ENVIRONMENTAL NOISE & VIBRATION IMPACT STUDY

PROPOSED TOWNHOUSE DEVELOPMENT
50 & 60 HARBORN RD, City of Mississauga

Prepared for:

W.E. Oughtred & Associates Inc.

Prepared by:

Vintec Acoustics

6-2400 Dundas Street West
Mississauga, ON. L5K 2R8

Vince Gambino P.Eng.,
Principal Consulting Engineer

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EXECUTIVE SUMMARY

Vintec Acoustics Inc. was retained by W.E. Oughtred & Associates Inc. to prepare an environmental noise and vibration impact study (ENVIS) for the proposed townhouse development located at 50 & 60 Harborn Road in Mississauga, ON. This report has been prepared to support an application for Mississauga Zoning Bylaw Amendment (ZBA) and Site Plan Approval (SPA). The proposed project comprises of 12 x 3-storey townhouse units. The townhouse block at the west end of the property (Building A) contains 5 units while on the east block (Building B) contains 7 units and the blocks are separated by a public driveway. Each of the proposed units includes its own parking space and a proposed common amenity recreation space is also proposed at the southwest side of the property.

This study provides an assessment of the anticipated site noise impacts from road traffic on Queen Elizabeth Way (QEW) Highway, which includes the QEW Westbound merge lane, Hurontario Street, and North Service Road which are located at a significant distance to the east. In addition to the road traffic noise, noise and vibration from the proposed public transit corridor(s), is the Hurontario Hazel McCallion LRT has also been included as part of this noise impact assessment. Road traffic data was obtained from the City of Mississauga Traffic Engineering Department. A site evaluation survey was conducted to confirm the acoustic environment in the general study area.

An assessment of the road traffic noise impacts on the proposed development was completed by examining the individual and cumulative acoustic contributions of the respective vehicular transportation corridors. Applicable noise control measures, which include warning clauses, façade design and environmental noise compliance, were recommended so that the City of Mississauga noise requirements, which are based on the guidelines defined in the NPC-300 publication provided by the Ministry of Environment, Conservation and Parks (MECP) are satisfied. The recommended noise control measures are typical of urban residential developments adjacent to major arterial roadways, highways, transportation road and rail corridors as well as local roads in the study area.

As required by the City of Mississauga, this noise and vibration impact study has also considered the potential noise impact of the proposed project on the existing community as well as the potential noise impact of the project on itself.

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1.0 INTRODUCTION

Vintec Acoustics Inc. was retained by W.E. Oughtred & Associates Inc. to prepare an environmental noise and vibration impact study (ENVIS) for the proposed townhouse development located at 50 & 60 Harborn Road in Mississauga, ON. This report has been prepared to support an application for Mississauga Zoning Bylaw Amendment (ZBA) and Site Plan Approval (SPA). The proposed project comprises of 12 x 3-storey townhouse units. The townhouse block at the west end of the property (Building A) contains 5 units while on the east block (Building B) contains 7 units and the blocks are separated by a public driveway. Each of the proposed units includes its own parking space and a proposed common amenity recreation space is also proposed at the southwest side of the property.

This study provides an assessment of the anticipated site noise impacts from road traffic on Queen Elizabeth Way (QEW) Highway, which includes the QEW Westbound merge lane, Hurontario Street, and North Service Road which are located at a significant distance to the east. In addition to the road traffic noise, noise and vibration from the proposed public transit corridor(s), is the Hurontario Hazel McCallion LRT has also been included as part of this noise impact assessment. Road traffic data and transit data were obtained from the City of Mississauga Traffic Engineering Department as well as publicly available data and assessment report information provided online by Metrolinx. The subject study area also lies well outside of the GTAA Noise Exposure Forecast (NEF) 25 contour; hence, potential aircraft noise impact is insignificant.

The study area is defined by an approximate 3133.41 m^2 area and is in proximity to existing residential homes in the area. There are no current nor planned stationary noise sources that are of any significance located within the study area

An assessment of noise impact on the proposed development from both local road and highway traffic and the proposed Hurontario LRT transportation corridor was completed by examining the individual and cumulative acoustic contributions of the respective transportation corridors.

Applicable noise control measures, which include façade design and warning clauses, have been recommended such that the requirements defined by the MECP; namely, the road noise guidelines in publication NPC-300 can be met at affected facades and outdoor amenity locations. The recommended noise control measures are typical of residential developments adjacent to a major City highway, major arterial roadways, and local roads in the study area.

The proposed townhouse homes development will be located at 50 & 60 Harborn Rd, Mississauga, ON. The development and study area are illustrated in the Figure 1a key area plan and aerial satellite photo and development key plan given in Figure 1b. Figures 2a and 2b illustrate the key façade and outdoor amenity areas in both plan and elevation within the project that have been identified for noise assessment and analysis purposes. The proposed development comprises two components. As noted, Building A comprises of 5 townhome units and Building B comprises of 7 townhome units. Both Buildings A and B share an outdoor playground amenity/outdoor recreation area that has a total area of about 110 m^2 which is located just south of unit 12 at the southwest corner of the site.

This ENVIS study has also considered the effect of the project on itself and the effect of the project on the environment. The project's potential noise impact on the existing community has been examined with respect to planned mechanical equipment as well as traffic that is generated by the development itself. The analysis demonstrates that traffic generated by the proposed development is a minimal contributor to future traffic noise levels in the area; and that along with the selection of quiet mechanical equipment, the proposed project is not expected to be a significant noise contributor in the community.

2.0 NOISE CRITERIA

The applicable guidelines for new residential development within the City of Mississauga are those outlined in MECP publication NPC-300, for noise assessment in land use planning. Based on the site-specific features, the proposed development is in an urban area. It is noteworthy to mention at the outset that the proposed development can therefore be defined as a Class 1 site for any future reference to potential stationary noise source considerations, as per NPC-300. The applicable Class 1 noise criteria for the proposed development are noted accordingly in Table A.

Table A: NPC 300 (Class 1) Limits for the Client Facility

Time of Day	Stationary Source Sound Limits Class 1
Plane of Window, 7:00 am to 7:00 pm	50 dBA
Plane of Window, 7:00 pm to 11:00 pm	50 dBA
Plane of Window, 11:00 pm to 7:00 am	45 dBA
Outdoor, 7:00 am to 11:00 pm	50 dBA

2.1 Outdoor Noise Criteria-Transportation Noise

The daytime noise criterion defined in NPC-300 for designated outdoor amenity/living areas, (OLA) is 55 dBA for vehicular transportation corridors, i.e., road and rail. Where it is not technically, economically, or administratively feasible to meet the 55 dBA limit, sound levels of up to 60 dBA are permissible with warning clauses. Where the daytime sound levels are greater than 60 dBA, noise control measures are often required to reduce sound levels to 60 dBA or less.

The project has included proposed a shared outdoor common recreation space located on the ground floor at the southwest corner of the site which was reviewed to ensure that sound levels are within acceptable limits as defined by NPC-300. A wooded area with dense tree coverage presently exists at the site and it provides shielding from vehicular traffic on the QEW . The project also made provision for suite balconies to promote the enjoyment of the outdoors.

The residential units in the project have thus been designed with a balcony and terrace provision and some at the upper storeys do have potential exposure to the road noise sources under review in this project with sound levels in the 60 dBA range. It should be noted that typically, balconies in residential buildings are not considered OLAs unless both of the following conditions exist, they are at least 4m in depth and there is no provision for protected amenities within the development. Neither condition exists in this case for the balconies; hence, for these reasons they do not require acoustic protection. Warning clauses are applicable for the future occupants of the development as shown in Appendix D, where Clauses A and C apply to OLA noise levels.

Contribution to outdoor noise levels that are attributable to development generated traffic has also been considered in this study. Based on a review of the proposed project details, the subject development is expected to generate traffic that will be introduced into the existing community. There is a project provision of 12 residential units that will entail vehicular ingress/egress to and from the site during any given day. This translates into a conservatively estimated movement of up to 50 to 100 vehicles combined from all site access points over a 24-hour period.

Based on existing traffic volumes in the study area, the anticipated additional traffic under worst case conditions is expected to result in a change of less than 0.5 dB(A). Changes in environmental noise levels of less than 3 dB(A) are not expected to be noticeable nor significant. Therefore, as per this analysis, any development generated traffic is not expected to significantly increase the ambient sound levels of the local acoustic environment. Therefore, project traffic will not adversely impact existing and proposed residential communities in the study area since current and projected traffic noise is dictated by the significant volume of traffic on the QEW as well as vehicular traffic corridors to the east.

2.2 Indoor Noise Criteria

For road traffic noise sources, the indoor sound level limits for the living/dining areas are 45 dBA during daytime hours (7:00 am – 11:00 pm). For sleeping quarters, the indoor sound level limit is 40 dBA during night-time hours (11:00 pm- 7:00 am).

