

DILLON
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OAKVILLE TOC

Noise Feasibility Study

157-165 Cross Avenue, Oakville, Ontario

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1.0 Introduction

1.1 Purpose and Objectives

Dillon Consulting Limited (Dillon) was retained by Cross Realty LP (the Developer) to complete a noise feasibility study as requested by Region of Halton for a proposed residential development located at 157-165 Cross Avenue in Oakville, Ontario. The proposed development is located on the north side of Cross Avenue, west of the Oakville GO station, and south of the Queen Elizabeth Way (QEW). This study has been completed in support of Zoning By-law Amendment application for the proposed development.

The noise feasibility study presented herein was prepared in accordance with the guidelines and requirements of the Region of Halton, Town of Oakville, the Ontario Ministry of Environment, Conservation and Parks (MECP) noise publication NPC-300, and MECP's land-use compatibility guidelines (D-series). This assessment focuses on the noise impacts from nearby transportation sources and stationary sources (i.e., nearby industrial operations) on the proposed development.

This noise feasibility study adheres to the Terms of Reference submitted to the Region of Halton. The Terms of Reference have been included in **Appendix A**.

1.2 The Project and Surrounding Areas

The proposed development is located at 157 and 165 Cross Avenue in Oakville, Ontario. The subject lands are currently occupied by low-rise commercial buildings and surface parking lots. The development is proposed to consist of the following two residential and commercial towers:

- Tower A – 58 storeys with commercial space, office space, and residential units; and
- Tower B – 50 storeys with commercial space and residential units.

Surrounding the proposed development are the following existing land uses:

- North – Commercial and office with associated parking lots;
- East – Oakville GO Station with associated parking lots;
- South – Residential (with several single-detached houses) and commercial with associated parking lots; and
- West - Commercial with associated parking lots.

At the time of this assessment, the subject lands and the surrounding land uses are zoned Midtown Transitional Commercial (MTC) as per the Town of Oakville's Zoning By-Law 2014-014.

The subject site and surrounding area are shown in **Figures 1** and **2**. The plans for the proposed development are provided in **Appendix B**. The zoning map showing the subject lands and surrounding area is provided in **Appendix C**.

2.0 Transportation Noise Assessment

This section investigates noise impacts from nearby transportation sources on the proposed development.

The transportation noise sources with the potential to impact the proposed development include the following:

- Passenger rail traffic from GO Transit's Oakville Subdivision
- Freight and passenger rail traffic from Canadian National Railway's (CN) Oakville Subdivision
- Road traffic from Cross Avenue
- Road traffic from Trafalgar Road
- Road traffic from Queen Elizabeth Way

Impacts from rail and road were predicted and compared against the applicable criteria in the Ontario Ministry of Environment, Conservation and Parks (MECP) noise guideline publication, *NPC 300 – Environmental Noise Guideline – Stationary and Transportation Sources – Approvals and Planning* (2013) and the Region of Halton's Noise Abatement Guidelines. NPC-300 outlines noise level criteria for sensitive land uses, which assist in determining requirements for façade construction, ventilation requirements, warning clauses, and potential noise barriers for the proposed development.

2.1 Noise Criteria

The applicable transportation noise criteria, as outlined in Part C of NPC-300, is presented in **Table 1** through **Table 4**. **Table 1** summarizes the indoor sound level limits based on the type of space assessed, time of day, transportation noise source, and the maximum allowable equivalent sound levels from railway sources. The indoor noise levels are based on the assumption of closed windows and doors.

Table 1: Indoor Sound Level Limits for Road and Rail

| Type of Space | Time Period | Equivalent Sound Level - L_{eq} | |
|---|-----------------------------|-----------------------------------|--------|
| | | Road | Rail |
| General offices, reception areas, retail stores, etc. | Daytime 07:00 - 23:00 | 50 dBA | 45 dBA |
| Living/dining areas of residences, hospitals, nursing homes, schools, daycares, etc. | Daytime 07:00 - 23:00 | 45 dBA | 40 dBA |
| Living/dining areas of residences, hospitals, nursing homes, etc. (except schools and daycares) | Night-time 23:00 - 07:00 | 45 dBA | 40 dBA |
| Sleeping quarters of residences | Daytime 07:00 - 23:00 | 45 dBA | 40 dBA |
| | Night-time 23:00 - 07:00 | 40 dBA | 35 dBA |
| Sleeping quarters of hotels | Night-time 23:00 - 07:00 | 45 dBA | 40 dBA |

Table 2 outlines the maximum equivalent plane-of-window sound levels for road and rail where if exceeded, a detailed building component design assessment is required to ensure the indoor sound level limits (see **Table 1**) are achieved.

Table 2: Requirements for Building Component Assessment

| Assessment Location | Time Period | Equivalent Sound Level - L_{eq} | |
|--|----------------------------|-----------------------------------|---------------------|
| | | Road | Rail ^[1] |
| Plane of window for living area or sleeping quarters | Daytime (07:00 - 23:00) | 65 dBA | 60 dBA |
| | Night-time (23:00 - 07:00) | 60 dBA | 55 dBA |

Note: [1] Whistle noise is included for the building component and indoor noise assessment.

Table 3 summarizes potential noise warning clauses and ventilation requirements that should be used to warn of potential annoyance due to existing noise sources related to road and rail. Whistle noise is not included in the determination of warning clause requirements.

Table 3: Ventilation and Warning Clause Requirements for Road and Rail

| Assessment Location | Time Period | Equivalent Sound Level - L_{eq} Road/Rail ^[1] | Ventilation and Warning Clause Requirements ^[2] |
|--|--------------------------|--|---|
| Plane of window for living area or sleeping quarters | Daytime (07:00 - 23:00) | ≤ 55 dBA | No Requirement |
| | | > 55 dBA and ≤ 65 dBA | Provision for the installation of central air conditioning with a Type C warning clause |
| | | > 65 dBA | Installation of central air conditioning with a Type D warning clause |
| Plane of window for living area or sleeping quarters | Nighttime (23:00 - 7:00) | ≤ 50 dBA | No Requirement |
| | | > 50 dBA and ≤ 60 dBA | Provision for the installation of central air conditioning with a Type C warning clause |
| | | > 60 dBA | Installation of central air conditioning with a Type D warning clause |

Note: [1] Whistle noise is not included in combined road/rail assessments for warning clause requirements.

[2] Warning clause types and requirements are provided in **Appendix D**.

The applicable noise criteria for Outdoor Living Areas (OLAs) specific to surface transportation are presented in **Table 4**. If the 16-Hour Equivalent Sound Level (L_{eq} 16hr) at an OLA is greater than 55 dBA and less than or equal to 60 dBA, noise control measures may be applied to reduce the sound level to 55 dBA. Otherwise, prospective purchasers or tenants should be informed of potential elevated noise levels by way of warning clause Type A. For a L_{eq} 16h of greater than 60 dBA, noise mitigation measures are required to reduce the noise levels to 55 dBA or less. Whistle noise is not included in the determination of the rail outdoor sound level.

Table 4: OLA Level Limits for Road and Rail Noise

| Assessment Location | Equivalent Sound Level - L_{eq} 16hr ^{[1],[2]} Road/Rail | Noise Control Measures and Warning Clause Requirements |
|---------------------|---|---|
| Outdoor Living Area | ≤ 55 dBA | No requirement |
| | > 55 dBA and ≤ 60 dBA | Installation of noise control measure OR a Type A warning clause ^[1] |
| | > 60 dBA | Installation of noise control measure with a Type B warning clause |

Notes: [1] Daytime only (07:00 - 23:00)

[2] Whistle noise is not included in assessment of rail noise for warning clause requirements.

2.2 Transportation Sources

In assessing potential transportation noise impacts on the proposed development, rail and road traffic noise sources in proximity to the proposed development were considered. The surrounding area was reviewed for airport facilities with potential to have aircraft noise impacts on the proposed development. It was determined that aircraft noise impacts are not expected on the proposed development.

All traffic data used in modelling road and rail traffic is included in **Appendix E**.

Road Noise Sources

The following road noise sources are located in proximity to the proposed development:

- Cross Avenue – 10 m southeast of proposed development
- Trafalgar Road – 300 m northeast of proposed development
- Queen Elizabeth Way – 178 m northwest of proposed development

Road traffic information for Cross Avenue was determined from the Town of Oakville's Traffic Volumes Map. It was determined that Cross Avenue had an annual average daily traffic (AADT) of 15,200 in 2018. An annual growth rate of 2% was assumed for Cross Avenue. A 90% and 10% split for daytime and nighttime traffic volumes was assumed for Cross Avenue. Truck percentages were determined based on turning movement counts for Cross Avenue and Trafalgar Road. Medium and heavy trucks percentage were conservatively assumed to be equal.

Road traffic information for Trafalgar Road was based on the ultimate average daily traffic of the roadway, described by the Region of Halton. Dillon obtained traffic information from recent noise studies completed in the area. A 90% and 10% split for daytime and nighttime traffic volumes was assumed for Trafalgar Road. Medium and heavy trucks percentage were each conservatively assumed to be 4.5%.

Road traffic information for the Queen Elizabeth Way was based on an information request response from the Ministry of Transportation. The Queen Elizabeth Way had an AADT of 219,100 in 2021. A 90% and 10% split for daytime and nighttime traffic volumes was assumed for the Queen Elizabeth Way. The Ministry of Transportation provided an annual growth rate of 3.2% and a truck percentage of 9%. It was assumed that medium and heavy trucks were equally distributed.

The forecasted future (2034) road traffic data is presented in **Table 5**.

Table 5: Future (2034) Road Traffic Data

| Roadway | 2034 AADT | Medium Trucks (%) | Heavy Trucks (%) | Speed (km/h) |
|---------------------|-----------|-------------------|------------------|----------------------|
| Cross Avenue | 20,866 | 4.5 | 4.5 | 50 |
| Trafalgar Road | 55,000 | 4.5 | 4.5 | 50/60 ^[1] |
| Queen Elizabeth Way | 329,973 | 4.5 | 4.5 | 100 |

Notes: [1] Trafalgar Road posted speed limit changes from 50 km/h to 60 km/h north of South Service Road East.

Rail Noise Sources

The GO Transit and CN Oakville Subdivisions are located approximately 180 m southeast of the proposed development.

CN provided rail traffic information for the CN Oakville Subdivision. CN's daily passenger and freight rail traffic was projected for the year 2034, based on a per annum growth of 2.5%. Engine warning whistle may still be sounded in cases of emergency or warning precaution at station locations and pedestrian crossings.

Metrolinx provided rail information for the GO Expansion Program, which described the future daily train volumes for diesel and electric locomotive trains. Per the request of Metrolinx, all electric locomotives were conservatively assessed as diesel locomotives.

Anti-whistling by-laws are in effect at at-grade crossing in proximity to the proposed development, therefore rail whistles were not assessed as a noise source. GO trains were observed to operate a warning bell when approaching the Oakville GO station. The warning bells are determined to be a safety device and are exempt from rail noise assessments.

Rail traffic data used in this assessment has been presented in **Table 6**.

Table 6: Future (2034) Rail Traffic Data

| Rail Operator | Train Type | Daytime and Evening (07:00-23:00) | | Nighttime (23:00-07:00) | | Speed [km/h] |
|---------------|-------------|-----------------------------------|------|-------------------------|------|--------------|
| | | Locomotives | Cars | Locomotives | Cars | |
| CN | Passenger | 37 | 184 | 0 | 0 | 153 |
| | Way Freight | 16 | 98 | 21 | 131 | 96 |
| GO Transit | Passenger | 354 | 4248 | 54 | 648 | 129 |

2.3 Predicted Sound Level

The noise analysis was completed using Cadna/A, a noise propagation software. The Cadna/A software includes the implementation of the Transportation Noise Model (TNM) roadway algorithms, as well as the Federal Transit Administration/Federal Railroad Administration (FTA/FRA) railway algorithms. 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 noise source. The 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 source to receptor.

Railway Analysis

The railway noise impact assessment was conducted using the FRA algorithm using Cadna/A. STEAM, utilized through STAMSON Version 5.04 was not used in the assessment due to the complexity of the proposed development and the surrounding area. Based on Dillon's experience using FRA and STEAM in rail noise assessments, the results of the FRA algorithm are within an acceptable range of accuracy. The rail noise model inputs are outlined in **Section 2.2**.

Roadway Analysis

The assessment for roadway impact noise was completed using the TNM algorithm, developed by the Federal Highway Administration (FHWA), implemented through Cadna/A. ORNAMENT, utilized through STAMSON Version 5.04 was not used in the assessment due to the complexity of the proposed development and the surrounding area. Based on Dillon's experience using TNM and ORNAMENT in road noise assessments, the results of the ORNAMENT algorithm are within an acceptable range of accuracy. The road noise model inputs are outlined in **Section 2.2**.

While the posted speed limit and actual speed of vehicles may vary, the posted speed limits were used in the TNM algorithm per best practices.

Sensitive Receptor Locations

For the purposes of this study, the Building Evaluation feature was used in Cadna/A to assess the façade impacts throughout the proposed development. Based on the architectural plans, the following Outdoor Living Areas (OLAs) were identified which require assessment for transportation noise impacts:

- 2nd Floor Outdoor Amenity Area; and
- 3rd Floor Outdoor Amenity Area.

The private balconies of the proposed development are less than 4 m in depth, and therefore are not considered OLAs per MECP NPC-300.

Transportation Noise Impacts – Plane of Window

Table 7 summarizes the predicted building façade noise levels from transportation noise sources at the sensitive receptors within the proposed development.

Table 7: Combined Road and Rail Noise Prediction Summary Table - Façade Impacts

| Receptor | Equivalent Sound Level - $L_{eq}^{[1],[2]}$ [dBA] | | | | | |
|-----------------------------------|---|-----------|-----------------|-----------|---------------------------------------|-----------|
| | Road Impacts | | Railway Impacts | | Combined Road and Rail ^[3] | |
| | Daytime | Nighttime | Daytime | Nighttime | Daytime | Nighttime |
| Building A Northeast Façade | 71 | 64 | 67 | 62 | 72 | 66 |
| Building A Southeast Façade | 68 | 61 | 69 | 65 | 71 | 66 |
| Building A Southwest Façade | 72 | 66 | 65 | 61 | 73 | 67 |
| Building A Northwest Façade | 74 | 67 | 61 | 57 | 74 | 67 |
| Building B Northeast Façade | 72 | 66 | 66 | 61 | 73 | 67 |
| Building B Southeast Façade | 61 | 55 | 67 | 62 | 68 | 63 |
| Building B Southwest Façade | 73 | 67 | 63 | 58 | 73 | 67 |
| Building B Northwest Façade | 76 | 69 | 56 | 51 | 76 | 69 |

Notes: [1] L_{eq} represents maximum predicted impacts along façade.

[2] Predicted noise levels that exceed the applicable limits are presented in **bold**.

[3] Combined impacts may not be equal to road plus rail, as maxima may be in different locations along the façade.

The predicted transportation sound levels for combined road and rail impacts at the building façades of the proposed development are presented in **Figures 3** and **4** for the daytime and nighttime periods, respectively.

Transportation Noise Impacts – Outdoor Living Area

Table 8 summarizes the predicted building façade noise levels from transportation noise sources at the sensitive receptors within the proposed development.

Table 8: Combined Road and Rail Noise Prediction Summary Table - OLA Impacts

| Receptor | Daytime Equivalent Sound Level – L_{eq}^[1] |
|------------------|---|
| Level 2 East OLA | 61 |
| Level 2 West OLA | 69 |
| Level 3 OLA | 70 |

Notes: [1] Predicted noise levels that exceed the applicable limits are presented in **bold**.

2.4 Noise Control Measures

Façade Construction Recommendations

Based on the predicted façade sound levels shown in **Table 7**, and the threshold criteria outlined in **Table 2**, a detailed building component design analysis is required throughout the proposed development to ensure the indoor sound level criteria is met (outlined in **Table 1**).

Indoor sound levels, and the building component analysis were completed using the National Research Council's (NRC) Building Practice Note 56 (BPN56). BPN56 is the method for selecting appropriate STC ratings for the façade and glazing components to control impacts from transportation noise sources, and satisfy indoor sound level criterion.

