



# Traffic Impact Letter and Swept Path Assessment Study

# **Proposed Motel**

# **1144 Division Street, Cobourg**

**Prepared by:** Traffic+ Engineering Ltd. **Prepared for:** Land and Building Experts

November 23, 2020



1119-34 Leith Hill Road Toronto, ON M2J 1Z4

Phone: (514) 891-3972 Email: Nabil@TrafficPlus.ca Website: TrafficPlus.ca

# Report

Date November 23, 2020

Client Land and Building Experts

### **Client Contact**

Nalliah Thayabharan, M.Eng. Project Manager 570 Alden Road, Unit#6, Markham, ON L3R 8N5

## Re: Traffic Impact Letter and Swept Path Assessment Proposed Motel Division Street, Town of Cobourg

Traffic+ Engineering Ltd. is pleased to submit this Traffic Impact Letter and AutoTURN Swept Path Assessment in support of a Re-Zoning application related to the proposed Motel to be built next to an existing motel building located along Division Street in the Town of Cobourg, Ontario.

The site is accessed via a single full movement driveway located on Division Street. The proposed development will consist of a three-storey Motel to be built adjacent to the existing motel which will be built on a vacant lot, with a total surface area of approximately 848.41 m<sup>2</sup> (9,132.20 ft<sup>2</sup>), with total rooms equal to 50.

The purpose of this study is to determine the traffic impacts of the proposed development on the surrounding road network and to identify any improvements necessary to accommodate this added traffic, if found necessary. Additionally, the study will assess the garbage truck maneuverability at the staging area.

The study concludes that the proposed Motel addition does not require a traffic impact study, which is based on the City of Toronto Transportation Impact Studies Guidelines as well as on the City of Vaughan Transportation Impact Study Guidelines, as it will generate 23 vehicular trips during AM Peak and 24 vehicular trips during PM Peak hours, which will have imperceptible effects on future traffic operations in the vicinity of the site.

Additionally, the site layout can easily accommodate the manoeuvring of a front loading garbage truck that is currently being used in and out of the site, and the staging area located by the proposed Motel addition.

Our Reference: 2020-010



1119-34 Leith Hill Road Toronto, ON M2J 1Z4

Phone: (514) 891-3972 Email: Nabil@TrafficPlus.ca Website: TrafficPlus.ca

# Report

We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

handin

Mr. Nabil Ghariani, P.Eng., PTOE, M.S.C.E. President and CEO







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## 1.0 Introduction

#### 1.1 Study Overview

Traffic+ Engineering Ltd. was retained by Land and Building Experts to provide a Traffic Impact letter and undertake a garbage truck swept path assessments in, out, and at the staging area by the proposed Motel addition in support of a Re-Zoning application.

The subject property is a currently operating as a motel which is located at 1144 Division Street, in the Town of Cobourg, which is located south of Division Street and Veronica Street/Denmore Road. The site is currently accessed via a single full movement driveway also located along Division Street.

#### 1.2 Study Area and Proposed Site Plan

The approximate location of the subject site is illustrated in **Figure 1**. The community surrounding the subject site is comprised of low density businesses and fast food buildings all located along Division Street.





## 2.0 Existing Conditions

The subject property is currently operating as a single storey motel. The proposed Motel addition will be built next to the existing motel and will have three (3) storeys. The existing motel is currently in operation and will still continue after the construction of the new building. The area surrounding the subject site is comprised of low density businesses and fast food buildings all located along Division Street.

#### 2.1 Existing Road Network

The existing road network where the site is located is described below:

 Division Street: is a mostly north-south Major Arterial in the Town of Cobourg as per the Town of Cobourg Road Classification System and is comprised of four (4) lanes with a median centre lane. A continuous pedestrian sidewalk is found on the east side of the corridor and on-street parking is not permitted at all time. The posted speed limit is 50 km/h in the vicinity of the proposed development.

### 3.0 **Proposed Development**

Based on the site plan prepared by Archisystem Inc. received on November 19, 2020, **Figure 2** and **Figure 3**, the proposed development will consist of a three-storey Motel building which will be built on a vacant lot located just south of the existing motel. Site access will be accommodated by a single full movement driveway, located on Division Street.









