

**The Municipality of  
Clarington  
Traffic Impact Study  
Guidelines**

Engineering/Building  
Services Department  
40 Temperance Street  
Bowmanville, Ontario

January 2015

**THE MUNICIPALITY OF CLARINGTON  
TRAFFIC IMPACT STUDY GUIDELINES**

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## Introduction

### 1.0 INTRODUCTION

#### 1.1 PURPOSE

Traffic impact studies are an important part of the development review and approval process. They are primarily required to identify the impacts of new development on the public transportation system and their mitigation through measures such as road and intersection improvements, the installation or upgrading of traffic control devices, increased transit service, and/or active transportation facilities. In addition, traffic impact studies assist in identifying the financial responsibility and timing for transportation system improvements, and may also be used to establish the staging of development.

These guidelines have been developed by the Municipality of Clarington (the Municipality) to meet the following objectives:

- Provide land owners, development companies, and consultants with an approach to preparing traffic impact studies that will meet the requirements of the Municipality;
- Ensure consistency in the preparation of traffic impact studies, which will facilitate thorough and expeditious reviews by the Municipality and reduce the potential costs and delays to developers; and
- Establish a framework that contributes to the understanding of this aspect of the development review and approval process by Clarington Council and the general public.

#### 1.2 MUNICIPALITY OF CLARINGTON'S ROLE

Within Clarington, the Municipality has responsibility for all local and collector roads, some arterial roads, cycling facilities, sidewalks, and trails. The agencies with responsibility for the other components of the transportation system are as follows:

- The Regional Municipality of Durham (the Region) has responsibility over the remainder of the arterial roads (the Regional roads) and the traffic signal system (regardless of the jurisdiction of the intersecting roadways);
- The Ministry of Transportation of Ontario (MTO) has responsibility for the provincial freeways and highways;
- Durham Region Transit (DRT) provides public transit services within the Municipality and Region-wide; and
- GO Transit has jurisdiction over inter-region rail and bus transit.

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The onus is on the proponent to contact all potentially affected government agencies to confirm road jurisdiction and to determine their individual requirements with respect to addressing impacts on various aspects of the transportation system.

For a development within the Municipality, the Engineering/Building Services Department is the key contact for traffic impact studies, and in conjunction with other Municipal departments, will assist in establishing the scope of a traffic impact study. As noted above, the proponent may also need to consult with other government agencies.

With respect to pre-consultation, submission, and review of traffic impact studies, the following Municipal department and/or agency structure applies:

- **Engineering/Building Services Department:** primary and first point of contact for all traffic impact studies, and the key resource for traffic and collision data as well as information regarding traffic control devices; and
- **Planning Department:** involved in the review of developments, and the key resource for information pertaining to population and employment growth, the Official Plan, zoning by-laws, development patterns, etc.

Following a review of a traffic impact study, the comments prepared by staff in the departments listed above are collected by the Planning Department.

### 1.3 DESCRIPTION OF THE PLANNING PROCESS RELEVANT TO TRANSPORTATION

The planning process related to assessing the traffic impact of new development or redevelopment ranges from broader, longer range issues to very site specific details. The key instruments in the planning process as related to addressing potential changes in traffic requirements are described briefly below:

- **Official Plan Amendments:** as may be required to change land use designations in the Official Plan to accommodate a proposed land use (e.g., re-designating lands from agricultural to an urban land use type);
- **Re-Zoning:** as may be required to increase the intensity or diversity of land uses on a site (e.g., altering how land may be used, where buildings and other structures can be located, the types of buildings that are permitted and how they may be used or the lots sizes and dimensions, parking requirements, building heights and setbacks from the street);
- **Plan of Subdivision:** as may be required to address the details of a subdivision of land (e.g., street connections to the public road system, locations of traffic signals, etc.); and

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- **Site Plan:** as may be required to address the details of a specific development (e.g., driveway access design details) or Plan of Condominium.

As part of a traffic impact study, the introduction should include a description of where the development is in the planning process, and what is being applied for with respect to any changes to the existing planning regulations.

These guidelines have been developed to address traffic impact studies that focus on a particular development, and are not intended to cover the full range of activities that may be necessary for secondary planning or corridor transportation studies. The latter type of studies, which are broader and more comprehensive, are often required as part of the background work for a proposed amendment to the Official Plan.

### 1.4 WHEN IS A TRAFFIC IMPACT STUDY REQUIRED?

A traffic impact study will be required for all developments that will have an impact on the transportation network, which includes roads, transit, cycling and pedestrian facilities.

At the discretion of the Engineering/Building Services Department, the scope of the assessment will range from a full Traffic Impact Study to an opinion-based Traffic Impact Statement (typically a shorter letter report). The term “*Traffic Impact Study*” as used within these guidelines applies to either the full study or the statement.

It is also recognized that developments may not proceed as originally planned for a variety of reasons. Should the proposed development remain dormant for two years or more, i.e., the application process has become inactive, it will be necessary to update the traffic impact study to address any changes in either the development proposal or study area traffic conditions.

### 1.5 PRE-CONSULTATION

Prior to the undertaking of a traffic impact study, pre-consultation is required between the Municipality and the applicant’s consultant. The intent of the pre-consultation is to discuss the development proposal, relevant issues pertaining to the type of development or its location, establish the scope of study required, and to confirm acceptable study parameters.

The format for pre-consultation will depend in part on the scale of the development proposal and its likely traffic impacts, and may include a phone discussion, email exchange, or a meeting. A checklist of discussion items is provided in Section 3 of these guidelines to provide structure to the pre-consultation, and to serve as the basis for the requirements of a particular traffic impact study.

