



Sun & Shadow Study

Study Description:

The Sun/Shadow Study is a technical document that provides graphic communication of the shadows cast by a proposed development on the site and surrounding areas during specified test dates.

The objective of the Sun/Shadow Study is to ensure adequate sun is maintained for the continued comfort and use of outdoor spaces, particularly public spaces including parks and schoolyards. New development should not unduly impact adjacent properties through shadowing, as such the Sun/Shadow Analysis will be used to assess proposed massing and guide design revisions that optimize sunlight outcomes.

Purpose:

The purpose of this Terms of Reference (“TOR”) is to establish clear expectations and requirements for the preparation of Sun/Shadow Analyses submitted to the City of Kitchener. 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 Sun/Shadow Study may be required for proposed developments of 8-storeys (25 metres) or higher as part of the following Planning Act applications:

- Official Plan Amendment
- Zoning By-law Amendment
- Site Plan Control
- Other planning applications, as identified by the City.

The need for a Sun/Shadow 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., Committee of Adjustment applications) the applicant is encouraged to contact the City’s Planning Division to discuss the nature of the proposal and to determine if a Sun/Shadow Study is required.

Qualified Person:

Sun/Shadow Study shall be prepared by a qualified and competent professional in good standing. Qualified professionals include:

- Urban Designer
- Registered Professional Planner (RPP/MCIP)
- Licensed Architect (OAA)
- Professional Engineer

The report must identify and be signed by the author(s) and, where prepared under the direction of a qualified professional, the signature of the reviewer of the report. 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* and City of Kitchener Official Plan Section 17.E.10 ("Complete Application Requirements"). This Terms of Reference document is to be applied in conjunction with all applicable regulations, by-laws, and guidelines, including the City of Kitchener's *Urban Design Manual*.

Study Requirements:

This TOR document sets out the minimum requirements that must be included in a Sun/Shadow Study. Requirements may be scoped by staff through the Pre-Submission Consultation Process.

Report Contents:

Shadow Diagrams may be appended to an Urban Design Brief, or may be submitted as a stand alone report. The Massing Model is required to be submitted in Google SketchUp.

Where submitted as a standalone report, Sun/Shadow Diagrams are to be exported to PDF and submitted with a standard metric scale and north arrow, and title blocks must include:

- ☐ Address of Subject lands
- ☐ Applicant name
- ☐ Application type
- ☐ Name of the company preparing the analysis
- ☐ Software and data sources used

Sun/Shadow Diagrams should at a minimum indicate:

- ☐ Date and time, astronomical north, scale bar, and latitude and longitude
- ☐ Development site boundaries and surrounding lot fabric
- ☐ Label major streets, parks, and landmark
- ☐ Massing of existing, approved, and proposed buildings and structures as further described below.

A. Massing Model

The Massing model required for the Sun/Shadow Analysis is to include at a minimum:

- Delineated boundaries of the development site.
- Boundaries of all surrounding streets, blocks, lots, parks, and open spaces; existing building and structures
- Approved but unbuilt buildings and structure (where known)

The model should clearly illustrate, by using different colours, the shadows cast by:

- Existing buildings and structures
- Approved buildings and structures (where known)
- The proposed development
 - The model does not need to include permitted horizontal projections (e.g., balconies) but is required to include the mechanical penthouse.

- The extent of the model should ensure that the shadow impacts during the requested times are fully shown.
- The context model should use the City of Kitchener open data, or where appropriate, an approved City source.

B. Required Time Zone, and Latitude, and Longitudinal Coordinates

The following time zone will be used:

- Eastern Standard Time: Universal Time minus 5 hours (December 21st model)
- Eastern Daylight-Saving Time: Universal Time minus 4 hours (March, June and September 21st model)

The development site should be geolocated to the following coordinates:

- Latitude N 43.45164 degrees
- Longitude W -80.49234 degrees

C. Required dates and times

The Sun/Shadow Study will be conducted on March 21, June 21, September 21, and December 21 (subject to the proposed development complexity and adjacent sensitivities) using hourly intervals as follows:

June 21 (EDT)	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00
March/Sept 21 (EDT)	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	
December 21 (EDT)		9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	

City Staff may request fewer or alternative study dates and times following the pre-application consultation meeting.

D. Policy Context

The Sun/Shadow Study shall be evaluated against the relevant policies found in all applicable documents:

- City of Kitchener Official Plan, including any Secondary Plans; and
- Urban Design Manuals, Guidelines, and Plans as identified by City staff.

E. Evaluation Criteria

In accordance with the City's Urban Design Manual, developments are required to be designed to maintain daily access to at least 5 hours of cumulative direct sunlight to nearby properties with low-rise zoning, public areas and open spaces under equinox conditions, beginning with sidewalks located on the opposite site of adjacent ROWs. Demonstrate through the shadow study how this is achieved.

F. Summary of Results and Recommendations:

Provide a written summary of the shadow impacts and include recommendations for revisions to the proposed massing in order to optimize access to sunlight (if applicable).

Additional Information

1. If City staff consider the submitted Sun/Shadow 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.

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.
3. If a Sun/Shadow Study is not requested at the time of Pre-Submission Consultation, this does not preclude the City from requesting an Sun/Shadow 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.
4. The City of Kitchener 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, report must be AODA compliant and must meet the current provincial standard for compliance.
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.
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.
7. Documents and all related information submitted to the City as part of a complete development application are considered public documents once submitted.
8. The Sun/Shadow Study shall be submitted in conjunction with the applicable development application(s), unless otherwise agreed to by the City.
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.
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.