Results from an initial building component analysis are shown in **Table 9**. As detailed floor plans were not available at the time of this study, typical unit layouts were assumed based on typical high-rise residential units. It was assumed that living/dining spaces had 70% façade glazing and the sleeping quarters had 50% façade glazing. Overall window STC requirements were determined using the combined (logarithmic addition) requirements from the individual transportation noise impacts from locomotive, wheel, and roadway noise. STC calculations were completed for daytime and nighttime periods, with the worst-case requirement selected for recommendation. The BPN56 analysis is presented in **Appendix D**. It is recommended that the building component analysis is updated as the development design progresses.

Table 9: Building Component Analysis Using Maximum Impacts

| Building | Maximum Required Glazing (STC) | |
|-----------------------------|--------------------------------|-------------------|
| | Living/Dining Area | Sleeping Quarters |
| Building A Northeast Façade | 37 | 35 |
| Building A Southeast Façade | 37 | 36 |
| Building A Southwest Façade | 36 | 35 |
| Building A Northwest Façade | 37 | 36 |
| Building B Northeast Façade | 36 | 35 |
| Building B Southeast Façade | 34 | 33 |
| Building B Southwest Façade | 36 | 34 |
| Building B Northwest Façade | 38 | 36 |

The above mentioned STC ratings are conservatively calculated and represent the recommended minimum STC ratings for the windows and are based on the worst case noise impacts on the entire façade.

Windows should be carefully selected to ensure the entire assembly (frame and glazing) meets the specified minimum STC ratings. It is recommended that manufacturer tests and specifications be reviewed by an Acoustical Consultant upon selection.

Sensitive spaces located on corners of buildings, which have multiple façade exposure and potential contribution from multiple sources may require an STC increase of 3. As the design progresses, the façade and glazing requirements should be reviewed by an Acoustical Consultant, ideally at the Site Plan Approval (SPA) stage, to confirm or update the above recommended STC ratings.

Ventilation Requirements and Warning Clauses

Based on the predicted façade sound levels shown in **Table 7**, and the threshold criteria outlined in **Table 3**, all dwellings of the proposed development will require installation of central air conditioning and a Type D warning clause.

Additionally, CN and Metrolinx require that a warning clause regarding the potential for noise and vibration impacts be applied to all sensitive locations within 300 metres of their right-of-way.

Outdoor Living Area Recommendations

Based on the predicted OLA sound levels shown in **Table 9**, and the threshold criteria outlined in **Table 5**, the 2nd, 7th, and 6^{2nd} floor outdoor amenity areas of Building A and the 3rd and 7th floor outdoor amenity areas of Building B require mitigation measures.

Dillon recommends the following acoustic barriers be installed to reduce the transportation noise impacts on the OLAs:

- An acoustic barrier with a height of 2.5 m surrounding the west façade of the 2nd floor OLA;
- An acoustic barrier with a height of 2.0 m surrounding the east façade of the 2nd floor OLA;
- An acoustic barrier with a height of 2.5 m surrounding the west façade of the 3rd floor OLA; and
- An acoustic barrier with a height of 2.5 m surrounding the east façade of the 3rd floor OLA.

The acoustic barriers should have a minimum surface density of 20 kg²/m. The barriers should be structurally sound, appropriately designed to withstand wind and snow load, and constructed without cracks or surface gaps. Any gaps under the barrier that are necessary for drainage purposes should be minimized and localized, so that the acoustical performance of the barrier is maintained. The layout of the acoustic barriers and the predicted OLA daytime noise levels has been shown in **Figure 5**.

The mitigated transportation noise impact on the proposed development's OLAs are presented in **Table 10** below.

Table 10: Mitigated Combined Road and Rail Noise Prediction Summary Table - OLA Impacts

| Receptor | Daytime Equivalent Sound Level – L _{eq} ^[1] (dBA) |
|------------------|---|
| Level 2 East OLA | 57 |
| Level 2 West OLA | 59 |
| Level 3 OLA | 60 |

In addition to the acoustic barriers, the residential dwellings of the proposed development should have a Type B warning clause.

All warning clauses should be included in agreements that are registered on Title for all Offers of Purchase and Sale, lease/rental agreements, and condominium declarations. The list of applicable warning clauses required for the proposed development are provided in **Appendix D**.

3.0 Stationary Noise Assessment

A review of the site and surrounding area has been conducted to identify potential stationary sources (e.g., industrial / commercials) that have the potential to impact the proposed sensitive use. A site visit was completed by Dillon staff on August 1st, 2023 for the purpose of classifying facilities in proximity to the proposed developments, identifying potential sources of noise, and classifying the acoustic environment.

3.1 MECP Guideline D-6 Compatibility between Industrial Facilities

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 (e.g., noise) on the sensitive land use. As per the guideline, potential noise impact from commercial / industrial establishments within the potential influence area/or recommended minimum separation distance, as outlined in D-6 (see **Table 11**), should be assessed.

Table 11: Guideline D-6 Potential Influence Area and Recommended Minimum Separation Distance

| Industrial Classification ^[1] | Area of Influence | Recommended Minimum Separation Distance |
|--|-------------------|---|
| Class I | 70 m | 20 m |
| Class II | 300 m | 70 m |
| Class III | 1000 m | 300 m |

Note: [1] Industrial classification are outlined in Guideline D-6, and presented in **Appendix F**.

3.1.1 Facilities

The land use planning guide, *D-6 Compatibility between Industrial Facilities*, was used for the classification of the surrounding industrial facilities and the compatible proximities for the proposed sensitive land use. The criteria for classification of industrial categories are presented in **Appendix F**.

Table 12 describes the industries that were identified with the potential to have noise impacts on the proposed development.

Table 12: Facilities with Proximity to Proposed Development

| Facility and Address | Industrial Classification | Description of Operations | Environmental Compliance Approval |
|---|----------------------------------|---|--|
| Various Commercial Facilities 117 Cross Avenue | Class 1 | Rooftop air handling units | No |
| Various Commercial Facilities 125 Cross Avenue | Class 1 | Rooftop air handling units, truck deliveries, and idling reefer trucks | No |
| Various Commercial Facilities 177 Cross Avenue | Class 1 | Rooftop air handling units and 24 hour outdoor self-operated car wash and vacuuming | No |
| Various Commercial Facilities 187 Cross Avenue | Class 1 | Rooftop air handling units and air tools associated with car detailing operations | No |
| AllFix Automotive 570 Argus Road | Class 1 | Auto repair shop without paint spray booth | No |

3.1.2 Stationary Noise Criteria and Area Classification

NPC-300 Exclusionary Limits

MECP Publication NPC-300 outlines applicable noise criteria for the proposed development associated with surrounding industrial and commercial stationary noise sources. The noise criteria are defined using area classifications (not to be confused with the D-6 industrial classifications), which are based on the receptor's existing acoustical environment. NPC-300 classification are as follows:

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

Different noise guideline limits apply to each area classification, as shown below in **Table 13**.

Table 13: Exclusionary Limits for Stationary Noise Sources

| Assessment Location | Time Period | Exclusionary Sound Level Limit - L_{eq} 1hr | | | |
|--|---------------------------|---|---------|---------|---------|
| | | Class 1 | Class 2 | Class 3 | Class 4 |
| Plane of window for living area or sleeping quarters | Daytime (07:00 - 19:00) | 50 dBA | 50 dBA | 45 dBA | 60 dBA |
| | Evening (19:00 - 23:00) | 50 dBA | 50 dBA | 40 dBA | 60 dBA |
| | Nighttime (23:00 - 07:00) | 45 dBA | 45 dBA | 40 dBA | 55 dBA |
| Outdoor points of reception | Daytime (07:00 - 19:00) | 50 dBA | 50 dBA | 45 dBA | 55 dBA |
| | Evening (19:00 - 23:00) | 50 dBA | 45 dBA | 40 dBA | 55 dBA |

During the site visit conducted on August 1st, 2023, it was observed that the acoustic environment surrounding the proposed development is dominated by transportation noise and general urban hum. Based on the nature of the area, the Class 1 urban sound level limits would apply.

Background Sound Levels

In areas that have increased ambient noise due to road traffic, the background sound level may be used as the sound level limit. Due to the proposed development's proximity to the Queen Elizabeth Way, Trafalgar Road, and Cross Avenue, a transportation noise analysis was completed to determine the background sound levels for the receptors of the proposed development.

The background sound levels due to road noise is the minimum hourly noise impacts during each hour of the daytime, evening, and nighttime period. Dillon utilized hourly traffic variations in urban areas to determine minimum traffic for each period. The minimum hourly road traffic of the Queen Elizabeth Way for the daytime, evening, and nighttime period was assessed as 5.0%, 2.3%, and 0.3%, respectively of the 2023 AADT. The minimum hourly road traffic of Cross Avenue was assessed as 4.8%, 2.7%, and 0.3%, respectively of the 2023 AADT.

The only traffic data available for Trafalgar Road was the ultimate capacity of the roadway. As this would not be representative of the current ambient noise levels of the area, Trafalgar Road was not considered for background sound levels.

The road noise analysis was completed using the TNM algorithm through Cadna/A. **Table 14** below summarizes the calculated background sound levels for each receptor of the proposed development.

Table 14: Background Sound Levels

| Receptor | Background Sound Level (1 hour) (dBA) | | |
|-----------------------------------|---------------------------------------|---------|--------------------------|
| | Daytime | Evening | Nighttime ^[1] |
| Building A Northeast Façade | 69 | 66 | 56 |
| Building A Southeast Façade | 66 | 63 | 54 |
| Building A Southwest Façade | 70 | 67 | 58 |
| Building A Northwest Façade | 72 | 68 | 60 |
| Building B Northeast Façade | 70 | 67 | 58 |
| Building B Southeast Façade | 58 | 56 | 46 |
| Building B Southwest Façade | 71 | 68 | 59 |
| Building B Northwest Façade | 74 | 70 | 61 |
| Level 2 East OPR | 54 | 51 | NA |
| Level 2 West OPR | 64 | 61 | NA |
| Level 3 OPR | 64 | 61 | NA |

Notes: [1] Outdoor Points of Reception (OPR) are not assessed during the nighttime period

3.1.3 Stationary Sources

The noise sources associated with the industries identified in **Section 2.2.2** are outlined below in **Table 15**. The stationary noise source locations are presented in **Figure 6**.

Table 15: Stationary Noise Sources

| Noise Source ^[1] | Associated Facility | # of Sources | Source Type |
|-------------------------------|-------------------------------------|--------------|----------------------------------|
| Rooftop HVAC Units | 117, 125, 177, 187 Cross Avenue | 38 | Point source, steady |
| Rooftop Air-Cooled Condensers | 125 Cross Avenue | 17 | Point source, steady |
| Truck Movements | 125 Cross Avenue | 2 | Line source, steady |
| Truck Back-up Beepers | 125 Cross Avenue | 2 | Line source, steady, tonal |
| Idling Reefer Truck | 125 Cross Avenue | 2 | Point source, steady |
| Car Wash Bay | 177 Cross Avenue | 6 | Point source, steady |
| Vacuum | 177 Cross Avenue | 4 | Point source, steady |
| Air tools | 187 Cross Avenue and 570 Argus Road | 2 | Point source, quasi-steady state |

Note: [1] Sound power level and spectrum of noise sources are provided in **Appendix G**.

MECP's publication, *NPC-104 – Sound Level Adjustments*, specifies sound level adjustments (penalties) to be applied to the observed sound level of a source based on its sound quality. NPC-104 specifies that a penalty of +5 dB be applied to any sound that has a pronounced audible tonal quality or cyclical variation, and that a +10 dB penalty be applied to a quasi-steady impulsive sound. "Quasi-steady" is a sequence of impulsive sounds emitted from a source having a time interval of less than 0.5 s, per MECP's *NPC-101 – Technical Definitions*. Sound level penalties are not accumulated when more than one sound quality applies. Instead, the largest of the applicable penalties shall be used.

The operation of air tools at Fine Auto Details and AllFix Automotive is assumed to operate as a quasi-steady state impulsive sound. A +10 dB penalty was applied to this noise source.

With the exception of the rooftop HVAC units and self-operated car wash and vacuums, all noise sources were assumed to operate continuously only during the daytime and evening period. A 50% and 25% duty cycle was assumed for all rooftop HVAC units for the evening and nighttime periods, respectively. Based on observations made during the site visit, the self-operated car wash and vacuums were modelled as operating for 15 minutes per hour during the daytime and evening periods. It was assumed that the self-operated car wash and vacuums will operate at 66% of that capacity during the nighttime period.

3.1.4 Noise Sensitive Points of Reception

As per the MECP noise guidelines NPC-300, a Point of Reception (POR), as it applies to impact assessments of stationary sources, means any location on a noise sensitive land use where noise from a stationary source is received. Noise sensitive land uses include the following lands:

- Permanent, seasonal, or rental residences;

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

Noise sensitive points of reception considered in this study included the windowed facades of the apartments and the common outdoor amenity areas of the proposed development.

3.1.5 Predicted Sound Levels - Stationary

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 0.20, representing reflective grounds between sources and receptors;
- A 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. The predicted receptor noise levels (at the proposed development site) were compared against the applicable criteria, as specified in NPC-300 (see **Table 13** and **Table 14**).

Table 16 summarizes the predicted building façade daytime, evening, and nighttime noise levels from stationary noise sources from the surrounding industries at the proposed development.

Table 16: Stationary Noise Impact Summary Table – Surrounding Industries on Proposed Development

| Point of Reception | Maximum Leq (1 hour) (dBA) | | | MECP Compliance |
|--------------------------------|----------------------------|-----------------------|--|-----------------|
| | Daytime (07:00-19:00) | Evening (19:00-23:00) | Nighttime ^[1] (23:00-07:00) | |
| Building A Northeast Façade | 50 | 49 | 44 | Yes |
| Building A Southeast Façade | 42 | 39 | 36 | Yes |
| Building A Southwest Façade | 56 | 52 | 50 | Yes |
| Building A Northwest Façade | 55 | 51 | 49 | Yes |
| Building B Northeast Façade | 56 | 56 | 52 | Yes |
| Building B Southeast Façade | 52 | 50 | 46 | Yes |
| Building B Southwest Façade | 58 | 52 | 52 | Yes |
| Building B Northwest Façade | 58 | 52 | 51 | Yes |
| Level 2 East OPR | 40 | 36 | NA | Yes |
| Level 2 West OPR | 53 | 49 | NA | Yes |
| Level 3 OPR | 48 | 43 | NA | Yes |

Note: [1] Outdoor Points of Reception (OPR) are not assessed during the nighttime period.

The predicted stationary noise impacts from the surrounding industries at the proposed development façades are shown in **Figures 7 to 9**.

The building evaluation feature in Cadna/A was used to determine the predicted stationary impacts and the background noise levels across all façades. The predicted impacts from the nearby stationary sources on the proposed development are less than the higher of the MECP NPC-300 Class 1 exclusionary limits or the background sound levels at all façade locations.

3.2 Impacts from the Proposed Development on itself and the Environment

The mechanical equipment of the proposed development should be assessed for noise impacts on the proposed development itself and the surrounding environment. At the time of this assessment, the mechanical plans for the proposed development were not available.

The future mechanical equipment of the proposed development should be located to reduce exposure to the receptors of the proposed development and the surrounding environment and where possible should be located within mechanical penthouses. Where isolation from noise sensitive receptors is not possible, equipment selection should be completed with consideration for reducing the noise emissions of the equipment.

As mechanical plans become available for the proposed development, it is Dillon's recommendation that a qualified acoustic consultant assesses the stationary noise impacts of the equipment on the development itself and the surrounding environment.

4.0 Rail Vibration Assessment

The proposed development is located approximately 180 m from the CN and GO Transit right-of-way, and outside of the 75 m vibration influence area per the Guidelines for New Development in Proximity to Railway Operations (FCM/RAC, 2013). A vibration assessment for the proposed development is not required.

5.0

Conclusions

Dillon Consulting Limited (Dillon) was retained by Cross Realty LP (the Developer) to complete a noise feasibility study as requested by Region of Halton for a proposed residential development located at 157 and 165 Cross Avenue in Oakville, Ontario. This study has been completed in support of Zoning By-law Amendment application for the proposed development.

The noise feasibility study focuses on the noise impacts from nearby transportation sources and stationary sources (i.e., nearby industrial operations) on the proposed development.

Transportation Noise Assessment

As outlined in Section 2.4, the results of the transportation noise assessment confirm that the noise impacts on the proposed development can be sufficiently controlled by:

- Upgraded glazing throughout the proposed development;
- The installation of central air conditioning with a Type D warning clause throughout the proposed development;
- The installation of acoustic barriers surrounding the building outdoor amenity areas;
- A CN and Metrolinx warning clauses; and
- A Type B warning clause throughout the proposed development.

