



City of London

TRANSPORTATION IMPACT ASSESSMENT GUIDELINES

APRIL 2012

ACKNOWLEDGEMENTS

The Transportation Impact Assessment Guidelines were originally prepared by IBI Group in 2006. Since then, additional modifications have been incorporated by City staff. These guidelines are the summation of contributions made by both parties. The City of London gratefully acknowledges IBI Group for their assistance and technical input provided.

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1. INTRODUCTION

1.1 Transportation Impact Assessments – General

A transportation impact assessment (TIA) provides valuable information and analysis for governing agencies and others reviewing development and redevelopment proposals. The City of London Transportation Impact Assessment Guidelines have been compiled to outline the process and structure required to produce a comprehensive transportation impact assessment for a development or redevelopment proposal in the City. A transportation impact assessment should include consideration of all modes of travel including automobiles, trucks, transit vehicles, cyclists and pedestrians.

1.2 Why is a Transportation Impact Assessment Required?

The main purpose of a TIA is to demonstrate that the transportation impacts of a proposed development or redevelopment will be manageable and that the transportation aspects of the proposal are consistent with the objectives and policies of the City of London. The TIA also provides the basis for the identification and evaluation of transportation related improvements or mitigation measures to be included as conditions of approval for the development or redevelopment application. Hereafter, all references to the terms development or development proposal will be equally applicable to redevelopment applications/proposals as well.

Through the TIA, the proponent must demonstrate that the application meets these criteria, as summarized below:

- That there is sufficient road network capacity to accommodate the proposed development, taking into account transportation system improvements and travel demand management initiatives which will be secured/identified in conjunction with the proposal;
- That the development be phased, if necessary, in conjunction with the implementation of transportation system and service improvements and travel demand management initiatives, to ensure that supply and demand are balanced over time;
- That the proposal incorporate a suitable travel demand management strategy which includes all reasonable measures to facilitate and promote transit, cycling, walking and ride-sharing for trips to and from the site;
- That the number of vehicular parking spaces provided in conjunction with the proposal be considered for short and long term parking demands, special needs parking and commercial vehicle loading facilities; and
- That the development must be successfully integrated with the London road and transit systems with respect to vehicular and pedestrian access and connections to the transit system. In some cases, provision may have to be made for on-site transit stations and related facilities and services.

1.3 Applicability

It should be recognized that the policies and standards included in this document are relevant at the time of printing. These guidelines will be revised, as necessary, to reflect future changes to City policy, practice and accepted standards.

The Proponent shall contact City of London staff to identify any major modifications to this document since its compilation date.

The following document outlines general guidelines for the preparation of transportation impact assessments for submission in the City of London. There may be instances where the guidelines and general assessment assumptions may not be applicable to certain locations in the City, or specific types of developments. It should be recognized that the purpose of this document is to provide a framework for the preparation of a TIA and shall not be substituted for good transportation engineering judgement.

In addition, there may be cases where the scope of the TIA can be reduced due to previous approvals or studies in the area or on the site. **Sections 2.1 and 2.2** include a discussion regarding the scope of a transportation impact assessment at various points in the development approval process.

For additional information or for clarification of any of the material contained in this document please contact the following departments/agencies, as applicable:

Transportation Planning and Traffic Operations Inquiries

Manager, Traffic Engineering
and Transportation Planning
City of London
300 Dufferin Avenue, 8th Floor
London Ontario N6A 4L9
Telephone: 519-661-2500

Transit Inquiries:

Director of Transportation and Planning
London Transit Commission
450 Highbury Avenue N
London, Ontario N5W 5L2
Telephone: 519-451-1340

Provincial Roads Contact:

Ministry of Transportation of Ontario
Regional Traffic Section, South-western
Region
659 Exeter Road
London, Ontario, N6E 1L3
Telephone: 519-873-4351

Subdivision/Site Plan Inquiries:

Manager, Development Services
City of London
300 Dufferin Avenue, 6th Floor
London Ontario N6A 4L9
Telephone: 519-661-2500

Planning/Development Inquiries:

Planning and Development
City of London
204-206 Dundas Street,
London Ontario N6A 4L9
Telephone: 519-661-4980

1.4 Acknowledgement of Authorship/Ownership

When the scale of the development warrants a transportation assessment, it is the Proponent's responsibility to retain an experienced transportation consultant.

The City of London requires that a transportation impact assessment be prepared and/or reviewed by a qualified firm/individual. The individual taking responsibility for the Proponent's transportation impact work must be a registered Professional Engineer with more than five years of applicable experience in the preparation of transportation impact studies.

Included in **Appendix A** is a Certificate of Ownership that must be submitted with each TIA or addendum, including the stamp of the professional engineer taking responsibility for the work. In completing this form, the engineer is verifying that appropriate assumptions and methodologies have been used in the completion of the transportation impact assessment and is identifying who the individual(s) are taking corporate/professional responsibility for the work. This information will also assist city staff in contacting the appropriate individual if clarification of any part of the transportation impact assessment is required during the review process, or in the future.

