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Ms. Nancy Shoemaker
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**Re: Pedestrian Level Wind Study – Letter of Opinion
47-49 Willow Road, Guelph, Ontario
RWDI Project #2000454**

Dear Ms. Shoemaker,

Rowan Williams Davies & Irwin Inc. (RWDI) has prepared this Letter of Opinion in support of the development application for the proposed 47-49 Willow Road project. The approach is based on the City of Guelph Pedestrian Level Wind Study Terms of Reference published in May 2019. The objective of this study is to provide a qualitative wind assessment and comment on any potential building design issues related to wind comfort or safety, and to provide conceptual solutions for wind control, where needed.

This Letter of Opinion discusses the potential pedestrian level wind conditions around the proposed project based on a review of the local wind climate, design information provided by the design team and RWDI's experience with wind tunnel testing of similar projects.

PHYSICAL CONTEXT

The site is located at the west corner of Willow and Dawson Road in Guelph, ON. The existing use for the site is a commercial plaza. The immediate surroundings include mid-rise residential buildings to the west (6 storey), north (5 storey) and east (7 storey), with low-rise residential (2.5 storey) to the south.

The proposed project includes two six-storey residential buildings with ground floor commercial use. A portion of the existing commercial plaza will be preserved as part of the proposed project (see Image 1). This assessment is based upon architectural drawings prepared by EDGE Architects dated May 14, 2019.



Image 1: Aerial Views from East (left) and North (right)
(Courtesy of EDGE Architects Ltd)

WIND DATA

Long-term wind records measured at Waterloo-Wellington International Airport were used as reference for the wind climate in the area. The distribution of wind frequency and directionality for summer (May through October) and winter (November through April) seasons are shown in the wind roses in Image 2.

When all winds are considered (regardless of speed), winds from the southwest through northwest and east are predominant on a year-round basis. Strong winds of a mean speed greater than 30 km/h measured at the airport (at an anemometer height of 10 m above grade) occur more often in the winter than in the summer.

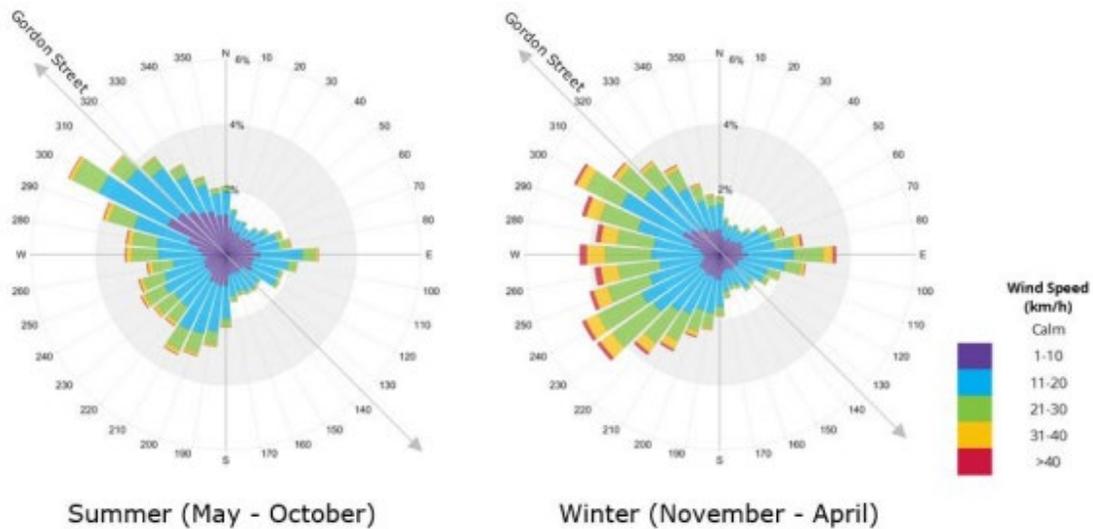


Image 2: Directional Distribution of Winds Approaching Waterloo-Wellington International Airport (1986 - 2016)

CRITERIA

The RWDI pedestrian wind criteria is used for this assessment. This criterion has been developed by RWDI through research and consulting practice since 1974. RWDI's criterion has been widely accepted by municipal authorities, building design and City planning communities, including the City of Guelph. RWDI's criterion illustrated in Image 3 below.



Comfort Category	GEM Speed (km/h)	Description
Sitting	≤ 10	Calm or light breezes desired for outdoor restaurants and seating areas where one can read a paper without having it blown away
Standing	≤ 15	Gentle breezes suitable for main building entrances, bus stops, plazas, and other places where pedestrians may linger
Walking	≤ 20	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering
Uncomfortable	> 20	Strong winds of this magnitude are considered a nuisance for all pedestrian activities, and wind mitigation is typically recommended

Notes:

- (1) GEM speeds are equal to the gust speed divided by 1.85, or the mean speed (whichever is larger); and,
- (2) GEM speeds listed above are based on a seasonal exceedance of 20% of the time between 6:00 and 23:00. Nightly hours between 0:00 and 5:00 are excluded from the wind analysis for comfort since limited usage of outdoor spaces is anticipated.

Safety Criterion	Gust Speed (km/h)	Description
Exceeded	> 90	Excessive gust speeds that can adversely affect a pedestrian's balance and footing. Wind mitigation is required.

