Hamilton

Terms of Reference: Shadow Impact Study for Downtown Hamilton

1.0 Description

A Shadow Impact Study is a planning application submission requirement which includes a visual model and written analysis of the shadow the proposed development will cast. A Shadow Impact Study demonstrates the impact of development in terms of sun and daylight access to the surrounding context including surrounding buildings, the public realm, and public open space and how the impacts will be mitigated (if applicable).

2.0 Why do we need this?

A Shadow Impact Study may be required in support of a development application to demonstrate that the location, massing, vertical and horizontal articulations, and height of a proposed building. The objective is to maintain quality, comfortable and inviting public spaces and pedestrian environments by demonstrating that a development will not cause undue shade on the subject lands, and on the surrounding context, including building facades, private and public outdoor amenity and open spaces, parkland, school yards and buildings, sidewalks and other components of the public realm.

3.0 When is this study required?

A Shadow Impact Study may be required for proposals comprised of buildings 6 storeys or higher, for the following development applications:

- Official Plan Amendments;
- Zoning By-Law Amendments;
- Site Plan Control applications; and,
- Minor Variance applications.

The requirement for a Shadow Impact Study will be identified at the Formal Consultation stage of an application.

Staff may request a Shadow Impact Study for development proposals of lesser height based on potential impacts on the surroundings. The requirement for, and scope, of a shadow analysis will be identified at the Formal Consultation stage.

Where a Shadow Impact Study has been provided at the OPA, ZBA, or MV application stage, a Shadow Impact Study will not be required at the Site Plan application stage provided the proposal has not changed.

4.0 Who should prepare the study?

The Shadow Impact Study should be prepared by a registered architect, professional engineer, a Registered Professional Planner (RPP), or Landscape Architect.

5.0 Test Dates, Time Zone, and Geographical Coordinates

Dates

Shadow Impact Studies will be conducted on March 21st and September 21st.

Times

Shadow Impact Studies will be conducted at the following times:

- Solar Noon (SN)
- Hourly intervals starting 1.5 hours after sunrise and ending 1.5 hours before sunset

Time Zone

Shadow Impact Studies will be prepared using the following:

- Time Zone: Eastern
- Daylight Saving Time: Universal Time (UTC) minus 4 hours

Geographical Coordinates

Shadow Impact Studies will be prepared for the following geographic coordinates:

- Latitude: N 43 degrees: 14'30"
- Longitude: W 79 degrees: 51'00"

6.0 Shadow Impact Study Format

A Shadow Impact Study should include a shadow model and written analysis.

The Shadow Model

Images of shadow tests using models that clearly indicate the development site, its boundary, the footprint and mass of buildings within the test site, all streets, sidewalks, public and private open spaces, school yards and buildings, playgrounds, sitting areas, patios, and all adjacent properties and buildings affected by shadows.

Shadow models should include the following information:

- Municipal Address;
- Type of application;
- The name of the individual and company who has prepared the model;
- North arrow and scale bar;
- All streets, blocks, parks and open spaces, and existing building structures to a distance that shows the shadow impacts during the requested times (at a minimum 4.0 times the building height to the north, east and west; 1.5 times the building height to the south);
- The as-of-right height and massing – identify the shadow outline which would be cast if the as-of-right height and massing were constructed on the subject and adjacent lands;
- The proposed building(s) – highlight the site and identify the shadow outline of the proposed building(s). Indicate through a different shade/hatching the area which results in a *new net shadow;*
- Approved, but not yet constructed – identify proposed development in the study area which have received approval but are not yet constructed, Provide the shadow outline(s) of such buildings only if the shadows which would be cast overlap on the shadow area of the proposed application;
- Developments under construction but not fully built;
- All shadows should be represented using different colours to distinguish between existing shadows and the shade resulting from proposed building(s);
- Reference bearing for at least one street adjacent to the subject site;
- All images to be displayed in a top view;
- 3D mapping showing the shadows from proposed buildings and all buildings within the study area.

