This generally equates to an average increase of about one additional vehicle trip added

to the study area streets every six minutes during the peak times of the day. Traffic volume increases of this magnitude are considered to be small and manageable, and will have a negligible impact on traffic operations – particularly given the considerable amount of residual capacity that exists at the adjacent signalized intersection.

3.2 The Vehicle Access

Vehicle access to/from the proposed development will be provided via the existing driveway connection to Circassion Drive. This existing driveway is located approximately midway between the signalized intersection to the east, and the sharp horizontal curve to the west. Both roadway features limit vehicle operating speeds along this section of Circassion Drive and speeds are expected to be well below the regulatory 50 km/h speed limit.

A driver sight distance review was carried out at the proposed driveway location to ensure minimum driver visibility requirements are met. GRIFFIN completed this review following 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 new access was assessed. This is referred to as stopping sight distance (SSD). The provision of adequate SSD for vehicles traveling on Circassion Drive 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 Department of Transportation and Infrastructure Renewal (NSTIR) best practices and 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 approximate centre of the existing access, on the edge of the westbound travel lane. A summary of the field measured sight distances relative to estimated operating speeds between the signalized intersection and the sharp horizontal curve is provided in *Table 3*.

Table 3: Summary of Stopping Sight Distance Measurements

Measurement Location	Travel Direction	Available SSD	TAC Required SSD			Does Available Exceed Required?
			Estimated Speed	Base[A]	Slope Adjusted	
1. Existing Access *(as shown in Figure 2)*	Eastbound	54 m	40 km/h	50 m	45 m (+3%)[B]	Yes
	Westbound	20 m	20 km/h	20 m	20 m (-3%)[B]	Yes

A – 2017 TAC Chapter 2, Table 2.5.2

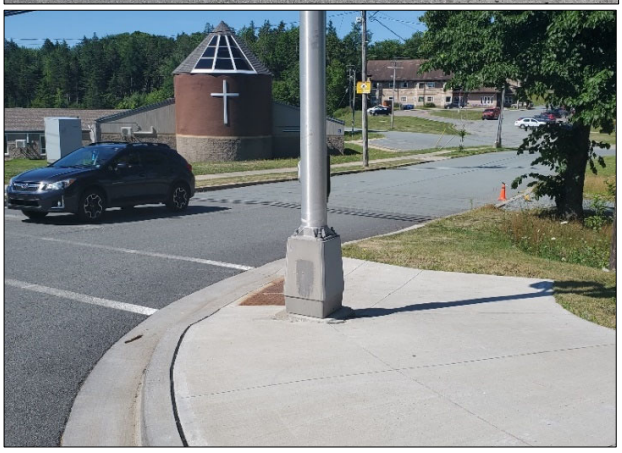
B – An estimate of the actual slope along Circassion Drive on the approaches to the site access.

Based on the results contained in *Table 3*, GRIFFIN concluded that there is sufficient stopping sight distance along Circassion Drive for the estimated operating speed of a vehicle approaching the existing driveway location. Therefore, the access location shown in *Figure 2* appears to meet minimum TAC design guidelines for stopping sight distance.

Although not associated with the proposed new driveway, GRIFFIN identified the potential for limited driver sight lines through the northwest quadrant of the Forest Hills Parkway / Circassion Drive intersection. There is existing vegetation that has the potential to limit visibility of drivers making the southbound-to-westbound turn. It is suggested that the proponent work with the HRM during the detailed design stage of the project to ensure that the applicable corner sight triangle By-Law requirements are met in this location.

Figure 3: Driver Views Along Circassion Drive

***Circassion Dr** – looking east towards driveway, through sharp horizontal curve.*



***Circassion Dr** – looking west towards driveway, from northwest corner.*

***Circassion Dr** – looking west towards driveway, from southwest corner.*

5.0 CONCLUSIONS AND RECOMMENDATIONS

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

- The existing property at civic #1 Circassion Drive is currently vacant. The Dartmouth Housing Authority is preparing a Development Agreement application to re-purpose the site and build 18 affordable housing units contained in a three-floor multi-unit building. The existing vehicle driveway is proposed to remain in place and will serve up to 14 off-street parking spaces for residents.
- The trip generation calculations for a proposed 18-unit medium-density residential development is expected to generate up to 8 trips/hour (2 inbound and 6 outbound) during the weekday morning peak period and 10 trips/hour (6 inbound and 4 outbound) during the weekday afternoon peak period.
- The site-generated vehicle trips associated with the proposed development will move to/from Circassion Drive via the existing driveway. GRIFFIN has concluded the following:
    - There is a considerable amount of residual capacity on Circassion Drive to accommodate new traffic. Eastbound queues generated by the adjacent traffic signals will periodically extend to and beyond the site driveway. However, these queues grow and dissipate with each signal cycle and under future conditions these queues are not expected to adversely impact vehicles entering and exiting the site access.
    - The forecast site-generated vehicle trips moving in/out of the proposed development are very low (about one new vehicle trip every 6 minutes). Thus, no auxiliary turn lanes are required to accommodate the increase in volumes on either Circassion Drive or at the new driveway. Therefore, the existing driveway will only require one inbound lane and one outbound lane.
- The qualitative traffic operational assessment suggests the new site-generated peak hour trips will have a negligible impact on traffic operations along Circassion Drive and Forest Hills Parkway. The new vehicle trips were calculated to add - on average - about one vehicle every six minutes. As such, there is expected to be sufficient residual capacity along existing streets during peak times to accommodate this small number of new site-generated trips.

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

1. That a review be carried out to ensure the current design of the existing driveway can accommodate an appropriate design vehicle (eg. a garbage truck or fire truck). Any changes or modifications should follow the latest HRM and Transportation Association of Canada (TAC) geometric design guidelines.
2. 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.
3. That HRM consider installing a short section of sidewalk / active transportation trail between the northwest quadrant of the signalized intersection and the driveway at civic #1 Circassion Drive. This will help provide a convenient connection for active transportation users traveling between the new development and adjacent transit / AT facilities.

6.0 CLOSING

The findings flowing from this qualitative traffic impact statement suggest the new trips generated by the proposed 18-unit residential development are expected to have a negligible impact on the existing traffic operations along the adjacent street corridors and it 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]

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