

GRADIENTWIND

ENGINEERS & SCIENTISTS

September 27, 2023

Great Lakes Estates Inc.

3410 South Service Road, Suite G2
Burlington, ON L7N 3T2

Re: Pedestrian Level Wind Opinion Letter
468-474 Millen Road, Hamilton, ON
GWE File No.: 23-152 PLW OL

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Great Lakes Estates Inc. to undertake a preliminary pedestrian wind assessment for the proposed residential development located at 468-474 Millen Road in Stoney Creek (Hamilton), Ontario. The intent of this letter is to provide a professional opinion regarding anticipated pedestrian wind conditions for the site based on drawings provided by Great Lakes Estates Inc. in July 2023, consideration of existing and approved surrounding developments, statistical knowledge of the Hamilton wind climate, and experience with similar projects in Hamilton.

The development site is located on the west end of a parcel of land bounded by Cherry Beach Road to the north, Given Road the east, North Service Road to the south and Millen Road to the west. In the near-field, the site is surrounded by low-rise residential buildings to the north, the Lake Trail Motel to the east, a 9-storey building to the northwest, the Queen Elizabeth Way approximately 50 metres to the south, and Lake Ontario approximately 100 metres to the north. The far-field surroundings (beyond the near-field and within a two-kilometre radius) generally continues the low-rise exposure from the southeast clockwise to the northwest, with an additional cluster of mid-rise buildings to the northwest along Lake Ontario. The site wind conditions are also influenced by the local wind climate, defined statistically in a figure following the main text.

The proposed development comprises a 15-storey residential building with an approximately 'V'-shaped floorplate open to the south, and three levels of below-grade parking accessed via a ramp along the north elevation of the building. At grade, the site features landscaped outdoor amenity space to the south and west, with additional landscaped areas to the north and east. The primary residential entrance is located

along the west elevation fronting Millen Road. The remainder of the ground floor consists of residential units with private patios along the east elevation and building support services in the northwest corner. Above, the building rises with setbacks at the northwest corner of Level 2, the south elevations of Levels 7 and 12, and the north elevation of Levels 11 and 13, before a final setback from the north elevation at Level 15 accommodates a rooftop outdoor amenity with adjacent indoor amenity.

Pedestrian wind comfort is determined by three main factors, including (i) the geometry and orientation of the study building, (ii) shielding and channeling effects created by the massing and relative spacing of surrounding buildings, and (iii) the alignment of the study building with respect to statistically prominent wind directions. For Hamilton, the most common winds occur from the southwest, followed by those from the northeast. The directional preference and relative magnitude of wind speed changes somewhat from season to season.

Considering the proximity of the open exposure of Lake Ontario to the north, the site is expected to be significantly influenced by prominent northeasterly winds, with some buffering provided by the existing vegetation and low-rise residential buildings to the north. Further, the overall low-rise exposure in the remaining directions will provide little buffer to salient southwesterly winds approaching the site, which are additionally expected to be channelled along Millen Road between the relatively taller study building and the opposing existing mid-rise development to the west. Overall, the site and surrounding areas, including sidewalk areas, are expected to experience wind conditions suitable for walking or better throughout the year, with somewhat calmer conditions during the warmer months (Figures 1 and 2, Tag A). Although there is the potential for intermittently uncomfortable conditions near the building corners during the colder months as prominent winds accelerate around the building, the proposed landscape plantings in these areas will buffer wind speeds.

The grade-level outdoor amenities and landscaped areas along the south and west elevations, as well as any additional seating or amenity areas in the landscaped spaces to the north and east, will likely require some mitigation upwind of seating areas such as plantings or raise planters, and/or targeted overhead pergola structures, to ensure calm conditions suitable for sitting or more sedentary activities during the summer (Tag B). Areas along the building façade, such as the private patios to the north and east, the central courtyard area, the various building access points throughout (Tag C), will experience slightly calmer conditions due to the sheltering of the study building itself and cantilevered balconies above, and are expected to be largely suitable for standing or better throughout the year. Further, the canopy over



the primary residential entrance fronting Millen Road will provide reprieve from potential downwash winds.