**Shadows from proposed development should be shown fully on the page and not cut off.*

Written Analysis

Shadow models must be submitted with a written analysis which shall include the following:

- Confirmation of site latitude and longitude used in shadow drawings;
- A statement describing how astronomic true north was determined;

- Origin/source of the base plan;
- Description of all locations, uses of areas not meeting the shadow impact criteria (include a key plan for reference);
- Quantification and assessment of the impacted areas that do not meet the shadow impact criteria;
- Summary outlining how the shadow impact criteria have been met;
- If applicable, detail the proposed measures to be adjusted in the development proposal which will minimize or eliminate the resulting shadow impacts and describe any mitigating features that have been incorporated into the site and building design. This may require confirmation through submission of a revised site plan and/or building elevations. A condition of Site Plan Approval will be placed to ensure that the recommendations of the shadow study are fully implemented, prior to the City releasing any associated securities.

7.0 Submission Requirements

- 6 hard copies and one digital copy of the Shadow Impact Study.
- A digital model (KML file format) of the proposed building(s) to be inputted into the City's 3D base mapping.

8.0 Shadow Impact Criteria

Public Realm

- Shadows from proposed development shall allow for a minimum of 3 hours of sun coverage between 10:00 a.m. and 4:00 p.m. as measured from March 21st to September 21st on public sidewalks and public and private outdoor amenity space such as patios, sitting areas, and other similar programs.
- Shadows from the proposed development shall allow for a minimum of 50% sun coverage at all times of the day as measured from March 21st to September 21st on public plazas, parks and open spaces, school yards, and playgrounds.
- Downtown Hamilton contains a number of primary gathering spaces where civic life occurs. The quality, image, and amenity of these spaces strongly affect how people perceive the Downtown. Development shall not cast any new net shadow between 10:00 a.m. and 4:00 p.m. as measured from March 21st to September 21st on the following parks, squares, plazas and open spaces areas that serve as Downtown's key civic gathering spaces:

a) Gore Park;
b) Prince's Square (50 Main Street East);
c) City Hall Forecourt (71 Main Street West);
d) Whitehern Museum (41 Jackson Street West); and,
e) Ferguson Station (244, 248 King Street East).

9.0 Examples of Mitigation Measures

Mitigation measures to reduce shadow impacts on shadow sensitive areas include, but are not limited to:

- reduced height;
- alternative massing;
- different building orientation;
- lot consolidation;
- step backs;
- slender towers (towers with smaller floorplates).

10.0 Other Resources Available

- City-Wide Corridor Planning Principles and Design Guidelines
- Site Plan Guidelines
- Downtown Hamilton Tall Building Guidelines

11.0 Glossary

As-of-right height and massing: As approved by the existing Official Plan, Secondary Plan or Zoning By-law, whichever provision prevails.

New net shadow: Highlights the increase in shadow resulting from the proposed development after taking into account the shadow which would be cast form the as-of-right height and massing, the current shadows on the landscape, and any approved but not yet constructed buildings.

Hamilton

Terms of Reference: **Pedestrian Level Wind Study for Downtown Hamilton**

1.0 Description

A Pedestrian Level Wind Study is a planning submission requirement which includes a visual model and written evaluation of how a proposed development will impact pedestrian level wind conditions at various times of the year on pedestrian areas and how the impacts will be mitigated (if applicable).

2.0 Why do we need this?

A Pedestrian Level Wind Study may be required in support of a development application to predict, assess, and where necessary, mitigate the impact of the site and building designs and development on pedestrian level wind conditions. The objective is to maintain comfortable and safe pedestrian level wind conditions that are appropriate for the season and the intended use of pedestrian areas. Pedestrian areas include street frontages, pathways, building entrance areas, open spaces, amenity areas, outdoor sitting areas, and accessible rooftop streets, parks, and open spaces among others.

