

GRADIENTWIND

ENGINEERS & SCIENTISTS

LAND USE COMPATIBILITY ASSESSMENT

5584 Fraser Street
Niagara Falls, Ontario

Report: 24-179 – Land Use Compatibility Assessment



March 4th, 2025

PREPARED FOR

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PREPARED BY

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EXECUTIVE SUMMARY

This report describes a land use compatibility assessment for a proposed development located at 5584 Fraser Street in Niagara Falls, Ontario. The development comprises a rectangular four-storey residential building with a rooftop terrace at the northeast corner. The subject site is surrounded by low-rise residential and commercial buildings in all directions with Stanley Avenue to the east. This study is based on architectural drawings prepared by ACK Architects Studio Inc. provided in October 2024, the Ontario Ministry of Environment, Conservation and Parks (MECP) Land Use Compatibility Guidelines (D-Series), and other relevant MECP guidelines, as well as digital maps of the City of Niagara Falls. As a preliminary study, this report satisfies the City of Niagara Falls' terms of reference for Air Quality Studies, and Compatibility / Mitigation studies.

Our survey revealed that there is one Class II facility within the potential influence area. However, as it exceeds the minimum required separation distance of 70 meters for Class II facilities, no significant impacts related to noise, vibration, dust, emissions, or odour are anticipated at the study site. Furthermore, the survey revealed that there are several Class I and II facilities around the study site, however, they are not within the potential influence areas defined in MECP's "Guideline D-6 Compatibility Between Industrial Facilities and Sensitive Land Uses". Therefore, no nearby facilities are expected to have adverse impacts on the site regarding emissions, noise and vibrations, and odour. No land compatibility issues or conflicts with the existing or future employment lands are expected. Figure 1 illustrates the site location with surrounding land use.

The primary source of roadway traffic noise is Stanley Avenue. As determined in the transportation noise assessment, the subject property is compatible with existing transportation noise sources. A CN main rail line is approximately 400 meters west of the site, with a spur line around 200 meters west. Both exceed the minimum noise influence distances of 300 meters for main lines and 75 meters for spurs, making vibration and noise impacts negligible. As per the Railway Association of Canada proximity guidelines, a vibration study is not required¹. Please see the transportation noise assessment for more information.

¹ Dialog, J. E. Coulter Associates Limited, Guidelines for New Development in Proximity to Railway Operations, The Federation of Canadian Municipalities and The Railway Association of Canada, May 2013



In keeping with standard building construction and good engineering practice, as well as the provincial and city guidelines, the following comments and recommendations are 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:

- Based on the findings of this report, Gradient Wind concludes that the proposed sensitive land use is feasible. Furthermore, sensitive land use in the form of existing residential houses already surrounds the site in all directions.
- The identified industries operating with a valid ECA either exceed the minimum required separation distance or are out of the potential influence areas defined by Ontario Guideline D-6 Compatibility between Industrial Facilities.
- The proposed development does not introduce and new constraints on nearby industrial facilities, that currently don't already exist.

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1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) has been retained by ACK Architects Studio Inc. to undertake a Land Use Compatibility study for the proposed development located at 5584 Fraser Street in Niagara Falls, 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 Traffic Related Air Pollution (TRAP) report², as well as digital maps of the City of Niagara Falls. As a preliminary study, this report satisfies the City of Niagara Falls' terms of reference for Air Quality Studies, and Compatibility / Mitigation studies.

2. TERMS OF REFERENCE

The focus of this land use compatibility assessment is the proposed residential building located at 5584 Fraser Street in Niagara Falls, Ontario. The development comprises a rectangular four-storey residential building with a rooftop terrace at the northeast corner. The building consists of residential units at levels two, three, and four, with balconies along all elevations, and a floorplate setback at level three.

The proposed development is located within a Prestige Industrial Zone and adjacent to a General Industrial Zone, which permits facilities of a more intensive nature. However, as the area is predominantly comprised of single detached dwellings, any industrial facility seeking to establish operations within the neighborhood must implement appropriate mitigation measures to ensure that existing residential properties are not adversely affected by potential noise, vibration, emissions, or other industrial impacts.

