Environmental Noise Assessment – Lakeshore Road East from Etobicoke Creek to East Avenue

City of Mississauga

SLR Project No: 241.30176.00000

June 2023

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Prepared by
SLR Consulting (Canada) Ltd.
150 Research Lane – Suite 105
Guelph, ON, N1G 4T2

for

HDR Inc.
100 York Blvd., Suite 300
Richmond Hill, ON, L4B 1J8

June 2023

Prepared by:

Chris Blaney, B.A.
Senior Noise Specialist

Reviewed by:

Jason Dorssers, B.Eng.
Acoustical Consultant

Distribution: 1 copy – City of Mississauga
1 copy – SLR Consulting (Canada) Ltd.

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EXECUTIVE SUMMARY

SLR Consulting (Canada) Ltd., was retained by HDR Inc. on behalf of the City of Mississauga (City) to conduct an environmental noise impact assessment in Mississauga, Ontario. The City is completing this project in accordance with Ontario Regulation 231/08, Transit Projects, and Metrolinx Undertakings (Transit Projects Regulation) of the *Environmental Assessment Act* (EA Act). The Regulation exempts proponents of all public transit projects from the requirements under Part II and Part II.1 of the EA Act, provided the project follows the steps prescribed in the Transit Projects Assessment Process (TPAP); a proponent-driven, self-assessment process. Proponents must follow the prescribed steps in the TPAP within specified timeframes, culminating with the Ministry of the Environment, Conservation and Parks, Ontario (MECP) decision within six (6) months of the start of the process, which is marked by the Notice of Commencement.

The overall objectives of this study include, but are not limited to the following:

- to assess future "build" and "no-build" sound levels from road traffic noise sources in the area (i.e., noise levels with and without the proposed project taking place);
- to use these predictions to assess potential impacts according to the applicable guides;
- to specify mitigation measures where required; and
- to assess the potential for construction noise and provide a Code of Practice to minimize potential impacts.

The potential environmental transportation noise impacts of the proposed undertaking have been assessed. Both operational and construction noise impacts have been considered. The conclusions and recommendations are as follows:

- The results show that changes in sound levels resulting from the proposed project are expected to be negligible. Noise impacts are extremely minor and below the 5 dBA impact criteria in the Noise Protocol.
- The 'as-built' sound levels are less than the 60 dBA criteria for all the homes except for Receptors 13 and 14. It is not possible to construct noise barriers for these two receptor locations because of existing building entrances and roadways in the vicinity of the NSA's.
- No noise mitigation is recommended for this project.
- Construction noise impacts are temporary in nature but may be noticeable at times in nearby residential NSAs. Methods to minimize construction noise impacts should be included in the Construction Code of Practice, as outlined in Section 3.3.

1.0 INTRODUCTION

SLR Consulting (Canada) Ltd., was retained by HDR Inc. on behalf of the City of Mississauga (City) to conduct an environmental noise impact assessment in Mississauga, Ontario. The City is completing this project in accordance with Ontario Regulation 231/08, Transit Projects, and Metrolinx Undertakings (Transit Projects Regulation) of the *Environmental Assessment Act* (EA Act). The Regulation exempts proponents of all public transit projects from the requirements under Part II and Part II.1 of the EA Act, provided the project follows the steps prescribed in the Transit Projects Assessment Process (TPAP); a proponent-driven, self-assessment process. Proponents must follow the prescribed steps in the TPAP within specified timeframes, culminating with the Ministry of the Environment, Conservation and Parks, Ontario (MECP) decision within six (6) months of the start of the process, which is marked by the Notice of Commencement.

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- to use these predictions to assess potential impacts according to the applicable guides;
- to specify mitigation measures where required; and
- to assess the potential for construction noise and provide a Code of Practice to minimize potential impacts.

A glossary of transportation sound basics can be found in Appendix A.

1.1 Project Description

The project involves the construction of a Bus Rapid Transportation (BRT) under the TPAP process and preliminary design for approximately a 2 km long section of Lakeshore Road East from Etobicoke Creek to East Avenue. A context plan and an overview of the study area for the project is shown in Figure 1. Plates showing the technically preferred alternative are shown in Figure 2 to Figure 8.

2.0 NOISE IMPACTS (OPERATIONAL NOISE)

For transportation projects, operational noise is of primary importance. This section of the report provides an analysis of operational noise impacts from road traffic noise related to this undertaking.

2.1 Applicable Guides

The Ontario provincial policies and guides from the Ministry of Transportation, Ontario (MTO) and the MECP are directly applicable under the TPAP process for transportation projects such as this one and they are discussed in detail in this report.

2.1.1 Ontario Provincial Guides and Policies

Ontario has several guides and documents related to assessing transportation noise impacts. The document most applicable to municipal roadway projects is:

- Ontario MECP/MTO, "Joint Protocol", A Protocol for Dealing with Noise concerns during the Preparation, Review and Evaluation of Provincial Highway's Environmental Assessments (MTO & MECP, 1986)

In May 2007, the MTO released the *Environmental Guide for Noise* (MTO, 2006) which superseded the Joint Protocol and previous MTO *Quality and Standards Directive QST-A1 Noise Policy and Acoustic Standards for Provincial Highways* (MTO 1992). Currently the *Environmental Guide for Noise* (the Guide) has not been adopted by the MECP for municipal road or transit projects. Therefore, the Joint Protocol has been used for this study. A summary of the effort required under the Joint Protocol is shown in Table 1.

Table 1: Summary of Mitigation Efforts Under the MECP/MTO Joint Protocol

Future Sound Levels	Change in Noise Level Above Future "No-Build" Ambient	Mitigation Effort
< 55 dBA	0 to 5 dBA	None
	> 5 dBA	
> 55 dBA	0 to 5 dBA	None
	> 5 dBA	• Investigate noise control measures on right-of-way. • If project cost is not significantly affected introduce noise control measure within right-of-way. • Noise control measures, where introduced, should achieve a minimum of 5 dBA attenuation averaged over first row receivers. • Mitigated to ambient, as administratively, economically, and technically feasible.

Notes: Values are L_{eq} (16h) levels for municipal roads.

The Joint Protocol sets out an Outdoor Objective sound level of the higher of 55 dBA L_{eq}, or the existing ambient. For sound levels less than 65 dBA either the Guide or the Joint Protocol assesses noise impacts in a similar manner. Only in the case where sound levels exceed 65 dBA, is the Guide more stringent. The evaluation of noise impacts is determined by the change in cumulative sound levels from the 2041 "no-build" scenario to the future "build" scenario. Assessments are based on a minimum 10-year future horizon year (i.e., traffic volumes 10 years after the completion of the project). Accordingly, a design year of 2041 applies to this project, corresponding to the traffic forecasts provided by HDR Inc.

Noise mitigation is warranted when increases in sound level over the "no-build" ambient are greater than 5 dBA. Mitigation measures can include changes in vertical profiles and horizontal alignments and noise barriers. Noise mitigation, where applied, must be administratively, economically, and technically feasible, and must provide at least 5 dBA of reduction averaged over the first row of noise-sensitive receivers. Mitigation measures are restricted to within the roadway right-of-way. Off right-of-way noise mitigation, such as window upgrades and air conditioning, is not considered.

2.1.2 Local Noise Policies and Guides

The City of Mississauga has a noise policy. Noise barriers, if warranted, will be designed according to *City of Mississauga Policy 09-03-03 Noise Attenuation Barriers on Major Roadways*. Replacement of existing

noise barriers should be considered if the existing noise barriers are in poor physical condition or if the daytime sound levels with the project in place ("build" scenario) are above 60 dBA. There are no existing noise barriers within the study area that are impacted by this project and that would require possible replacement.

2.2 Location of Noise Sensitive Areas Within the Study Area

2.2.1 Definition of Outdoor Living Area (OLA) and Noise Sensitive Areas (NSAs)

Noise impacts from transportation projects are evaluated at noise sensitive receptors commonly referred to as NSAs. The OLA is the part of an outdoor amenity area provided for the quiet enjoyment of the outdoor environment. The OLA is typically an area at ground level accommodating outdoor living activities. For sound level calculation purposes, the usual distance from the dwelling unit wall is 3 m where the actual OLA is not known. The vertical height is 1.5 metres (approximate head-height) above ground level. Where unknown, the side closest to the source of noise is assumed. Paved areas for multiple dwelling residential units are not defined as OLA. The OLA may include private areas used by individual dwelling occupants or "common" areas used by multi-tenant dwelling occupants.

Under the Joint Protocol, NSAs include the following land uses, provided they have an OLA associated with them:

- Private homes (single family units and townhouses);
- Multiple unit buildings such as apartments, provided they have a communal OLA associated with them;
- Hospitals and nursing homes for the aged, provided they have an OLA for use by patients;
- Schools, educational facilities, and daycare centres where there are OLAs for students;
- Campgrounds that provide overnight accommodation;
- Hotels and motels with outdoor communal OLAs for visitors; and
- Churches and places of worship.

The following land uses are generally not considered to qualify as NSAs:

- Apartment balconies;
- Cemeteries;
- Parks and picnic areas not part of a defined OLA;
- All commercial; and
- All industrial.

2.2.2 Representative NSAs for Analysis

Fifteen (15) NSAs have been used in the analysis to represent worst-case potential noise impacts at all nearby noise sensitive land uses within the study area. NSAs were chosen to assess areas with similar overall noise levels and similar changes in noise ("build" versus "no-build"). Not all the noise sensitive areas within the project limits were modeled. In a search of the City of Mississauga WEB site for planed or approved new residential developments they were in similar locations as the ones modeled in this study. These NSAs and modelled receptor locations are described in Table 2. The locations of the representative noise receptors used in the analysis are shown in Figure 2 to Figure 8.

Table 2: Representative NSAs Considered in Analysis

Receptor Location	Municipal Street Address	Distance in Metres to Existing Lakeshore Road East[1]	Characteristic of Property in Relation to Lakeshore Road East
Receptor 1	729 Byngmount Avenue	59	South
Receptor 2	1012 East Avenue	51	North
Receptor 3	1005 East Avenue	49	North
Receptor 4	1014 Westmount Avenue	55	North
Receptor 5	698 First Street	60	North
Receptor 6	1014 Meredith Avenue	57	North
Receptor 7	1017 Edgeleigh Avenue	65	North
Receptor 8	1015 Ogden Avenue	63	North
Receptor 9	1074 Ella Avenue	54	North
Receptor 10	1115 Lakeshore Road East	47	North
Receptor 11	1016 Haig Boulevard	62	North
Receptor 12	1018 Orchard Road	67	North
Receptor 13	1015 Orchard Road	29	North
Receptor 14	1285 Lakeshore Road East	23	North
Receptor 15	1049 Cherriebell Road	78	North

Notes: [1] Distances to the receptors are distances from center of the current Lakeshore Road East.

2.3 Study Horizons

Under the Noise Protocol a "noise impact" is defined as the difference in projected noise levels at the "no-build" and the projected noise levels at the "build" design year. Traffic volumes from the year 2041 were the best available at the time of this assessment to assess possible noise impacts.

2.4 Study Scenarios

As mentioned above, the "noise impact" for the study area is defined as the difference in projected noise levels between the "no-build" and "build" scenarios.

2.5 Road Traffic Data

Traffic volumes for the 2041 "no-build" and 2041 "build" scenarios for multiple roadways were provided by HDR Inc and are found in Appendix B. The data is further summarized in Table 3. Traffic data was provided as Average Annual Daily Traffic (AADT), with percentage of commerical vehicles, day/night traffic split and the posted speeds. The noise prediction models accepted for use by MECP are only capable of using a minimum speed of 50 km/h, so if the posted speeds were 40 km/h, a more

conservative speed of 50 km/h was used. These traffic volumes and associated data are at least 10 years in the future as required in the Noise Protocol.

Table 3: 2041 "Build" and "No-Build" Traffic Volumes

Roadway	Section	AADT	Day / Night Split [1]	Overall % Commercial Vehicles	Medium / Heavy Truck Split [2]	Posted or Used Speed (km/h)
Lakeshore Road East	West of East Ave.	39,492	90/10	3.52	1.76/1.76	50
	East Ave. to Lakeshore Promenade	37,944	90/10	3.34	1.67/1.67	50
	Lakeshore Promenade to Ogden Avenue	33,838	90/10	3.78	1.89/1.89	50
	Ogden Ave. to New Hydro Access Rd.	34,538	90/10	4.41	2.21/2.21	50
	New Hydro Access Rd. to Haig Blvd.	32,226	90/10	4.46	2.23/2.23	50
	Haig Blvd. to Fergus Ave.	31,880	90/10	5.07	2.54/2.54	50
	Fergus Ave. to Dixie Rd.	31,340	90/10	5.07	2.54/2.54	50
	Dixie Rd. to 1515 Lakeshore Rd. East	26,176	90/10	5.71	2.86/2.86	50
	1515 Lakeshore Rd. East to 42/43 St.	26,356	90/10	5.52	2.76/2.76	50
East Ave	North of Lakeshore Rd. East	970	90/10	5.38	2.69/2.69	50
	South of Lakeshore Rd. East	4,096	90/10	4.83	2.42/2.42	50
Lakeshore Promenade	South of Lakeshore Rd. East	9,894	90/10	1.32	0.66/0.66	50
Ogden Ave.	North of Lakeshore Rd. East	7,440	90/10	4.06	2.03/2.03	50
	South of Lakeshore Rd. East	8,982	90/10	0.99	0.50/0.50	50
New Hydro Access R.	North of Lakeshore Rd. East	548	90/10	15.40	7.70/7.70	50
	South of Lakeshore Rd. East	9,820	90/10	0.00	0.00/0.00	50
Haig Blvd.	North of Lakeshore Rd. East	4,294	90/10	11.65	5.83/5.83	50
	South of Lakeshore Rd. East	6,564	90/10	0.00	0.00/0.00	50

Roadway	Section	AADT	Day / Night Split [1]	Overall % Commercial Vehicles	Medium / Heavy Truck Split [2]	Posted or Used Speed (km/h)
Fergus Ave.	North of Lakeshore Rd. East	1,370	90/10	11.79	5.90/5.90	50
	South of Lakeshore Rd. East	614	90/10	11.86	5.93/5.93	50
Dixie Rd.	North of Lakeshore Rd. East	13,158	90/10	1.43	0.72/0.72	50
	South of Lakeshore Rd. East	94	90/10	22.22	11.11/11.11	50
1515 Lakeshore Rd. E. Condo	North of Lakeshore Rd. East	1,422	90/10	4.40	2.20/2.20	50
BRT	Entire Length on Lakeshore Rd. East	272	90/10	100.00	100.00/0.00	50

Notes: [1] XX / YY is the percentage of vehicle traffic in the 16-hour daytime and 8-hour night-time respectively.
[2] MM / HH is the percentage of medium trucks and heavy trucks used in the analysis, respectively.

