September 27, 2022

21 John Dev Inc.
31 Scarsdale Road, Unit 5
North York, ON M3B 2R2

Attn: Stephanie Bonic, Senior Development Manager
sbonic@devron.com

Dear Ms. Bonic:

Re: Air Quality and Land Use Compatibility Assessment
13-21 John Street and 36-40 South Station Street, Toronto
Gradient Wind File 22-215-Land Use Compatibility

1. INTRODUCTION AND TERMS OF REFERENCE

Gradient Wind Engineering Inc. (Gradient Wind) was retained by 21 John Dev Inc. to undertake a Land Use Compatibility study for the proposed development located at 13-21 John Street and 36-40 South Station Street in Toronto, Ontario. The complete scope of work within our mandate includes a preliminary review and a professional opinion in terms of expected air quality and noise impacts on the development, such as the impact of emissions from nearby commercial and industrial sources as applicable. The study is based on the Ontario Ministry of Environment, Conservation and Parks (MECP) Land Use Compatibility Guidelines (D-Series) and other relevant MECP guidelines, the City of Toronto Traffic Related Air Pollution (TRAP) report[1], as well as digital maps received from the City of Toronto. This report complements an air quality, and noise and vibration feasibility report prepared by others (ref. BCX Environmental Consulting report, *Land Use Compatibility Assessment – Air Quality*, dated September 19, 2022, and HGC Engineering report, *Noise and Vibration Feasibility Study*, dated September 21, 2022, respectively).

The focus of this land use compatibility study is the subject site located at the northwest corner on a parcel of land bordered by South Station Street to the north, Lawrence Avenue West to the southeast,

[1] City of Toronto. *Avoiding the TRAP: Traffic-Related Air Pollution in Toronto and Options for Reducing Exposure*, October 2017

Weston Road to the southwest, and John Street to the west. Throughout this report, Lawrence Avenue West is referred to as project east.

The proposed development comprises a near rectangular 40-storey mixed-use residential building topped with a mechanical penthouse level (MPH), rising above an eight-storey podium. Above below-grade parking, the ground floor includes a residential lobby to the east with main entrances at the northeast and southeast corners of the proposed development, retail space to the west, indoor amenity to the north, and central elevator core, loading space, and shared building support spaces. Access to below grade parking is provided by a ramp to the south of the proposed development via a laneway which extends from South Station Street to John Street, from the northeast clockwise to the southwest of the subject site. Level 2 includes a day care to the west and residential units throughout the remainder of the level. Levels 3-6 and 8-40 are reserved for residential use. Level 7 includes a fitness centre to the west and residential units throughout the remainder of the level. Amenity terraces are situated at the southwest corner at Level 2 and to the west at Levels 7 and 9. Private terraces are situated at the southeast corner at Level 2, to the west at Level 5, to the north at Levels 6-8, and at the northeast corner at Level 9. This assessment is based on the architectural drawings provided by 3XN in July and August 2022.

The site is surrounded by low-rise commercial buildings in all compass directions with a mid-rise commercial building to the south-southeast, and high-rise mixed-use residential buildings to the southwest, northwest, and east-southeast. Notably, Canadian Pacific Railway (CP Rail) and GO Transit-Metrolinx railways extend from the northwest to the east, approximately 70 m from the midway of the corridors to the northeast of the subject site. In addition, a mixed-use residential development, referred to as “Weston Park Development”, comprising two towers (28 and 38 storeys) is proposed (awaiting OPA and ZBA approval) at 1871-1885 Weston Road located approximately 150 m to the southeast of the subject site.

The relevant pollution sources surrounding the site include existing nearby industrial/commercial facilities. Other facilities which could produce adverse effects on a neighbouring property include railway transportation corridors and/or associated lands/buildings. The study site is located approximately 45 m to the southwest of the Metrolinx Weston Subdivision and 80 m southwest of the CP Rail. Additionally, roadways and railways are not considered within the MECP D-Series guidelines. Odour and air quality impacts from transportation sources are addressed in Section 5.