A margin of conservatism of approximately 3 dB(A) has been applied to the exterior wall and window (façade) design assessment of this project to ensure a quiet indoor environment given the future Hazel McCallion LRT public transportation corridor and the anticipated growth in vehicular traffic volumes on major roads and highways located within the study area.

2.3 Exterior Building Facade Noise Criteria

Where the sound levels at the exterior of the building facades (i.e., plane of window) exceed 55 dBA at living/dining room windows during daytime hours and 50 dBA at bedroom windows during night-time periods, the unit must be provided with forced air heating with provision for central air conditioning. Central air conditioning must be incorporated into the building design prior to occupancy for conditions where sound levels exceed the 55/50 dBA plane of window criterion by more than 10 dB (i.e., 65 dBA at living/dining room windows and 60 dBA at bedroom windows). Warning clauses are applicable as well. Central air conditioning is proposed for the project, and the appropriate noise warning clause requirements (Clause B in Appendix D) will be specified.

2.4 Noise Criteria and Discussion of Stationary Noise Sources

For non-transportation sources (i.e., HVAC units and exhausts, etc.), the applicable MECP noise criteria at a point of reception (POR) are dictated by Publication NPC-300 [1] for a Class 1 Area. These guidelines state that the one-hour sound exposures (Leq, 1 hour) from stationary noise sources in Class 1 areas, at the plane of an open window, shall not exceed:

- the higher of 50 dBA or background noise between 0700h and 1900h.
- the higher of 47 dBA or background noise between 1900h and 2300h; and
- the higher of 45 dBA or background noise between 2300h and 0700h

If the background sound level is higher than the exclusionary limits, the background sound can be used as the limit. The ambient noise environment is dominated by primarily from the Queen Elizabeth Way (QEW) including both Eastbound and Westbound lanes. The QEW merger lane adjacent to the site also contributes to the local background sound. Furthermore, sound levels measurements were completed on site in June 2025 and the results are summarized in Appendix F. The modelled sound levels align with the in-situ measurements; hence confirming a robust acoustic impact analysis for this site as per requirements defined by MECP in NPC-300.

A local zoning map is shown in Figure 3, and it illustrates the significant distances to any commercial and/or industrial zoning that is in the general vicinity of the study area. The ambient noise environment in the project area is dominated by QEW Highway, Hurontario Street and future growth (i.e., LRT); and a 50 to 51 dBA nighttime sound level limit is found to be appropriate for any stationary noise source consideration.

In this regard, the proposed Mississauga LRT North service is to be about 150m and shielded from the proposed site. Thus, any noise impact is expected to negligible due to the local influence of sound from the QEW and the significant distance to the proposed station. In addition, the proposed LRT station is also not expected to be a major concern as these facilities are proposed to be designed in accordance with best standards for community integration. A nighttime sound level limit of at least 50 to 51 dBA is considered appropriate and conservative for the elevated receptors because of the ambient that is dictated by local highway transportation. Therefore, there is no reason to believe that noise levels from the proposed LRT station shall be out of compliance with the city's noise by-law or NPC-300.

2.5 Potential Noise Impact of the Development on Itself

In a multi-unit, high rise residential development, architectural and mechanical noise control is often required to ensure an acceptable living environment. The potential noise impact of the project on itself, for 50-60 Harborn Road considers the following possible scenarios:

1. Airborne noise heard between suites and in particular demising partitions
2. Airborne and structure borne noise from mechanical and/or electrical equipment
3. Activity generated sounds from common room spaces and amenities that may be heard by adjacent suite occupants and/or tenants

It is proposed to meet building code and follow best practices to ensure minimal potential noise impacts along with TARION Bulletin 19R requirements, especially regarding the certification of construction drawings and the certification and/or acoustic performance testing and verification for the "as built" condition of the building.

2.6 Potential Construction Vibration Impact of the Development

As part of this environmental noise and vibration impact study that has been undertaken to assess the proposed development, Vintec Acoustics has also considered construction vibration impact. In this respect, the construction activity that is expected for this project shall entail demolition, site preparation, excavation, piling, drilling, forming, and shoring all of which are required to meet state of the art construction noise and vibration guidelines, such as the city of Toronto bylaw 514-2008

[3], for ensuring acceptable vibration at nearby buildings and sensitive structures; and where required to make provision for a monitoring program to confirm compliance with any requirements.

3.0 NOISE IMPACT ASSESSMENT

The main sources of transportation noise affecting this development include (QEW) Highway, QEW Westbound Merge Lane, Hurontario Street, North Service Road, and the proposed Hazel McCallion Line LRT. The sound levels at the proposed development due to road traffic were calculated using the MECP software STAMSON, Version 5.04.

3.1 Road Traffic Data

The Annual Average Daily Traffic (AADT) volumes for the local roads and the distant major vehicular transportation corridors were provided by the City of Mississauga. This includes several traffic volume data samples collected by the city between the years of 2018 and 2021. Current volumes are lower than previous years and this can be attributed to pandemic era related restrictions and an associated reduction in overall traffic volumes observed throughout the province. The data provided is summarized in Table 1 and presented in Appendix B. The traffic data provided was projected to the year 2040 using a conservative annual growth rate of 2% for vehicle volumes on QEW Highway, QEW Westbound Merge Lane, Hurontario Street and North Service Road.

An appropriate day/night split was used for the respective road traffic components. More specifically, the daytime and night-time noise levels are estimated by applying correction factors of (+1 dB, -3 dB) to the 24 hr Leq for Hurontario Street and North Service Road. It is noteworthy that the day/night Leq for the QEW is equivalent because of its provincial highway designation. The road gradients in the study area are all less than 2%. The details of road traffic data provided by the city as well as STAMSON calculation samples are provided in Appendix C.

Using the projected road traffic data acquired as per noted methodology, the on-site sound levels were calculated using STAMSON and as described in Tables 1ab and 2 in Appendix A.

Warning Clause A, as shown in Appendix D, will be required to inform future building owner/occupants of noise from the vehicular transportation corridors in the area; and Warning Clause C will be required to inform future occupants of the future presence of Metrolinx Mississauga LRT right-of-way that will be located within 300m of the proposed development.

3.2 LRT Traffic Data-Noise

Future Hazel McCallion Line volumes and speed were based on publicly available online data, environmental noise, and vibration assessment studies (ENIA) and similarly, online data and

information from Metrolinx. As per public data and draft environmental assessments prepared for the Hazel McCallion Line, the acoustic model presented in this report has been prepared on the basis that 288 train passbys are proposed to occur during the daytime period of 0700-2300 and about up to 80 train passbys during the nighttime (2300- 0700). A summary of the projected LRT traffic volume is shown in Table B.

Figure 1c shows the study area profile of the Hazel McCallion line in both plan and elevation. This information was referenced and adopted into the acoustic model that was prepared for the subject site as it provides information on both track elevation, which is in the range of up to 0.5 to 0.7m above grade.

Table B Summary of Projected LRT volumes

Segment	Speed Limit (km/hr)	Traffic Volumes-total
Hazel McCallion Line LRT	80 **(Speed typically in 30-40 kph range)**	~ 368 trains/day **(Modelled as 1472 medium trucks)**

Each proposed LRT vehicle on the Hazel McCallion Line is conservatively considered to be equivalent to 4 medium trucks travelling at a maximum speed of 80km/hr. It is understood that typical speeds are expected to be less than half of maximum through this area. The sound level predictions prepared for this report, and which are included in the Appendix therefore represent a conservative assessment, as the model basis of sound levels attributable to 4 medium trucks is at least 6 dB(A) greater than the typical noise emissions from an LRT passby profile, as provided in references [8], [9]. By comparison, the acoustic model for the Eglinton Crosstown LRT (straight section about 300m north) is based on 1 LRT vehicle being equivalent to 2 medium trucks traveling at a speed of 80 km/hr: and thus, representing a margin of conservatism of approximately 3 dB(A). The sound level prediction methodology undertaken in this study for the proposed Metrolinx transportation corridor(s) thus provides a degree of conservatism that is consistent with proposed infrastructure objectives.

3.3 LRT Traffic Data-Vibration

Rail transit systems and heavy vehicles on roadways can produce perceptible levels of ground vibration, especially when traversing road surface and rail track irregularities when they are near residential neighborhoods and/or vibration-sensitive buildings. Environmental vibration propagates through the soil and transportation structure to a point of reception. Unique

characteristics of both the soil strata and the structure transfer into a specific spectral excitation that is unique and representative of the site-specific conditions.

In the case of groundborne vibration, this energy can cause perceptible motion in the ground, and which propagates and can excite an intervening structure such as a dwelling or condominium building and give rise to groundborne noise. Wheel rotations, especially those from wheels that are irregular and `out-of-round' (i.e., wheel flats) can generate vibration when passing over an uneven surface. Vibration will enter the structure at the foundation and the building primary and secondary structure elements will respond to this incident energy, especially within the frequency range of structural resonances of floors, walls, and other assemblies. This structural excitation gives rise to noise and feelable vibration in secondary structures within a space such as wall hangings, cabinets, shelf contents, etc.