Stationary Noise Assessment

The noise impacts from surrounding commercial and industrial properties on the development were assessed through modelling of stationary sources in Cadna/A using ISO:9613 standards. It was determined that the noise impacts from the surrounding commercial and industrial properties will not exceed MECP requirements.

The mechanical plans of the proposed development were not available at the time of this assessment. As the plans become available, it is recommended that a stationary noise assessment is completed for the mechanical equipment for impacts on the proposed development itself and the surrounding environment.

6.0

Closure

This noise feasibility study has been prepared based on the information provided and/or approved by Cross Realty LP. 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 Cross Realty LP. 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.

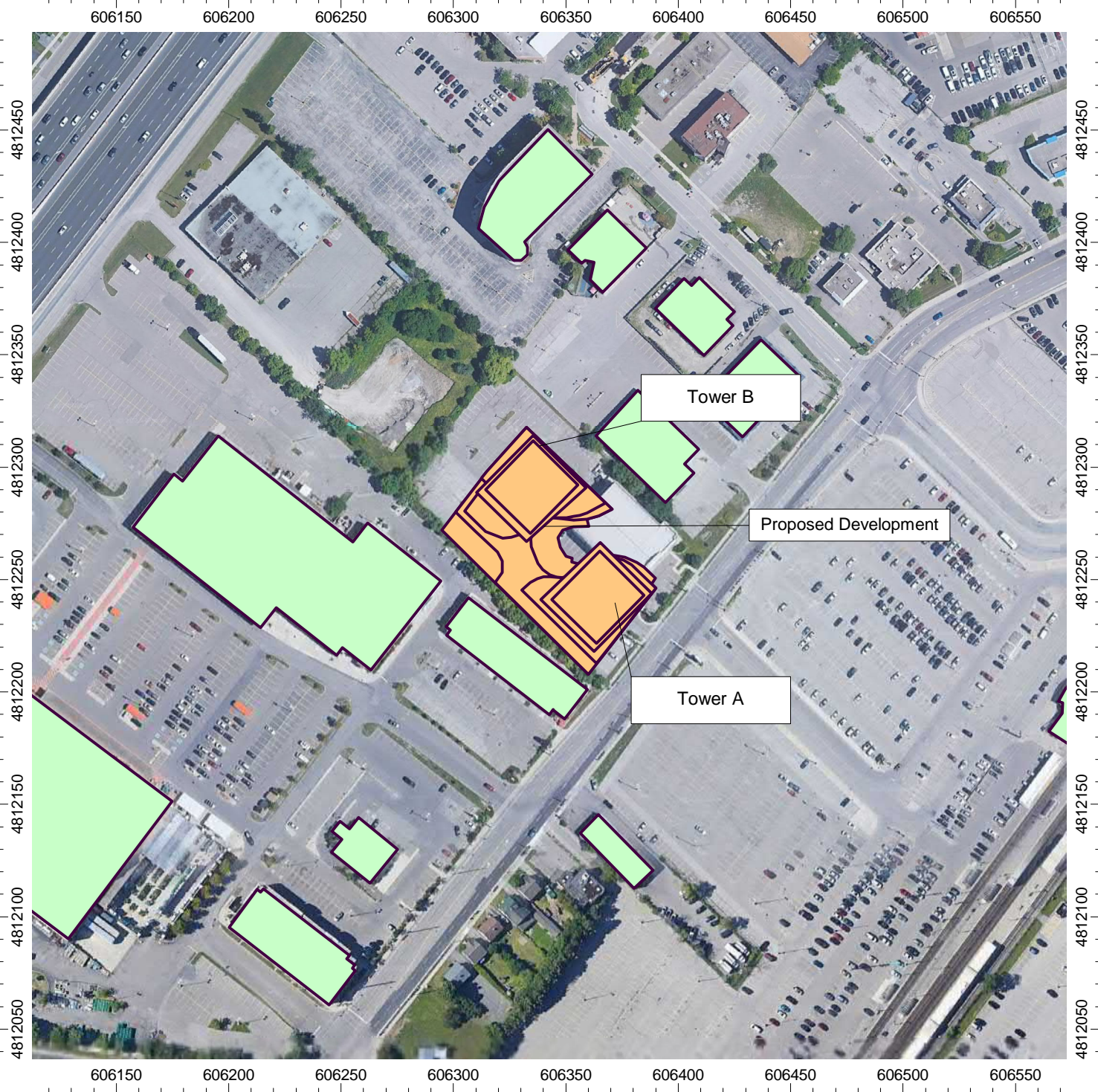
Respectfully Submitted:

DILLON CONSULTING LIMITED



Callum Heggart, P.Eng.

Figures



Scale 1: 2,500

Figure 1

Project # 23-6593

Sep 2024

Subject Site

157 and 165 Cross Avenue, Oakville Ontario





Scale 1: 5,000

Figure 2

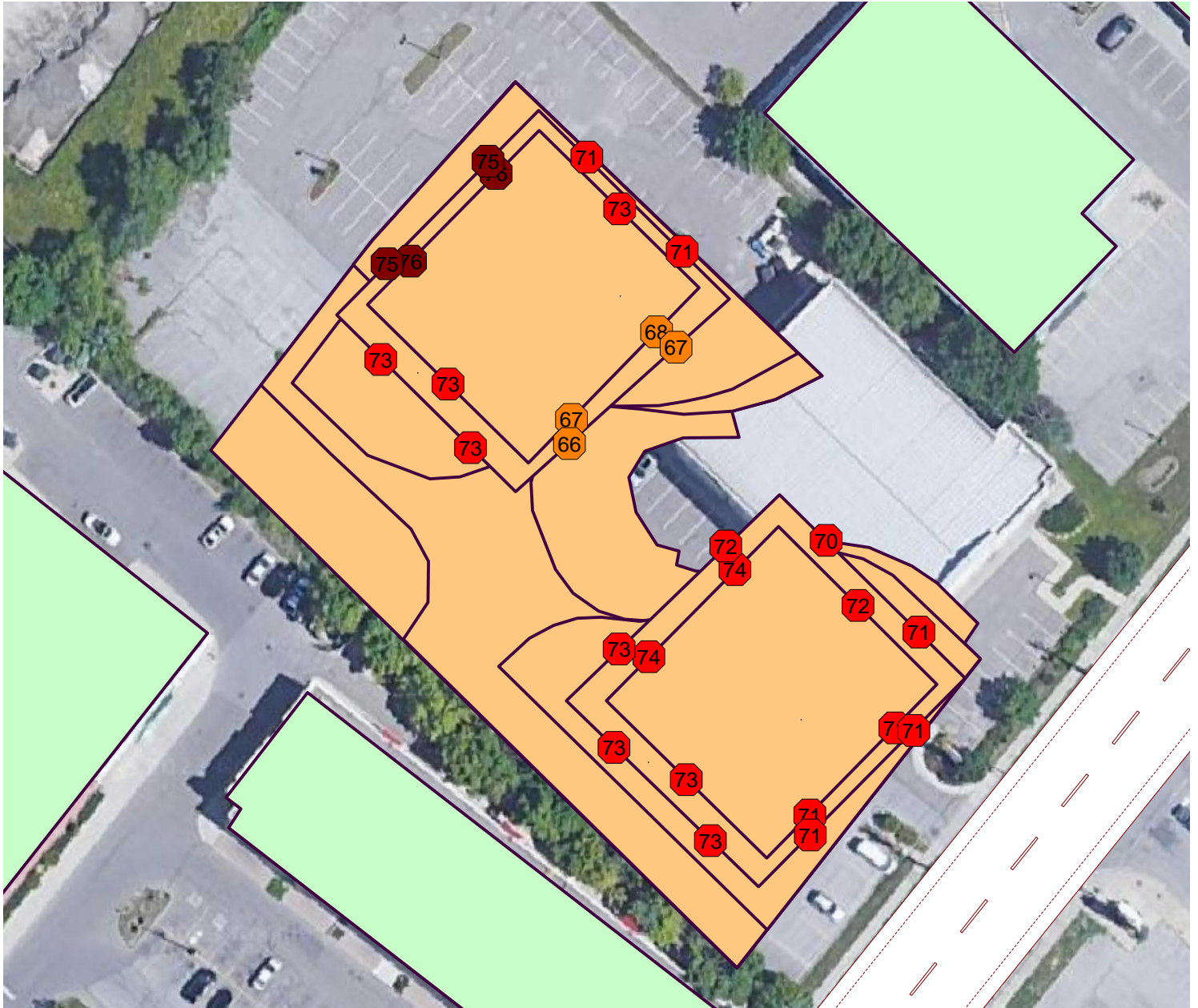
Project # 23-6593

Sep 2024

Surrounding Area

157 and 165 Cross Avenue, Oakville Ontario





Scale 1: 2,000

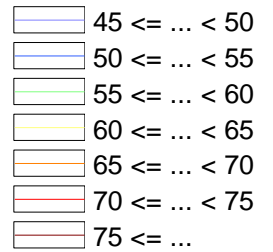


Figure 3

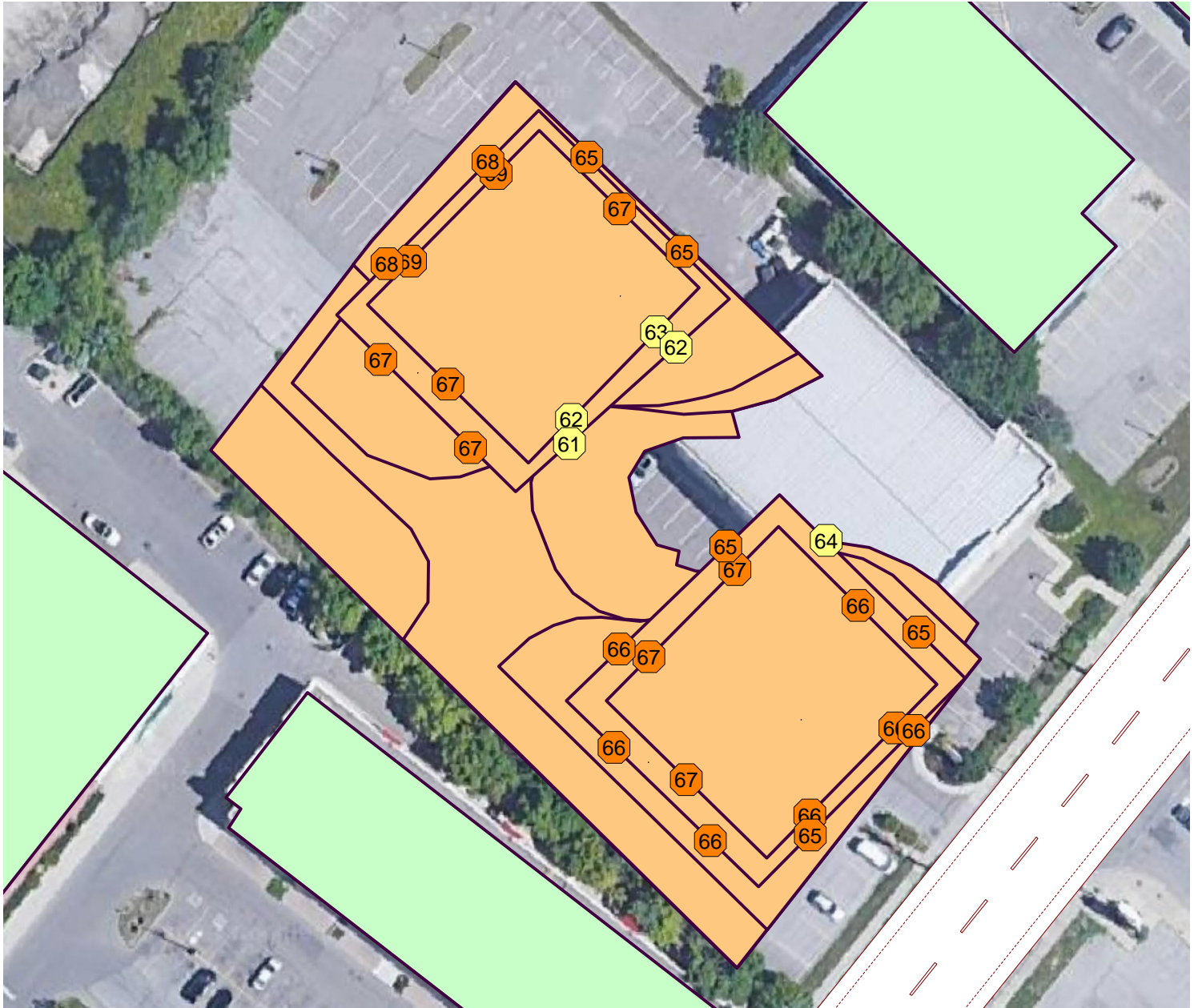
Combined Transportation Noise Impacts - Daytime

157 and 165 Cross Avenue, Oakville Ontario



Project # 23-6593

Sep 2024



Scale 1: 2,000

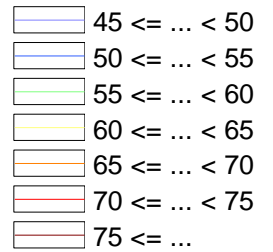


Figure 4

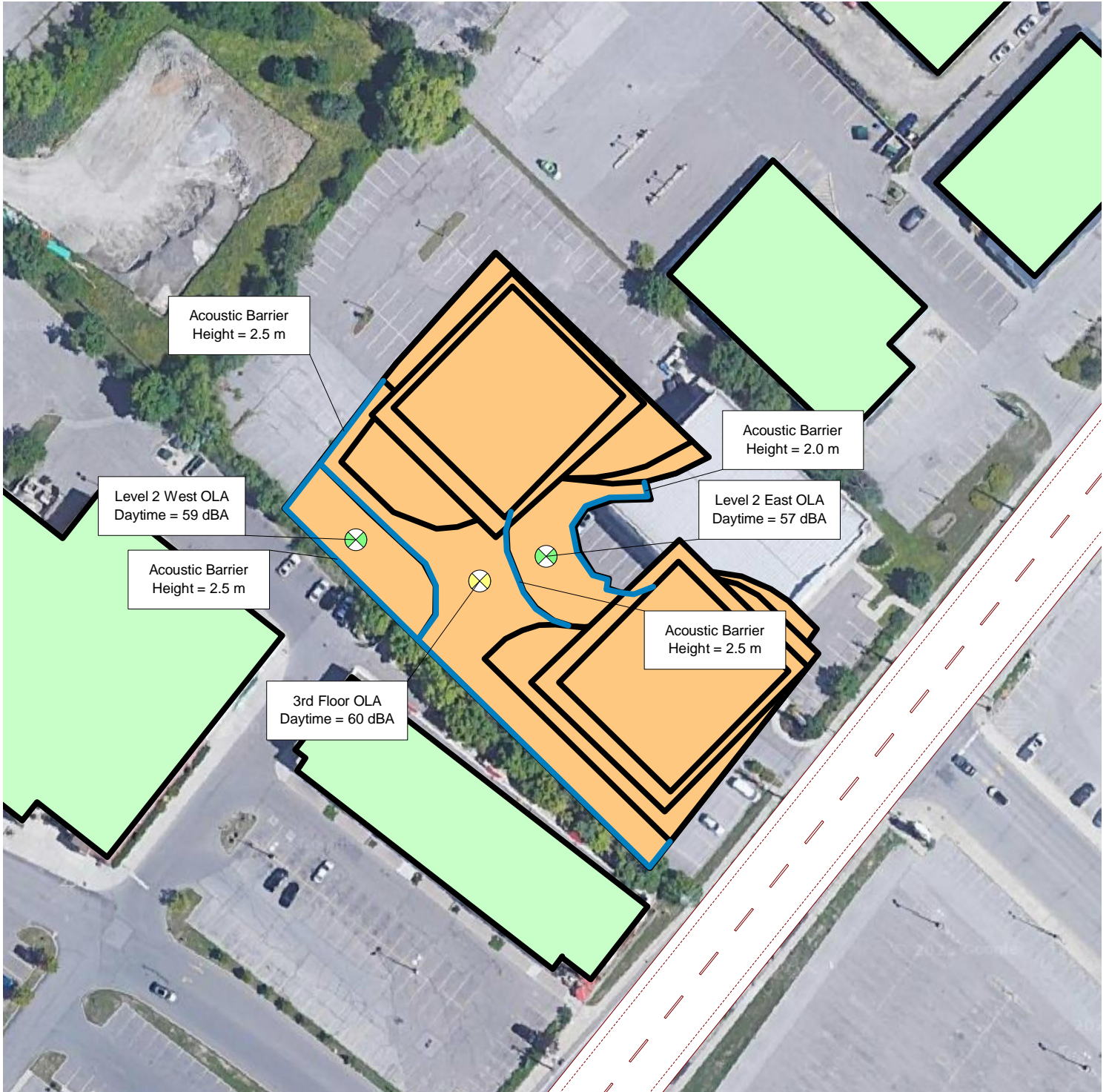
Combined Transportation Noise Impacts - Nighttime