Buildings can have major impacts on the wind conditions in their surrounding context especially when a building is considerably taller than surrounding buildings. It is important to consider the potential impacts of a proposed development on the local microclimate early in the planning and design process as this allows sufficient time to consider appropriate wind control and mitigation strategies, including changes to site and building designs.

3.0 When is this study required?

A Pedestrian Level Wind Study may be required as part of proposals for the following development applications:

- Official Plan Amendments;
- Zoning By-Law Amendments;
- Site Plan Control applications; and,
- Minor Variance Applications.

The requirement for a Pedestrian Level Wind Study will be identified at the Formal Consultation stage of an application.

4.0 What triggers a Pedestrian Level Wind Study?

Building Height

- A development proposal with a building 20 m in height or more requires a **Qualitative Wind Assessment** as a minimum. A **Quantitative Wind Tunnel Study** may be required at the discretion of the Planning and Economic Department.

- A development proposal with a building 20 m in height or more and up to two times the height of surrounding buildings requires a **Quantitative Wind Tunnel Study.**

- A development proposal with a building 44 m in height or more requires a **Quantitative Wind Tunnel Study.**

Number of Buildings

- A development proposal with two or more buildings that are 20 m in height or more requires a **Quantitative Wind Tunnel Study.**

Site Area (size)

- A development proposal with a site area of 3 hectares or more, and a building that is 20 m in height or more, requires a **Quantitative Wind Tunnel Study.**

5.0 Who should prepare the study?

The Pedestrian Level Wind Study should be prepared by a qualified microclimate specialist. These studies are to be signed and sealed by a Professional Engineer. If a Wind Study is prepared by an individual or company who do not have extensive experience in pedestrian level wind evaluation, an independent peer review may be required at the expense of the proponent.

6.0 Wind Data Collection

6.1 Test Dates

A minimum of 30 years of hourly wind data from John C. Munro Hamilton International Airport should be used and presented on a four season basis as follows:

Summer: Hourly winds occurring the period of May through October.

Winter: Hourly winds occurring the period of November through April.

Appropriate hours of pedestrian usage for a typical project (i.e. 6:00 am and 11:00 pm) should be considered for wind comfort, while data for 24 hours should be used to assess wind safety.

6.2 Pedestrian and Amenity Area Test Locations

Test locations will be identified through an image in the application submission (refer to **Figures 1 and 2**). Test locations include:

- Major building entrances;
- Sidewalks (adjacent to the proposed building(s),
- Parking lots (adjacent to the proposed building(s),
- Public amenity spaces (e.g. parks, plazas, courtyards, trails, public pools, restaurant patios, etc.);
- Private amenity space (e.g. balconies, rooftop patios, private pools).

6.3 Configurations

When conducting a pedestrian level wind study the most objective way to assess the impact of a proposed development is to compare it to the existing wind conditions. In some parts of the City it may be prudent to consider a future cumulative configuration.

The following is a description of the configurations that typically need to be considered:

Existing

- Include all existing buildings, significant topographic features, and developments under construction within a 400 m radius of the site.

Proposed

- Include the proposed development being studies, as well as all existing buildings, significant topographic features, and developments under construction within a 400m radius of the site.

Future (only if warranted)

- Add any buildings that are part of a future development identified by the City, and deemed by the wind consultant to have a potential impact on winds at the subject site.

Mitigation

- Where mitigation is required to achieve acceptable pedestrian wind comfort levels, evaluate the proposed configuration with all recommended mitigation measures in

order to demonstrate the benefits of the mitigation strategies under the proposed and/or future configurations.

6.4 Requirements for Assessment Techniques

6.4.1 Qualitative Assessment:

A Qualitative Assessment relies on professional observation and interpretation. A Qualitative Assessment may be conducted either as a **Qualitative Desktop Assessment**, or using **Computational Fluid Dynamics (CFD).**

Requirements for a Qualitative Desktop Assessment

- Predict and estimate the wind speeds at critical locations around the proposed development while giving consideration to the frequency of occurrence of wind speeds.
- Assessment should be based on the standard wind comfort criteria described in this document in **Section 8.0**.
- Where conditions are considered to be unacceptable for the intended usage, provide mitigation concepts to improve the wind comfort to acceptable levels or suggest appropriate adjustments to pedestrian usage.