Human response to ground vibration depends on the magnitude of the vibration, typically measured in units of mm/s rms (root mean square). The threshold of human perception to vibration is about 0.10 mm/s rms and limits of 0.14 mm/s are typically deemed to represent the applicable limits of vibration in a living space by rail authorities. For comparison, the threshold of annoyance for continuous vibration is 1.0 mm/s rms and the threshold for structural damage is 10 mm/s rms.

Amplitudes of groundborne vibration from a slightly elevated LRT rail are generally found to be lower than vibration from rail structures located at or below grade. The transmission path from the elevated rail line to the ground is an indirect path with appreciable losses in the amount of the energy that is inherently transmitted into the ground in comparison to grade or sub-grade rail transit. In addition, the proposed rail and structure has considered noise and vibration abatement in its execution as per data provided by Metrolinx and outlined in Appendix E. The nearest sensitive area is at about 130m from the track and supporting structure. Based on reference data provided in [8], [9], an at grade LRT generates groundborne vibration that is expected to be in the range of 0.05 mm/s rms or less at setback of approximately 75m, and notably lower amplitudes are expected at more distant locations and/or for a significantly elevated rail. As a result, the amplitude of vibration at the site-specific development property is estimated to be below 0.04 mm/s rms and in accordance with references [8], [9]. These amplitudes are well below the threshold of feelable vibration and thus well within an acceptable range as defined by guidelines for acceptable vibration in existing and proposed residential structures. As a result, vibration is not expected to be of concern and special vibration isolated building foundations are not required for the proposed townhomes at 50 & 60 Harbord Road.

3.4 Construction Noise and Vibration Impact of Hazel McCallion Line

The Hazel McCallion Line began major construction within the last 4 years in recent years and the project was planned to be completed by 2026. The construction of this rapid transit line may be a source of potential construction noise and vibration impact to nearby sensitive buildings. Construction activity may comprise site clearing, demolition, excavation, compaction, grading, drilling, piling, and erecting of transit support structure and rail. Noise and vibration generated by construction activity will be assessed accordingly and is proposed to follow the requirements of the robust City of Mississauga Bylaw 360-1979 [3]. Neighboring facilities and occupants within sensitive buildings such as the proposed development under review in this study will occasionally hear and feel noise and vibration due to construction and which may at times cause annoyance.

Duration of construction is expected to vary subject to the type of activity as scheduled accordingly in a proposed construction plan. The 35 to 40m setback to the construction zone is appreciable and we do not expect construction vibration to exceed the recommended benchmark requirements for most activities. Sub surface piling and tunneling may be exceptions; and thus, may warrant execution of strategic noise and vibration abatement, where applicable. This shall include management and scheduling of construction activities to be undertaken as noted in the Metrolinx protocols presented in Appendix E. These efforts will assist in ensuring that potential impacts and annoyance to the proposed development are minimized.

3.5 Noise Impact of the Development Itself

3.5.1 Guidelines and Criteria

The proposed development is required to satisfy the general requirements of the Ontario Building Code. The construction of the partitions within a residential building are proposed to meet the following minimum STC (Sound Transmission Class) requirements.

Suite/Suite – Wall or Floor/Ceiling	STC of 50
Suite/Elevator Hoist or Refuse Chute	STC of 55

The noise associated with the mechanical/electrical equipment operation should satisfy the NC (Noise Criteria) recommended by ASHRAE (American Society of Heating and Air-conditioning Engineers HVAC Handbook). The criteria as follows.

Living Rooms, Dining Rooms	NC-30 to 35
Bedrooms	NC-25 to 30
Washrooms	NC-35 to 40

3.5.2 Recommendations

Although acoustic design and review of details of the buildings is beyond the scope of this noise and vibration impact study, it is proposed to follow noise and vibration guidelines to minimize noise impact potential and to ensure acceptable noise levels for future owners and/or tenants within the proposed multi-storey buildings.

- A mechanical floating floor or equivalent vibration isolation system and/or a suspended drywall ceiling in the suite will likely be required for the mechanical spaces located above dwelling units (e.g., mechanical rooms located in the penthouse).
- Special attention will also be required for floors/ceilings, doors, and walls of recreational facilities such as party rooms, gyms and outdoor recreation space and amenity terraces that are above, below, or adjacent to residential suites.

  The walls between garbage rooms and adjacent suites are recommended to have an STC rating of 60. Also, the entire run of the vibration isolated garbage chute should be straight with a least 2” insulation around its perimeter.

  The walls between elevator shafts and adjacent suites are recommended to have minimum STC rating of 60.
- If applicable, any proposed standby generator is proposed to be acoustically treated (i.e., silencers, mufflers, etc.) to meet a sound level limit that is the range of 60 to 65 dBA, subject to the location of the nearest receptors and MECP registration should be provided.
- Pipe risers should be separated from suites with a wall construction providing a minimum STC of 55.
- All pipes greater than 3” in diameter should be vibration isolated from all walls and floors. These pipes should be supported on resilient hangers with a neoprene element in series with a spring isolator having static deflection of at least 1”.
- All pipes penetrating through the wall or floors should do so through an enlarged sleeve penetration. There should be no mechanical contact between the two, thus avoiding the transfer of vibration to the structure. All sleeve penetrations should also be stuffed with insulation and sealed on both sides with non-hardening caulking. Wherever pipes pass through sleeved floor penetrations at anchor points, neoprene-metal-neoprene pad should be inserted between the floor/sleeving and the pipe clamps.
- Noise propagation from the mechanical equipment, particularly supply fans, pumps, and air conditioning equipment should be verified to ensure acceptable interior noise levels as defined herein.

- All mechanical equipment shall be installed with adequate vibration isolation.
- The city also requires an assessment of the noise impact of the project on the existing environment. In this regard, the noise levels from outdoor mechanical equipment such as possible rooftop equipment, air conditioning condensing units, etc. shall not exceed the NPC-300 limits defined by MECP. Noise controls such as quiet equipment selection will ensure low noise impact potential, i.e., selection of any at grade equipment that is typically less than 70 dBA at 1m or as required. Achieving these levels may entail acoustic upgrades to selected mechanical-electrical system designs. Air-conditioning condensing units shall be selected for low noise; and where an AHRI sound level rating of 7.5 bels or less is appropriate. Furthermore, the equipment shall be in a noise insensitive area that minimally impacts both on-site and off-site points of reception. It is further recommended that an acoustic design review of the proposed demising separations and mechanical equipment be undertaken per TARION 19R.
- Please note that the TARION Bulletin 19R Certification process requires that construction (architectural and mechanical also) drawings and the “as built” condition of the project be tested as required to confirm acoustic performance and to meet the relevant building code, and best practices requirement for acoustical design.

4.0 INDOOR AND OUTDOOR NOISE REQUIREMENTS

4.1 Outdoor Noise Levels

The project also includes an outdoor living area (OLA) playground amenity space located towards the southwest corner of the site as shown in Figure 2b. Unabated sound levels at this location have been predicted to be greater than 60 dBA and therefore the proposed OLA playground shall require acoustic protection in the form of an acoustic fence.

The sound levels of the abated outdoor amenity space can be reduced to below 60 dBA, and into the range of 58 dBA with an acoustic barrier height of 2.4m. For information purposes, an acoustic barrier wall of at least 2.4m in height is recommended and this acoustic barrier serves to reduce the sound levels in the designated outdoor living areas of the project to within acceptable limits as defined by MECP and the City. Any acoustic barrier is proposed to be continuous with no gaps nor discontinuities and meet a surface weight of at least 4 psf (20kg/sqm). Transparent acrylic panels that meet these requirements are a viable and an acceptable alternative to the `traditional’ masonry and composite panel sound walls that are often opaque. As noted, sound levels in the OLA playground situated at the southwest of the proposed townhomes have been predicted to be

in the range of 58 dBA and are therefore within acceptable sound limits as defined by MECP. In addition, warning Clauses A and C, as shown in Appendix D, will also be required to inform future building owner/occupants within this new development of potential noise from the vehicular transportation corridors in the area.

4.2 Indoor Noise Levels

The predicted sound levels at the key receptor areas are summarized in Table 2 for road noise under both daytime and night-time conditions. Window glazing that meets the minimum requirements defined by the Ontario Building Code will suffice for most of the project, particularly at the lower floor levels as defined in this project. For instance, a double-glazed thermal pane window system such as 6-16-6 mm (i.e., pane-gap-pane) or equivalent should suffice for most of the project as summarized in Table 3. Upgraded window glazing that is beyond the minimum requirements of the Ontario Building Code (OBC) is applicable for the west façade. The proposed façade design and construction that is required to meet OBC thermal/energy requirements is expected to exceed the site-specific minimum requirements for environmental noise control.

Since the predicted night-time sound levels at the upper storeys of the proposed buildings exceed 60 dBA, central air conditioning is required for noise control reasons and therefore Warning Clause B, as described in Appendix D will also apply.