157 and 165 Cross Avenue, Oakville Ontario



Project # 23-6593

Sep 2024



Scale 1: 1000

Figure 5

Project # 23-6593

Sep 2024

Combined Transportation OLA Noise Impacts - Daytime



157 and 165 Cross Avenue, Oakville Ontario



Scale 1: 2,500

Figure 6

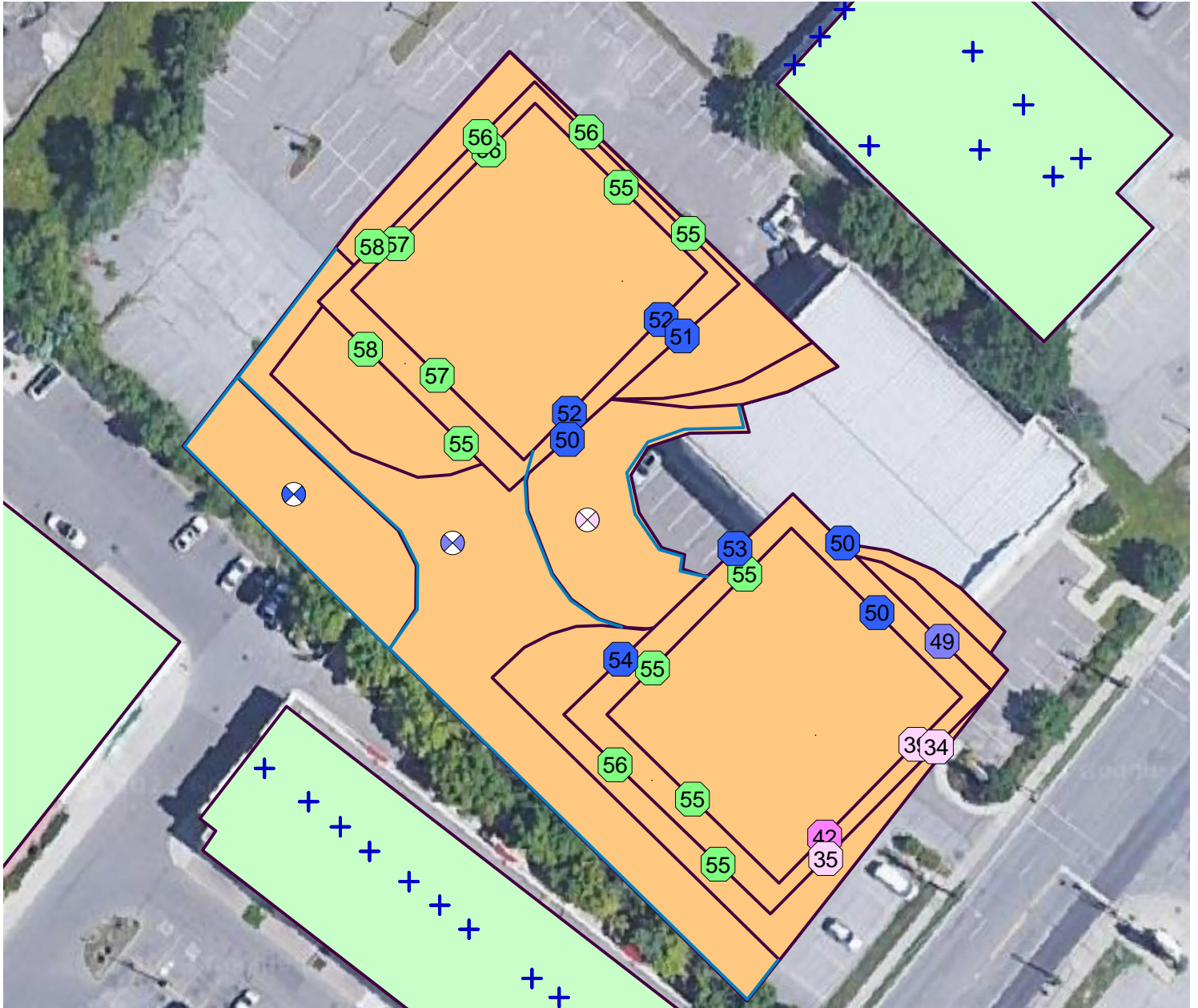
Project # 23-6593

Sep 2024

Stationary Noise Sources

157 and 165 Cross Avenue, Oakville Ontario





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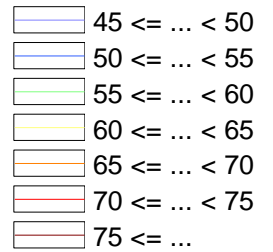


Figure 7

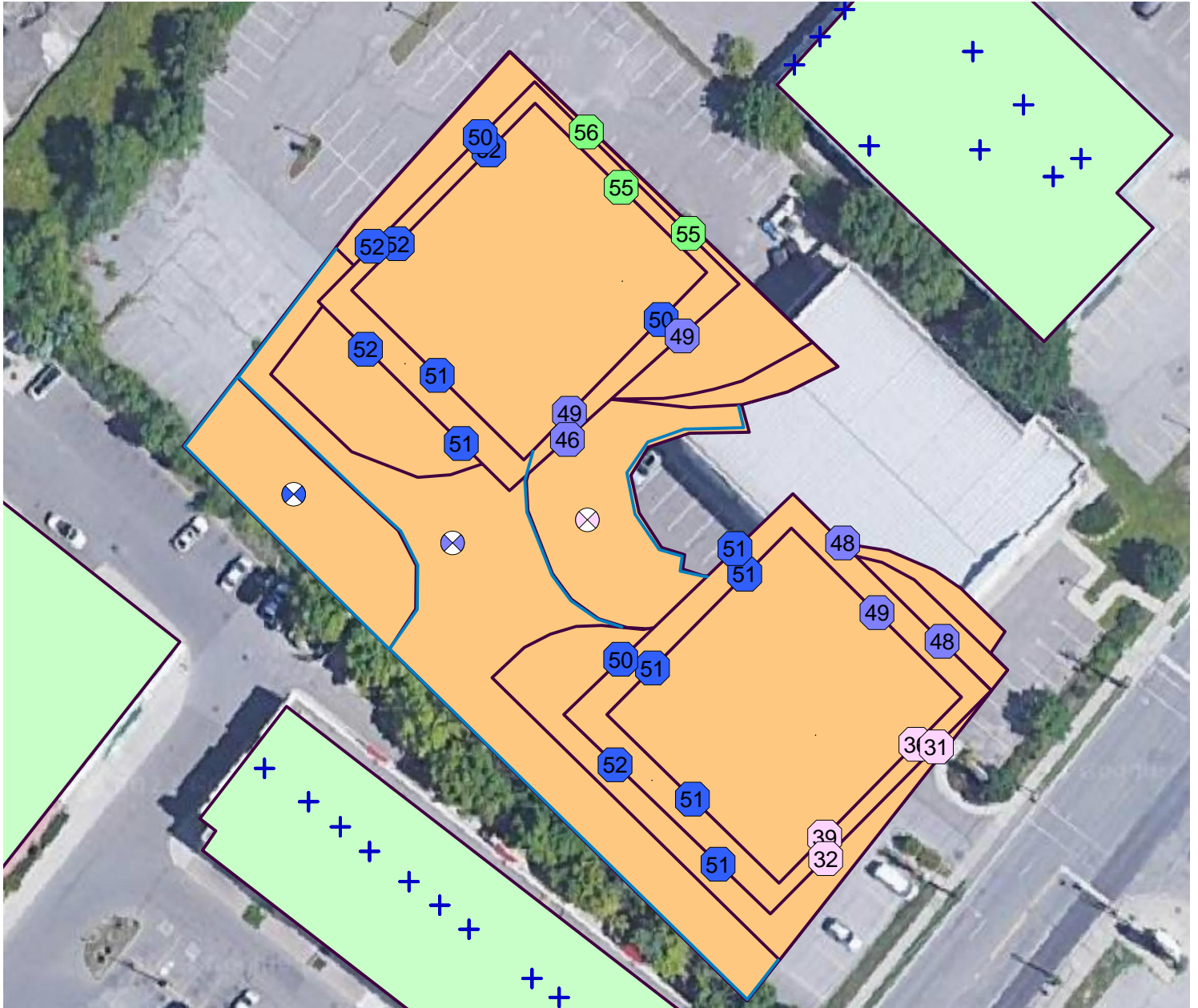
Stationary Noise Impacts Daytime



Project # 23-6593

Sep 2024

157 and 165 Cross Avenue, Oakville Ontario



Scale 1: 700

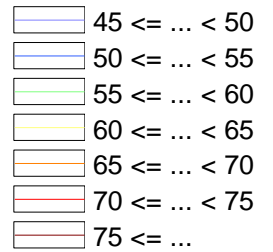


Figure 8

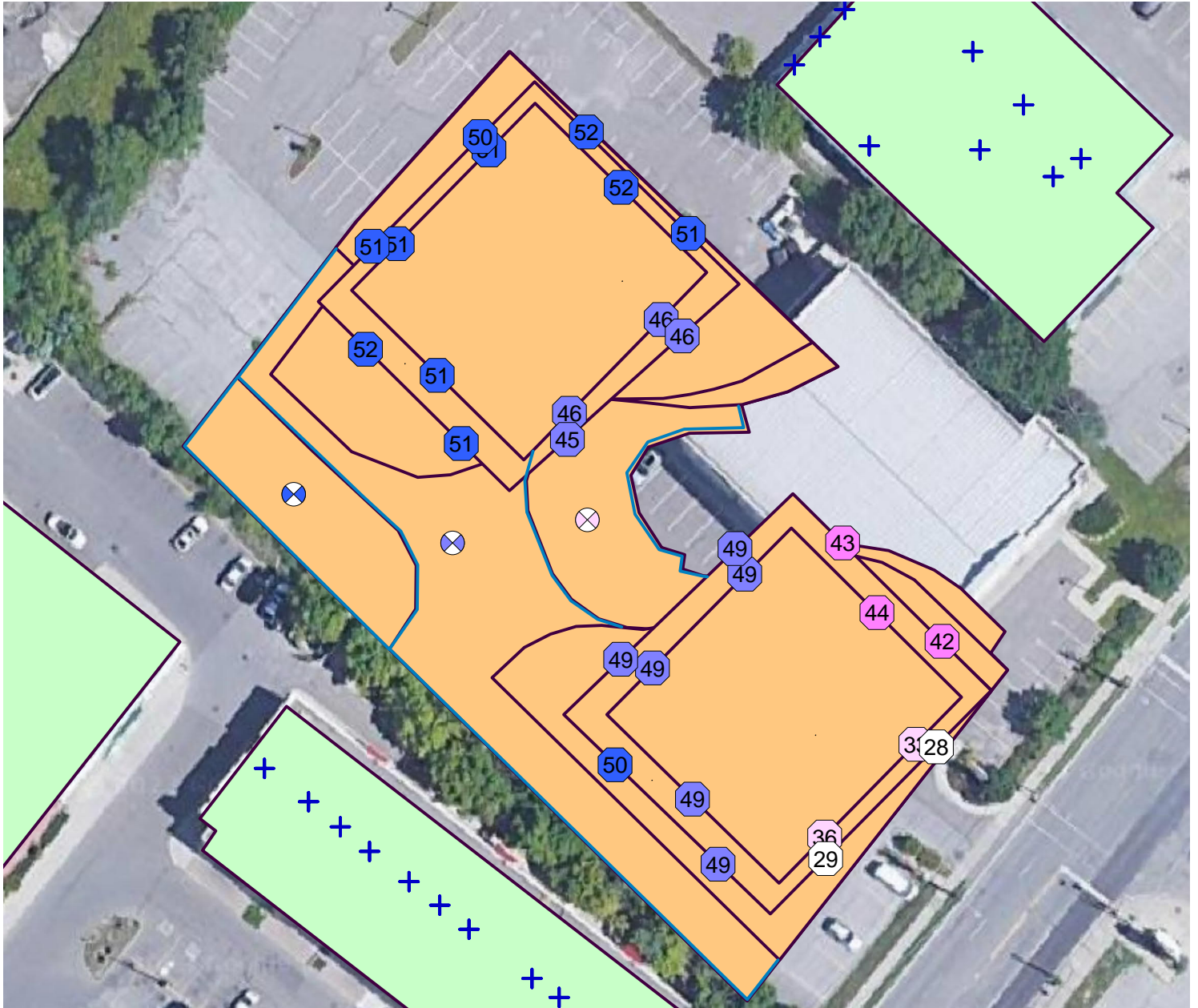
Stationary Noise Impacts Evening



Project # 23-6593

Sep 2024

157 and 165 Cross Avenue, Oakville Ontario



Scale 1: 700

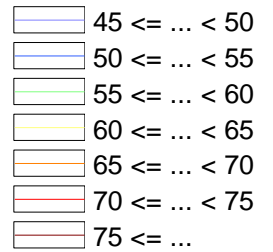


Figure 9

Project # 23-6593

Sep 2024

Stationary Noise Impacts Nighttime



157 and 165 Cross Avenue, Oakville Ontario

Appendix A

Terms of Reference

OAKVILLE TOC

*Noise Feasibility Study - 157-165 Cross Avenue,
Oakville, Ontario*

October 2024 – Dillon File # 23-6593





MEMO

TO: Sharon Yin and Michaela Campbell
FROM: Lucas Arnold
DATE: July 24th, 2023
SUBJECT: 157 & 165 Cross Avenue Noise Feasibility Study Terms of Reference
OUR FILE: 23-6593

Dillon Consulting Limited (Dillon) has been retained by Distrikt to complete a Noise Feasibility Study for a proposed development located at 157 and 156 Cross Avenue in Oakville, Ontario. The proposed development will consist of two residential towers that are approximately 50-storeys.

Prior to the start of work on the Noise Feasibility Study, Dillon has prepared the following Terms of Reference for approval by the Region of Halton's Transportation Planning department.

Terms of Reference

The Noise Feasibility Study will be completed per the Region of Halton's Noise Abatement Policy and with consideration of the following regulatory documents:

- MECP's NPC-300 Guidelines;
- The Federation of Canadian Municipalities and the Railway Association of Canada Guidelines for New Development in Proximity to Railway Operations;
- The Town of Oakville's Noise By-law 2008-098 (as amended); and
- The Ministry of the Environment, Conservation and Parks (MECP) D-series of Guidelines for Land-Use Compatibility.

The Noise Feasibility Study will include an assessment of transportation noise impacts on the proposed development and an assessment of stationary noise impacts from surrounding facilities on the proposed development. The process that Dillon will follow to complete those assessments is described in the following sections.

Transportation Noise Assessment

To assess transportation noise impacts on the proposed development, Dillon will complete the following tasks:

- Dillon will review the site plans of the proposed development to identify Points of Reception as defined in the Region of Halton's Noise Abatement Guidelines;
- Dillon will gather traffic information for the QEW, Trafalgar Road, and the GO Transit Oakville Subdivision;
- Dillon will analyze the traffic information to determine traffic volumes 10 years in the future;
- Dillon will determine the transportation noise impacts at the subject property due to the surrounding roads and railways through predictive modeling, based on regulatory-approved noise prediction models; and

- Based on the transportation noise impacts, Dillon will advise of potential barrier requirements, upgraded building façade requirements, building ventilation provisions, and other requirements (if applicable) as per MECP noise guideline NPC-300.

Stationary Noise Impacts

To assess stationary noise impacts from the surrounding environment on the proposed development, Dillon will complete the following tasks:

- Dillon will complete a site visit to the area to determine potential stationary noise sources associated with the surrounding commercial and/or industrial properties;
- Dillon will gather information for the operations of the surrounding uses;
- Dillon will use the above information to develop an outdoor noise propagation model of the surrounding area in accordance with methods outlined in ISO 9613, which will be implemented using Cadna/A. This noise propagation model is an MECP approved acoustical modelling software;
- The predicted noise impacts will be compared against the applicable NPC-300 noise guideline limits; and
- If it is determined that impacts from the surrounding commercial and/or industrial properties exceed the NPC-300 noise guideline limits at the proposed development, source-based mitigation may be required. At Distrikt's authorization, Dillon will assess potential at-source noise mitigation measures.