Requirements for Computational Fluid Dynamics (CFD)

- It shall be acceptable to simulate only the prevailing wind directions as a basis of assessment using CFD.
- The CFD simulation shall appropriately represent the atmospheric boundary layer for winds approaching the computational model.
- Presentation of the wind speeds shall include horizontal planes at pedestrian level (i.e. 1.5 m above local grade) and vertical slices to understand flow conditions in critical areas.
- The actual assessment of wind conditions at critical pedestrian locations must account for the probability of all wind directions that can occur based on the wind data from the appropriate airport.
- The potential wind comfort and safety categories should be assessed for areas of interest.

- If problematic wind conditions are predicted, design alternatives and wind mitigation measures shall be recommended and described in the final report.

6.4.2 Quantitative Wind Tunnel Study:

A Quantitative Wind Tunnel Study is based on measured data from physical scale model testing. A Quantitative Wind Tunnel Study shall be conducted in a boundary layer wind simulation facility.

Requirements for Quantitative Wind Tunnel Testing

For wind tunnel testing, the following are the key requirements:

- 36 wind directions shall be tested.
- The wind simulation facility must be capable of simulating the earth's atmospheric boundary layer and appropriate profiles for each of the wind directions tested.
- Wind speeds shall be presented in km/h.
- Wind speed sensors used to measure local wind speeds shall be omni-directional and represent the horizontal wind speed at a full scale height of approximately 1.5 m above local grade. These sensors should be capable of measuring mean wind speed and wind speed fluctuations with time, including peak gusts of three to ten second duration. Sampling time in the wind tunnel shall represent a minimum of one hour of full scale time.
- The model scale should be selected to allow representation of sufficient architectural detail on the proposed development while including the surrounding context within approximately 400 m of the centre of the proposed development site (typically scales of 1:300 or 1:400 have proven to be effective). Structures and natural features beyond the modelled surroundings shall be appropriately represented in the wind tunnel upwind of the scale model.
- Sensors shall be placed at least every 10 m along a street frontage of the study buildings and at all locations where pedestrians will travel or gather. A typical development project would require a minimum of 50 sensor locations on and around the proposed development to provide adequate coverage.
- The final results shall be presented in both tabular and graphic forms for all the test configurations, with seasonal comfort data and annual safety data.

7.0 Pedestrian Level Wind Study Submission Format

A Pedestrian Level Wind Study will contain and address the below contents for wind studies and analysis criteria. Failure to satisfy the components may result in the application being considered incomplete.

The Application Submission

- State the type of application and the municipal address.
- State the name of the individual and company who has prepared the study.
- Provide 6 hard copies of the Pedestrian Level Wind Study and one digital copy (including the development massing).
- The wind model shall be no smaller than a 1:500 representation of the proposed development and will include all buildings within a minimum of 400 metres of the site, in keeping with the industry standard.

Prior to the Application Submission

- Where a wind tunnel test is to be completed provide an image displaying the proposed "test locations" to the City for approval prior to the simulation (refer to **Figures 1 and 2**).

Existing Context

- Provide the meteorological data used to confirm the wind conditions.
- Provide images which display the prevailing wind directions inset within the current site conditions for each required test date. Highlight the location of the proposed site (refer to **Figure 2**).