The relevant pollution sources surrounding the site include existing institutional and commercial facilities. Other facilities which could produce adverse effects on a neighbouring property include arterial roadways such as Stanley Avenue located to the east of the site. Transportation is not considered within the MECP

² City of Toronto. *Avoiding the TRAP: Traffic-Related Air Pollution in Toronto and Options for Reducing Exposure*, October 2017

D-Series guidelines. Therefore, odour and air quality impacts from transportation sources are addressed in Section 5 of this study. Figure 1 illustrates the site location with surrounding land use designation.

3. OBJECTIVES

The main goals of this work are to (i) identify critical points of impingement and sources of emissions (odour, dust, noise), (ii) identify transportation and stationary noise sources, (iii) identify sources of vibration, and (iv) provide measures to comply with the requirements of Ministry of the Environment, Conservation and Parks (MECP) *Guideline D-6 – Compatibility Between Industrial Facilities and Sensitive Land Uses*, and other relevant MECP guidelines.

4. METHODOLOGY

The assessment is based on the desktop review of satellite imagery, street views, official plan and zoning maps, and a search of the MECP “Access Environment” database of registered Environmental Compliance Approval (ECA) and Environmental Activity and Sector Registry (EASR) permit holders.

Related to land use compatibility, the Provincial Policy Statement (PPS 2024) policy 3.5.1 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* are defined as:

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.



Based on a review of the surroundings, the only major facilities, as defined by the PPS, in proximity to the development are arterial roads and the industrial lands to the northwest.

Policy 3.4.1 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 are 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 3.5*

There are no airports, rail, or marine facilities within the influence zone of the Subject Lands that noise, emission, dust, or odour would be of concern.

The terms of reference require a review of complaints in the area; however, 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.

4.1 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.

4.2 Identifying Sources of Emissions

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 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 with 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 (see Figure 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.

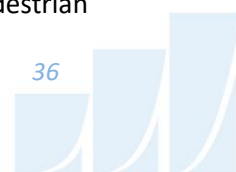
TABLE 1: D-6 RECOMMENDED SEPARATION & INFLUENCE AREA

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

4.3 Meteorological Data Analysis

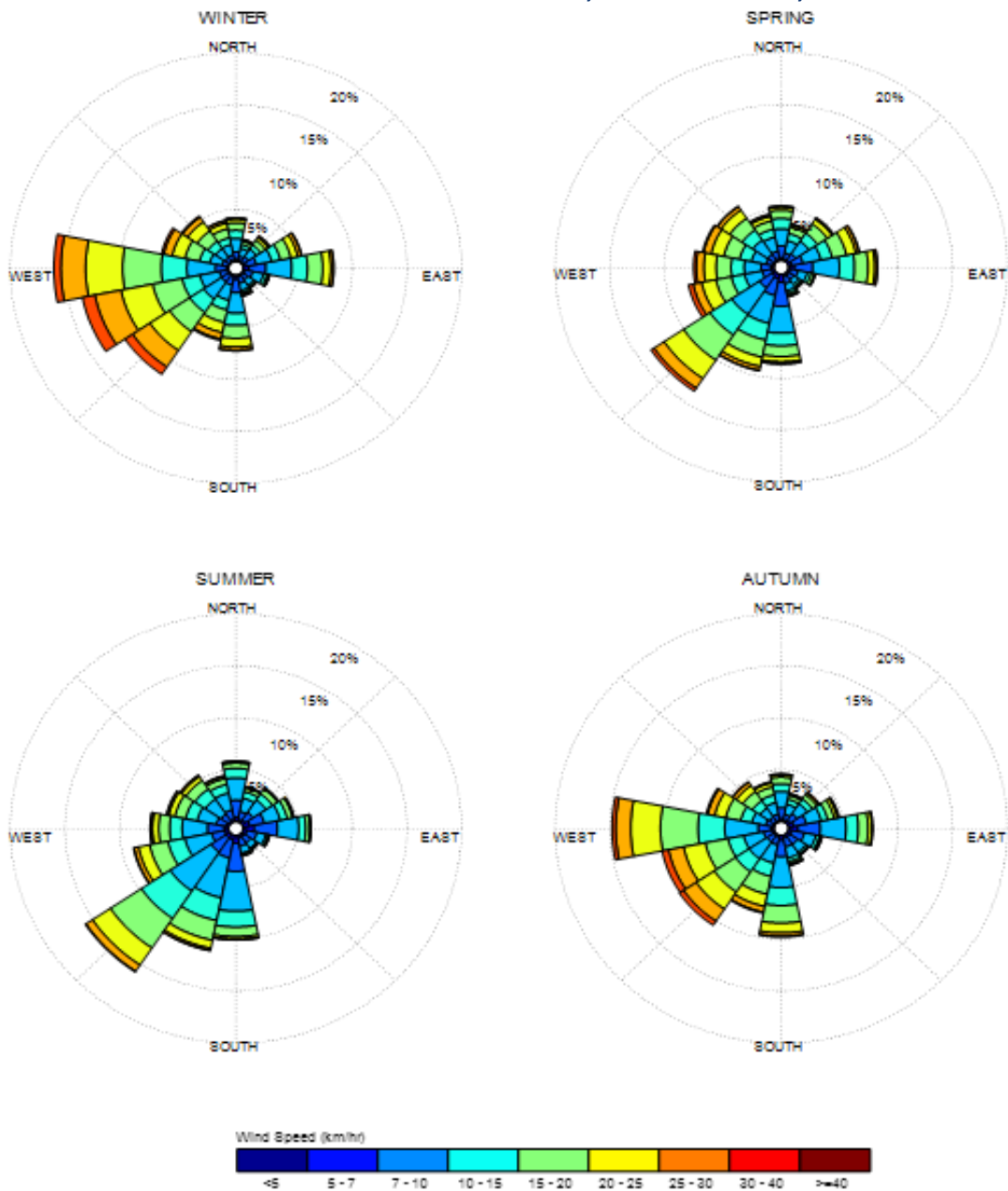
A statistical model for winds in the greater Toronto area (GTA) was developed from approximately 40 years of hourly meteorological wind data recorded at Lester B. Pearson International Airport and obtained from Environment and Climate Change Canada. Wind speed and direction data were analyzed for each 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 the similarity of weather patterns, and not according to the traditional calendar method.