The sources of transportation noise impacting the site include Weston Road, Lawrence Avenue West, the Metrolinx GO Transit corridor, as well as the CP Rail corridor. During Site Plan Control submission stage, a detailed transportation noise analysis will be required to determine the appropriate noise mitigation measures to ensure indoor noise levels comply with MECP NPC-300 noise guidelines. The current land use compatibility assessment also provides commentary on the potential impact of existing and future nearby stationary sources on the subject sites. As the nearest railway corridor is within 75 m of the site's property line, impacts from ground vibrations should also be considered. As previously mentioned, a transportation noise and ground borne vibration feasibility assessment has been prepared by others at this time.

It should be noted that information regarding complaints and/or concerns with regards to air quality and/or noise are predominantly obtained via a Freedom of Information (FOI) request made to the Ministry of Ontario Freedom of Information Office. Complaint history gathered from this request is typically a useful tool during the preliminary evaluation stage of the nearby facilities. However, taking into account the exceptionally long processing time necessary for each FOI request, in addition to the intrinsic nature of the focus area and its surroundings, Gradient Wind concluded that the information gathered from the FOI request would not be a crucial aspect of the analysis and would likely have a negligible impact on the overall findings.

2. METHODOLOGY OF AIR QUALITY ASSESSMENT

2.1 Identifying Critical Points of Impingement

The critical points of impingement for this study include fresh-air intakes, public sidewalks, walkways, building entrances, balconies, and terraces/green roofs devoted to common amenity space. Different receiver location types can have varying exposure times and sensitivities to pollutants. For instance, fresh-air intakes continuously provide air to the building's mechanical systems and can affect a large number of the building's occupants, making them the most sensitive. Main entrances operate intermittently, predominantly during daytime hours; therefore, the sensitivity of these locations is lower.

2.2 Identifying Emissions Sources

Following the definition of the critical points of impingement, a review of the study area was conducted to locate sources of airborne pollutants and odours. In general, emission sources that are considered as potentially influential to residential properties include nearby, existing commercial/industrial facilities.

Industrial processes are bound by the requirements of Section 9 of the Environmental Protection Act (EPA) R.S.O 1990 and Ontario Regulation (O. Reg.) 419/05 - Air Pollution and Local Air Quality. Section 9 of the Environmental Protection Act states that "*No person shall, except under and in accordance with an environmental compliance approval, use, operate, construct, alter, extend or replace any plant, structure, equipment, apparatus, mechanism or thing that may discharge or from which may be discharged a contaminant into any part of the natural environment other than water"*. Despite compliance to Section 9 of the EPA, a facility may be liable under Section 14 of the EPA if they permit the discharge of a contaminant, including odour, which causes an adverse effect. Under O. Reg 419/05 "*a person shall not discharge a contaminant or cause or permit the discharge of a contaminant into the natural environment, if the discharge causes or may cause an adverse effect*".

In order to obtain and maintain an Environmental Compliance Approval (ECA) (formerly referred to as a Certificate of Approval (CoA)), the emitting source must show compliance with O. Reg. 419/05. Compliance with O. Reg. 419/05 for air emissions is shown through an Emissions Summary and Dispersion Modelling (ESDM) report. An ESDM report quantifies all emissions from a facility and must demonstrate, through air dispersion modelling, that contaminant concentrations are below standards prescribed in O.Reg 419/05 at all points of impingement.

However, some industries may be exempt from Section 9 depending on the type of industry and operation occurring on site but are still required to be considered for planning purposes through other assessments (e.g., stationary noise studies as per NPC-300 guidelines).