2. TIA REQUIREMENTS AND SCOPE

2.1 When is a Transportation Impact Assessment Required?

There are a number of considerations in determining the need, elements and level of detail for a TIA. Generally a TIA may be required when one or more of the following are anticipated/present:

- The development proposal will add more than 100 peak-hour vehicle trips to the transportation system;
- The development is planned with an access to an arterial roadway within 200 metres of a signalized intersection;
- The development is located in an area of high roadway congestion, high operating speeds, and limited sight distance where safety is an issue;
- The development, its access, or type of operation, is not envisaged by existing land-use or transportation plans;
- The development requires an amendment to the Official Plan or zoning by-law, long range policy, strategy or plan, including rezoning;
- The development is a large recreation or entertainment facility that would likely serve as a regional attraction;
- The development has the potential to create unacceptable adverse operational and safety impacts on the area road network;
- The development will create transit/ridership demand that cannot be properly serviced by existing facilities, routes, frequency, hours of operation, etc; and/or
- Any previous TIA study prepared for the same site is more than three years old.

The above criteria are necessarily general and in view of the lack of definitive criteria to establish the need for and scope of a TIA for a particular proposal, the Proponent shall consult with City of London; Transportation Planning & Design staff, to determine site specific TIA requirements.

2.2 TIA Scope/Detail

The level of detail and the required components of the TIA will be a function of the location, size and operation of the development proposal. Included in **Exhibit 2-1** is a summary of the points in the development approval process where a TIA may be requested and the overall purpose of the TIA. **Appendix B** includes a general assessment flow chart for a complete TIA.

In some cases, the size, location and nature of the proposal will be such that a detailed transportation impact assessment is not required. Through discussions with City staff, the proponent may be required to prepare a transportation impact statement, which would outline the general characteristics of the site, its operation and trip generation/ridership potential, and a high level assessment of traffic impact, access, safety and parking requirements. The transportation impact statement would be a technical letter, stamped by a Professional Engineer specializing in transportation planning, which outlines the required components agreed upon with the City.

The proposed development may lie within an area for which a recent and relevant Area Plan has already been completed. Under this scenario, the City shall determine if certain elements of the TIA can be omitted or directly incorporated into the current TIA work, i.e., background growth potential, identified arterial road improvements, etc.

Exhibit 2-1 – General TIA Scope

Stage of Approval	General Transportation Impact Assessment Scope
Area Plan/Secondary Plan	<ul style="list-style-type: none"> • Identification of major/arterial transportation infrastructure and operational improvements associated with area wide development potential • Determination of the collector roadway network and the major intersection configurations and type of control
Draft Plan of Subdivision	<ul style="list-style-type: none"> • Arterial and collector roadway requirements and operations • Phasing plan • General description of access locations and operations • Allocation of responsibility for funding and implementation of transportation infrastructure improvements ¹
Rezoning	<ul style="list-style-type: none"> • Phasing plan • Transportation infrastructure improvements tied to phasing plan • Description of access locations and operations • Allocation of responsibility for funding and implementation of transportation infrastructure improvements ¹
Site Plan	<ul style="list-style-type: none"> • Access location and operations • Transportation infrastructure improvements tied to phasing plan • Site specific impacts on road network including adjacent site operations
<p>Note: (1) May consist of urban works funds, city services funds, city capital/operations budgets, and/or site-specific proponent costs.</p>	

Included in **Exhibit 2-2** is an indication of the components that the City of London will require at the various points in the development process. The proponent is to review the TIA requirements included in the column representing their specific point in the development process and discuss relevancy with City of London Staff.

The onus will be on the Proponent to demonstrate that certain aspects of the general requirements for a TIA are not required based on the point in the approval process, or availability and content of recent studies. The proponent should discuss the assessment scope and confirm it with the City before initiating it.

Exhibit 2-2 – Specific TIA Elements

TIA Component	Site Development Process			
	Secondary Plan/Area Plan	Draft Plan of Subdivision	Rezoning	Site Planning
Transportation Network				
Major transportation improvements <ul style="list-style-type: none"> • Planned roadways • New interchange/intersection including roundabouts • Road widening • New transit routes/services • Pedestrian and bicycle routes 	√	√	√	√
Local transportation system improvements <ul style="list-style-type: none"> • Intersection improvements • Traffic signal installation or modifications • Traffic calming plans 		√	√	√
Long range transit route and facilities planning (> 5 years)	√	√		
Short term transit service planning		√		√
Travel Demand Analysis				
Development potential beyond the study area	√	√	√	√
Project specific travel demands and assignments		√	√	√
Site specific travel demand from other approved developments within study area			√	√
Area wide transit demands	√	√		
Required transit service levels			√	√
TDM measures	√	√		√
Transportation Analysis				
Arterial road link capacity, intersection location, configuration and control	√	√	√	√

