

Lakefront Heights Inc.

### **Official Plan and Zoning By-Law Amendments**

Stationary Noise Study Lakefront Heights Development Windsor, ON

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## 1.0 Introduction

### **1.1** Purpose and Objectives

Dillon Consulting Limited (Dillon) was retained by Lakefront Heights Inc. to complete a stationary noise study for a proposed residential development (the Proposed Development) located at 0 Wyandotte Street East (south of Sportsman's Club) in Windsor Ontario.

The Noise Study presented herein was prepared in accordance with the guidelines and requirements of the City of Windsor, the Ontario Ministry of the Environment, Conservation and Parks (MECP) noise publication NPC-300 and MECP's land-use compatibility guidelines (D-series). This assessment focuses on the potential noise impacts from nearby commercial operations on the Proposed Development.

### 1.2 The Project and Surrounding Areas

The Proposed Development is located at 0 Wyandotte Street East in Windsor, Ontario. Per the City of Windsor's zoning bylaw, the lands surrounding the Proposed Development include areas zoned as commercial, residential, and green district.

The Proposed Development consists of the following buildings:

- 2 Storey parking structure
- Building A 13 storey building with approximately 110 Units;
- Building B 13 storey building with approximately 110 Units; and
- 18 attached townhouse units.

The Proposed Development and surrounding lands are shown in **Figure 1**. The development's conceptual plan and relevant zoning maps are shown in **Appendix A**.



### 2.0 Stationary Noise Assessment

Dillon has completed a noise assessment to predict potential noise impacts from surrounding industrial and commercial land uses on the Proposed Development.

### 2.1 D-6 Guidelines

The MECP's land-use compatibility guidelines (D-series) are intended to prevent or minimize the encroachment of sensitive land uses upon industrial/commercial land uses and vice versa, as these two types of land uses are normally incompatible, due to possible adverse effects on the sensitive land use. The guidelines were designed to reduce potential complaints and protect sensitive land uses while upholding the ability of commercial and industrial properties to maintain compliance with MECP requirements.

The D-6 guideline separates industries into three classes based on the scale of the industry's operation. This involves considerations including, but not limited to: probability of fugitive emissions, schedule of operations, and production volume. The D-6 criteria for industry classification are shown in **Appendix B**. The guideline provides setback distances for each class representing potential influence areas and recommended minimum separation distances shown in **Table 1**.

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

#### Table 1: D-6 Influence Areas and Recommended Separation Distances

The D-6 guideline specifies that for site-specific plans, measurement shall be from the closest existing, committed, or proposed property/lot line of the industrial land use to the property/lot line of the closest existing, committed, or proposed sensitive land use. Areas designated for ancillary land uses that are not of a sensitive nature (such as a parking lot) may be included within the separation distance.

When considering vacant industrial land, determination of its potential influence area is based on a hypothetical "worst case scenario" for which the zoned area is committed.



### 2.2 Nearby Industries

Dillon reviewed the area surrounding the subject lands in order to classify the existing industrial and commercial lands using the MECP's D-Series framework, as well as to identify nearby vacant lands which are zoned to allow for commercial or industrial uses. Additionally, a site visit was conducted by Dillon personnel on June 12<sup>th</sup>, 2024, to identify industrial or commercial operations with the potential influence areas that intersect the Proposed Development.

Industries were classified based on site visit observations, review of existing MECP approvals documents, and through publicly available information.

Within the study area, the only industry identified with potential for adverse effects on the Proposed Development was the Riverside Sportsmen Club located at 10835 Riverside Drive East, directly north of the Proposed Development's property boundary.

Riverside Sportsmen Club operates as a restaurant and dining hall for private events. Based on observations made during the site visit, the Riverside Sportsmen Club is considered a Class I industry with the potential to have noise impacts on the Proposed Development.

As per the D-6 Guideline, the Proposed Development is located within the potential influence area of the Riverside Sportsmen Club. The following sections provide an assessment of the potential noise impacts from the Riverside Sportsmen Club on the Proposed Development.

The zoning of vacant lands in proximity to the Proposed Development were reviewed to identify vacant lands that allow for commercial or industrial uses. As per the City of Windsor Zoning By-law 8600, the vacant lands located to the east and south of the proposed development are zoned as residential districts. Therefore, future commercial or industrial uses on these vacant lands were not considered.

#### 2.2.1 Noise Sources

Dillon has identified potential noise sources associated with the Riverside Sportsmen Club. The potential noise sources and the sound power level of each noise source is provided in **Table 2**.

#### **Table 2: Stationary Noise Sources**

Noise Source	# of Sources	Sound Power Level (dBA)
HVAC Unit	3	86
Exhaust Fan	4	78

Conservatively, it was assumed that the above identified noise sources operate simultaneously during the daytime period and at a 50% operating capacity during the nighttime period. Dillon utilized its inhouse library to apply sound power levels to the identified noise sources.



The locations of the noise sources are identified in Figure 2.

Per NPC-300, the following sources are not considered stationary sources associated with the Riverside Sportsmen Club:

- Occasional movement of vehicles on the property such as delivery of goods to and the removal of goods/refuse from convenience stores, fast food restaurants and similar commercial facilities; and
- Parking lots for private passenger vehicles at offices or commercial facilities.

#### 2.2.2 Noise Criteria

NPC-300 defines sound level limits for noise impacts from stationary sources on noise sensitive land uses. A noise sensitive land use is defined as a property of a person that accommodates a dwelling, a noise sensitive commercial purpose, or a noise sensitive institutional purpose. This definition includes:

- Permanent, seasonal, and rental residences;
- Hotels, motels, and campgrounds;
- Schools, universities, libraries, and daycare centres;
- Hospitals and clinics, nursing/retirement homes; and
- Places of worship.

Points of reception (POR) for dwellings are located at the centre of any window on a noise sensitive space, with a first-storey height of 1.5 m and subsequent storeys separated by 3 m. A dwelling may have an outdoor point of reception located on its property within 30 m of its façade at a height of 1.5 m, typically in back or front yards, terraces, or patios.

In NPC-300, areas are divided into four classes based on their existing background acoustical environment:

- Class 1 Urban Area;
- Class 2 Semi-Urban/Semi-Rural Area;
- Class 3 Rural Area; and
- Class 4 Areas of Redevelopment and Infill.

