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Ellen O'Hara, P.Eng.
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RE: A Traffic Impact Statement for a proposed development on Quinpool Road

Dear Ms. O'Hara:

1.0 INTRODUCTION

At the request of *DesignPoint Engineering & Surveying Ltd.*, the GRIFFIN transportation group inc. has carried out a qualitative Stage 1 - Traffic Impact Assessment in support of the planning application process for a proposed multi-story building to be located at civics #6324-6330 Quinpool Road in Halifax, Halifax Regional Municipality (HRM). The proposed development will be comprised of mostly high-density residential – including a mix of 1 and 2-bedroom apartment units totaling 125 units – plus 9,100 ft² of ground floor commercial space.

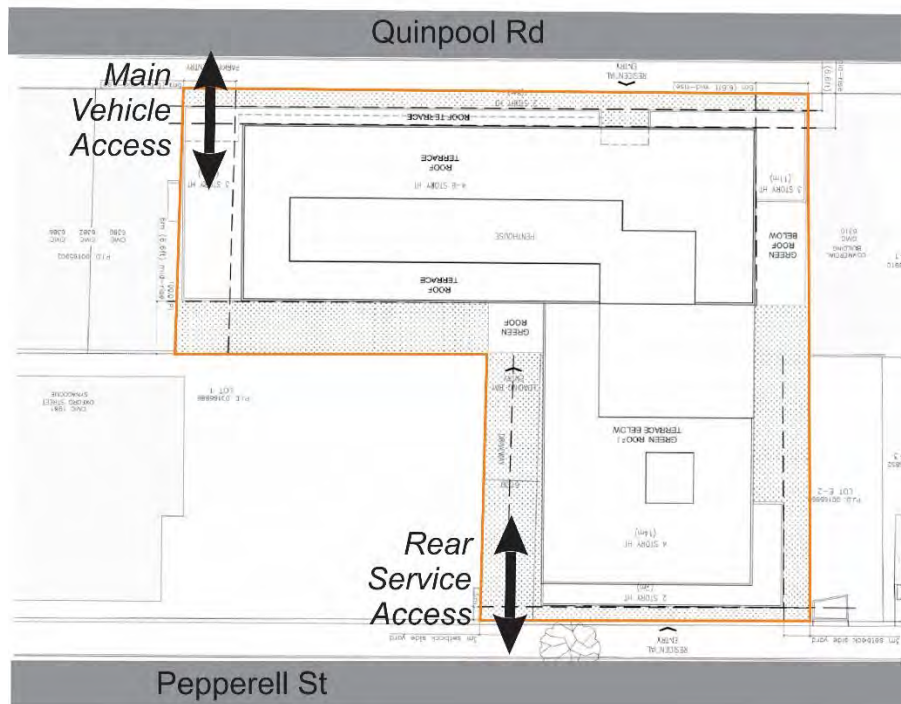
The subject lands are located on the south side of Quinpool Road opposite Harvard Street. Currently there is one building located on these lands that contains a fast food restaurant with a drive-through window as well as a fitness centre. The north portion of the property has a C-2C (Minor Commercial – Quinpool Road) Zoning designation and the south portion has a C-2 (General Business) Zoning designation. The site is located within HRM's Urban Service Area and the Halifax Peninsula Land Use By-law area.

The traffic impact assessment associated with this mixed-use development is discussed in the following Sections. The site context is generally illustrated in *Figure 1* and a site concept plan is contained in *Figure 2*.

Figure 1: Study Area and Site Context



Figure 2: Proposed Site Concept Plan



2.0 STUDY AREA AND SITE CONEXT

Quinpool Road is generally aligned in an east-west direction with a four-lane urban cross-section (two travel lanes in each direction). It is under the jurisdiction of the HRM and appears to function as an urban arterial street that connects the downtown area to the east, with residential areas and the Highway 102 commuter corridor to the west.

Currently there are three vehicle accesses connecting to Quinpool Road serving vehicular traffic entering/exiting the existing businesses. This includes the main access to the fast food restaurant, the drive-through exit lane as well as a driveway located on the west side of the fitness centre business. There is currently no vehicle access to the rear of these businesses via Pepperell Street.

In addition to the vehicle accesses, Quinpool Road forms a t-intersection with Harvard Street generally opposite the existing fitness centre business. Traffic and pedestrian control at this intersection is provided via a “half-signal” – a pedestrian-actuated signalized crossing for pedestrians moving north-south across Quinpool plus stop-sign control for vehicles turning from Harvard Street.

It is understood that the proposed mixed-use development will reduce the number of vehicle accesses connecting to Quinpool Road from three to one, plus the addition of a rear service access for delivery trucks, garbage trucks and so forth.

3.0 EXISTING TRAFFIC CONDITIONS

3.1 *Traffic Volume Data*

Since the proposed development will be mostly residential in nature, is adjacent to other residential housing, as well as supporting neighbourhood commercial land use types it seemed reasonable to assume the highest overall study area volumes would occur during the weekday morning and afternoon peak periods. Therefore, these two peak times were selected and used in this assessment.