The statistical model of the area’s wind climate, which indicates the directional character of local winds on a seasonal basis, is illustrated on the following page. The plots illustrate the seasonal distribution of measured wind speeds and directions in kilometres 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 (direction wind is coming from) during the measurement period. The common wind speeds and directions can be identified by the longer length of the bars. For the area, 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 vary somewhat from season to season, with the summer months displaying the calmest winds relative to the remaining seasonal periods.

SEASONAL DISTRIBUTION OF WIND NIAGARA FALLS INTERNATIONAL AIRPORT, NIAGARA FALLS, NEW YORK



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.

4.4 Sources of Emission in the Vicinity of the Subject Site

We conducted a survey of the surrounding facilities within the potential influence areas via aerial imagery, street view, and a search of the MECP “Access Environment” database of registered ECA and Environmental Activity and Sector Registry (EASR) permit holders.

Only the facilities with an ECA related to air quality and noise are considered in this assessment. Other ECA types such as permits to take water, and private sewage works are not related to sources of emission, dust or odour.

Our survey revealed that there are several Class I and II facilities around the study site. Figure 2 illustrates the site location with the surrounding context.

4.4.1 Class I Industries

No Class I industries were identified within the Potential Influence Area of 70 metres. The Class I Industries within 1000 metres of the study site with an ECA, however, farther than the potential influence area defined for Class I industries can be seen below:

5594 Fraser Street – Streamline Auto & Marine Upholstery

Industry: Upholstery Shop

Environmental Compliance Approval (ECA) No / date: N/A

Distance from the Proposed Development: Approx. 5 m to the west.

Potential Impacts: The facility is classified as a Class I industry. However, there is no Environmental Compliance Approval (ECA) associated with the shop, and its operations and equipment are considered to have a negligible effect on the area as most operations occur indoors. No large pieces of HVAC equipment were identified on the site.



4065 Stanley Avenue, Unit 3 – NorthernPharm Inc.

Industry: Pharmacy

Environmental Compliance Approval (ECA) No / date: 1876-ADTJTH / September 21st, 2016

Distance from the Proposed Development: Approx. 265 m to the north

The ECA approval consists of one (1) exhaust fan and four (4) laboratory fume hoods.

Potential Impacts: The facility is a pharmacy located approximately 265 metres to the north of the study site which is beyond the potential influence area of Class I facilities. Therefore, no adverse noise, vibration, dust, emissions or odour impact from the facility is expected to impact the study site.