TIA Component	Site Development Process			
	Secondary Plan/Area Plan	Draft Plan of Subdivision	Rezoning	Site Planning
Traffic control, lane requirements and operations at collector and local road intersections	√	√	√	√
Storage lengths and tapers for auxiliary lanes at all intersections		√	√	√
Transit route planning	√	√		
Transit stop locations and operations		√		√
Bicycle route planning	√	√		
Off-site pedestrian facilities		√		√
On-street parking requirements/provisions		√	√	√
Driveway access and operations			√	√
Traffic infiltration potential	√	√	√	√
Traffic management plan including traffic calming elements	√	√		
Site Operations				
Driveway access design and operations including sight distances and corner clearances			√	√
On-site pedestrian/bicycle facilities and operations				√
Weaving/merging issues			√	√
On-site traffic calming elements				√
Parking and loading layout and design				√
Parking supply			√	√
Improvements and Funding				
Identification of major transportation infrastructure improvements	√	√	√	√
Allocation of responsibility for funding and implementation of major transportation infrastructure improvements	√	√	√	√
Funding of local physical and operations improvements	√	√	√	√
Site Phasing and Required Improvements		√		√

Having established the TIA scope, the remainder of this guideline document, including the appendices, outlines the acceptable methodologies with which to document the required components.

2.3 Other Jurisdictional Requirements

In addition to the requirements outlined herein for the City of London for the preparation and submission of a transportation impact assessment, the County of Middlesex and the Province of Ontario may require additional information or analysis to satisfy their requirements for a development proposal.

The proponent shall meet with all affected jurisdictions simultaneously to expedite the process and ensure consistency for the TIA scope/approach.

The Proponent shall contact other City departments, and County and Provincial staff directly to determine these needs. Contact information for these agencies is available in **Section 1.3**.

2.4 Functional Life of TIA

Generally, a transportation impact assessment will have a "functional life" of three years. However, major planning/ development, road network or transit changes within the study area during this timeframe may reduce the applicability of the document if they were not previously considered.

3. DESCRIPTION OF THE DEVELOPMENT PROPOSAL AND THE STUDY AREA

A description of the development proposal, the proponent, its location and the proposed TIA study area is required to allow City Staff to identify the site location, its anticipated operation and area of potential impact. In addition, this valuable information allows timely review of key assessment assumptions. Provided below is a summary of the required elements of the project and study area.

3.1 Description of the Development or Redevelopment Proposal

The following components of the project shall be summarized at the beginning of the transportation impact assessment document, *as applicable*:

- Existing land uses or "as-of-right" provisions in the Official Plan, zoning by-law etc.;
- Planned staging of the development;
- Boundary roadways, near-by intersections and accesses to adjacent land uses or developments;
- Proposed access points and types;
- Nearby transit facilities; and
- Pedestrian linkages.

For site specific TIAs the following shall be provided, as applicable:

- Municipal address;
- Rezoning application number;
- Total building size, building locations and number of units;
- Floor space including a summary of each type of use;
- Number of parking spaces along with location and access arrangements;
- Number and type of loading areas along with location and access arrangements; and
- Anticipated date of occupancy and hours of operation, if known.

As applicable, the Proponent shall provide area road network, subdivision drawings or a preliminary site plan, of a suitable scale, for consideration in the evaluation of the transportation impact assessment.

3.2 Description of Study Area

3.2.1 DEFINITION OF THE STUDY AREA

Generally, the size of the study area will be a function of the size and nature of the development proposal and the existing and future operations of the surrounding road network.

The study area shall encompass all City, County and Provincial roads, intersections, interchange ramp terminals and transit facilities, which will be noticeably affected by the travel generated by the proposed development. Typically, this will include area that may be impacted by one or more of the following:

- Increase by 5% or more of traffic volumes or transit usage on adjacent facilities;
- Volume/capacity (V/C) ratios for overall intersection operations, through movements, shared through/turning movements increased to 0.9 or above;
- V/C ratios for exclusive movements increased to 0.9 or above.

Since the definition of a TIA study area cannot be based on definitive criteria, it is important that the Proponent contact City Transportation Staff to establish mutually acceptable study area limits and scope of assessment.