Dillon will complete the following tasks to determine stationary noise impacts from the proposed development's mechanical equipment on itself and the surrounding environment:

- Dillon will review the mechanical system plans of the proposed development to identify stationary noise sources;
- Dillon will develop an outdoor noise propagation model for the proposed development's stationary noise sources in accordance with methods outlined in ISO 9613, which will be implemented using Cadna/A;
- The predicted noise impacts will be compared against the applicable NPC-300 noise guideline limits;
- If it is determined that impacts from the proposed development's stationary noise sources exceed the NPC-300 noise guidelines, source-based mitigation measures may be required. At Distrikt's authorization, Dillon will assess potential at-source noise mitigation measures.

If mechanical plans for the proposed development are not available at the time of the assessment, Dillon will provide guidance on equipment selection that would reduce stationary noise impacts on itself and the surrounding environment.

Reporting

Dillon will prepare a single report for the Noise Feasibility Study. The report is expected to consist of the following sections:

- An introduction describing the purpose of the study, a description of the proposed development and the surrounding environment, and a summary of the guidelines and regulations that the study follows;
- A section describing the road traffic information used in the assessment, the transportation noise modelling completed, a summary predicted transportation noise impacts, and if applicable, mitigation measures to achieve NPC-300 sound level limits;
- A section identifying the surrounding environment's stationary noise sources that have potential to impact the proposed development, a description of the noise modelling completed, a summary of predicted stationary noise impacts, and if applicable, mitigation measures to achieve NPC-300 sound level limits;
- A section providing guidance on the equipment selection for the proposed development such that noise impacts on the proposed development itself and the surrounding environment are minimized;
- A conclusion of the study which summarizes the recommendations from the transportation noise assessment and stationary noise assessment;
- Figures that identify the location of noise sources with respect to the proposed development, graphically show the noise impacts on the proposed development, and if applicable, identify the locations of noise mitigation measures;
- An appendix providing the plans of the proposed development at the time of the assessment;
- An appendix providing the relevant zoning by-laws for the surrounding environment; and
- An appendix providing the road traffic data utilized in the assessment

Appendix B

Site Plans

OAKVILLE TOC

Noise Feasibility Study - 157-165 Cross Avenue,
Oakville, Ontario

October 2024 – Dillon File # 23-6593



Appendix C

Zoning

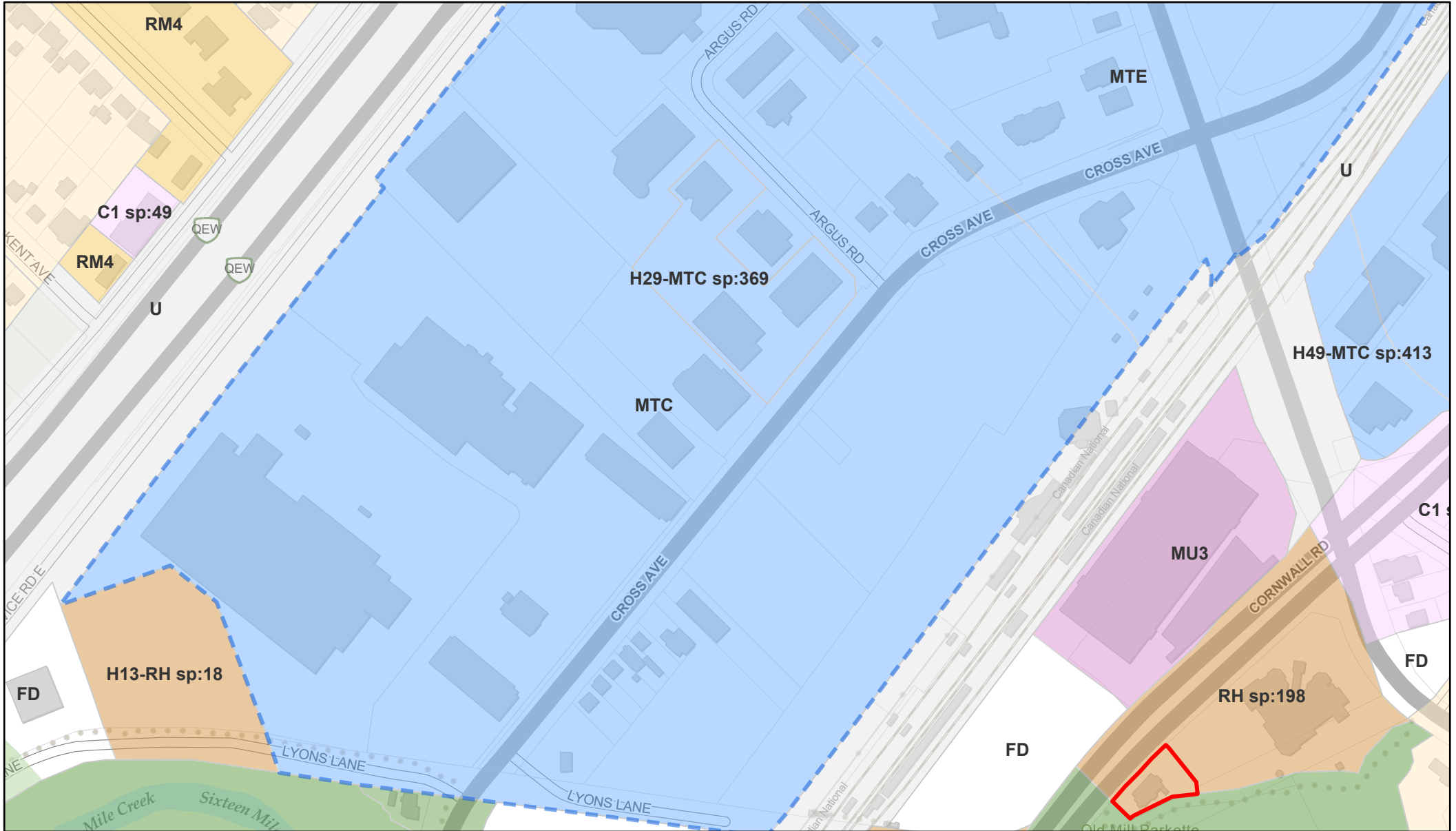
OAKVILLE TOC

Noise Feasibility Study - 157-165 Cross Avenue,
Oakville, Ontario

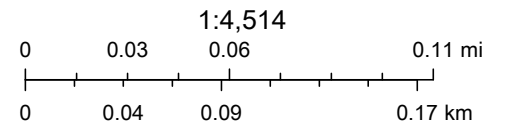
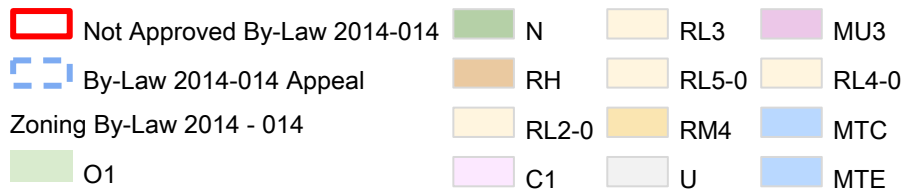
October 2024 – Dillon File # 23-6593



Zoning By-Law



8/17/2023, 11:49:53 AM



Esri Community Maps Contributors, City of Hamilton, Province of Ontario, Town of Oakville, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada, Esri, NASA, NGA, USGS, FEMA

Town of Oakville

Midtown Oakville Zones

Portions of this by-law not yet in effect are covered with a blue tone. This version consolidates all amendments and orders of the OMB up to the consolidation date shown below. Contact the Building Services or Planning Services departments for more information.

7.1 List of Applicable Zones

| | |
|---------------------------------|-----|
| Midtown Transitional Commercial | MTC |
| Midtown Transitional Employment | MTE |

7.2 Permitted Uses

Uses permitted in the Midtown Oakville Zones are denoted by the symbol “✓” in the column applicable to that *Zone* and corresponding with the row for a specific permitted use in Table 7.2, below.

| Table 7.2: Permitted Uses in the Midtown Oakville Zones | | |
|---|----------|-------|
| | MTC | MTE |
| Legal uses of land, buildings, and structures existing on the lot as of the effective date of this By-law | ✓ | ✓ |
| Retail Uses | | |
| Outside display and sales area | ✓ | ✓ |
| Retail propane and transfer facility | ✓ (1)(2) | |
| Retail store | ✓ | ✓ (3) |
| Service Commercial Uses | | |
| Adult entertainment establishment | | ✓ |
| Commercial school | ✓ | |
| Dry cleaning/laundry | ✓ | |
| Financial institution | ✓ | ✓ (3) |
| Food production | ✓ | ✓ (3) |
| Pet care establishment | ✓ | |
| Place of entertainment | ✓ (4) | |
| Restaurant | ✓ | ✓ (3) |
| Service commercial establishment | ✓ | ✓ (3) |
| Sports facility | ✓ | ✓ (3) |
| Veterinary clinic | ✓ | |
| Office Uses | | |
| Business office | ✓ | ✓ |
| Medical office | | ✓ |
| Community Uses | | |
| Day care | ✓ | ✓ (3) |
| Emergency service facility | ✓ | ✓ |

OMB Appeals

Part 7 in its entirety

36 - General Electric Canada

Once Midtown Strategy projects are complete, staff anticipate an Official Plan Amendment will be required to update various schedules in the Livable Oakville Plan. Corresponding policy amendments may also be required to reflect changes recommended in the Parking Strategy and Mobility Hub Study work being undertaken in tandem with the Class Environmental Assessment.

In the interim, staff are recommending two transition zones – Midtown Transitional Commercial (MTC) and Midtown Transitional Employment (MTE) – apply that freeze building envelopes to those legally existing February 25, 2014. New buildings and structures would require a planning application, allowing Council to review a proposal and establish conformity with the Livable Oakville Plan (in particular, the acquisition of future roads required in Midtown Oakville). A limited range of additional uses are permitted that conform to the uses permitted in the Livable Oakville Plan to allow for the continued use of existing buildings should vacancies emerge.

Staff anticipate Midtown Strategy work to be complete later in 2015. Implementing zoning for Midtown Oakville would be introduced through a separate process, including a dedicated statutory public meeting for the Official Plan and Zoning By-law Amendments.

Midtown Oakville Zones

Portions of this by-law not yet in effect are covered with a blue tone. This version consolidates all amendments and orders of the OMB up to the consolidation date shown below. Contact the Building Services or Planning Services departments for more information.

| Table 7.2: Permitted Uses in the Midtown Oakville Zones | | |
|--|------------|------------|
| | MTC | MTE |
| Open Space Uses | | |
| <i>Conservation use</i> | ✓ | ✓ |
| <i>Park, public</i> | ✓ | ✓ |
| <i>Stormwater management facility</i> | ✓ | ✓ |
| Employment Uses | | |
| <i>Training facility</i> | | ✓ |
| Hospitality Uses | | |
| <i>Hotel</i> | | ✓ |
| <i>Public hall</i> | ✓ (1) | ✓ |
| Community Uses | | |
| <i>Art gallery</i> | ✓ | |
| <i>Community centre</i> | ✓ | ✓ |
| <i>Day care</i> | ✓ | ✓ |
| <i>Emergency service facility</i> | ✓ | ✓ |
| <i>Library</i> | ✓ | |
| <i>School, private</i> | ✓ | |
| Community Uses | | |
| <i>Conservation use</i> | ✓ | ✓ |
| <i>Park, public</i> | ✓ | ✓ |
| <i>Stormwater management facility</i> | ✓ | ✓ |

Additional Regulations for Permitted Uses Table 7.2

1. Not permitted on a *lot* abutting a residential *zone*.
2. Only permitted for the sale of propane to the general public for automotive and recreational purposes.
3. Permitted only within the same *building* or part thereof *used* by any other *use* not subject to this footnote.
A maximum of 20% of the *net floor area* of the *building* shall be cumulatively occupied by all *uses* subject to this footnote.
4. Permitted only as an *accessory use*.

Midtown Oakville Zones

Portions of this by-law not yet in effect are covered with a blue tone. This version consolidates all amendments and orders of the OMB up to the consolidation date shown below. Contact the Building Services or Planning Services departments for more information.

7.3 Regulations

The regulations for the Midtown Oakville *Zones* are set out in Table 7.3, below.

| Table 7.3: Regulations in the Midtown Oakville Zones | | |
|--|---|-----|
| | MTC | MTE |
| Minimum <i>lot frontage</i> | Shall be as legally existing as of the effective date of this By-law. | |
| Minimum <i>lot area</i> | | |
| Maximum <i>lot coverage</i> | | |
| Minimum <i>front yard</i> | | |
| Minimum <i>flankage yard</i> | | |
| Minimum <i>interior side yard</i> | | |
| Minimum <i>rear yard</i> | | |
| Maximum <i>height</i> | | |

Commercial Zones

Portions of this by-law not yet in effect are covered with a blue tone. This version consolidates all amendments and orders of the OMB up to the consolidation date shown below. Contact the Building Services or Planning Services departments for more information.

9.1 List of Applicable Zones

| | |
|--------------------------|----|
| Neighbourhood Commercial | C1 |
| Community Commercial | C2 |
| Core Commercial | C3 |
| Service Station | C4 |

Be sure to refer to all Parts of this By-law to ensure that you have reviewed all regulations that may apply to your lot. Contact staff in zoning section of the Building Services department to confirm the applicable zoning.

9.2 Permitted Uses (2016-023)

Uses permitted in the Commercial Zones are denoted by the symbol “✓” in the column applicable to that Zone and corresponding with the row for a specific permitted use in Table 9.2, below.

| | C1 | C2 | C3 | C4 |
|--|-----------|-----------|-----------|-----------|
| <i>Art gallery</i> | ✓ | ✓ | ✓ | |
| <i>Business office</i> | ✓ | ✓ | ✓ | |
| <i>Commercial parking area</i> | | | | |
| <i>Commercial school</i> | ✓ | ✓ | ✓ | |
| <i>Community centre</i> | ✓ | ✓ | ✓ | |
| <i>Conservation use</i> | ✓ | ✓ | ✓ | ✓ |
| <i>Day care</i> | ✓ (1) | ✓ | ✓ | |
| <i>Drive-through facility</i> | ✓ (1) | ✓ (1) | ✓ (1) | ✓ (1)(2) |
| <i>Dry cleaning depot (2016-023)</i> | ✓ | ✓ | ✓ | |
| <i>Dry cleaning/laundry establishment (2016-023)</i> | | ✓ | ✓ | |
| <i>Emergency service facility</i> | ✓ | ✓ | ✓ | |
| <i>Emergency shelter (PL240317)</i> | ✓ (7) | | | |
| <i>Financial institution</i> | ✓ | ✓ | ✓ | |
| <i>Food bank</i> | ✓ | ✓ | ✓ | |
| <i>Food production</i> | ✓ | ✓ | ✓ | |
| <i>Funeral home</i> | | ✓ | | |
| <i>Library</i> | ✓ | ✓ | ✓ | |
| <i>Medical office</i> | ✓ | ✓ | ✓ | |
| <i>Motor vehicle repair facility</i> | | | ✓ (6) | |
| <i>Motor vehicle service station</i> | | | ✓ | ✓ |
| <i>Motor vehicle washing facility</i> | | | ✓ | ✓ (5) |
| <i>Museum</i> | ✓ | ✓ | ✓ | |
| <i>Outside display and sales area</i> | ✓ | ✓ | ✓ | ✓ |
| <i>Outside miniature golf</i> | | ✓ | ✓ | |
| <i>Park, public</i> | ✓ | ✓ ✓ | ✓ | ✓ |
| <i>Pet care establishment</i> | ✓ | ✓ | ✓ | |
| <i>Place of entertainment</i> | | ✓ | ✓ | |
| <i>Place of worship</i> | ✓ (4) | ✓ (4) | ✓ (4) | |