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The Municipality may accept study findings and recommendations even where pre-consultation has not occurred, but omitting pre-consultation is likely to result in a need for multiple revisions, and resubmissions, which can greatly extend the review process.

### **1.6 REQUIRED QUALIFICATIONS**

As part of the pre-consultation exercise, the applicant's consultant should be prepared to demonstrate the experience and expertise that both the firm and the individual acting as project manager have in the field of traffic engineering and the preparation of traffic impact studies. In the event that the consultant lacks the prerequisite experience, the Municipality would require that the applicant retain a new qualified consultant, or possibly a qualified sub-consultant to assist the original consultant. The latter case would address situations where the original consultant is providing other services within their field of expertise to the applicant.

The submitted traffic impact study will include a transmittal or signature page with the signatures of the project manager and a second person responsible for quality assurance (i.e., "checked by"). The Municipality requires that traffic impact studies shall be prepared under the supervision of an individual or individuals with the following qualifications:

- Licensed by Professional Engineers Ontario;
- Specific training in traffic and transportation engineering; and
- Several years of experience related to preparing traffic studies for existing or proposed developments.

The individual taking responsibility for the traffic impact study shall apply their PEO stamp to the final report.

### **1.7 RESPONSIBILITIES FOLLOWING THE MUNICIPALITY'S REVIEW OF A TRAFFIC IMPACT STUDY**

If it is determined through the Municipality's review of the traffic impact study that all transportation and traffic impacts have been properly assessed, and the recommended improvements to the transportation system will allow the development to proceed without adverse impacts, favourable comments will be provided with respect to transportation and traffic considerations for the development review and approval process.

Should the Municipality determine that the traffic impact study is incomplete, has significant errors, or has not properly identified the necessary improvements; the applicant's consultant will be required to:

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- Address any study issues or deficiencies as identified in the Municipality's review; and
- Depending on the extent of the Municipality's review comments, submit a revised report or an addendum report identifying how the issues and deficiencies have been or are to be addressed. The additional submissions would also require two signatures and a PEO stamp.

Pending receipt and subsequent acceptance of a revised or addendum report, favourable comment on the development proposal will be withheld by the Municipality.

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## 2.0 TECHNICAL COMPONENT

### 2.1 DESCRIPTION OF DEVELOPMENT PROPOSAL

The report title page shall include the name of the proposed development, the developer's name and the consultant's name, as well as the road and municipality where the proposed development is located.

The type and size of the proposed development shall be clearly described, including as much detail as possible on the proposed uses, number and size of buildings, etc. The current status of the development proposal within the planning process shall be noted, as well as the expected dates for construction start, full build-out, and completion of any interim phases.

The location of buildings on the site, the proposed accesses to the public road network, and the internal traffic circulation system shall be illustrated on a site plan, which is to be included for reference as part of the traffic impact study. The site plan shall be clear, legible, and current.

With respect to traffic impact, the time periods when the development will have the greatest impact on the transportation system shall be identified as related to the nature of the proposed land use (e.g., weekday and weekend am/pm peak, street peak, peak of generator, etc.). This would include a description of the hours of operation, and/or considerations such as shift changes, special events, or other unique aspects of a proposed development. Other unusual characteristics, such as higher generation of truck traffic, transit trips, pedestrian/cyclist traffic, etc., shall also be identified.

**Description of proposed development and planning context**

**Clear, legible, and current site plan to be included in the report**

**Identification of critical time periods for assessing impact**

### 2.2 DEFINITION OF THE STUDY AREA

The study area for a traffic impact study will typically vary according to the size of the proposed development, but should include the road sections and intersections, transit routes, and cycling and pedestrian facilities that will experience higher traffic demands and/or impacts due to the proposed development. Therefore, **pre-consultation with the Municipality** shall be required to establish the limits of the study area including the specific intersections and other significant transportation facilities to be included in the

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analysis. The traffic impact study report shall include a key map to illustrate the study area in the context of the Municipality.

**Pre-Consultation required with Municipality to confirm study area**  
**Key Map for report to illustrate study area**

### 2.3 DESCRIPTION OF EXISTING CONDITIONS

The existing physical conditions in the study area shall be clearly documented through a site visit, and shall include detailed descriptions of the roadways, intersections, traffic control devices, transit, cycling and pedestrian facilities, traffic regulations (e.g., turn prohibitions, speed limits, parking restrictions, etc.), and adjacent land uses. The classification of study area roads shall also be provided as well as any other designation with respect to their intended function such as goods movement corridor, transit spine, cycling spine, etc. The latter designations may be found in the Official Plans of the Municipality and the Region, or in current transportation master plans, cycling master plans, etc. To augment the descriptive text where it would be beneficial, it is recommended that photos taken at the site should be included in the traffic impact study to assist in illustrating existing conditions.

The most recent traffic volumes available in the Municipality's and/or Region's database shall be requested, and shall be supplemented by new traffic counts at the proponent's cost in the event that either the available traffic counts are more than one year old or there are no traffic counts available for a particular intersection or roadway. This will ensure that the basis for both assessing existing traffic conditions and forecasting future traffic conditions will properly reflect current traffic data for the peak periods of interest. A summary of the key traffic data and other relevant data that may be required (depending on the scope of the traffic impact study) is as follows:

- Existing and historical traffic volumes, including vehicle classification;
- Bicycle traffic volumes;
- Pedestrian crossing volumes;
- Collision records (typically three year history);
- Signal timing;
- Transit routes and schedules; and

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- List of committed road improvements.

Existing traffic operations shall also be observed and documented during the peak periods. Preferably, the observations should be carried out at the same time as the data collection. This will assist in determining if there are any unusual traffic conditions or issues within the study area, and will serve to validate the results of subsequent analyses.