3.2.2 FEATURES OF STUDY AREA

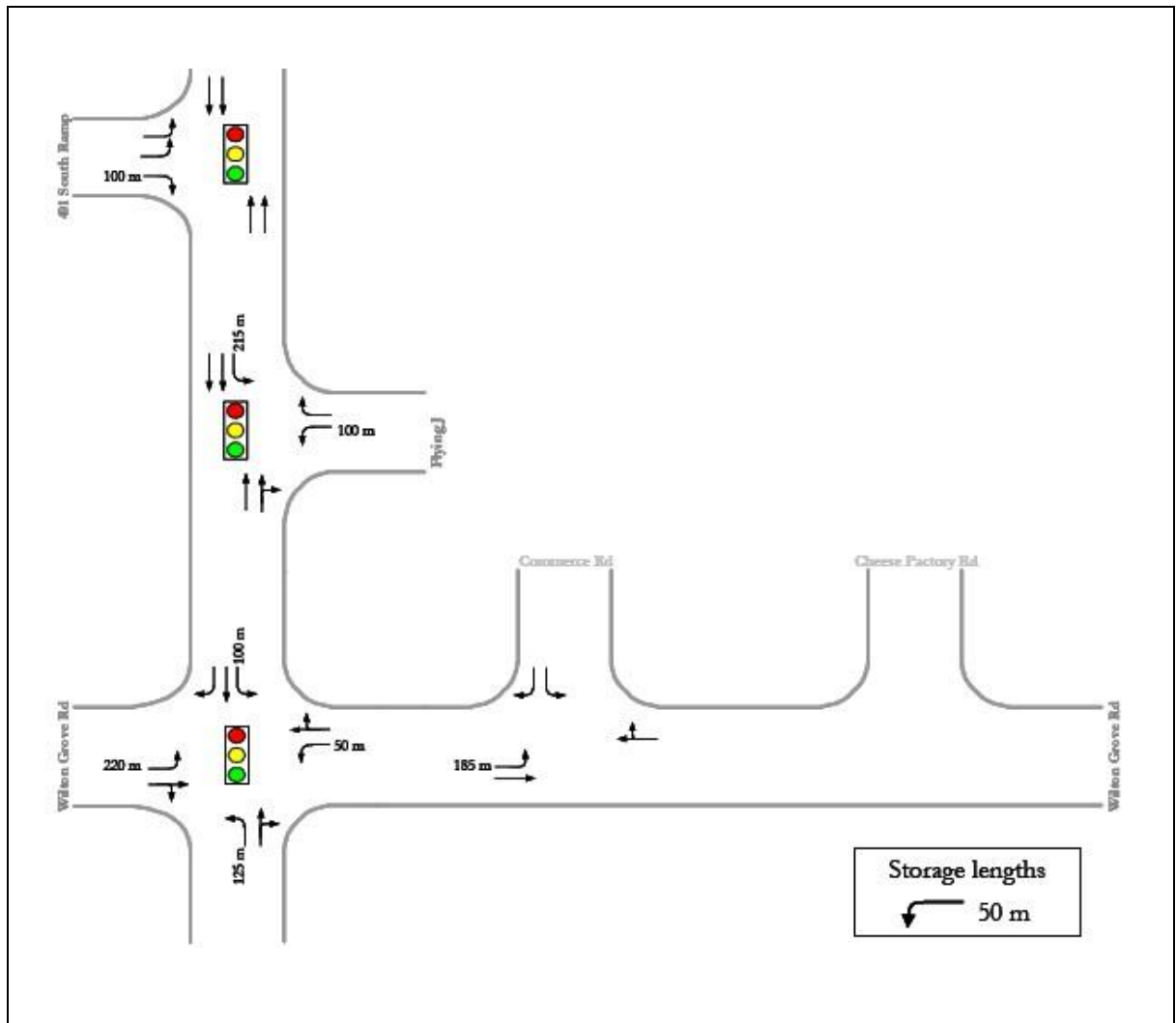
A description and an illustration of the existing transportation system within the study area shall be provided in the existing conditions section of the TIA and shall include, but not be limited to, the following:

- Roads indicating the number of lanes, jurisdiction and posted speed;

- Signalized/unsignalized intersections and interchange ramp terminals indicating, as relevant:
 - Lane configurations, widths and storage lengths;
 - Available permitted movements;
 - Type and mode of control/detection;
 - Turning restrictions, by time of day/day of week, as applicable; and
 - Transit facility locations specifically bus stops, bays and lanes.
- Location of sidewalks, bicycle paths/routes and pedestrian control such as crossovers, intersection pedestrian signals (IPS) and school crossing guard locations;
- Location of on-street parking, parking/stopping restrictions adjacent to the development, which would affect the operation of the roadways and intersections in the study area;
- Transit facilities and routes, which serve or will be expected to serve the development site; and
- Truck routes/heavy vehicle restrictions including the times they are in effect;
- Planned roadway, transit and pedestrian improvements which will have a noticeable impact on the transportation operations within the study area; and
- Other developments in the study area, which are under construction, approved or for which an application has been submitted. Briefly describe the size (i.e., units, GFA, etc.) and nature of these developments in general terms.

Included in **Exhibit 3-1** is an example of a typical graphic that should be included with the description of the study area.

Exhibit 3-1 – Example Road Network and Traffic Control Graphic



4. ANALYSIS PERIODS

4.1 Horizon Year(s)

Generally, the horizon year will be taken as five (5) years from the build-out of the site/area. Other considerations to be taken into account are as follows:

- Area plan/secondary planning horizons;
- Other area development proposals;
- Future roadway infrastructure and transit initiatives; and
- Occupancy date.

Interim horizon years may need to be evaluated to account for:

- Phasing of developments;
- Interim site access arrangements; and/or
- Planned transportation system improvements.

It is important that the Proponent obtain agreement from City Staff regarding appropriate horizon years for the specific development prior to proceeding.

4.2 Analysis Periods

Identification of the time periods for analysis should take into consideration the following:

- Type and size of development;
- Trip generation potential during weekday AM and PM peaks of the adjacent road network;
- Hours of operation;
- Reoccurring special events; and
- Seasonal fluctuations.