## 4.0 Traffic Assessments

#### 4.1 Trip Generation

As noted, the proposed development will consist of a three (3) storey Motel to be built on a vacant lot land but next to the existing motel, with a total surface area of approximately 848.41 m<sup>2</sup> (9,132.20 ft<sup>2</sup>). The proposed total number of rooms is equal to 50 rooms.

The trip generation related to the proposed development was estimated using the trip generation rates provided in the ITE Trip Generation Manual (9<sup>th</sup> Edition) for the following land uses:

- Land Use Category 320: Motel

**Table 1** provides the trip generation for the proposed Motel.

			Mote	l (320)			
	Number of Rooms	Average Rate	Total Trips	In (%)	Out (%)	In Trips	Out Trips
AM Peak	50	0.45	23	36%	64%	8	15
PM Peak	50	0.47	24	54%	46%	13	11

#### Table 1: Estimated Trip Generation Rate

#### 4.2 City of Toronto and City of Vaughan Traffic Impact Study Guidelines

Based on the City of Toronto Transportation Impact Study Guidelines, dated 2013, and City of Vaughan Transportation Impact Study Guidelines, dated 2018, indicate that development / redevelopment will add 100 trips or more during the peak hour to the surrounding road network.

Given that the total trip generation during AM Peak and PM Peak hours are equal to 23 vehicular trips and 24 vehicular trips, respectively, which are much lower than 100 trips per peak hour required to trigger a TIS. Additionally, the fact that the intersections at Division Street and Veronica Street/Desmore Road as well as at Division Street and Veronica Street/Patterson Street both have dedicated left turn movements at the intersections which provide ample capacity for the intersections to operate at acceptable level of service.

Therefore, it can be deduced that the proposed Motel does not require a traffic impact study as it will have imperceptible effects on future traffic operations in the vicinity of the site.

Appendix 1 provides a copy of staff email agreeing to scope reduction.



**Appendix 2** provides copies of the City of Toronto and City of Vaughan Transportation Impact Study Guidelines.

#### 4.3 Traffic Impact at the Access Driveway

Although a full traffic impact study may not be needed due to low vehicular trips generated from the proposed development, a traffic operation assessment is undertaken at the access driveway. The objective of this assessment is to demonstrate that the proposed development will not have any major impacts on the driveway operation under full buildout.

#### 4.4 **Trip Distribution**

In order to assess the driveway under conservative condition, a trip distribution of 80% of vehicles are from/to the Highway 401 and 20% vehicles are from/to downtown Cobourg is being used.

#### 4.5 Traffic Forecasting

The traffic growth rate used to forecast existing traffic volumes is equal to 2.0%, as this information was provided during the pre-consultation meeting with the Town's staff.

#### 4.6 Traffic Counts

A traffic count was undertaken on October 22, 2020 at the access driveway. **Figure 4** and **Figure 5** provide the traffic volumes for existing, future background and future total.

It should be noted that the traffic counts were undertaken during COVID-19 provincial trips and gathering strict restrictions, which may reflect on traffic volumes. These traffic volumes may be lower than typical traffic volumes collected prior these restrictions.







#### 4.7 Traffic Assessments Under Future Total Scenario

**Table 2** provides the assessments results under future total at the access driveway located along Division Street.

pd		٥						Directi	ons / M	ovemen	ts / Appr	oaches				
eric		ſyp			West	bound			North	bound			South	bound		
Analysis P	Intersection	Control <sup>-</sup>	MOE	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
'n			LOS	В		В	В		А	А	A	А	А		А	Α
k Ho	Division St. and	Unsignational	Delay	10.9		10.9	10.9		0.0	0.0	0.0	0.1	0.1		0.1	0.2
A Pea	Access Driveway	Unsignalized	v/c	0.03		0.03			0.22	0.11		0.01	0.33			0.33
AN			95th Queue	0.7		0.7			0.0	0.0		0.2	0.2			
r			LOS	В		В	В		А	A	А	А	А		А	Α
k Hc	Division St. and	Unsignalized	Delay	11.1		11.1	11.1		0.0	0.0	0.0	0.1	0.2		0.2	0.2
A Pea	Access Driveway	onsignalized	v/c	0.02		0.02			0.24	0.12		0.01	0.31			0.31
M			95th Queue	0.5		0.5			0.0	0.0		0.3	0.3			

#### Table 2: Future Total Traffic Operations Results (2025)

From **Table 2**, it can be deduced that the proposed Motel will have minimal impacts onto Division Street where levels of service range from LOS A, along Division Street and LOS B at the access driveway.