The data collection activities shall be described in the traffic impact study with existing peak period traffic volumes presented clearly and legibly in figures (preferable), charts, and/or tables. The raw traffic data summaries obtained from field counts shall be provided for reference as part of the report appendix materials.

**Description of physical conditions of transportation network**

**Current traffic data supported by observations of operations**

**Clear and legible presentation of traffic data**

## 2.4 SETTING A PLANNING HORIZON AND DETERMINING BACKGROUND TRAFFIC FORECAST

Background traffic refers to the traffic that would be using the study area road network regardless of whether the proposed development is built or not, and as such, provides a benchmark for the assessment of the development's impact. Prior to estimating background traffic, it is necessary to establish a horizon year(s), or design year(s), for assessing future traffic conditions and requirements. The appropriate horizon year(s) shall be determined on a case-by-case basis depending on the scale of the development, and in some cases, development phasing. This will be part of the **pre-consultation with the Municipality**.

It is recognized that a relatively short term planning horizon is used for most traffic impact studies, since the traffic assessment is usually based on detailed operational analysis methodologies, and longer range forecasts are not considered to be sufficiently precise to be analyzed in this way. Therefore, typical horizon years that shall be considered are as follows:

- "Opening day" to represent full build-out of a proposed development (typically within one to five years of the base year/current conditions);
- Five or 10 years after full build-out to assess a relatively mature state of development in the study area;

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- If the development is to be phased, at build-out of each significant development phase; and
- Any combination of the above to reflect logical checkpoints as development progresses.

The typical methods for preparing background traffic forecasts include:

- Application of growth factors based on historical traffic growth, travel demand forecasting models, population growth, etc.;
- Addition of traffic that will be generated by other developments within the study area that are approved, but not constructed;
- Reassignment of area traffic to reflect planned improvements to a road network such as the addition of a new road that may change travel patterns; and
- A combination of the above.

As noted above, it may be necessary to make assumptions with respect to future road network improvements that could logically be in place by the study horizon year(s). Information pertaining to planned road network improvements shall be drawn from the capital works programs or development charges by-laws of the Municipality and other local jurisdictions, or from current transportation master plans or other longer range transportation planning studies. Since these information sources may give a range of years for the implementation of a planned improvement, a conservative approach shall be taken whereby it is assumed that the improvement would occur later rather than earlier in a planning period when associating it with a particular horizon year.

The acceptable methodology for estimating future background traffic shall also be discussed with the **Municipality as part of pre-consultation**. The appropriate method will be largely dependent on Study Area characteristics as well as the horizon year(s).

The background traffic forecasts for the peak hour periods for each horizon year shall be presented clearly and legibly in figures. Supporting information such as regression analysis to develop historical growth rates, travel demand model output, and assumptions used in estimating background traffic volumes shall be provided for reference as part of the report appendix materials.

**Pre-Consultation is required with the Municipality to confirm:**

- **Horizon year(s) for forecasting**

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- **Background traffic forecasting methodology**
  - **Future road network assumptions**
- Clear and legible presentation of background traffic forecasts**

## 2.5 TRIP GENERATION AND MODAL SPLIT ASSUMPTIONS

The number of vehicle trips that will be generated by the proposed development during the peak hour period of the adjacent or nearby arterial roads shall be estimated using generally accepted methodologies, which may vary depending on the type of development. These methodologies include:

- First principles: estimates of traffic based on anticipated site activity (e.g., number of employees) and converted into vehicle trips through the application of factors such as modal split, percentage of traffic occurring during peak hours, etc.;
- Trip generation surveys of proxy developments conducted by the applicant's consultant; and
- Trip rates and formulae published in the **current edition** of the Institute of Transportation Engineers (ITE) manual, "Trip Generation".

The basic trip generation developed using the sources above shall be adjusted where appropriate to account for the following factors that affect the number of vehicle trips generated by a site or considered additional to the study area road network:

- Pass-by trips, diverted link trips, and on-site synergy between complementary land uses – according to ITE methodology, original research, or reasonable assumptions (with supporting rationale); and
- Modal split and TDM adjustments – according to reasonable assumptions for the study horizon year. Reference should be made to the Municipality's and/or Region's Transportation Master Plan with respect to the anticipated future modal split.

The methodology and assumptions to be used in estimating peak period site trip generation shall be confirmed through **pre-consultation with the Municipality** and shall be applied in accordance with the current edition of the ITE "*Trip Generation Handbook*". When transit ridership is part of the growth scenario (i.e. transit station area), the trip generation shall be based on "person trip" principles before the modal split is applied.

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The site trip generation shall be clearly presented in tables or charts, and supporting research or other relevant information shall be provided for reference as part of the report appendix materials.

***Pre-Consultation is required with the Municipality to confirm:***

- ***Acceptable site trip generation methodologies***
- ***Acceptable site trip generation adjustments***

***Clear presentation of site trip generation and reference material***

## 2.6 TRIP DISTRIBUTION

The distribution of the site generated trips to the study area road network shall be based on generally accepted methodologies, which may vary by the type of development and for different horizon years. As well, different methods may be applied to determine the trip distribution for primary, pass-by, and diverted link trips. These methodologies include:

- Existing traffic patterns;
- Origin-destination or similar travel surveys;
- Market research and related study by a market consultant;
- Travel demand forecasting model information related to origins/destinations for a specific traffic zone or zones;
- Current Transportation Tomorrow Survey data;
- Census data; and
- ITE Trip generation manual/handbook for pass-by and diverted link guidance.