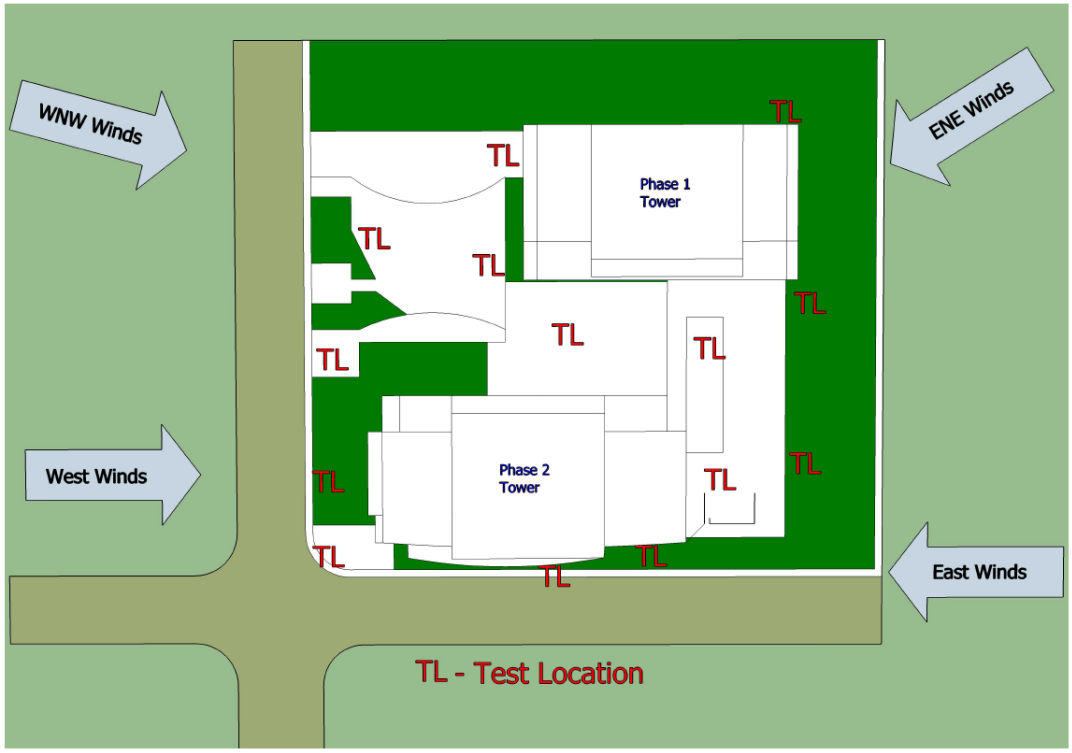
Effects of the Proposal

- Provide an image which displays the existing and proposed pedestrian and amenity area(s) within the proposed development and immediate adjacent area(s) which form part of the "test locations" used to evaluate wind conditions in the analysis area (refer to **Figures 1 and 2**)
- Where a wind tunnel test was completed, provide statistical text information of the resulting wind conditions at the test locations (e.g. prevailing wind directions and speeds) as a result of the proposed development.

Explanation and Assessment

- Provide a written summary of the wind impacts, which include the locations of the impact and type of wind sensitive use where the impact occurs for each test date.
- The pedestrian wind comfort level and safety exceedance are determined by the predicted wind speeds for respective exceeding frequencies as specified in **Section 8.0** Pedestrian Level Wind Study Criteria. The assessment will give consideration to the predicted comfort level and in intended pedestrian usage. In addition, a comparison to existing, and if appropriate future, wind conditions, shall be considered.
- The proposed development shall achieve wind comfort conditions that are considered appropriate for the intended usage (i.e. walking on sidewalks, standing at building entrance areas, and sitting or standing in amenity areas where more passive use is anticipated). If the proposed development produces pedestrian comfort conditions that prove to be less than desirable based on the intended use of unsafe (as per the definitions in **Table 1**) then the developer shall proposed mitigation strategies and/or investigate alternative to the proposed design with the microclimate speciality.
- If applicable, detail the proposed mitigation measures to be adjusted in the development proposal which will minimize or eliminate the resulting wind impacts and describe any mitigating features that have been incorporated into the site and building design. This may require confirmation through submission of a revised site plan and/or building elevations. A condition of Site Plan Approval will be placed to ensure that the recommendations of the wind study are fully implemented, prior to the City releasing any associated securities.
- Overall, the proposed development shall improve on existing wind conditions where possible, and as a minimum, shall not significantly degrade wind conditions especially when considering the safety criteria. Some allowance for degradation of wind comfort levels during the winter months may be deemed to be acceptable due to reduced pedestrian usage of outdoor spaces.