Concerning the rooftop outdoor amenity, the terrace is largely exposed to Lake Ontario in the north, and is therefore expected to experience standing or better conditions during the summer. To ensure conditions suitable for sitting or more sedentary activities, it will likely be necessary to provide mitigation, such as dense coniferous plantings in raised planters, along the full terrace perimeter, and/or install targeted upwind mitigation and overhead pergolas near seating areas. The exact composition and configuration of potential mitigation can be coordinated with the design team at a later date, if required.

The foregoing opinions are based on knowledge and experience of wind flow patterns around buildings. While these statements are expected to be reliable for the site as a whole. This concludes our preliminary assessment. Please advise the undersigned of any questions or comments.

Sincerely,

Gradient Wind Engineering Inc.



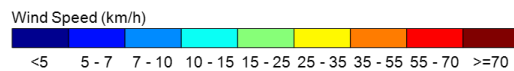
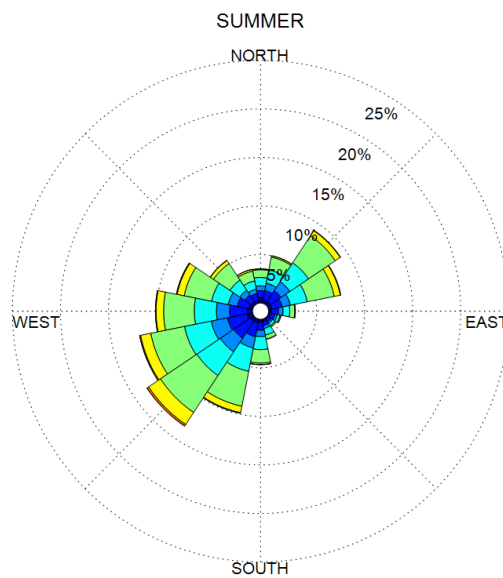