The rationale for determining trip distribution shall be discussed as part of ***pre-consultation with the Municipality***, and shall be clearly articulated in the traffic impact study. The trip distribution shall be presented clearly in tables or figures, and relevant background information shall be provided for reference as part of the report appendix materials.

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***Pre-Consultation is required with the Municipality to confirm:***

- ***Acceptable trip distribution methodologies***
- ***Acceptable trip distribution variations***

***Clear presentation of trip distribution and reference material***

## 2.7 TRIP ASSIGNMENT AND TOTAL TRAFFIC FORECASTS

The assignment of the site trips to the study area road network shall combine the trip generation and distribution information with logical decision-making regarding the choice of alternative routes to/from a site. A trip assignment may be made manually or automatically generated through a travel demand model. The selected method may depend on the scale of development.

The assumptions or parameters used in undertaking the trip assignment shall be clearly articulated in the traffic study by providing the following:

- Description of the rationale for routing choices where alternatives exist;
- Explanation of iterative assignments if undertaken to avoid problem traffic movements; and
- Separate figures that clearly illustrate primary site trips, pass-by/diverted link trips, and internal trips, as applicable.

The site trip assignment, or assignments if considering a phased development, shall be summed with the corresponding background traffic forecasts to determine total traffic forecasts for each peak period of each horizon year. A separate figure shall be provided to clearly illustrate the total traffic forecast for each horizon year.

**Trip generation/distribution combined with logical routings**

**Manual or transportation planning model site trip assignments**

**Site and background traffic summed for total traffic forecasts**

**Clear presentation of site and horizon year total traffic forecasts**

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## 2.8 OPERATIONAL ANALYSIS

The analysis of existing and future traffic conditions shall be conducted using methodologies and software analysis tools that are **accepted by the Municipality**. This is necessary as part of ensuring that the analysis is easily understood as well as maintaining consistency in the review of traffic impact studies for development sites across the Municipality.

For guidance with respect to analysis and determination of improvements the consultant should be familiar with the following reference documents:

- Municipality of Clarington *“Design Guidelines and Standard Drawings”*;
- Regional Municipality of Durham *“Right-Turn Lane Guideline”*, *“Policy for Entranceways”*, *“Arterial Corridor Guidelines”*, and *“Design Specifications for Traffic Control Devices, Pavement Markings, Signage, and Roadside Protection”*;
- Ontario Traffic Manual (OTM);
- Ministry of Transportation of Ontario (MTO) *“Geometric Design Standards for Ontario Highways”*; and
- Transportation Association of Canada (TAC) *“Geometric Design Guide for Canadian Roads”*.

The analysis shall follow the methodology of the *“Highway Capacity Manual”* as determined by the urban or rural setting of the proposed development. In urban and rural areas, level of service is primarily based on “vehicular delay” at intersections. For free flow road sections in rural areas, the level of service is primarily based on “speed” and “density” of traffic. It is the planning policy of the Municipality to operate the intersections within the urban road network at LOS “D” or better (individual turning movements at LOS “E” or better). Rural free flow road sections are expected to operate at LOS “C” or better.

The capacity analysis and LOS shall address the performance of all the proposed site entrance/exits and the study area intersections under existing and future conditions for the identified analysis periods. As determined through **pre-consultation with the Municipality**, the operational performance of each signalized and unsignalized intersection will be analyzed for some or all of the following analysis periods:

- Existing Conditions;
- Future Background Conditions; and
- Future Background Conditions + Full Development

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The analysis should include the following factors:

- Existing signal timings;
- Existing peak hour factors;
- Existing heavy vehicle proportions;
- Calibration of the analysis software in relation to in the field traffic observations;
- Rationale for modifications to any of the above for the analysis of future conditions; and
- Software outputs should be in the HCM 2000 format.

The respective roles of the Municipality and the consultant in establishing the ground rules for the analysis and presenting the results of that analysis are summarized in **Table 1**.

**Table 1  
TRAFFIC OPERATIONS ANALYSIS  
ROLES AND RESPONSIBILITIES**

<b>Component</b>	<b>Municipality</b>	<b>Consultant</b>
Methodology and Software	Identify acceptable operational analysis techniques and software. <i>Currently Highway Capacity Manual methodology and Synchro software are required</i>	Consult with the Municipality with respect to acceptable Synchro software version and/or the acceptability of using an alternative analysis tool where Synchro is not appropriate (e.g., roundabouts, microsimulation, etc.)
Input Parameters	Identify acceptable and/or required parameters – saturation flow ( <i>use Synchro default</i> ), peak hour factor ( <i>use as counted</i> ), heavy vehicle percentages ( <i>use as</i>	Clearly state all parameters and assumptions, and identify any changes to software default parameters or other parameters prescribed by the

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<b>Component</b>	<b>Municipality</b>	<b>Consultant</b>
	<i>counted</i> ), cycle lengths, clearance intervals, minimum phases ( <i>use existing timings</i> ), etc.	Municipality. Include HCM2000 format software reports and drawings in an appendix, with all clearly labeled for ease of reference
Queuing	Identify acceptable methodology for queue analysis. <i>Currently Synchro and 95<sup>th</sup> percentile queue</i>	Tabulate and identify where queues would be expected to exceed available storage
Measures of Effectiveness  (Level of Service – LOS; volume to capacity ratio – v/c)	Identify acceptable LOS, and provide a definition of critical movements by LOS and/or v/c where improvements are required	Clearly present analysis results in tables, charts, figures, and/or drawings. Highlight critical movements warranting improvements
Traffic Signal Justification	Identify acceptable methodology for traffic signal justification. Currently, Book 12 of the Ontario Traffic Manual, excluding the four hour justification	Clearly state assumptions and calculations as well as any deviation from accepted methodology or the rationale for using an alternative methodology. Provide calculation sheets in an appendix, clearly labeled for ease of reference.
Traffic Signal Operation	Provide signal timing information and identify acceptable cycle lengths, minimum timings, and phasing. Refer to the Region’s Design Specifications for Traffic Control Devices, Pavement Markings, Signage and	Conduct analysis in consideration of the Region’s signal operation philosophy and guidelines.

