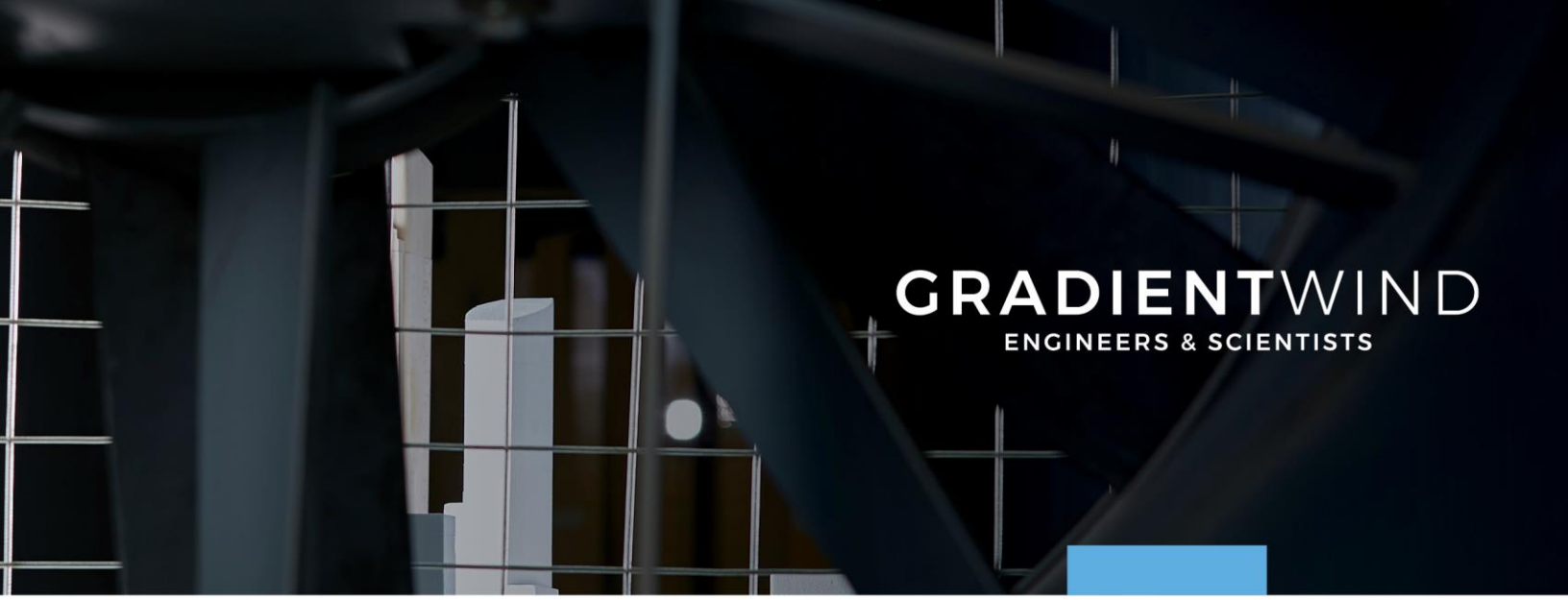
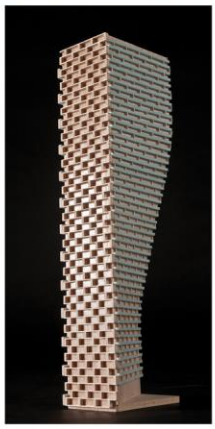


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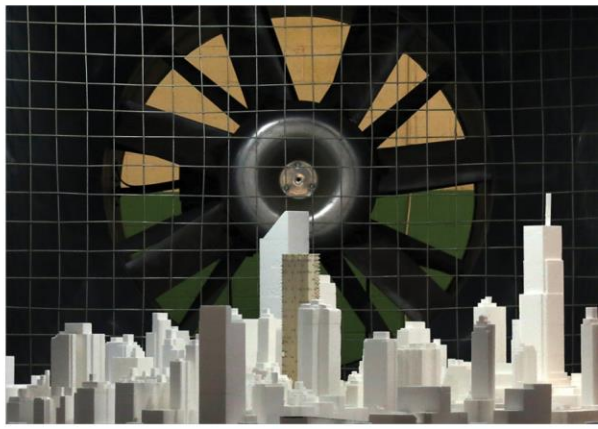
LAND USE COMPATIBILITY (AIR QUALITY) STUDY

