Terms of Reference:
Transportation Impact Study

Study Description

The goal of a Transportation Impact Study ("TIS") is to assess the potential effects of traffic caused by a proposed development on municipal systems and roadways. The study aims to predict and analyze the circulation and congestion impacts generated by development projects and identify feasible mitigation measures to offset any impacts.

Purpose

The purpose of this Terms of Reference ("TOR") is to establish clear expectations and requirements for the preparation of Transportation Impact Studies submitted to the City of Waterloo. This document provides guidance to developers and transportation consultants on the process to identify the need for a Transportation Impact Study in support of a development application and to determine an appropriate scope. Compliance with these guidelines will help to expedite review times and mitigate the need for further revisions and submissions. Failure to satisfy the requirements set out in this TOR may result in an application being deemed incomplete. If an application is deemed incomplete it will be returned to the applicant to satisfy the necessary submission requirements.

When is it Required?

A Transportation Impact Study is required for the following Planning Act application when a proposed land use change and/or development proposal has the potential to impact the transportation network:

- Zoning By-law Amendment
- Official Plan Amendment
- Draft Plan of Subdivision
- Draft Plan of Condominium
- Site Plan Control
- Other planning applications, as determined by the City.

The need for a Transportation Impact Study as part of a complete application will be identified as part of the pre-application consultation review. In the instance where a planning application being advanced does not have a mandatory pre-application consultation process (e.g., Minor Variance), the applicant is encouraged to contact the City's Planning Division to discuss the

nature of the proposal and to determine if a Transportation Impact Study is required. In some instances where impacts are expected to be limited, and at the sole discretion of the City, a scoped Transportation Study can be prepared instead of a full TIS. This may be requested anytime there are transportation considerations on the site or the adjacent transportation network that need to be studied and addressed. In such instances, the City will determine requisite information to be contained within the scoped Transportation Study, in consultation with any applicable external agencies through the pre-consultation process.

Pre-Study Conference

A Pre-Study Conference with City staff is required to identify whether or not a full Transportation Impact Study is required or a scoped Transportation Study and the appropriate scope. Typically, the Region coordinates a discussion between the applicant's transportation consultant and staff from the City and the Region on the need for and scope of a TIS. A pre-study conference form, a concept plan, and a draft Table of Contents is required for staff to review in advance of a meeting between the consultant and relevant staff.

If the proposal is not near a Regional transportation corridor or the nature of the transportation impacts is more local, the Region may not require the submission of a TIS as part of the development application, but the City may. If the TIS has been requested by the City of Waterloo, the applicant's consultant is required to send a pre-study conference form, a concept plan, and a draft Table of Contents to the City's Manager of Transportation (traffic@waterloo.ca) and request a pre-study conference. This meeting would be held in addition to the Pre-consultation Meeting required as part of the Planning Act application(s).

Context sensitive information about the city transportation network and impacted neighbourhoods will be discussed at the pre-study conference with City transportation staff. Transportation demand management strategies and the need to incorporate them into the development proposal will also be discussed.

The pre-study conference form and the draft Table of Contents that is approved by City staff will be appended to the TIS or Transportation Study for reference. Planning staff will verify that the study Table of Contents corresponds with the approved draft. If all elements in the Table of Contents are included, and no other issues are identified, then the TIS can be deemed complete.

Qualified Persons

A Transportation Impact Study shall be prepared by qualified and competent professional in good standing, experienced in matters of transportation, transportation infrastructure, and related mitigation measures as it related to development and land use planning. The report must identify the author(s) and, where prepared under the direction of a qualified professional, the reviewer of the report by way of a signed letter, project information form, or a Professional Engineer's seal. The qualified professional that has signed the report shall take professional responsibility for its contents and the accuracy of the information contained therein.

Applicable Legislation

The authority to require or request information or material to evaluate and make a decision on proposed planning applications is provided by the Ontario *Planning Act*, the Provincial Policy Statement, and City of Waterloo Official Plan Section 12.2.14 ("Complete Applications").

This Terms of Reference document is to be applied in conjunction with all applicable regulations, by-laws, and guidelines, including the City of Waterloo's Urban Design and Engineering Manuals.

The City of Waterloo (City) uses the Region of Waterloo (Region) Transportation Impact Study (TIS) Guidelines. Transportation analysis should be undertaken in accordance with City of Waterloo and Region of Waterloo requirements and parameters. The City also relies on industry standard guidelines and assessment tools developed by the Institute of Transportation Engineers, the Transportation Association of Canada, and the Province of Ontario.

Study Requirements

Study requirements are generally outlined in the Region's TIS Guidelines and will be discussed and refined through the pre-study conference process. Additional City of Waterloo requirements should be considered in the development of a pre-study conference form and draft Table of Contents.

A sample Table of Contents would include:

☐ Introduction

☐ Proposal

☐ Site Transportation Context

☐ Existing Traffic

☐ Background Traffic

☐ Site Traffic

☐ Future Total Traffic

☐ Active Transportation Considerations

☐ Transportation Demand Management

☐ Conclusions and Recommendations

Additional Information

Note 1:
If City staff consider the submitted Transportation Impact Study to be incomplete, unsatisfactory, inconsistent, insufficient, authored by an unqualified individual, or if it fails to satisfy the requirements set out in this TOR in any other manner, the associated development application may be deemed incomplete and returned to the applicant.

Note 2:
Deeming an application complete does not guarantee that the contents of the study are acceptable to City staff and/or that the application will be approved.

Note 3:
If a request for a Transportation Impact Study is not made at an earlier stage in the development process, this does not preclude the City from requesting a Transportation Impact Study at a later stage. Once an application has been deemed "complete", the City may require additional information, reports, and/or studies following a more detailed review to assess the implications of an application for approval.