The façade design, glazing calculations and noise control recommendations were based on an exterior wall to window area of 40%. This translates into approximate wall to floor area ratio of about 25 to 30%. The corresponding window to floor area ratios is about 30% and 40% for bedrooms and living rooms, respectively. The effective window glazing requirement is a direct function of the size of the window relative to the room floor area. A higher ratio of glazing in comparison to the ratios used in this study would entail a higher acoustic performance rating for glazing construction; similarly, a lower ratio means that the glazing requirement can be relaxed.

The operable window glazing for living rooms and bedrooms for the north and west facades of Tower A; particularly, at the upper storeys are to be designed to meet acoustic performance that is in the range of approximately STC 39. Laminated window glazing may be considered as a space saving option to thicker monolithic glazed sections in meeting STC values that are typically greater than STC 38. The glazing requirements shall be fulfilled by a qualified supplier of acoustically rated window glazing and frame construction. A preliminary window glazing and façade design schedule for each key façade element or area (i.e., exterior doors, wall, etc.) of the project is given in Table 3. It is proposed that any window glazing schedules provided by a supplier will be reviewed by the acoustical consultant to ensure conformance with the recommendations in this report as well as the requirements of TARION Bulletin 19R.

4.3 Noise Impact of the Development on Itself

Preliminary noise and vibration control guidelines pertaining to the noise and vibration controls within the residential building are presented in section 3.3 of this noise and vibration impact study. It should be noted that limited information on the building (i.e., no detailed description of proposed building construction or proposed mechanical and electrical equipment) was available at the time that this report was prepared. Drawing review, acoustic certification and testing of building details as well as mechanical and electrical drawings is recommended to satisfy the TARION Bulletin 19R certification requirements.

5.0 CONCLUSIONS

This environmental noise and vibration impact study (ENVIS) has been prepared to address potential road traffic noise as well as noise and vibration impact potential from the proposed public transportation LRT corridors on the proposed development. This ENVIS was completed by examining the individual contributions of the various nearby local roads and proposed near and distant major transportation corridors. Applicable noise control measures which include a 2.4m acoustic barrier for the playground/OLA, upgraded window glazing in areas of high noise exposure as well as warning clause provisions have been recommended such that the MECP noise guidelines can be met at affected facades and at designated outdoor amenity locations. The recommended noise control measures are summarized accordingly in this report. The recommendations listed herein have been robustly determined for the subject study area and the findings are consistent with the expected requirements for residential developments adjacent to major arterial roadways, highways and transportation corridors as described.

The study also addresses potential stationary noise sources located within about 300m of the study area and facilities located 50m or greater are of minor impact and represent negligible potential for adverse noise impact. This condition looks primarily at the worst cast where future elevated receptors (open window scenario) may have a direct sight line to existing and/or planned facilities.

This noise and vibration impact study has also considered the noise impact of the project on the surrounding community and environment. Recommendations pertaining to the selection of quiet AC condensing units are provided to ensure project compatibility. This study also provides detailed recommendations and guidelines to address the potential noise impact of the development on itself.

In summary, as required for ZBA and SPA, and with the implementation of the recommendations outlined in this report, the proposed development shall be within acceptable sound level limits as defined by the City, MECP and other review authorities.

6.0 REFERENCES

1. Ontario MECP, NPC- 300, Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning.
2. Ontario Line Technical Advisor, Contract RFS-2019-NAFC-110, Draft Noise and Vibration Impact Assessment Report, February 2022.
3. City of Mississauga, Noise Control, Bylaw No.0360-1979, 2024.
4. MOEE/GO Protocol for Noise and Vibration Assessment for the Proposed Eglinton West Rapid Transit Line (1983).
5. Ministry of the Environment's STAMSON/STEAM Computer Programme, (Version 5.04), 1989.
6. Ministry of the Environment Publication D-6, Compatibility between Industrial Facilities and Sensitive Land Uses, July 1995.
7. U.S Federal Transit Administration , FTA – VA- 90 – 1003-06, Transit Noise and Vibration Impact Assessment.
8. Hurontario-Main LRT Project, Environmental Project Report 508956-3210-4ERA-0001, June 2014.
9. LEA Consulting Ltd. Transportation Impact Study, Proposed Mixed-Use Development, June 4th, 2021.
10. Doracin Terra Strategies Ltd. Transportation Impact Study , 3085 Hurontario Street PN:2020-72, July 2021.

APPENDIX A SUMMARY TABLES

Table 1a: Projected Road Traffic Volumes (see Appendix for Traffic Data from City)

Parameters	QEW WB	QEW EB	QEW Merge Lane	Hurontario St. NB	Hurontario St. SB	North Service Road
Projected 2040 AADT	107433	107433	14808	25489	27701	11970
No. of Lanes	3	3	2	2	2	2
Percentage of Medium Trucks	5%	5%	3	3	3	3
Percentage of Heavy Trucks	12%	12%	3	3	3	3
Speed Limit (km/hr)	100	100	80	50	50	50
Grade	<2%	<2%	<2%	<2%	<2%	<2%

Table 1b: Projected LRT Volumes (various ENIA references)

Parameters	Hazel McCallion LRT
Daily Volumes (0700-2300)	288
Nighttime Volumes (2300-0700)	Up to 80
Estimated Length of trains, m (#cars)	80-100 (4 to 5)
Estimated Start of Service	2026
Estimated Speed Range (kph)	Up to 80
Grade/Elevated	Flat, up to 0.7m, <2% gradient
Estimated Duration of Construction	2026

Table 2: Calculated Noise Levels Due to Projected Road Traffic dBA & L_{eq} (all in dBA)
****Calculated Noise levels at 50-60 Harborn Road**

Location/Floor*	Height (m)	Day Sound Level (dBA)	Night Sound Level (dBA)	Daytime Level (dBA) w/ Acoustic Barrier for designated OLA
POR1	1.5	58	58	-
POR1	4.5	59	59	-
POR1	10.5	62	62	-
POR2	1.5	60	60	-
POR2	4.5	61	61	-
POR2	10.5	63	63	-
POR3	1.5	61	61	-
POR3	4.5	62	62	-
POR3	10.5	64	64	-
POR4	1.5	61	61	-
POR4	4.5	62	62	-
POR4	10.5	64	64	
POR5	1.5	60	60	
POR5	4.5	61	61	
POR5	10.5	64	63	
POR_OLA-REC Playground	1.5	58	<58	**Acoustic barrier, height 2.4m**

***See Figures 2a, 2b and 2c for designated noise assessment locations within the proposed project**

Table 3: Operable Window Glazing and Façade Design Schedule for 50-60 Harborn Road

Location/Facade	LR STC	LR glazing (pane-gap-pane) mm	BR STC	BR (pane-gap-pane) mm
ALL South Façades: POR3	**35**	**6-16-6**	**39**	**6L-13-6L or 6-37-6mm**
ALL SE/SW Facades: POR4	**35**	**6-16-6**	**39**	**6L-13-6L or 6-37-6mm**
ALL NE/NW Facades: POR2,5	**34**	**6-13-6 mm**	**36**	**6-20-6**
ALL N Facades: POR1	**33**	**OBC**	**35**	**6-16-6**

Notes:

- LR-Denotes Living room or other daytime living areas; BR-denotes bedtime as designated nighttime living area
- STC- refers to Sound Transmission Class, an acoustic performance parameter for demising elements such as walls, windows, etc.
- Window assessment based on living room and bedroom window to floor area ratios of 40% and 30% respectively. Wall area based on a 50 to 63% wall/floor area ratio. Proposed masonry and/or stucco exterior wall will easily meet the minimum requirement for a simulated mansard exterior and built-up framing
- Recommended window glazing applies to operable pane sections. Non-operable and fixed quality glass windows that are fully sealed can be up to 3 `STC' points lower.
- Glazing specification based on pane-gap-pane thickness given in mm.
- *OBC denotes standard operable commercial thermal double pane construction meeting building code requirements, i.e., STC 34 or 6-13-6 mm (pane-gap-pane) or acoustic equivalent.
- **Laminated glass can be evaluated as an alternative for areas that require STC 38 or greater. For instance, at STC 39, a ***6L-13-6L*** mm laminated glass pane can be selected as equivalent to a 6-37-6 or 3-40-6mm double glazed thermopane.
- Entry Doors on SE and SW facades shall be well sealed and weather-stripped 44mm solid slab wood doors or equal and doors on NE and NW facades shall be well sealed and weather-stripped 44mm steel doors with insulated core or equal
- Final floor plan layouts and window glazing schedules will be reviewed by the acoustic engineer.

