James J. Copeland, P.Eng.
GRIFFIN transportation group inc.
30 Bonny View Drive
Fall River, NS B2T 1R2

September 9, 2020

Mr. Robert MacPherson, P.Eng.
President
RMP Development Consulting Limited
610 Wright Avenue, Suite 240
Dartmouth, NS B3B 0H8

RE: A Traffic Impact Statement for a proposed rezoning of #1155 Lucasville Road

Dear Mr. MacPherson:

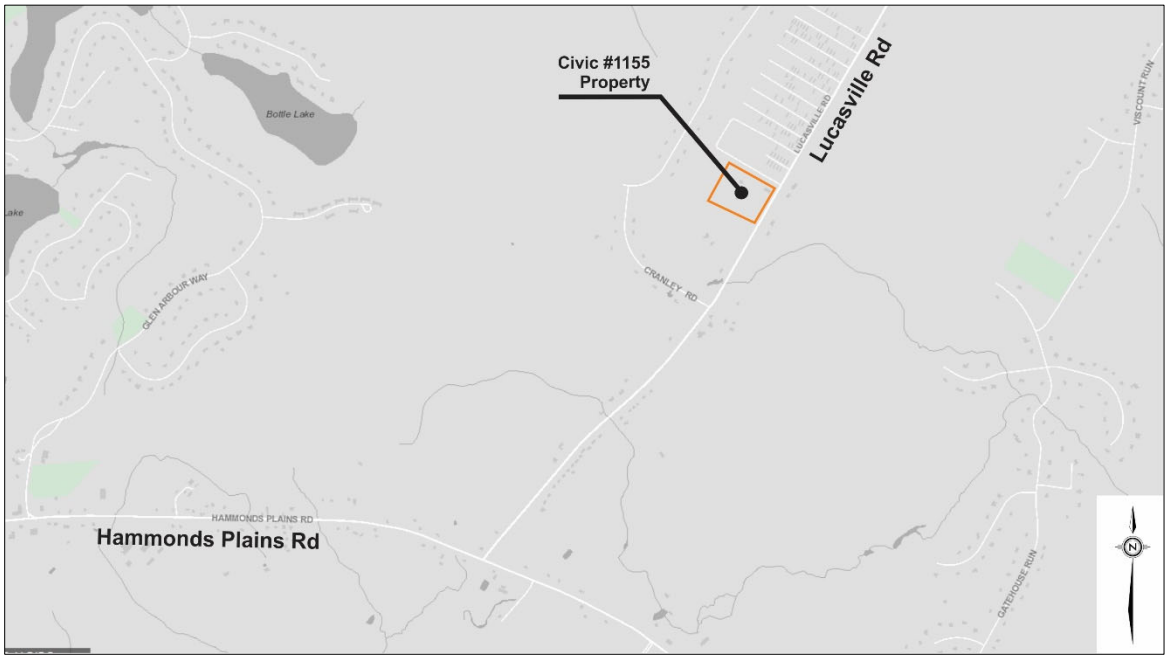
1.0 INTRODUCTION

At the request of *RMP Development Consulting Limited (RMP)*, the GRIFFIN transportation group inc. has completed a qualitative Stage 1 - Traffic Impact Assessment in support of the proposed rezoning application for the civic #1155 Lucasville Road, in the community of Lucasville, Halifax Regional Municipality (HRM). The subject lands (PID #40599243) are located on the west side of Lucasville Road, immediately south of Tenth Street, and measures approximately 8 acres in size. Currently, this property has an existing zoning designation of MU-1 (Mixed Use) within the *Beaverbank, Hammonds Plains, and Upper Sackville Land Use By-Law Area* and is being used as a parking area for school buses. As such, the current use of this property is not compliant with the current zoning. The location is generally illustrated in *Figure 1.*

It is understood that the property owners are seeking approval to re-zone the property from its current MU-1 zone designation, to an I-1 (Mixed Industrial) zone designation. Since the owners intend to continue to use these lands as a school bus parking area, a successful rezoning to Mixed Industrial would align the current use with the appropriate zone designation.