Note 4:
The City of Waterloo is committed to complying with the Accessibility for Ontarians with Disabilities Act (AODA). In our everyday work with businesses institutions, and community partners we anticipate the same commitment to AODA compliance. Therefore, the Transportation Impact Study must be AODA compliant and must meet the current provincial standard for compliance.

Note 5:
The City reserves the right to request an updated study, or an addendum thereto, should staff determine that changes in the development proposal or changes to legislation warrant further/ modified planning analysis.

Note 6:
City staff reserve the right to require a peer review of submitted materials by an appropriate agency or qualified professional, the cost of which will be borne by the applicant.

Note 7:
Documents and all related information submitted to the City as part of a complete development application are considered public documents once submitted.

Note 8:
The Transportation Impact Study shall be submitted in conjunction with the applicable development application(s), unless otherwise agreed to by the City.

Note 9:
This Terms of Reference document is intended to be used for guideline purposes only, and will be used to provide technical direction throughout the planning and development process. Completion of a report in alignment with the requirements of this Terms of Reference will not guarantee approval of the development application in question.

Note 10:
This TOR is relevant at the time of publishing and will be updated as necessary to reflect current policy, best practices, and accepted standards. It is the applicant's responsibility to ensure the report is prepared in accordance with the most recent version of the TOR issued by the City.

This Terms of Reference was prepared by a qualified external consulting firm. For clarification for any information contained within this document, please contact the City of Waterloo staff assigned to the pre-consultation process.

Appendix 1: City of Waterloo PRE-STUDY CONFERENCE FORM

Item	Description	Details
ISSUES		
1	List any issues expected that may impact the content or recommendations of the subject Transportation Impact Study.	o o o o
INTRODUCTION		
2	Nature of application (Attach a drawing)	o Official Plan Amendment o Zoning Amendment o Site Plan Control Application o Plan of Subdivision o Community Plan o Other
3	TIS process, and relevant policies, procedures and approvals	o Guidelines for the preparation of Transportation Impact Studies in Support of Development Applications o Transportation Impact Studies Requirements for Capacity Analysis, Roundabouts, Turn Lanes o Safety Analysis Checklist o Policy and Procedures for Access onto Regional Roads
4	Public Meeting	o Required o Not Required
CONTEXT		
5	Study intersections (Intersections to be analyzed) Note: the consultant is responsible to identify any further intersections impacted as the study progresses.	o o o o o o o
6	Size and number of phases of development	o Phase 1: o Phase 2: o Phase 3: o Phase 4: o Phase 5:
7	Approved and pending approval development applications	o o o
8	Planned transportation system improvements	o o o
TRAVEL DEMAND		
9	Horizon years	o 5 years from date of TIS o 5 years after full occupancy o Transportation Plan horizon for large scale projects o Interim years o Other…

Item	Description	Details
10	Peak hour determination	o AM weekday peak hour of adjacent roadway o PM weekday peak hour of adjacent roadway o Saturday peak of adjacent roadway o AM weekday peak hour of development o PM weekday peak hour of development o Saturday peak of development o Other…
11	Background	o Historical traffic/transit counts o ROW travel demand forecasts o Approved and pending approval development applications o Other…
12	Trip generation	o ITE average rates o ITE fitted equation o Rates published elsewhere o Observed rates for similar areas o Observed rates for similar developments in the local area o Other…
13	Trip reductions (TDM, internal, pass-by)	o Transportation Demand Management Checklist o Published Travel Demand Management reductions o Observed Travel Demand Management reductions o ITE internal capture reductions for mixed-use developments o Observed internal capture reductions for mixed-use developments o ITE pass-by reductions o Observed pass-by reductions for similar developments o Other…
14	Trip distribution	o ITE trip distribution IN/OUT split o Regional travel demand o Population and employment distribution o Market analysis of catchment area o Other…
15	Trip assignment	o Local traffic pattern o Site layout and access design o Existing turning movements o Other…
EVALUATION OF IMPACTS		
16	Traffic impact analysis (Use approved software)	o Unsignalized intersections o left turn warrant analysis o signal warrant analysis o Signalized intersections o LOS, v/c, delay, queuing o ROW saturation flow rates o Existing signal timings for existing conditions o Optimize signal timings for future conditions o Use existing cycle length to respect coordinated corridor o Queuing analysis o Roundabouts o Other…

Item	Description	Details
17	Roundabout feasibility (Use approved software)	o Initial screening o Intersection control study (10 year horizon)
18	Transit assessment	o Frequency and hours of service o Presence of bus stops o Reliability of service o Passenger loads o Travel time o Other
19	Pedestrian assessment	o Presence, connectivity, and width of sidewalks o Barriers and buffers from traffic o Crossing opportunities at intersections o Delay at intersections o Number of driveways and traffic volumes at the driveways o Presence of illumination o Future needs (desire lines / policy / accessibility / demand) o Other
20	Cycling assessment	o Presence of a dedicated facility o Network connectivity o Number and width of travel lanes adjacent to the route o Volume and speed of traffic o Percentage of trucks and buses encountered o Pavement condition o Presence of parking /showers/change rooms o Future needs (desire lines / policy / demand) o Other
21	Safety analysis	o Road safety review o Collision risk analysis o Access conflict evaluation
22	Site access and circulation	o Review sight distances at all new access points o Internal traffic controls o Loading facilities and access o Service/maintenance vehicle access o Emergency vehicle access
23	Submission format	o Three hard copies of main report including appendices (other than analysis results/output e.g. Synchro reports) o Minimum one original hard copy must be sealed by a professional engineer o Electronic copy of complete report and all appendices o Electronic copy of operational analysis files (e.g. Synchro, Arcady o Electronic copy of all signal warrant calculation files o Other