The sound level limits for outdoor and plane-of-window PORs for continuous and impulsive noise are outlined in **Table 3**.

#### **Table 3: Stationary Source Continuous Noise Exclusionary Limits**

Assessment Location	Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
Plane of window for living	Daytime (07:00 - 19:00)	50 dBA	50 dBA	45 dBA	60 dBA
area or sleeping quarters <sup>[1]</sup>	Evening (19:00 - 23:00)	50 dBA	50 dBA	40 dBA	60 dBA
area or sleeping quarters.	Nighttime (23:00 - 07:00)	45 dBA	45 dBA	40 dBA	55 dBA
Outdoor points of	Daytime (07:00 - 19:00)	50 dBA	50 dBA	45 dBA	55 dBA
reception	Evening (19:00 - 23:00)	50 dBA	45 dBA	40 dBA	55 dBA

Note: [1] The plane of window for living area or sleeping quarters will be referred to as the "façade" of a receptor.

Based on observations made during the site visit completed on June 12<sup>th</sup>, 2024, the existing background acoustical environment of the Proposed Development's lands are considered Class 1 – Urban Area.



#### 2.2.3 Noise Sensitive Points of Reception

Noise sensitive points of reception considered in this study included the façades of the residential dwellings of the Proposed Development. The rear yards of the attached townhomes were considered as outdoor points of receptions. The balconies of the Proposed Development's units are less than 4 m in depth and are not considered outdoor points of reception as per NPC-300. No other common outdoor points of reception were identified within the Proposed Development.

#### 2.2.4 Predicted Sound Levels

The noise analysis was completed using CADNA/A, an outdoor noise propagation model, based on ISO Standard 9613, Part 1: Calculation of the absorption of sound by the atmosphere, 1993 and Part 2: General method of calculation (ISO-9613-2:1996). The model is capable of incorporating various site specific features, such as elevation, berms, absorptive grounds, and barriers to accurately predict noise levels at specific receptors, pertaining to noise emissions from a particular source / sources. The ISO based model accounts for reduction in sound level due to increased distance and geometrical spreading, air absorption, ground attenuation, and acoustical shielding by intervening structures and topography. The model is considered conservative as it represents atmospheric conditions that promote propagation of sound from the source to the receiver.

The following assumptions were incorporated in the noise propagation modelling:

- A global ground absorption coefficient of 0.50, representing a mix of absorptive and reflective grounds in the area surrounding the Proposed Development;
- Second order reflection was incorporated in the noise model; and
- The ground within the study area is considered to be generally flat.

For the purposes of the stationary assessment, the Building Evaluation feature in Cadna/A was used to determine building facades impacts.

Impacts from the stationary noise sources were predicted through noise propagation modelling. **Table 4** below summarizes the worst-case noise impacts on the façades of the Proposed Development for continuous noise.



#### **Table 4: Noise Impact Summary Table**

	Maximum Leq		
Point of Reception	Daytime / Evening (07:00-19:00)	Nighttime (23:00-07:00)	MECP Compliance
Worst Case Impacts Façade of Proposed Development	46	43	Compliant with Class 1 Noise Criteria

The predicted noise impacts from the Riverside Sportsmen Club on the Proposed Development have been shown in **Figures 2** and **3** for the daytime/evening and nighttime period, respectively.

The outdoor points of reception (OPRs) associated with the townhome units towards the south of the Proposed Development are shielded from all noise sources associated with Riverside Sportsmen Club. The predicted OPR sound levels at the townhome units range from 15 to 20 dBA.

The results indicate that the potential noise impacts from the Riverside Sportsmen Club on the Proposed Development are predicted to be compliance with the MECP Class 1 exclusionary limits.



## 3.0 Conclusions

Dillon Consulting Limited (Dillon) was retained by Lakefront Heights Inc. to complete a stationary noise study for a proposed residential development (the Proposed Development) located at 0 Wyandotte Street East (south of Sportsman's Club) in Windsor Ontario.

The noise study found that stationary noise impacts from the Riverside Sportsmen Club located north of the Proposed Development are predicted to be compliant with the applicable noise criteria.



### 4.0 Closure

This stationary noise study has been prepared based on the information provided and/or approved by Lakefront Heights Inc. This report is intended to provide a reasonable review of available information within an agreed work scope, schedule, and budget. This report was prepared by Dillon for the sole benefit of the Lakefront Heights Inc. The material in the report reflects Dillon's judgement in light of the information available to Dillon at the time of this report preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust that the report is to your satisfaction. Please do not hesitate to contact the undersigned if you have any further questions on this report.

Respectfully Submitted:

#### **DILLON CONSULTING LIMITED**



Lucas Arnold, P.Eng. Associate



Callum Heggart, P.Eng.

Attachments Attachment A: Development Conceptual Plan and Zoning Attachment B: D-6 Classification Criteria