Typically, the weekday AM and PM peak traffic periods will constitute the "worst case" combination of site related and background traffic; however, in the case of commercial, entertainment, religious, institutional, sports facility uses, weekend or site peak analysis may be required.

5. EXISTING TRANSPORTATION CONDITIONS

5.1 Traffic Conditions

To provide a representative picture of the existing traffic conditions, the following shall be included in the TIA, as applicable:

- Exhibit(s) showing the existing traffic volumes for the roadways and intersections in the study area including pedestrian volumes and heavy vehicle percentages. Traffic volumes may be acquired from the City, previous transportation planning, traffic operation or transportation impact studies undertaken in the vicinity of the proposed development. In general, traffic counts more than three (3) years old or counts that do not appear to reflect current conditions, shall be updated by the applicant;
- Intersection analysis of the existing conditions for all peak periods. The analysis shall be undertaken with the methodologies outlined in the City's standards for intersection operations (Refer to Section 02 of the City's Design Specifications and Requirements http://www.london.ca/Cityhall/EnvServices/Water/design_specs.htm) . Calibration of the analysis to actual conditions must be undertaken;

- Summary of the performance measures including level-of-service (LOS), volume to capacity (v/c) ratios and queue lengths (95th percentile queue) for all intersections and accesses individual movements. Full documentation of the results of all level of service analyses shall be provided in an appendix;
- A summary of key collision or safety issues identified through consultation with City Transportation Staff; and
- Summary of key field observations of the existing conditions.

5.2 Transit Operations

To provide a representative picture of the existing and planned transit conditions within the study area, the following shall be included in the TIA, as applicable:

- Commentary/exhibit(s) summarizing to the existing transit routes, stops and facility locations;
- Approximate walking distance and dedicated route to the transit services from the proposed development;
- Transit vehicle headways/frequency for routes that service or may be anticipated to service the development proposal.

Transit information and current planning is available from the London Transit Commission.

6. BACKGROUND TRAFFIC

6.1 Future Developments

The Proponent shall include anticipated traffic growth on the area road network from developments that are expected to proceed prior to or within the selected assessment horizons (as identified in **Section 4.1**). This may include land zoned for development, but for which there isn't an active development application.

The Proponent shall contact the City's Planning Department to establish the approved/active development proposals within the Study Area and the City's Transportation Department to confirm the predicted traffic growth from these development proposals

The background changes in traffic growth shall take into account:

- Area-wide development potential;
- Developments that are being constructed;
- Occupancy levels of adjacent development, i.e., buildings which are constructed but not fully occupied; and

- Developments/land uses that are planned to be closed, or activities suspended which will noticeably impact the transportation system in the study area.

6.2 Background Growth in Transit Demand/Planned Transit Service

An assessment of anticipated transit ridership and service changes resulting from development and London Transit Commission initiatives must be incorporated into the analysis.

The background growth in transit demand must recognize:

- The transit travel and TDM initiatives of the City of London;
- Reasonable transit modal split assumptions; and
- Developments that are currently being constructed, not fully occupied or approved and are anticipated to be constructed prior to the proposed development.

The Proponent shall contact London Transit Commission Staff to determine major changes to transit services or demands in the vicinity of the development site.

7. SITE TRAVEL DEMANDS

7.1 Estimation of Traffic Demand

Available trip generation methods may include one or more of the following, and will be a function of the proposed development and its intended operations:

- Trip generation surveys from similar developments in the City of London or comparable municipality, which have similar operating characteristics as the proposed development;
- ITE Trip Generation rates provided that differences in the site operations and size are accounted for; and
- "First principles" calculations of anticipated trips to/from the site.

Where appropriate, it may be justified to reduce or allocate the base trip generation of the proposed development to account for:

- **Pass-by Trips** - Trips that represent intermediate stops on a trip already on the road network, i.e. a motorist stopping into a service station on their route to/from work. Pass-by trips must be accounted for in the turning movements into/out of the site;
- **Transit Usage** – Reductions in automobile travel to the site to account for travel to/from the site by public transit. Transportation planning projections/goals shall be considered; however, shall not replace good engineering judgement and actual modal split data.

- **Captive Market Effects** - Trips which are shared between two or more uses on the same site; and
- **Travel Demand Management (TDM)** – strategies to be employed at the proposed development to reduce single occupancy vehicle (SOV) trip making, i.e., staggered work hours, ridesharing, company/hotel shuttle, etc (Refer to **Section 7.2**).

All trip generation assumptions and adjustments assumed in the calculation of "new" vehicle trips shall be supported and documented. Sensitivity analysis shall be undertaken where trip generation parameters have the potential to vary considerably and most probable values cannot be readily identified.

7.2 Travel Demand Management (TDM) Strategies

The City of London Transportation Master Plan (May 2004) has established a goal of reducing its SOV dependency by 10% below current forecasts over a 20 year time horizon (2024). Accordingly, all TIA submissions shall include a suitable travel demand management plan which includes all reasonable measures to facilitate reduced automobile reliance and promote transit, cycling and walking for trips to and from the site.