2.6 Noise Model Used

The roadway noise prediction model used is the ORNAMENT road noise prediction algorithms produced by the MECP. The MECP "STAMSON" highway noise prediction model is a computerized version of this method. Both methods are simplified versions of the United States Federal Highway Administration Method. A Cadna/A implementation of the STAMSON/ ORNAMENT model was used for the noise analysis because of its ability of handle complex ground elevations, multiple barriers, and receptors. The Cadna/a software also considers screening from buildings that are located between the roadways and the NSAs. The sound power levels, and noise source heights used in Cadna/A are found in Appendix C. A comparison between the STAMSON output and the Cadna/A implementation of the ORNAMENT algorithms is provided in Appendix C.

The noise prediction model relies on the use of vehicle noise emission levels to generate a noise source that can then be assessed at the receptors based on the following factors:

- speeds for the roadways in the area used in the noise analysis;
- pavement surface used for construction of the roadway (hot mix asphaltic pavement for all roadways);
- elevations, contours and locations of all the NSA's near the right-of-way;
- roadway grades;
- intervening rows of homes and barriers;
- type of ground cover, soft or hard ground;
- percentage of commercial traffic; and
- distance from the roadway.

The model uses the following vehicle classifications:

Automobiles -	Two axles and four wheels designed primarily for the transportation of nine or fewer passengers, or transportation of cargo (light trucks). This classification includes motorcycles. Generally, the gross vehicle weight is less than 4,500 kilograms.
Medium trucks -	Two axles and six wheels designed for the transportation of cargo. Generally, the gross vehicle weight is greater than 4,500 kilograms but less than 12,000 kilograms.
Heavy trucks -	Three or more axles and designed for the transportation of cargo. Generally, the gross vehicle weight is greater than 12,000 kilograms.

Distances, roadway heights, and receptor locations were obtained from plan drawings supplied by HDR Inc. in addition to aerial photography.

2.7 Detailed Modelling

Table 4 presents a comparison of predicted 2041 "no-build" versus 2041 "build" sound levels at receptors in the study area during the 16-hour daytime period. The "no-build" assumes that there are no roadway improvements, and the "build" assumes that the roadway improvements are in place including the proposed BRT on Lakeshore Road East.

Table 4: 2041 "Build" and "No-Build" Noise Levels

Receptor Location	Number of Homes Represented by Receptor	"No-Build" L_{eq} (16h)	"Build" L_{eq} (16h)	Change ("Build" minus "No-Build")	Increase Above 5 dBA (Yes/No)	> 60 dBA (Yes/No)
Receptor 1	4	59.4	59.7	0.3	No	No
Receptor 2	2	52.3	52.2	-0.1	No	No
Receptor 3	3	59.1	58.8	-0.3	No	No
Receptor 4	2	58.5	58.3	-0.2	No	No
Receptor 5	6	54.5	54.4	-0.1	No	No
Receptor 6	7	49.7	49.5	-0.2	No	No
Receptor 7	3	57.4	57.3	-0.1	No	No
Receptor 8	4	60.9	60.9	0.0	No	No
Receptor 9	5	57.8	57.5	-0.3	No	No
Receptor 10	2	58.6	58.4	-0.2	No	No
Receptor 11	2	58.7	59.2	0.5	No	No
Receptor 12	4	53.2	53.4	0.2	No	No
Receptor 13	1	64.5	63.7	-0.8	No	Yes
Receptor 14	2	67.7	66.6	-1.1	No	Yes
Receptor 15	4	56.0	56.0	0.0	No	No

Notes: [1] Distances to the receptors are distances from center of the existing Lakeshore Road East.

2.8 Discussion of Noise Impacts

The locations of the noise receptors as well as their distance from the relocated Lakeshore Rd and the future BRT are shown in Figure 2 to Figure 8. The results show that changes in sound levels resulting from the proposed project are expected to range from plus 0.5 to minus 1.1 dBA. This is considered a negligible change in sound level. It takes approximately a 3 dBA change[1] in sound levels before most persons perceive a change, therefore the slight increases or decreased in sound levels are expected to be imperceptible.

The loudest predicted sound levels are at Receptors 13 and 14 with are at apartment buildings located close to Lakeshore Road East that are more directly exposed to noise from both the current and future Lakeshore Road East which is the dominant noise source for these homes. The future sound levels will be in the approximate 63 to 67 dBA range. Most of the homes are in the second row of buildings behind a row of commercial buildings fronting Lakeshore Road East. Some of the homes may be at similar distances from the nearby roadways and the future BRT. Predicted sound levels differ slightly due to differences in the shielding provided by buildings located between the receptor and the noise source.

Due to the new location of Lakeshore Road East moving southerly, the sound levels for most of the homes will decrease slightly in the future. The noise impact of the BRT running along the centre of the future right-of-way will be insignificant because of the relatively high road traffic volumes on Lakeshore Road East. The noise impact of the buses is included with the future Lakeshore Road East option shown in Table 4.

2.9 Discussion and Investigation of Noise Mitigation

There was no quantitative examination of placing new noise barriers to mitigate any changes in noise levels. Noise impacts are extremely minor and below the 5 dBA impact criteria in the Noise Protocol. The 'as-built' sound levels are less than the 60 dBA criteria for all the homes except for Receptors 13 and 14.

It is not possible to construct noise barriers for these two receptor locations because of existing building entrances and roadways in the vicinity of the NSA's. No noise mitigation is recommended for this project.

3.0 CONSTRUCTION NOISE IMPACTS

Construction noise impacts are temporary in nature, and largely unavoidable. Although for some periods and types of work, construction noise may be noticeable, with adequate controls, impacts can be minimized. This section of the report provides overview of the by-law and recommends a Code of Practice to minimize impacts.

3.1 Construction Noise and Vibration Assessment Guides

3.1.1 MECP Model Municipal Noise Control By-Law

The MECP stipulates limits on noise emissions from individual items of equipment, rather than for overall construction noise. In the presence of persistent noise complaints, sound emission standards for the various types of construction equipment used on the project should be checked to ensure that they meet

[1] See Appendix A, Human Perception of Sound, for additional information on changes in sound levels.

the specified limits contained within MECP Publication NPC-115 – "Construction Equipment". These limits are provided in Table 5.

Table 5: NPC-115 Maximum Noise Emission Levels for Typical Construction Equipment

Type of Unit	Maximum Sound Level [1] (dBA)	Distance (m)	Power Rating (kW)
Excavation Equipment [2]	83	15	< 75
	85	15	> 75
Pneumatic Equipment [3]	85	7	-
Portable Compressors	76	7	-

Notes: [1] Maximum permissible sound levels presented here are for equipment manufactured after January 1, 1981.
[2] Excavation equipment includes bulldozers, backhoes, front end loaders, graders, excavators, steam rollers and other equipment capable of being used for similar applications.
[3] Pneumatic equipment includes pavement breakers.

3.1.2 Construction Vibration Guides

Blasting is not expected to occur as part of this project's construction processes. Regardless, vibration from construction activities can affect surrounding structures. The vibration limits recommended under Ontario Provincial Standard Specification (OPSS) OPSS MUNI-120 – *General Specification for the Use of Explosives* should be adopted (OPSS 2014). These vibration limits are summarized in Table 6.

Table 6: Construction Vibration Limits – OPSS MUNI-120

Element	Frequency	Limit – Peak Particle Velocity (PPV), mm/s
Structures and Pipes	< 40 Hz	20
	> 40 Hz	50
Concrete and Grout < 72 hours from placement	All	10

These limits would apply to vibration from construction activities such as hoe ramming, pile driving, dumping and excavation. The contractor should assess the potential for vibration impacts from their planned activities prior to the start of construction and mitigate accordingly.

In addition, the contractor should abide by the following MECP vibration document requirements when constructing this undertaking:

- Noise Pollution Control Publication 207 (NPC-207), *Impulse Vibration in Residential Buildings,* (November 1983); and,
- Vibration limits within MECP publication NPC-207 can be supplemented by more detailed construction vibration limits regarding building damage from Chapter 12 of *United States Federal Transit Administration - Transit Noise and Vibration Impact Assessment* (document FTA-VA-90-1003-06 – May 2006).

Where there are overlapping criteria, the more stringent criteria apply. Excerpts from NPC-207 are presented in Tables 7 and 8. Full details of the construction vibration limits are provided in their respective documents.

The scope of NPC-207 is defined as follows:

> *The purpose of this Publication is to provide a method for assessment of impulse vibration measured inside occupied residential buildings, caused by the operation of stationary sources of vibration including, but not limited to, stamping presses and forging hammers.*

NPC-207 was drafted to address permanent, rather than temporary, vibration impacts and address perceived vibrations rather than the building damage criteria that are set out in OPSS MUNI-120.

Table 7: Table 207-2: Vibration Limits for Frequent Impulses (20 or More Impulses in Reported Observation Period)

Observation Period in Minutes	Limit on the Average Peak Vibration Velocity in mm/s	
	Day-Time 07:00 – 23:00	Night-Time 23:00 – 07:00
20 minutes or less	0.30	0.30
Less or equal to 60 minutes but more than 20 minutes	0.60	0.30
Less or equal to 120 minutes but more than 60 minutes	1.00	0.30

Notes: Source: NPC-207 – Full details for vibration limits provided in NPC-207

Table 8: Table 207-3: Vibration Limits for Infrequent Impulses (Less than 20 Impulses in Reported Observation Period)

Observation Period in Minutes	Limit on the Average Peak Vibration Velocity of Individual Impulses in mm/s	
	Day-Time 07:00 – 23:00	Night-Time 23:00 – 07:00
120 minutes	10.00	0.30

Notes: Source: NPC-207 – Full details for vibration limits provided in NPC-207

3.1.3 Local Noise Control By-Law

The proposed project is in the City of Mississauga which has a bylaw restricting noise from construction activities. The City may require an exemption to the bylaw if there is a requirement to work at times not allowed in Schedule 2 of the bylaw. Table 9 clearly defines the types of work that will happen during the construction phase of this undertaking. A consolidated copy of the bylaw can be found in Appendix D.

Table 9: City of Mississauga Noise Control By-law

Jurisdiction	Bylaw Number	Bylaw Provision
City of Mississauga	360-79	1. In this by-law, (303-00)

Jurisdiction	Bylaw Number	Bylaw Provision
		"construction" includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, moving, land clearing, earth moving, grading, excavating, the laying of pipe and conduit whether above or below ground level, street and highway building, concreting, equipment installation and alteration and the structural installation of construction components and materials in any form or for any purpose, and includes any work in connection therewith;

3.2 Anticipated Construction Activities

The following construction activities are anticipated as part of this project:

- Removing some existing surface pavements,
- Construction of the roadway widening and BRT, including removal of overburden,
- Paving of new roadway surfaces, and
- repaving of some of the existing roadways

3.3 Construction Code of Practice Requirements (Mitigation)

To minimize the potential for construction noise impacts, it is recommended that provisions be written into the contract documentation for the contractor, as outlined below:

- Where possible construction should be carried out during the normally allowed hours specified in the by-law found in Appendix D. If construction activities are required outside of these hours, the Contractor should minimize the amount of noise being generated to not be clearly audible in any noise sensitive areas.
- There should be explicit indication that the Contractor is expected to comply with all applicable requirements of the contract.

All equipment should be properly maintained to limit noise emissions. As such, all construction equipment should be operated with effective muffling devices that are in good working order. This is also a requirement of the local noise control by-laws.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The potential environmental noise impacts of the proposed undertaking have been assessed. Both operational and construction noise impacts have been considered. The conclusions and recommendations are as follows:

- The results show that changes in sound levels resulting from the proposed project are expected to be negligible. Noise impacts are extremely minor and below the 5 dBA impact criteria in the Noise Protocol.
- The 'as-built' sound levels are less than the 60 dBA criteria for all the homes except for Receptors 13 and 14. It is not possible to construct noise barriers for these two receptor locations because of existing building entrances and roadways in the vicinity of the NSA's.
- No noise mitigation is recommended for this project.
- Construction noise impacts are temporary in nature but may be noticeable at times in nearby residential NSAs. Methods to minimize construction noise impacts should be included in the Construction Code of Practice, as outlined in Section 3.3.

5.0 REFERENCES

Ontario Ministry of the Environment, Conservation and Parks (MECP) / Ontario Ministry of Transportation (MTO), 1986, "Joint Protocol", *A Protocol for Dealing with Noise Concerns During the Preparation, Review and Evaluation of Provincial Highway's Environmental Assessments*

Ontario Ministry of the Environment, Conservation and Parks (MECP), 1989, Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT)

Ontario Ministry of the Environment and Climate Change (MECP), 2000, STAMSON v5.04: Road, Rail and Rapid Transit Noise Prediction Model

Ontario Ministry of the Environment, Conservation and Parks (MECP), 1977b, *Model Municipal Noise Control Bylaw,* which includes Publication NPC-115 – Construction Equipment

Ontario Ministry of the Environment, Conservation and Parks (MECP), 1977c, *Model Municipal Noise Control Bylaw,* which includes Publication NPC-119 – Noise from Blasting

Ontario Ministry of Transportation (MTO), 1992a, Quality and Standards Directive QST-A1, Noise Policy and Acoustic Standards for Provincial Highways

Ontario Ministry of Transportation (MTO), *Environmental Guide for Noise (2006),* Revised 2008.

Ontario Ministry of the Environment, Conservation and Parks (MECP) Publication NPC-207 - Impulse Vibration in Residential Buildings, Revised November 1983.

Ontario Provincial Standard Specification OPSS MUNI 120: *General Specification for the Use of Explosives.*

Transit Noise and Vibration Impact Assessment, Federal Transit Administration, FTA-VA-90-1003-06, May 2006.

The Corporation of the City of Mississauga, Noise By-Law Number 360-79, 2020.