APPENDIX B REPORT FIGURES & PROJECT DRAWINGS

Figure 1a: 50 & 60 Harborn Rd Key Area and Aerial Plan Views, NTS

Figure 1b: Key Plan showing Proposed Townhouse Development at 50 & 60 Harborn Road, NTS

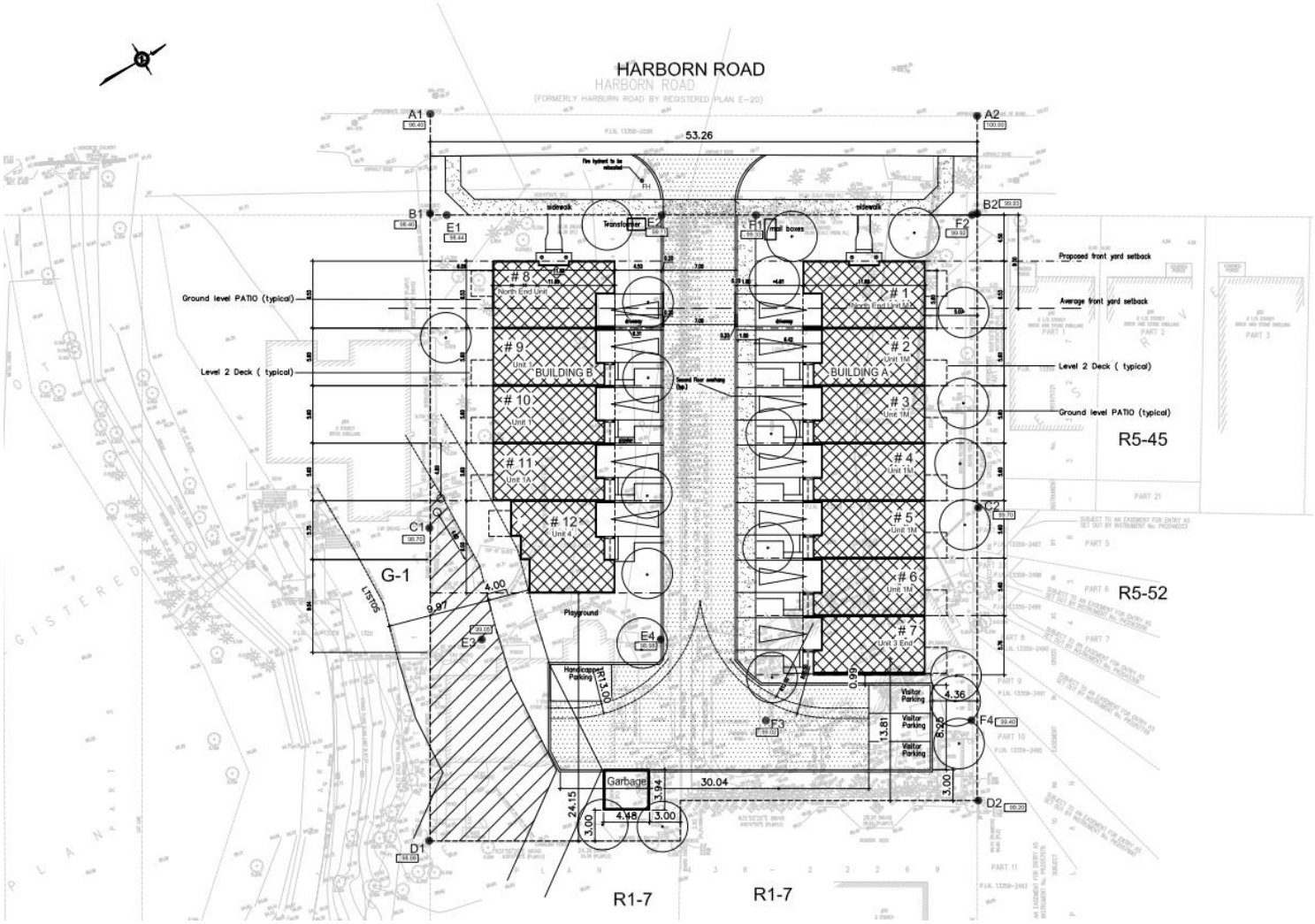


Figure 1c: Key Plan showing Proposed Metrolinx LRT line

Figures 2: Selected Receptor Locations for Acoustic Analysis at 50 & 60 Harborn Road

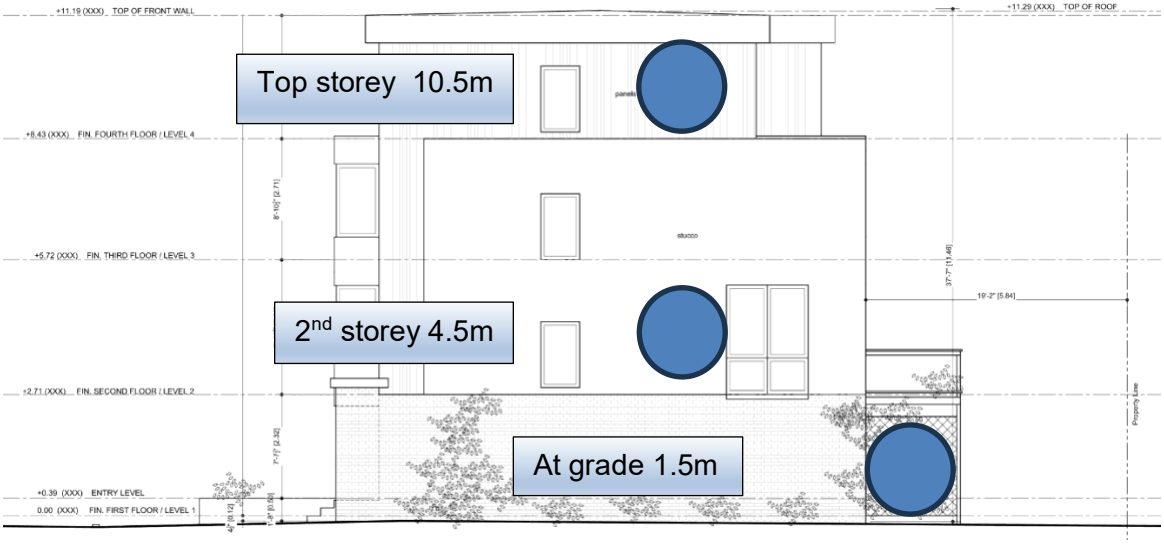


Figure 2a: Elevation view denoting locations for Acoustic Analysis at 50 & 60 Harborn Road