The TDM section of the TIA shall provide:

- A description of the TDM initiatives and their function; and
- An evaluation of the impacts of the proposed TDM initiatives specifically relating to reduced trip generation associated with the site, reduced peak hour travel, reduced parking demands and increased transit usage/auto occupancy.

7.3 Trip Distribution and Assignment

7.3.1 TRIP DISTRIBUTION

The trip distribution assumptions should be supported by one or more of the following, in the order of preference:

- Origin-destination surveys;
- Comprehensive travel surveys;
- Employment and population data – a data file is available from City Staff along with a map;
- Existing/anticipated travel patterns; and/or
- Market studies.

Engineering judgement shall be used to determine the most applicable of the above methodologies for each particular application.

7.3.2 TRIP ASSIGNMENTS

Trip assignment assumptions shall reflect the most "probable" travel patterns considering the planned site access(es). Traffic assignments may be estimated using a transportation planning model or "hand assignment" based on knowledge of the proposed road network in the study area.

The assumptions shall take into account projected "pass by" trips, "diverted" trips, and "internal" trips.

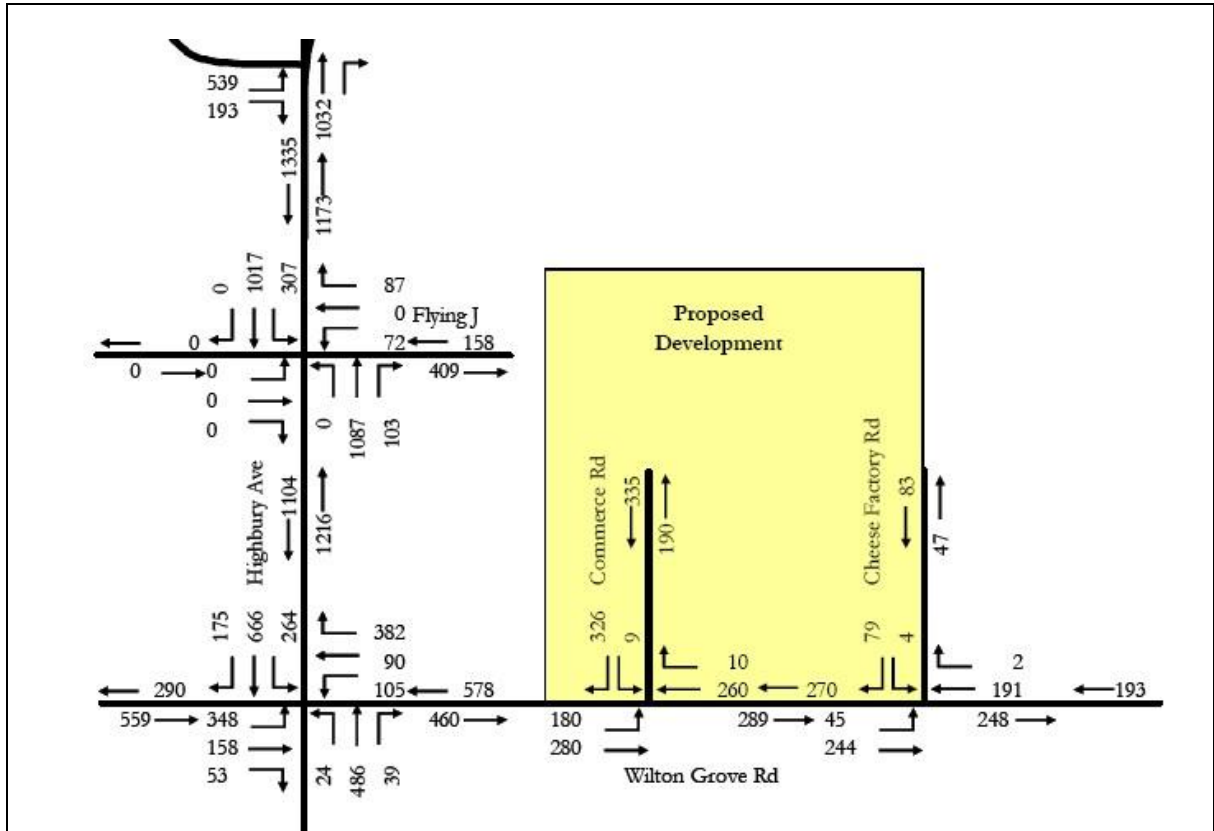
7.4 Summary of Traffic Demand Estimates

A summary of the existing and future traffic demands shall be provided in a series of graphics that summarize the following:

- Existing traffic;
- Future background - existing plus background traffic growth;
- Site generated traffic including a separate graphic for pass-by trip assumptions; and
- Future total traffic - future background + site generated traffic.

An example exhibit is included in **Exhibit 7-1**. Summary exhibits must be provided for each peak period and analysis horizon. In some cases, interim traffic conditions may need to be assessed to reflect phasing of developments, interim site access arrangements or planned transportation system improvements.

Exhibit 7-1 – Example Traffic Volume Graphic



7.5 Site Generated Transit Demand (As Required)

The level of detail required by the City will be dependent on the nature of the development area and its reliance on transit usage. The site generated transit demand must reflect the assumptions outlined in the auto trip generation assumptions.