Appendix 3 provides detailed Synchro results

#### 4.8 Design Speed

Currently, the posted speed along Division Street by the development's frontage is 50 km/h. Typically, the design speed of the main road is usually assumed to be 10 km/h over the posted speed limit for analysis purposes. In this case, the design speed of the corridor is equal to 60 km/h.

#### 4.9 Intersection Sight Distance

There are two sight distance assessments that have to be undertaken in order to conclude that the available sight distance at an intersection be deemed to be adequate, which are as follows:

- A test for vehicles that are required to depart an intersection safely; and
- A test to determine if the conditions of an approaching vehicle and driver on the side street can adequately see oncoming traffic as it approaches the intersection.



The various tests require a driver's eye height of 1.05 m above the pavement surface and an object height of 1.2 m, representing the assumed top of an approaching vehicle which is unlike the Decision Sight Distance which requires and object height of 0.45 m.

#### **Departing Vehicles**

According to the Transportation Association of Canada (TAC) and the Ministry of Transportation of Ontario (MTO), the requirements for sight distances and sight triangles for signalized intersections are the same as those applied for stop controlled intersections. According to TAC:

"Since the intersecting traffic flows at signalized intersections move at separate times, theoretically, sight distance considering the cross-street traffic is not a requirement. However, due to numerous potential operating conditions associated with signalized intersections, the stop control sight distance is provided as a minimum. The signal operation conditions that support this practice include: signal malfunction, violation of the signal, right-turns permitted on red, and the use of the flashing red/yellow mode."

Based on the requirements outlined for stop controlled intersections, there are three components to be assessed:

- Crossing Sight Distance;
- Left-turn Sight Distance; and
- Right-turn Sight Distance

However in this study, the assessment will only be undertaken for the Left-turn Sight Distance and Right-turn Sight Distance as the configuration of the proposed intersection is a three legged intersection.

**Figure 6** illustrates the components of stop control sight distance. The left turn sight distance requirement is based on the time required to start from a stopped position, clear the near side traffic stream and accelerate to normal operating speed without interfering with through traffic. The right-turn sight distance requirement is based on the time to start from a stopped position and accelerate to normal operating speed without interfering with through traffic travelling in the same direction. In this case, the governing condition is the distance required for either turning left, or turning right to access the main street from the side street.

The governing safe sight distance for turning movements at an intersection is the distance "required for a left-turning vehicle to attain the assumed operating speed of the highway before being overtaken by an approaching vehicle travelling in the same direction at the design speed" (as stated in the "Geometric Design Standards for Ontario Highways, MTO, Section E.3.2.3.2, Page E3-5").

For a design speed of 60 km/h, the safe sight distance requirement for turning movements onto a main road from a side road is as follows:



- Left-turn Sight Distances: vehicles turning left from a minor road to the main road must have a minimum sight distance of 140 metres for vehicles approaching from the right, and a minimum of 180 metres for vehicles approaching from the left
- **Right-turn Sight Distances:** vehicles turning right from minor road to the main road must have a minimum sight distance of 180 metres for vehicles approaching from the left





The chart used to determine these distances is taken from the Geometric Design Standards Manual, and it is illustrated in **Figure 7**.

The TAC Manual provides a chart for vehicles turning left onto a two-lane roadway, illustrated in **Figure 8**. Based on the chart, it can be deduced that the minimum sight distance for a vehicle turning left onto a four-lane roadway is 130 metres.

Comparing MTO Geometric Design Standard Manual and TAC Manual, it can be deduced that the MTO's sight distance of 180 metres is conservative and will be used to assess the sight distance at the proposed access driveway and Division Street.