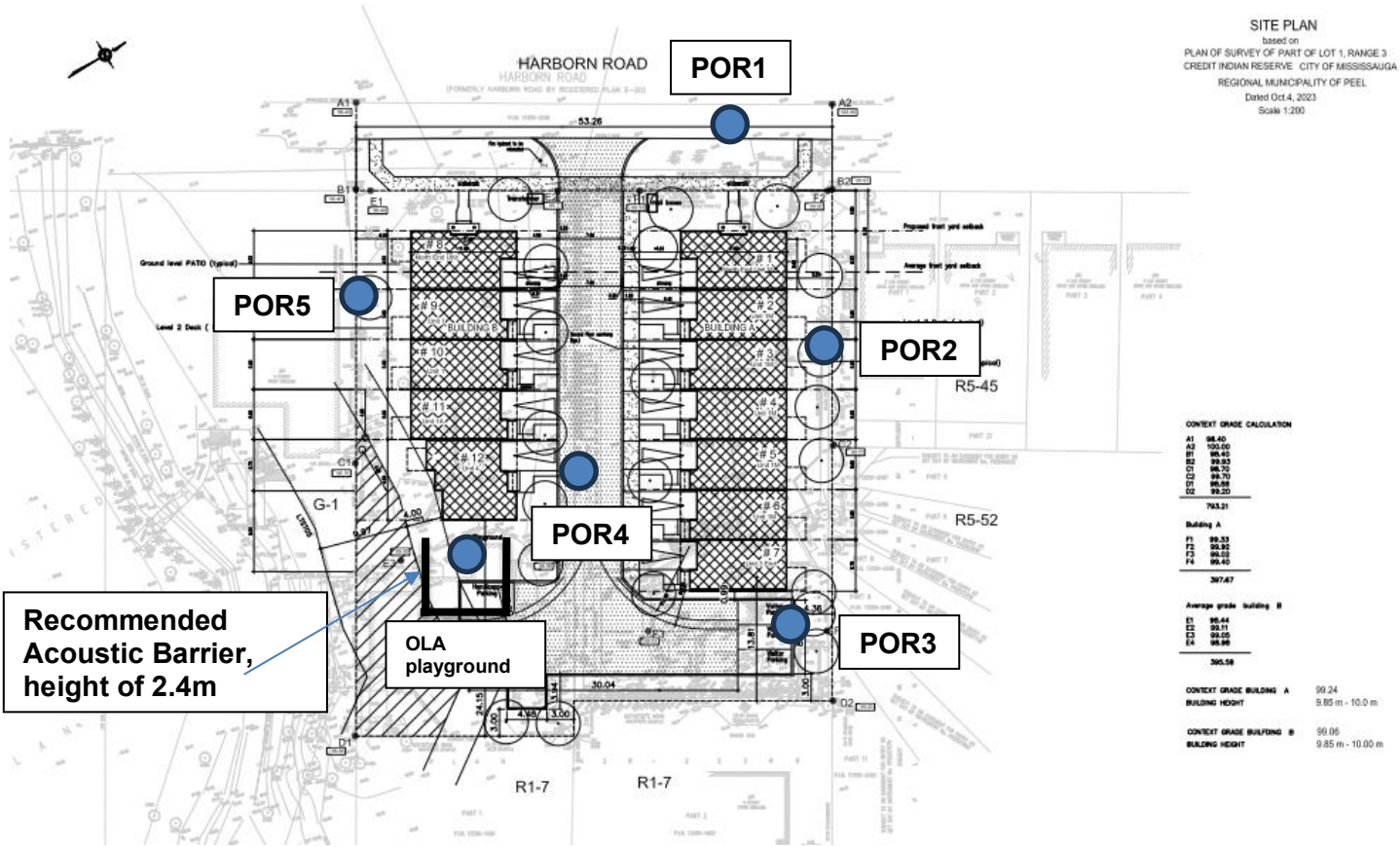
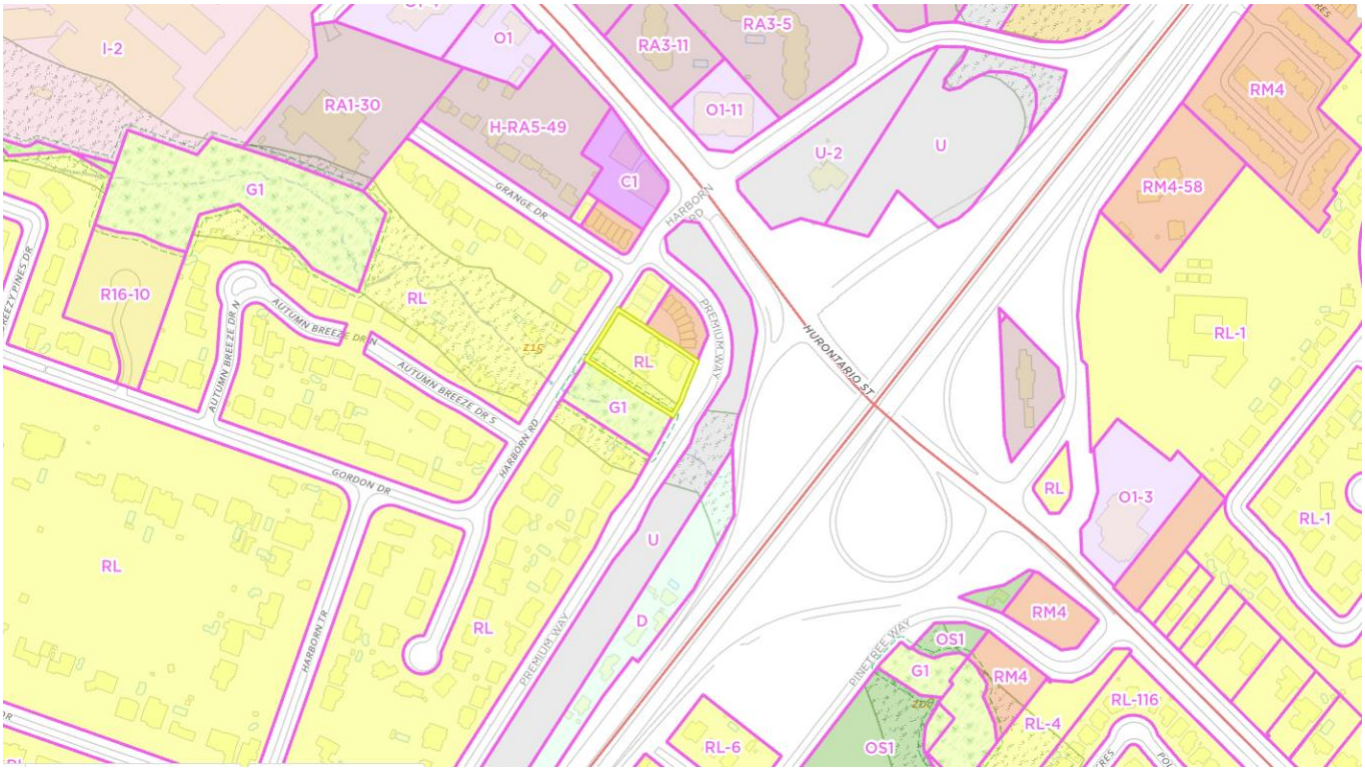


Figure 2b: Plan View of Proposed Site & Outdoor Amenity Living Area (OLA) & Assessment Locations