A site visit was carried out on Wednesday May 16th, 2018 to observe traffic volumes, driver behavior, existing vehicle access operations, pedestrian activity and so forth. In addition, historical traffic data was obtained from HRM from their on-going traffic data collection program. These data included an intersection turning movement count at the adjacent signalized Quinpool Road / Oxford Street intersection (October 2014) as well as automatic traffic recorder (ATR) counts along Quinpool Road (June 2012). A summary of the historical two-way volumes on Quinpool Road in the vicinity of the proposed development are provided in *Table 1*.

Table 1: Peak Hour Traffic Volumes on Quinpool Road

	AM Peak (vph)			PM Peak (vph)		
	Eastbound	Westbound	Two-way	Eastbound	Westbound	Two-way
June 2012 (ATR at civic 6324)	1,359	438	1,797	694	981	1675
October 2014 ^A (TMC at Oxford)	1,292	453	1,745	466	1,156	1,622

A – Volume on Quinpool Road east of Oxford Street.
 vph – vehicles per hour.

Although these historical counts are somewhat dated they provide a relative comparison during the 2012-2014 time period. In addition, the volumes contained in *Table 1* were taken from a specific weekday at different times of the year (i.e. June versus October) and peak hour traffic data fluctuates from day-to-day and month-to-month. Despite these dynamic conditions, it was concluded from our review that there has been very little change in the two-way peak hour volumes in the Quinpool Road corridor between the two data sets presented in *Table 1*. This suggests there has been very little traffic growth in this corridor and is likely due in part to this being an established area of Halifax and that Quinpool Road serves as one of the main commuter routes in/out of the downtown area and operates at capacity during the peak times of the day.

3.2 Driver Behaviour

A further assessment of the existing vehicle movements was carried out with a particular focus on vehicles moving in and out of the existing site. The fast food restaurant typically has a peak operating time that generally coincides with the weekday afternoon traffic peak on Quinpool Road. During this time it was observed that only a very small number of restaurant patrons attempted – and successfully – made a left turn out of the driveway. This is likely due to the continuous congestion and queue spillback along Quinpool Road from the Oxford Street traffic signal. The congested conditions on Quinpool Road created a situation where the fast food restaurant patrons appeared to treat the driveway as if it were a right-in, right-out access.

4.0 SIGHTLINE REVIEW

Typically, a driver sight line review is carried out as part of the traffic impact assessment process to ensure drivers have sufficient visibility and distance to perform avoidance movements or bring their vehicle to a stop. The concept site plan shown in *Figure 2* locates the vehicle access point at the west boundary of the subject lands. Guidelines contained in the Transportation Association of Canada’s (TAC) Geometric Design Guide for Canadian Roads were followed for this review.

The posted speed limit along Quinpool Road is 50 km/h and it was observed that drivers were generally adhering to this speed outside of the peak periods. This is likely due to the fact that Quinpool Road has an enclosed cross-section, numerous accesses and side streets, on-street

parking during off-peak times of the day and congested conditions during peak times. Therefore, a 50 km/h operating speed was used in this review and the minimum stopping sight distance (SSD) requirement associated with this speed is 65 m.

Given the straight and flat alignment of Quinpool Road there appeared to be sufficient sight lines that exceeded TAC minimum requirements for a 50 km/h. However, the provision of adequate driver sight lines to/from the future driveway location will need to be confirmed by the site design team to ensure that these sight lines are maintained into the future. In addition, the By-Law corner clearance and sight triangle requirements will also need to be verified.

5.0 SITE 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 that would be entering and exiting the newly 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 deemed appropriate. Based on our review of the commercial/residential land use type being proposed it was determined that ITE's published trip generation rates were appropriate. As such, ITE's *Trip Generation, 9th Edition* document was used and the forecast site-generated trips are summarized in *Table 2*.

Table 2: Site Trip Generation for the Proposed Mixed-use Development

	Size	Trip Rate	New Vehicle Trips / Hour		
			In	Out	Total
AM Peak Hour					
Apartment – General (Code 220)	125 Units	0.52/unit ^B	13 (20%)	52 (80%)	65
Specialty Retail (Code 826)	9,100 ft ²	6.84/1,000 ft ² ^A	17 (48%) ^C	19 (52%) ^C	36 ^C
AM Peak Total Trips^C			30	71	101
PM Peak Hour					
Apartment – General (Code 220)	125 Units	0.69/unit ^B	56 (65%)	30 (35%)	86
Specialty Retail (Code 826)	9,100 ft ²	5.02/1,000 ft ² ^A	16 (56%) ^C	10 (44%) ^C	26 ^C
PM Peak Total Trips^C			72	40	112

A – ITE's average rate used. No regression formula provided for PM peak, likely due to the limited number of studies.

B – ITE's regression formula used.

C – New trips only, includes discount for 30% pass-by and 10% on-site synergy.