## **Figures**

Lakefront Heights Inc. Stationary Noise Study June 2024 – 21-2104





### Figure 1

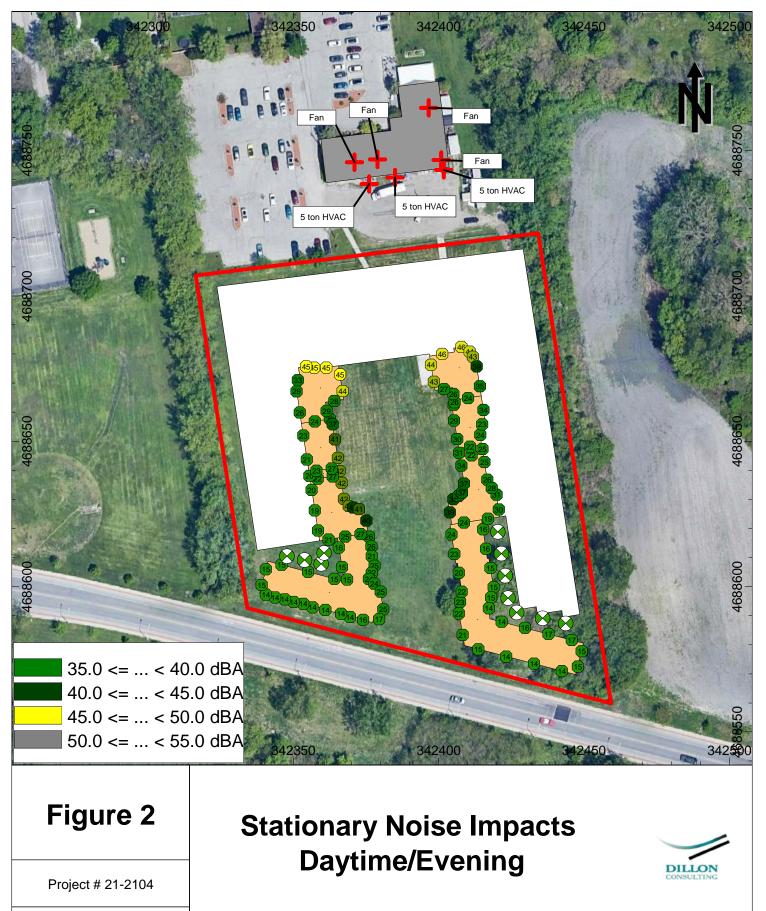
Site and Surrounding Area



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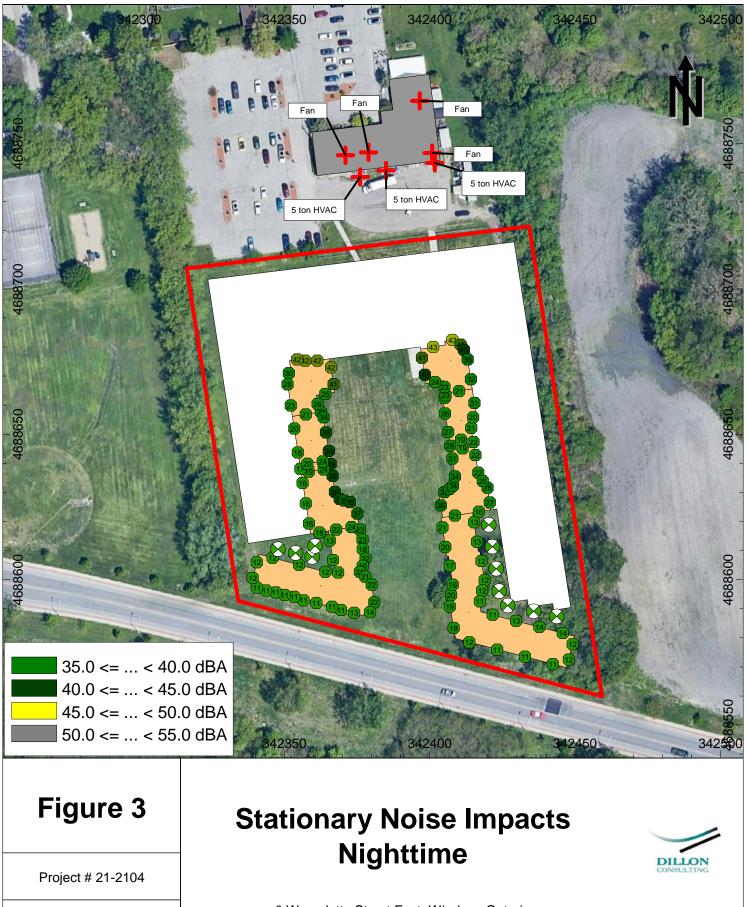
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Project # 21-2104



0 Wyandotte Street East, Windsor, Ontario

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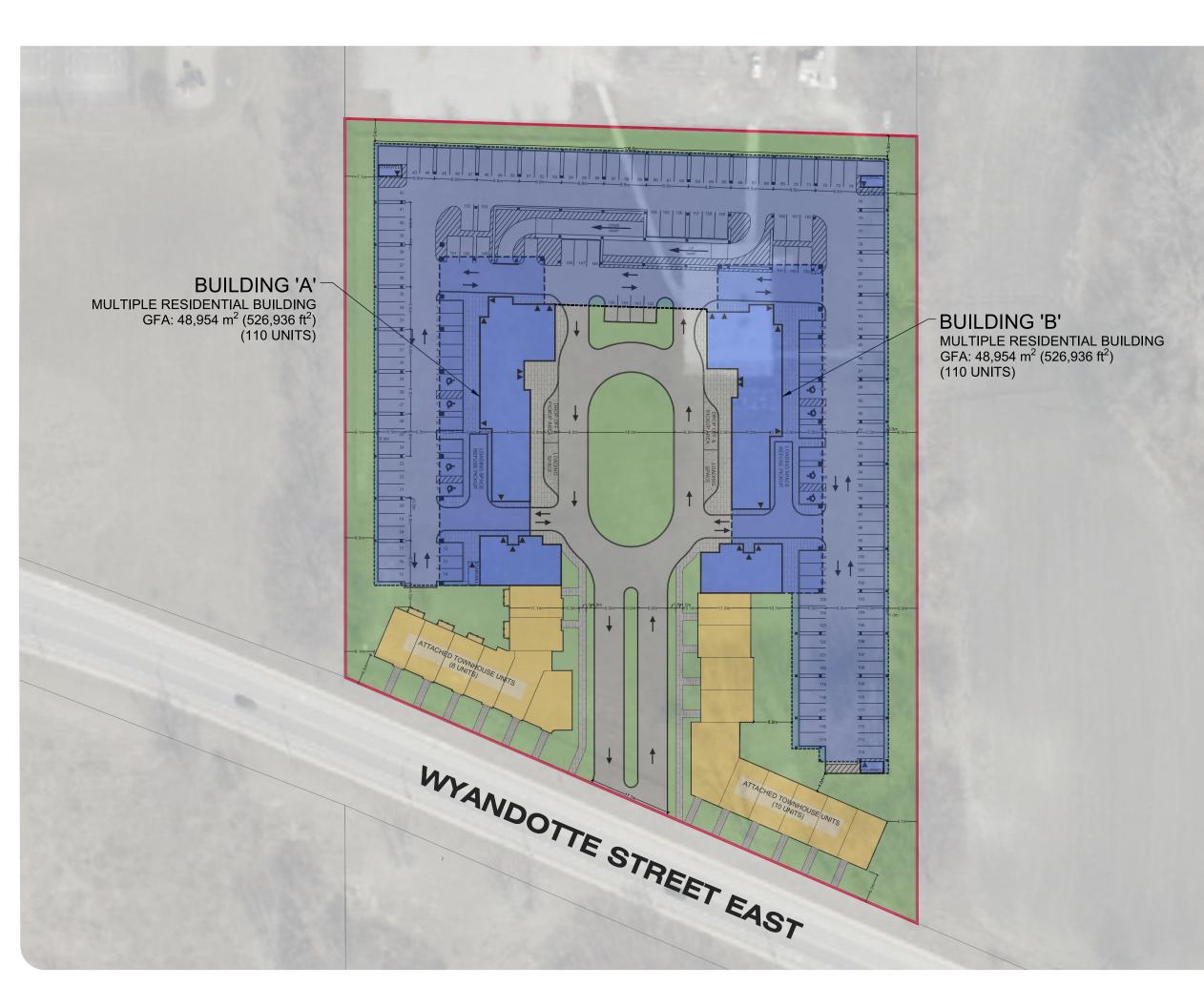
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# **Appendix A**