2362 Fairview Street
Burlington, Ontario

REPORT: GW23-092-LUC (Air Quality)







May 17, 2023

PREPARED FOR

Lockwood Leasing
1141 South Service Road West,
Oakville, ON L6L 6K4

PREPARED BY

Joshua Foster, P.Eng., Lead Engineer
Michael Lafortune, C.E.T., Environmental Scientist

EXECUTIVE SUMMARY

This report describes land-use compatibility (air quality) study undertaken in support of a land conversion request for the property at 2362 Fairview Street in Burlington, Ontario. The development concept in support of the employment lands conversion request comprises a six-storey mixed-use building with a 'U' shaped planform. The complete scope of work within our mandate includes studies for air quality and stationary noise impacts from surrounding industrial-use properties. Transportation noise impacts are covered under a separate report. Figure 1-2 illustrate the subject site and surrounding zoning.

In keeping with standard building construction and good engineering practice, as well as City of Burlington guidelines, the following comments and recommendations are provided to be incorporated into the design of the building to ensure indoor air quality is maintained for future developments:

(i) Based on the findings of this report, Gradient Wind concludes that residential and mixed-use land are feasible for the study site.

(ii) The development concept can meet the minimum recommended separation distance from established industries operating with a valid ECA.

(iii) Based on Gradient Wind's experience on other projects in the area, air quality impacts from surrounding roadways are expected to be minor with gaseous concentrations of Nitrogen Dioxide (NO_2), Carbon Monoxide (CO), and Particulate Matter (PM) remaining compliant with the MECP's Ambient Air Quality Criteria (AAQC). With improvements to vehicle technology, concentrations are expected to reduce in the future.

(iv) In line with standard building practices, design, install, operate, and maintain 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 certification filters should be used for any future development. Details of the air filtration system will be designed by the mechanical engineers during the detailed design phase.

(v) Under reasonable future growth scenarios for roadway traffic volume, technological improvements and more stringent emission standards will likely result in lower emissions and improved air quality for the site over time.

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1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) has been retained by Lockwood Leasing to undertake a land use compatibility (air quality) study, to support a land conversion request for the property at 2362 Fairview Street in Burlington, Ontario. The complete scope of work within our mandate includes the assessment of air quality and stationary noise impacts from surrounding industrial-use properties. Transportation noise impacts are covered under a separate report. 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 subject site is located at 2362 Fairview Street in Burlington, Ontario. The study site is bordered by Fairview Street to the northwest, low-rise commercial buildings to the northeast and southwest, and low-rise residential to the southeast. GO Metrolinx Rail Line runs to the northwest of Fairview Street, separated by low-rise commercial buildings. Throughout this report Fairview Street is referred to as north.

The proposed development site comprises a six-storey mixed-use building with a 'U' shaped planform. The building is served two levels of below-grade parking. Access to parking is provided by a lane, which runs from north to south at the centre of the site, through Fairview Street. Ground floor comprises commercial spaces located on the north side, residential lobbies, amenity spaces, and residential units. Levels 2 to 6 consist of residential units. The central courtyard area is planned as outdoor parking and the underground parking access ramp is located in this area. This study is based on drawings prepared by Weston Consulting, dated May 2023. Figure 1-2 illustrate the subject site and surrounding zoning.

It should be noted that information regarding complaints and/or concerns with regard 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. STUDY METHODOLOGY

2.1 Land Use Compatibility in relation to Provincial Policy Statement (PPS)

The Provincial Policy statement (PPS 2022) policy 1.2.6.1 states:

> *Major facilities and sensitive land uses shall be planned and developed to avoid, or if avoidance is not possible, minimize and mitigate any potential adverse effects from odour, noise and other contaminants, minimize risk to public health and safety, and to ensure the long-term operational and economic viability of major facilities in accordance with provincial guidelines, standards and procedures.*

Where *major facilities* is defined as*:*

> *means facilities which may require separation from sensitive land uses, including but not limited to airports, manufacturing uses, transportation infrastructure and corridors, rail facilities, marine facilities, sewage treatment facilities, waste management systems, oil and gas pipelines, industries, energy generation facilities and transmission systems, and resource extraction activities.*

The PPS, policy 1.2.6.1 of the PPS requires separation between *major facilities* and *sensitive land uses*, such as residential, so that among other things, excessive emissions, dust and odour noise do not adversely impact individuals in the *sensitive land uses*.