#### **Field Investigation**

A field investigation conducted in October 2020 where sight distances were measured from the approximate site access driveway location. It was found that the sight distance on the left of the access (looking South) along Division Street is equal to approximately 225 metres, whereas the minimum required sight distance is 180 metres, and the sight distance on the right of the access (looking North) along Division Street is found to equal to approximately 150 metres, whereas the minimum required sight distance is 140 metres. Hence, the field sight distances exceed the minimum required sight distances and the proposed location of the access driveway is adequate.

Figure 9 shows the photos taken during the field investigation.





#### 5.0 Site Circulation Assessments

Based on the proposed site layout and type of development which will consist solely of a Motel building, the swept path assessment will focus on garbage truck maneuverability along the driveway and at the staging area. Based on the site plan, the staging area is proposed to be at the end of the new Motel building. The assessment will consist of undertaking numerous swept paths at the proposed staging area to ensure that garbage truck can easily empty the bins and exit the site without any obstructions.

#### 5.1 Type of Garbage Truck

In consultation with the Town of Cobourg Staff, it was agreed to use the existing garbage trucks currently in use to service the motel as the typical garbage truck to be used in the assessment which is a front load garbage truck. The dimensions and turning movement radius specifications for this type of garbage truck which were replicated in AutoTurn software are found in **Appendix 4**.

#### 5.2 Swept Path Assessments

The truck circulation assessment along the driveway and at the staging area was completed using AutoTurn 11 software package for a front load garbage truck. The analysis utilizes a typical front load garbage truck as agreed with City staff.

Based on the comprehensive AutoTurn assessments, it can be determined that the proposed site layout around the development and at the staging area can accommodate a front load garbage truck.

Detailed AutoTurn assessments in different locations around the proposed development are illustrated in **Figures 10 – 16**.





![](_page_26_Figure_0.jpeg)

![](_page_27_Figure_0.jpeg)

![](_page_28_Figure_0.jpeg)

![](_page_29_Figure_0.jpeg)

![](_page_30_Figure_0.jpeg)

Ref# 2020-010

## 6.0 Findings and Conclusions

The findings and conclusions of our study are as follows:

- Based on the information and site plan received from Archisystem Inc. received on November 19, 2020, the proposed development consists of a three-storey Motel which will be built on a vacant lot located just south of the existing motel;
- Site access will be accommodated by a single full movement driveway, located on Division Street;
- Total trip generation during AM Peak and PM Peak hours are equal to 23 vehicular trips and 24 vehicular trips, respectively, which are much lower than 100 trips per peak hour required to trigger a TIS, as defined by City of Toronto Transportation Impact Study Guidelines as well as City of Vaughan Transportation Impact Study Guidelines;
- Intersections at Division Street and Veronica Street/Desmore Road as well as at Division Street and Veronica Street/Patterson Street both have dedicated left turn movements at the intersections which provide ample capacity for the intersection to operate at an acceptable level of service;
- Traffic operations undertaken at the access driveway under full buildout demonstrated that the proposed Motel will have no negative impacts on Division Street levels of service;
- It can be deduced that the proposed Model does not require a traffic impact study because its trip generation will have imperceptible effect on future traffic operations in the vicinity of the site;
- The site layout can easily accommodate the manoeuvring of a typical front load garbage truck at the staging area located in the back of the site.

It is in our opinion, and based on the information provided by the architects and the client, it can be concluded that the internal site layout will provide adequate service for the front load garbage to maneuver at the staging area located in the back of the site.

# **APPENDIX 1**

Staff Emails for Agreeing to Scope Change Fire Department

![](_page_32_Picture_2.jpeg)

#### Nabil Ghariani

From:	Terry Hoekstra <thoekstra@cobourg.ca></thoekstra@cobourg.ca>
Sent:	Wednesday, October 21, 2020 9:27 AM
To:	Nabil Ghariani; Glenn McGlashon
Cc:	Joseph Chartrand; Neil Stewart
Subject:	RE: 1144 Division St - Traffic Impact Study - Scope
Attachments:	Vaughan's Transportation Impact Study (TIS) Guidelines - April 2018.pdf

Good morning Nabil,

I am satisfied with reducing the scope, but would like to see the projections below provided within a sealed letter, as well as a confirmation of proper sight lines, exiting the site.