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<b>Component</b>	<b>Municipality</b>	<b>Consultant</b>
	Roadside Protection, Section 9.	
Sight Distance	Identify acceptable reference material and methodology for sight distance requirements. <i>Currently, "TAC Geometric Design Guide for Canadian Roads"</i>	Provide references to manuals used and document field measurements, including assumed design speed, object and eye heights. Illustrate with appropriate drawings and/or photos where this will be beneficial
Collision Review	Identify collision prone locations or safety concerns, and safety performance indicators to be considered	Summarize data in tables and/or in collision diagrams, and identify patterns and likely contributing factors (if any)

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***Pre-Consultation is required with the Municipality to confirm:***

- ***Acceptable reference documents and guidelines***
- ***Acceptable methodology and software for operational analysis***
- ***Analysis periods***
- ***Acceptable reference materials and/or manuals***
- ***Safety aspects related to traffic operations and road design***

***Clear presentation of analysis results, reference material, and software output***

## 2.9 SCREENLINE ANALYSIS

For larger scale development proposals, a screenline analysis must be undertaken. Screenline analysis is a comparison of forecasted demands and lane capacities on the major road network (including freeways, arterial roads and major collector roads) connecting the site to the area transportation network. Typical lane capacities should be established based on Official Plan road classifications and the general characteristics of the roads (e.g., suburban with limited access, urban with on-street parking, etc.). Mitigation measures in the form of additional lane capacity must be identified where V/C for the screenline exceeds 0.90.

Screenline analysis should consider new capacity that is planned to occur within the horizon of the development. Planned transportation network changes are identified in the schedules of the Official Plans and Transportation Master Plans of the Municipality and the Region, and detailed in their respective annual Capital Budgets.

Transit demands should also be considered, based on the assumed transit modal split, and transit network requirements identified. Consideration should be given to the Region's Official Plan schedule showing the Transit Priority network and the Durham Region Long Term Transit Strategy.

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***Identification of Screenline deficiencies and recommended mitigation measures***

***Identification of Transit Demands and Transit Network Requirements***

## **2.10 SAFETY ANALYSIS**

The level of safety analysis to be included in the TIS is to be discussed during **pre-consultation with the Municipality**. This could range from a detailed examination of collision history for locations that are known to have safety concerns to a basic consideration of typical safety-related factors such as, but not limited to the following:

- Sight distance;
- Conflict areas where vulnerable road users (pedestrians and cyclists) are at risk;
- Conflicts with transit operations;
- Weaving and merging;
- Non-local traffic infiltration in residential areas; and
- Conflicts and safety issues specifically related to truck movements.

Where required, the reporting related to safety considerations will be supported by diagrams, maps, summary tables, and references to relevant information sources and manuals.

**Pre-Consultation is required with the Municipality to confirm:**

- **Level of safety analysis**
- **Site-specific safety concerns**

**Clear presentation of safety analysis and supporting reference material**

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### 2.11 ACCESS ANALYSIS

#### 2.11.1 General

Access management is a key consideration of both the Municipality and the Region in the review of development proposals. It is desirable from a safety and operational perspective to ensure that the number and location of access points does not negatively impact abutting roads. The typical considerations related to access management are as follows:

- Access points must be located on minor roads where feasible;
- Access points must be evaluated in terms of capacity, safety and adequacy of queue storage capacity;
- The number of exit lanes, radii, and vehicle storage should be appropriate to accommodate site generated traffic demands;
- The justification for more than one access must be based on the volume of site traffic and not on design preference;
- The locations of access points must line up with existing intersections wherever possible. Where this is not possible, access points must be adequately spaced from both adjacent roads and access points to adjacent properties;
- The throat length at the access must be sufficiently long to minimize conflicts between site and through traffic on the road network; and
- Access points should be free of all encumbrances and provide sufficient sight distance at their intersections with the public road system as well as with the site.

In general, the number and frequency of access points should be in accordance with the Municipality's and/or Region's access management practices and policies, and access guidelines must be in accordance with those outlined in the most recent edition of the TAC *"Geometric Design Guide for Canadian Roads"*.

#### 2.11.2 Turn Lane Requirements

The traffic impact study must examine the requirements for auxiliary left and right turn lanes with guidance taken from the operational analyses, the MTO *"Geometric Design Guide for Ontario Highways"*, and/or the Durham Region *"Right-Turn Lane Guideline"*. Adequate spacing must be provided between access points to avoid potential lane overlaps. As noted previously, all design guidelines must be in accordance with those outlined in the TAC *"Geometric Design Guide for Canadian Roads"*. The traffic impact

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study must include a pavement marking and signage plan for the roadway(s) along the frontage of the development showing both existing and proposed traffic control devices.

### 2.11.3 Sight Distance Evaluation

At each access point and at each intersection where a new road is proposed, the sight distance requirements must be determined based on appropriate guidelines (TAC “*Geometric Design Guide for Canadian Roads*”). These must be compared with actual field measurements, which are to be documented in the traffic impact study, to determine any areas of concern.