However, based on a review of the surroundings, the only major facilities as defined by the PPS in proximity to the subject site are arterial roadways, a rail line, and light industrial facilities. As demonstrated in this study, the development concept maintains the recommended setback distances (i.e. the development concept is not in the potential influence area) from these industries as described in Ontario Ministry of Environment, Conservation and Parks D-6 Guidelines regarding Compatibility between Industrial Facilities. The potential influence zone of light, medium and heavy industries is 70 m, 300 m and 1,000 m respectively, as discussed in Section 2.3.

Policy 1.6.9.1 of the PPS states:

> *Planning for land uses in the vicinity of airports, rail facilities and marine facilities shall be undertaken so that:*

a) their long-term operation and economic role is protected; and

b) airports, rail facilities and marine facilities and sensitive land uses are appropriately designed, buffered and/or separated from each other, in accordance with policy 1.2.6

There are no airports, or marine facilities within the influence zone of the Subject Lands that noise, emission, dust or odour would be of concern. The Burlington GO station is located approximately 600 m to the southwest, however is in closer proximity to existing residential dwellings abutting the rail corridor.

The surrounding lands are primarily zoned MXG/MXE (Mixed-use Corridor Zone) with a small amount of GE (Employment Zone) lands to the north. The MXG lands permit a variety of possible future uses including mixed-use commercial, residential, and some light-industrial such as an automotive shop, which would be a considered a Class I industry. The GE lands permit a variety of industrial uses, however outdoor manufacturing would be prohibited at this site due to the proximity to residential lands directly north.

2.2 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.

2.3 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 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.

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. 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. It is noted that there are no facilities in proximity to the site operating as propane storage and/or distribution facilities.

TABLE 1: D-6 RECOMMENDED SEPERATION & INFLUENCE AREA

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

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, the following industries have been identified:

Class I

2397 Fairview Street

Aro Motors Collision Ltd. operates an automotive repair facility at this location with ECA #: 8434-72SNZ2. Sources of emissions include a paint spray booth. The facility is located 80 m to the east of the subject site and is beyond the potential influence area. No adverse impacts are expected at the subject site.

2380 McDowell Road

Hood Packaging Corporation operates a packaging facility at this location with ECA #: 1451-5C4RY5. Sources of emissions include general exhausts for the packaging operations. The facility is located 170 m to the north of the subject site and is beyond the potential influence area. No adverse impacts are expected at the subject site.

2170 Queensway Drive

Bull Moose Tube Limited operates a steel tube and pipe manufacturing facility at this location with ECA #: 6419-AXBH6F. Sources of emissions include general exhausts for the manufacturing operations. The facility is located 700 m to the west of the subject site and is beyond the potential influence area. No adverse impacts are expected at the subject site.

Class II

1055 Truman Street

Nalco Canada ULC operates a water treatment chemical manufacturing plant with ECA#: 1357-9SYQ4B. Sources of emissions include general exhausts for manufacturing operations. The facility is located more than 1,000 m to the west of the subject site and is beyond the potential influence area. No adverse impacts are expected at the subject site.