6.0 STATEMENT OF LIMITATIONS

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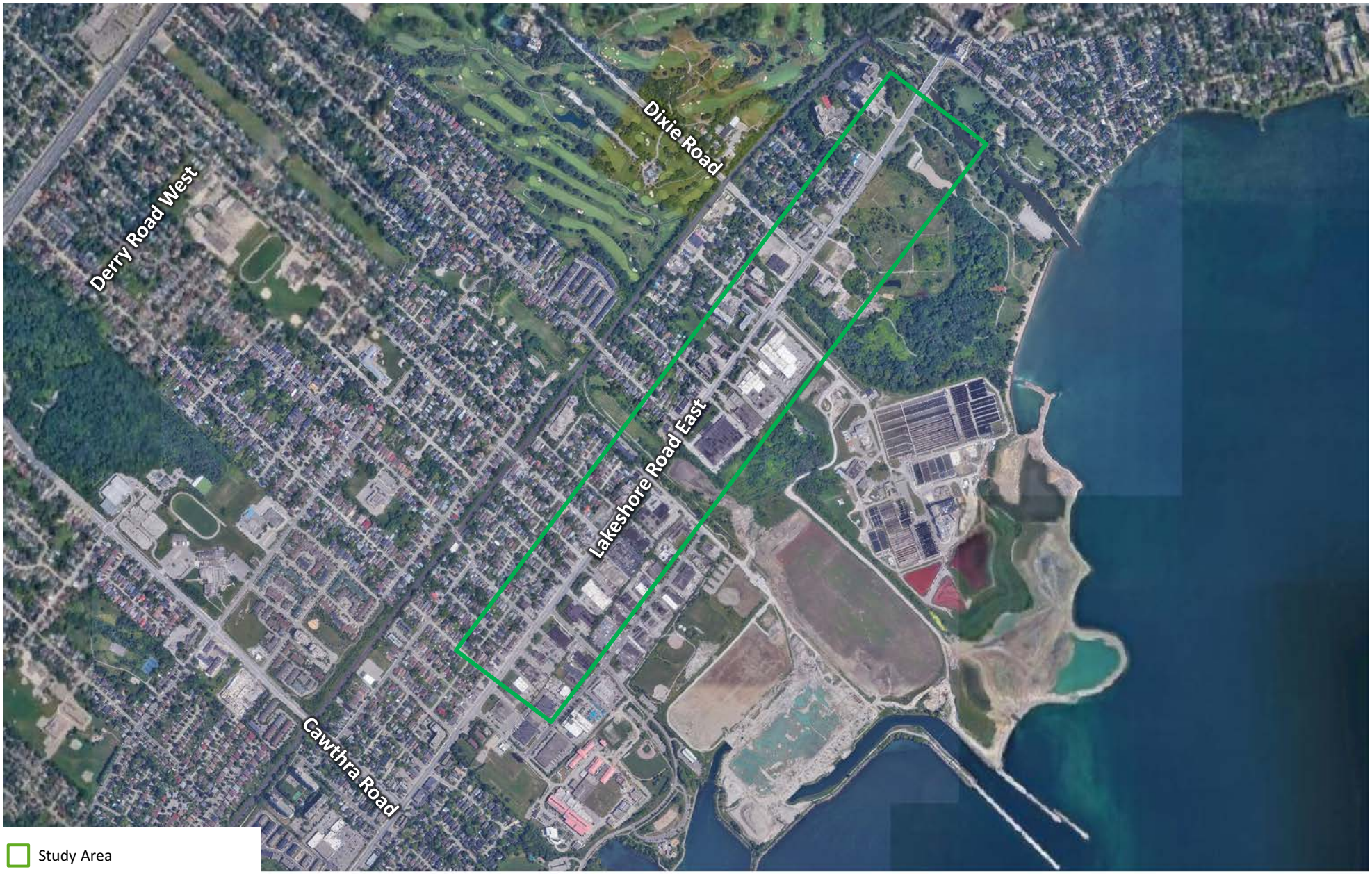
FIGURES

Environmental Noise Assessment – Lakeshore Road East from Etobicoke Creek to East Avenue

City of Mississauga

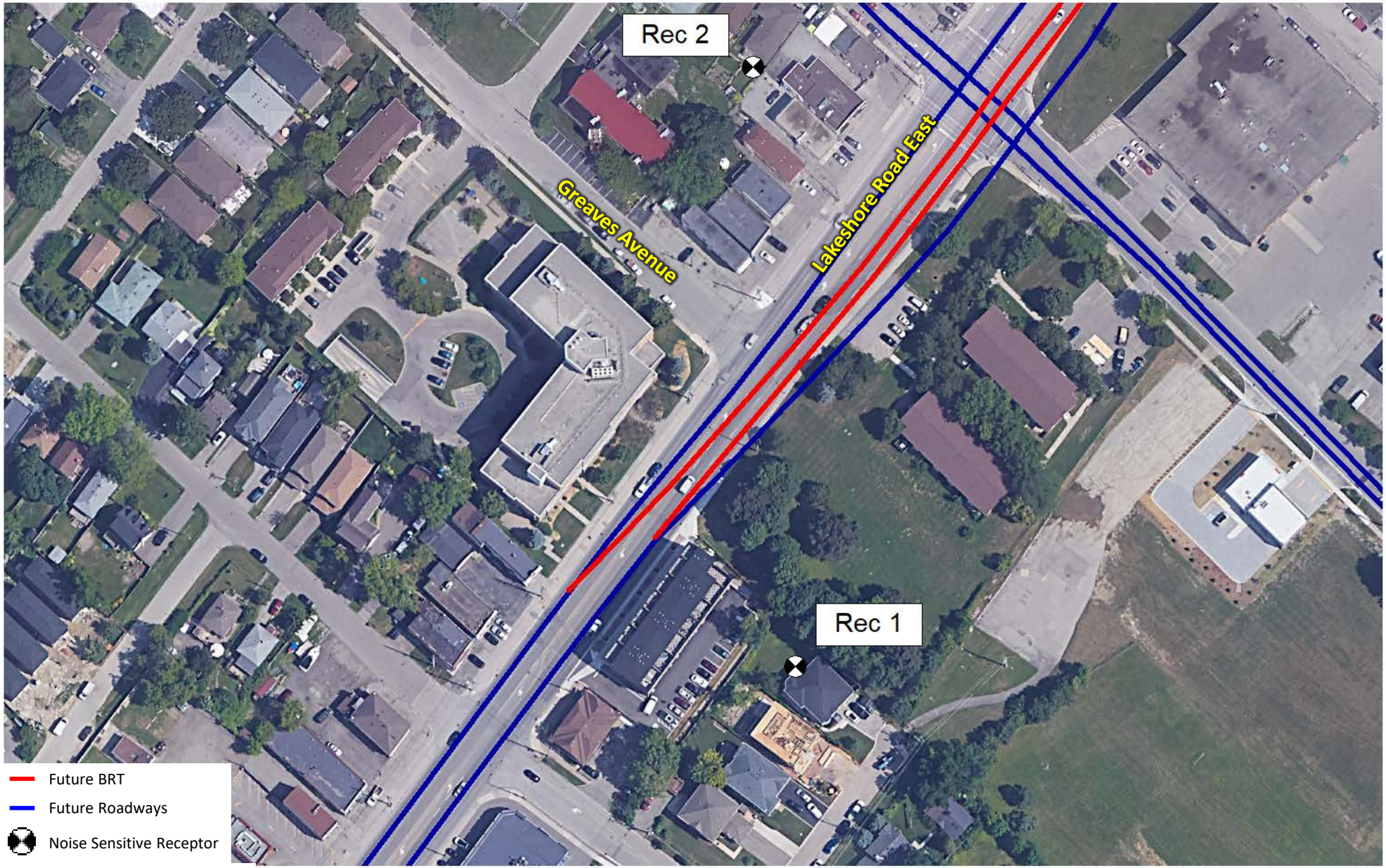
SLR Project No: 241.30176.00000



Study Area

Aerial Photography from Google

CITY OF MISSISSAUGA	True North	Scale: 1: 30,000	METRES	SLR global environmental solutions
LAKESHORE ROAD EAST BRT EA		Date: June 1, 2023 Rev 1.1	Figure No. **1**	
SITE AND CONTEXT PLAN		Project No. 241.30176.00000		



Aerial Photography from Google

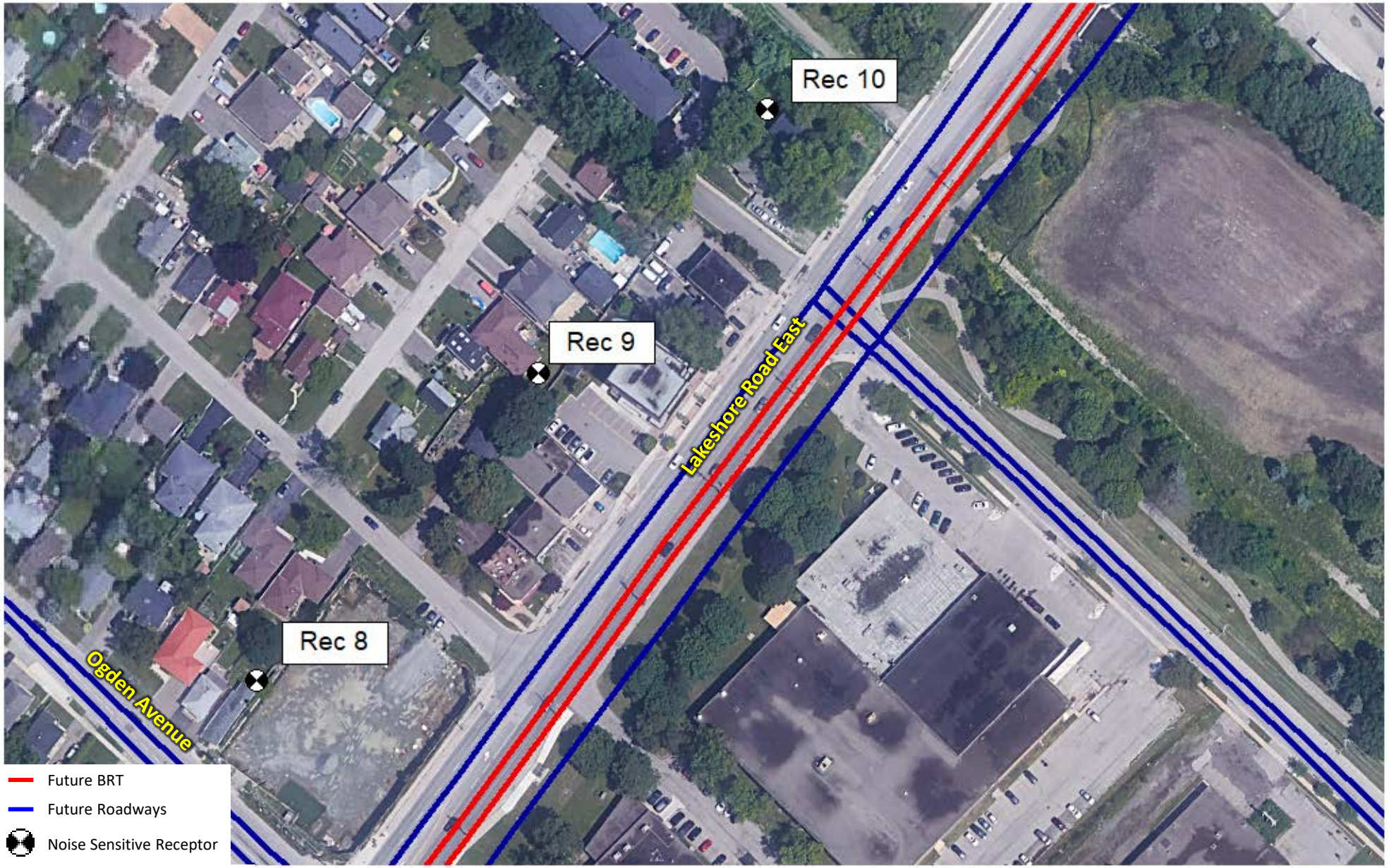
CITY OF MISSISSAUGA	True North	Scale: 1: 1,500	METRES	SLR global environmental solutions
LAKESHORE ROAD EAST BRT EA		Date: June 1, 2023 Rev 1.1	Figure No. **2**	
NOISE SENSITIVE RECEPTORS 1 AND 2		Project No. 241.30176.00000		

Aerial Photography from Google

CITY OF MISSISSAUGA	True North	Scale: 1: 1,500	METRES	SLR global environmental solutions
LAKESHORE ROAD EAST BRT EA		Date: June 1, 2023 Rev 1.1	Figure No. **3**	
NOISE SENSITIVE RECEPTORS 3 TO 5		Project No. 241.30176.00000		

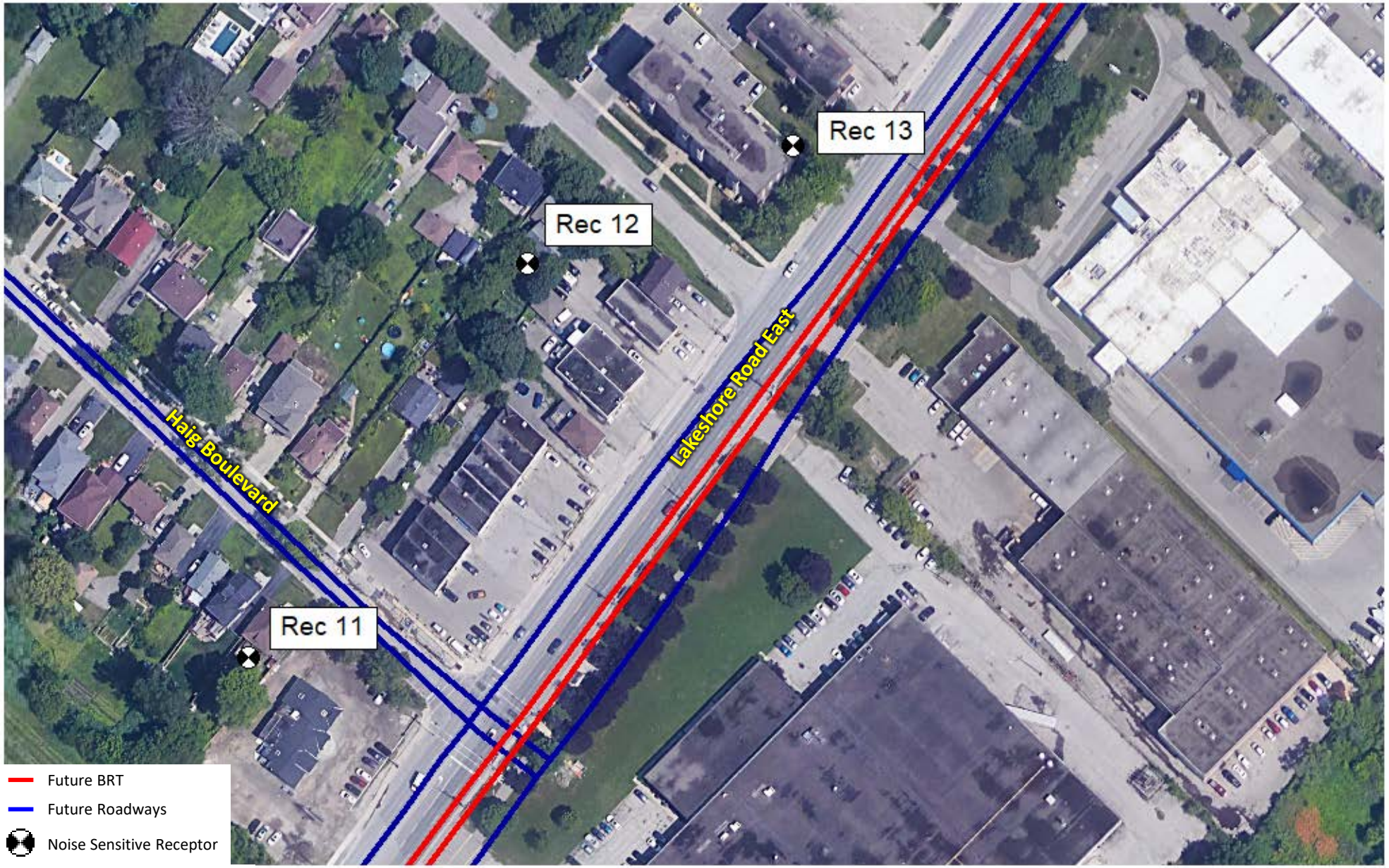
Aerial Photography from Google

CITY OF MISSISSAUGA	True North	Scale: 1: 1,500	METRES	SLR global environmental solutions
LAKESHORE ROAD EAST BRT EA		Date: Feb. 28, 2022 Rev 1.1	Figure No. **4**	
NOISE SENSITIVE RECEPTORS 6 AND 7		Project No. 241.30176.00000		