In order of preference, one or more of the following may be used to establish the transit demand for the proposed development:

- Transit surveys provided by the London Transit Commission;
- Transit surveys/data obtained from a similar development with proper adjustments for major differences between the proposed and surveyed site;
- "First principles" calculations of anticipated transit trips to/from the site; and/or
- ITE Trip Generation rates for transit.

The Proponent shall contact London Transit Commission Staff early in the impact review process to establish mutually acceptable assumptions for transit usage for the development proposal.

8. EVALUATION OF IMPACTS OF SITE GENERATED TRAVEL DEMAND

8.1 Evaluation of Impacts of Site Generated Traffic Demand

The following are the steps that shall be undertaken to evaluate the impacts of the site-generated traffic on the area road network:

- Calculate the travel demand generated by the development proposal and assign it to the area road network consistent with the methodology outlined in **Section 7**.
- Undertake intersection analysis for all intersections and accesses within the study area. The intersection analysis shall be conducted with the general assumptions outlined in the City's standards for intersection operations (Refer to Section 02 of the City's Design Specifications and Requirements http://www.london.ca/Cityhall/EnvServices/Water/design_specs.htm);
- Provide a summary of level-of-service for all analysis periods and time horizons. Full documentation of the results of all level of service analyses shall be provided in an appendix.
- Identify intersections and proposed accesses where:
 - Volume/capacity (V/C) ratios for overall operations, through movements, shared through/turning movements increased to 0.9 or above and Level of Service "E" or worse;
 - V/C ratios for dedicated turning movements increased to 0.9 or above and Level of Service "E" or worse;
 - Queues for an individual movement and turning movement projected to exceed available lane storage (95th percentile queue).
- Identify potential safety or operational issues associated with the following:
 - Weaving/merging;
 - Corner clearances;
 - Sight distances;
 - Vehicle-pedestrian conflicts;
 - Access conflicts;
 - Traffic infiltration;
 - Cyclist operations;
 - Heavy truck movement conflicts;

All of the above considerations may not be applicable to the development site/area. It should also be recognized that the above list is not exhaustive and there may be other operational or safety concerns that may need to be addressed in the TIA; and

- Provide supplementary analysis required to address vehicle queue lengths/queue blocking, merging, weaving, gap availability/acceptance, sight distance availability, etc.

8.2 Evaluation of Impacts of Site Generated Transit Demand (As Required)

The following are the steps that shall be undertaken to evaluate the impacts of the site generated transit demands on the transit level-of-service:

- Evaluation of the site generated transit demands with comparisons to the transit service supplied in the area for all analysis periods and horizons
- Determination of London Transit's plans for transit service to the area;
- Identification of situations/locations and time periods where:
 - Transit service is not provided in the area and is required;
 - The provision of transit service or facilities are desired on site;
 - Demand exceeds residual capacity of the existing transit service. In these cases, times of day, duration and days of week should be specified as applicable;
 - Transit service hours do not coincide with the times when transit demand will be required;
 - It would be beneficial to provide increase transit frequency or service requirements for special events or peak arrival/departure times.
- Identification of pedestrian connections that are required to conveniently access transit services; and
- Identification of impacts on transit operations directly associated with the site generated traffic volumes.

9. TRANSPORTATION SYSTEM IMPROVEMENTS

This section outlines the process of identification of physical and operational transportation system improvements and other measures required to ensure that the impacts associated with proposed development can be mitigated to the satisfaction of the City.

The physical and operational remedial measures recommended in the TIA must address all deficiencies identified through the completion of the tasks outlined in **Section 8** of this document.

9.1 Identification of Required Road Network Improvements

The physical and operational road network improvement requirements identified in the TIA must address and ensure that:

- Site generated traffic does not create conditions in which the capacity criteria summarized in **Section 8** are exceeded;
- Vehicular, pedestrian and cyclist operations and safety are maintained or improved;
- Motorist, pedestrian and cyclist needs and safety are accommodated; and
- Site generated traffic will not have a noticeable adverse impact on existing or proposed residential communities.

Additional analysis shall be provided to demonstrate that the proposed mitigating measures will in fact address the impacts of the site generated traffic. If required, the City may request that functional plans be provided for all recommended road improvements. A to-scale drawing with dimensions illustrating edge of pavement and lane designations is typically required. An exhibit should be provided within the body of the report, which illustrates the proposed physical improvements. A legend should be provided in the graphic, which identifies network attributes that are “existing” and which are “improvements” being proposed.

9.2 Identification of Required Transit System Improvements (As Required)

The physical and operational transit system and service improvement requirements identified in the TIA must address and ensure that:

- The existing capacity of the transit service and facilities is capable of accommodating the anticipated site generated transit demand;
- Site generated traffic will not have a noticeable adverse impact on transit operations; and
- There is a provision for the following, if required:
 - Transit service to the area or to the site including potential transit routes;
 - An increase in transit frequency or hours of operation;
 - Special event service; and
 - Transit facilities such as terminals, bays or stops.