Notes:

- (3) Based on an annual exceedance of 9 hours or 0.1% of the time for 24 hours a day.

Image 3: Wind Comfort and Safety Criteria

ASSESSMENT

All of the above information, combined with our experience and engineering judgement, allows us to summarize the wind conditions as follows:

Existing wind conditions would most likely be considered comfortable for *sitting* or *standing* during the summer and *standing* or *walking* in the winter. No current safety exceedances are likely to exist at this site.

The proposed project (see Image 4) will be exposed to the prevailing winds from the northwest compass quadrant, resulting in some increases in wind speeds along the Dawson Road sidewalks adjacent to the property. Even with these increased wind speeds, we expect conditions to be comfortable for *standing* in summer and *walking* in winter. No safety exceedances are predicted to occur with the proposed project in place.

The proposed common amenity area is located upwind of the proposed development and will have conditions similar to those that currently exist. If there is a desire to improve these conditions, then landscaping and/or



porous vertical wind screens installed to the north and west of the amenity area would help protect from prevailing winds.

The building entrances along the north facades of Buildings 1 and 2 are predicted to experience accelerated winds comfortable for *walking* during the winter. These conditions are less than ideal for building entrances. If there is a desire to improve these wind conditions, the addition of architectural wind screens or landscaping upwind (i.e., to the west) of the doors of concern should be considered. Alternatively, the entry doors could be recessed into the façade for enhanced wind protection. The building entrances along the south facades should experience appropriate wind conditions.

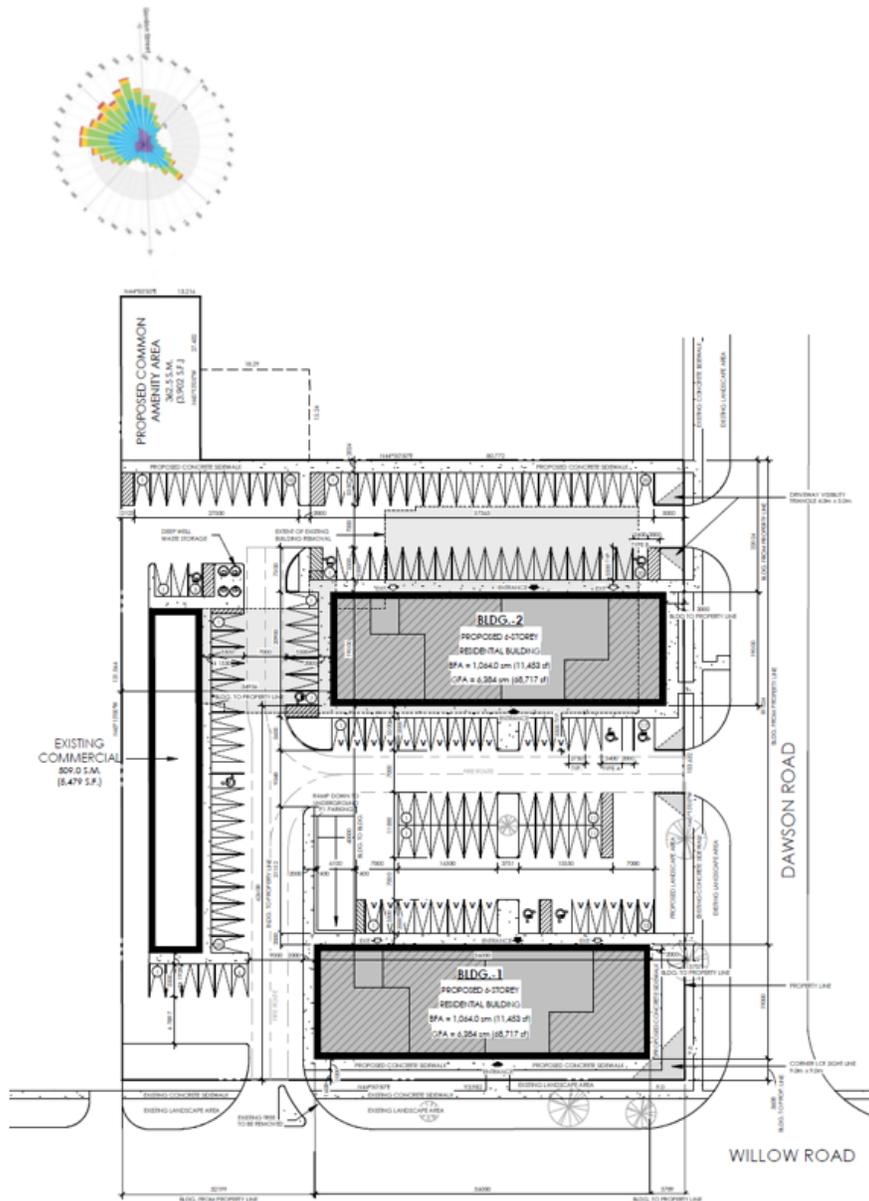


Image 4: Proposed Site Plan



CLOSING

We trust the above assessment satisfies your requirements for this development application with the City of Guelph. Should you have any questions or require additional information, please do not hesitate to contact us.

Yours very truly,

ROWAN WILLIAMS DAVIES & IRWIN Inc.

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