To minimize the potential for adverse impacts of industrial activities on sensitive land uses, the MECP has provided guidelines for adequate buffering of incompatible land uses under "Guideline D-6 Compatibility Between Industrial Facilities and Sensitive Land Uses". The minimum separation distances are based on both the size of a facility and the scope of industrial activities within the facility, classified as Class I, II, or III, for light, medium and heavy industrial uses, respectively. Table 1 summarizes the recommended separation distance and potential area of influence for each class (see Figures 1 and 2). A sensitive development may be permitted within an industrial influence zone if appropriate air quality studies are undertaken and potential causes of adverse effects are mitigated.

TABLE 1: D-6 RECOMMENDED SEPARATION & INFLUENCE AREA

Class	Minimum Recommended Separation Distance (m)	Potential Influence Area (m)
I	20	70
II	70	300
III	300	1000

3. AIR QUALITY ASSESSMENT RESULTS

Based on a review of the surroundings via aerial imagery and a search of the MECP "Access Environment" database of registered ECA and EASR permit holders, there are a number of industrial-use properties surrounding the site within 1000 m of the study site. Our findings indicate there are three active Class I industries within the respective potential influence area. No active Class II or Class III industries were found within the potential influence area.

Class I Industries

26 Pine Street

The property at 26 Pine Street, known as Waycred Logistics, is classified as a warehousing and freight transportation service facility. The site does not have an active ECA at the time of this writing. The facility is located approximately 580m from the nearest study site property line which is beyond the potential influence area for Class I facilities. The facility has two small scale rooftop units (RTU) which are typical for this building type. There is evidence that suggests the processes at the facility take place primarily indoors. The facility is adjacent to existing residential buildings to the east along Pine Street.

Due to the setback distance from the study site, the size and operations of the facility, and its proximity to existing residential dwellings, no significant sources of emissions, odours or noise are expected from the facility onto the study site.

20 Pine Street

The property at 20 Pine Street, known as Reverso Manufacturing Inc., is classified as a fireplace manufacturer and supplier. The site does not have an active ECA at the time of this writing. The facility is located approximately 606m from the nearest study site property line which is beyond the potential

influence area for Class I facilities. The facility has three small scale rooftop units (RTU) which are typical for this building type. There is evidence that suggests the processes at the facility take place primarily indoors. The facility is adjacent to existing residential buildings to the east along Pine Street.

Due to the setback distance from the study site, the size of the facility, and its proximity to existing residential dwellings, no significant sources of emissions, odours or noise are expected from the facility onto the study site.

4 Pine Street

The property at 4 Pine Street, known as Ontario Heating, is classified as a heating equipment supplier. The site does not have an active ECA at the time of this writing. The facility is located approximately 626m from the nearest study site property line which is beyond the potential influence area for Class I facilities. The facility has two small scale rooftop units (RTU) which are typical for this building type. There is evidence that suggests the processes at the facility take place primarily indoors. The facility is adjacent to existing residential buildings to the east along Pine Street.

Due to the setback distance from the study site, the size of the facility, and its proximity to existing residential dwellings, no significant sources of emissions, odours or noise are expected from the facility onto the study site.

Obsolete Industries

1965 Lawrence Avenue West

The property at 1965 Lawrence Avenue West was an industrial bakery operated by Weston Foods (Canada) Inc. According to Ontario's Business Registry website, the property status is considered inactive. As such, the existing ECA (#9358-9YPRVA) and EASR (#R-003-9389868259) reports are considered obsolete. Due to the site's inactivity, no significant sources of emissions, odours or noise are expected from the facility onto the study site.