The vehicle access serving the civic #1155 property is proposed to remain at its existing location. The access to the site is about 180 m south of Tenth Street on the west side of Lucasville Road. The existing driveway location is shown in *Figure 2*.

Figure 1: Study Area and Site Context



Source: HRM GIS Maps

Figure 2: Existing Site Layout and Access Location

Source: Google Maps

2.0 STUDY AREA AND SITE CONEXT

2.1 Overview

Lucasville Road is generally aligned in a north-south direction through the study area and has a two-lane, two-way rural cross-section. It provides a key connection between Hammonds Plains Road and the community of Middle Sackville and has a rural open-ditch cross-section.

2.2 Existing Traffic Volume Review

Due to a provincial state of emergency in place at the time of this review, general traffic volume patterns were not representative of typical conditions. Based on other studies recently completed by GRIFFIN in Nova Scotia, it has been determined that the general travel demand on roadways has been reduced by about 20-40% - depending on location, street classification and so forth.

To obtain more representative volumes GRIFFIN carried out a review of available historical traffic volumes in the Lucasville Road corridor from previous projects the firm had completed in the area. This included historical volumes recorded by GRIFFIN in April 2015 at the Lucasville Bryanston Run intersection[1]. Even though these volumes are dated they were still considered to be reasonably representative of the typical peak hour trends moving along this corridor.

GRIFFIN has summarized the highest peak hour volume – the weekday afternoon peak hour – recorded in April 2015 and compared these historical volumes to an estimate of current 2020 volumes assuming a more than 2% per year growth. The comparison of volumes is provided in *Table 1*.

Table 1: Peak Hour Volumes – Lucasville Road (north of site)

		Northbound	Southbound	Two-way Total
2015 Observed	PM Peak Hour	312 vph	431 vph	743 vph
2020 Estimated	PM Peak Hour	350 vph	480 vph	830 vph

vph – vehicles per hour.

A – Observed by GRIFFIN in 2015 at the Lucasville / Bryanston Run intersection.

B – Estimated using a yearly growth rate of more than 2%.

The two-way afternoon peak hour vehicle demand traveling along Lucasville Road during the critical weekday afternoon peak hour is expected to be about 800-850 vehicles/hour. Using typical conversion factors GRIFFIN applies to Nova Scotia roadways, this level of hourly demand represents an approximate daily demand of about 8,000-8,500 vehicles/day (vpd). Since the latest TAC geometric design guidelines do not provide maximum capacity values for rural two-lane roadways, GRIFFIN reviewed methodologies for estimating rural roadway capacity published by the Federal Highway Administration (FHWA). The FHWA identifies an approximate maximum

[1] Lakestone Residential Development Traffic Impact Study, April 2015. Prepared by GRIFFIN on behalf of DesignPoint Engineering.

practical two-way capacity range of 20,000-25,000 vpd for this type of facility – dependent upon vehicle operating speeds, truck percentages and so forth. Therefore, it was concluded that there is a considerable amount of residual capacity in the Lucasville Road corridor and this roadway has the ability to accommodate future traffic growth.

2.3 Vehicle Operating Speed Data

The existing access location is situated near a speed limit transition from 60 km/h to 70 km/h. As such, northbound drivers are traveling from the 70 km/h speed zone into the 60 km/h speed zone and likely carry higher speeds through the study area. Conversely, southbound drivers travel from the 60 km/h zone into the 70 km/h zone.

GRIFFIN did not gather vehicle operating speed data for this project. However, based on numerous studies completed along HRM suburban roadways with a two-lane, two-way rural cross-section the vehicle operating speeds are typically between 5-10 km/h above the posted speed limit. As such, the selected vehicle operating speed for the analysis steps discussed later in this letter was assumed to be 80 km/h.

3.0 EXISTING VEHICLE ACCESS

Vehicle access to/from the proposed development will be provided via the existing driveway connection to Lucasville Road, in the location shown in *Figure 2*. GRIFFIN carried out a driver visibility review at this access location to ensure its users are provided with sufficient sight lines that meet minimum design requirements. The existing driver views from the proposed driveway location are shown in *Figure 3*.