3580 Stanley Avenue – Stanley Transformer Station (Hydro One Networks Inc.)

Industry: Transformer Station

Environmental Compliance Approval (ECA) No / date: N/A

Distance from the Proposed Development: Approx. 975 m to the north

The facility is registered with a registration number of *R-010-8111549951*. The registration includes an Emissions Screening Summary Report.

Potential Impacts: The Emissions Screening Summary Report shows that no emissions are expected from the transformer station and the noise level impacts at the noise-sensitive areas closer to the station than the proposed development will be below NPC-300 criteria. Therefore, no impact of emissions, odours, noise, or vibration is expected from the facility on the subject site.

4.4.2 Class II Industries

One Class II industry, located at 5800 Thorold Stone Road, was identified within the Potential Influence Area of 300 metres. However, as it exceeds the minimum required separation distance of 70 meters for Class II facilities, no significant impacts related to noise, vibration, dust, emissions, or odour are anticipated at the study site.

Additionally, all Class II Industries within 1000 metres of the study site with an ECA, however, farther than the potential influence area defined for Class II industries can be seen below:



5800 Thorold Stone Road – Oleo Energies Inc.

Industry: Manufacturing

Environmental Compliance Approval (ECA) No / date: 8625-BG3ND2 / November 5th, 2019

Distance from the Proposed Development: Approx. 190 m to the northwest

The ECA approval includes a bulk lubricants and specialty chemicals blending facility, consisting of the following processes and support units: raw material unloading, raw material storage tanks, product blending, product storage tanks and loading, natural gas-fired boilers, and quality assurance testing.

Potential Impacts: The facility is a large lubricant/chemical contract manufacturer located approximately 190 metres to the northwest of the study site which is within the potential influence area of Class II facilities. However, as it exceeds the minimum required separation distance of 70 meters for Class II facilities, the closest points of reception to the facility are much closer than the proposed development, and according to the ECA the facility needs to comply with Air Containment Benchmark standards at the property line of the facility. Therefore, no significant impacts related to noise, vibration, dust, emissions, or odour are anticipated at the study site.

6030 Thorold Stone Road – Autoline Toyota

Industry: Car Dealership

Environmental Compliance Approval (ECA) No / date: 0748-7AAP3G / December 27th, 2007

Distance from the Proposed Development: Approx. 620 m to the northwest

The ECA approval consists of one (1) paint spray booth and one (1) natural gas-fired air make up unit.

Potential Impacts: The facility is a car dealership located more than 600 metres to the northwest of the study site which is beyond the potential influence area of Class II facilities. Therefore, no adverse noise, vibration, dust, emissions or odour impact from the facility is expected to impact the study site.



5900 Thorold Stone Road, Unit 1 – Architectural Millwork Niagara

Industry: Carpentry

Environmental Compliance Approval (ECA) No / date: 1289-5C4LB9/ July 31st, 2002

Distance from the Proposed Development: Approx. 400 m to the northwest

The ECA approval consists of one (1) spray booth.

Potential Impacts: The facility is a carpentry business located approximately 400 metres to the northwest of the study site which is beyond the potential influence area of Class II facilities. Therefore, no adverse noise, vibration, dust, emissions or odour impact from the facility is expected to impact the study site.

4500 Drummond Road – Brock Ford Sales Inc.

Industry: Car Dealership

Environmental Compliance Approval (ECA) No / date: 7158-4LPRF3/ June 28th, 2000

Distance from the Proposed Development: Approx. 850 m to the southwest

The ECA approval consists of one (1) downdraft paint spray booth and one (1) paint spray gun.

Potential Impacts: The facility is a car dealership located approximately 850 metres to the southwest of the study site which is beyond the potential influence area of Class II facilities. Therefore, no adverse noise, vibration, dust, emissions or odour impact from the facility is expected to impact the study site.

4421 Drummond Road – Niagara Chrysler Dodge Jeep Ram

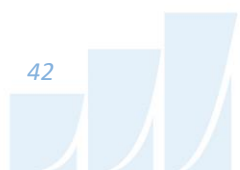
Industry: Car Dealership

Environmental Compliance Approval (ECA) No / date: 6798-5BALF5/ June 28th, 2002

Distance from the Proposed Development: Approx. 900 m to the southwest

The ECA approval consists of one (1) paint spray booth.