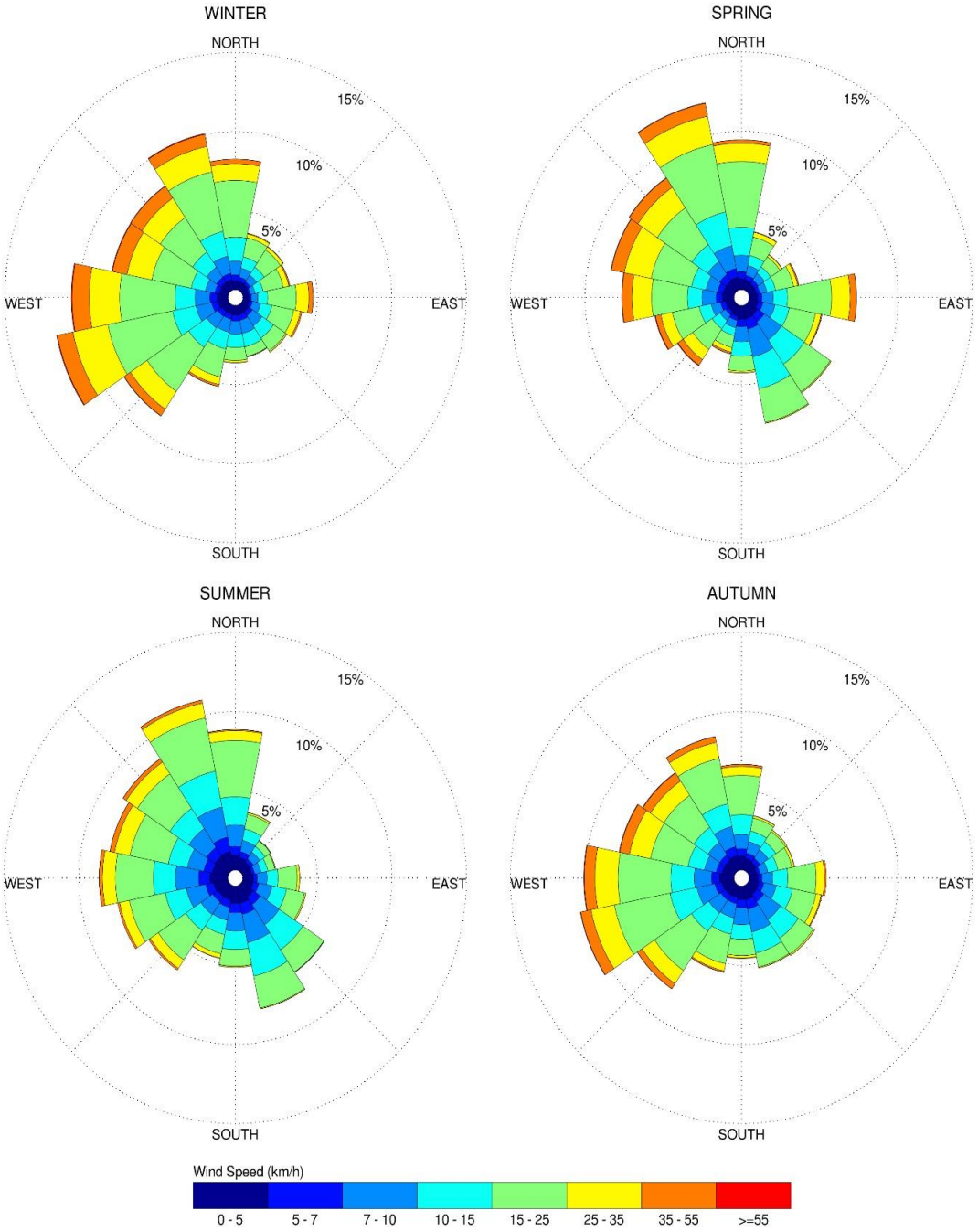
2.4 Meteorological Data Analysis

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.

3. STATIONARY NOISE IMPACTS

Gradient Wind investigated the potential stationary noise impacts from nearby industrial/commercial properties surrounding the subject site. As previously mentioned, the site is surrounded by mixed-use commercial and employment facilities. These properties contain small rooftop equipment for HVAC, and as such are not expected to have a significant impact on the subject site. Roadway noise is expected to dominate as the site is adjacent to major roadways on three sides.

Stationary noise impacts of the subject site onto the surroundings will be determined at a future stage to ensure noise levels at nearby areas meet the NPC-300 criteria. Similarly, off-site noise impacts are not expected to be a concern given the set back distances to nearby existing low-rise noise-sensitive properties. Furthermore, the site will have elevated background noise levels as a result of the proximity to major roadways. Elevated background noise will serve to mitigate the effects of stationary noise sources. Where necessary, noise impacts can generally be minimized by judicious selection and placement of the proposed equipment.