Development Conceptual Plan and Zoning









#### SITE DATA MATRIX ZONING PROVISIONS REQUIRED PROVIDED PROJECT DESCRIPTION N/A RESIDENTIAL ZONING DESIGNATION RD3.3 SITE SPECIFIC RD3.3 RESIDENTIAL LAND USE N/A MAJOR OCCUPANCY(S) 4 N/A RESIDENTIAL PERMITTED USES MULTIPLE DWELLING MULTIPLE DWELLING MINIMUM SITE AREA 11,680m<sup>2</sup> 16,633m<sup>2</sup> BUILDING AREA (GROUND FLOOR FOOTPRINT 9,314.5m<sup>2</sup> N/A TOTAL UNITS N/A 238 LOT COVERAGE 35% 56%\* 45.0m 129.4m MINIMUM LOT WIDTH MAXIMUM BUILDING HEIGHT 24.0m 44.0m\* MINIMUM FRONT YARD DEPTH 6.0m 12 N/A MINIMUM REAR YARD DEPTH 5.0m 13 N/A MINIMUM SIDE YARD DEPTH N/A 6.0m REQUIRED SPACES - STANDAR 289 307 REQUIRED SPACES -4 TYPE A AND 4 TYPE E 16 (8 TYPE A & 8 TYPE B ACCESSIBLE REQUIRED SPACES - VISITOR 44 48 (15%) 18 PARKING SPACES - TOTAL 297 323 19 GROUND FLOOR PARKING N/A 162 20 SECOND FLOOR PARKING N/A 161 BICYCLE SPACES 18 23 22 LOADING SPACES 4 4 23 LANDSCAPED AREA - SOFT N/A 4.871m<sup>2</sup> LANDSCAPED AREA - HARD N/A 1,159m<sup>2</sup> I ANDSCAPED AREA - TOTAL 6,030m<sup>2</sup> (36.2%) 35% 26 DWELLING UNITS PER HECTARE 180 144 \* REQUIRES SITE SPECIFIC ZONING BY-LAW AMENDMENT

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SOURCE: COUNTY OF ESSEX AERIAL PHOTOGRAPHY (2021)

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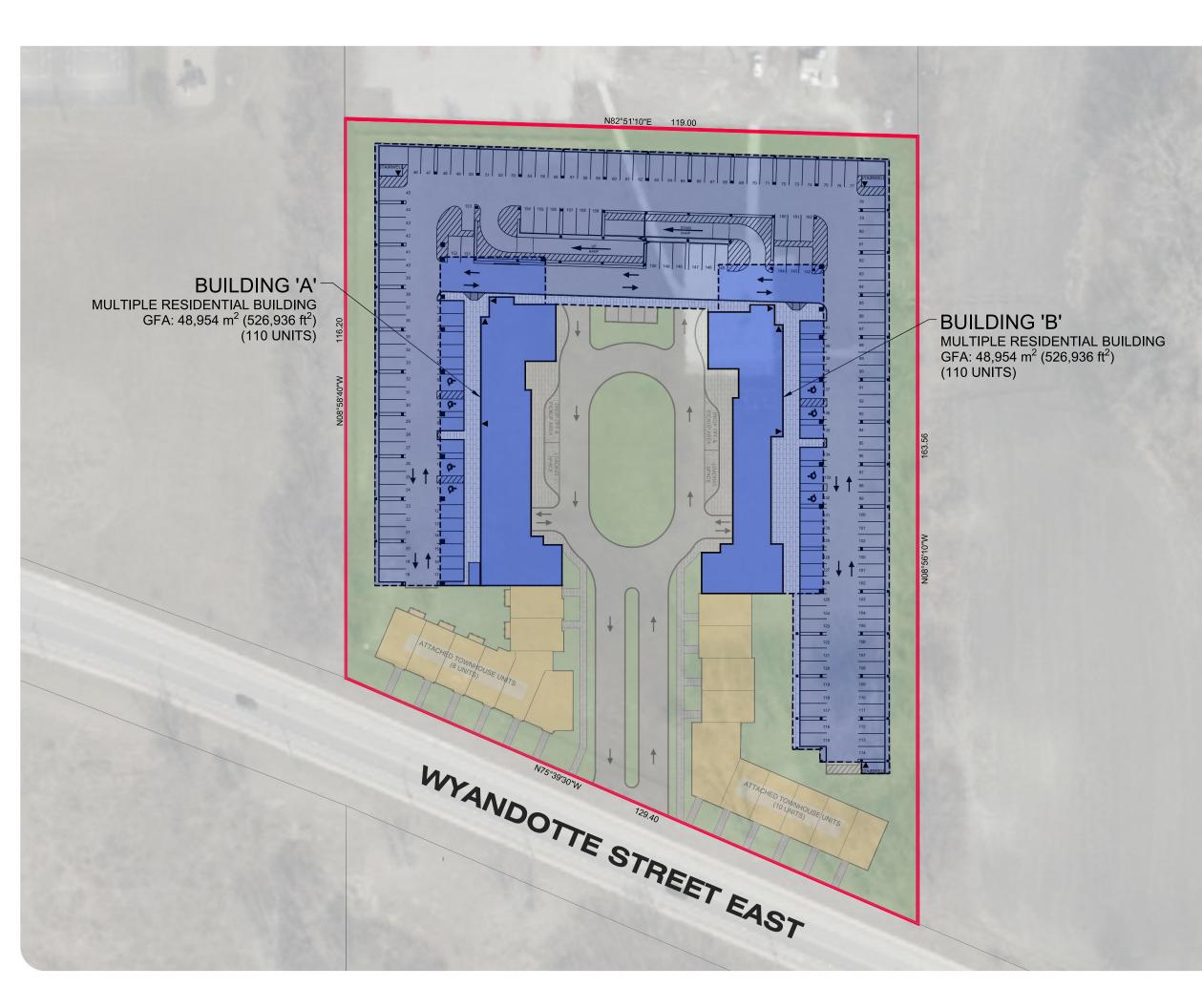
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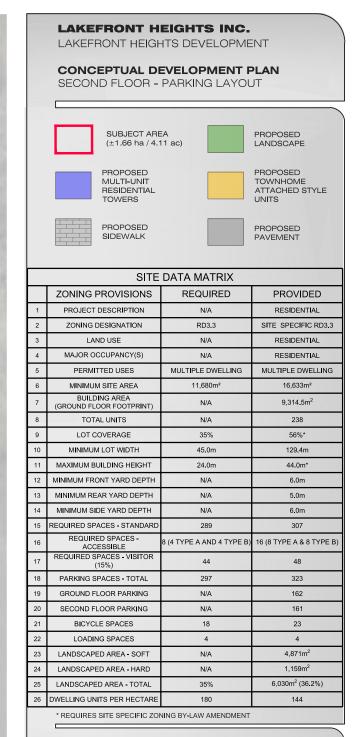
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DILLON CONSULTING