Potential Impacts: The facility is a car dealership located approximately 900 metres to the southwest of the study site which is beyond the potential influence area of Class II facilities. Therefore, no adverse noise, vibration, dust, emissions or odour impact from the facility is expected to impact the study site.



4.4.3 Class III Industries

No Class III industries were identified within a 1000 km radius of the subject site.

4.4.4 Obsolete Industries

4300 Stanley Avenue – Premier Ferti Tech Ltd.

Industry: Fertilizer Manufacturer

Environmental Compliance Approval (ECA) No / date: N/A

Distance from the Proposed Development: Approx. 180 m to the southeast

Potential Impacts: The facility is classified as a Class II industry. However, the shop has ceased operations and is currently listed for sale; therefore, considered obsolete and is not a concern for adverse noise, vibration, dust, emissions or odour impacts. Should any new industrial use take over the property they are currently constrained by residential immediately to the south and east of the facility. There are also several other residences between the proposed development and this property. Therefore, any new development of this facility is currently constrained by other sensitive properties in the area.

5. TRANSPORTATION SOURCES AIR QUALITY IMPACT

5.1 Noise Transportation Sources

The primary source of roadway traffic noise is Stanley Avenue. As determined in the transportation noise assessment, the subject property is compatible with existing transportation noise sources. A CN main rail line is approximately 400 meters west of the site, with a spur line around 200 meters west. Both exceed the minimum noise influence distances of 300 meters for main lines and 75 meters for spurs, making vibration and noise impacts negligible. As per the Railway Association of Canada proximity guidelines, a vibration study is not required³. Please see the transportation noise impact study for more information.

5.2 Air Quality Transportation Sources

There are no major roadways adjacent to the subject site, therefore roadway emissions are expected to be insignificant.

³ Dialog, J. E. Coulter Associates Limited, Guidelines for New Development in Proximity to Railway Operations, The Federation of Canadian Municipalities and The Railway Association of Canada, May 2013

6. CONCLUSIONS AND RECOMMENDATIONS

The site was assessed for noise, vibration, dust, odour, and air quality concerns. The conclusions of our assessment are summarized below.

Emissions, Odour, and Noise and Vibration Impacts from the Industrial Facilities:

Our survey revealed that there is one Class II facility within the potential influence area. However, as it exceeds the minimum required separation distance of 70 meters for Class II facilities, no significant impacts related to noise, vibration, dust, emissions, or odour are anticipated at the study site. Furthermore, the survey revealed that there are several Class I and II facilities around the study site, however, they are not within the potential influence areas defined in MECP's "Guideline D-6 Compatibility Between Industrial Facilities and Sensitive Land Uses". Therefore, no nearby facilities are expected to have adverse impacts on the site regarding emissions, noise and vibrations, and odour. No land compatibility issues or conflicts with the existing or future employment lands are expected.

Transportation Noise Sources Air Quality Impact:

There are no major roadways adjacent to the subject site, therefore roadway emissions are expected to be insignificant.

CONCLUSION:

In keeping with standard building construction and good engineering practice, as well as the provincial and city guidelines, the following comments and recommendations are 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:

- Based on the findings of this report, Gradient Wind concludes that the proposed sensitive land use is feasible. Furthermore, sensitive land use in the form of existing residential houses already surrounds the site in all directions.
- The identified industries operating with a valid ECA either exceed the minimum required separation distance or are out of the potential influence areas defined by Ontario Guideline D-6 Compatibility between Industrial Facilities.

- The proposed development does not introduce and new constraints on nearby industrial facilities, that currently don't already exist.

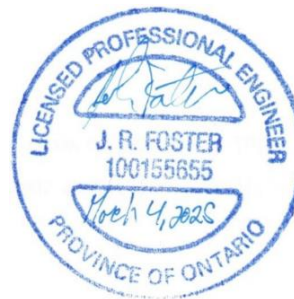
This concludes our assessment and report. If you have any questions or wish to discuss our findings, please advise us. In the interim, we thank you for the opportunity to be of service.

Sincerely,

Gradient Wind Engineering Inc.



