

June 28, 2022

Penady (North Barrie) Limited
33 Yonge Street, Suite 901
Toronto, Ontario
M5E 1G4

Re: Pedestrian Wind Comfort & Microclimate Opinion Letter
303 Cundles Road East, Barrie
Gradient Wind File # 22-184

Gradient Wind Engineering Inc. (GW) was retained by Penady (North Barrie) Limited to undertake a preliminary pedestrian wind assessment for a proposed residential development along the south side of Cundles Road East in Barrie, Ontario. The intent of this letter is to provide a professional opinion regarding anticipated pedestrian wind conditions for the site. This initial commentary is based on architectural drawings prepared by SRN Architects in June 2022.

The proposed development is located on the south side of Cundles Road, to the west of the North Barrie Crossing shopping centre, and to the east of two existing mid-rise residential buildings at 295 and 299 Cundles Road East. To the south of the site is Highway 400. The far-field surroundings comprise primarily low-rise suburban developments in the northwest quadrant, suburban developments followed by forested space and Little Lake in the northeast quadrant, and low-rise commercial developments followed by suburban developments to the south. 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 three separate mid-rise buildings, referred to as buildings B1, B2, and B3, organized from west to east (relative to project north). Building B1 is a 12-storey L-shaped building at the west side of the site. The ground floor features a lobby near the east side of the building and residential units along the perimeter. Building B2, at the centre of the site, is an 8-storey rectangular shaped building. A central residential lobby is accessed from the north and south elevations and



View of study site looking west

residential units are located elsewhere along the perimeter. Building 3, at the east side of the site, is an 11-storey L-shaped building with a lobby at the east portion of the building and residential units in the remainder of the space. Several POPS (Privately Owned Public Space) are located within the site: to the south of Building B1, as well as between B1 and B2, and between B2 and B3. Each of the buildings feature successive step-backs with increasing elevation. For Building B2, an elevated outdoor amenity is provided at the step-back from the east at Level 6.

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 Barrie, the most common winds occur for northwesterly wind directions, as well as winds from the east. Summer months tend to produce calmer wind conditions as compared to other seasons.

For prominent westerly and northwesterly winds, the upwind mid-rise buildings (295 Cundles Street East) will provide sheltering from lower-level winds over the east portion of the site. The west side of the site will be more exposed to these prominent wind directions, on account of the upwind open schoolyard areas. For less-frequent northerly and easterly wind directions, the upwind massing in these directions will provide some buffering for oncoming winds. At a height above their surroundings, Buildings B1 and B3 will be particularly exposed to higher-level winds with minimal upwind resistance. The various step-



backs along the respective north elevations of the buildings will provide some mitigation of downwash winds, while the relatively flat east elevation of Building B3, at the east side of the site, will provide limited protection from downwash winds at the base of the building.

Wind conditions at each of the lobby entrances, recessed within the façade, are expected to be suitable for standing, or better, during each season, which is acceptable. Driveways and walkways through the site are mostly expected to be comfortable for standing, with areas around the base of Building B1, between B1 and B2, and to the east of Building B3 expected to be somewhat windier and suitable for walking. The POPS to the west of Building B3 is expected to be comfortable for sitting during the warmer months and for standing during the winter. The two POPS areas to the west of Building B2 and B3 are expected to be somewhat windier and suitable for standing during the summer and for walking during the colder months. If seating areas are desired for these spaces, it may be necessary to provide vertical wind barriers to the northwest of designated spaces (relative to true north) to deflect oncoming winds.

Regarding the elevated amenity terrace for Building B2 on the east side of Level 6, the mid-rise buildings at 295 Cundles Road East will provide some blockage of northwesterly winds. However, mitigation in the form of vertical wind screening aligned to deflect prominent winds will likely be required to ensure sitting conditions during the warmer months.

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.