Figure 1: Test Locations



8.0 Pedestrian Level Wind Study Criteria

The criteria to be used for assessment of pedestrian wind conditions have been developed through research and practice. Both mean and gust wind speeds can affect pedestrian comfort, therefore their combined effect is used as the basis of the criteria and defined as a Gust Equivalent Mean (GEM) wind speed. The GEM is defined as the maximum mean wind speed or the gust wind speed divided by 1.85.

A 20% exceedance is used in these criteria to determine the comfort category, which suggests that wind speeds would be comfortable for the corresponding activity at least 80% of the time or four out of five days. Only gust winds are considered in the safety criterion. These criteria for wind forces represent average wind tolerances.

Wind Comfort Criteria

There are four measuring points to evaluate the comfort of the wind speed: sitting, standing, strolling, and walking. These measuring points are to be evaluated at different locations/areas on the development site and immediate adjacent area to ensure that they meet the criteria. Should a proposed development not be able to meet the comfort evaluation criteria, mitigation

measures (e.g. building design, and/or site design measures) are to be included into the design of the building and/or site.

Table 1: Pedestrian Wind Comfort Criteria

Wind Comfort Category	GEM Speed (km/h)	Description
Sitting	≤ 10	Calm or light breezes for outdoor restaurants and seating areas where one can read a paper without having it blown away
Standing	≤ 14	Gentle breezes suitable for main building entrances and bus stops
Strolling	≤ 17	Moderate winds that would be appropriate form window shopping and strolling along a downtown street, plaza, or park
Walking	≤ 20	Relative high speeds that can be tolerated if ones objective is to walk, run, or cycle without lingering
Uncomfortable	> 20	Strong winds of this magnitude are considered a nuisance for most activities, and wind mitigation measures are recommended
Notes: (1) Gust Equivalent Mean (GEM) speed = *max*(mean speed, gust speed/1.85); and **(2)** GEM speeds listed above are based on a seasonal exceedance of 20% of the time between 6:00 and 23:00. The criterion has been met if the wind speeds occur at least 80% of the time or four out of five days.		

Wind Safety Criteria

Wind gusts will be used to measure the safety of the wind on all test locations. Should a proposed development not be able to meet the wind safety criteria, appropriate mitigation measures (e.g. redesign of the site, reduction in height, etc.) will be required to eliminate the safety issue.

Table 2: Pedestrian Wind Safety Criteria

Wind Safety Criterion	Gust Speed (km/h)	Description
Exceeded	≥ 90	Excessive gusts that can adversely affect a pedestrian's balance and footing. Wind mitigation is required
Note: the GEM is based on an annual exceedance of 9 hours or 0.1% of the time for a 24 hour day.		

9.0 Examples of Mitigation Measures

In areas where wind conditions are considered to be unacceptable for the intended pedestrian use or unsafe (as defined in **Table 1**) and will be accessible to pedestrians, wind control mitigation strategies shall be developed and tested to demonstrate efficacy. In more extreme

cases, the developer in consultation with the microclimate specialist may need to investigate and prepare design alternatives that can achieve more acceptable wind conditions.

Wind Control Mitigation Strategies may include the following:

- Building massing changes or alternative designs that are more responsive to the local wind climate.
- Incorporating podiums, tower setbacks, balconies, curved or stepped corners, notches and/or colonnades.
- Strategic use of canopies, parapet walls and wind screens, landscaping, planters, public art and/or other features that prove to be effective for mitigating problematic wind conditions.
- Modifications to the pedestrian usage.

The use of landscaping as part of a mitigation strategy is acceptable but must be selected and sized to be effective at the time of installation. Landscaping can only be recommended as a mitigation measure where the wind conditions are suitable for it to thrive and for its maintenance.

High branching deciduous trees can reduce down washing wind flows in the summer months when they have full foliage. However, they generally do not provide ground level protection from horizontal wind flows. Coniferous trees can provide additional wind protection during the winter months.

The type of trees (i.e., deciduous, coniferous or marcescent), approximate size and location required for wind control shall be specified in the wind study. The landscape architect shall select the species appropriate for the site and which will achieve the stated wind mitigation benefits.

Where extreme wind conditions such as safety exceedances are predicted, hard landscaping (e.g., architectural features, screens, etc.) is strongly recommended over soft landscaping (e.g. trees, shrubs, etc.), as trees may not be able to survive in extreme wind environments.

Examples of Massing Principles to Mitigate Wind Effects

WIND AT STREET LEVEL

When wind hits the windward face of a tall building, the building tends to deflect wind downwards, causing accelerated wind speeds at pedestrian level and around the windward corners of the building.

When introducing a base building or podium with step back, and setting back a tower relative to the base building, the downward wind flow can be deflected, resulting in reduced wind speed at pedestrian level.

The proportions of the base building and tower step backs and their influence on the wind conditions is affected by the heights of surrounding buildings.

WIND BETWEEN BUILDINGS

When the leeward face of a low building faces the windward face of a tall building, it causes an increase in the downward flow of wind on the windward face of the tall building.

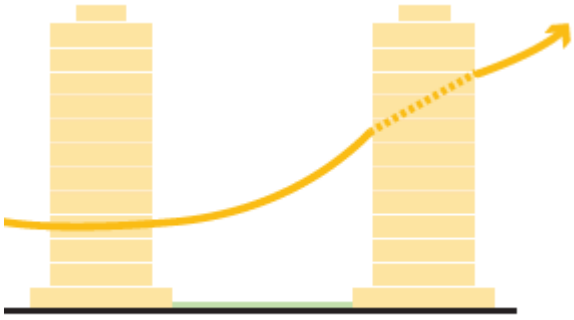
This results in accelerated winds at pedestrian level in the space between the two buildings and around the windward corners of the tall building.

By landscaping the base building roof and providing a tower step back, wind speed at grade can further be reduced, and wind conditions on the base building roof can improve.
Also, a horizontal canopy on the windward face of a base building can improve pedestrian level wind conditions.

DISTANCE BETWEEN BUILDINGS

Wind speed is accelerated when wind is funneled between two buildings located close to one another causing a "wins canyon effect".

The intensity of the acceleration is further influenced by the building heights, size of the facades, and building orientation.



Spacing towers further apart allows for wind to move through more easily.

Confirmation of Proper Implementation

Prior to Site Plan approval for any Building Permit clearance, the following clause shall be included on the Site Plan and all relevant drawings:

> *The microclimate specialist shall confirm, to the satisfaction of the Planning and Economic Development Department that the 'as constructed' buildings and wind mitigation measures are in compliance with the recommendations of the Pedestrian Level Wind Study.*

Prior to the final site works inspection by the Planning and Economic Development Department, the microclimate specialist shall issue a letter confirming that the wind mitigation measures have been installed in accordance with the recommendations of the Pedestrian level wind study.

Hamilton

Terms of Reference: **Visual Impact Assessment for Downtown Hamilton**

1.0 Description

Visual impacts are changes to the scenic attributes of the landscape as a result of land development and the associated changes in the human visual experience of the landscape. The submission of a Visual Impact Assessment (VIA) is a planning submission requirement that includes a visual model and written analysis demonstrating the sensitivity of the visual receptors and the magnitude of change in views.

2.0 Why do we need this?

A VIA may be required in support of a development application to demonstrate that the location, massing, and height of a proposed building will not have a significant impact on the local landscape. With its distinct height, and forested natural character the Niagara Escarpment is a powerful visual feature from Downtown Hamilton. VIAs are required to understand and limit the loss of views to the Niagara Escarpment.