Regards,

Terry Hoekstra, C.E.T. Manager of Engineering and Capital Projects Town of Cobourg 740 Division Street, Building 7 Cobourg, ON K9A 0H6 <u>www.cobourg.ca</u> (p) 905.372.9971 Ext. 4371 (f) 905.372.0009

\*\*\*Due to the COVID-19 outbreak, please be advised that The Town of Cobourg has declared a State of Emergency and has closed public access to all Municipal Buildings. Municipal staff are now working reduced schedules in order to ensure the health and safety of the public and employees, as well as maintain business continuity. We encourage all business to be done through email, phone, video-conferencing or courier.

For deliveries and other activities requiring direct access to Public Works, the Town of Cobourg has established strict screening and sign-in protocols for all visitors in the name of health and safety. Please contact our office to determine if alternatives are possible. We will make this transition as seamless as possible to minimize any service disruptions.\*\*\*

#### PRIVILEGE AND CONFIDENTIALITY NOTICE

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From: Nabil Ghariani [mailto:nabil@trafficplus.ca] Sent: Tuesday, October 20, 2020 2:49 PM To: Glenn McGlashon <gmcglashon@cobourg.ca>; Terry Hoekstra <thoekstra@cobourg.ca> Subject: 1144 Division St - Traffic Impact Study - Scope

Good afternoon Terry:

I hope you are doing well.

![](_page_33_Picture_13.jpeg)

The purpose of this email to kindly request that the scope for the Traffic Impact Study be reduced to only the assessment at the access driveway of the Motel / Hotel, this is mainly due to the fact that the proposed Hotel will generate an insignificant number of vehicles. Based on the ITE Trip Generation for Hotel (Code 310), it was deduced that the Total trips (In and Out vehicles) during AM Peak Hour is equal to 27 vehicles, and the total trips during PM Peak Hour is equal to 30 vehicles.

Additionally, given that vehicles will most likely be assigned as a through traffic at the studied intersections, the operational traffic impacts will be insignificant onto these signalised intersections.

Moreover, based on the Vaughan's Traffic Impact Study Guideline (attached along with this email), it is clearly indicated that a TIS is required if the development will add 100 trips or more during the peak hour to the surrounding road network (Page 8).

I am open to discuss further with you on this subject should you have any questions or require additional clarification.

Have a great day.

Best regards,

Nabil.

![](_page_34_Picture_7.jpeg)

Engineering Ltd.

Mr. Nabil GHARIANI, P.Eng., PTOE, M.S.C.E. President and CEO Traffic+ Engineering Ltd. Website: TrafficPlus.ca E-mail: <u>Nabil@TrafficPlus.ca</u> Cell Phone# (514) 891 - 3972

From: Glenn McGlashon [mailto:gmcglashon@cobourg.ca] Sent: Tuesday, October 13, 2020 10:23 AM

To: dave chahal <d4164002999@gmail.com>

Cc: Nabil Ghariani <<u>nabil@trafficplus.ca</u>>; Brooke Gillispie <<u>gillispieb@northumberlandcounty.ca</u>>; 'Ken Thajer' <<u>kthajer@grca.on.ca</u>>; Kirk Johnstone <<u>johnstonek@northumberlandcounty.ca</u>>; Dave Johnson <<u>djohnson@cobourg.ca</u>>; Dean Hustwick <<u>dhustwick@cobourg.ca</u>>; Dereck Paul <<u>DPaul@lusi.on.ca</u>>; Farook Hyder <<u>fhyder@lusi.on.ca</u>>; Glenn McGlashon <<u>gmcglashon@cobourg.ca</u>>; Ian Davey <<u>idavey@cobourg.ca</u>>; Jason Johns <<u>jjohns@cobourg.ca</u>>; Jered Marshall <<u>jmarshall@cobourg.ca</u>>; Jodi Ware-Simpson <<u>jwaresimpson@cobourg.ca</u>>; Joseph Chartrand<<u>jchartrand@cobourg.ca</u>>; Larry Spyrka <<u>lspyrka@lusi.on.ca</u>>; Laurie Wills <<u>lwills@cobourg.ca</u>>; Mike Vilneff <<u>mvilneff@cobourg.ca</u>>; Neil Stewart <<u>nstewart@cobourg.ca</u>>; Rob Franklin <<u>rfranklin@cobourg.ca</u>>; Rory Quigley <<u>rquigley@cobourg.ca</u>>; Scott Bambridge <<u>scott.bambridge@CobourgPolice.com</u>>; Shawn Bolender <<u>sbolender@lusi.on.ca</u>>; Teresa Behan <<u>tbehan@cobourg.ca</u>>; Terry Hoekstra <<u>thoekstra@cobourg.ca</u>> Subject: RE: 1144 Division St - Pre-Consultation Checklist