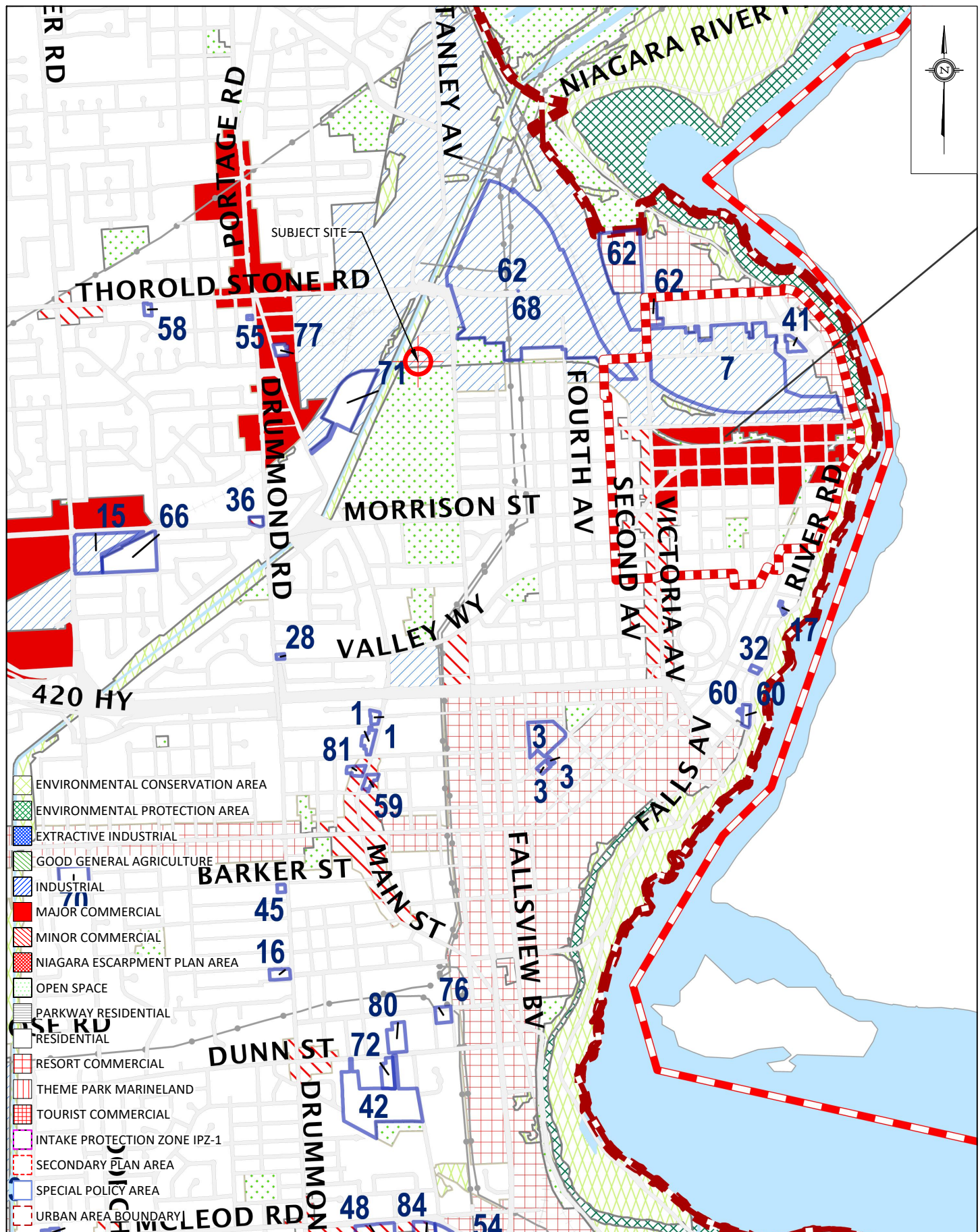
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Gradient Wind File 24-179- Land Use Compatibility Assessment





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PROJECT 5584 FRASER STREET, NIAGARA FALLS
LAND USE COMPATIBILITY, AIR QUALITY AND, ODOUR ASSESSMENT