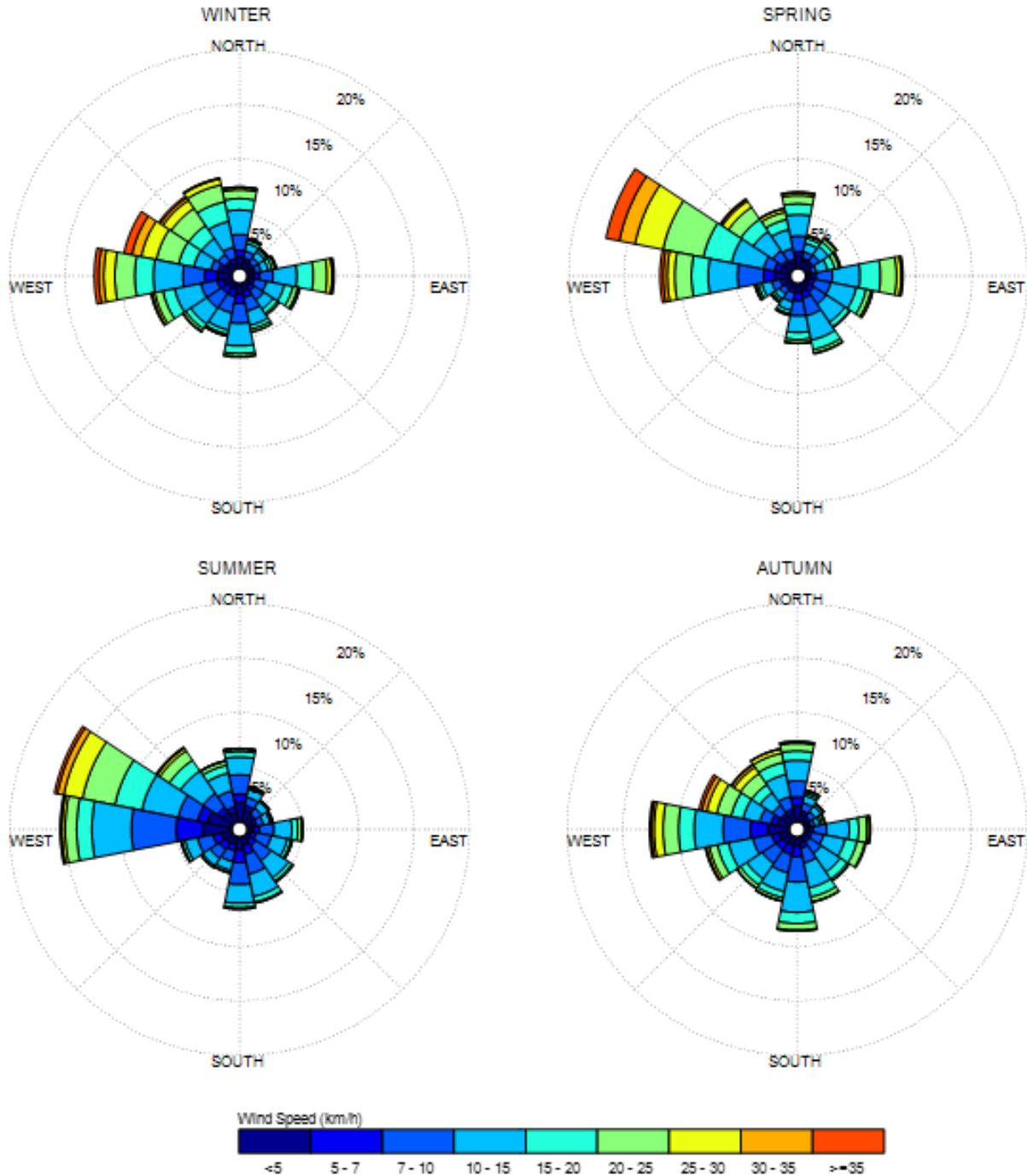
Sincerely,

Gradient Wind Engineering Inc.



Andrew Sliasis, M.A.Sc., P.Eng.
Principal

SEASONAL DISTRIBUTION OF WINDS FOR VARIOUS PROBABILITIES LAKE SIMCOE REGIONAL AIRPORT, BARRIE, 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.

