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Att: Anson Lee-Pearn
The Little Gym
5 Bridle Path
Hammonds Plains, NS B4B 2A9

RE: A Traffic Impact Statement for proposed changes to civic #5 Bridle Path

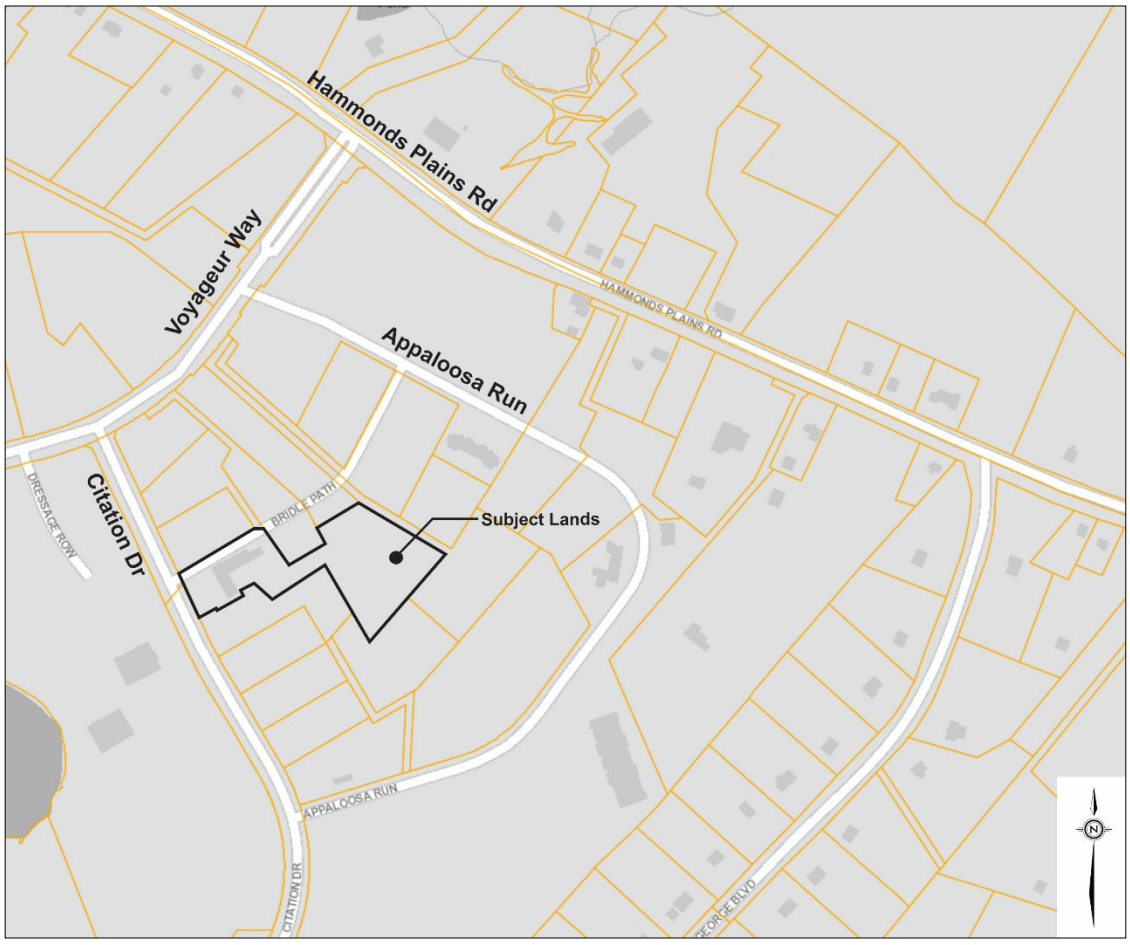
1.0 INTRODUCTION

At your request, the GRIFFIN transportation group inc. has completed a qualitative Stage 1 traffic impact assessment in support of the planning approval process for the proposed changes to the use of the ground floor space within the existing building at civic #5 Bridle Path (PID #41233610), in the community of Hammonds Plains, Halifax Regional Municipality (HRM). The majority of the land area within the subject property is vacant, with the exception of the southwestern corner which is currently occupied by a mixed-use building and one accessory building. This PID measures about 2.5 acres in size, but as noted above is largely undeveloped. These lands currently have a Mixed Use (MU-1) zone designation within the *Beaverbank, Hammonds Plains, and Upper Sackville Land Use By-Law* area. The location of the subject property is shown in *Figure 1*.

