October 26, 2021

Y Street Capital Inc
4019 Carling Avenue, Suite 201B
Ottawa, ONK2K 2A3

Attn: Vincent Colizza, OAA, MRAIC, AIA
Vincent P. Colizza Architects Inc.
vcolizza@colizzaarchitects.com

Dear Mr. Colizza:

Re: Pedestrian Wind Comfort Qualitative Assessment
255 Richmond Road, Ottawa
Gradient Wind File: 21-327 DT PLW

Gradient Wind Engineering Inc. (Gradient Wind) was retained to provide a qualitative evaluation of pedestrian wind comfort for the proposed development in advance of a detailed computer simulation currently in progress. This letter provides our assessment based on overall building renderings and architectural drawings provided by your office (Colizza Architects) Version 10, dated October 14, 2021, consideration of existing and approved future surrounding buildings, knowledge of the Ottawa wind climate, and experience with similar projects in the Ottawa area.

1. TERMS OF REFERENCE

The proposed development comprises a nine-storey building with an 'L' shaped plan form located at the northwest corner of Richmond Road and Tweedsmuir Avenue in Ottawa. Three below grade parking levels occupy the full site on a quadrilateral, nearly rectangular, footprint. The floor plans vary on each level with the biggest changes occurring above level four due to setbacks progressively on the north elevation at higher levels. The ground floor contains residential functions, common amenity spaces and double height retail spaces occupying the Richmond Road half of the south elevation. The indoor amenity spaces at the northwest quadrant of the ground floor also connect to an outdoor patio at the north facing corner of the

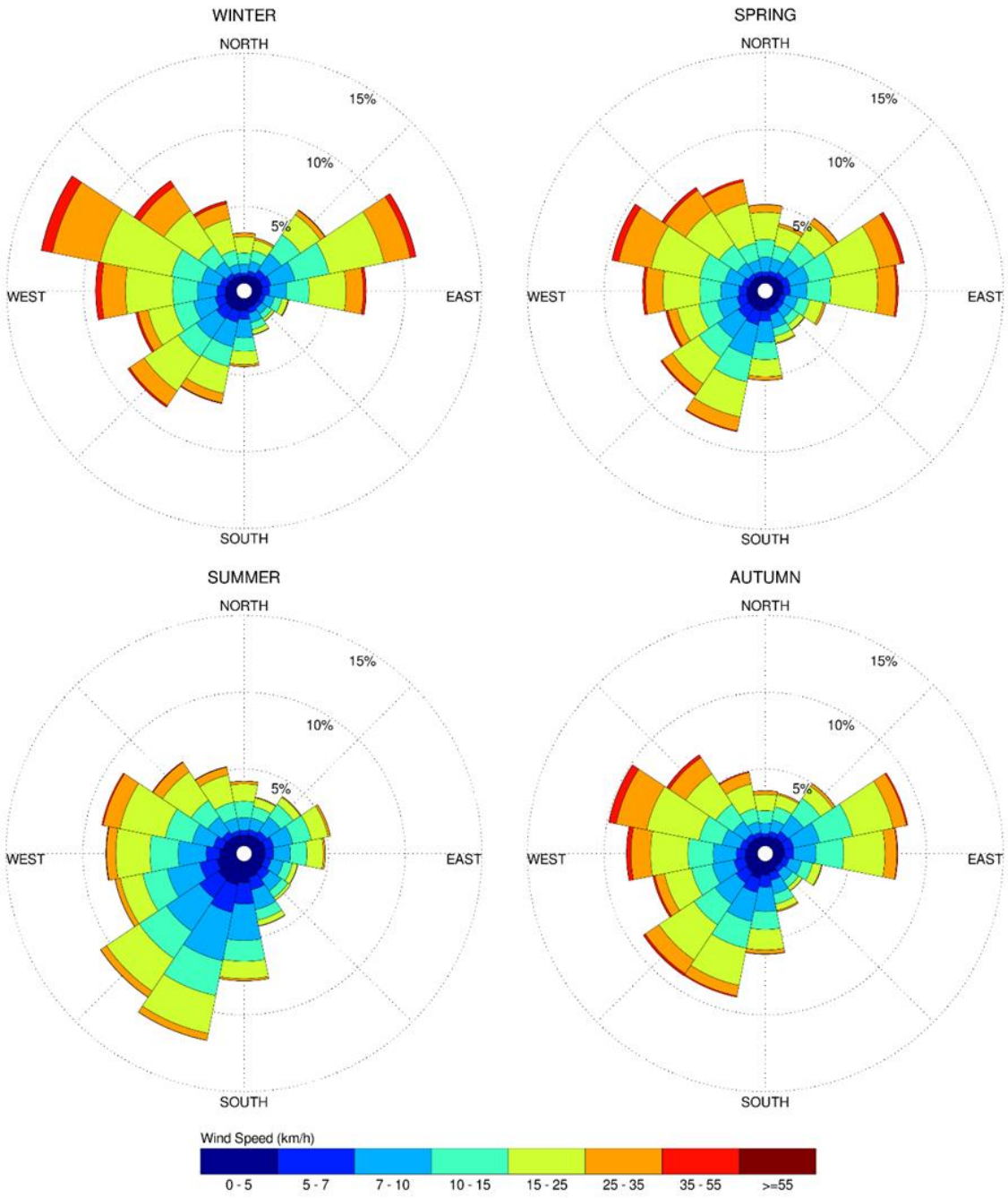
building. Private terraces begin at level four on the north elevation and continue to level seven. At level eight the building footprint reduces to create large private terraces around the full perimeter. Private balconies, either recessed or cantilevered, serve the majority of the remaining suites. The main condominium entrance and ramp to underground parking occur side-by-side on Tweedsmuir Avenue. Figure 1 illustrates isometric views of the proposed building from the northwest and southeast perspectives including balconies and terraces. The south building elevation overlooks Richmond Road.