<p><b>Access Management policies and guidelines</b></p> <p><b>Auxiliary turn lane requirements according to accepted guidelines</b></p> <p><b>Sight Line evaluation according to TAC “Geometric Design Guide for Canadian Roads”</b></p>
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### 2.12 SITE CIRCULATION AND PARKING

Depending on the type and form of a proposed development, it will be necessary to review and discuss the site plan, parking supply, and the specifics of access requirements. The level of detail required for this aspect of the TIS will be discussed during **pre-consultation with the Municipality**.

The typical issues to be considered and addressed are as follows:

- Internal traffic circulation routes, bicycle and pedestrian circulation routes, and on-site traffic control strategies or devices;
- Regarding pedestrian routing, the ease of pedestrian travel between the transit stops serving the site and the pedestrian accesses to the site buildings;
- On-site vehicle queuing, especially as related to drive-through operations, that may have the potential to impact the public road system;
- Proposed parking supply versus the Municipality’s parking requirements as outlined in the corresponding by-laws, and a demonstration of how the parking supply is satisfactory (either by meeting the by-law requirements or through a rationalization of the parking supply that may consider site-specific characteristics and/or the application of shared parking concepts);
- Other parking-related issues as related to design guidelines and standards;

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- Consideration of access and parking that address accessibility for persons with mobility limitations;
- Discussion and/or demonstration of on-site loading requirements and access to delivery or maintenance facilities such that the public road system is not impacted; and
- Discussion and/or demonstration of emergency vehicle access and circulation within the site, including the explicit designation of fire routes.

The information above may be presented descriptively and/or displayed on the site plan, including the use of vehicle turning templates to illustrate the swept paths of larger vehicles within the site.

***Pre-Consultation is required with the Municipality to confirm:***

- ***Level of site plan review required***
- ***Acceptable guidelines and standards for site circulation and parking***

***Clear presentation of site plan review and supporting site plans, drawings, etc.***

### 2.13 PROVISIONS FOR NON-AUTO MODES

An assessment is required of the provisions made in the development proposal for all non-auto modes, in keeping with the policy directions established by the Official Plan of the Municipality and Region, the Transportation Master Plans of the Municipality and Region, and the Regional Cycling Plan.

Consideration should also be given to DRT's Long Term Transit Strategy and the Transit Oriented Development Strategy. Elements of the proposal that support rapid and conventional transit ridership, cycling, and pedestrian movements on the study area transportation network must be identified. The method and means by which the development, as well as adjacent areas, can be efficiently and effectively serviced by transit must be determined. pedestrian and bicycle network continuity should also be considered.

An assessment of potential impacts on transit operations must be undertaken for current transit routes and any service changes proposed by the applicant and where the site accesses connect to or cross elements of the Region's Transit Priority Networks (refer to the Regional Official Plan and the Long Term Transit Strategy). The

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assessment will identify the potential for increased delay to transit vehicles, safety concerns/conflicts with transit vehicles, and any impacts on stations or stops.

Gaps in pedestrian and cycling network continuity, due to missing infrastructure or as a result of winter maintenance, should be identified. That is, the consultant should note where obvious gaps in the networks would exist as a result of the site pedestrian and cycling facilities not connecting or being accessible, or having access to pedestrian and/or cycling facilities on the existing transportation network. Identification of these gaps will assist staff of the Municipality and Region in approving development-related transportation infrastructure and/or prioritizing their own programs for pedestrian and cycling facility construction and maintenance.

A detailed assessment of pedestrian facility level of service may be required in the vicinity of the site where the development is expected to produce higher pedestrian volumes. Additional sidewalk or facility width may be required in such circumstances.

**Assessment of non-auto modes**

**Potential impacts on transit operations**

**Gaps in pedestrian and cycling infrastructure**

**Assessment of pedestrian facility level of service**

## 2.14 COMMUNITY IMPACT ANALYSIS

### 2.14.1 Neighbourhood Impacts

As determined through *pre-consultation with the Municipality*, the traffic impact study may have to include a review of the transportation network in the vicinity of the proposed development and identify potential neighbourhood infiltration routes. Focusing on these routes in the study area, the report will identify site-related traffic impacts on potentially affected neighbourhood streets during the commuter peak and/or the projected site peak and an appropriate mitigation strategy, where one may be required.

### 2.14.2 Parking Impacts

For developments that generate higher auto parking demand, there may be potential for spillover parking into adjacent neighbourhoods or sites. The traffic impact study will

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assess the site-generated parking demand and determine an appropriate parking strategy to mitigate the potential negative parking impacts on the local community.

### 2.14.3 Transportation Demand Management

A goal of the Official Plans and Transportation Master Plans of the Municipality and Region is to reduce peak hour travel demand, reduce auto dependency, increase vehicle occupancy, encourage linked trips and encourage other modes of travel as part of Transportation Demand Management (TDM). Any reductions in vehicle trip generation based on TDM must be clearly explained with reference material as part of a “person-trip” analysis of the development scenario. A Travel Options plan will be required on certain developments determined by the Municipality and/or Region. The Travel Options plan will identify recommended TDM measures, links to the Municipality’s and Region’s TDM initiatives, and mechanisms for integrating the proposed development into the existing services and programs. The Planning Departments of the Municipality and Region will be available to assist in developing a TDM plan.

***Identification of potential neighbourhood infiltration routes and mitigation measures***

***Parking Management Strategy***

***Transportation Demand Management (TDM) plan***

### 2.15 FINDINGS AND RECOMMENDATIONS

The translation or interpretation of the results of a traffic analysis into recommended road and traffic control improvements and requirements shall reflect the Municipality’s practices and policies. In addition to the reference documents outlined in the previous sections, the Official Plan of the Municipality and Region contains transportation policies and schedules, which should also be referenced as required with respect to road classifications, future transportation improvements (e.g., new road links, transit spines, interchanges, cycling and walking facilities, etc.), and descriptions of the functions and characteristics of the regional road network.