Figure 3: Zoning Map of 50 & 60 Harborn Road Study Area



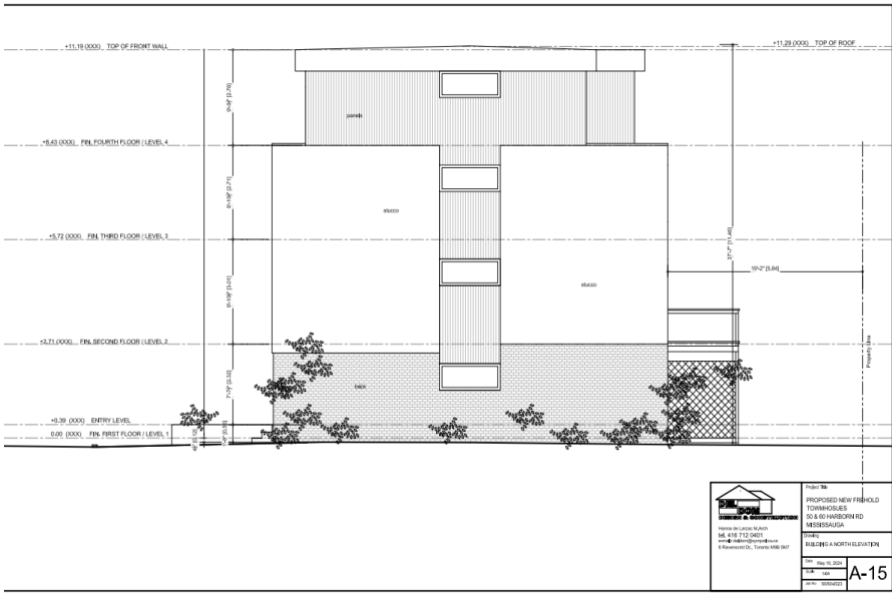
Legend

Additional Figures, showing floor plan views

Building A Front Elevation

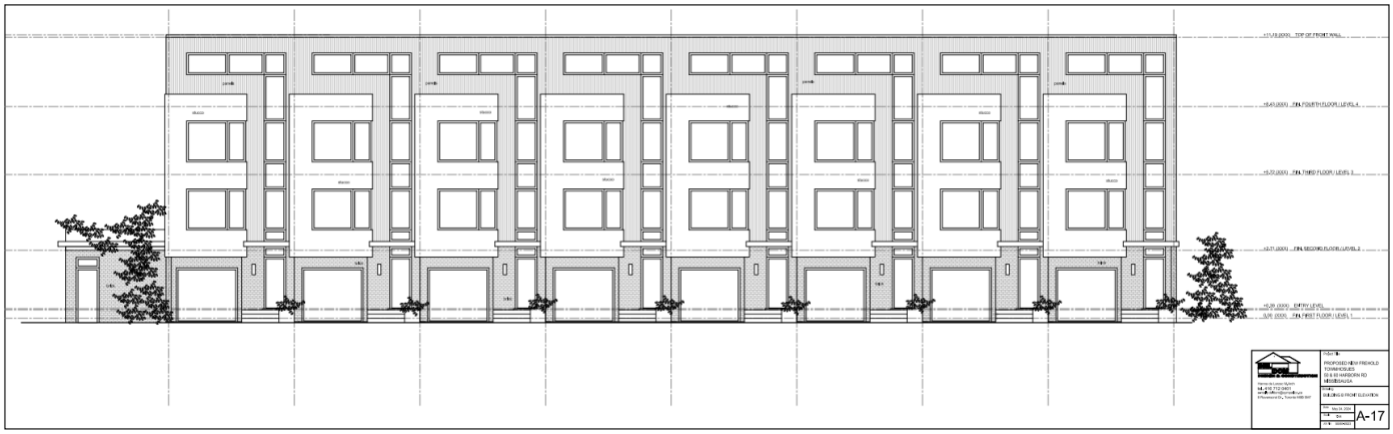
Building A Rear Elevation

Building A North Elevation



Building A South Elevation

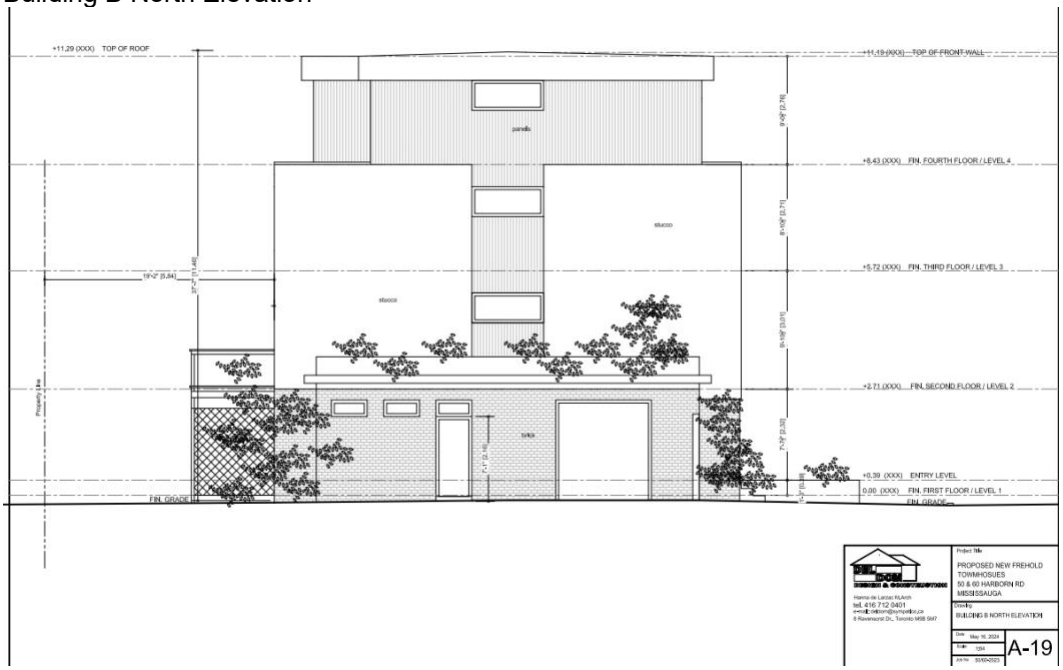
Building B Front Elevation



Building B Rear Elevation

Building B South Elevation

Building B North Elevation



APPENDIX C ROAD TRAFFIC DATA & STAMSON CALCULATION SAMPLES

QEW OLA_REC

STAMSON 5.0 NORMAL REPORT Date: 03-02-2026 10:11:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: qewola2.te Time Period: 24 hours
Description:

Road data, segment # 1: QEW WB

Car traffic volume : 107433 veh/TimePeriod *
Medium truck volume : 6472 veh/TimePeriod *
Heavy truck volume : 15533 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: QEW WB

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 2
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 215.00 m
Receiver height : 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.40 m
Elevation : 4.00 m
Barrier receiver distance : 5.75 m
Source elevation : 0.00 m
Receiver elevation : 4.00 m
Barrier elevation : 4.00 m
Reference angle : 0.00

Road data, segment # 2: QEW EB

Car traffic volume : 107433 veh/TimePeriod *
Medium truck volume : 6472 veh/TimePeriod *
Heavy truck volume : 15533 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: QEW EB

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 3
House density : 90 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 220.00 m
Receiver height : 1.50 m

Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.40 m
Elevation : 4.00 m
Barrier receiver distance : 5.75 m
Source elevation : 0.00 m
Receiver elevation : 4.00 m
Barrier elevation : 4.00 m
Reference angle : 0.00

Road data, segment # 3: QEW Merge L

Car traffic volume : 14808 veh/TimePeriod *
Medium truck volume : 473 veh/TimePeriod *
Heavy truck volume : 473 veh/TimePeriod *
Posted speed limit : 77 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: QEW Merge L

Angle1 Angle2 : -30.00 deg 30.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 1
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 134.00 m
Receiver height : 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -30.00 deg Angle2 : 30.00 deg
Barrier height : 2.40 m
Elevation : 4.00 m
Barrier receiver distance : 5.75 m
Source elevation : 0.00 m
Receiver elevation : 4.00 m
Barrier elevation : 4.00 m
Reference angle : 0.00

Road data, segment # 4: Huron N

Car traffic volume : 25489 veh/TimePeriod *
Medium truck volume : 813 veh/TimePeriod *
Heavy truck volume : 813 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 4: Huron N

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1
House density : 90 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 160.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 5: Huron S

Car traffic volume : 27701 veh/TimePeriod *
Medium truck volume : 884 veh/TimePeriod *
Heavy truck volume : 884 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 5: Huron S

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1
House density : 90 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 145.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 6: North Serv

Car traffic volume : 11970 veh/TimePeriod *
Medium truck volume : 382 veh/TimePeriod *
Heavy truck volume : 382 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 6: North Serv

Angle1 Angle2 : 30.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1
House density : 90 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 216.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 7: LTR N/S

Car traffic volume : 0 veh/TimePeriod
Medium truck volume : 1152 veh/TimePeriod
Heavy truck volume : 0 veh/TimePeriod
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 7: LTR N/S

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1
House density : 90 %

Surface : 1 (Absorptive ground surface)
Receiver source distance : 152.00 m
Receiver height : 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 0.70 m
Reference angle : 0.00

Results segment # 1: QEW WB

Source height = 1.86 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
---+---+---+---
1.86 ! 1.50 ! 1.40 ! 5.40

ROAD (0.00 + 58.46 + 0.00) = 58.46 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.23 84.24 0.00 -14.21 -0.61 -5.00 0.00 0.00 64.42
-90 90 0.53 84.24 0.00 -17.68 -1.23 0.00 -6.86 0.00 58.46
-90 90 0.39 84.24 0.00 -16.02 -0.95 0.00 0.00 -7.21 60.06

Segment Leq : 58.46 dBA

Results segment # 2: QEW EB

Source height = 1.86 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
---+---+---+---
1.86 ! 1.50 ! 1.40 ! 5.40

ROAD (0.00 + 55.27 + 0.00) = 55.27 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.23 84.24 0.00 -14.34 -0.61 -5.00 0.00 0.00 64.30
-90 90 0.53 84.24 0.00 -17.84 -1.23 0.00 -9.90 0.00 55.27
-90 90 0.39 84.24 0.00 -16.16 -0.95 0.00 0.00 -7.20 59.93

Segment Leq : 55.27 dBA

Results segment # 3: QEW Merge L

Source height = 1.32 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

1.32 ! 1.50 ! 1.32 ! 5.32

ROAD (0.00 + 42.28 + 0.00) = 42.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-30	30	0.25	69.27	0.00	-11.84	-4.82	-5.00	0.00	0.00	47.60
-30	30	0.55	69.27	0.00	-14.70	-4.88	0.00	-5.57	0.00	44.12
-30	30	0.40	69.27	0.00	-13.33	-4.85	0.00	0.00	-8.81	42.28

Segment Leq : 42.28 dBA

Results segment # 4: Huron N

Source height = 1.32 m

ROAD (0.00 + 42.04 + 0.00) = 42.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	67.76	0.00	-17.07	-1.46	0.00	-7.20	0.00	42.04

Segment Leq : 42.04 dBA

Results segment # 5: Huron S

Source height = 1.32 m

ROAD (0.00 + 43.03 + 0.00) = 43.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	68.12	0.00	-16.36	-1.46	0.00	-7.28	0.00	43.03

Segment Leq : 43.03 dBA

Results segment # 6: North Serv

Source height = 1.32 m

ROAD (0.00 + 31.25 + 0.00) = 31.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
30	90	0.66	64.48	0.00	-19.23	-7.08	0.00	-6.92	0.00	31.25

Segment Leq : 31.25 dBA

Results segment # 7: LTR N/S

Source height = 0.50 m

ROAD (0.00 + 40.07 + 0.00) = 40.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.46	0.00	-16.70	-1.46	0.00	-7.24	0.00	40.07

Segment Leq : 40.07 dBA

Total Leq All Segments: 60.42 dBA

TOTAL Leq FROM ALL SOURCES: 60.42

QEW OLA_REC DAY LTR
STAMSON 5.0 SUMMARY REPORT Date: 14-06-2001 16:05:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: qewpor.te Time Period: 16 hours
Description: QEW OLAREC_DAY_LTR_N/S

Road data, segment # 1:

Car traffic volume : 0 veh/TimePeriod
Medium truck volume : 1152 veh/TimePeriod
Heavy truck volume : 0 veh/TimePeriod
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1:

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 2
House density : 90 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 151.00 m
Receiver height : 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 0.70 m
Reference angle : 0.00

Result summary
---

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.	0.50	40.37	40.37
Total			40.37 dBA

Total Leq FROM ALL SOURCES: 40.37
TRAFFIC DATA

Hurontario St between Bronte College CRT & Harborn Rd

Classification Details Report

Location: HURONTARIO ST btwn BRONTE COLLEGE CRT & HARBORN RD
Municipality: Mississauga
Both directions