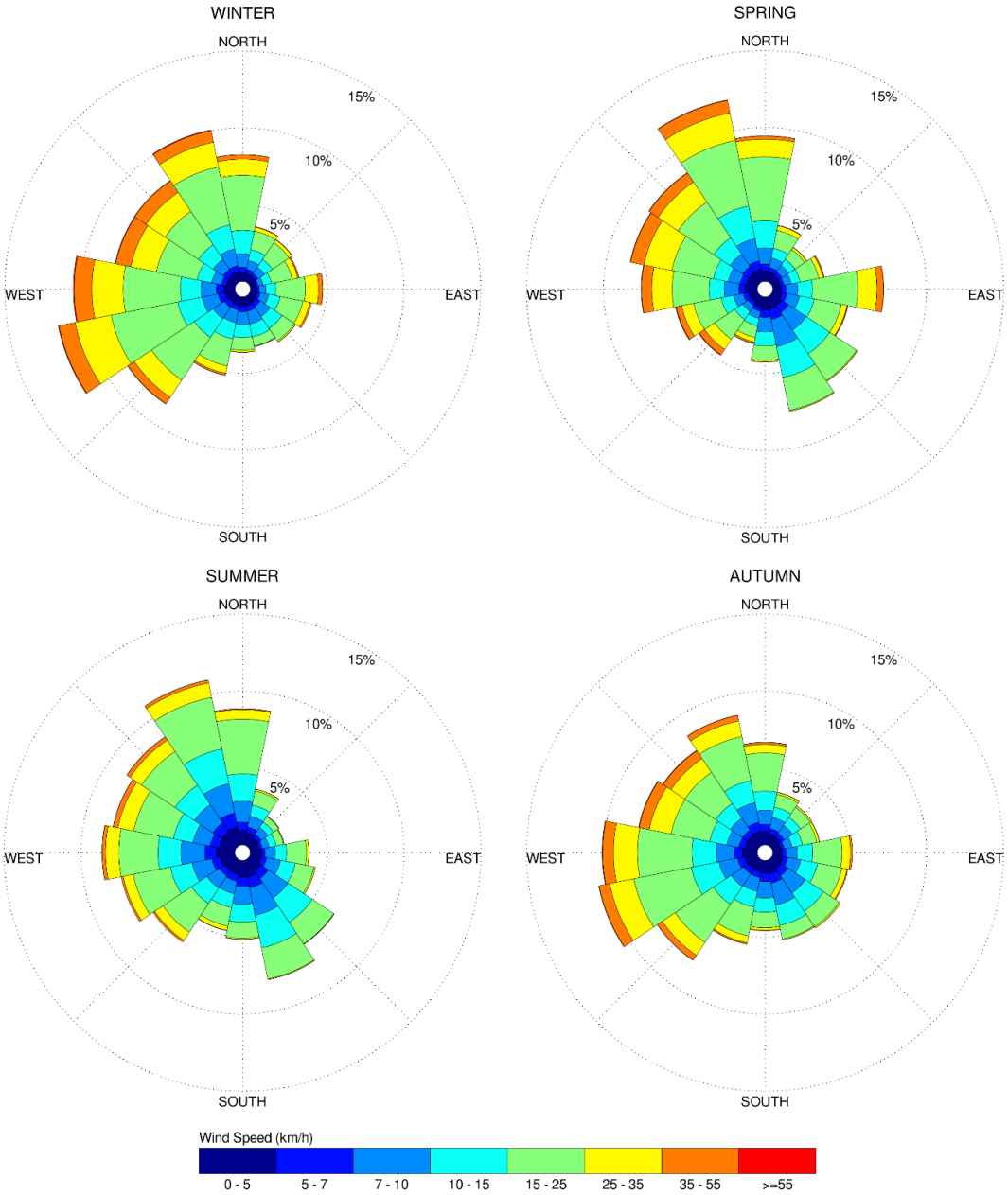
The results of the current analysis indicate that no air quality mitigation measures are required at any of the nearby facilities.

3.1 Meteorological Data Analysis

A statistical model for winds in Toronto was developed from approximately 40-years of hourly meteorological wind data recorded at Lester B. Pearson International Airport and obtained from Environment and Climate Change Canada. Wind speed and direction data were analyzed for each month of the year in order to determine the statistically prominent wind directions and corresponding speeds, and to characterize similarities between monthly weather patterns. Based on this portion of the analysis, the four seasons are represented by grouping data from consecutive months based on similarity of weather patterns, and not according to the traditional calendar method.