Commercial Zones

| Table 9.2: Permitted Uses in the Commercial Zones (2017-025) | | | | |
|---|-----------|-----------|-----------|-----------|
| | C1 | C2 | C3 | C4 |
| <i>Rental establishment</i> | | ✓ | ✓ | |
| <i>Restaurant</i> | ✓ | ✓ | ✓ | ✓ (5) |
| <i>Retail propane and transfer facility</i> | | | ✓ (3) | ✓ (3) |
| <i>Retail store</i> | ✓ | ✓ | ✓ | ✓ (5) |
| <i>School, private (2016-023)</i> | ✓ (1) | ✓ | ✓ | |
| <i>Service commercial establishment</i> | ✓ | ✓ | ✓ | |
| <i>Sports facility</i> | ✓ | ✓ | ✓ | |
| <i>Stormwater management facility</i> | ✓ | ✓ | ✓ | ✓ |
| <i>Veterinary clinic</i> | ✓ | ✓ | ✓ | |

Additional Regulations for Permitted Uses Table 9.2

1. Permitted only on a *lot* abutting a major *arterial road*.
2. A maximum one *drive-through facility* shall be permitted on a *lot*.
3. Shall not be permitted on a *lot* abutting any *Residential Zone*.
4. The maximum *lot area* shall be 2.5 hectares. The maximum percentage of *net floor area* permitted to be occupied by a *place of worship* is 50% of the total *net floor area* on the *lot*.
5. Permitted only *accessory* to a *motor vehicle service station*.
6. Permitted only *accessory* to a *retail store*.
7. Prohibited on the *first storey* of a *building*. (PL140317)

9.3 Regulations

The regulations for *lots* in a Commercial Use *Zone* are set out in Table 9.3, below.

| Table 9.3: Regulations in the Commercial Zones | | | | |
|---|-----------------|------------|------------|-----------|
| (2015-018) | C1 | C2 | C3 | C4 |
| Minimum <i>lot area</i> | 0.2 ha | 2.0 ha | 4.0 ha | n/a |
| Minimum <i>lot frontage</i> | 30.0 m | n/a | n/a | 30.0 m |
| Minimum <i>lot depth</i> | n/a | n/a | n/a | 30.0 m |
| Minimum <i>front yard</i> | A 0.0 m | 3.0 m | 3.0 m | 3.0 m |
| Maximum <i>front yard</i> | B 17.5 m | 17.5 m (1) | 17.5 m (1) | n/a |
| Minimum <i>flankage yard</i> | C 0.0 m | 3.0 m | 3.0 m | 3.0 m |
| Maximum <i>flankage yard</i> | C 17.5 m | 17.5 m (1) | 17.5 m (1) | n/a |
| Minimum <i>interior side yard</i> | D 0.0 m | 0.0 m | 0.0 m | 3.0 m |

Portions of this by-law not yet in effect are covered with a blue tone. This version consolidates all amendments and orders of the OMB up to the consolidation date shown below. Contact the Building Services or Planning Services departments for more information.

Residential Zones

6.1 List of Applicable Zones

| | |
|-------------------------|---|
| Residential Low | RL1, RL2, RL3, RL4, RL5, RL6 RL7, RL8, RL9, RL10, RL11 |
| Residential Uptown Core | RUC |
| Residential Medium | RM1, RM2, RM3, RM4 |
| Residential High | RH |

6.2 Permitted Uses

Uses permitted in the Residential Zones are denoted by the symbol “✓” in the column applicable to that Zone and corresponding with the row for a specific permitted use in Tables 6.2.1 and 6.2.2, below.

| Table 6.2.1: Permitted Uses in the Residential Low Zones and the Residential Uptown Core Zone (2017-025) | | | | | | |
|--|--------|---------------------------------|------------------|------|------|-----|
| | | RL1, RL2, RL3, RL4, RL5, RL6 | RL7, RL8, RL9 | RL10 | RL11 | RUC |
| <i>Accessory dwelling unit</i> (2023-024) | | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Bed and breakfast establishment</i> | (1) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Conservation use</i> | | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Day care</i> | (1) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Detached dwelling</i> | | ✓ | ✓ | ✓ | | ✓ |
| <i>Duplex dwelling</i> | | | | ✓ | | |
| <i>Emergency service facility</i> | | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Emergency shelter</i> | | | | | | |
| <i>Home occupation</i> | | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Linked dwelling</i> | | | | | ✓ | |
| <i>Lodging house</i> | (1)(2) | ✓ | | | ✓ | ✓ |
| <i>Park, public</i> | | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Place of worship</i> | | | | | | |
| <i>Private home day care</i> | (1) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Private school</i> | | | | | | |
| <i>Semi-detached dwelling</i> | | | ✓ | | | ✓ |
| <i>Short-term accommodation</i> (2023-024) | (1) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Stormwater management facility</i> | | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Townhouse dwelling</i> | | | | | | ✓ |

Additional Regulations for Permitted Uses Table 6.2.1

1. A maximum of one of the *uses* subject to this footnote shall be permitted on a *lot*. (2023-024)
2. The maximum number of *lodging units* shall be 3.
3. Permitted only on a *corner lot*.

Residential Zones

| Table 6.2.2: Permitted Uses in the Residential Medium and Residential High Zones (2017-025) | | | | | |
|--|------------|------------|------------|------------|-----------|
| | RM1 | RM2 | RM3 | RM4 | RH |
| <i>Accessory Dwelling Unit (2023-024)</i> | ✓ | | | | |
| <i>Apartment dwelling</i> | | | | ✓ | ✓ |
| <i>Back-to-back townhouse dwelling</i> | | ✓ | | | |
| <i>Conservation use</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Day care (1)</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Emergency service facility</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Home occupation</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Long term care facility</i> | | | ✓ | ✓ | ✓ |
| <i>Park, public</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Private home daycare (1)</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Retail store, accessory</i> | | | | | ✓ |
| <i>Retirement home</i> | | | ✓ | ✓ | ✓ |
| <i>Short-term accommodation (1)</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Stacked townhouse dwelling</i> | | | ✓ | | |
| <i>Stormwater management facility</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Townhouse dwelling</i> | ✓ | | | | |

Additional Regulations for Permitted Uses Table 6.2.2

1. A maximum of one of the *accessory uses* subject to this footnote shall be permitted in a *dwelling* or an *accessory dwelling unit* associated with the main *dwelling*. (2023-024)

Portions of this by-law not yet in effect are covered with a blue tone. This version consolidates all amendments and orders of the OMB up to the consolidation date shown below. Contact the Building Services or Planning Services departments for more information.

Mixed Use Zones

8.1 List of Applicable Zones

| | |
|---------------------------|-----|
| Central Business District | CBD |
| Main Street 1 | MU1 |
| Main Street 2 | MU2 |
| Urban Centre | MU3 |
| Urban Core | MU4 |

8.2 Permitted Uses

Uses permitted in the Mixed Use Zones are denoted by the symbol “✓” in the column applicable to that Zone and corresponding with the row for a specific permitted use in Table 8.2, below.

| | CBD | MU1 | MU2 | MU3 | MU4 |
|--|-------|-------|-------|-------|-------|
| <i>Accessory dwelling unit (2023-024)</i> | ✓ | ✓ | ✓ | | |
| <i>Apartment dwelling</i> | ✓ (1) | ✓ (3) | ✓ (3) | ✓ (3) | ✓ (3) |
| <i>Art gallery</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Bed and breakfast establishment</i> (5) | ✓ | | | | |
| <i>Business office</i> (6)(7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Commercial parking area</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Commercial school</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Community centre</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Conservation use</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Day care</i> | ✓ (5) | ✓ | ✓ | ✓ | ✓ |
| <i>Detached dwelling</i> (2) | ✓ | ✓ | ✓ | | |
| <i>Dormitory</i> (4) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Dry cleaning depot (PL140317)</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Dry cleaning/laundry establishment (PL140317)</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Emergency service facility</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Emergency shelter (PL140317)</i> | ✓ (8) | ✓ (8) | ✓ (8) | ✓ (8) | ✓ (8) |
| <i>Financial institution</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Food bank</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Food production</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Funeral home</i> | ✓ | | | | |
| <i>Home Occupation</i> (5) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Hotel</i> (7) | ✓ | | | ✓ | ✓ |
| <i>Library</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Live-work dwelling (2017-025)</i> (2) | ✓ | ✓ | ✓ | | |
| <i>Long term care facility</i> | ✓ (1) | ✓ (3) | ✓ (3) | ✓ (3) | ✓ (3) |
| <i>Medical office</i> (6)(7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Motor vehicle rental facility</i> | | | | ✓ | ✓ |

Mixed Use Zones

| Table 8.2: Permitted Uses in the Mixed Use Zones (2017-025) | | | | | |
|--|------------|------------|------------|------------|------------|
| | CBD | MU1 | MU2 | MU3 | MU4 |
| <i>Museum</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Outside display and sales area</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Park, public</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Pet care establishment</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Place of entertainment</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Place of worship</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Post-secondary school</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Private home day care</i> (5) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Public hall</i> (7) | ✓ | | | ✓ | ✓ |
| <i>Rental establishment</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Restaurant</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Retail store</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Retirement home</i> | ✓ (1) | ✓ (3) | ✓ (3) | ✓ (3) | ✓ (3) |
| <i>School, private</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>School, public</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Semi-detached dwelling</i> (2) | ✓ | ✓ | ✓ | | |
| <i>Service commercial establishment</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Short-term accommodation</i> (2023-024) (5) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Sports facility</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Stormwater management facility</i> | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Taxi dispatch</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Townhouse dwelling</i> (2) | ✓ | ✓ | ✓ | | |
| <i>Veterinary clinic</i> (7) | ✓ | ✓ | ✓ | ✓ | ✓ |

Additional Regulations for Permitted Uses Table 8.2

1.
 - a) Stand-alone residential *buildings* are not permitted on *lots* having a *front lot line* or *flankage lot line* abutting Lakeshore Road. (2021-068)
 - b) Residential *dwelling units* located on the *first storey* shall have the *main front entrance* oriented towards a *public road*. (2021-068)
2. Permitted only where the use legally existed on the lot on the effective date of this By-law.
3.
 - a) Prohibited in the first 9.0 metres of depth of the *building*, measured in from the *main wall* oriented toward the *front lot line*, on the *first storey*. (2021-068)
 - b) Notwithstanding this, an *ancillary residential use* on the *first storey* is permitted to occupy a maximum of 15% of the length of the *main wall* oriented toward a *front lot line*. (2021-068)
4. Only permitted *accessory* to and on the same *lot* as a post-secondary school or private school.

Portions of this by-law not yet in effect are covered with a blue tone. This version consolidates all amendments and orders of the OMB up to the consolidation date shown below. Contact the Building Services or Planning Services departments for more information.

Open Space Zones

12.1 List of Applicable Zones

| | |
|--------------------|-----|
| Park | O1 |
| Private Open Space | O2 |
| Cemetery | CEM |

12.2 Permitted Uses

Uses permitted in the Open Space Zones are denoted by the symbol “✓” in the column applicable to that Zone and corresponding with the row for a specific permitted use in Table 12.2, below.

Be sure to refer to all Parts of this By-law to ensure that you have reviewed all regulations that may apply to your lot. Contact staff in zoning section of the Building Services department to confirm the applicable zoning.

| | O1 | O2 | CEM |
|---|----|-------|-----|
| <i>Business office</i> | | ✓ (1) | |
| <i>Cemetery</i> | | | ✓ |
| <i>Commercial school</i> | | ✓ (1) | |
| <i>Community centre</i> | ✓ | ✓ | |
| <i>Conservation use</i> | ✓ | ✓ | ✓ |
| <i>Emergency service facility</i> | ✓ | ✓ | |
| <i>Golf course</i> | | ✓ | |
| <i>Library</i> | | ✓ (1) | |
| <i>Marina</i> | ✓ | | |
| <i>Museum</i> | | ✓ (1) | |
| <i>Outside miniature golf course</i> | | ✓ | |
| <i>Park, private</i> | | ✓ | |
| <i>Park, public</i> | ✓ | ✓ | |
| <i>Public hall</i> | | ✓ (1) | |
| <i>Restaurant</i> | | ✓ (1) | |
| <i>Retail store</i> | | ✓ (1) | |
| <i>Stormwater management facility</i> | ✓ | ✓ | ✓ |
| <i>Service commercial establishment</i> | | ✓ (1) | |
| <i>Sports facility</i> | | ✓ | |

Additional Regulations for Permitted Uses Table 12.2

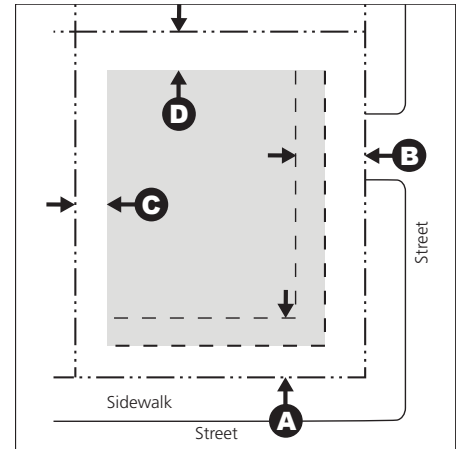
1. Permitted only *accessory* to another permitted use.

Open Space Zones

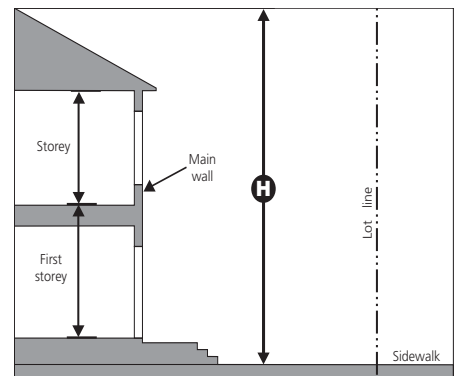
12.3 Regulations

The regulations for *lots* in an Open Space Zone are set out in Table 12.3, below.

| Table 12.3: Regulations in the Open Space Zones | | | |
|---|-----------------|--------|--------|
| | O1 | O2 | CEM |
| Minimum lot area | n/a | n/a | n/a |
| Minimum lot frontage | n/a | n/a | n/a |
| Minimum front yard (2015-018) | A 0.0 m | 12.0 m | 5.0 m |
| Minimum flankage yard (2015-018) | B 0.0 m | 12.0 m | 5.0 m |
| Minimum interior side yard (2015-018) | C 4.5 m | 12.0 m | 5.0 m |
| Minimum rear yard (2015-018) | D 4.5 m | 12.0 m | 7.5 m |
| Maximum height | H 14.0 m | 14.0 m | 14.0 m |
| Maximum lot coverage | 25% | 25% | 30% |



The black circles are letters corresponding to the applicable yard in the regulations table. The shaded area represents the potential building envelope remaining once minimum yards are removed.



Height is measured to the tallest point of the building.

Portions of this by-law not yet in effect are covered with a blue tone. This version consolidates all amendments and orders of the OMB up to the consolidation date shown below. Contact the Building Services or Planning Services departments for more information.

Other Zones

14.1 List of Applicable Zones

| | |
|--------------------------------|-----|
| Utility | U |
| Future Development (2023-024) | FD |
| Stormwater Management Facility | SMF |

Be sure to refer to all Parts of this By-law to ensure that you have reviewed all regulations that may apply to your lot. Contact staff in the zoning section of the Building Services department to confirm the applicable zoning.

14.2 Permitted Uses

Uses permitted in the Other Zones are denoted by the symbol “✓” in the column applicable to that Zone and corresponding with the row for a specific permitted use in Table 14.2, below.

| Table 14.2: Permitted Uses in the Other Zones <i>(2017-025) (2023-024)</i> | | | |
|--|----------|-----------|------------|
| | U | FD | SMF |
| <i>Conservation use</i> | ✓ | ✓ | ✓ |
| <i>Emergency service facility</i> | | ✓ | |
| Legal uses of land existing on the lot as of the effective date of this By-law | | ✓ (1) | |
| <i>Major transit station (2017-025)</i> | ✓ (2) | | |
| <i>Park, private</i> | | | ✓ |
| <i>Park, public</i> | | ✓ | ✓ |
| <i>Stormwater management facility</i> | ✓ | ✓ | ✓ |

Additional Regulations for Permitted Uses Table 14.2

1.
 - a) Only buildings and structures legally existing on the effective date of this By-law and one accessory building or structure constructed after the effective date of this By-law are permitted.
 - b) If the use is a dwelling, the uses listed under accessory residential uses in Table 6.2.1 of this By-law are additionally permitted, subject to the additional regulations of that Table, and Section 6.5 of this By-law shall apply to permit accessory buildings and structures.
2.
 - a) Only permitted within and adjacent to a railway corridor at locations designated by an operator of a passenger rail service.
 - b) Accessory uses to a major transit station
 - i) shall be limited to restaurants, retail stores, dry cleaning/laundry and service commercial establishments;
 - ii) may be stand-alone or within shared premises;
 - iii) shall have a maximum total net floor area of 500.0 square metres; and,
 - iv) shall be exempt from the parking and yard regulations of this By-law (2017-025)

The Utility (U) Zone applies to most significant infrastructure facilities in Oakville. Infrastructure is permitted broadly across Oakville in Section 4.10 of this By-law and not in the Permitted Use Tables.