Additional analysis shall be provided to demonstrate that the proposed mitigating measures will in fact address the impacts of the site generated traffic. The Proponent shall consult with the London Transit Commission to confirm the feasibility of the provision of new/improved transit services.

9.3 Implementation of Required Improvements

The Proponent must demonstrate that the required improvements are:

- Implemented in conjunction with the planned timing of the development. For example, some roadway improvements may require an environmental assessment prior to implementation. The Proponent must demonstrate that the development will be phased or timed, as necessary, in conjunction with the implementation of transportation infrastructure or service improvements and/or TDM strategies, to ensure that travel supply and demand are kept in balance over time.
- Feasible given existing operational or physical constraints of the road network, transit service or field equipment, i.e., if an advance phase is required at a signalized intersection, then the ability of the controller to accommodate additional phases will need to be verified;

10. SITE PLAN, PARKING AND ACCESS REQUIREMENTS

This section addresses site plan criteria, parking and access locations in order to develop a plan that will be harmonized with the surrounding developments and provide acceptable access and site circulation for all anticipated modes of travel.

Points of consideration with respect to site plan criteria, parking and access are:

- Compliance with the City of London's Access Management Guidelines;
- An evaluation of proposed access points with respect to possible mutual interference with other adjacent or opposed access points shall be undertaken;
- An evaluation of sight-lines to ensure safe conditions in accordance with accepted standards;
- An evaluation of the potential for access and circulation movements with on-site parking, traffic control, drive through facility etc. to severely impact on-site operations or result in vehicle queues extending onto public roadways;
- Demonstration that the parking policies and standards applied to the development are in accordance with City requirements;
- An evaluation of delivery vehicle/courier unloading facilities and access to these facilities with respect to location, size and design. Convenient access shall be provided in order to avoid the possibility of pick-up/delivery occurring on City rights-of-way;
- An evaluation of emergency vehicle access and circulation, including explicit designation of the fire route;
- A description and evaluation of site access provisions for pedestrians and cyclists shall be included with particular emphasis on convenient and safe access to transit services from the existing/planned facilities to the "front door" of the development; and

- A description of the measures taken to make the proposed development or redevelopment, including on-site transit facilities, where appropriate, accessible to persons with personal mobility limitations.

11. DOCUMENTATION AND REPORTING

It is recommended that the format of the TIA follow the guidelines outlined in this document, as applicable. The following is a recommended structure for a standard comprehensive TIA:

- Executive Summary; (If required)
- Table of Contents
- Site/Development Description;
- Study Area;
- Existing Conditions;
- Analysis Periods;
- Background Travel Demand;
- Site Generated Trips;
- Future Travel Demand;
- Future Traffic Operations and Impacts;
- Future Transit Operations and Impacts;
- Improvement Alternatives Required to Mitigate Traffic and Transit Impacts;
- Functional design drawings; and
- Conclusions and Recommendations.

Three (3) copies of the TIA with technical appendices shall be provided to the City of London for review. An electronic copy of the text material and analysis shall be provided in Adobe Acrobat (pdf) and/or other mutually acceptable file formats (*.dwg, Synchro 6.0, etc.). A technical appendix included under another cover shall be provided in the case were the analysis and other technical materials are too substantial to provide in one document. The City prefers to have large appendix materials provided in electronic format. Where possible, key maps, diagrams, graphs, tables and other exhibits shall be placed adjacent to the relevant text as opposed to an appendix.

APPENDIX A

CERTIFICATE OF AUTHORSHIP/OWNERSHIP

City of London
Transportation Impact Assessment

CERTIFICATE OF OWNERSHIP

Development Name/Reference:

Company or Firm:

Original Submission or Addendum:

Original Report Name:

I hereby certify that the attached document has been prepared accurately and to the best of my knowledge. The assumptions and analysis contained herein have been formulated using sound transportation planning and traffic operations methodologies.

Individual accepting corporate responsibility:

Name: _____

Signature: _____

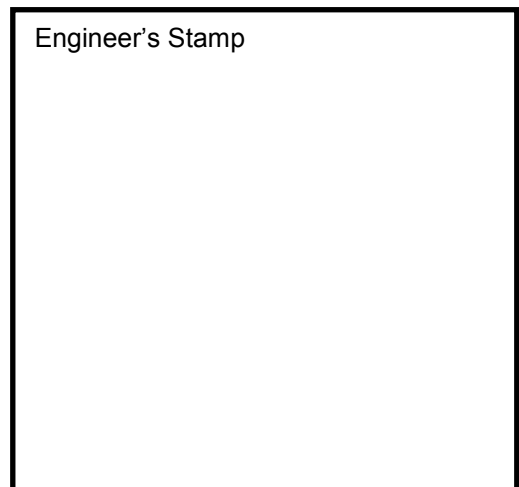
Project Manager (if different than above):

Name: _____

Other Individuals involved in the preparation of the assessment and can be contact regarding study content:

Name: _____

Name: _____



APPENDIX B

ASSESSMENT PROCESS FLOW CHART