FIGURE 1: NORTHWEST (LEFT) AND SOUTHEAST (RIGHT) PERSPECTIVES – 255 RICHMOND ROAD

1.1 Ottawa Wind Climate

The statistical model of the Ottawa wind climate is illustrated on the following page and indicates the directional character of local winds on a seasonal basis. The plots illustrate seasonal distribution of measured wind speeds and directions in kilometers per hour (km/h). Probabilities of occurrence of different wind speeds are represented as stacked polar bars in sixteen azimuth divisions. The radial direction represents the percentage of time for various wind speed ranges per wind direction during a 40-year measurement period. The preferred wind speeds and directions can be identified by the longer length of the bars. For Ottawa, the most common winds occur for westerly wind directions, followed by those from the east, while the most common wind speeds are below 36 km/h. The directional preference and relative magnitude of the wind speed varies somewhat from season to season, with the summer months displaying the calmest winds relative to the remaining seasonal periods.

SEASONAL DISTRIBUTION OF WIND
OTTAWA MACDONALD-CARTIER INTERNATIONAL AIRPORT, OTTAWA, 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.

1.2 Pedestrian Wind Comfort Guidelines and Safety Criteria

Pedestrian comfort and safety criteria are based on the mechanical effects of wind without consideration of other meteorological conditions (i.e., temperature, relative humidity). The comfort criteria assume that pedestrians are appropriately dressed for a specified outdoor activity during any given season. Five pedestrian comfort classes are based on 80% non-exceedance mean wind speed ranges, which include (1) Sitting; (2) Standing; (3) Strolling; (4) Walking; and (5) Uncomfortable. More specifically, the comfort classes and associated mean wind speed ranges are summarized as follows:

1) **Sitting:** Mean wind speeds no greater than 10 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 16 km/h.

2) **Standing:** Mean wind speeds no greater than 14 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 22 km/h.

3) **Strolling:** Mean wind speeds no greater than 17 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 27 km/h.

4) **Walking:** Mean wind speeds no greater than 20 km/h occurring at least 80% of the time. The equivalent gust wind speed is approximately 32 km/h.

5) **Uncomfortable:** Uncomfortable conditions are characterized by predicted values that fall below the 80% target for walking. Brisk walking and exercise, such as jogging, would be acceptable for moderate excesses of this criterion.

The pedestrian safety wind speed criterion is based on the approximate threshold that would cause a vulnerable member of the population to fall. A 0.1% exceedance gust wind speed of 90 km/h is classified as dangerous. The gust speeds, and equivalent mean speeds, are selected based on the Beaufort Scale which describes the effects of forces produced by varying wind speed levels on objects. Gust speeds are included because pedestrians tend to be more sensitive to wind gusts than to steady winds for lower wind speed ranges. For strong winds approaching dangerous levels, this effect is less important because the mean wind can also create problems for pedestrians.

2. ANTICIPATED PEDESTRIAN WIND COMFORT

The building is in a low-density mixed residential and commercial neighbourhood in the Westboro district of Ottawa. The site is surrounded generally by buildings of less than four-storeys for most directions except for isolated taller buildings at greater distances. One exception is a similar size condominium building on the southeast diagonal corner to the site. This existing building blocks east and southeast winds from approaching the site.

The study building itself benefits from the stepped massing on the two sections of the north elevation. The terraced floors serve to minimize prominent westerly winds from downwashing to grade level including the outdoor amenity patio at the base of the north elevation and also to disrupt wind from concentrating over private terrace at higher floors.

Hence, based on consideration of the subject site, influence of surrounding buildings, and the relationship to the local wind climate, the sidewalks, and neighbouring areas around the base of the building will not be adversely impacted by the presence of the new building. Prominent winds from the southwest clockwise to north are prevented from reaching ground level by the stepped building profile above level four which divert winds upwards. Winds from the northeast clockwise to south are less common and weaker as compared to westerly winds. East and southeast winds are blocked by an existing building of similar massing on the southeast corner of the same intersection. Wind comfort over the outdoor patio at level one at the north facing west corner is expected to be suitable for sitting during the summer and shoulder months of spring and autumn according to the stated guidelines in Section 1.2. Elevated private terraces and balconies are expected to be comfortable for most of the time year-round.

3. CONCLUSIONS

Based on site exposures, and favourable massing of the study building itself, wind conditions at grade level are expected to be comfortable for a wind range of pedestrian uses year-round. The main condo building entrance on Tweedsmuir Avenue is expected to experience calm wind conditions year-round. Retail entrances on Richmond Road are also expected to be suitable for regular pedestrian access, (standing, strolling and walking activities). Private terraces and balconies are expected to experience comfortable conditions during the three warmer seasons of the year and acceptable wind comfort during the winter months. No dangerous wind conditions are expected to occur over the site.

The forgoing statements and conclusions apply to common weather systems, during which no dangerous or consistently strong wind conditions are expected anywhere over the study site. During extreme weather events not considered here (e.g. thunderstorms, tornadoes, and downbursts), pedestrian safety is the main concern. However, these events are short-lived and infrequent and there is often sufficient warning for pedestrians to take appropriate cover.

This concludes our qualitative assessment of pedestrian wind comfort. Please advise the undersigned of any questions or comments.

Sincerely,

Gradient Wind Engineering Inc.

Vincent Ferraro, M.Eng., P.Eng.
Managing Principal

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