The focus of this traffic impact assessment is on the proposed re-purposing and increased floor area of the civic #5 business within the existing building. It is understood that two separate 2,000 ft^2 spaces will be consolidated to create a 4,000 ft^2 space for a new business on the ground floor. The remaining floor space and other uses within this same building will remain unchanged.

Vehicle access is provided via the Bridle Path which appears to operate as a private lane that exclusively serves the existing building. The Bridle Path connects to Citation Drive about 125 m west of the Voyageur Way / Citation Drive intersection. Although HRM's GIS mapping shows the Bridle Path as a through street, it in fact currently terminates at the rear of the existing building.

Figure 1: Existing Site Location



Source: HRM GIS Mapping

2.0 STUDY AREA AND CURRENT TRAFFIC CONDITIONS

2.1 - Overview

All traffic moving to/from the existing building at civic #5 Bridle Path will do so via Citation Drive. Citation Drive is a public street under HRM's jurisdiction and is generally aligned in an east-west direction. In this growing area of Hammonds Plains, Citation Drive appears to function as a local or minor collector street and provides land access to a mix of apartment buildings and commercial buildings.

Traffic moving in/out of this neighbourhood utilizes Voyageur Way and its connection to the regional connector Hammonds Plains Road. The intersections of Citation Drive / Voyageur Way as well as Hammonds Plains Road / Voyageur Way currently operate with two-way stop-control (i.e.

stop-control on the minor leg of the intersection). In summary, all traffic moving to/from the subject lands will travel through the Hammonds Plains Road / Voyageur Way intersection.

2.2 - Existing Traffic Volume Review

GRIFFIN carried out a site visit on Thursday August 5th, 2021 to observe existing traffic conditions in the vicinity of the subject property. Although the main vehicle access connects to Citation Drive, the focus of our qualitative traffic assessment extended beyond Citation Drive to also include Voyageur Way and the potential impacts on the intersection with Hammonds Plains Road. As such, GRIFFIN installed an automatic traffic recording (ATR) unit on Voyageur Way – between Citation Drive and Appaloosa Run – to understand the current travel patterns and peak hour traffic demand moving in/out of this neighbourhood. Traffic volume and speed data were gathered between August 5th and August 9th which captured data on both weekdays and weekend days. Gathering these data helped to identify the approximate volume to capacity ratio within the Voyageur Way corridor and to help understand the future impacts to the Hammonds Plains Road intersection.

A summary of the existing AM and PM peak hour vehicle flows along Voyageur Way are summarized in *Table 1*.

Table 1: Observed August 2021 Traffic Volumes – Voyageur Way Between Citation and Appaloosa

	Northbound (toward Hammonds Plains Rd)	**Southbound** (toward Citation Dr)	**Two-way Volume**
Weekday AM Peak Hour	61 vph	47 vph	**108 vph**
Weekday PM Peak Hour	57 vph	51 vph	**108 vph**
Daily Volume (estimate)	-	-	**1,080 vpd**

vph – vehicles per hour
vpd – vehicles per day

GRIFFIN reviewed hourly volume data gathered from August 5th to 9th and it was concluded the weekday morning and afternoon peaks experienced the highest volumes. These time periods are typically the focus of a traffic impact assessment since the weekday peak commuter travel times often coincide with the peak operating times of the proposed business. As shown in *Table 1*, the weekday peak commuter flows were observed to be:

- *Weekday AM Peak hour*: 108 vph two-way flow, and
- *Weekday PM Peak hour*: 108 vph two-way flow

Interestingly, both the AM and PM peak hours were observed to have the same two-way hourly demand. GRIFFIN then used typical factors to convert the peak hourly flow into an estimate of the daily volume. The daily volume on Voyageur Way is estimated to be approximately 1,000-1,100 vpd.

Although the Transportation Association of Canada (TAC) does not provide guidance with respect to the absolute maximum capacity for various street classifications, HRM has identified a typical daily capacity in their Municipal Design Guidelines document. Voyageur Way appears to operate as a collector street and HRM has identified this class of street as having a capacity of about 12,000 vpd. Of course, this value will vary based on site-specific conditions such as the number of through lanes, presence of on-street parking, transit and so forth. Regardless of the exact value, the 12,000 vpd threshold offers some context and guidance for our qualitative assessment. In conclusion, the observed weekday demand of about 1,100 vpd is well below the 12,000 vpd collector street capacity. This suggests there is a substantial amount of residual capacity in the Voyageur Way corridor to accommodate future traffic growth.

No traffic flow concerns were observed during our AM peak hour site visit in the vicinity of the site. There were no queues observed at the Hammonds Plains Road stop sign and this is likely due to the very low volumes traveling along Voyageur Way.