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DATE: 12/06/2024





SCALE : 1:750

SOURCE: COUNTY OF ESSEX AERIAL PHOTOGRAPHY (2021)

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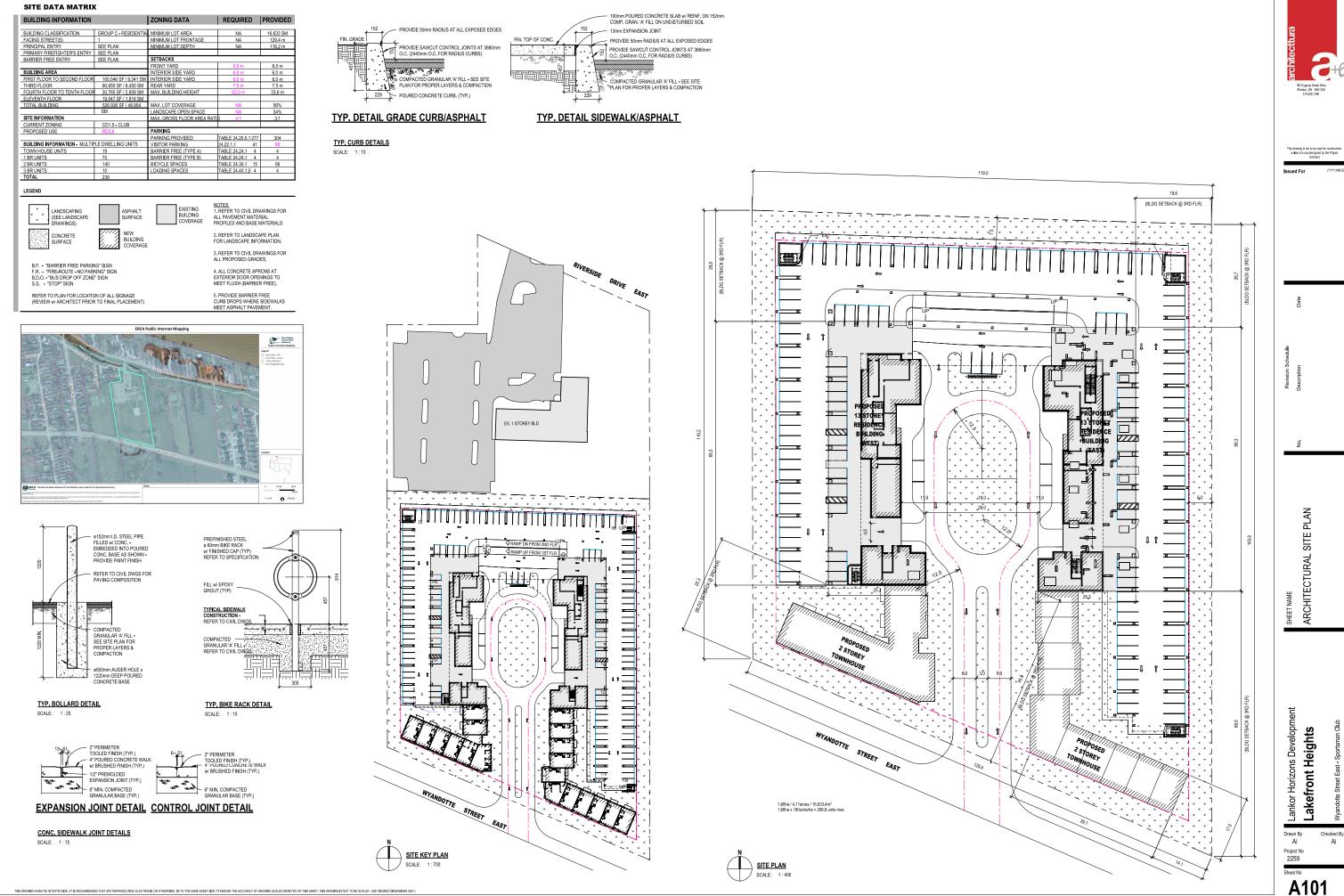
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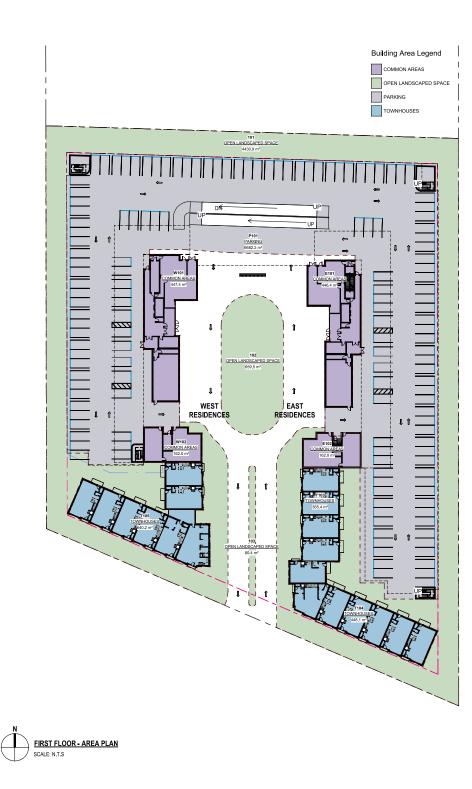