Other Zones

14.3 Regulations

The regulations for the Other *Zones* are set out in Table 14.3, below.

| | U | FD | SMF |
|-----------------------------------|----------|-----------|------------|
| Minimum <i>lot area</i> | n/a | n/a | n/a |
| Minimum <i>lot frontage</i> | n/a | n/a | n/a |
| Minimum <i>front yard</i> | 7.5 m | 9.0 m | n/a |
| Minimum <i>flankage yard</i> | 6.0 m | 2.4 m | n/a |
| Minimum <i>interior side yard</i> | 6.0 m | 2.4 m | n/a |
| Minimum <i>rear yard</i> | 7.5 m | 7.5 m | n/a |
| Maximum <i>height</i> | n/a | 10.0 m | n/a |
| Maximum <i>lot coverage</i> | n/a | (1) | n/a |

Additional Regulations for Zone Regulations Table 14.3

1.
 - a) The maximum *lot coverage* and *floor area* shall be the *lot coverage* and *floor area* that legally existed on the effective date of this By-law, and may be increased by a maximum of 10% at the location of the *building* only.
 - b) For *accessory buildings* or *structures*, the regulations of Section 6.5 shall apply.

Appendix D

Warning Clauses and BPN56

Warning Clauses

All warning clauses should be included in agreements that are registered on title for all Offers of Purchase and Sale, lease/rental agreements, and condominium declarations.

Type B: "Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic and rail traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

Type D: "This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

CN Warning Clause: "Canadian National Railway Company and its assigns or successors in interest has or have a rights-of-way within 1000 metres from the land the subject hereof. There may be alterations to or expansions of the railway facilities on such rights-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). CNR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid rights-of-way."

Metrolinx: "Metrolinx and its assigns and successors in interest has or have a right-of-way within 300 metres from the land the subject hereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future including the possibility that Metrolinx or any railway entering into an agreement with Metrolinx to use the right-of-way or their assigns or successors as aforesaid may expand their operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). Metrolinx will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."

| Location | Source | Time of Day | Location Type | Sound Levels | | | | Facade and Room Inputs | | | | | | | Source Inputs | | | | | Component 1 - Veneer | | | | | Component 2 - Glazing | | | | | Required Glazing (STC) | | | |
|----------|------------|-------------|-------------------|--------------------|-----------------------------|--------------------------|--------------------------|---------------------------|---------------------------|----------------|------------------------------|-------------------------------|---------------------------------|--------------------------------|-------------------------------|-----------------|------------------------|-----------------------------------|----------------------------|----------------------|-----------------|----------------------|--------------------|---------------------|-----------------------|--------------------------------|-------------------|--------------------|---------------------|------------------------|-----------------|--------------------------------|-------------------|
| | | | | Facade Level (dBA) | Free Field Correction (dBA) | Indoor Requirement (dBA) | Required Reduction (dBA) | Exposed Facade Height (m) | Exposed Facade Length (m) | Room Depth (m) | Floor Area (m ²) | Facade Area (m ²) | Glazing as % of Facade Area (%) | Glazing as % of Floor Area (%) | Veneer as % of Floor Area (%) | Room Absorption | Height of Receptor (m) | Horizontal Distance to Source (m) | Incident Sound Angle (deg) | Angle Correction | Source Spectrum | Assumed Veneer (STC) | Building Component | Spectrum Correction | Room Correction | % Total Transmitted Energy (%) | Energy Correction | Building Component | Spectrum Correction | | Room Correction | % Total Transmitted Energy (%) | Energy Correction |
| BA NE | Roadway | Daytime | Living/Dining | 71 | 3 | 45 | 29 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -4 | 5% | 42 | C | 4 | -1 | 95% | 0 | 34 |
| | Locomotive | Daytime | Living/Dining | 62 | 3 | 40 | 25 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -4 | 5% | 39 | C | 6 | -1 | 95% | 0 | 32 |
| | Wheel | Daytime | Living/Dining | 66 | 3 | 40 | 28 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -4 | 5% | 47 | C | 1 | -1 | 95% | 0 | 30 |
| | Roadway | Night-time | Living/Dining | 64 | 3 | 45 | 22 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -4 | 5% | 42 | C | 4 | -1 | 95% | 0 | 27 |
| | Locomotive | Night-time | Living/Dining | 58 | 3 | 40 | 21 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -4 | 5% | 39 | C | 6 | -1 | 95% | 0 | 28 |
| | Wheel | Night-time | Living/Dining | 61 | 3 | 40 | 24 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -4 | 5% | 47 | C | 1 | -1 | 95% | 0 | 26 |
| | Roadway | Daytime | Sleeping Quarters | 71 | 3 | 45 | 29 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -2 | 5% | 40 | C | 4 | -2 | 95% | 0 | 32 |
| | Locomotive | Daytime | Sleeping Quarters | 62 | 3 | 40 | 25 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -2 | 5% | 37 | C | 6 | -2 | 95% | 0 | 30 |
| | Wheel | Daytime | Sleeping Quarters | 65 | 3 | 40 | 28 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -2 | 5% | 45 | C | 1 | -2 | 95% | 0 | 28 |
| BA SE | Roadway | Daytime | Living/Dining | 68 | 3 | 45 | 26 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -4 | 5% | 42 | C | 4 | -1 | 95% | 0 | 37 |
| | Locomotive | Daytime | Living/Dining | 64 | 3 | 40 | 27 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -4 | 5% | 39 | C | 6 | -1 | 95% | 0 | 34 |
| | Wheel | Daytime | Living/Dining | 67 | 3 | 40 | 30 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -4 | 5% | 47 | C | 1 | -1 | 95% | 0 | 32 |
| | Roadway | Night-time | Living/Dining | 61 | 3 | 45 | 19 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -4 | 5% | 42 | C | 4 | -1 | 95% | 0 | 24 |
| | Locomotive | Night-time | Living/Dining | 60 | 3 | 40 | 23 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -4 | 5% | 39 | C | 6 | -1 | 95% | 0 | 30 |
| | Wheel | Night-time | Living/Dining | 63 | 3 | 40 | 26 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -4 | 5% | 47 | C | 1 | -1 | 95% | 0 | 28 |
| | Roadway | Daytime | Sleeping Quarters | 68 | 3 | 45 | 26 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -2 | 5% | 40 | C | 4 | -2 | 95% | 0 | 29 |
| | Locomotive | Daytime | Sleeping Quarters | 64 | 3 | 40 | 27 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -2 | 5% | 37 | C | 6 | -2 | 95% | 0 | 32 |
| | Wheel | Daytime | Sleeping Quarters | 67 | 3 | 40 | 30 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -2 | 5% | 45 | C | 1 | -2 | 95% | 0 | 30 |
| BA SW | Roadway | Daytime | Living/Dining | 72 | 3 | 45 | 30 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -4 | 5% | 42 | C | 4 | -1 | 95% | 0 | 36 |
| | Locomotive | Daytime | Living/Dining | 60 | 3 | 40 | 23 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -4 | 5% | 39 | C | 6 | -1 | 95% | 0 | 30 |
| | Wheel | Daytime | Living/Dining | 63 | 3 | 40 | 26 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -4 | 5% | 47 | C | 1 | -1 | 95% | 0 | 28 |
| | Roadway | Night-time | Living/Dining | 66 | 3 | 45 | 24 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -4 | 5% | 42 | C | 4 | -1 | 95% | 0 | 29 |
| | Locomotive | Night-time | Living/Dining | 56 | 3 | 40 | 19 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -4 | 5% | 39 | C | 6 | -1 | 95% | 0 | 26 |
| | Wheel | Night-time | Living/Dining | 59 | 3 | 40 | 22 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -4 | 5% | 47 | C | 1 | -1 | 95% | 0 | 24 |
| | Roadway | Daytime | Sleeping Quarters | 72 | 3 | 45 | 30 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -2 | 5% | 40 | C | 4 | -2 | 95% | 0 | 33 |
| | Locomotive | Daytime | Sleeping Quarters | 60 | 3 | 40 | 23 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -2 | 5% | 37 | C | 6 | -2 | 95% | 0 | 32 |
| | Wheel | Daytime | Sleeping Quarters | 63 | 3 | 40 | 26 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -2 | 5% | 45 | C | 1 | -2 | 95% | 0 | 30 |
| BA NW | Roadway | Daytime | Living/Dining | 74 | 3 | 45 | 32 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -4 | 5% | 42 | C | 4 | -1 | 95% | 0 | 37 |
| | Locomotive | Daytime | Living/Dining | 52 | 3 | 40 | 15 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -4 | 5% | 39 | C | 6 | -1 | 95% | 0 | 28 |
| | Wheel | Daytime | Living/Dining | 60 | 3 | 40 | 23 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -4 | 5% | 47 | C | 1 | -1 | 95% | 0 | 27 |
| | Roadway | Night-time | Living/Dining | 67 | 3 | 45 | 25 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -4 | 5% | 42 | C | 4 | -1 | 95% | 0 | 30 |
| | Locomotive | Night-time | Living/Dining | 52 | 3 | 40 | 15 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -4 | 5% | 39 | C | 6 | -1 | 95% | 0 | 27 |
| | Wheel | Night-time | Living/Dining | 55 | 3 | 40 | 18 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -4 | 5% | 47 | C | 1 | -1 | 95% | 0 | 20 |
| | Roadway | Daytime | Sleeping Quarters | 74 | 3 | 45 | 32 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 230 | 39.44 | 1 | D | 45 | D | 7 | -2 | 5% | 40 | C | 4 | -2 | 95% | 0 | 35 |
| | Locomotive | Daytime | Sleeping Quarters | 56 | 3 | 40 | 19 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 250 | 37.12 | 1 | F | 45 | D | 10 | -2 | 5% | 37 | C | 6 | -2 | 95% | 0 | 24 |
| | Wheel | Daytime | Sleeping Quarters | 60 | 3 | 40 | 23 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 189.2 | 250 | 37.12 | 1 | B | 45 | D | 2 | -2 | 5% | 45 | C | 1 | -2 | 95% | 0 | 22 |
| BB NE | Roadway | Daytime | Living/Dining | 72 | 3 | 45 | 30 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 140.9 | 270 | 27.56 | 0 | D | 45 | D | 7 | -4 | 5% | 42 | C | 4 | -1 | 95% | 0 | 34 |
| | Locomotive | Daytime | Living/Dining | 61 | 3 | 40 | 24 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 140.9 | 215 | 33.24 | 1 | F | 45 | D | 10 | -4 | 5% | 39 | C | 6 | -1 | 95% | 0 | 37 |
| | Wheel | Daytime | Living/Dining | 64 | 3 | 40 | 27 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 140.9 | 215 | 33.24 | 1 | B | 45 | D | 2 | -4 | 5% | 47 | C | 1 | -1 | 95% | 0 | 29 |
| | Roadway | Night-time | Living/Dining | 66 | 3 | 45 | 24 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 140.9 | 270 | 27.56 | 0 | D | 45 | D | 7 | -4 | 5% | 42 | C | 4 | -1 | 95% | 0 | 28 |
| | Locomotive | Night-time | Living/Dining | 57 | 3 | 40 | 20 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 140.9 | 215 | 33.24 | 1 | F | 45 | D | 10 | -4 | 5% | 39 | C | 6 | -1 | 95% | 0 | 27 |
| | Wheel | Night-time | Living/Dining | 59 | 3 | 40 | 22 | 3.00 | 6.00 | 3.00 | 18.00 | 18.00 | 70% | 70% | 30% | Intermediate | 140.9 | 215 | 33.24 | 1 | B | 45 | D | 2 | -4 | 5% | 47 | C | 1 | -1 | 95% | 0 | 24 |
| | Roadway | Daytime | Sleeping Quarters | 72 | 3 | 45 | 30 | 3.00 | 3.00 | 3.00 | 9.00 | 9.00 | 50% | 50% | 50% | Intermediate | 140.9 | 270 | 27.56 | 0 | D | 45 | D | 7 | -2 | 5% | 40 | C | 4 | -2 | | | |

Appendix E

Traffic Information

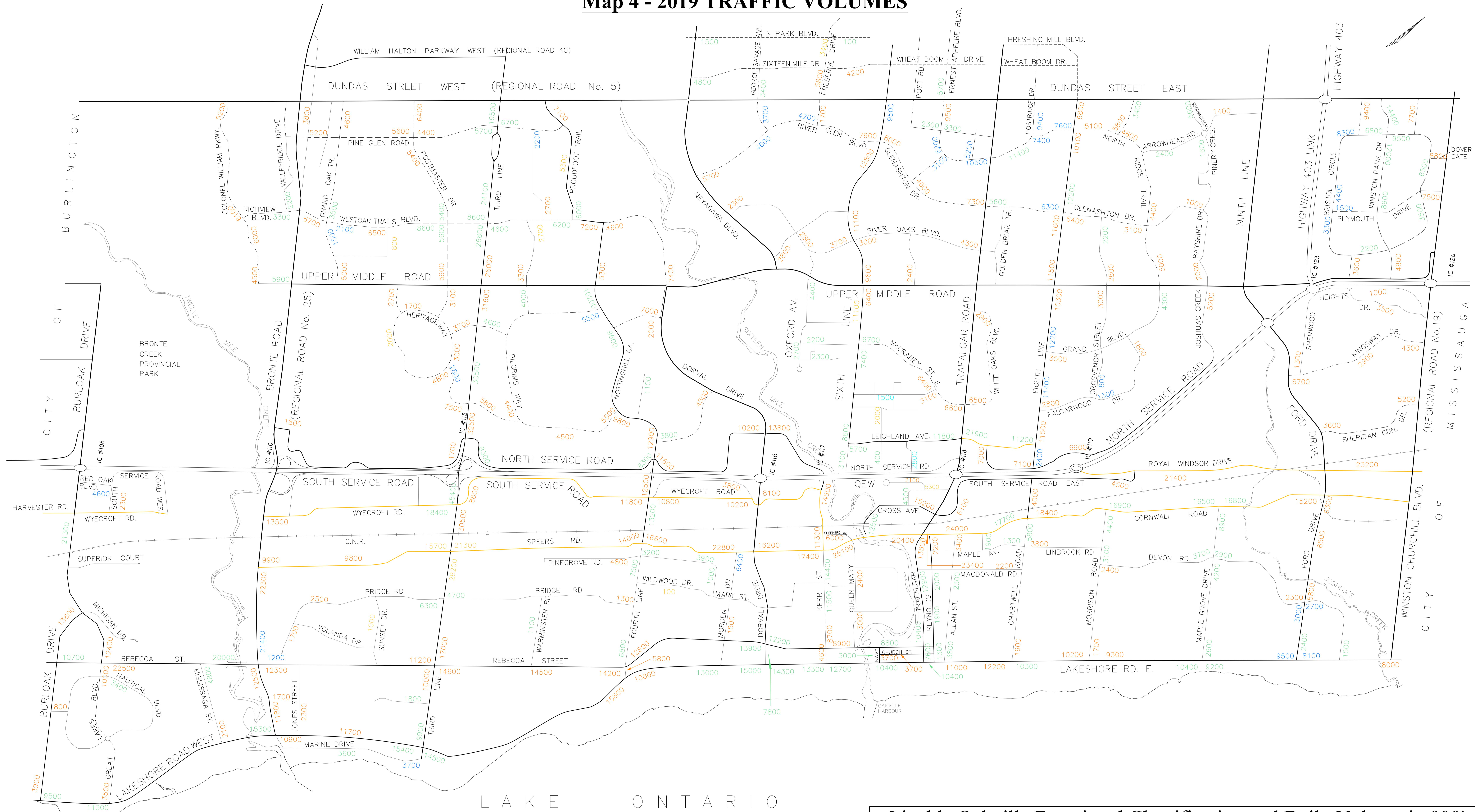
OAKVILLE TOC

Noise Feasibility Study - 157-165 Cross Avenue,
Oakville, Ontario

October 2024 – Dillon File # 23-6593



Map 4 - 2019 TRAFFIC VOLUMES



| Livable Oakville Functional Classification and Daily Volume in 000's | | | | | |
|--|-----------------|-------|----------------------|-----------------|-------|
| Road Class | Typical Maximum | | Road Class | Typical Maximum | |
| Major Arterials | 40-60 | ————— | Industrial Arterials | 15 | ----- |
| Multi-purpose Arterials | 20-40 | ————— | Major Collectors | 10 | ----- |
| Minor Arterials | 20-40 | ————— | Collectors | 5 | ----- |

LEGEND
 2019 Volumes 2018 Volumes 2017 Volumes 2016 Volumes 2015 Volumes Beyond 2015 Volumes
 Please Note: All Volumes Are Rounded to the Nearest 100.