The statistical model of the Toronto area wind climate, which indicates the directional character of local winds on a seasonal basis, is illustrated on the following page. 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 the measurement period. The common wind speeds and directions can be identified by the longer length of the bars. For Toronto, the most common winds concerning pedestrian comfort occur from the southwest clockwise to the north, as well as those from the east. 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
LESTER B. PEARSON INTERNATIONAL AIRPORT, TORONTO, 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.

4. STATIONARY NOISE IMPACTS

4.1 Existing And Future Buildings onto 13-21 John Street and 36-40 South Station Street

Gradient Wind investigated the potential stationary noise impacts from nearby existing and future developments surrounding the study site. As previously mentioned, the site is surrounded by low-rise commercial buildings in all compass directions with a mid-rise commercial building to the south-southeast, and high-rise mixed-use residential buildings to the southwest, northwest, and east-southeast.

Regarding the current existing properties surrounding the site, the property to the east-southeast at 1901 Weston Road is considered to be the property with the largest number of exposed mechanical equipment nearest to the subject site. Based on satellite imagery, the building is serviced by standard HVAC equipment for the building type. The primary mechanical equipment is positioned on the roof deck and the mechanical penthouse. The property is situated approximately 43m from the study site. With that notion, stationary noise impacts from existing properties onto the study site are considered negligible.

Regarding the future proposed mixed-use residential development located at 1871-1885 Weston Road, stationary noise impacts are expected to be insignificant as mechanical equipment typically resides in the mechanical penthouse level or on the roof deck. In addition, the property is situated approximately 150m to the southeast of the study site which is typically beyond the potential influence radius for HVAC equipment. It is advised that the proponent of the proposed mixed-use development conduct a detailed stationary noise analysis to ensure compatibility with the surrounding existing and future proposed developments, such as 13-21 John Street and 36-40 South Station Street. However, stationary noise levels may be masked by traffic noise levels from Weston Road and the railway corridors, which are considered the dominant sources of noise.

4.2 13-21 John Street and 36-40 South Station Street onto Existing and Future Buildings

Stationary noise impacts from the proposed development onto the surroundings and itself would be addressed at a future phase once the mechanical equipment design has progressed and information becomes available. Stationary noise sources associated with the development could include rooftop air handling units, cooling towers or dry coolers, and emergency generators. Noise from these sources can

be controlled to acceptable limits established by MECP by judicious selection of the equipment, locating the equipment on a high roof away from nearby residential receptors, and where necessary, installing silencers or noise screens.

5. TRANSPORTATION AIR QUALITY AND NOISE IMPACTS

5.1 Noise

The primary sources of transportation noise impacting the site include Weston Road, Lawrence Avenue West, the Metrolinx GO Transit corridor, as well as the CP Rail corridor. The subject property is considered compatible with existing transportation noise sources with the inclusion of noise mitigation measures, such as upgrading building components, ventilation requirements, and Warning Clauses. It is Gradient Wind's understanding that a transportation noise feasibility assessment has been prepared by others at this time.

5.2 Air Quality

Similarly, the dominant sources of transportation emissions include Weston Road, Lawrence Avenue West, the Metrolinx GO Transit corridor, as well as the CP Rail corridor. This is based on their distance relative to the subject site as well as their transportation classifications.

Roadways and railways are not considered within the MECP D-Series guidelines, however the City of Toronto has created a report detailing the impacts of transportation traffic pollution onto sensitive buildings and ways to mitigate such impacts. This report is titled "*Avoiding the TRAP: Traffic-Related Air Pollution in Toronto and Options for Reducing Exposure*".

Based on the findings of the report, emission impacts due to Lawrence Avenue West are expected to be less significant compared to emission impacts due to Weston Road and the railway corridors primarily due to the separation distance; closer transportation sources typically have greater emission impacts mostly at the lower floors.