4. TRANSPORTATION AIR QUALITY IMPACTS

The dominant sources of transportation emissions include Fairview Street, Guelph Line, and the Oakville Subdivision rail corridor, carrying GO Transit and CN trains. This is based on their distance relative to the subject site as well as their roadway/railway classifications.

Roadways are not considered within the MECP D-Series guidelines, the City of Toronto has created a report detailing the impacts of roadway 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, closer transportation sources typically have greater emission impacts mostly on 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 any future development.

5. IMPACTS ON EMPLOYMENT LANDS

While the overall area still comprises of commercial/employment land uses, the current zoning for MXG and MXC allows for some sensitive land uses such as apartment buildings and retirement residences. There are currently a few properties in the area which are being developed for such uses. These are 2243, 2269 Fairview Street & 864 Drury Lane, as well as 2089 Fairview Street. There are no proposed industrial-use developments in the immediate area, and the trend of the neighbourhood is toward residential-use. Any future industrial facility proposals would need to seek an ECA. The change in land use will also not trigger any existing facilities to be non complaint with their ECA. The existing residential lands, which abut the site and are significant in size, already place a constraint on the growth and use of the employment lands.

6. RESULTS AND CONCLUSIONS

In keeping with standard building construction and good engineering practice, as well as City of Burlington guidelines, the following comments and recommendations are provided to be incorporated into the design of the building to ensure indoor air quality is maintained for future developments:

(i) Based on the findings of this report, Gradient Wind concludes that residential and mixed-use land are feasible for the study site.

(ii) The development concept can meet the minimum recommended separation distance from established industries operating with a valid ECA.

(iii) Based on Gradient Wind's experience on other projects in the area, air quality impacts from surrounding roadways are expected to be minor with gaseous concentrations of Nitrogen Dioxide (NO_2), Carbon Monoxide (CO), and Particulate Matter (PM) remaining compliant with the MECP's Ambient Air Quality Criteria (AAQC). With improvements to vehicle technology, concentrations are expected to reduce in the future.

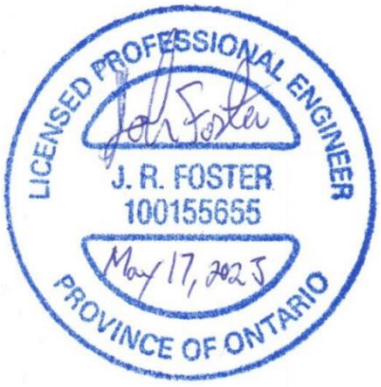
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(v) Under reasonable future growth scenarios for roadway traffic volume, technological improvements and more stringent emission standards will likely result in lower emissions and improved air quality for the site over time.