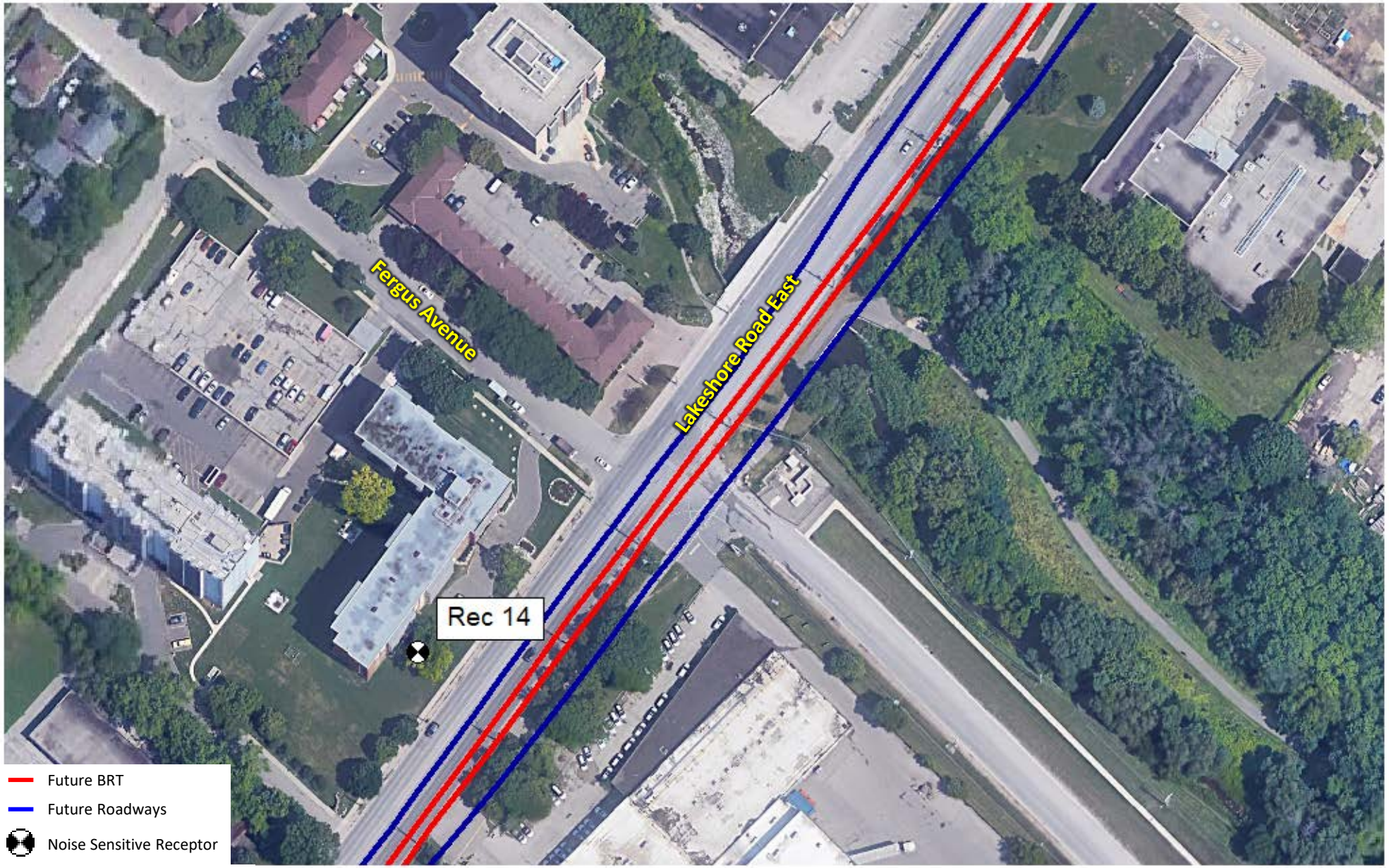
Aerial Photography from Google

CITY OF MISSISSAUGA	True North	Scale: 1: 1,500	METRES	SLR global environmental solutions
LAKESHORE ROAD EAST BRT EA		Date: June 1, 2023 Rev 1.1	Figure No. **5**	
NOISE SENSITIVE RECEPTORS 8 TO 10		Project No. 241.30176.00000		



Aerial Photography from Google

CITY OF MISSISSAUGA	True North	Scale: 1: 1,500	METRES	SLR global environmental solutions
LAKESHORE ROAD EAST BRT EA		Date: June 1, 2023 Rev 1.1	Figure No. **6**	
NOISE SENSITIVE RECEPTORS 11 TO 13		Project No. 241.30176.00000		



Future BRT

Future Roadways

Noise Sensitive Receptor

Aerial Photography from Google

CITY OF MISSISSAUGA	True North	Scale: 1: 1,500	METRES	SLR global environmental solutions
LAKESHORE ROAD EAST BRT EA		Date: June 1, 2023 Rev 1.1	Figure No. **7**	
NOISE SENSITIVE RECEPTOR 14		Project No. 241.30176.00000		

Aerial Photography from Google

CITY OF MISSISSAUGA	True North	Scale: 1: 1,500	METRES	SLR global environmental solutions
LAKESHORE ROAD EAST BRT EA		Date: June 1, 2023 Rev 1.1	Figure No. **8**	
NOISE SENSITIVE RECEPTOR 15		Project No. 241.30176.00000		

APPENDIX A – Terms, Glossary

Environmental Noise Assessment – Lakeshore Road East from Etobicoke Creek to East Avenue

City of Mississauga

SLR Project No: 241.30176.00000

Transportation Sound Basics

Sound Levels

Sound is, in its simplest form, a dynamic, fluctuating pressure, in a fluid medium. That medium can be air, other gases, or liquids such as water. These fluctuations are transmitted by pressure waves through the medium from the source to the receiver. For the majority of transportation engineering purposes, the primary interest is with sound waves in air, with human beings as the receptor. Noise is defined as unwanted sound. The standard practice within the acoustical industry is to use these two terms interchangeably.

Decibels

A decibel (dB) is a logarithmic ratio of a value to a reference level. The general mathematical format is:

$$\text{Level in dB} = 10 \log (\text{Value} / \text{Reference})$$

Any value can be expressed in decibels. Decibels are very, very useful in performing comparisons where there are huge ranges in levels. For example, an acoustical engineer can expect to deal with acoustical energy values ranging from 0.00001 W to 100 W (sound power), and pressures ranging from 0.002 Pa to 200 Pa (sound pressure)[1]. For completeness, decibels should always be stated with their reference level (e.g., 20 dB re: 20 µPa). However, in practice the reference level is often left out.

Sound Pressure Level

Sound pressure level is what humans experience as sound. Sound waves create small fluctuations around the normal atmospheric pressure. These pressure fluctuations come into contact with eardrums and create the sensation of sound. Sound pressure is measured in decibels, according to the following equation:

$$\text{Sound Pressure Level, dB} = 10 \log (p^2/p_0^2))$$

Where: p = root mean square (r.m.s.) sound pressure, in Pa
p_o = reference sound pressure, 20 µPa

The reference pressure represents the faintest sound that a “typical” human being can hear. The typical abbreviation for sound pressure level is SPL, although Lp is also often used in equations. “Sound level” or “noise level” are also sometimes used.

Octave Bands

Sounds are composed of varying frequencies or pitches. Human sensitivity to noise varies by frequency, with a greater sensitivity to higher frequency sounds. The propagation of sound also varies by frequency. The unit of frequency is Hertz (Hz), which refers the number of cycles per second (number of wave peaks per second of the propagating sound wave). The typical human hearing response runs from 20 Hz to 20,000 Hz. Frequencies below 20 Hz are generally inaudible, although response is variable, and some individuals may be able to hear or perceive them.

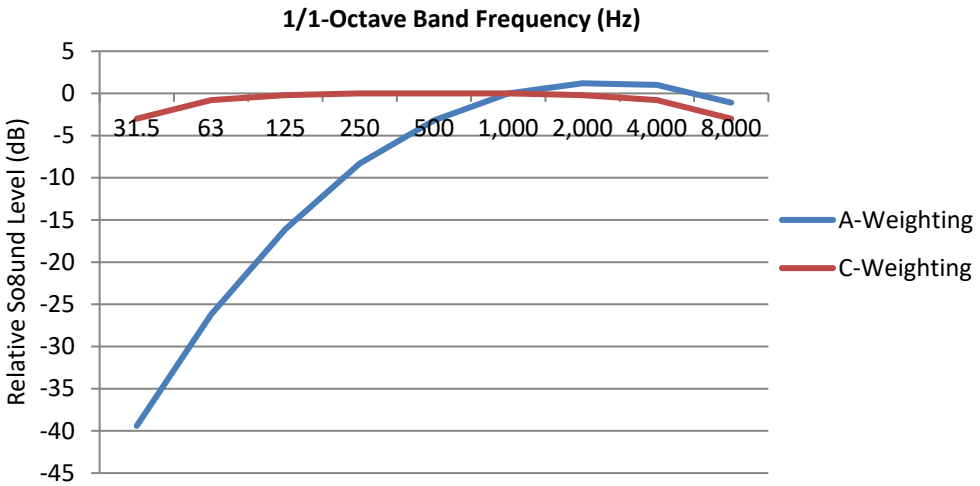
Sound is typically analysed in octave bands or 1/3-octave bands. An octave band is defined as a band or range of sound frequencies where the frequency range doubles for succeeding octave (alternately, the highest frequency in the range is twice the value of the lowest frequency).

[1] Equivalent to Sound Power Levels ranging from 70 to 140 dB and Sound Pressure Levels ranging from 20 dB to 140 dB

A-Weighting

When the overall sound pressure level is expressed as a single value (i.e., not expressed in frequency band levels) the variation in human frequency response must be accounted for. People do not hear low frequency noise as well as noise in mid or high frequencies. To account for this, frequency-weighting networks have been developed to better account for human hearing response. The most frequently used networks are the A-Weighting and C-Weighting.

The A-Weighting network was developed to correspond to how humans hear low to medium levels of noise, such as those typically generated by road traffic. The A-Weighting is the most frequently used scheme, and the majority of noise guidelines are expressed in A-Weighted decibel values, denoted as "dBA" levels. C-Weighted "dBC" values are sometimes used in assessing low-frequency noise impacts, which are generally not of concern in transportation noise impact assessment. The A-Weighting and C-Weighting values are shown in the following figure.



A-Weighting and C-Weighting Networks

Ranges of Sound Levels

People experience a wide range of sound levels in their daily activities. The table below presents a graphical comparison of "typical" noise levels which might be encountered, and the general human perception of the level. Sound levels from 40 to 65 dBA are in the faint to moderate range. The vast majority of the outdoor noise environment, even within the busiest city cores, will lie within this area. Sound levels from 65 to 90 dBA are perceived as loud. This area includes very noisy commercial and industrial spaces. Sound levels greater than 85 dBA are very loud to deafening and may result in hearing damage.

Ranges of Sound Levels

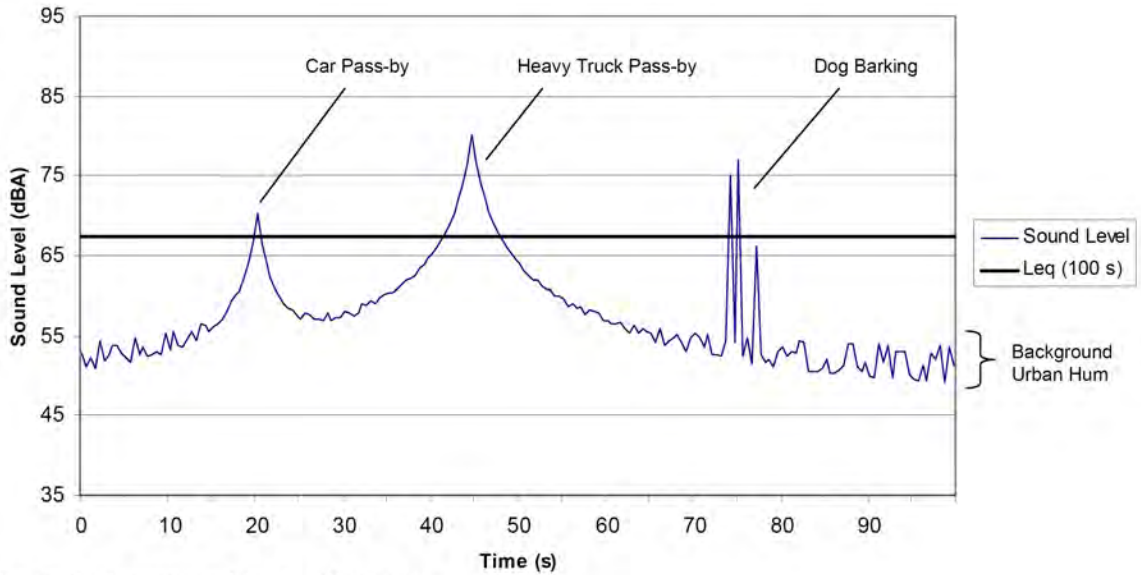
Sound Levels		
Human Perception	**SPL in dBA**	**Sources of Noise**
Deafening	125	Sonic booms
	120	Threshold of Feeling / Pain
	115	Maximum level, hard rock band concert
	110	Accelerating Motorcycle at a few feet away
Very Loud	105	Loud auto horn at 3 m away
	100	Dance club / maximum human vocal output at 1 m distance
	95	Jack hammer at 15 m distance
	90	Indoors in a noisy factory
Loud	85	Heavy truck pass-by at 15 m distance
	80	School cafeteria / noisy bar; Vacuum cleaner at 1.5 m
	75	Near edge of major highway
	70	Inside automobile at 60 km/h
	65	Normal human speech (unraised voice) at 1 m distance
Moderate	60	Typical background noise levels in a large department store
	55	General objective for outdoor sound levels; typical urban sound level (24h)
	50	Typical suburban / semi-rural sound level (24h)
	45	Typical noise levels in an office due to HVAC; typical rural levels (24h)
Faint	40	Typical background noise levels in a library
	35	
	30	Broadcast Studio
	25	Average whisper
Very Faint	20	Deep woods on a very calm day
	15	
	10	
	5	Human breathing
	0	Quietest sound that can be heard

Noise Descriptors – L_{eq} Values

At this time, the best available research indicates that long-term human responses to noise are best evaluated using energy equivalent sound exposure levels (L_{eq} values), in A-Weighted decibels (L_{eq} values in dBA)[2,3] including adjustments to account for particularly annoying characteristics of the sounds being analyzed.