2.3 - Vehicle Operating Speed Data

Typically, GRIFFIN will gather free-flow vehicle operating speeds to calculate the 85th percentile speed along a roadway corridor. However, given the very low volume utilizing Citation Drive and the good driver visibility to/from the Bridle Path connection, GRIFFIN did not gather speed data in the vicinity of the existing driveway. Based on our observations, traffic moving along Citation appeared to be compliant with the regulatory 50 km/h speed limit. To remain conservative in our driver visibility assessment of the existing driveway connection we have assumed a worst-case scenario where the 85th percentile operating speed is 60 km/h. A detailed discussion regarding the driver sight distance assessment provided in Section 3.2.

3.0 NEW VEHICLE ACCESS AND VISIBILITY

3.1 – Location and Operation

As noted earlier, no changes are proposed to the existing driveway and it will continue to serve the subject lands and the new business that will occupy the re-purposed floor space at civic #5. The existing off-street parking supply will also remain unchanged.

3.2 – Driver Visibility

A driver sight distance review was carried out at the existing driveway location – the connection of Bridle Path with Citation Drive. Our review was based on the guidelines contained in the latest Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads document (2017) as well as the Nova Scotia Department of Transportation's field measurement best practices. Since this is a pre-existing vehicle driveway GRIFFIN only assessed the minimum requirement for vehicles approaching the 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. A summary of the SSD assessment is provided in *Table 2*.

Table 2: Summary of Stopping Sight Distance Measurements – Existing Access (60 km/h)

Measurement Location	Travel Direction	Available SSD	TAC Required SSD		**Does Available Exceed Required?**
			Base[A]	Slope Adjusted	
1. Existing Access	Eastbound (toward Appaloosa)	125 m	85 m	87 m (-3%)[B]	Yes
	Westbound (toward Voyageur)	155 m	85 m	92 m (-6%)[B]	Yes

A – 2017 TAC Chapter 2, Table 2.5.2

B – An estimate of the actual slope along Citation Drive on the approaches to the new access.

The field measurements were carried out by GRIFFIN using 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 near travel lane. As noted in earlier in Section 2.3, the operating speed used in our review was based on an estimated design speed of 60 km/h.

GRIFFIN concluded the existing vehicle access location provides sufficient stopping sight distance along Citation Drive in both directions for a 60 km/h operating speed. Therefore, the Bridle Path access appears to be in a suitable location and meets minimum TAC design guidelines for stopping sight distance.

The available driver visibility along Citation Drive from the existing Bridle Path access location is shown in *Figure 2*.

4.0 VEHICLE TRIP GENERATION

4.1 – Existing and Proposed Business Operations

As discussed earlier in this letter, the proponent has plans to consolidate ground-floor space within the existing building to accommodate a new 4,000 ft^2 business. Both previous businesses are no longer operating out of this location and as such there were no existing traffic counts to obtain from these businesses. However, HRM's assessment of the newly proposed business should consider the fact there were site-generated trips moving in/out of the Bridle Path access associated with these previous business operations at one point, and they will be replaced with the traffic associated with the new business.

Figure 2: Driver Views Along Citation Drive at Bridle Path Access

Looking left (to the east) along Citation Drive - from Bridle Path.

Looking right (to the west) along Citation Drive - from Bridle Path.

Table 3 contains a summary of the previous and proposed business operations associated with the proposed changes to the ground-floor space at civic #5.

Table 3: Previous and Proposed Business Operations at Civic #5

Previous Business Operations	Proposed Business Operations
2,000 ft^2 commercial space – utilized for a pet food and horse supply (Tack) shop	4,000 ft^2 commercial space – utilized for youth gym classes (maximum of 15 participants / class)
2,000 ft^2 commercial space – used for general office space	
Total Area: 4,000 ft^2	**Total Area: 4,000 ft^2**

In summary, this traffic impact assessment focuses on a 4,000 ft^2 space on the ground floor of the existing building. The proposed business will consolidate floor space vacated by the two previous businesses.

4.2 – Trip Generation Calculations for Proposed Business

A key component of the traffic impact assessment process is the step that quantifies the expected number of new vehicle trips associated with the new business operations. 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, 10th Edition* document – assuming there is a similar and suitable land use contained within this document. However, upon reviewing the ITE document there was not sufficient information available for a similar 4,000 ft^2 business, and therefore, GRIFFIN used a first principles approach to quantifying the expected number of vehicle trips. Discussions were held with the proponent to better understand the new business operations, and these details are summarized in *Table 4*.

Table 4: Summary of Proposed Business Operations

Vehicle Trip Type	Amount	Description / Notes
Hours of Operation	One-hour classes (max)	Morning classes: 9:30-13:00 Afternoon classes: 16:30-19:00
Employees	Up to 3 employees	- n/a
Youth Participants / Class	Up to 15 youths / class	- maximum per class
Vehicle Round Trips / Class	12 vehicles, 24 total in/out trips	- 1.25 vehicle occupancy rate

As noted in *Table 4*, each youth gym class will be about one hour in length with up to 15 youth participants and up to 3 employees. To comply with current public health requirements and minimize conflicts between concurrent classes, it is expected that there will be a brief time gap between classes. This will reduce the likelihood of overlapping vehicle trips moving in/out of the

site access. It is also assumed that there will be a small amount of ride-sharing among class participants and as such the total number of vehicles generated by each class will be less than one trip per participant. GRIFFIN has assumed a 1.25 vehicle occupancy rate which is a reasonable recreational trip-sharing occupancy rate.

Based on these expected business operations, GRIFFIN then quantified the total number of trips associated with each class. Our focus for these calculations was on the afternoon peak period as this was the only time on a weekday when the peak business operations overlapped with either the morning or afternoon commuter travel time. Our afternoon peak hour trip generation calculations are contained in *Table 5*.

Table 5: Vehicle Trip Generation Calculations – PM Peak Hour

Source	Description	Units	Peak Hour Trip Rate	New Vehicles per Hour		
				In	Out	Total
Proposed Business – 4,000 ft² youth gym classes						
Employees	Full-time	3	1.0	3	0	3
Participants	Total participants	15	-	-	-	-
	1.25 veh. occupancy	12	2.0	12	12	24
			Sub-Total (vph)	**15**	**12**	**27**

Based on the results contained in *Table 5*, the proposed youth gym classes operating within a 4,000 ft² ground-floor space is expected to generate up to 27 trips/hour (15 inbound and 12 outbound) during the weekday afternoon peak hour. The morning peak hour operations are expected to occur after the peak commuter times, and was therefore, not considered to be a critical time period to examine in this assessment.

In conclusion, the proposed business is expected to generally increase traffic volumes by about one additional vehicle trip every two to three minutes. Traffic volume increases of this magnitude are considered to be very small, manageable, and will have a negligible impact on traffic operations.

5.0 VEHICLE PARKING

It is understood that the existing off-street parking provided around the existing building will remain unchanged as part of the proposed changes to the ground-floor space associated with civic #5.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions were gleaned from the qualitative Stage 1 traffic impact assessment of the proposed business within the existing mixed-use building at civic #5 Bridle Path:

- The subject property contains a mixed-use building, measures about 2.5 acres in size, and currently has a Mixed Use (MU-1) zone designation within the *Beaverbank, Hammonds Plains, and Upper Sackville Land Use By-Law* area.
- The proponent is proposing to consolidate space on the ground-floor of the existing building that is associated with the civic #5 address. The ground-floor space was previously occupied by two former commercial businesses – 2,000 ft^2 each – and this space will be consolidated into one 4,000 ft^2 area. The new space will be utilized for youth gym classes. Details regarding the proposed business operations include:
    - Up to 3 employees, a maximum of 15 youth participants / class, and a class length of about one hour.
    - Operating hours are expected to occur from 9:30-13:00 and 16:30-19:00.
    - GRIFFIN assumed there would be some ride-sharing among participants and a 1.25 vehicle occupancy rate was used.

  The proposed business operations are expected to generate up to 27 trips/hour (15 inbound and 12 outbound) during the critical weekday afternoon peak hour.
- All site-generated vehicle trips will move to/from Citation Drive. The driver visibility along Citation Drive at the existing connection with Bridle Path was assessed and appears to exceed TAC minimum SSD requirements for an assumed 60 km/h operating speed.
- Our qualitative traffic operational assessment suggests the proposed new 4,000 ft^2 business will have a very small and negligible impact on the study area streets and intersections. The new vehicle trips were calculated to add - on average - about one vehicle every two to three minutes during the critical afternoon peak hour. It should also be noted that the net change in site-generated trips (i.e. removal of traffic associated with the former businesses, plus the addition of traffic associated with the new business) is expected to be negligible. There is sufficient residual capacity along the Citation Drive and Voyageur Way corridors, as well as the Voyageur Way / Hammonds Plains Road intersection to accommodate the net change in traffic volumes.

7.0 CLOSING

The findings flowing from this qualitative traffic impact statement suggest the expected new vehicle trips generated by the proposed ground floor business at civic #5 Bridle Path is expected to have a negligible impact on the existing traffic operations on the adjacent 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,

[redacted]

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