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,

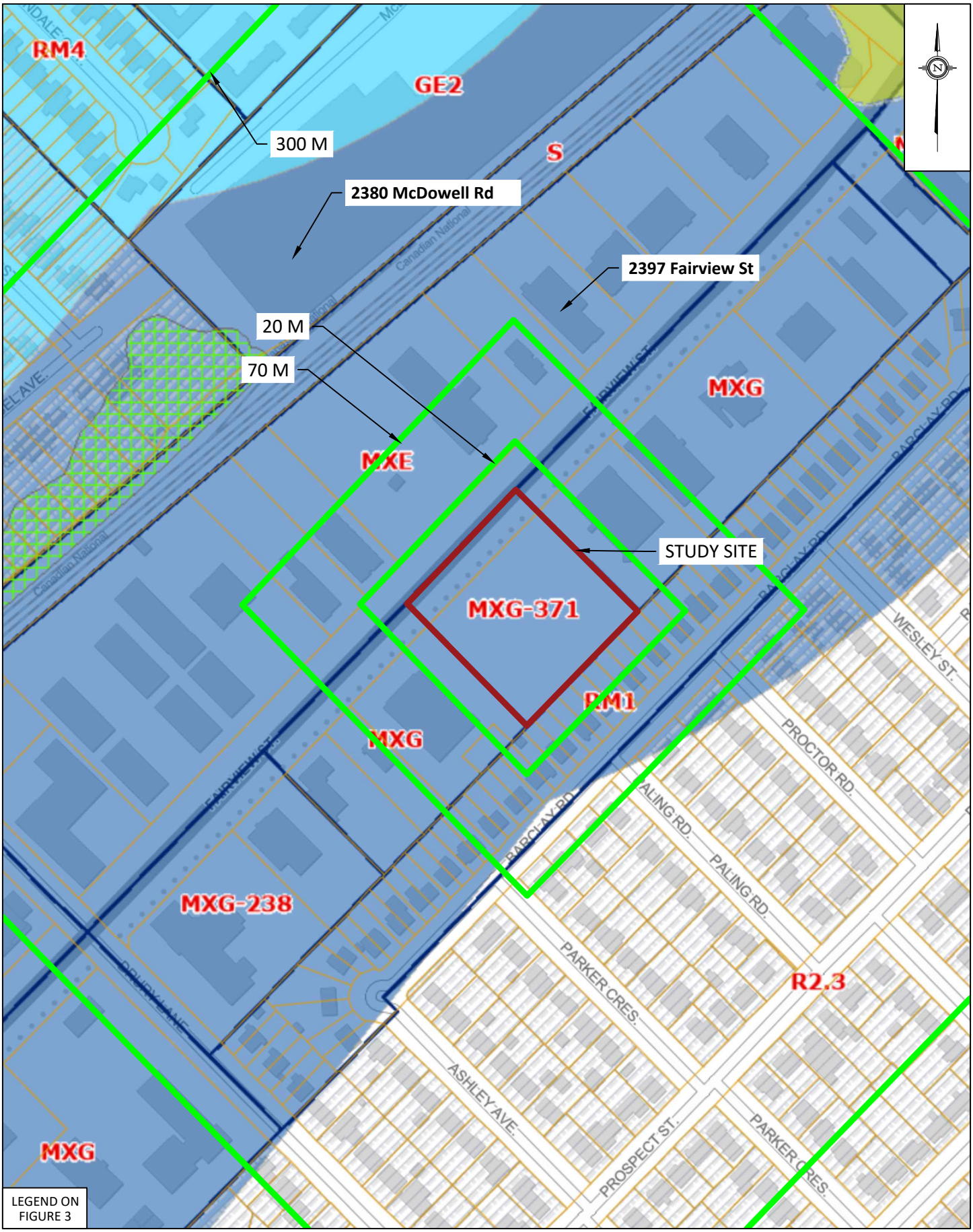
Gradient Wind Engineering Inc.



Michael Lafortune C.E.T.
Environmental Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File #23-092-LUC (Air Quality)