![](_page_34_Picture_13.jpeg)

#### Nabil Ghariani

From:	Mike Vilneff <mvilneff@cobourg.ca></mvilneff@cobourg.ca>
Sent:	Wednesday, October 21, 2020 1:27 PM
To:	Nabil Ghariani
Cc:	Glenn McGlashon
Subject:	RE: 1144 Division St - Fire Route and Fire Truck Maneuverability

#### Hi Nabil,

Given that there is no indication of any changes to the existing access route, we would not require any modifications to the access route to service the proposed new building.

#### Mike Vilneff

From: Nabil Ghariani [mailto:nabil@trafficplus.ca] Sent: October 20, 2020 3:28 PM To: Mike Vilneff <mvilneff@cobourg.ca> Subject: 1144 Division St - Fire Route and Fire Truck Maneuverability

Good afternoon Mike:

I hope you are doing well.

The purpose of this email is to inquire about the fire route for the proposed Hotel to be located at the existing Motel at 1144 Division Street.

The proposed Hotel will be a four storey building (probably less in case that there is not enough parking supply) and will be built close to Division Street (see attached DRAFT architectural plans). Given that the existing access route in the Motel is about 110 metres, and does not have a turnaround for a fire truck. I should also indicate that the fire truck turnarounds may not be required for shorter fire routes (less than 110 metres) because fire truck can reverse to exist the site to the main street.

Please feel free to contact me if you have questions pertaining the above inquiry.

Have a great day.

Best regards,

Nabil.

![](_page_35_Picture_14.jpeg)

# APPENDIX 2

Ciy of Toronto and City of Vaughan Transportation Impact Studies Guidelines

![](_page_36_Picture_2.jpeg)

# M Teronte

## CHAPTER 2 TIS OVERVIEW

## 2.1 Purpose

A TIS is intended to provide the information necessary to guide City staff in reviewing the transportation aspects of a development proposal by:

- · Assessing the extent of transportation impacts;
- Identifying physical infrastructure, balancing transportation demand with supply, and introducing level-of-service improvements or other measures that should be considered on the 'build-out' of a development to ensure network safety and acceptable operating conditions on roads, sidewalks, intersections and access points;
- Identifying an appropriate travel demand management (TDM) strategy to reduce private motor vehicle use and encourage pedestrian and cycling activity; and
- · Maintaining consistency with other City transportation objectives and OP policies.

The *GuideLines* instruct TIS scope determination, issues to address and analytical approaches while a proposed development's location, scale, and land use influence the actual TIS elements required. For development in areas where an environmental assessment, integrated land-use or other transportation strategy is in place, a traffic operations assessment focusing on limited issues such as access design and location may be all that is necessary.

### 2.2 When Required

In most cases, a TIS will be required if the proposed development adds more than 100 peak-hour, peak-direction vehicle trips to the transportation system. However, there will be situations when the 100 trip threshold is not reached and a TIS is still required, such as:

- The vehicle traffic generated by the development is expected to trigger a critical capacity
  or level-of-service condition at one or more of the surrounding signalized intersections
  (i.e., volume-to-capacity ratios are greater than 1.0 or level-of-service exceeds 'E' for
  either through movements or shared/exclusive turning lanes on intersection approaches);
- The development proposal is in an area with significant levels of existing vehicle or pedestrian traffic congestion, and/or a high expected rate of population or employment growth;
- The development proposal incorporates direct vehicle access to either a major or minor arterial road;
- · The development proposal is not captured in local land-use/transportation plans; and
- · The development proposal requires an amendment to the OP.