The operational and capacity deficiencies identified in the traffic impact study must be addressed or mitigated by feasible solutions. Functional design plans and detailed

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design drawings may be required for the identified improvements to ensure their feasibility. A cost estimate and detailed design drawings may also be required for recommended infrastructure improvements.

The respective roles of the Municipality and the consultant in identifying required improvements and related mitigation measures are summarized in **Table 2**.

**Table 2  
TRANSPORTATION IMPROVEMENTS  
ROLES AND RESPONSIBILITIES**

<b>Component</b>	<b>Municipality</b>	<b>Consultant</b>
Improvements (General)	Confirm methodology for assessing improvements required as a result of background traffic growth versus those required due to the proposed addition of site traffic.	Identify any existing deficiencies and improvement measures. Clearly identify traffic impacts associated with each of background and total traffic, as well as the required mitigation measures and timing for implementation. Demonstrate that the recommended improvements are feasible and will address the impacts.
Roads/Intersections	Identify the acceptable design standards/guidelines for recommended improvements, design speed(s) to be applied and the required level of supporting graphics or drawings. Currently, Municipality’s <i>“Design Guidelines and Standard Drawings”</i> and TAC <i>“Geometric Design Guide for Canadian Roads”</i> .	Present improvement measures in tables, schematic figures, functional plans, or preliminary and detail design plans – i.e., at a level sufficient to confirm feasibility and satisfy the Municipality’s requirements. Where applicable, provide references to guidelines and/or standards used.

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<b>Component</b>	<b>Municipality</b>	<b>Consultant</b>
Traffic Signals	Identify traffic signal spacing requirements and potentially related requirements for progression analysis/signal coordination.	Where required, conduct appropriate analyses to demonstrate feasibility of changes to signal operations or additional traffic signals.
Access Management	Identify acceptable reference material for access management policies and guidelines pertaining to Clarington roads. Currently, the Official Plan (Municipality and Region), Durham Region <i>“Arterial Corridor Guidelines”</i> and <i>“Policy for Entranceways”</i> and TAC <i>“Geometric Design Guide for Canadian Roads”</i> .	Clearly identify access management measures that may be required to mitigate safety or operational concerns. Identify where access plans comply or don’t comply with the Municipality’s policies and guidelines, and the rationale for non-compliance.
Active Transportation and Public Transit	Provide the contact information for staff and other agencies with an interest in these modes.	Identify appropriate TDM measures and the development of site-specific Travel Options plans.
Funding/Cost Estimates	Identify/confirm the improvements that will be the financial responsibility of either the Municipality or the development proponent. Provide guidance with respect to unit costs for road and traffic control improvement measures.	Where required, provide preliminary cost estimates for proposed transportation improvements.

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<p><b>Improvements required for existing, background and total traffic</b></p> <p><b>Feasibility of improvements and compliance with policies and guidelines</b></p> <p><b>Clear presentation of required improvements</b></p> <p><b>Consideration of cost estimates and funding</b></p>
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### 2.16 REPORTING

It is critical to the timing and efficiency of the Municipality's review that the traffic impact study be clearly and legibly documented in a report. Pre-submission quality control measures should include thorough checking of technical content and calculations, as well as proof-reading for errors in spelling and grammar. Failing to provide a report that meets the intent of the Municipality's guidelines will result in the report being returned to the consultant to address deficiencies prior to re-submission.

The specific requirements for reporting are as follows:

- Two hard copies of the report and technical appendices;
- One electronic file (pdf of report and technical appendices);
- Signature page to indicate the persons responsible for preparing and reviewing the report;
- Table of contents to generally follow the organization of the "*Traffic Impact Study Guidelines*";
- Key maps, tables, graphs, and figures to be placed within the report adjacent to the relevant text, rather than in an appendix; and
- Synchro analysis files to be made available upon request.

As discussed in the Introduction, the traffic impact study will be considered to have a shelf life of two years if the development application is dormant. If the application is to be reconsidered after this two year period, an updated report or addendum will be required to address any changes to the development proposal and/or the transportation system.

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It is noted that the Municipality may at their discretion engage the services of another consultant for a technical or peer review of the traffic impact study. In this event, the Municipality will notify the development proponent and their consultant in advance.

***Clear documentation essential to expedient review***

***Two hard copies and one pdf file for report and technical appendices***

***Shelf life of two years if project is dormant in the planning process***

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Traffic Impact Study Guidelines Checklist

**3.0 TRAFFIC IMPACT STUDY GUIDELINES CHECKLIST**

A checklist is provided below as a framework for both the Municipality and consultant to follow at the key stages of a traffic impact study. The purpose of the checklist at each stage is as follows:

- **Initiation:** to guide the pre-consultation discussion between the Municipality and consultant, and establish and confirm the required scope of work;
- **Preparation:** to ensure completeness and facilitate quality control by the consultant; and
- **Submission:** to ensure a comprehensive and expeditious review by the Municipality.