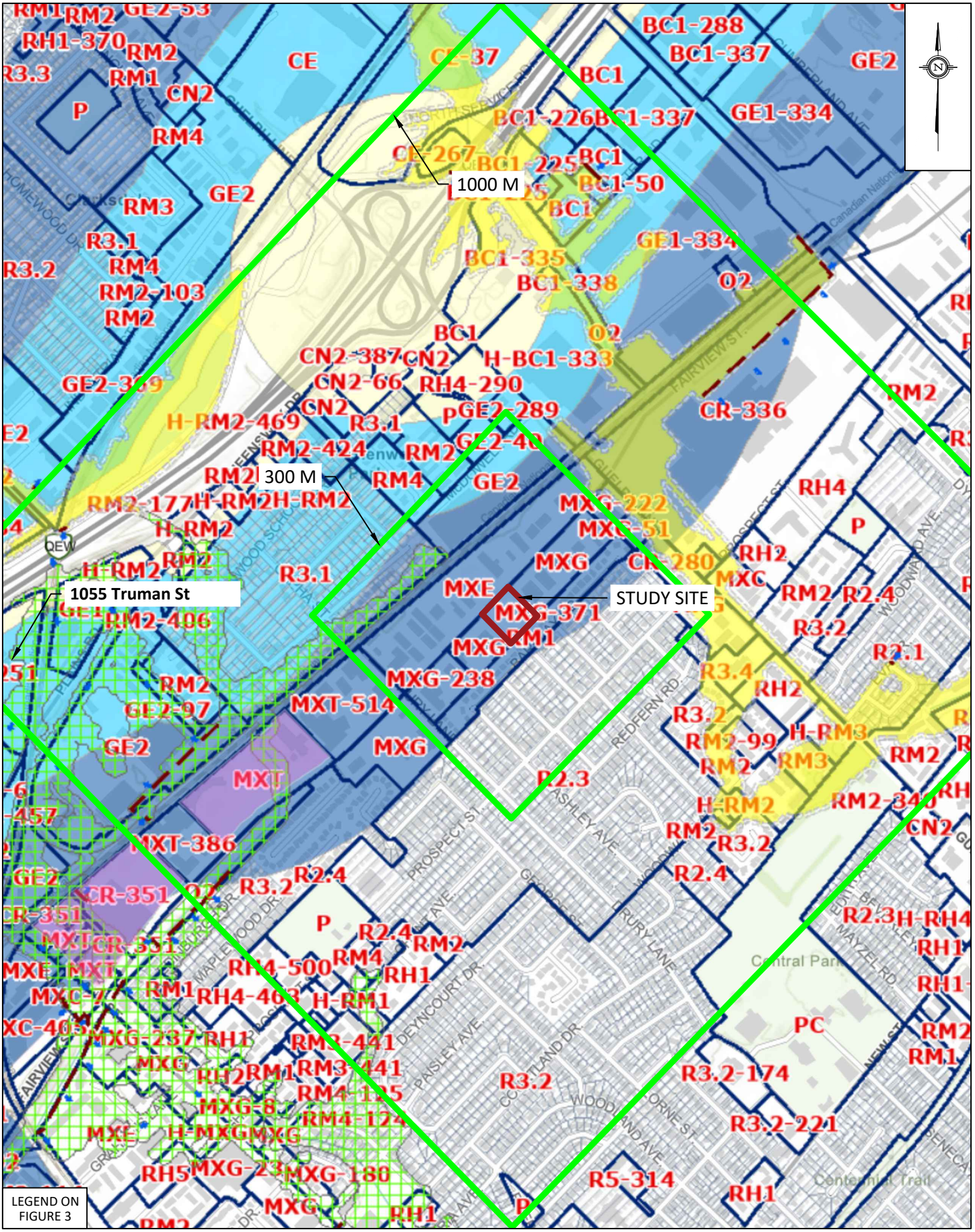


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127 WALGREEN ROAD, OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

PROJECT	2362 FAIRVIEW STREET, BURLINGTON LAND USE COMPATIBILITY ASSESSMENT		
SCALE	1:3000	DRAWING NO.	GW23-092-1
DATE	MAY 12, 2023	DRAWN BY	M.L.

DESCRIPTION

FIGURE 1:
PROPERTY LINE AND SURROUNDING CONTEXT



GRADIENTWIND ENGINEERS & SCIENTISTS 127 WALGREEN ROAD, OTTAWA, ON 613 836 0934 • GRADIENTWIND.COM	PROJECT: 2362 FAIRVIEW STREET, BURLINGTON LAND USE COMPATIBILITY ASSESSMENT		DESCRIPTION
	SCALE: 1:13000	DRAWING NO.: GW23-092-2	FIGURE 2: PROPERTY LINE AND SURROUNDING CONTEXT
	DATE: MAY 12, 2023	DRAWN BY: M.L.	

Residential Zones – Low Density	Holding Zone
R1, R2, R3, R4, R5	H (prefix)
Residential Zones – Medium Density	**Mixed-Use Corridor Zones**
RM1, RM2, RM3, RM4, RM5	MXG, MXC, MXE, MXT
Residential Zones – High Density	**Downtown Centre Zones**
RH1, RH2, RH3, RH4, RH5	DC, DW, DL-A, DL-B, DL-C, DRH, DRM, DRL, DI
Residential Zones – Orchard Community	**Uptown Centre Zones**
RO1, RO2, RO3, RO4	UCR1, UCR2, UC, UE, UCR3, URH, UMXE, UOP, URM
Residential Zones – Alton Community	**Rural Zones**
RAL1, RAL2, RAL3, RAL4	RA, RG, ME
Employment Zones	**North Aldershot Zones**
BC1, BC2, GE1, GE2	RNA1, RNA2, RNA3, SNA, MRNA, CNA, ONA, DNA
Commercial Zones	**Development Zone**
CR, CC1, CC2, CE, CN1, CN2	D
Park Zones	**Utility Services Zone**
P, PC	S
Open Space Zones	
O1, O2, O3	