SCALE 1:3000

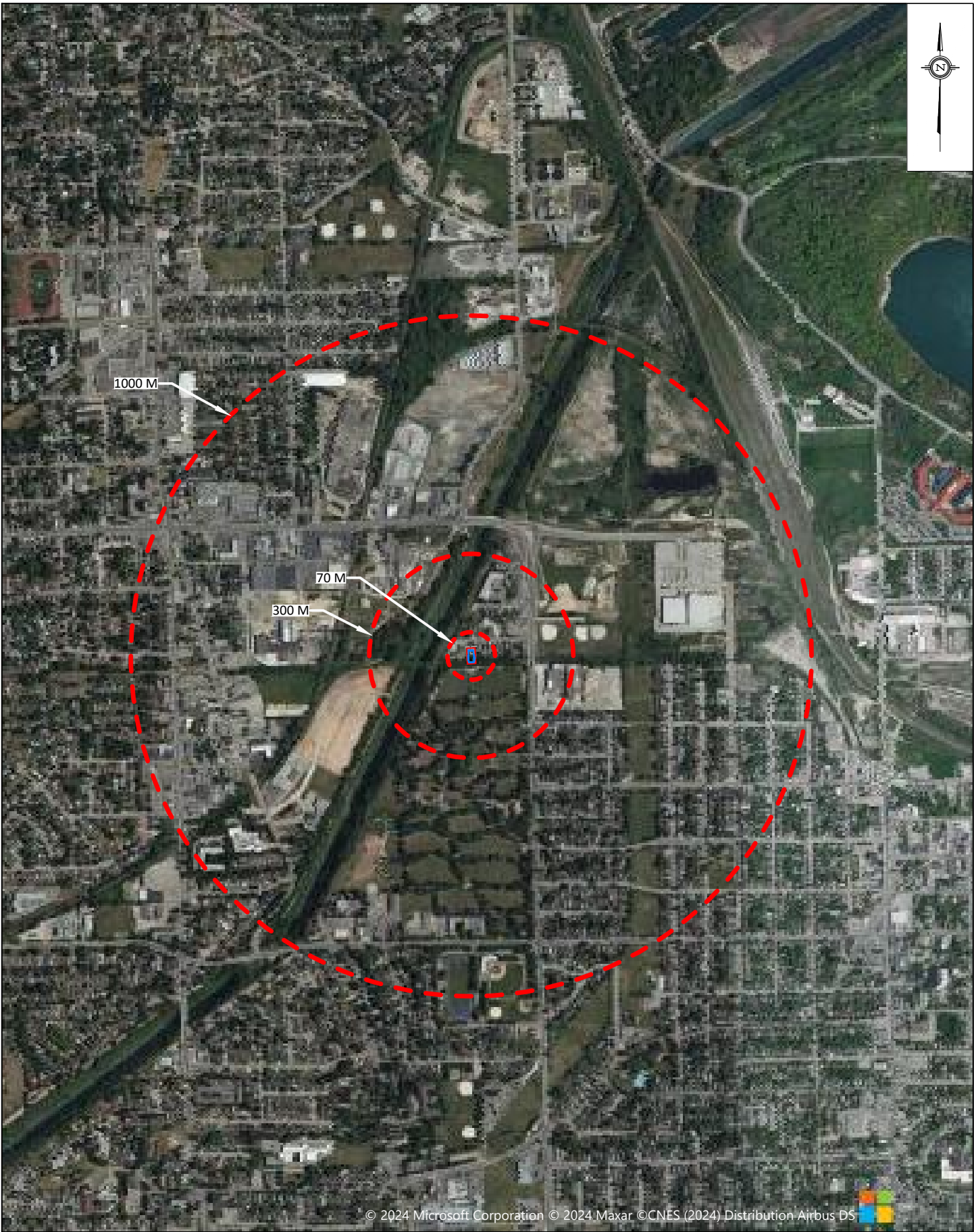
DATE MARCH 4, 2025

DRAWING NO. 24-179-NOISE-FIG1

DRAWN BY B.P.

DESCRIPTION

FIGURE 1:
PROPOSED SITE PLAN AND SURROUNDING LAND USE
DESIGNATIONS



<div>GRADIENTWIND</div> <div>ENGINEERS & SCIENTISTS</div> <div>127 WALGREEN ROAD, OTTAWA, ON 613 836 0934 • GRADIENTWIND.COM</div>	PROJECT 5584 FRASER STREET, NIAGARA FALLS		DESCRIPTION
	LAND USE COMPATIBILITY, AIR QUALITY AND, ODOUR ASSESSMENT		
	SCALE 1:3000	DRAWING NO. 24-179-NOISE-FIG2	
	DATE MARCH 4, 2025	DRAWN BY B.P.	
FIGURE 2: PROPOSED SITE PLAN AND SURROUNDING CONTEXT			