When less than 100 peak-hour, peak-direction trips are anticipated, the Applicant should consult with staff to determine if an analysis of traffic impact is required.

![](_page_37_Picture_19.jpeg)

![](_page_38_Picture_1.jpeg)

#### 2. GENERAL REQUIREMENTS

#### 2.1 Need for Study

There are several considerations in determining the need and level of detail for a transportation impact study. Block plans will generally require a planning analysis approach to assess demand and capacity on the adjacent transportation network. Subdivision and site plans usually necessitate a more detailed analysis of operational and design issues. Generally, TIS is required when one or more of the following criteria are anticipated or present:

- If the development/redevelopment will add 100 trips or more during the peak hour to the surrounding road network.
- If in the opinion of the Transportation Engineering Division, the site has the potential to generate five (5) percent increase in motor vehicle traffic volumes on the Vaughan road network or on critical intersection turning movements, resulting in unacceptable or adverse operational and safety impacts.
- The proposed site is located in an area of high roadway congestion.
- Site is not envisioned by local land use or transportation plans, or requires a change or exception to a City planning or by-law policy, strategy or plan.

In all cases, the City will determine the need for and scope of a transportation impact study. The level of detail and the required components will be a function of the location, size and operation of the development/ redevelopment proposal. In some instances, the proposal may lie within an area for which a transportation strategy or plan has been undertaken or prepared. In this case the City shall determine if certain elements of the TIS can be omitted. It is important that the proponent contact the City of Vaughan Transportation Engineering Division to obtain an exemption from all or any TIS requirements.

#### 2.2 Study Timing

Transportation needs are a major consideration for new or expanding development. In general, stages in the development process whereby transportation impact studies are potentially appropriate are:

- Zoning and rezoning applications
- Land subdivision applications
- Site plan approval
- Secondary plans, Block Plans or phases thereof
- Amendments to the Official Plan.

A transportation impact study will usually have a "shelf life" of three years. Major changes within the study area may reduce the life of the document if they were not considered in the impact assessment.

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![](_page_38_Picture_19.jpeg)

# APPENDIX 3

**Synchro Results** 

![](_page_39_Picture_2.jpeg)

# 1144 Division Street4: Division Street & Access

	٦	<b>→</b>	←	*	1	~
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		÷î†	<b>≜</b> †₽		Y	
Traffic Volume (vph)	6	763	527	2	4	12
Future Volume (vph)	6	763	527	2	4	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.897	
Flt Protected					0.988	
Satd. Flow (prot)	0	3579	3575	0	1669	0
Flt Permitted					0.988	
Satd. Flow (perm)	0	3579	3575	0	1669	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		120.9	119.1		88.8	
Travel Time (s)		8.7	8.6		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	829	573	2	4	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	836	575	0	17	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.4	3.4		3.7	-
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	26			14	26	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utiliza	ation 35.3%			IC	CU Level o	of Service

Analysis Period (min) 15

# 1144 Division Street4: Division Street & Access

	٦	<b>→</b>	←	*	1	~
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		-î†	<b>≜</b> î∌		Y	
Traffic Volume (vph)	10	717	563	3	3	9
Future Volume (vph)	10	717	563	3	3	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt			0.999		0.896	
Flt Protected		0.999			0.989	
Satd. Flow (prot)	0	3575	3575	0	1669	0
Flt Permitted		0.999			0.989	
Satd. Flow (perm)	0	3575	3575	0	1669	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.9	91.1		39.0	
Travel Time (s)		8.3	6.6		2.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	779	612	3	3	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	790	615	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.4	3.4		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	26			14	26	14
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						

Intersection Capacity Utilization 36.9% Analysis Period (min) 15

ICU Level of Service A

![](_page_42_Picture_0.jpeg)

# AutoTurn Front-Loading Garbage Truck Dimensions

![](_page_42_Picture_2.jpeg)

![](_page_43_Figure_0.jpeg)

![](_page_43_Picture_1.jpeg)

![](_page_44_Figure_0.jpeg)