3.0 When is this study required?

A VIA **may** be required for development proposals located on streets identified as View Corridors to the Niagara Escarpment, and properties identified as Locations Where There May Be Impacts to Views, as shown on Appendix "C" – Downtown Hamilton Secondary Plan – Viewshed Analysis.

A VIA **is** required for development proposals on properties identified as Locations Where There Are Impacts to Views, as shown on Appendix "C" – Downtown Hamilton Secondary Plan – Viewshed Analysis.

A VIA is required as part of the submission for the following development applications:

- Official Plan Amendments;
- Zoning By-Law Amendments;
- Site Plan Control applications; and,
- Minor Variance applications.

The requirement for and scope of a VIA will be identified at the Formal Consultation stage of an application.

Where a VIA has been provided at the OPA, ZBA, or MV application stage, a VIA will not be required at the Site Plan application stage provided the proposal has not changed.

4.0 Who should prepare the study?

The VIA should be prepared by a registered architect, a Registered Professional Planner (RPP), Landscape Architect, or a qualified consultant with experience in this field.

5.0 VIA Format

A VIA written assessment shall include a description of the project, the existing visual landscape, and the important scenic resources. The VIA shall also include visual simulations that show what the project will look like, demonstrates the potential project impacts on scenic landscapes, and mitigation measures that would help reduce the visual impacts created by the project. The VIA shall also include the submission of a digital model (KML file format) to be added to the City of Hamilton's 3D baseline mapping for review and analysis.

Written Analysis

A VIA written analysis shall include a description of the project, the existing visual landscape, and the important scenic resources, and include the following:

- METHODOLOGY: the methodology used for the impact analysis; and,

- REGULATORY AND PLANNING DOCUMENTS: a review of regulatory and planning documents and any applicable visual impact policies. The review shall include but not be limited to the Urban Hamilton Official Plan, the Downtown Hamilton Secondary Plan, and Niagara Escarpment Plan.

- LOCAL CONTEXT: the VIA should include a description of the surrounding area including land use, built form, and any scenic landscapes or landmarks. The information should include a description of the physical environment, scenic characteristics, and the nature and extent of human presence.

- VISUAL CHARACTERISTIS: The VIA should identify and describe the sources of visual contrast associated with the project. Visual contrast is change to what is seen by the viewer. Visual impact is both the change to the visual qualities of the landscape resulting from the introduction of visual contrasts, being development, and the human response to the change.

- VIEWSHED AND KEY OBSERVATION POINTS: an important step in the VIA process is to determine the geographic scope of impact assessment in order to limit the area of detailed investigation. Visual impacts are assessed from lands with views of the

development. The VIA should include a viewshed analysis using the elevation and land cover data to determine which parts development are likely to be visible from a designated point or points.

- VIEWSHED MAP: A viewshed map should be included in the VIA showing which areas have views of the development, helping to identify sensitive visual resource areas and other sensitive viewpoints that would have views of the development and may be subject to visual impacts from the development.

Simulation and Model

Visual simulations are visualizations of the proposed project and the surrounding landscape that are used to depict the overall appearance of a proposed project after it is operational. The visual simulation should demonstrate the actual or expected appearance of the landscape and development as closely as possible. The visual simulation should achieve the following:

- Potential visibility of the project through viewshed analysis;
- Impact on the existing conditions;
- Impacts of the development to the existing views to the Niagara Escarpment by providing before and after illustrations of the views;
- Demonstrate the impact to sensitive adjoining uses (single family residential, heritage, open space);
- Demonstrate alternative designs and mitigation measures to preserve important views and scenic landscapes; and,
- Identify existing and proposed streetscape treatment to enhance both the quality and extent of views.

In order for the City to review the findings of the written assessment and simulation the applicant is required to submit a digital model (KML file format) to be inputted into the City's 3D base mapping.

6.0 Other Resources Available

- City-Wide Corridor Planning Principles and Design Guidelines
- Site Plan Guidelines
- Downtown Hamilton Tall Building Study and Guidelines