Based on the results contained in *Table 2*, the proposed mixed-use development is expected to generate 101 trips/hour (65 inbound and 36 outbound) during the weekday morning peak period and 112 trips/hour (86 inbound and 26 outbound) during the weekday afternoon peak period. This generally equates to less than two additional vehicle trips added to the Quinpool Road corridor every minute during peak times of the day. These trips will be further split in the east and west travel directions along Quinpool Road. It should also be noted that truck traffic associated with deliveries, garbage and moving trucks have not been explicitly considered in *Table 2*. The majority

of these truck trips will likely occur outside of the peak commuter periods. They will also be utilizing a south driveway connecting to Pepperell Street.

Additional information that also must be considered when interpreting the trip generation results include:

1. *Ground floor commercial:* There will be on-site parking provided for the apartment residents (underground) as well as a limited number of parking spaces for patrons of the proposed ground floor commercial businesses. Therefore, some of the trips associated with the commercial land use type are not expected to add to the number of vehicles turning into/out of the proposed site driveway as some patrons are expected to use adjacent on-street parking.
2. *The removal of the existing businesses:* Fast food restaurants with a drive-through window are typically one of the highest vehicle traffic generating land use types. Although an explicit calculation of the existing trip generating characteristics for the existing businesses has not been carried out, it is expected that the net change in traffic volumes moving to/from this site – from current to proposed – will result in a decrease in traffic.

In summary, the net change in site-generated traffic volumes, assuming a worst-case scenario, will likely result in no change for the Quinpool Road corridor and could possibly reduce traffic volumes to some degree. The long vehicle queue appeared to be associated with the downstream traffic signals at Oxford Street.

6.0 TRAFFIC IMPACTS ON SURROUNDING STREETS

As discussed earlier in this letter the peak period traffic volumes observed traveling along the Quinpool Road corridor during the field review appear to be at the capacity for this type of street and during the afternoon peak period there were standing queues across the subject property in the westbound direction. This appeared to be due to the downstream traffic signals – most notably at Oxford Street.

The addition of the proposed site-generated traffic is expected to have the following operational impacts:

Quinpool Road: The new site-generated trips moving to/from the site are expected to be equal or less than the current volume patronizing the fast food restaurant and fitness centre. As such, the net change in traffic in the Quinpool Road corridor is expected to be negligible. However, the location of the future site driveway connecting the underground parking area with Quinpool Road will need to given careful consideration. If it is located west of Harvard Street it has the potential to create an overlap left turn conflict for opposing left turning vehicles on Quinpool Road. An example of this situation would be created when an eastbound left turning car waiting to turn onto Harvard Street creates a short eastbound queue that would block the proposed site driveway – preventing patrons from turning left into the subject site driveway.

Pepperell Street: Although the main site access will connect to Quinpool Road, a service driveway is proposed to the south, connecting to Pepperell Street. Currently, there is no south driveway connection and the newly proposed south access will result in a slight increase in volume on this local residential street. These vehicle trips are expected to be related to truck deliveries, garbage trucks, moving trucks and so forth and are not expected to create any traffic flow concerns along Pepperell Street.

7.0 FINDINGS & CONCLUSIONS

The following conclusions were gleaned from the qualitative traffic impact assessment of the proposed mixed use residential/commercial multi-story development located on Quinpool Road:

- The proposed mixed-use development will be comprised of 125 apartment units plus 9,100 ft² of ground floor commercial space. This is estimated to generate 101 trips/hour (65 inbound and 36 outbound) during the weekday morning peak period and 112 trips/hour (86 inbound and 26 outbound) during the weekday afternoon peak period.
- Although the proposed mixed-use development is expected to attract new traffic to the study area road network, there will be a corresponding reduction in traffic associated with the closure of the existing businesses. Since one of these businesses is a fast food restaurant with a drive-through window – one of the highest traffic generating land use types – the net change in site-generated trips is expected to be negligible.
- The qualitative traffic operational assessment suggests that Quinpool Road is operating at capacity during the weekday peak periods indicating there is little to no residual capacity in this corridor. During the afternoon peak period vehicle queues spillback across the subject property frontage from the Oxford Street traffic signal. However, due to the fact that there is likely to be no net change in site-generated trips in combination with a reduction in the number of accesses connecting to Quinpool Road, it is expected that there will be no negative traffic operational impact to this corridor.
- Vehicle access to the site is currently provided via three driveways connecting to Quinpool Road. The proposed site plan reduces the number of accesses to one – providing access to the underground parking – plus a new service access to the south via Pepperell Street. These access changes will reduce the number of vehicle conflicts along Quinpool Road. However, should the site access be located west of Harvard Street it has the potential to create an overlapping left turn conflict for eastbound left turns to Harvard and westbound left turns into the site.

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

- That the design of the proposed vehicle accesses follow 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 truck design vehicle for the service access connecting to Pepperell Street.
- That HRM By-law requirements for corner clearance and sight triangles are met to ensure both approaching and departing driver sightlines are maintained throughout the planning, design and construction phases of this project. This could possibly require the removal of on-street parking spaces adjacent to the proposed access on Quinpool Road.

8.0 CLOSING

The findings flowing from this qualitative traffic impact statement indicate the new trips generated by the proposed mixed-use development – located at civics #6324-6330 Quinpool Road – are expected to have a negligible impact on the performance of the study area streets and intersections. 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

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