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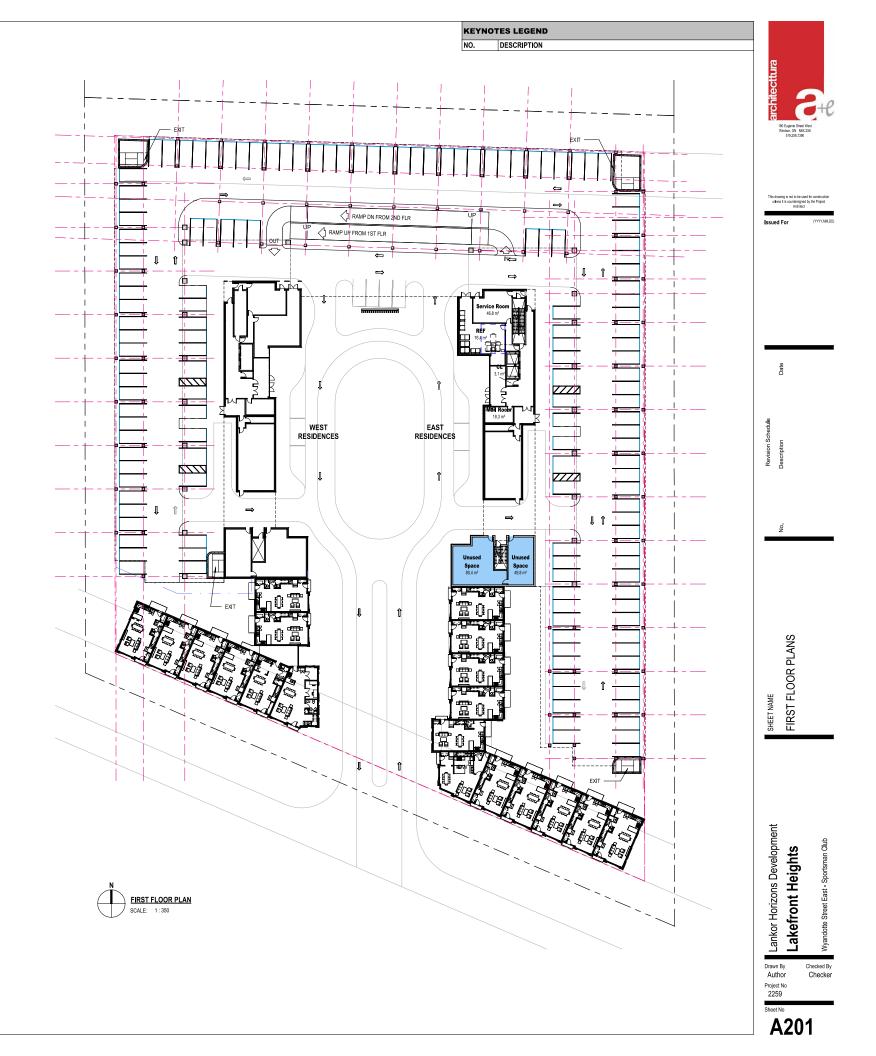
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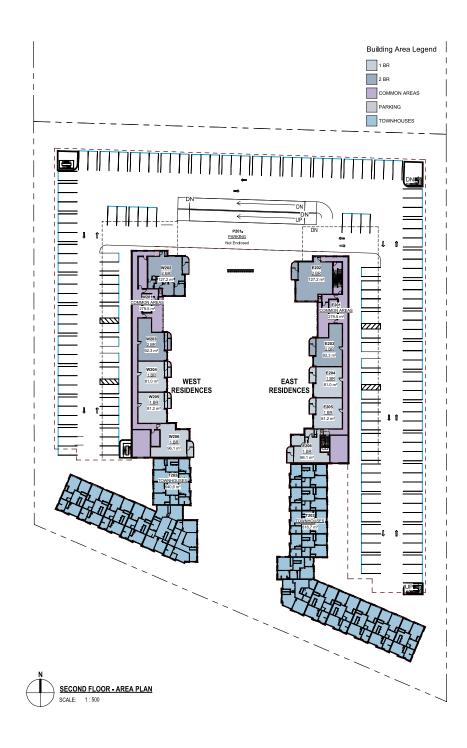
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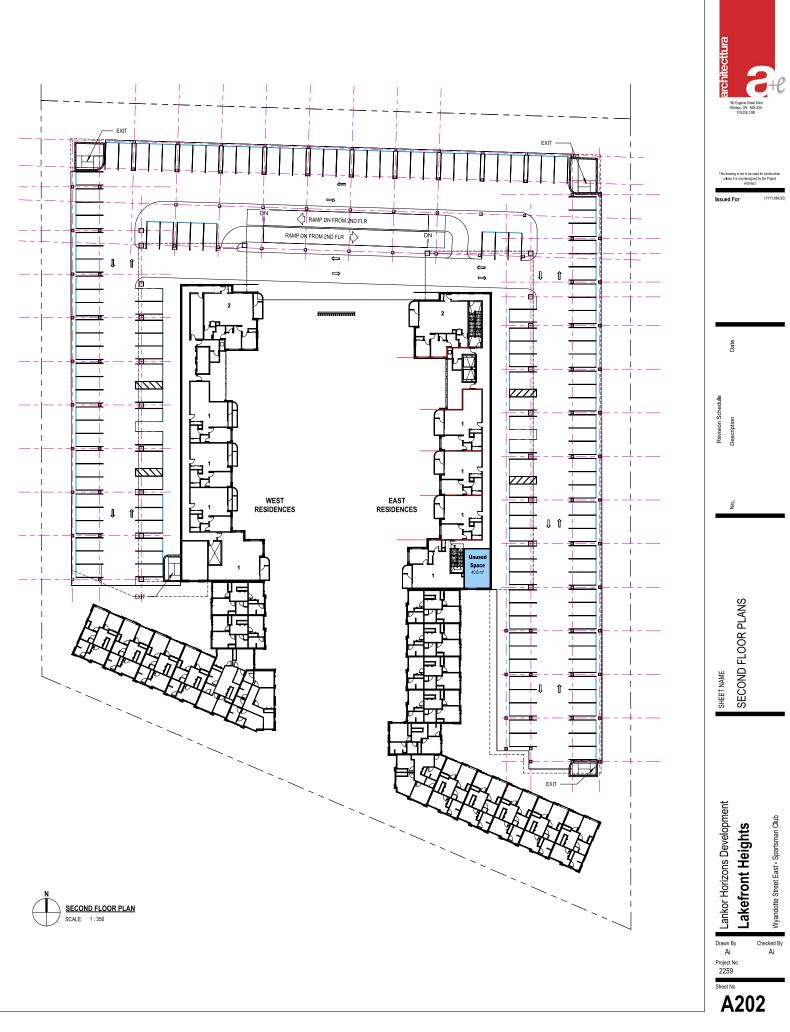