**TABLE 3**

▪ **TRAFFIC IMPACT STUDY GUIDELINES CHECKLIST**

Number	Item	Comments
<b>Pre-Study</b>		
1	<b>Pre-Consultation</b>	
2	<b>Planning Process</b> <ul style="list-style-type: none"> <li>▪ Official Plan Amendment</li> <li>▪ Re-Zoning</li> <li>▪ Plan of Subdivision</li> <li>▪ Site Plan</li> </ul>	

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Traffic Impact Study Guidelines Checklist

Number	Item	Comments
3	<b>Type of Traffic Impact Study Required?</b> <ul style="list-style-type: none"> <li>▪ Full Traffic Impact Study</li> <li>▪ Traffic Impact Statement</li> </ul>	
4	<b>Consultant Qualifications and Experience</b>	
<b>Study Parameters</b>		
1	<b>Study Area</b>	
2	<b>Data Requirements</b> <ul style="list-style-type: none"> <li>▪ Peak periods for study</li> <li>▪ Clarington and Region traffic data</li> <li>▪ Region signal timing information</li> <li>▪ Clarington and Region collision data</li> <li>▪ DRT transit information</li> <li>▪ Active transportation facilities</li> <li>▪ Traffic data collection required?</li> <li>▪ Traffic observations</li> </ul>	

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Traffic Impact Study Guidelines Checklist

<b>Number</b>	<b>Item</b>	<b>Comments</b>
3	<b>Background Traffic Forecast</b> <ul style="list-style-type: none"><li>▪ Horizon year(s)</li><li>▪ Future road network</li><li>▪ Methodology confirmed?</li><li>▪ Growth factors</li><li>▪ Other development</li></ul>	

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Traffic Impact Study Guidelines Checklist

<b>Number</b>	<b>Item</b>	<b>Comments</b>
4	<p><b>Site Trip Generation and Modal Split Assumptions</b></p> <ul style="list-style-type: none"> <li>▪ ITE land use code(s) and trip rates</li> <li>▪ Proxy site data collection</li> <li>▪ First principles</li> <li>▪ Modal split adjustment</li> <li>▪ Pass-by/diverted link adjustments</li> <li>▪ Development phases</li> <li>▪ TDM adjustment</li> </ul>	
5	<p><b>Site Trip Distribution</b></p> <ul style="list-style-type: none"> <li>▪ Existing travel patterns</li> <li>▪ Travel survey information (e.g. TTS)</li> <li>▪ Travel demand forecast model</li> <li>▪ Market study</li> <li>▪ Census data</li> </ul>	
6	<p><b>Site Trip Assignment</b></p> <ul style="list-style-type: none"> <li>▪ Methodology</li> <li>▪ Pass-by, diverted link, internal synergy</li> </ul>	

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Traffic Impact Study Guidelines Checklist

Number	Item	Comments
7	<p><b>Analysis</b></p> <ul style="list-style-type: none"> <li>▪ Acceptable reference documents as listed in Section 2.8</li> <li>▪ Synchro software</li> <li>▪ Signal timing parameters</li> <li>▪ Synchro inputs/defaults</li> <li>▪ Signal spacing</li> <li>▪ Signal justification (OTM Book 12, excluding 4 hour justification)</li> <li>▪ Acceptable LOS</li> <li>▪ Critical v/c ratio</li> <li>▪ Queue analysis</li> <li>▪ Auxiliary turn lane warrants</li> <li>▪ General safety considerations</li> </ul>	
8	<p><b>Screenline Analysis</b></p> <ul style="list-style-type: none"> <li>▪ Critical v/c ratio</li> <li>▪ Mode split adjustments</li> </ul>	

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Traffic Impact Study Guidelines Checklist

Number	Item	Comments
9	<p><b>Safety Analysis</b></p> <ul style="list-style-type: none"> <li>▪ Existing issues?</li> <li>▪ Sight lines</li> <li>▪ Conflict areas</li> </ul>	
10	<p><b>Access Analysis</b></p> <ul style="list-style-type: none"> <li>▪ Access management issues?</li> <li>▪ Auxiliary turn lane methodology</li> <li>▪ Sight line evaluation methodology</li> </ul>	
11	<p><b>Site Circulation and Parking</b></p> <ul style="list-style-type: none"> <li>▪ Internal traffic circulation and control</li> <li>▪ Parking supply and design requirements</li> <li>▪ Loading, emergency, and accessibility</li> </ul>	
12	<p><b>Provisions for Non-Auto Modes</b></p> <ul style="list-style-type: none"> <li>▪ Gaps in pedestrian and cycling networks</li> <li>▪ Transit impacts and requirements</li> </ul>	
13	<p><b>Community Impact Analysis</b></p>	

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Traffic Impact Study Guidelines Checklist

Number	Item	Comments
	<ul style="list-style-type: none"> <li>▪ Potential for non-local traffic infiltration</li> <li>▪ Potential for parking spillover</li> <li>▪ Potential for TDM</li> <li>▪ Consideration of Travel Options Plan</li> </ul>	
<b>Reporting</b>		
14	<p><b>Findings and Recommendations</b></p> <ul style="list-style-type: none"> <li>▪ Reflect Municipality's practices/policies</li> <li>▪ Reflect Region's practices/policies</li> <li>▪ Demonstrate feasibility</li> <li>▪ Functional or design drawings?</li> </ul>	
15	<p><b>Reporting</b></p> <ul style="list-style-type: none"> <li>▪ Number of hard copies (2)</li> <li>▪ PDF requirements (1 or more files)</li> <li>▪ Two-year shelf life re updates</li> </ul>	

# **THE MUNICIPALITY OF CLARINGTON TRAFFIC IMPACT STUDY GUIDELINES**

Traffic Impact Study Guideline User Comments

## **4.0 TRAFFIC IMPACT STUDY GUIDELINE USER COMMENTS**

A goal of the Traffic Impact Study Guidelines are to provide the “users” in the transportation industry an easy to use document containing information that will aid decision-makers in their understanding of the project impacts in order to allow a particular development to proceed in the development approval process.

We encourage all users of the Guidelines to contact the Municipality if there is any confusion or misunderstanding in the document during the initial years of use so that changes can be made over time.

All comments received will remain confidential. The sender will receive a response from the Municipality regarding the comments and their application to the guide.

Please send any comments to:

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