



# Terms of Reference: Sun/Shadow Analysis



## Study Description

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

The objective of the Sun/Shadow Analysis 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 Waterloo. 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 Analysis may be required for proposed developments of 6-storeys (18 metres) or higher as part of the following Planning Act applications:

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

The need for a Sun/Shadow Analysis 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 Analysis is required. City staff may request a Sun/Shadow Analysis for shorter buildings where the site is near open space or other sensitive areas.

## Qualified Persons

A Sun/Shadow Analysis shall be prepared by 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*, 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 Manual and Comprehensive Engineering and Landscape Manual.

## Study Requirements

This TOR document sets out the minimum requirements that must be included in all reports. More specific scoping of the Sun/Shadow Analysis may be identified by appropriate staff during the pre-application consultation process.

### **A. Building Mass Model**

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

- Boundaries of the development site delineated in thicker or coloured lines
- Boundaries of all surrounding streets, blocks, lots, parks, and open spaces; existing building and structures
- Approved but unbuilt buildings and structure

The model should clearly illustrate the shadows cast by:

- Existing buildings and structures
- Approved buildings and structures
- The proposed development

Each of these shadows should be distinguished by using different colours.

At City staff's direction, where the proposed development is taller than permitted heights, or in City staff's opinion deviates from the permitted zoning envelope, as-of-right massing may be requested.

The model does not need to include permitted vertical and 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 Waterloo 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 21<sup>st</sup> model)
- Eastern Daylight-Saving Time: Universal Time minus 4 hours (March, June and September 21<sup>st</sup> model)

The development site should be geolocated to the following coordinates:

- Latitude N 43.4643 degrees
- Longitude W 80.5204 degrees

**C. Required dates and times**

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

<b>June 21 (EDT)</b>												
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

  

<b>March/September 21 (EDT)</b>											
8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00

  

<b>December 21 (EST)</b>										
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 Analysis shall be evaluated against the relevant policies found in all applicable documents:

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

**E. Evaluation Criteria**

The following criteria will be used by City Staff to evaluate a proposed development’s shadow impacts to ensure adequate sun is maintained for the continued comfort and use of outdoor spaces. Criteria are listed in order of importance accordance with city-building priorities, with the most important listed first. This is not an exhaustive list, and City Staff may identify additional outdoor areas with associated shadow criteria. It is also recognized that not all criteria can be met for every site, as such there will be variations in the application of criteria on a site-by-site basis.

- Public Plazas, Parks and Open Space: no new net shadow between 10AM and 4PM during the September test date.
- School Yards and Children’s Play Areas: Continuous sun on 50 percent of the area between 9 AM to 4 PM during all test dates.



- Public Sidewalks: Minimum 50 percent sun coverage on the opposite sidewalk between 9 AM and 6 PM during the March and September test dates.
- Residential Yards: Minimum 3 continuous hours of sun during the March and September test dates.
- Community Gardens: Minimum 6 hours of direct sun on the June and September test dates.
- Solar Energy Generation: Shadow impacts criteria will be determined by City staff on a case-by-case basis.
- Heritage Resources: Shadow impacts criteria will be determined by City staff on a case-by-case basis.

## Submission Package

Images of the shadow diagrams are to be exported to PDF and submitted with a standard metric scale and north arrow. The City will not be accepting digital submissions of the actual massing model.

Ensure that the package includes:

- Municipal address
- Applicant name
- Application type
- Aerial Imagery
- Name of the company preparing the analysis
- Software and data sources used

Images 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 landmarks
- Massing of existing, approved, and proposed buildings and structures

## **Additional Information**

*Note 1:*

If City staff consider the submitted Sun/Shadow Analysis 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 Sun/Shadow Analysis is not made at an earlier stage in the development process, this does not preclude the City from requesting a Sun/Shadow Analysis 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 Sun/Shadow Analysis 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 Sun/Shadow Analysis 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.*