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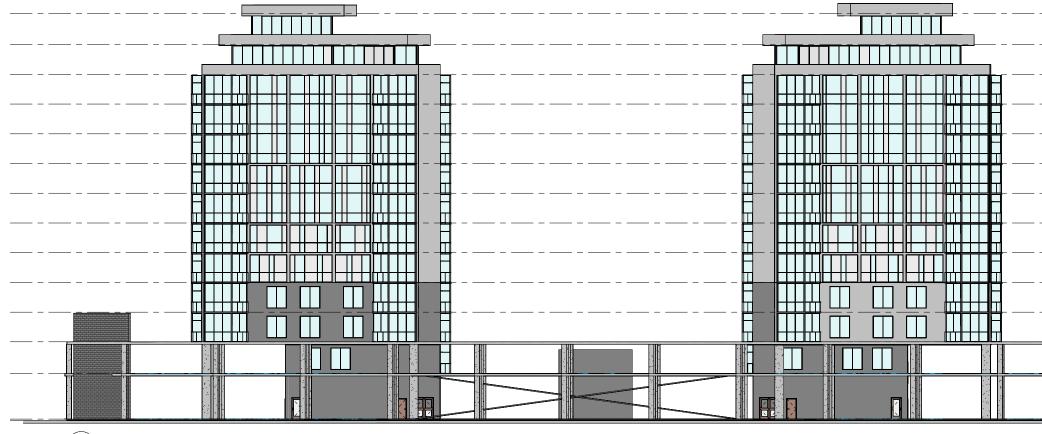
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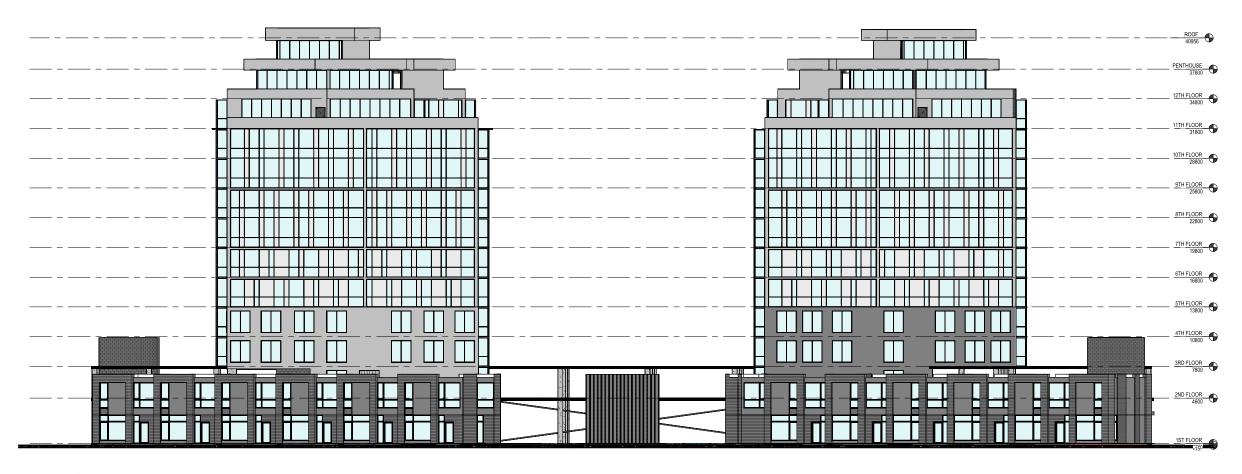




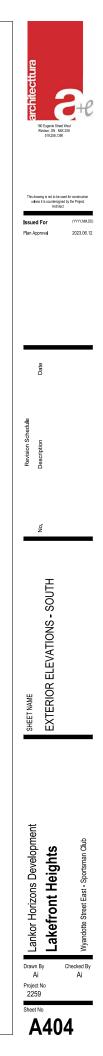
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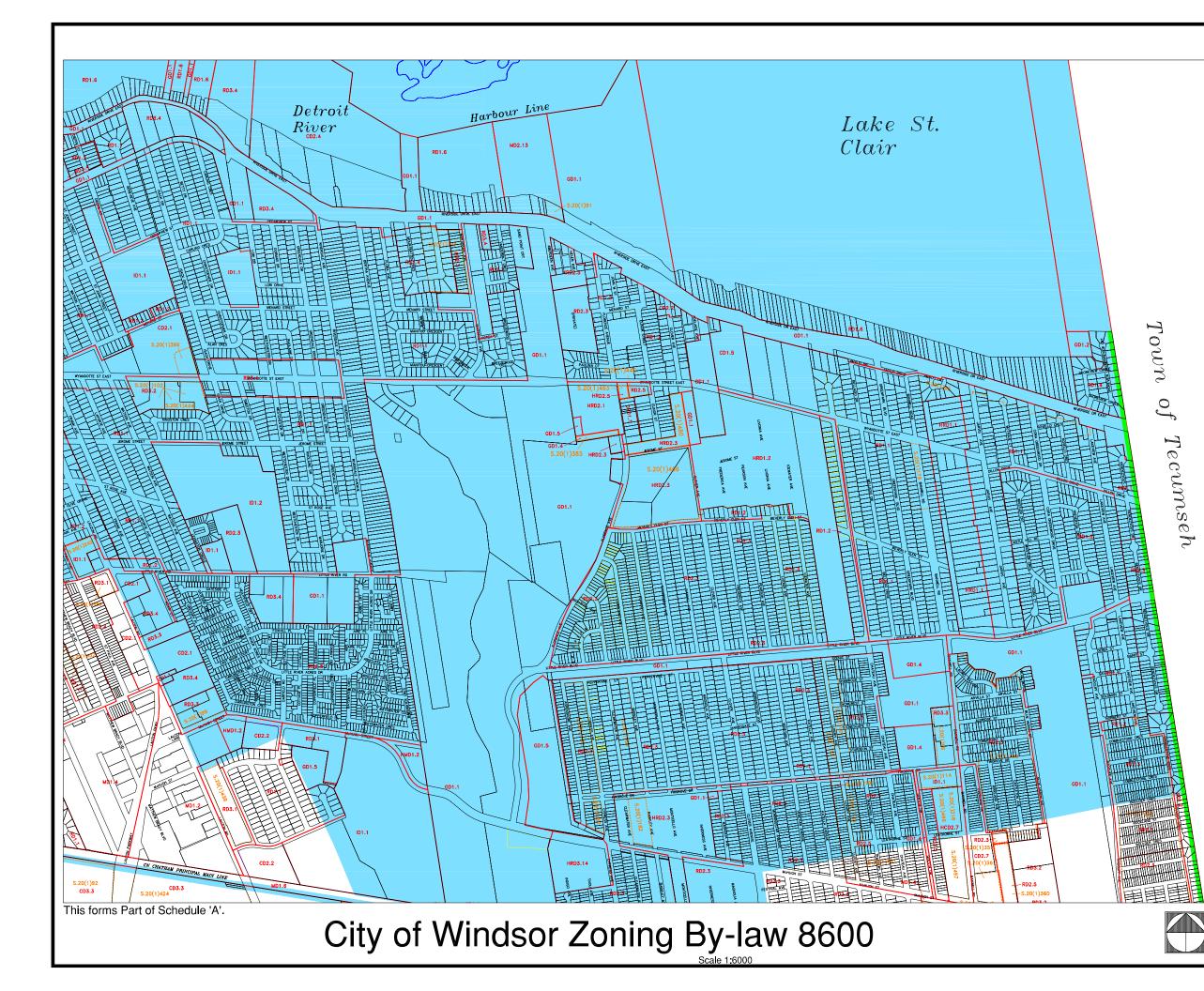
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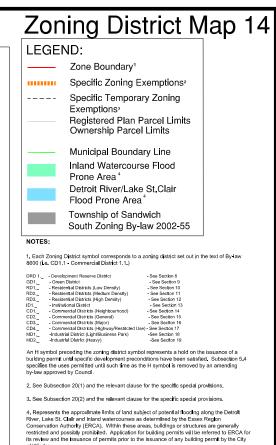
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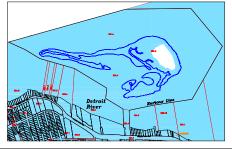
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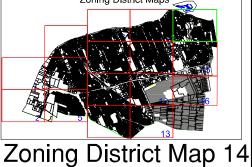




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31/07/18	106-2018		



Zoning District Maps



## **Appendix B**

**D-6 Classification Criteria** 





Category	Outputs	Scale	Process	Operations/Intensity	Possible Examples
Class I	<ul> <li>Noise: Sound not audible off property</li> <li>Dust and/or Odour: Infrequent and not intense</li> <li>Vibration: No ground borne vibration on plant property</li> </ul>	<ul> <li>No outside storage</li> <li>Small scale plant or scale is irrelevant in relation to all other criteria for this Class</li> </ul>	Self-contained plant or building which produces/stores a packaged product. Low probability of fugitive emissions	<ul> <li>Daytime operations only</li> <li>Infrequent movement of products and/or heavy trucks</li> </ul>	<ul> <li>Electronics manufacturing and repair</li> <li>Furniture repair and refinishing</li> <li>Beverages bottling</li> <li>Auto parts supply</li> <li>Packaging and crafting services</li> <li>Distribution of dairy products</li> <li>Laundry and linen supply</li> </ul>
Class II	<ul> <li>Noise: Sound occasionally audible off property</li> <li>Dust and/or Odour: Frequent and occasionally intense</li> <li>Vibration: Possible groundborne vibration, but cannot be perceived off property</li> </ul>	<ul> <li>Outside storage permitted</li> <li>Medium level of production allowed</li> </ul>	<ul> <li>Open process</li> <li>Periodic outputs of minor annoyance</li> <li>Low probability of fugitive emissions</li> </ul>	<ul> <li>Shift operations permitted</li> <li>Frequent movement of products and/or heavy trucks with the majority of movements during daytime hours</li> </ul>	<ul> <li>Magazine printing</li> <li>Paint spray booths</li> <li>Metal command</li> <li>Electrical production manufacturing</li> <li>Manufacturing of dairy products</li> <li>Dry cleaning services</li> <li>Feed packing plant</li> </ul>
Class III	<ul> <li>Noise: sound frequently audible off property</li> <li>Dust and/or Odour: Persistent and/or intense</li> <li>Vibration: Ground-borne vibration can frequently be perceived off property</li> </ul>	<ul> <li>Outside storage of raw and finished products</li> <li>Large production levels</li> </ul>	<ul> <li>Open process</li> <li>Frequent outputs of major annoyances</li> <li>High probability of fugitive emissions</li> </ul>	<ul> <li>Continuous movement of products and employees</li> <li>Daily shift operations permitted</li> </ul>	<ul> <li>Manufacturing of paint and varnish</li> <li>Organic chemicals manufacturing</li> <li>Breweries</li> <li>Solvent recovery plants</li> <li>Soaps and detergent manufacturing</li> <li>Manufacturing of resins and costing</li> <li>Metal manufacturing</li> </ul>

## References

Ontario Ministry of Environment Publication NPC-300, Environmental Noise Guideline, Stationary and Transportation Sources- Approval and Planning, October 2013.