Sound levels in the ambient environment vary each instant. In a downtown urban environment, the background noise is formed by an "urban hum", composed of noise from distant road traffic and from commercial sources. As traffic passes near a noise receptor, the instantaneous sound level may increase as a vehicle approaches, and then decrease as it passes and travels farther away. The energy equivalent sound exposure level L_{eq} is the average sound level over the same period of time with same acoustical energy as the actual environment (i.e., it is the average of the sound energy measured over a time period T). As a time-average, all L_{eq} values must have a time period associated with them. This is typically placed in brackets beside the L_{eq} tag. For example, a thirty-minute L_{eq} measurement would be reported as an L_{eq} (30 min) value. The L_{eq} concept is illustrated in the following figure, showing noise levels beside a small roadway, over a 100 second time period, with two vehicle pass-bys:

[2] Berglund and Lindvall, Community Noise, 1995.
[3] ISO 1996:2003(E), Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures.



The L_{eq} Concept

In this example, the background "urban hum" is between 47 and 53 dBA. A car passes by at 20 seconds. As it approaches, the noise level increases to a maximum, and then decreases as it speeds away. At 45 seconds, a heavy truck passes by. Near 75 seconds, a dog barks three times. The maximum sound level (L_{max}) over the period is 80 dBA and the minimum is 47 dBA. For almost 50 % of the time, the sound level is lower than 55 dBA.

The L_{eq} (100s) for the example is 67 dBA, which is much higher than the statistical mean sound level of 55 dBA. This illustrates that the L_{eq} value is very sensitive to loud noise events, which contain much more sound energy (as sound is ranked on a logarithmic scale) than the normal background. It is also sensitive to the number of events during the time period, and the duration of those events. If only the truck had passed by during the measurement (no car and no dog barks), the L_{eq} (100s) would be 66 dBA. If only the car and dog barks had occurred, the L_{eq} (100s) would be 61 dBA. This shows that the truck pass-by is the dominant event in our example, due to its level and duration.
The ability of the L_{eq} metric to account for the three factors of level, duration and frequency of events makes it a robust predictor of human response to noise. It is for this reason that the vast majority of noise standards are based on L_{eq} values.

Typical Durations for L_{eq} Analyses

For transportation noise impact analyses, the following durations are typically used:

L_{eq} (24h) – The sound exposure level over then entire 24-hour day
L_{eq} Day – Either: L_{eq} (15h), from 7am to 10 pm; or L_{eq} (16h), from 7am to 11 am
L_{eq} Night – Either: L_{eq} (9h), from 10 pm to 7 am; or L_{eq} (8h), from 11 pm to 7 am
L_{dn} – A special L_{eq} (24h) value with a 10 dB night-time penalty applied to overnight sound levels (10pm to 7am)
L_{eq} (1-h) – The sound exposure over a 1-hour time period

L_{eq} (24h) values are appropriate for examining impacts of transportation noise sources with small changes in sound exposure levels over the 24-hour day. For example, freeway noise levels are generally consistent over the 24-hour day. Therefore, for freeways, there is little difference between L_{eq} (24h) values and the corresponding L_{eq} Day and L_{eq} Night values.

L_{eq} Day values, covering off the AM-peak and PM-peak travel periods, are generally appropriate for examining the impacts of non-freeway highways and municipal arterial roadways. The vast majority of noise associated with these sources is concentrated in the daytime hours, where typically, 85% to 90% of the daily road traffic will occur.[4] Thus, if reasonable sound levels occur during the daytime (and appropriate guideline limits are met), they will also occur (and be met) at night.

To account for increased annoyance with noise overnight in a single value, the U.S. Environmental Protection Agency (U.S. EPA) developed the L_{dn} metric (also known as DNL). It is a special form of the L_{eq} (24h) with a +10 dB night-time penalty. L_{dn} values and a related metric, the day-evening-night level (L_{den}) are also used in some European guidelines. L_{dn} values are not used in Provincial jurisdictions in evaluating transportation noise. Instead, guideline limits for separate L_{eq} Day and L_{eq} Night periods are generally used.

L_{eq} (1-h) values are the average sound levels over a one-hour time period. These tend to fluctuate more over the day, as traffic levels can fluctuate significantly hour to hour. L_{eq} (1-h) values are useful in assessing the impact of transportation sources which also vary hourly, and which may vary in a different manner than the background traffic. These values are often used to assess haul route noise impacts, for example.

Some transportation noise sources may have significant traffic levels occurring overnight. For example, freight rail traffic in heavily used corridors can be shifted to over-night periods, with daytime track use being reserved for freight switcher traffic and passenger traffic. In situations such as this, an assessment of both daytime and night-time noise impacts may be appropriate.

Typical Background Sound Levels

Typical ambient background sound levels removed from direct influence of roads, railways and air traffic are:

- Urban areas: 55 dBA during the day, 45 dBA at night;
- Sub-urban / semi-rural areas: 50 dBA during the day, 45 dBA at night; and
- Rural area: 45 dBA during the day, 40 dBA at night.

Human Response to Changes in Sound Levels

The human ear does not interpret changes in sound level in a linear manner. The general subjective human perception of changes in sound level is shown in the following table.

[4] Based on research conducted by Ontario Ministry of Transportation and provided in the *MTO Environmental Office Manual Technical Areas – Noise.* Daytime refers to a 16 hour day from 7am to 11 pm.

Subjective Human Perception of Changes in Sound Levels[5,6]

Change in Broadband Sound Level (dB)	Human Perception of Change
<3	Imperceptible change
3	Just-perceptible change
4 to 5	Clearly noticeable change
6 to 9	Substantial change
>10 and more	Very substantial change (half or twice as loud)
>20 and more	Very substantial change (much quieter or louder)

Notes:
Adapted from Bies and Hansen, p53, and MOE Noise Guidelines for Landfill Sites, 1998. Applies to changes in broadband noise sources only (i.e., increases or decreases in the same noise or same type of noise only). Changes in frequency content or the addition of tonal or temporal changes would affect the perception of the change.

The above table is directly applicable to changes in sound level where the noise sources are of the same general character. For example, existing road traffic noise levels can be directly compared to future road traffic noise levels, using the above relationships. In comparing road traffic noise to road plus rail traffic noise, the different frequency and temporal nature of the noise means that the rail noise may be more noticeable. Adjustments for the nature of the new sound can be applied to better account for temporal and frequency differences.

For transportation noise sources, research conducted by the U.S. Environmental Protection Agency indicates that a 5 dB change in sound levels is required to trigger a change in large-scale community response to noise. This correlates to a clearly noticeable increase in noise levels.

Decay of Noise with Distance

Noise levels decrease with increasing distance from a source of noise. The rate of decay is partially dependent on the nature of the ground between the source: whether it is hard (acoustically reflective) or soft (acoustically absorptive). Transportation noise sources in general act as *line sources* of sound. For line sources, the rate of decay is approximately:

- Hard ground: 3 dB for each doubling of distance from the source
- Soft ground: 5 dB for each doubling of distance from the source

[5] Bies, D.A., and C.H Hansen 1988. Engineering Noise – Theory and Practice, 2nd Ed. E & E & FN Spon, London, p 53.
[6] Ontario Ministry of the Environment 1998. Noise Guidelines for Landfill Sites. Queen's Printer for Ontario.

APPENDIX B – Road Traffic Data

Environmental Noise Assessment – Lakeshore Road East from Etobicoke Creek to East Avenue

City of Mississauga

SLR Project No: 241.30176.00000

Road Segment ID	Roadway Name	Direction	AADT	AADT Both Directions	% Trucks	Med %	HT %
Lakeshore Rd. East	West of East Avenue	WB	19,746		3.52%	1.76%	1.76%
	West of East Avenue	EB	19,746	39,492	3.52%	1.76%	1.76%
	East Avenue to Lakeshore Promenade	WB	18,972		3.34%	1.67%	1.67%
	East Avenue to Lakeshore Promenade	EB	18,972	37,944	3.34%	1.67%	1.67%
	Lakeshore Promenade to Ogden Avenue	WB	16,919		3.78%	1.89%	1.89%
	Lakeshore Promenade to Ogden Avenue	EB	16,919	33,838	3.78%	1.89%	1.89%
	Ogden Avenue to New Hydro Access Road	WB	17,269		4.41%	2.21%	2.21%
	Ogden Avenue to New Hydro Access Road	EB	17,269	34,538	4.41%	2.21%	2.21%
	New Hydro Access Road to Haig Blvd.	WB	16,113		4.46%	2.23%	2.23%
	New Hydro Access Road to Haig Blvd.	EB	16,113	32,226	4.46%	2.23%	2.23%
	Haig Blvd. to Fergus Avenue	WB	15,940		5.07%	2.54%	2.54%
	Haig Blvd. to Fergus Avenue	EB	15,940	31,880	5.07%	2.54%	2.54%
	Fergus Avenue to Dixie Road	WB	15,670		5.07%	2.54%	2.54%
	Fergus Avenue to Dixie Road	EB	15,670	31,340	5.07%	2.54%	2.54%
	Dixie Road to 1515 Lakeshore Rd. E.	WB	13,088		5.71%	2.86%	2.86%
	Dixie Road to 1515 Lakeshore Rd. E.	EB	13,088	26,176	5.71%	2.86%	2.86%
	1515 Lakeshore Rd. E. to 42/43 Street	WB	13,178		5.52%	2.76%	2.76%
	1515 Lakeshore Rd. E. to 42/43 Street	EB	13,178	26,356	5.52%	2.76%	2.76%
East Avenue	North of Lakeshore Road East	NB	485		5.38%	2.69%	2.69%
	North of Lakeshore Road East	SB	485	970	5.38%	2.69%	2.69%
	South of Lakeshore Road East	NB	2,048		4.83%	2.42%	2.42%
	South of Lakeshore Road East	SB	2,048	4,096	4.83%	2.42%	2.42%
Lakeshore Promenade	South of Lakeshore Road East	NB	4,947		1.32%	0.66%	0.66%
	South of Lakeshore Road East	SB	4,947	9,894	1.32%	0.66%	0.66%
Ogden Avenue	North of Lakeshore Road East	NB	3,720		4.06%	2.03%	2.03%
	North of Lakeshore Road East	SB	3,720	7,440	4.06%	2.03%	2.03%
	South of Lakeshore Road East	NB	4,491		0.99%	0.50%	0.50%
	South of Lakeshore Road East	SB	4,491	8,982	0.99%	0.50%	0.50%
New Hydro Road	North of Lakeshore Road East	NB	274		15.40%	7.70%	7.70%
	North of Lakeshore Road East	SB	274	548	15.40%	7.70%	7.70%
	South of Lakeshore Road East	NB	4,910		0.00%	0.00%	0.00%
	South of Lakeshore Road East	SB	4,910	9,820	0.00%	0.00%	0.00%
Haig Boulevard	North of Lakeshore Road East	NB	2,147		11.65%	5.83%	5.83%
	North of Lakeshore Road East	SB	2,147	4,294	11.65%	5.83%	5.83%
	South of Lakeshore Road East	NB	3,282		0.00%	0.00%	0.00%
	South of Lakeshore Road East	SB	3,282	6,564	0.00%	0.00%	0.00%
Fergus Avenue	North of Lakeshore Road East	NB	685		11.79%	5.90%	5.90%
	North of Lakeshore Road East	SB	685	1,370	11.79%	5.90%	5.90%
	South of Lakeshore Road East	NB	307		11.86%	5.93%	5.93%
	South of Lakeshore Road East	SB	307	614	11.86%	5.93%	5.93%
Dixie Road	North of Lakeshore Road East	NB	6,579		1.43%	0.72%	0.72%
	North of Lakeshore Road East	SB	6,579	13,158	1.43%	0.72%	0.72%
	South of Lakeshore Road East	NB	47		22.22%	11.11%	11.11%
	South of Lakeshore Road East	SB	47	94	22.22%	11.11%	11.11%
1515 Lakeshore Condo	North of Lakeshore Road East	NB	711		4.40%	2.20%	2.20%
	North of Lakeshore Road East	SB	711	1,422	4.40%	2.20%	2.20%
BRT	Eastbound	EB	136		100.00%	100.00%	100.00%
	Westbound	WB	136	272	100.00%	100.00%	100.00%

APPENDIX C – Noise Output

Environmental Noise Assessment – Lakeshore Road East from Etobicoke Creek to East Avenue