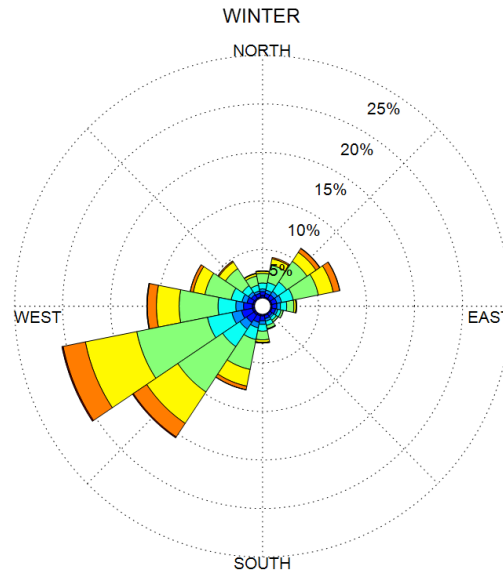
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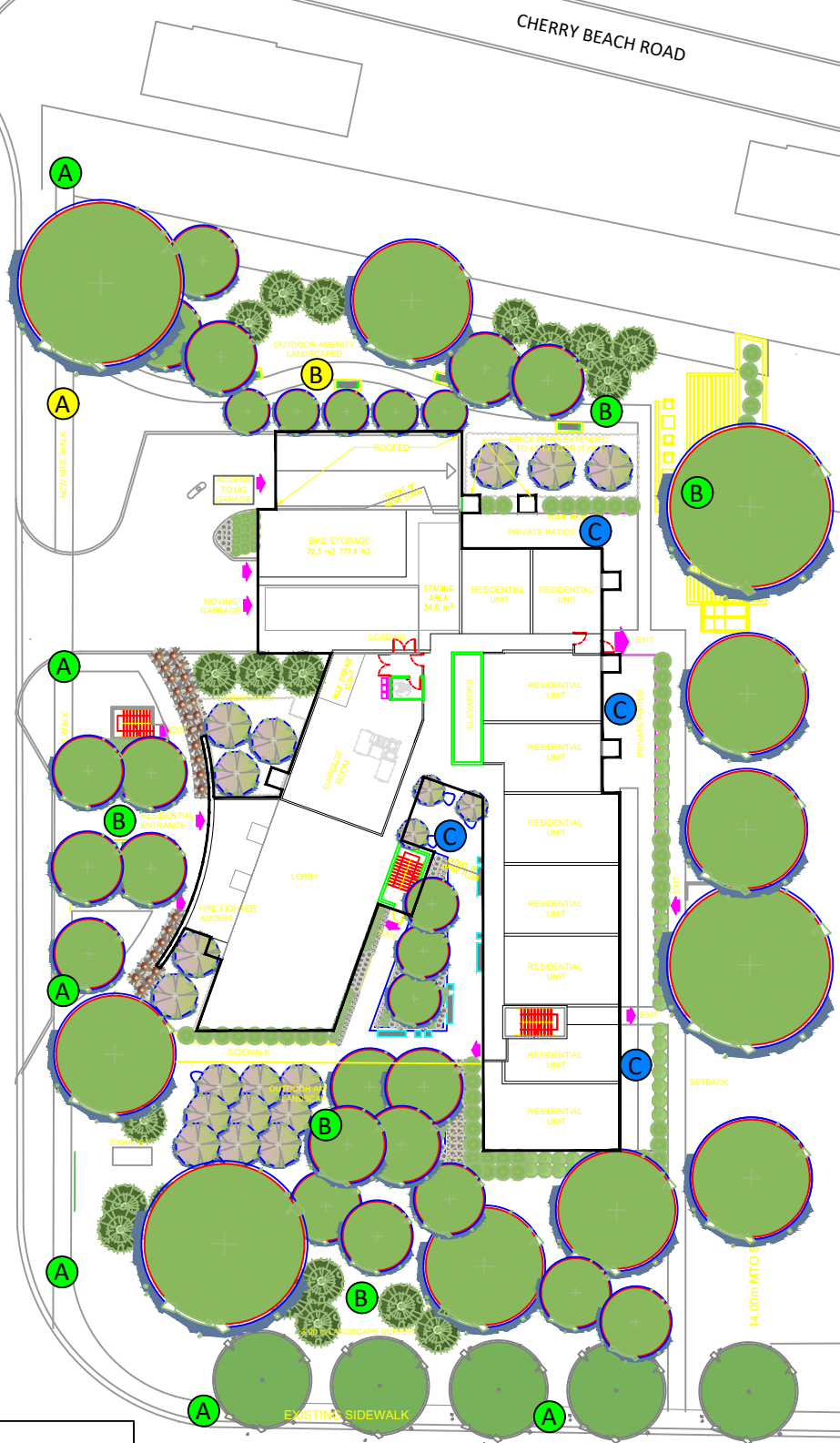
SEASONAL DISTRIBUTION OF WINDS FOR VARIOUS PROBABILITIES HAMILTON INTERNATIONAL AIRPORT, HAMILTON, ONTARIO



Notes:

1. Radial distances indicate percentage of time of wind events.
2. Wind speeds are mean hourly in km/h measured at 10 m above the ground.





PREDICTED # SITTING
 COMFORT # STANDING
 CATEGORY # WALKING

NOTES:
 1. SCALE IS APPROXIMATE.
 2. # PEDESTRIAN LEVEL WIND SENSOR LOCATION.

PROJECT	468-474 MILLEN ROAD, HAMILTON PEDESTRIAN LEVEL WIND ASSESSMENT	
SCALE	1:600 (APPROX.)	DRAWING NO. GW23-152-PLWOL-1
DATE	SEPTEMBER 26, 2023	DRAWN BY A.S.



- PREDICTED COMFORT CATEGORY
- # SITTING
 - # STANDING
 - # WALKING

- NOTES:
- SCALE IS APPROXIMATE.
 - # PEDESTRIAN LEVEL WIND SENSOR LOCATION.

PROJECT	468-474 MILLEN ROAD, HAMILTON PEDESTRIAN LEVEL WIND ASSESSMENT	
SCALE	1:600 (APPROX.)	DRAWING NO. GW23-152-PLWOL-2
DATE	SEPTEMBER 26, 2023	DRAWN BY A.S.