The driver 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 new access were 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 Lucasville 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 sight distance 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 southbound travel lane. A comparison of the field measured sight distances relative to TAC's minimum requirements for an 80 km/h operating speed is provided in *Table 2*.

Figure 3: Driver Views from the Existing Driveway for Civic #1155 Lucasville Road

At Existing Access – Looking North (left)

At Existing Access – Looking South (right)

Table 2: Summary of Stopping Sight Distance Measurements (80 km/h)

Measurement Location	Travel Direction	Available SSD	TAC Required SSD		**Does Available Exceed Required?**
			Base[A]	Slope Adjusted	
Existing Access *(as shown in Figure 2)*	Southbound	232 m	129 m (80 km/h)	133 m (-2)[B]	Yes
	Northbound	274 m		124 m (+2%)[B]	Yes

A – 2017 TAC Chapter 2, Table 2.5.2

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

Based on the site conditions, the available stopping sight distances along Lucasville Road exceed TAC minimum requirements for an 80 km/h vehicle operating speed. Therefore, there is good driver visibility in both directions along Lucasville Road in the vicinity of the existing access.

4.0 SITE TRIP GENERATION

Typically, traffic engineers carry out a calculation process to estimate the number of new vehicles that will be added to the study area roads and intersections as a direct result of a proposed new development. However, it is understood that the existing use of the civic #1155 property will remain unchanged and only the zoning designation will change for it to align with the current use. As such, the trip generation calculation step of the Traffic Impact Statement process has not been carried out in this case.

It is understood through *RMP Development Consulting Limited* that there are approximately 70 buses that currently utilize this property as a parking area. Therefore, school bus drivers are expected to carry out the following critical activities on weekdays:

- *Weekday early mornings*: Prior to the morning commuter peak, bus drivers arrive at the site to start their morning bus routes. This includes a combination of inbound vehicle trips for drivers arriving to start their buses combined with outbound bus trips as the drivers depart to start their routes.
- *Weekday mid-afternoons*: prior to the afternoon commuter peak, bus drivers return to the site following the completion of their afternoon bus routes. This includes a combination of inbound bus trips returning to the site as well as outbound vehicle trips as the drivers leave for the day.

Of course, there are additional inbound/outbound trips during the middle of the day as some bus drivers may return to the site as they wait between the morning and afternoon routes. However, the level of vehicle activity using the existing driveway at this time will not be as concentrated as the two key time periods noted above.

In summary, the following technical facts have been gleaned from our traffic operational review:

- There is a considerable amount of residual vehicle capacity available in the Lucasville Road corridor.
- The existing bus parking area at civic #1155 has been in place for over 10 years and there are no known traffic operational issues associated with the existing driveway with about 70 school busses utilizing the existing access.
- The driver visibility at the existing access location exceeds minimum design requirements.
- The peak school bus activity occurs prior to the weekday commuter peaks in the Lucasville Road corridor which reduces the potential for traffic operational issues to occur.

Based on these technical facts, there is not expected to be any negative traffic operational impacts should the current use of the civic #1155 property continue into the future.

5.0 FINDINGS & CONCLUSIONS

The following conclusions were gleaned from the qualitative traffic impact assessment of the proposed rezoning for civic #1155:

- The civic #1155 property will continue to be used as a school bus parking area for about 70 buses. However, since the current MU-1 (Mixed Use) zone does not permit this use, the owners have entered into a rezoning process with the HRM Planning and Development Department to have the zoning changed to I-1 (Mixed Industrial).
- The existing access will remain in its current location and continue to serve the vehicle activities associated with the school buses moving in/out of the site. GRIFFIN has determined that the available driver visibility at this location along Lucasville Road exceeds TAC's minimum driver stopping sight distance requirements – assuming an 80 km/h operating speed.
- The qualitative traffic operational assessment suggests there is residual capacity in the Lucasville Road corridor, there are no changes expected with respect to the number of vehicles using the existing civic #1155 driveway, and the peak time for bus activity is off-set form the peak period of the Lucasville Road commuter traffic. Therefore, there are not expected to be any negative traffic operational impacts expected along the Lucasville Road corridor during peak times of a typical day as a result of the proposed rezoning and continuation of the current use on this property.

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.