City of Mississauga

SLR Project No: 241.30176.00000

O R N A M E N T - Sound Power Emissions & Source Heights

Ontario Road Noise Analysis Method for Environment and Transportation

Road Segment ID	Roadway Name	Direction	Link Description	Speed (km/h) used	Period (h)	Traffic Year	AADT	Day	Night	Traffic for Period	Auto %	% Trucks	Med %	Hvy %	Auto	Med	Heavy	Road Gradient (%)	Cadna/A Ground Absorption G	PWL (dBA)	Source Height, s (m)
Lakeshore Road	West of East Avenue	WB	Day Impacts	50	16	2041	19,746	90.0%	10.0%	17,771	96.48%	3.52%	1.76%	1.76%	17,146	313	313	0	0.00	**81.3**	**1.2**
	West of East Avenue	EB	Day Impacts	50	16	2041	19,746	90.0%	10.0%	17,771	96.48%	3.52%	1.76%	1.76%	17,146	313	313	0	0.00	**81.3**	**1.2**
	East Avenue to Lakeshore Promenade	WB	Day Impacts	50	16	2041	18,972	90.0%	10.0%	17,075	96.66%	3.34%	1.67%	1.67%	16,505	285	285	0	0.00	**81.0**	**1.1**
	East Avenue to Lakeshore Promenade	EB	Day Impacts	50	16	2041	18,972	90.0%	10.0%	17,075	96.66%	3.34%	1.67%	1.67%	16,505	285	285	0	0.00	**81.0**	**1.1**
	Lakeshore Promenade to Ogden Avenue	WB	Day Impacts	50	16	2041	16,919	90.0%	10.0%	15,227	96.22%	3.78%	1.89%	1.89%	14,652	288	288	0	0.00	**80.8**	**1.2**
	Lakeshore Promenade to Ogden Avenue	EB	Day Impacts	50	16	2041	16,919	90.0%	10.0%	15,227	96.22%	3.78%	1.89%	1.89%	14,652	288	288	0	0.00	**80.8**	**1.2**
	Ogden Avenue to New Hydro Access Road	WB	Day Impacts	50	16	2041	17,269	90.0%	10.0%	15,542	95.59%	4.41%	2.21%	2.21%	14,857	343	343	0	0.00	**81.3**	**1.2**
	Ogden Avenue to New Hydro Access Road	EB	Day Impacts	50	16	2041	17,269	90.0%	10.0%	15,542	95.59%	4.41%	2.21%	2.21%	14,857	343	343	0	0.00	**81.3**	**1.2**
	New Hydro Access Road to Haig Blvd.	WB	Day Impacts	50	16	2041	16,113	90.0%	10.0%	14,502	95.54%	4.46%	2.23%	2.23%	13,855	323	323	0	0.00	**81.0**	**1.2**
	New Hydro Access Road to Haig Blvd.	EB	Day Impacts	50	16	2041	16,113	90.0%	10.0%	14,502	95.54%	4.46%	2.23%	2.23%	13,855	323	323	0	0.00	**81.0**	**1.2**
	Haig Blvd. to Fergus Avenue	WB	Day Impacts	50	16	2041	15,940	90.0%	10.0%	14,346	94.93%	5.07%	2.54%	2.54%	13,619	364	364	0	0.00	**81.3**	**1.3**
	Haig Blvd. to Fergus Avenue	EB	Day Impacts	50	16	2041	15,940	90.0%	10.0%	14,346	94.93%	5.07%	2.54%	2.54%	13,619	364	364	0	0.00	**81.3**	**1.3**
	Fergus Avenue to Dixie Road	WB	Day Impacts	50	16	2041	15,670	90.0%	10.0%	14,103	94.93%	5.07%	2.54%	2.54%	13,388	358	358	0	0.00	**81.3**	**1.3**
	Fergus Avenue to Dixie Road	EB	Day Impacts	50	16	2041	15,670	90.0%	10.0%	14,103	94.93%	5.07%	2.54%	2.54%	13,388	358	358	0	0.00	**81.3**	**1.3**
	Dixie Road to 1515 Lakeshore Rd. E.	WB	Day Impacts	50	16	2041	13,088	90.0%	10.0%	11,779	94.29%	5.71%	2.86%	2.86%	11,107	336	336	0	0.00	**80.8**	**1.3**
	Dixie Road to 1515 Lakeshore Rd. E.	EB	Day Impacts	50	16	2041	13,088	90.0%	10.0%	11,779	94.29%	5.71%	2.86%	2.86%	11,107	336	336	0	0.00	**80.8**	**1.3**
	1515 Lakeshore Rd. E. to 42/43 Street	WB	Day Impacts	50	16	2041	13,178	90.0%	10.0%	11,860	94.48%	5.52%	2.76%	2.76%	11,206	327	327	0	0.00	**80.8**	**1.3**
	1515 Lakeshore Rd. E. to 42/43 Street	EB	Day Impacts	50	16	2041	13,178	90.0%	10.0%	11,860	94.48%	5.52%	2.76%	2.76%	11,206	327	327	0	0.00	**80.8**	**1.3**
East Avenue	North of Lakeshore Road East	NB	Day Impacts	50	16	2041	485	90.0%	10.0%	437	94.62%	5.38%	2.69%	2.69%	413	12	12	0	0.00	**66.3**	**1.3**
	North of Lakeshore Road East	SB	Day Impacts	50	16	2041	485	90.0%	10.0%	437	94.62%	5.38%	2.69%	2.69%	413	12	12	0	0.00	**66.3**	**1.3**
	South of Lakeshore Road East	NB	Day Impacts	50	16	2041	2,048	90.0%	10.0%	1,843	95.17%	4.83%	2.42%	2.42%	1,754	45	45	0	0.00	**72.3**	**1.2**
	South of Lakeshore Road East	SB	Day Impacts	50	16	2041	2,048	90.0%	10.0%	1,843	95.17%	4.83%	2.42%	2.42%	1,754	45	45	0	0.00	**72.3**	**1.2**
Lakeshore Promenade	South of Lakeshore Road East	NB	Day Impacts	50	16	2041	4,947	90.0%	10.0%	4,452	98.68%	1.32%	0.66%	0.66%	4,394	29	29	0	0.00	**73.4**	**0.9**
	South of Lakeshore Road East	SB	Day Impacts	50	16	2041	4,947	90.0%	10.0%	4,452	98.68%	1.32%	0.66%	0.66%	4,394	29	29	0	0.00	**73.4**	**0.9**
Ogden Avenue	North of Lakeshore Road East	NB	Day Impacts	50	16	2041	3,720	90.0%	10.0%	3,348	95.94%	4.06%	2.03%	2.03%	3,212	68	68	0	0.00	**74.4**	**1.2**
	North of Lakeshore Road East	SB	Day Impacts	50	16	2041	3,720	90.0%	10.0%	3,348	95.94%	4.06%	2.03%	2.03%	3,212	68	68	0	0.00	**74.4**	**1.2**
	South of Lakeshore Road East	NB	Day Impacts	50	16	2041	4,491	90.0%	10.0%	4,042	99.01%	0.99%	0.50%	0.50%	4,002	20	20	0	0.00	**72.6**	**0.8**
	South of Lakeshore Road East	SB	Day Impacts	50	16	2041	4,491	90.0%	10.0%	4,042	99.01%	0.99%	0.50%	0.50%	4,002	20	20	0	0.00	**72.6**	**0.8**
New Hydro Road	North of Lakeshore Road East	NB	Day Impacts	50	16	2041	274	90.0%	10.0%	247	84.60%	15.40%	7.70%	7.70%	209	19	19	0	0.00	**67.4**	**1.7**
	North of Lakeshore Road East	SB	Day Impacts	50	16	2041	274	90.0%	10.0%	247	84.60%	15.40%	7.70%	7.70%	209	19	19	0	0.00	**67.4**	**1.7**
	South of Lakeshore Road East	NB	Day Impacts	50	16	2041	4,910	90.0%	10.0%	4,419	100.00%	0.00%	0.00%	0.00%	4,419	0	0	0	0.00	**71.6**	**0.5**
	South of Lakeshore Road East	SB	Day Impacts	50	16	2041	4,910	90.0%	10.0%	4,419	100.00%	0.00%	0.00%	0.00%	4,419	0	0	0	0.00	**71.6**	**0.5**
Haig Boulevard	North of Lakeshore Road East	NB	Day Impacts	50	16	2041	2,147	90.0%	10.0%	1,932	88.35%	11.65%	5.83%	5.83%	1,707	113	113	0	0.00	**75.3**	**1.6**
	North of Lakeshore Road East	SB	Day Impacts	50	16	2041	2,147	90.0%	10.0%	1,932	88.35%	11.65%	5.83%	5.83%	1,707	113	113	0	0.00	**75.3**	**1.6**
	South of Lakeshore Road East	NB	Day Impacts	50	16	2041	3,282	90.0%	10.0%	2,954	100.00%	0.00%	0.00%	0.00%	2,954	0	0	0	0.00	**69.8**	**0.5**
	South of Lakeshore Road East	SB	Day Impacts	50	16	2041	3,282	90.0%	10.0%	2,954	100.00%	0.00%	0.00%	0.00%	2,954	0	0	0	0.00	**69.8**	**0.5**
Fergus Avenue	North of Lakeshore Road East	NB	Day Impacts	50	16	2041	685	90.0%	10.0%	617	88.21%	11.79%	5.90%	5.90%	544	36	36	0	0.00	**70.4**	**1.6**
	North of Lakeshore Road East	SB	Day Impacts	50	16	2041	685	90.0%	10.0%	617	88.21%	11.79%	5.90%	5.90%	544	36	36	0	0.00	**70.4**	**1.6**
	South of Lakeshore Road East	NB	Day Impacts	50	16	2041	307	90.0%	10.0%	276	88.14%	11.86%	5.93%	5.93%	244	16	16	0	0.00	**66.9**	**1.6**
	South of Lakeshore Road East	SB	Day Impacts	50	16	2041	307	90.0%	10.0%	276	88.14%	11.86%	5.93%	5.93%	244	16	16	0	0.00	**66.9**	**1.6**

O R N A M E N T - Sound Power Emissions & Source Heights

Ontario Road Noise Analysis Method for Environment and Transportation

Road Segment ID	Roadway Name	Direction	Link Description	Speed (km/h) used	Period (h)	Traffic Year	AADT	Day	Night	Traffic for Period	Auto %	% Trucks	Med %	Hvy %	Auto	Med	Heavy	Road Gradient (%)	Cadna/A Ground Absorption G	PWL (dBA)	Source Height, s (m)
Dixie Road	North of Lakeshore Road East	NB	Day Impacts	50	16	2041	6,579	90.0%	10.0%	5,921	98.57%	1.43%	0.72%	0.72%	5,836	42	42	0	0.00	**74.7**	**0.9**
	North of Lakeshore Road East	SB	Day Impacts	50	16	2041	6,579	90.0%	10.0%	5,921	98.57%	1.43%	0.72%	0.72%	5,836	42	42	0	0.00	**74.7**	**0.9**
	South of Lakeshore Road East	NB	Day Impacts	50	16	2041	47	90.0%	10.0%	42	77.78%	22.22%	11.11%	11.11%	33	5	5	0	0.00	**61.1**	**1.8**
	South of Lakeshore Road East	SB	Day Impacts	50	16	2041	47	90.0%	10.0%	42	77.78%	22.22%	11.11%	11.11%	33	5	5	0	0.00	**61.1**	**1.8**
1515 Lakeshore Condo	North of Lakeshore Road East	NB	Day Impacts	50	16	2041	711	90.0%	10.0%	640	95.60%	4.40%	2.20%	2.20%	612	14	14	0	0.00	**67.4**	**1.2**
	North of Lakeshore Road East	SB	Day Impacts	50	16	2041	711	90.0%	10.0%	640	95.60%	4.40%	2.20%	2.20%	612	14	14	0	0.00	**67.4**	**1.2**
BRT	Eastbound	EB	Day Impacts	50	16	2041	136	100.0%	0.0%	136	0.00%	100.00%	100.00%	0.00%	0	136	0	0	0.00	**68.1**	**0.5**
	Westbound	WB	Day Impacts	50	16	2041	136	100.0%	0.0%	136	0.00%	100.00%	100.00%	0.00%	0	136	0	0	0.00	**68.1**	**0.5**

STAMSON 5.0 NORMAL REPORT Date: 24-02-2022 16:32:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: Time Period: 16 hours
Description: Receiver 14 - No Build Cadna/a Comparison

Road data, segment # 1: LSHaigFergEB

Car traffic volume : 13619 veh/TimePeriod
Medium truck volume : 364 veh/TimePeriod
Heavy truck volume : 364 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: LSHaigFergEB

Angle1 Angle2 : -80.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 28.30 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 2: LSHaigFergWB

Car traffic volume : 13619 veh/TimePeriod
Medium truck volume : 364 veh/TimePeriod
Heavy truck volume : 364 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: LSHaigFergWB

Angle1 Angle2 : -80.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 18.10 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 3: LSFergDixiEB

```
-----------------------------------
Car traffic volume  : 13388 veh/TimePeriod
Medium truck volume :   358 veh/TimePeriod
Heavy truck volume  :   358 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: LSFergDixiEB
-----------------------------------
Angle1   Angle2           : -90.00 deg   -80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  28.30 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

↟
Road data, segment # 4: LSFergDixiWB
-----------------------------------
Car traffic volume  : 13388 veh/TimePeriod
Medium truck volume :   358 veh/TimePeriod
Heavy truck volume  :   358 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: LSFergDixiWB
-----------------------------------
Angle1   Angle2           : -90.00 deg   -80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  18.10 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

↟
Results segment # 1: LSHaigFergEB
-----------------------------------

Source height = 1.26 m

ROAD (0.00 + 63.26 + 0.00) = 63.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -80     90   0.00  66.27   0.00  -2.76  -0.25   0.00   0.00   0.00  63.26
```

Segment Leq : 63.26 dBA

↟
Results segment # 2: LSHaigFergWB

Source height = 1.26 m

ROAD (0.00 + 65.20 + 0.00) = 65.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-80	90	0.00	66.27	0.00	-0.82	-0.25	0.00	0.00	0.00	65.20

Segment Leq : 65.20 dBA

↟
Results segment # 3: LSFergDixiEB

Source height = 1.26 m

ROAD (0.00 + 50.88 + 0.00) = 50.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-80	0.00	66.19	0.00	-2.76	-12.55	0.00	0.00	0.00	50.88

Segment Leq : 50.88 dBA

↟
Results segment # 4: LSFergDixiWB

Source height = 1.26 m

ROAD (0.00 + 52.82 + 0.00) = 52.82 dBA

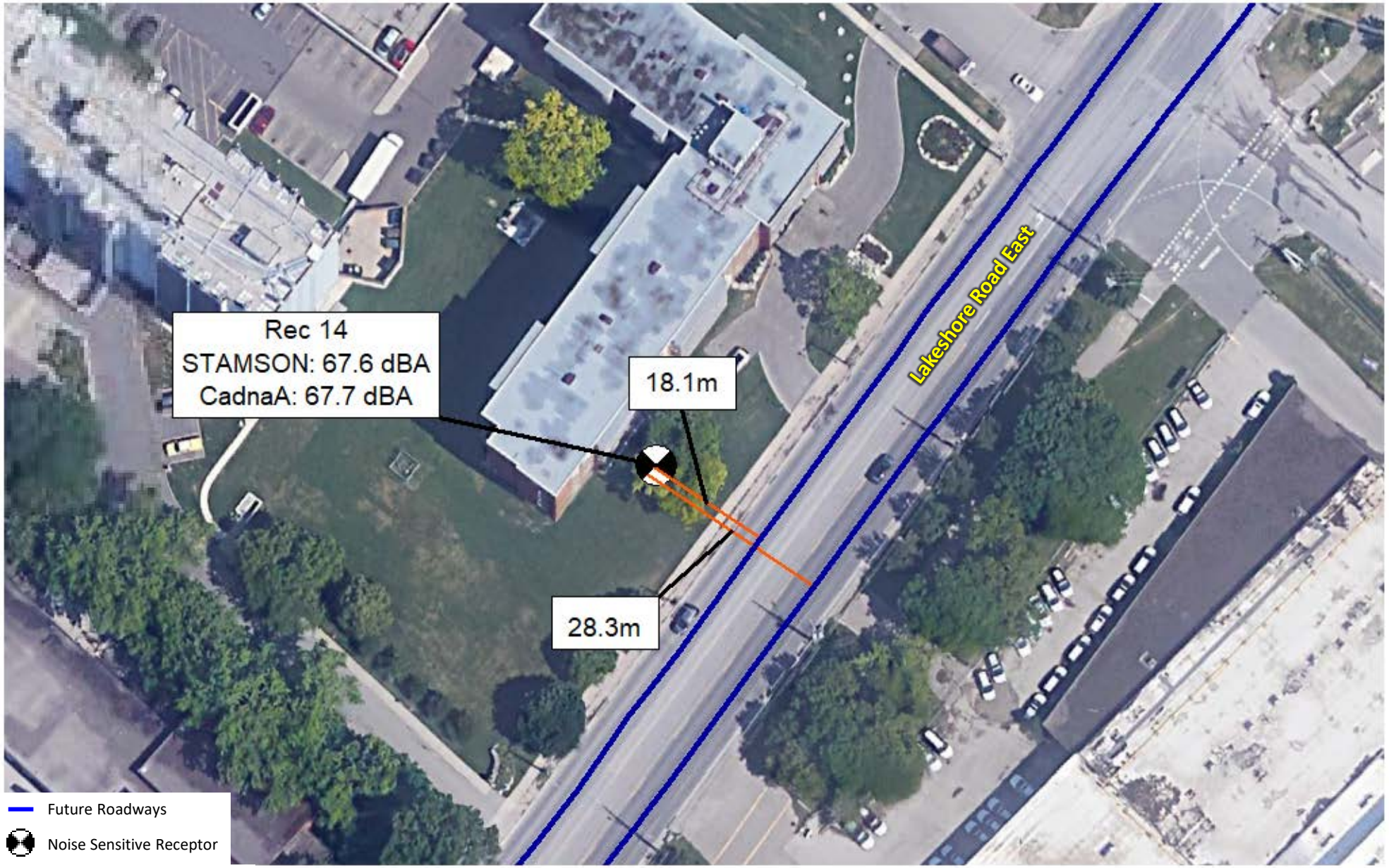
Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-80	0.00	66.19	0.00	-0.82	-12.55	0.00	0.00	0.00	52.82