Last Updated: February 24, 2016



Heggart, Callum <cheggart@dillon.ca>

Road Traffic Information Request - QEW

3 messages

Heggart, Callum <cheggart@dillon.ca>
To: Christopher.bee@ontario.ca

Tue, Jul 25, 2023 at 2:13 PM

Hi Christopher,

On behalf of Distrikt, Dillon Consulting Ltd. is completing a Noise Feasibility Study for a proposed residential development located at 157 and 165 Cross Avenue in Oakville, Ontario.

To support the Noise Feasibility Study, I would like to request traffic information for the QEW. Please let me know if the following information can be made available:

- Expected annual growth rate
- medium and heavy truck percentage
- hourly traffic counts or the the expected minimum hourly traffic counts/percentage of AADT for the daytime (7:00-19:00), evening (19:00-23:00), and nighttime (23:00-7:00) periods

Thanks
Callum



Callum Heggart
Dillon Consulting Limited
Suite 200 - 51 Breithaupt Street
Kitchener, Ontario, N2H 5G5
T - 519.571.9833 ext. 3153
F - 519.571.7424
CHeggart@dillon.ca
www.dillon.ca



Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
To: "Patel, Sohil (MTO)" <Sohil.Patel@ontario.ca>, "Heggart, Callum" <cheggart@dillon.ca>
Cc: "Bee, Christopher (MTO)" <Christopher.Bee@ontario.ca>

Tue, Jul 25, 2023 at 4:21 PM

To Sohil:

Can you please respond to Callum Heggart's Dillon request for data below.

Let me know if you have any questions.

Thanks.

Christopher Bee

MTO WR London Office

Operational Traffic Engineering Section

From: Heggart, Callum <cheggart@dillon.ca>
Sent: July 25, 2023 2:14 PM
To: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Subject: Road Traffic Information Request - QEW

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Patel, Sohil (MTO) <Sohil.Patel@ontario.ca>
To: "Heggart, Callum" <cheggart@dillon.ca>
Cc: "Bee, Christopher (MTO)" <Christopher.Bee@ontario.ca>, "Schmid, Kelly (MTO)" <Kelly.Schmid@ontario.ca>

Wed, Jul 26, 2023 at 9:35 AM

Hello Callum,

Please see below in Red which are the numbers from 2021 counts between Dorval Road and Trafalgar Road. MTO does not have recent hourly counts at this location.

- Expected annual growth rate: - **3.2%**
- medium and heavy truck percentage:- **9%**
- hourly traffic counts or the the expected minimum hourly traffic counts/percentage of AADT for the daytime (7:00-19:00), evening (19:00-23:00), and nighttime (23:00-7:00) periods:- **AADT 219,100**

Thank you,

Sohil Patel, Traffic Analyst

Highway Operations Management Branch

Operational Traffic Engineering Section

Ministry of Transportation,

289 St Paul St, St. Catharines, ON L2R 3M8

Cell:613-583-8946

[Quoted text hidden]



Train Count Data

TRANSMITTAL

To: Dillon Consulting *Project :* OAK-21.20- Trafalgar Road, Oakville, ON
Destinataire : 51 Breithaupt Street,
Suite 200 Kitchener
ON N2H 5G5

Att'n: Callum Heggart *Routing:* cheggart@dillon.ca

From: Umair Naveed *Date:* 11/21/2023
Expéditeur :

Cc: Adjacent Development
CN via e-mail

Urgent For Your Use For Review For Your Information Confidential

Re: Train Traffic Data – CN Oakville Subdivision near 165 Cross Avenue in Oakville, ON

Please find attached the requested Train Traffic Data; this data does not reflect GO Metrolinx Traffic. The application fee in the amount of **\$500.00** +HST will be invoiced.

Should you have any questions, please do not hesitate to contact the undersigned at permits.gld@cn.ca.

Sincerely,

Umair Naveed

Umair Naveed
Officer Public Works – Eastern Canada
Permits.gld@cn.ca

Date: 2023/11/21

Project Number: OAK-21.20- Trafalgar Road, Oakville, ON

Dear Callum Heggart:

Re: Train Traffic Data – CN Oakville Subdivision near 165 Cross Avenue in Oakville, ON

The following is provided in response to Callum Heggart’s 2023/07/25 request for information regarding rail traffic in the vicinity of 165 Cross Avenue Street in Oakville at approximately Mile 21.20 on CN’s Oakville Subdivision.

Typical daily traffic volumes are recorded below. However, traffic volumes may fluctuate due to overall economic conditions, varying traffic demands, weather conditions, track maintenance programs, statutory holidays and traffic detours that when required may be heavy although temporary. For the purpose of noise and vibration reports, train volumes must be escalated by 2.5% per annum for a 10-year period.

Typical daily traffic volumes at this site location are as follows:

***Maximum train speed is given in Miles per Hour**

| | 0700-2300 | | | |
|---------------|-----------|-------------|------------|------------|
| Type of Train | Volumes | Max.Consist | Max. Speed | Max. Power |
| Freight | 0 | 140 | 60 | 4 |
| Way Freight | 3 | 25 | 60 | 4 |
| Passenger | 14 | 10 | 95 | 2 |

| | 2300-0700 | | | |
|---------------|-----------|-------------|------------|------------|
| Type of Train | Volumes | Max.Consist | Max. Speed | Max. Power |
| Freight | 0 | 140 | 60 | 4 |
| Way Freight | 4 | 25 | 60 | 4 |
| Passenger | 0 | 10 | 95 | 2 |

The volumes recorded reflect westbound and eastbound freight and passenger operations on CN’s Oakville Subdivision.

Except where anti-whistling bylaws are in effect, engine-warning whistles and bells are normally sounded at all at-grade crossings. There are two (2) at-grade crossings in the immediate vicinity of the study area at Mile 20.55 Chartwell Road and Mile 21.94 Kerr Street. Anti-whistling bylaws are in effect at these crossings. Please note that engine warning whistles may be sounded in cases of emergency, as a safety and or warning precaution at station locations and pedestrian crossings and occasionally for operating requirements.

With respect to equipment restrictions, the gross weight of the heaviest permissible car is 286,000 lbs.

The triple (3) mainline track is considered to be continuously welded rail throughout the study area. The presence of four (4) switches located at Mile 21.92, 22.04, 22.05 and 22.13 may exacerbate the noise and vibration caused by train movements.

The Canadian National Railway continues to be strongly opposed to locating developments near railway facilities and rights-of-way due to potential safety and environmental conflicts. Development adjacent to the Railway Right-of-Way is not appropriate without sound impact mitigation measures to reduce the incompatibility. For confirmation of the applicable rail noise, vibration and safety standards, Adjacent Development, Canadian National Railway Properties at Proximity@cn.ca should be contacted directly.

I trust the above information will satisfy your current request.

Sincerely,

Umair Naveed

Umair Naveed
Officer Public Works – Eastern Canada
Permits.gld@cn.ca



Heggart, Callum <cheggart@dillon.ca>

Rail Traffic Information Request - GO Oakville Subdivision

2 messages

Heggart, Callum <cheggart@dillon.ca>
To: raildatarequests@metrolinx.com

Tue, Jul 25, 2023 at 2:15 PM

Hi,

On behalf of Distrikt, Dillon Consulting Ltd. is completing a Noise Feasibility Study for a proposed residential development located at 157 and 165 Cross Avenue in Oakville, Ontario.

To support the Noise Feasibility Study, I would like to request rail information for the Oakville subdivision in proximity to the proposed development. Please let me know if the following information can be made available:

- GO train volumes for the daytime and nighttime periods
- Maximum locomotives and cars associated with each train type
- Speed of each train type in proximity to 165 Cross Avenue
- Expected annual growth rate of rail traffic in the area
- Whether whistles are sounded during typical operations in the area

Thanks
Callum



Callum Heggart
Dillon Consulting Limited
 Suite 200 - 51 Breithaupt Street
 Kitchener, Ontario, N2H 5G5
 T - 519.571.9833 ext. 3153
 F - 519.571.7424
 CHeggart@dillon.ca
 www.dillon.ca



Rail Data Requests <RailDataRequests@metrolinx.com>
To: "Heggart, Callum" <cheggart@dillon.ca>

Thu, Aug 10, 2023 at 1:47 PM

Hi Callum,

Further to your request dated July 25th 2023, the subject lands (157 and 165 Cross Avenue, Oakville) are located within 300 metres of the CN Oakville Subdivision (which carries Lakeshore West GO rail service).

It's anticipated that GO rail service on this Subdivision will be comprised of diesel and electric trains. The GO rail fleet combination on this Subdivision will consist of up to 1 locomotives and 10 passenger cars. The typical GO rail weekday train volume forecast near the subject lands, including both revenue and equipment trips is in the order of 408 trains. The planned detailed trip breakdown is listed below:

| | | | | | | | | | |
|--|---------------------|----------------------|-----------------------|------------------------|--|---------------------|----------------------|-----------------------|------------------------|
| | 1 Diesel Locomotive | 2 Diesel Locomotives | 1 Electric Locomotive | 2 Electric Locomotives | | 1 Diesel Locomotive | 2 Diesel Locomotives | 1 Electric Locomotive | 2 Electric Locomotives |
|--|---------------------|----------------------|-----------------------|------------------------|--|---------------------|----------------------|-----------------------|------------------------|

| | | | | | | | | | |
|-----------------|-----|---|-----|---|-------------------|----|---|----|---|
| Day (0700-2300) | 132 | 0 | 222 | 0 | Night (2300-0700) | 20 | 0 | 34 | 0 |
|-----------------|-----|---|-----|---|-------------------|----|---|----|---|

The current track design speed near the subject lands is 80 mph (129 km/h).

There are *anti-whistling by-laws* in affect near the subject lands at Kerr St, Chartwell Rd, and Fourth Line

With respect to future electrified rail service, Metrolinx is committed to finding the most sustainable solution for electrifying the GO rail network and we are currently working towards the next phase.

Options have been studied as part of the Transit Project Assessment Process (TPAP) for the GO Expansion program, currently in the procurement phase. The successful proponent team will be responsible for selecting and delivering the right trains and infrastructure to unlock the benefits of GO Expansion. The contract is in a multi-year procurement process and teams have submitted their bids to Infrastructure Ontario and Metrolinx for evaluation and contract award. GO Expansion construction will get underway in late 2023.

However, we can advise that train noise is dominated by the powertrain at lower speeds and by the wheel-track interaction at higher speeds. Hence, the noise level and spectrum of electric trains is expected to be very similar at higher speeds, if not identical, to those of equivalent diesel trains.

Given the above considerations, it would be prudent at this time, for the purposes of acoustical analyses for development in proximity to Metrolinx corridors, to assume that the acoustical characteristics of electrified and diesel trains are equivalent. In light of the aforementioned information, acoustical models should employ diesel train parameters as the basis for analyses. We anticipate that additional information regarding specific operational parameters for electrified trains will become available in the future once the proponent team is selected.

Operational information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability and passenger demand.

It should be noted that this information only pertains to Metrolinx rail service. It would be prudent to contact other rail operators in the area directly for rail traffic information pertaining to non-Metrolinx rail service.

I trust this information is useful. Should you have any questions or concerns, please do not hesitate to contact me.

Justin Neale

Third Party Projects Review Team

Metrolinx | [10 Bay Street](#) | [Toronto](#) | [Ontario](#) | [M5J 2W3](#)

From: Heggart, Callum <cheggart@dillon.ca>

Sent: July 25, 2023 2:15 PM

To: Rail Data Requests <RailDataRequests@metrolinx.com>

Subject: Rail Traffic Information Request - GO Oakville Subdivision

You don't often get email from cheggart@dillon.ca. [Learn why this is important](#)

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Appendix F

Industrial Classification

OAKVILLE TOC

Noise Feasibility Study - 157-165 Cross Avenue,
Oakville, Ontario

October 2024 – Dillon File # 23-6593



| Category | Outputs | Scale | Process | Operations/Intensity | Possible Examples |
|-----------|---|---|--|---|--|
| Class I | <ul style="list-style-type: none"> • Noise: Sound not audible off property • Dust and/or Odour: Infrequent and not intense • Vibration: No ground borne vibration on plant property | <ul style="list-style-type: none"> • No outside storage • Small scale plant or scale is irrelevant in relation to all other criteria for this Class | <ul style="list-style-type: none"> • Self-contained plant or building which produces/stores a packaged product. Low probability of fugitive emissions | <ul style="list-style-type: none"> • Daytime operations only • Infrequent movement of products and/or heavy trucks | <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 |
| Class II | <ul style="list-style-type: none"> • Noise: Sound occasionally audible off property • Dust and/or Odour: Frequent and occasionally intense • Vibration: Possible groundborne vibration, but cannot be perceived off property | <ul style="list-style-type: none"> • Outside storage permitted • Medium level of production allowed | <ul style="list-style-type: none"> • Open process • Periodic outputs of minor annoyance • Low probability of fugitive emissions | <ul style="list-style-type: none"> • Shift operations permitted • Frequent movement of products and/or heavy trucks with the majority of movements during daytime hours | <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 |
| Class III | <ul style="list-style-type: none"> • Noise: sound frequently audible off property • Dust and/or Odour: Persistent and/or intense • Vibration: Ground-borne vibration can frequently be perceived off property | <ul style="list-style-type: none"> • Outside storage of raw and finished products • Large production levels | <ul style="list-style-type: none"> • Open process • Frequent outputs of major annoyances • High probability of fugitive emissions | <ul style="list-style-type: none"> • Continuous movement of products and employees • Daily shift operations permitted | <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 |

Appendix G

Stationary Noise Source Data



| Source | Octave Spectrum Hz (dB) | | | | | | | | | Overall (dBA) | Information Source |
|----------------------|-------------------------|-------|-------|-------|-------|-------|------|------|------|----------------------|--------------------|
| | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | |
| HVAC (5-ton) | | | 69.0 | 72.0 | 77.0 | 76.0 | 72.0 | 66.0 | 58.0 | 79.7 | Dillon Library |
| Air-Cooled Condenser | 106.1 | 100.4 | 93.6 | 88.2 | 85.3 | 84.4 | 82.9 | 76.6 | 70.6 | 89.7 | Dillon Library |
| Truck Movement | 112.2 | 112 | 110.9 | 105.9 | 102.3 | 100.9 | 101 | 96 | 90.6 | 107.1 | Dillon Library |
| Truck Back-up Beeper | 103.4 | 97.9 | 93.3 | 92.5 | 90.5 | 96.3 | 90.6 | 80.7 | 73.2 | 98.3 ^[1] | Dillon Library |
| Idling Reefer Truck | 101.8 | 105.5 | 94.2 | 95.2 | 94.8 | 89.2 | 86.7 | 81.3 | 73.8 | 95.7 | Field Measurements |
| Car Wash Bay | 83.9 | 80.7 | 76.6 | 77.3 | 75.2 | 75.7 | 78.3 | 80.8 | 79.8 | 85.8 | Field Measurements |
| Vacuum | 81.8 | 82.2 | 77.7 | 73.7 | 79.4 | 82.9 | 87.6 | 88.4 | 82.5 | 93.0 | Field Measurements |
| Air Tools | 93.6 | 88.9 | 93.4 | 86.8 | 90.3 | 89.4 | 96.6 | 96.1 | 95.9 | 102.0 ^[2] | Dillon Library |

Notes: [1] Not inclusive of the +5 dB tonal penalty

[2] Not inclusive of the +10 dB quasi-steady impulsive penalty

References

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

US FTA Transit Noise and Vibration Impact Assessment Manual, 2018

Guidelines for New Development in Proximity to Railway Operations, Railway Association of Canada and Federation of Canadian Municipalities, May 2013.