

March 29, 2022

Mr. Glenn Reinders
Reinders and Law Ltd.
64 Ontario Street North
Milton, ON L9T 2T1

SLR Project No.: 241.30477.00000

Dear Mr. Reinders,

**RE: Pedestrian Wind Comfort – Letter of Opinion
149 AINSLIE STREET NORTH - CAMBRIDGE**

At the request of Reinders and Law Ltd., this letter of opinion by SLR Consulting (Canada) Ltd. (SLR) provides our estimation of the pedestrian wind conditions on the proposed development at 149 Ainslie Street North in Cambridge, Ontario. This letter of opinion is based on our engineering experience with pedestrian wind conditions in the region and is in support of the project's upcoming combined Zoning Bylaw Amendment (ZBA) and Site Plan Control (SPA) application.

BUILDING INFORMATION & SURROUNDINGS

SLR received architectural information on March 14, 2022; this information was used for this letter of opinion. The site is currently occupied by a two-storey commercial building and a parking lot. SLR conducted a site visit on March 5, 2022. Images of the existing site and surroundings are included in **Figures 1a** and **1b**.



Figure 1a: Looking west at the existing site



Figure 1b: Looking southeast at existing site

The proposed development will be an eight-storey apartment building with a total height of approximately 25 m. There is a rooftop garden at the southwest corner of the 3rd Level and an outdoor amenity space at the northeast corner of the 8th Level. The main residential entrance is located on the south facade. Other

secondary entrances are located on the east, west and south facades. In addition, a courtyard on the south side of the proposed development. Grade level areas of interest on-site are shown in **Figure 2**.



Figure 2: Site plan

WIND CLIMATE

Wind data recorded at the Region of Waterloo International Airport in Breslau for the period 1993 to 2020 was obtained and analysed to create a wind climate model. The annual wind distribution diagram (“wind rose”) is shown in **Figure 3**. This diagram illustrates the percentage of time wind blows from the 16 main compass directions. Of main interest are the longest peaks that identify the most frequently occurring wind directions. The annual wind rose indicates that winds approaching from the northwest and southwest quadrants are the most prevalent. The direction from which stronger winds (e.g., greater than 30 km/h) approach are also of interest as they have the highest potential of creating problematic wind conditions, depending upon site exposure and the building configuration. The wind rose in **Figure 3** also identifies the directional frequency of these stronger winds (in yellow). On an annual basis, strong winds occur most frequently from the west, west-southwest, west-northwest, and southwest directions.

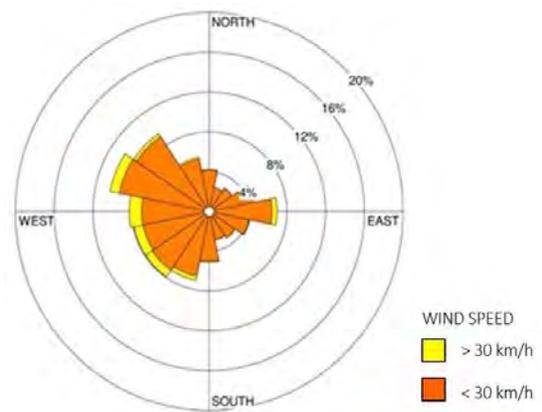


Figure 3: Annual Wind Rose
 (Waterloo International Airport 1993-2020)

PEDESTRIAN WIND COMFORT CRITERIA

There are generally accepted wind comfort levels that are desired for various pedestrian uses. For example, for public sidewalks, wind comfort suitable for **leisurely walking** would be desirable year-round; however, in the winter, windier conditions comfortable for **fast walking**, may occur in harsher wind climates. For main entrances and transit stops, wind conditions conducive to **standing** would be preferred throughout the year but can be difficult to achieve in regions where winter winds are inherently harsh. For outdoor amenity spaces, wind conditions suitable for **sitting** and/or **standing** are generally desirable during the spring, summer, and autumn months. The most stringent category of **sitting** is considered appropriate for cafes, patios, and dedicated seating areas, while for parks **sitting** and/or **standing** would be appropriate in the summer.

The comfort criteria are based on predictions of localized wind forces combined with frequency of occurrence. Climate issues that influence a person's overall "thermal" comfort, (e.g., temperature, humidity, wind chill, exposure to sun or shade, etc.) are not considered in the comfort rating.

PREDICTED PEDESTRIAN WIND CONDITIONS

Currently, the existing wind conditions in the vicinity of the development, including the nearby sidewalks of Ainslie Street North, Market Street and Park Hill Road East, are expected to be suitable for standing year-round. This includes the nearby transit stops along Ainslie Street.

With the construction of the proposed development wind conditions along the nearby sidewalks of Ainslie Street North, Market Street and Park Hill Road East are generally anticipated to remain suitable for standing throughout the year. At the nearby transit stops, wind conditions are also predicted to remain comfortable for standing throughout the year.

Wind conditions on-site are generally expected to be comfortable for sitting or standing throughout the year. The exceptions are near the northwest and southwest corners of the proposed development, due to their exposure to the northwesterly and westerly winds. The prevailing wind flows downwash off the building's facade and are redirected towards the ground, creating local accelerations near the building corners. At the main residential entrance, wind conditions are expected to be conducive to sitting or standing throughout the year, as the entrance facade is recessed from the main building facade. Wind conditions at other secondary entrances are also generally expected to be comfortable for standing throughout the year. Wind conditions in the outdoor courtyard on the south side of the proposed development are predicted to be comfortable for sitting or standing throughout the year. These wind conditions are considered suitable for the intended use.

Wind conditions in the outdoor amenity spaces on the 3rd Level and 8th Level of the proposed development are predicted to be predominantly suitable for standing in the summer and leisurely walking in the winter. If calmer wind conditions are desired, we suggest the design team incorporate local wind control features, such as dense landscaping, local wind screens, etc., along the edges of these amenity spaces. In addition, for the 3rd Level roof garden, horizontal features such as trellises or pergola can be considered for seating areas, particularly on the west half of the space, to reduce the impact of downwashing wind flows from the southwest corner of the building.

CLOSING

Wind conditions on the proposed site, as well as on the surrounding sidewalks, are expected to be comfortable for the intended use at grade. We suggest the design team include wind control measures on the outdoor amenity terraces above grade to provide calmer wind conditions and extend use into the spring and autumn seasons.

Should you have any questions or comments, please feel free to contact us.

Yours sincerely,
SLR Consulting (Canada) Ltd.



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