Segment Leq : 52.82 dBA

Total Leq All Segments: 67.59 dBA

↟

TOTAL Leq FROM ALL SOURCES: 67.59



Aerial Photography from Google

CITY OF MISSISSAUGA	True North	Scale: 1: 750	METRES	SLR global environmental solutions
LAKESHORE ROAD EAST BRT EA		Date: Feb 28, 2022 Rev 1.1	Figure No. C1	
CADNA/A AND STAMSON COMPARISON – EXISTING CONDITION – REC 14		Project No. 241.30176.00000		

APPENDIX D – Noise Bylaw

Environmental Noise Assessment – Lakeshore Road East from Etobicoke Creek to East Avenue

City of Mississauga

SLR Project No: 241.30176.00000

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79

(Amended by 77-85, 1298-86, 755-87, 63-92, 230-94, 303-00, 495-03, 124-05, 110-06, 92-07, 120-07, 127-07, 248-07, 73-08, 99-08, 299-08, 325-09, 243-13, 43-15, 60-15, 120-17, 125-18, 166-20, 188-20, 192-20)

WHEREAS **sections 8, 9 and 11 of the *Municipal Act, 2001*, authorize the Council of the Corporation of the City of Mississauga to pass by-laws necessary or desirable for municipal purposes, and in particular paragraphs 5, 6 and 8 of subsection 11(2) authorize by-laws respecting the economic, social and environmental well-being of the municipality, the health, safety and well-being of persons; and the protection of persons and property;**

AND WHEREAS **section 129 of the *Municipal Act, 2001,* empowers a local municipality to prohibit and regulate with respect to noise and vibration;**

NOW THEREFORE the Council of the Corporation of the City of Mississauga ENACTS as follows:

INTERPRETATION

1. In this by-law, (303-00)

"City" **means the City of Mississauga in the Regional Municipality of Peel**

"Commissioner" **means the Commissioner of Transportation and Works for the City or his or her designate; (299-08)**

"construction" **includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, moving, land clearing, earth moving, grading, excavating, the laying of pipe and conduit whether above or below ground level, street and highway building, concreting, equipment installation and alteration and the structural installation of construction components and materials in any form or for any purpose, and includes any work in connection therewith;**

"construction equipment" **means any equipment or device designed and intended for use in construction or material handling, including but not limited to, air compressors, pile drivers, pneumatic or hydraulic tools, bulldozers, tractors, excavators, trenchers, cranes, derricks, loaders, scrapers, pavers, generators, off-highway haulers or trucks, ditchers, compactors and rollers, pumps, concrete mixers, graders or other material handling equipment;**

"Council" means the Council of the Corporation of the City of Mississauga;

"highway" means a common and public highway and includes any bridge, trestle, viaduct, pathway, or other structure forming part of the highway, and except as otherwise provided, includes a portion of a highway and the area between the lateral property lines thereof; (125-18)

"Minister" means the Minister of the Environment;

"Ministry" means the Ministry of the Environment;

"motor vehicle" includes an automobile, motorcycle, motor assisted bicycle unless otherwise indicated in The Highway Traffic Act, and any other vehicle propelled or driven otherwise than by muscular power, but does not include the cars of electric or steam railways, or other motor vehicles running only upon rails, or a motorized snow vehicle, traction engine, farm tractor, self-propelled implement of husbandry or road-building machine within the meaning of The Highway Traffic Act.

"motorized conveyance" includes a vehicle and any other device employed to transport a person or persons or goods from place to place, but does not include any such device or vehicle if operated only within the premises of a person or if propelled or driven only by muscular, gravitational or wind power;

"noise" means unwanted sound;

"Noise Control Officer" means a person designated by the Commissioner for the City as a noise control officer; (1298-86, 755-87, 299-08)

"_point of reception"_ means any point on the premises of a person where sound or vibration originating from other than those premises is received;

"public notice" means written notice provided by regular mail or delivery in person which includes information regarding the type of construction, the address or general area where the construction will take place, the date(s) and time(s) of construction, the source of construction noise and mitigation measures, that will be taken to reduce the noise or vibration from construction; (125-18)

"Quiet Zone" means those areas of the City where quiet is of particular importance and as more particularly designated in Schedule 4 to this By-law.

"Residential Area" means any area containing dwellings which are normally used for human habitation.

"temporary outdoor patio" means an accessory seating area, located adjacent to or within proximity of a restaurant, convenience restaurant or take-out restaurant. (166-20)

ADMINISTRATION

2. The Commissioner shall be responsible for the administration and enforcement of this by-law. (1298-86, 755-87, 495-03, 299-08)

GENERAL PROHIBITION

3. No person shall emit or cause or permit the emission of sound resulting from an act listed in Schedule 1 to this by-law and which sound is likely to disturb a reasonable person in the City. (188-20)

PROHIBITION BY TIME AND PLACE

4. No person shall emit or cause or permit the emission of sound resulting from any act listed in Column 1 to Schedule 2 to this by-law if clearly audible at a point of reception located in a residential area or quiet zone within a prohibited period of time for such an area as set out in Column 2 to Schedule 2 to this By-law.

PUBLIC SAFETY EXEMPTION

5. The provisions of Section 3 and 4 do not apply to the emission of a sound or vibration in connection with emergency measures undertaken:

(a) for the immediate health, safety or welfare of the inhabitants of the City or any of them; or

(b) for the preservation or restoration of property.

EXEMPTION OF TRADITIONAL FESTIVE OR RELIGIOUS ACTIVITIES

6. The provisions of Section 3 and 4 do not apply to the emission of sounds or vibrations made by persons in connection with any of the traditional, festive, religious or other activities set out in Schedule 3 to this by-law.

GRANT OF EXEMPTION

7. (1) Any person may apply for an exemption from the provisions of Sections 3 and 4 of this By-law, with respect to any source of sound or vibration. (299-08)

(2) An application for exemption under Subsection (1) shall be in writing and shall contain:

(a) the name and address of the applicant,

(b) a description of the source of sound or vibration in respect of which exemption is being sought,

(c) a statement of the section of the by-law from which exemption is sought,

(d) the period of time (not in excess of six (6) months) for which the exemption is sought,

(e) the reasons why the exemption is being sought,

(f) proof of publication for two consecutive days within the preceding ten (10) days in a newspaper of general circulation within the City, of a notice of intention to apply for any exemption to this by-law, received or by the distribution of a flyer as prescribed by the City to all residences within a 500 meter radius of the subject property containing the information required by Clauses (a) through (e) hereof, stating the date upon which objections may be submitted to City staff. (299-08)

(g) the application fee. (299-08)

(3) An application for an exemption completed in accordance with section 7(2) shall be delivered to the Commissioner. (299-08)

(4) The Commissioner may grant an exemption, in whole or in part, with terms and conditions, subject to the provisions of this By-law. (299-08)

(5) In considering the completed application for any exemption, the Commissioner shall take into account the following: (299-08)

(a) If an exemption is granted, a time limit shall be specified, and an exemption shall not exceed six months.

(b) The Commissioner shall consult with the affected Ward Councillor on an application for an exemption and the consultation shall include any terms and conditions that may be attached to an exemption.

(c) Any correspondence received regarding the application as a result of the distribution of the Notice or newspaper advertisement referred to in Section 7(2)(f).

(d) The proximity of the sound to a Residential Area and the likelihood that the sound for which an exemption is requested may negatively affect persons in a Residential Area.

(e) Whether any negative impacts under clauses (c) or (d) can be reduced with the use of mitigation measures including limiting the sound to certain days or times of the day.

(6) A breach by the applicant of any of the terms or conditions imposed by the Commissioner in granting an exemption shall immediately render the exemption null and void. (299-08)

(7) **Notwithstanding that the authority to grant an exemption is delegated to the Commissioner, and that he or she may have already exercised the delegated power, Council shall retain the right to exercise the authority to grant or deny an exemption in accordance with the conditions set out in section 7 (5) of this By-law. (299-08)**

(8) **Notwithstanding any other provisions in this By-law, where the grant of an exemption under section 7 of this By-law relates to construction on a City Highway: (125-18)**

(i) **subparagraphs 7(2)(f), (g) and 7(5)(c) do not apply;**

(ii) **the period of time for the exemption may be greater than six months; and**

(iii) **the applicant shall, following notification of approval of the exemption and at least two weeks prior to the commencement of construction, circulate a public notice to all residences within a 500 meter radius of the source of sound or vibration.**

(9) **Any person operating a temporary outdoor patio who applies for an exemption from the provisions of Sections 3 and 4 of this By-law shall not be subject to subsection 7(2)(g) of this By-law. (166-20)**

(10) **Any person operating a temporary outdoor patio who applies for an exemption from Section 4 of this By-law as it relates to an act listed in Column 1, section 2 of Schedule 2 during a prohibited period of time as set out in Column 2 of Schedule 2, shall not be subject to subsection 7(2)(f) of this By-law. (192-20)**

SEVERABILITY

8. **(1)** **If a court of competent jurisdiction declares any section or part of a section of this by-law invalid, such section or part of a section shall not be construed as having persuaded or influenced Council to pass the reminder of the by-law and it is hereby declared that the remainder of the by-law shall be valid and shall remain in force. (166-20)**

(2) **The defined term "temporary outdoor patio" in section 1, subsection 7(9) and subsection 7(10), shall only apply for a temporary period from the date of enactment and passing of this By-law until December 31, 2020, and shall be deemed to be deleted from this By-law effective January 1, 2021. (166-20, 192-20)**

PENALTY

9. **(1)** **Every person who contravenes any provision of this by-law is guilty of an offence. Pursuant to the provisions of the Provincial Offences Act, R. S. O. 1990, c.P. 33 upon conviction a person is liable to a fine of not more than $5,000, exclusive of costs. (77-85, 63-92)**

(2) **In addition to the provisions of Subsection (1), the Court in which the information is first laid and any court of competent jurisdiction thereafter, may issue an order prohibiting the contravention and repetition of the offence by the person convicted, and such order shall be in addition to any penalty imposed on the person convicted.**

10. (1) **By-law Number 7364 enacted by the former Town of Mississauga and any other by-law passed by the former Town of Mississauga to control noise is hereby repealed.**

(2) **By-law Number 957, enacted by the former Village of Port Credit and any other by-law passed by the former Village of Port Credit to control noise is hereby repealed.**

(3) **By-law Number 66-36, enacted by the former Town of Streetsville and any other by-law passed by the former Town of Streetsville to control noise is hereby repealed.**

(4) **By-law 2370 enacted by the former Township of Toronto and any other by-law passed by the former Township of Toronto to control noise is hereby repealed.**

(5) **Any Noise Control By-law, enacted by the Town of Oakville in that part of Oakville which was annexed by the City of Mississauga, and more particularly described in Section 2(1)(a) of The Regional Municipality of Peel Act, 1973, S.O. 1973, c. 60, is hereby repealed.**

READ A FIRST AND SECOND TIME THIS 28TH DAY OF MAY, 1979.
READ A THIRD TIME AND FINALLY PASSED THIS 28TH DAY OF JANUARY 1980.
Signed by: "Hazel McCallion", Mayor "Terence L. Julian", Clerk

This by-law is approved pursuant to the provisions of The Environmental Protection Act, 1971, as amended, at Toronto, this 9th day of April, 1980.
Signed by: "Harry Parrott", Minister of the Environment

SCHEDULE 1 TO BY-LAW NUMBER 360-79
GENERAL PROHIBITIONS
(Amended by 188-20)

1. **An unnecessary or unreasonable noise emanating from a motor vehicle, which includes but is not limited to the following:**

   a) **A noise caused from a bell, horn or other signalling device except when required or authorized by law or in accordance with good safety practices.**

   b) **A noise caused from an engine, a muffler and/or any other part of the emission control system.**

   c) **A noise caused by the operation of a motor vehicle, trailer or parts thereof related to the motor vehicle's disrepair or maladjustment.**

   d) **A noise caused from the operation of a motor vehicle in a manner which causes its tires to squeal.**

   e) **An amplified sound caused by the operation of any electronic device or group of connected devices emitting from the motor vehicle.**

2. **The operation of an engine or motor in, or on, any motor vehicle or item of attached auxiliary equipment for a continuous period exceeding five minutes, while such vehicle is stationary in a Residential Area or a Quiet Zone unless:**

   a) **the original equipment manufacturer specifically recommends a longer idling period for normal and efficient operation of the motor vehicle in which case such recommended period shall not be exceeded; or,**

   b) **operation of such engine or motor is essential to a basic function of the vehicle or equipment, including but not limited to, operation of ready-mixed concrete trucks, lift platforms and refuse compactors; or,**

   c) **weather conditions justify the use of heating or refrigerating systems powered by the motor or engine for the safety and welfare of the operator, passengers or animals, or the preservation of perishable cargo, and the vehicle is stationary for purposes of delivery or loading; or,**

   d) **prevailing low temperatures make longer idling periods necessary immediately after starting the motor or engine; or,**

   e) **the idling is for the purpose of cleaning and flushing the radiator and associated circulation system for seasonal change of antifreeze, cleaning of the fuel system, carburettor or the like, when such work is performed other than for profit.**

3. **The operation of any item of construction equipment in a Quiet Zone or Residential Area without effective muffling devices in good working order and in constant operation.**

SCHEDULE 2 TO BY-LAW NUMBER 360-79
PROHIBITED PERIODS OF TIME:

A - 23:00 hrs. of one day to 07:00 hrs. next day (09:00 hrs. Sundays)

B - 19:00 hrs. of one day to 07:00 hrs. next day (09:00 hrs. Sundays)

C - 17:00 hrs. of one day to 07:00 hrs. next day (09:00 hrs. Sundays)

D - All Day Sundays and Statutory Holidays

E - 17:00 hrs. of one day to 07:00 hrs. next day

F - 19:00 hrs. of one day to 07:00 hrs. next day

SCHEDULE 2 TO BY-LAW NUMBER 360-79
PROHIBITED PERIODS OF TIME:

	COLUMN 1	COLUMN 2 PROHIBITED PERIOD OF TIME	
		QUIET ZONE	RESIDENTIAL AREA
1.	The operation of any auditory signalling device, including but not limited to the ringing of bells or gongs and the blowing of horns or sirens or whistles, or the production, reproduction or amplification of any similar sounds by electronic means except where required or authorized by law or in accordance with good safety practices.	At Any Time	B & D
2.	The operation of any electronic device or group of connected devices incorporating one or more loudspeakers or other electro-mechanical transducers, and intended for the production, reproduction or amplification of sound.	At Any Time	C
3.	All selling or advertising by shouting or outcry or amplified sound.	At Any Time	B & D
4.	Loading, unloading, delivering, packing, unpacking, or otherwise handling any containers, products, materials, or refuse, whatsoever, unless necessary for the maintenance of essential services or the moving of private household effects.	B	B & D
5.	The operation of any construction equipment in connection with construction.	E & D	F & D
6.	The detonation of fireworks or explosive devices not used in construction.	At Any Time	A - unless otherwise permitted in accordance with the provisions of By-law 160-74 or its successors

SCHEDULE 2 TO BY-LAW NUMBER 360-79
PROHIBITED PERIODS OF TIME:

	COLUMN 1	COLUMN 2 PROHIBITED PERIOD OF TIME	
		QUIET ZONE	RESIDENTIAL AREA
7.	The discharge of firearms.	At Any Time	At Any time- unless in accordance with the provisions of By-law 331-77 or its successors.
8.	The operation of a combustion engine which (i) is, or (ii) is used in, or (iii) is intended to be used in, a toy, or a model or replica of any device, which model or replica has no function other than amusement and which is not a conveyance.	At Any Time	A
9.	The operation of any powered rail car including but not limited to refrigeration cars, locomotives or self-propelled passenger cars, while stationary on property not owned or controlled by a railway governed by The Canada Railway Act	At Any Time	A
10.	The operation of any motorized conveyance other than on a highway or other place intended for its operation.	At Any Time	B
11.	The venting, release or pressure relief of air, steam or other gaseous material, product or compound from any autoclave, boiler, pressure vessel, pipe, valve, machine, device or system.	At Any Time	A
12.	Persistent barking, calling or whining or other persistent noise making by any domestic pet.	At Any Time	At Any Time
13.	The operation of any powered or nonpowered tool for domestic purposes other than snow removal.	A	A

SCHEDULE 2 TO BY-LAW NUMBER 360-79
PROHIBITED PERIODS OF TIME:

	COLUMN 1	COLUMN 2 PROHIBITED PERIOD OF TIME QUIET ZONE	 RESIDENTIAL AREA
14.	The operation of solid waste bulk lift or refuse compacting equipment.	B	A
15.	The operation of a commercial car wash with air drying equipment.	B	B
16.	Yelling, shouting, hooting, whistling or singing.	At Any Time	A

SCHEDULE 3 TO BY-LAW 360-79
ACTIVITIES TO WHICH THE BY-LAW DOES NOT APPLY

(amended by 230-94, 495-03, 124-05, 110-06, 92-07, 120-07, 127-07, 248-07, 73-08, 99-08, 325-09, 243-13, 43-15, 60-15, 120-17)

ACTIVITIES TO WHICH THE BY-LAW DOES NOT APPLY	LOCATION
Applewood Acres Homeowners Association – Annual Family Fun Day	West Acres Park 2166 Westfield Drive
Banares Museum - Exemption applies to all approved events and activities at this location.	Banares Museum 1507 Clarkson Road North
Bradley Museum - Exemption applies to all approved events and activities at this location.	Bradley Museum 1620 Orr Road
Can-Sikh Festival	Paul Coffey Park 3430 Derry Road West
Canada Day (various locations throughout the City) • Churchill Meadows Friends • Malton BIA and Partners • Port Credit Paint the Town Red • Streetsville BIA and Partners	 Churchill Meadows Park 3370 McDowell Drive West Wood Mall 7205 Goreway Drive Port Credit Memorial Park 32 Stavebank Rd N - (plus designated locations throughout Port Credit Village) Streetville Memorial Park 335 Church Street - (plus designated locations throughout the Village)
Caroling in the Park	Port Credit Memorial Park 32 Stavebank Road North
Cavalia	Hershey Centre 5399 Rose Cherry Place
Desh Bhagat	Paul Coffey Park 3430 Derry Road West
Filming Activities Authorized by the City's Film Unit via a Film Permit issued in accordance with Corporate Policy and Procedure No. 06-03-02 - "Filming on City of Mississauga Property"	Approved designated locations

Lakeside Park - Exemption applies to all approved events and activities at this location.	Lakeside Park 2268 Lakeshore Rd West
Leslie Log House - Exemption applies to all approved events and activities at this location.	Leslie Log House 4415 Mississauga Rd
Malton Festival	Paul Coffey Park 3430 Derry Road West
Mississauga Celebration Square Exemption applies to appropriately approved events and activities that appear on the MCS calendar of events, programs and activities	Civic Square 300 City Centre Drive, Library Square 301 Burnhamthorpe Road West Living Arts Centre Park 4141 Living Arts Centre Drive
Mississauga Marathon	City Centre Drive, Lakefront Promenade Park 800 Lakefront Promenade PLUS designated locations
Mississauga Waterfront Festival	Port Credit Memorial Park 32 Stavebank Road North PLUS Port Credit Library and Port Credit Arena
Mount Zion Apostolic Church - Picnic	Paul Coffey Park 3430 Derry Road West
Movies In The Park - Rotary Series	Port Credit Memorial Park 32 Stavebank Road North
Palestine House Educational and Cultural Centre	Mississauga Valley Park 1275 Mississauga Valley Boulevard
Port Credit Art Fest	Port Credit Memorial Park, 32 Stavebank Road North

Port Credit Busker Fest	Port Credit Memorial Park 32 Stavebank Road North PLUS event designated sites throughout Port Credit Village
Rebel – National Youth Week	Mississauga Celebration Square PLUS approved designated locations

Safe City Mississauga – Neighbours Night Out	Approved designated locations
Sherwood Forrest - Annual Family Fun Day	Sherwood Green Park 1864 Deer's Wold
St Gabriel Lebanese Festival	Streetsville Memorial Park 335 Church Street
Southside Shuffle – Blues and Jazz Festival	Port Credit Memorial Park 32 Stavebank Road North PLUS event designated sites throughout Port Credit Village
Streetsville Founders - Bread & Honey Festival	Streetsville Memorial Park 335 Church Street
Sunset Concert Series (Culture Division Program)	Port Credit Memorial Park 32 Stavebank Road North Lake Aquitaine 2750 Lake Aquitaine Avenue
University of Santos Thomas Alumni - Annual Picnic	Mississauga Valley Park 1275 Mississauga Valley Boulevard

THE CORPORATION OF THE CITY OF MISSISSAUGA
SCHEDULE 4 TO BY-LAW NUMBER 360-79

QUIET ZONES

The Quiet Zones are those areas contained within the dotted lines on Maps A, B, C and D which are attached to By-law 360-79

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW

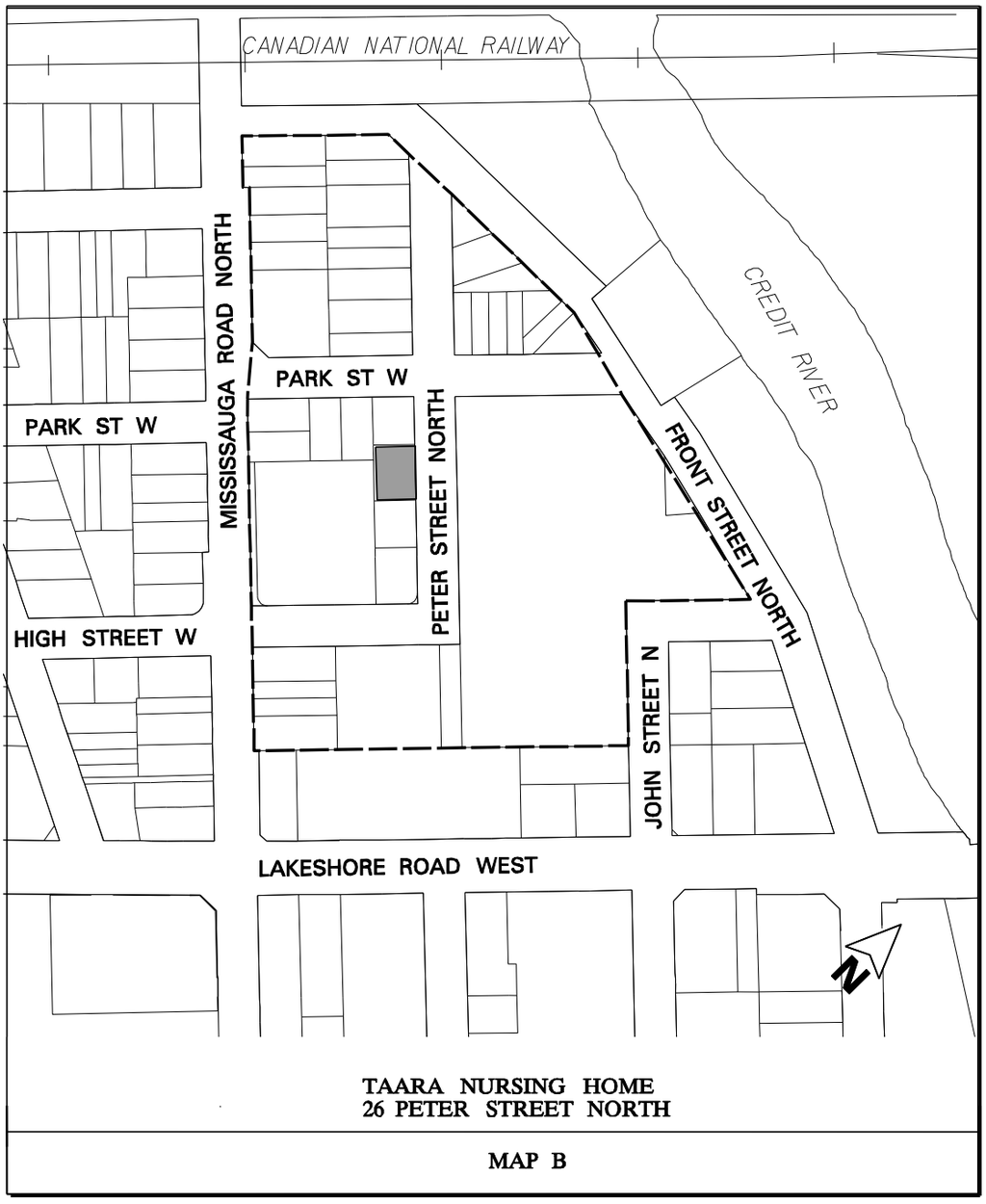
①TRILLIUM HEALTH CARE
100 THE QUEENSWAY WEST

②CHELSEY PARK NURSING HOME
2250 HURONTARIO STREET

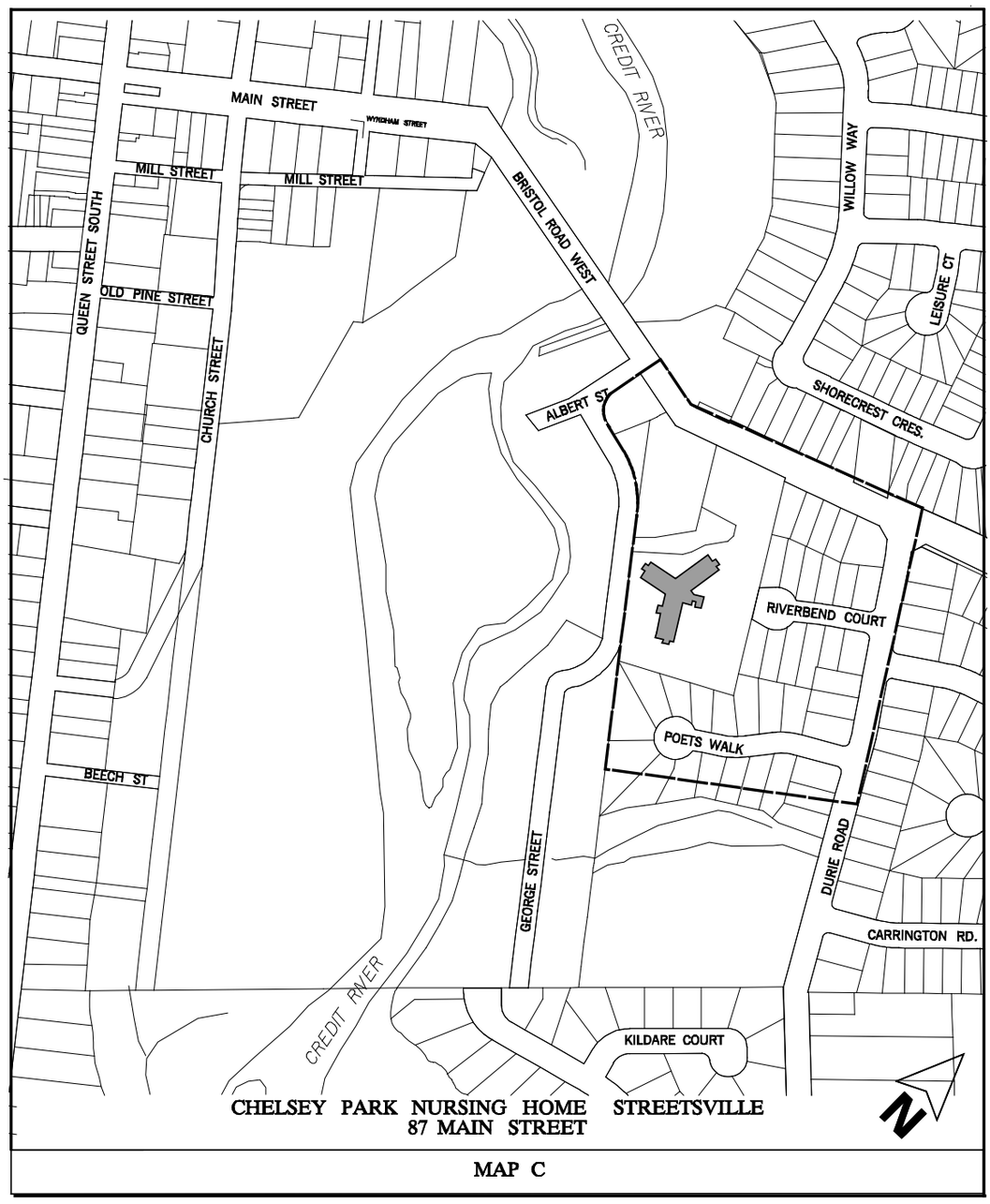
③EXTENDICARE NURSING HOME
55 THE QUEENSWAY WEST

MAP A

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW



THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW



MAP C

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW