

Land Use Compatibility, Environmental Air Quality Assessment Proposed 1157-1171 North Shore Boulevard East Development Toronto, ON

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NOVUS PROJECT TEAM:

Engineer: Jenny Vesely, P.Eng.
Specialist: Nigel Taylor, M.Sc., EP

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Table of Contents

1.0	Introduction	1
2.0	Description of Development and Surrounding Area.....	1
2.1	Proposed Development.....	1
2.2	Area Context.....	1
2.3	Zoning	2
2.4	Nearby Industries	2
3.0	Applicable Air Quality Related Planning Policy and Guidelines	4
3.1	Halton Region’s Regional Official Plan Guidelines: Land Use Compatibility Guidelines	4
3.1.1	Guideline D-2	6
3.2	Halton Region’s Regional Official Plan Guidelines: Air Quality Guidelines.....	7
4.0	Classification of Nearby Industries	8
4.1	Guideline D-2 Classification of Surrounding Land Uses.....	8
4.2	Guideline D-6 Classification of Surrounding Land Uses.....	8
4.3	D-Series Guideline Summary.....	10
4.4	Transportation Sources.....	10
5.0	Provincial Guidelines and Regulations for Potentially Incompatible Uses	10
5.1	General Air Quality Contaminants.....	10
5.2	Odour.....	10
6.0	Site Visit to the Area	11
7.0	Potential Air Quality Impacts.....	11
7.1	Industrial Sources	11
7.2	Transportation Impacts.....	13
8.0	Conclusions	14

List of Tables

Table 1: Surrounding Industries Included in the Air Quality Assessment	3
Table 2: Ministry of the Environment and Climate Change’s Land Use Compatibility Setback Distances and Areas of Influence	5
Table 3: Ministry of the Environment and Climate Change’s Land Use Compatibility Guideline D-Series Classifications	5
Table 4: Industries / Commercial Uses in the Area	9

List of Figures

Figure 1: Context Plan	2
Figure 2: Surrounding Industries of Interest	3
Figure 3: D-6 Setbacks From Proposed Site	9
Figure 4: Wind Roses for Burlington Piers (1991-2015).....	13

List of Appendices

Appendix A: Proposed Development Plan	
Appendix B: Zoning Maps	

1.0 Introduction

Novus Environmental Inc. (Novus) was retained by Amico Properties to conduct a land-use compatibility assessment for the proposed development to be located at 1157-1171 North Shore Boulevard East in Burlington, focusing on air quality.

Novus has reviewed the surrounding land uses in the area with respect to the Region of Halton's *Air Quality Guidelines, Regional Official Plan Guidelines* and the Ministry of the Environment, Conservation and Parks (MECP) land use compatibility guideline (D-Series) including Guideline D-6 – *Compatibility Between Industrial Facilities and Sensitive Land Uses* (MECP 1995) and Guideline D-2 *Compatibility between Sewage Treatment and Sensitive Land Use*. This report addresses potential impacts from surrounding industrial land uses.

2.0 Description of Development and Surrounding Area

2.1 Proposed Development

The proposed development is located on the north side of North Shore Boulevard East, just east of the Queen Elizabeth Way highway. The site is currently occupied by two four-storey residential buildings and a one-storey garage. The proposed residential development ranges in height from two-storeys along the north edge of the site to 17-storeys at the southeast corner of the site. The development is trapezoidal in shape, with an approximate footprint of 113m by 63m. At grade-level, there are two amenity courtyards on the north and south sides of the building and a wellness patio near the southwest corner of the building. Above grade, there are amenity terraces on Levels 3 through 7.

A copy of the current site plan is provided in **Appendix A**.

2.2 Area Context

Figure 1 below shows a context plan. Immediately surrounding the site are: the QEW to the south, low-rise residential buildings to the northwest and north, with mid-rise residential buildings to the northeast and east. To the southeast is a low-rise commercial building. Beyond the immediate surroundings there is low-rise residential buildings to the south, west and north; mid-rise residential buildings to the northeast, along North Shore Boulevard East; and low-rise institutional and residential buildings to the east and southeast. Lake Ontario is 400m to the east and Hamilton Harbour is 500m southwest. The Skyway Wastewater Treatment Plant is also located to the southeast, approximately 630m from the proposed development.



Figure 1: Context Plan

2.3 Zoning

City of Toronto Burlington By-law

As per the City of Burlington Zoning By-law 2020, the development lands are currently designated as Downtown High Density Residential. A copy of the relevant zoning map, obtained from the City of Burlington's online portal, is provided in **Appendix B**.

2.4 Nearby Industries

The area surrounding the proposed development site is mainly residential, however, there are a few commercial properties along North Shore Boulevard East and industries along the water. The D-series guideline applies to industrial facilities, meaning the hospital and Burlington cultural centre would not typically be included. However, since they hold ECA's and have air emissions, they were considered in this assessment. Industrial / commercial facilities of interest from an air quality perspective considered in this assessment are summarized in **Table 1** below:

Table 1: Surrounding Industries Included in the Air Quality Assessment

Industry # in Figures 2&3	Industry Address	Industry Name	Type of Operations
1	1230 North Shore Boulevard East	Joseph Brant Memorial Hospital	Hospital
2	1125 Lakeshore Road	Skyway Wastewater Treatment Plant	Wastewater Treatment Plant
3	1333 Lakeshore Road	Burlington Cultural Centre	Public art gallery with art classes including painting and pottery

The assessment focuses on the facilities identified in the table above. These are the only identified industries based on a review of Google Earth Pro™ imagery and site visit to the area. The main industries considered as the focus of this assessment are identified in **Figure 2**.



Figure 2: Surrounding Industries of Interest

3.0 Applicable Air Quality Related Planning Policy and Guidelines

3.1 Halton Region's Regional Official Plan Guidelines: Land Use Compatibility Guidelines

The purpose of Land Use Compatibility Guidelines development by the Region (LUCG) is to “identify how land use compatibility issues may be addressed by municipalities during a development proposal...” The LUCG were developed by the Region in consideration of the Provincial D-Series of Guidelines, prepared by the Ontario Ministry of the Environment and Climate Change (MECP) in 1995 for planning guidance in evaluating land use compatibility. Section 2 of the LUCG identifies the relevant provincial guidelines and regulations which are to be considered in conducting air quality assessment in Ontario:

“The D-Series are used for development applications that require the re-designation (Official Plan Amendment) or rezoning of land uses (Zoning By-law amendment). The MOE’s D-Series are only applicable when a:

- *New sensitive land use requires a land use amendment and is proposed to be located within the influence, or potential influence, area of an impacting use, such as an existing industrial land use; or when a*
- *New industrial use requires a land use amendment and is proposed to be located near an existing sensitive residential use.”*

Included in the Region’s summary is a discussion of the “potential areas of influence” approach, as presented in the D-series of guidelines when assessing compatibility of industrial uses with more sensitive uses such as residences.

In preparing the LUCG, the Region has clarified an aspect concerning recommended minimum separation distances. In the LUCG, it is understood that areas of influence of various industrial processes will be site specific. Actual areas of influence are determined through appropriate studies allowing for industrial activities to be compatible with more sensitive land uses within the area of influence and within recommended minimum separation distances which are presented in **Table 2**. Appropriate studies can provide mitigation strategies, if required.

Table 2: Ministry of the Environment and Climate Change’s Land Use Compatibility Setback Distances and Areas of Influence

Ministry of Environment: D-Series – INDUSTRIAL USES Potential Areas of Influence and Minimum separation Distances*		
Industrial Facility	Potential Area of Influence (metres)	Minimum Separation Distance (metres)
Class I	70	20
Class II	300	70
Class III	1000	300

A summary of the D-6 Industrial Categorization criteria considered in the LUCG is listed in **Table 3**. It is worth noting that the Region has made minor alterations to the table from what appears in the D-6 guidance.

Table 3: Ministry of the Environment and Climate Change’s Land Use Compatibility Guideline D-Series Classifications

¹ Halton Regional Official Plan Guidelines – Land Use Compatibility Guidelines (www.halton.ca/common/pages/UserFile.aspx?fileId=121105, accessed January, 2015)

Ministry of Environment: D-Series' Industrial Categorization Criteria			
Item	Class 1	Class 2	Class 3
Noise	• Sound not audible off property	• Sound occasionally audible off property	• Sound frequently audible off property
Dust and /or Odour	• Infrequent and not intense	• Frequent and occasionally intense	• Persistent and/or intense
Vibration	• No ground-borne vibration on plant property	• Possible ground-borne vibration, but cannot be perceived off property	• Ground-borne vibration can frequently be perceived off property
Air Quality	• Low probability of fugitive emissions	• Occasional outputs of either point source or fugitive emissions	• High probability of fugitive emissions
Scale of Production	• Small scale plant or scale is irrelevant in relation to all other criteria for this Class	• Medium level of production allowed	• Large production levels
Outside Storage	• Minimal storage	• Outside storage permitted	• Outside storage of raw and finished products
Process	• Self-contained plant or building	• Open process – outdoor storage of wastes or materials	• Open process – outdoor storage of wastes or materials
Process Outputs	• Produces/stores a packaged product	• Periodic outputs of minor annoyance	• Frequent outputs of major annoyances
Possibility of Fugitive Emissions	• Low probability of fugitive emissions	• Low probability of fugitive emissions	• High probability of fugitive emission
Hours of Operation	• Daytime operations only	• Shift operations permitted	• Daily shift operations permitted
On-site Movement	• Infrequent movement of products and/or heavy trucks	• Frequent movement of products and/or heavy trucks with the majority of movements during daytime hours	• Continuous movement of products and employees
Examples (not comprehensive)	<ul style="list-style-type: none"> • Electronics manufacturing and repair • Furniture repair and refinishing • Beverages bottling • Auto parts supply • Packaging and crafting services • Distribution of dairy products • Laundry and linen supply 	<ul style="list-style-type: none"> • Magazine printing • Paint spray booths • Metal command • Electrical production manufacturing • Manufacturing of dairy products • Dry cleaning services • Feed packing plant 	<ul style="list-style-type: none"> • Manufacturing of paint and varnish • Organic chemicals manufacturing • Breweries • Solvent recovery plants • Soaps and detergent manufacturing • Manufacturing of resins and costing • Metal manufacturing

2

3.1.1 Guideline D-2

The D-2 guideline specifically addresses waste stabilization ponds and sewage treatment plants. The Halton Region's Land Use Compatibility Guidelines refer to the full D-series of guidelines, however, do not specifically discuss the requirements of the D-2 Guideline. The D-2 Guideline is applicable to this study due to the presence of the Skyway Wastewater Treatment Plant.

² Halton Regional Official Plan Guidelines – Land Use Compatibility Guidelines (www.halton.ca/common/pages/UserFile.aspx?fileId=121105, accessed January, 2015)

Within the D-2 guideline, plants are categorized into three classes:

- Those with a design capacity equal to or less than 500 cubic metres of sewage per day (m³/d),
- Those with a design capacity greater than 500 m³/day but less than 25,000 m³/day; and
- Those with a design capacity greater than 25,000 m³/day

To minimize the potential to cause an adverse effect, minimum separation distances are recommended within the guideline.

For facilities with a capacity equal to or less than 500 m³/day, the recommended separation distance is 100 m. A smaller separation distance may be permitted if a qualified professional produces a study showing the feasibility of the distance based on implementing mitigation measures for noise, odour and other contaminants.

For facilities with a capacity greater than 500 m³/day but less than 25,000 m³/day, the minimum separation distance shall be 100 m. the recommended separation distance is 150 m.

For facilities with a capacity greater than 25,000 m³/day, a separation distance of greater than 150 m may be required. The guideline notes that these facilities will be dealt with on an individual basis as the determination of the required distance will depend on the types of sources and control measures being applied.

3.2 Halton Region's Regional Official Plan Guidelines: Air Quality Guidelines

The Region's Air Quality Guidelines (AQG) were developed along with a number of other guidelines for land use planning which came out of the Regional Official Plan Amendment (ROPA 38). In general terms, the AQG recommends consideration of local industrial sources and transportation features when evaluating the siting of a residential land use.

The AQG acts as a summary document of the applicable guidelines for a particular undertaking.

"2.1 Under the Region's policy 143(12), any source emission studies may only be applicable when sensitive land uses (residential, natural heritage) are proposed with these 3 conditions present:

- 1) Within 30 m of a major arterial road or provincial highway or within 150 m of provincial freeway;*
- 2) In proximity to an industrial use; and a*
- 3) Utility use"*

Novus conducted a review of identified industrial uses and roadways/highways, as referred to in items 1) and 2) of Section 2.1.

4.0 Classification of Nearby Industries

4.1 Guideline D-2 Classification of Surrounding Land Uses

The capacity of the nearby Skyway Wastewater Treatment Plant is 140,000 m³/day and therefore falls into the class of facilities greater than 25,000 m³/day. For this class, the minimum recommended separation distance is 150m. However, the guideline notes that these facilities should be dealt with on an individual basis and greater separation distances may be required. As the capacity of the Lakeview facility is approximately 6 times greater than the 25,000 m³/day threshold, an additional review should be performed to determine if the separation distance of approximately 630 m to the proposed development is appropriate.

Although the operation of the Lakeview facility is covered by the D-2 Guideline, based on the relatively large capacity of the facility, it may be better classified as a larger general industry facility under the D-6 Guidelines, as the operations from an odour perspective have the potential to influence distances greater than the 150m designated in the D-2 guideline, as discussed above. The D-6 guidelines provide additional recommendations for setback distances for various sizes of industry. Therefore, the Lakeview facility is also evaluated below with respect to the D-6 Guidelines.

4.2 Guideline D-6 Classification of Surrounding Land Uses

Three industrial land uses were identified surrounding the proposed residential development. **Figure 3** provides the guideline D-6 setbacks from the proposed development property line and shows the identified industries in the area.



Figure 3: D-6 Setbacks From Proposed Site

The industries are classified in **Table 3** below:

Table 4: Industries / Commercial Uses in the Area

Address	Name	Type	ECA	Class	Within A of I? ^[1]
1230 North Shore Boulevard East	Joseph Brant Memorial Hospital	Hospital	Yes	I	
1125 Lakeshore Road	Skyway Wastewater Treatment Plant	Wastewater Treatment Plant	Yes	III	
1333 Lakeshore Road	Burlington Cultural Centre	Public art gallery with art classes including painting and pottery	Yes	I	

Notes:

- n/a = Not Available
- [1] A of I = Area of Influence
- [2] Though considered under Guideline D-2, this facility has also been classified under Guideline D-6 due to its potential to influence areas greater than the Guideline D-2 separation distance from an odour perspective

Each the Joseph Brant Memorial Hospital and Burlington Cultural Centre (Class I facilities) lie outside the 70m area of influence and are therefore unlikely to affect the proposed

development. The Skyway Wastewater Treatment Plant, though covered under the D-2 Guideline, could also be considered a Class III (heavy industrial) facility under the D-6 Guideline (as discussed above). While it meets the minimum separation distance to the proposed development, it is within the area of influence, therefore an assessment of the potential for air quality and odour impacts from this facility is warranted.

4.3 D-Series Guideline Summary

As outlined above, an assessment of the potential for air quality and odour impacts from the Skyway Wastewater Treatment Plant is warranted under both Guideline D-2 and Guideline D-6. Provided that the air quality emissions and odour impacts from this facility meet the applicable air quality regulations, the requirements of Guidelines D-2 and D-6 will be met. This approach is consistent with Section 3.4.3 of Guideline D-2 and Section 4.10 of Guideline D-6, and also consistent with the presence of existing sensitive residences within the 1000 m area of influence distance from the Facility.

4.4 Transportation Sources

As the proposed development lies within 30m of North Shore Boulevard East (major arterial road) and within 150m of the QEW highway, the Halton Region's Air Quality Guidelines require that they be considered as a potential air quality source. Both roadways have been considered in this study.

5.0 Provincial Guidelines and Regulations for Potentially Incompatible Uses

Within Ontario, facilities which emit significant amounts of contaminants to the environment are required to obtain and maintain an Environmental Compliance Approval (an "ECA", formerly a Certificate of Approval, or "C of A") from the MECP or submit an Environmental Activity and Sector Registry ("EASR"). As shown in **Table 4** above, all three of the industries included in this assessment have ECAs from the MECP for their operations.

5.1 General Air Quality Contaminants

Under O.Reg. 419, a facility is required to meet prescribed standards for air quality contaminants at their property boundary line and any location off-site. The exception to this are elevated locations associated with high-rise residential development. Elevated locations are only assessed provided there is a point of reception.

5.2 Odour

There are a select few compounds that are provincially regulated from an odour perspective; there is no formal regulation with respect to mixed odours.

The MECP has decided to apply odour-based standards to locations “where human activities regularly occur at a time when those activities regularly occur,” which is generally accepted to be places that would be considered sensitive such as residences and public meeting places. Therefore, a new development introduces new sensitive receptors at which odour impacts could potentially occur.

As stated by the Environmental Commissioner of Ontario, impacts from mixed odours produced by industrial facilities are generally only considered and regulated by the MECP in the presence of persistent complaints (ECO 2010).

6.0 Site Visit to the Area

A site visit was performed for the proposed project on July 19th, 2018 by a Novus staff member. Winds on this day were blowing from the south, and considered calm at around 4 km/hr. A hand-held nasal olfactometer (a “Nasal Ranger”) was brought on the site visit to measure any odours, if detected.

During the site visit, odours were detected twice at the proposed site. The detected odours were recognizable as a sewage-type smell. The odours occurred for only 1-2 seconds and were too faint and infrequent to obtain a measurement using the Nasal Ranger. It should be noted that we are aware of a sewer-trap in the area, on the south side of North Shore Boulevard East, which may have contributed to the detectable odour. This trap connects to the main sewage flowing towards the Skyway Wastewater Treatment Plant.

During the site visit, Novus staff also walked along the waterfront trail and Lakeshore Road, adjacent to the Skyway Waste Water Treatment Plant. Here, odours were only detected in one location near the facility’s property line. Downwind (south) of the facility and along the majority of the sidewalk near the facility, odours were not detected. Again, sewage type odours were detected in one location adjacent to the facility, but odours were too intermittent to obtain a measurement. Odours were described as faint.

Overall, minimal odours were detected during the 2-hour walk around the vicinity of the site and the sewage treatment plant.

7.0 Potential Air Quality Impacts

7.1 Industrial Sources

The Class I facilities are outside of the D-6 recommended setback distance and areas of influence. In addition, the Class I facilities have existing Environmental Compliance

Approvals, and therefore should already meet the MECP guidelines for air quality contaminants at their property lines.

The Skyway Wastewater Treatment plant also has an existing Environmental Compliance Approval, and therefore will already meet the MECP guidelines for air quality contaminants at the property line. However, the primary concern from an air quality perspective is emissions of sewage-type odours from the plant. Odour impacts are only assessed at sensitive land-uses, therefore, the proposed development introduces a new residential receptor in proximity to the Wastewater Treatment Plant. Typically, the major sources of odorous emissions from wastewater treatment plants are the clarifiers and aeration tanks, which are located outdoors and exposed to the atmosphere. The Skyway Wastewater Treatment plant is approximately 630m from the proposed development site.

There are existing high rise residential buildings, ranging from 9 to 12-storeys tall, immediately east of the proposed development site on North Shore Boulevard East, a similar distance from the wastewater treatment plant to the proposed facility. Therefore, the addition of these new elevated receptors does not introduce a new receptor height which could impact the facility operations. There are also existing low-rise residences located immediately south of the Wastewater Treatment Plant, within 60m of the facility, as well as within 350m to the southeast of the facility and directly north of the proposed development site. As the odorous emission sources at the facility are typically ground-level area sources, worst-case impacts would typically not occur at elevated receptors, therefore, the addition of a high-rise development does not introduce a new potential worst-case receptor location. Minimal sewage-type odours were detected during the site visit to the area, however, faint odours were detected briefly at the proposed site. As mentioned above, these odours may be attributed to a nearby sewer-trap and not the facility.

Winds which would direct emissions from the waste-water treatment towards the development are from the south and southeast. **Figure 4** shows the wind roses for the Burlington Piers meteorological station. The wind roses show the frequency at which winds blow from the various compass directions. As can be seen from this image, predominant winds occur from the west through southwest, which would direct emissions from the facility towards Lake Ontario. Winds which would direct emissions from the facility towards the proposed site (south and southeast) occur approximately 7% of the time.

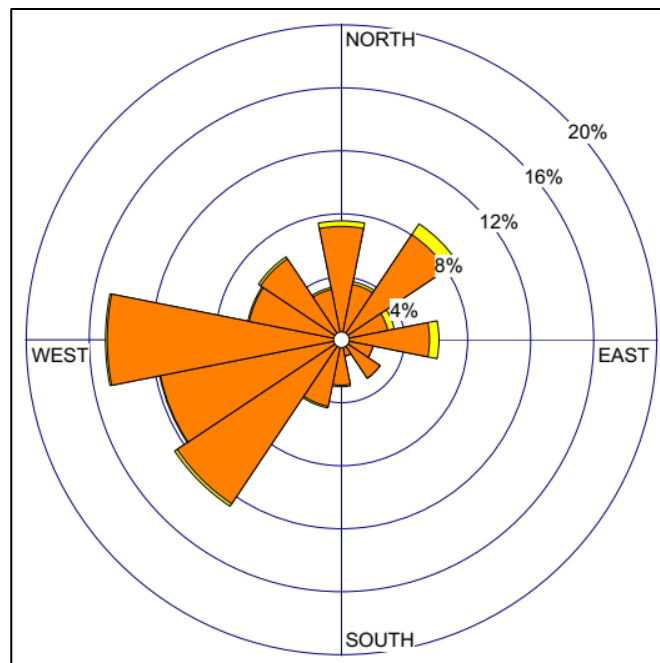


Figure 4: Wind Roses for Burlington Piers (1991-2015)

Due to the presence of many existing sensitive receptors in similar or closer proximity to the wastewater treatment plant, we do not expect there to be a compatibility concern with the proposed development. If there are not any current odour concerns or complaints from the existing residences, we would expect similar response at the proposed development. Though faint sewage-type odours were detected briefly during the site visit, we believe they were likely due to the nearby sewer-trap and not the Skyway Wastewater Treatment Plant.

7.2 Transportation Impacts

The proposed development lies near both North Shore Boulevard East and the QEW. The southeast portion of the building is approximately 10m from North Shore Boulevard East while the northwest portion of the building lies approximately 40m from the roadway. From the QEW, there is a separation distance of 110m or greater to the proposed development. The development also includes three outdoor patios at grade-level and several above-grade amenity terraces.

The existing site is occupied by residential uses, and the location of the buildings on site is similar to that of the proposed residential development. Along North Shore Boulevard East, there are several high-rise residential developments in similar proximity to the roadway. There is also the Joseph Brant Hospital, which is a critical receptor location. Along the QEW to the north of the proposed development are several low-rise residential properties, on both the east and west side of the QEW. These properties are in similar proximity or closer to the highway than the proposed development. Since roadway emissions act like a line source, with minimal

upward momentum, the introduction of elevated receptors does not introduce a new worst-case receptor location.

The proposed development also includes a landscape buffer along the western and southern property lines. The buffered landscape is positive feature which not only blocks line of site to the roadway, but can filter out particular emissions, particularly to the outdoor patios located along the south façade of the building.

Due to the presence of existing residences in similar proximity to North Shore Boulevard East and the QEW, it is our opinion that a detailed transportation study is not required for the proposed development as residential lands are already compatible near these roadways.

8.0 Conclusions

A review of the existing industries and transportation sources surrounding the proposed 1157-1171 North Shore Boulevard East development with respect to air quality has been performed in accordance with the Region of Halton's Land Use Compatibility guidelines. Odours and general air quality contaminants were considered at the proposed development from the surrounding industries and roadways. Two Class I industries were identified and determined to be outside of the corresponding area of influence and are not expected to be a concern from an air quality perspective.

Due to the presence of several low rise and high-rise residences in the area, as well as on the existing site, impacts from the nearby roadways (North Shore Boulevard East and QEW) are not expected to cause a compatibility concern.

Similarly, the presence of several residences in similar proximity or closer to the Skyway Wastewater Treatment Plant, in addition to existing residences located at the proposed site, shows residential land-use is currently compatible. Though sewage-type odours were detected briefly at the proposed site, we believe these odours may be attributed due to the nearby sewer-trap and not the wastewater treatment plant. Any odours from the sewer-trap are expected to be infrequent, and is common in any urban setting.

The proposed development is anticipated to be compatible with the surrounding land uses from an air quality perspective.