The following is a list of a few suggested mitigation strategies presented in the TRAP report to address air pollution impacts from transportation sources:

- Implementing barriers between sources and sensitive areas (i.e., physical or vegetation).

- Consideration for the location and orientation of individual buildings and outdoor amenity areas (i.e., position sensitive areas as far as possible from roadways and buffered by transitional uses).
- Mechanical building ventilation with Minimum Efficiency Reporting Value (MERV) 8 certification particulate filters.
- Where possible, only opening windows on the side of buildings that face away from TRAP sources.
- Locating ventilation intakes away from transportation sources (i.e., the highest point of the building).

It should be noted that only opening windows on the side of buildings that face away from TRAP sources may not be feasible from a design and administrative perspective. Therefore, it is important to include appropriate ventilation systems in the sensitive spaces such as centralized air conditioning, or similar equipment, to allow residents to keep windows closed and achieve a comfortable indoor environment.

With that notion, the subject property is considered to be compatible with existing TRAP sources with the inclusion of select air quality mitigation measures described above. As these are suggested mitigation strategies, it is advised that a detailed assessment be completed at a future stage to determine the appropriate air quality mitigation specific to the development.

6. IMPACTS ON EMPLOYMENT LANDS

In recent years, the neighbourhood of the proposed study site has not experienced much change from a development perspective. The area comprises Commercial Residential in all compass directions with Utility and Transportation areas beyond to the north, as well as Residential Apartment and Residential areas beyond to the south. In addition, the land to the southeast at 1871-1885 Weston Road is proposed to accommodate a mixed-use multi-tower development which will introduce additional employment and residential opportunities. With that notion, should the proposed development at 13-21 John Street and 36-40 South Station Street be granted approval for residential use, it is not expected to have any land compatibility issues or conflicts with the existing or future employment lands.

7. CONCLUSIONS

In keeping with standard building construction and good engineering practice, as well as City of Toronto and MECP guidelines, the following comments and recommendations are provided to be incorporated

into the design of the building to ensure indoor air quality and noise levels are maintained to acceptable standards for the proposed development:

(i) Based on the findings of this report, Gradient Wind concludes that the residential sensitive land use is feasible.

(ii) The development can incorporate mitigation strategies to address emission impacts from TRAP sources, as outlined in Section 5.2.

(iii) In line with standard building practices, appropriate provisions include the design, installation, operation, and maintenance of air filtration at the fresh air intakes of the mechanical systems serving all habitable areas, including the addition of air conditioning. The areas that would not require filtered air would be parking garages and utility spaces. Minimum Efficiency Reporting Value (MERV) 8-10 certification filters should be used for this development in all occupied spaces. Details of the air filtration system will be designed by the mechanical engineers during the detailed design phase.

This concludes our land use compatibility study and report. If you have any questions or wish to discuss our findings, please advise us. In the interim, we thank you for the opportunity to be of service.

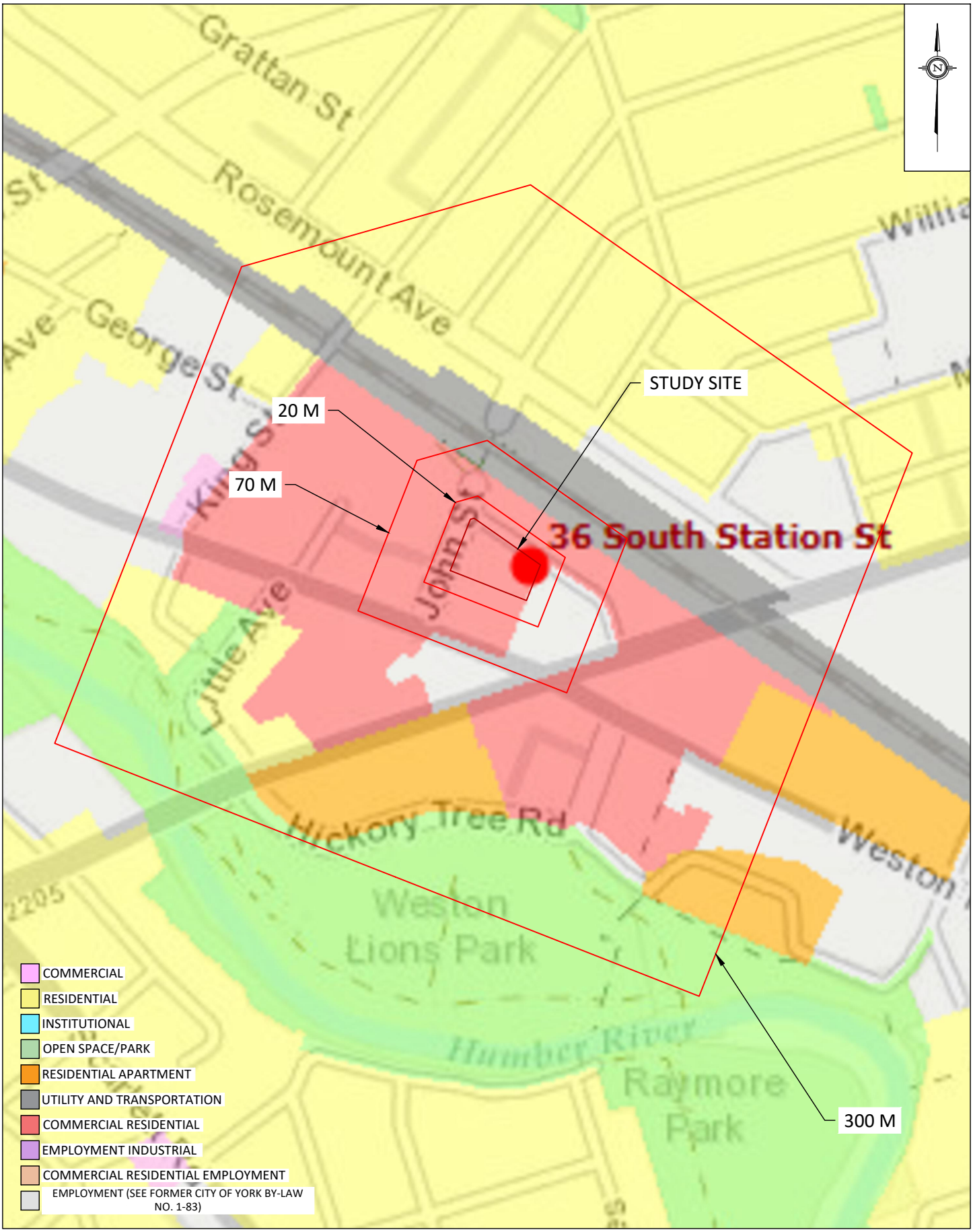
Sincerely,

Gradient Wind Engineering Inc.

Giuseppe Garro, MASc.
Environmental Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File 22-215



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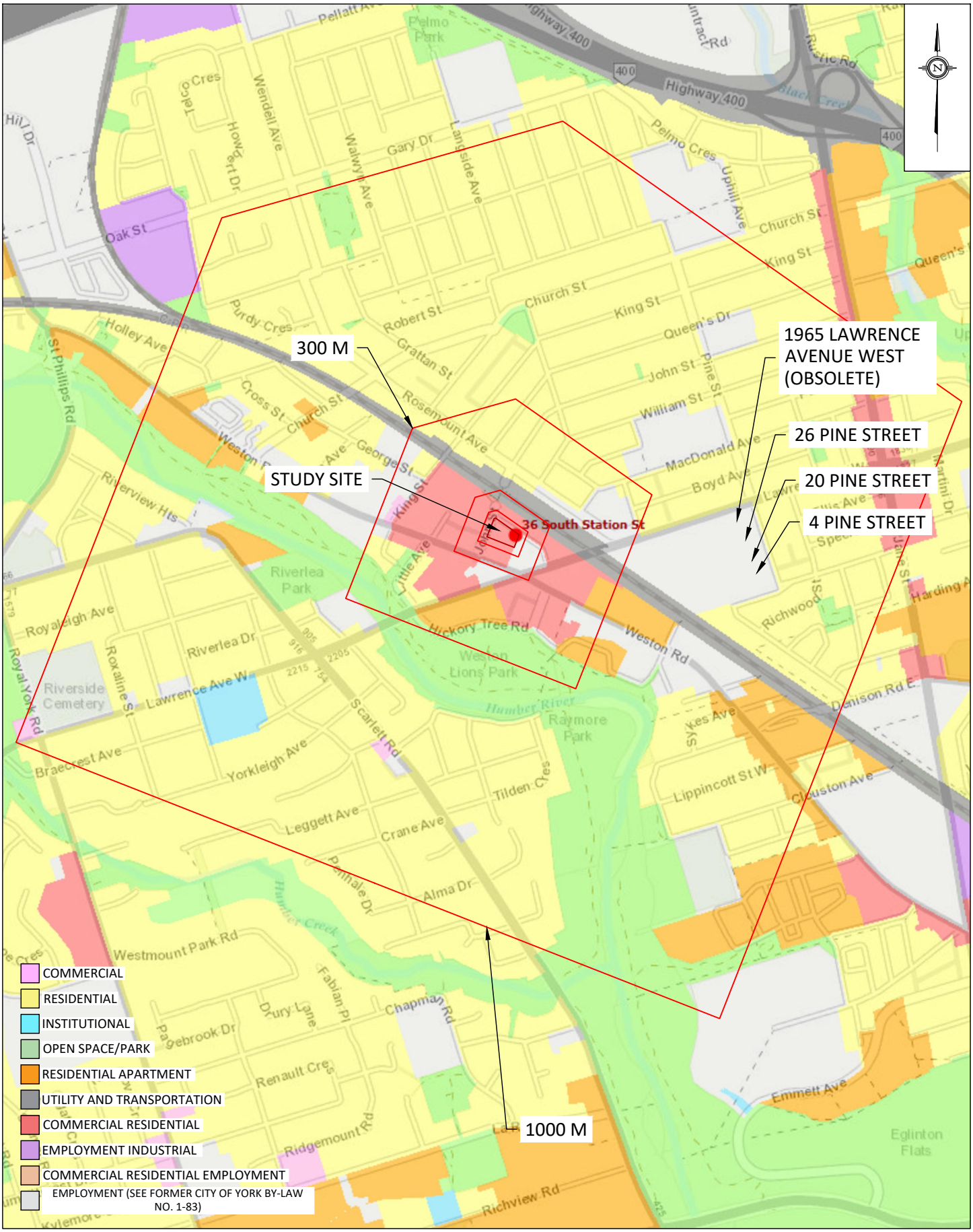
PROJECT	13-21 JOHN ST & 36-40 SOUTH STATION ST, TORONTO LAND USE COMPATIBILITY ASSESSMENT		DESCRIPTION
SCALE	1:5000	DRAWING NO. GW22-215-1	FIGURE 1: PROPERTY LINE AND SURROUNDING CONTEXT
DATE	SEPTEMBER 27, 2022	DRAWN BY G.G.	



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PROJECT	13-21 JOHN ST & 36-40 SOUTH STATION ST, TORONTO LAND USE COMPATIBILITY ASSESSMENT		DESCRIPTION
SCALE	1:14000	DRAWING NO. GW22-215-2	FIGURE 2: PROPERTY LINE AND SURROUNDING CONTEXT
DATE	SEPTEMBER 27, 2022	DRAWN BY G.G.	