Start Time	1 0-4.8	2 4.9-9	3 9.1-10	4 10.1-13	5 13.1-15.8	6 15.9-18.8	7 18.9-22.5	8 22.6-40	Grand Total
5/16/2018 12:00 AM	353	192	0	8	1	0	0	0	554
5/16/2018 1:00 AM	171	108	4	10	1	0	0	0	294
5/16/2018 2:00 AM	116	84	1	1	0	0	0	0	202
5/16/2018 3:00 AM	102	73	0	1	1	0	0	0	177
5/16/2018 4:00 AM	144	91	2	8	0	0	0	0	245
5/16/2018 5:00 AM	403	292	2	20	0	1	0	0	718
5/16/2018 6:00 AM	1048	550	10	17	7	3	3	1	1639
5/16/2018 7:00 AM	1774	743	10	33	11	19	4	6	2600
5/16/2018 8:00 AM	2145	924	13	37	20	19	5	6	3169
5/16/2018 9:00 AM	1578	829	8	45	10	5	1	2	2478
5/16/2018 10:00 AM	1557	863	17	39	13	13	8	1	2511
5/16/2018 11:00 AM	1748	846	13	41	11	6	4	3	2672
5/16/2018 12:00 PM	1851	905	15	32	16	7	4	1	2831
5/16/2018 1:00 PM	1802	883	21	28	10	7	3	0	2754
5/16/2018 2:00 PM	1997	872	16	49	24	15	4	2	2979
5/16/2018 3:00 PM	2186	966	10	45	12	7	7	3	3236
5/16/2018 4:00 PM	2186	933	20	20	11	12	4	3	3189
5/16/2018 5:00 PM	2198	881	6	23	10	9	3	2	3132

5/16/2018 6:00 PM	2123	913	10	21	13	13	2	2	3097
5/16/2018 7:00 PM	2061	872	9	23	7	8	4	0	2984
5/16/2018 8:00 PM	1774	781	9	24	11	8	4	2	2613
5/16/2018 9:00 PM	1653	729	9	20	11	6	3	2	2433
5/16/2018 10:00 PM	1052	536	3	10	8	1	0	2	1612
5/16/2018 11:00 PM	737	381	2	16	4	1	1	0	1142
Grand Total	32759	15247	210	571	212	160	64	38	49261
	1	2	3	4	5	6	7	8	Grand Total
Total %	66.50%	30.95%	0.43%	1.16%	0.43%	0.32%	0.13%	0.08%	100.00%

QEW

2021	10144	0.0	QEW	ERIN MILLS PKWY IC-126	MISSISSAUGA RD IC-130	4.1	147100
2021	10146	0.0	QEW	MISSISSAUGA RD IC-130	HWY 10 HURONTARIO ST IC-132	2.0	171700
2021	10150	0.0	QEW	HWY 10 HURONTARIO ST IC-132	CAWTHRA RD IC-134	2.2	177700
2021	10151	0.0	QEW	CAWTHRA RD IC-134	DIXIE RD(WBL) IC-136	1.8	192600
2021	16400	1.8	10	SOUTH SERVICE RD END OF NA	NORTH SERVICE RD START OF NA	0.5	N/A
2021	16400	0.0	10	HWY 2 LAKESHORE RD START OF NA	SOUTH SERVICE RD END OF NA	1.9	
2021	16410	0.3	10	NORTH SERVICE RD START OF NA	AT RAMPS 35 & 51 (W) END OF NA	4.6	
2021	16420	3.0	10	AT RAMPS 35 & 51 (W) END OF NA	AT RAMPS 26 & 61 (E) START OF NA	0.4	N/A
2021	16425	0.2	10	AT RAMPS 26 & 61 (E) START OF NA	RAMP 25 TO 401 EB FERNHILL WAY (W)	4.0	

A review of the two available historic counts at the intersection of Hurontario Street and South Service Road/QW Eastbound off-ramp revealed growth rates that ranged from a negative value to 18% per annum. Through discussion with City of Mississauga staff, GHD was directed to utilize a 3% growth rate along Hurontario Street. Similarly, a growth rate was also calculated for the QEW Off-Ramps, however it resulted in a negative growth rate. GHD reached out the MTO to establish a growth rate to be used, with a general 2% per annum growth rate suggested by the MTO.

The projected baseline 2022 traffic volumes for the a.m. and p.m. peak hours are summarized in **Figure 6**.

The historic and most recent turning movement count data from the MTO, City of Mississauga and Spectrum Traffic Inc. are provided in **Appendix B**.

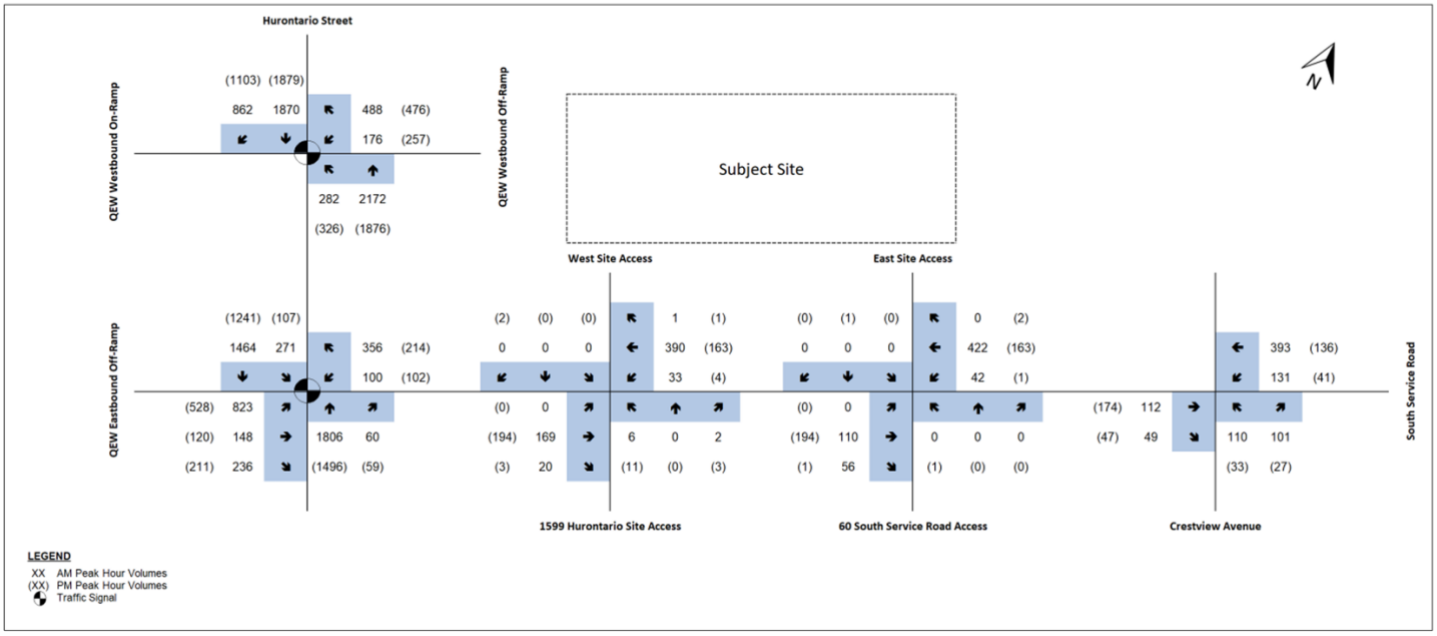


Figure 6 Baseline 2022 Existing Traffic Volumes

Hurontario Street

CITY OF MISSISSAUGA

SUMMARY OF ROAD TRAFFIC DATA

Road	QEW	Dixie Road	South Service Road
AADT*	218,000**	48,600***	15,000**
No. of Lanes	8	6	2
Speed (km/hr)	100	60	60
Trucks (%)	12	3.7 (day)/3.2 (night)	3
Medium/Heavy Split (%)	25/75	32/68 (day)/53/47 (night)	55/45
Gradient (%)	Up to 2	Up to 3	Up to 12
Day/Night Split (%)	67/33	91/9	90/10
Ultimate R.O.W. (m)	--	--	15

* AADT: Annual Average Daily Traffic.
** Ultimate
*** Planned

The AADT for 2018 is 49261

And combines

NB ~23600. &

SB-26600

APPENDIX D WARNING CLAUSES

CLAUSE A

"Purchasers are advised that despite the inclusion of noise control features in this development area and within the dwelling units, noise due to increasing road traffic may be of concern, occasionally interfering with the activities of the occupants as the noise levels may exceed the noise criteria of the Municipality and the Ministry of the Environment, Conservation and Parks."

CLAUSE B

"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 Municipality's and the Ministry of the Environment, Conservation and Parks noise criteria."

CLAUSE C: Metrolinx (Mississauga Hazel McCallion LRT) Warning Clause:

"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."

Appendix E: Noise and Vibration Management Strategies for the Construction and Operation of Planned Metrolinx LRT.

Information Sheet

Subway Program - The Ontario Line

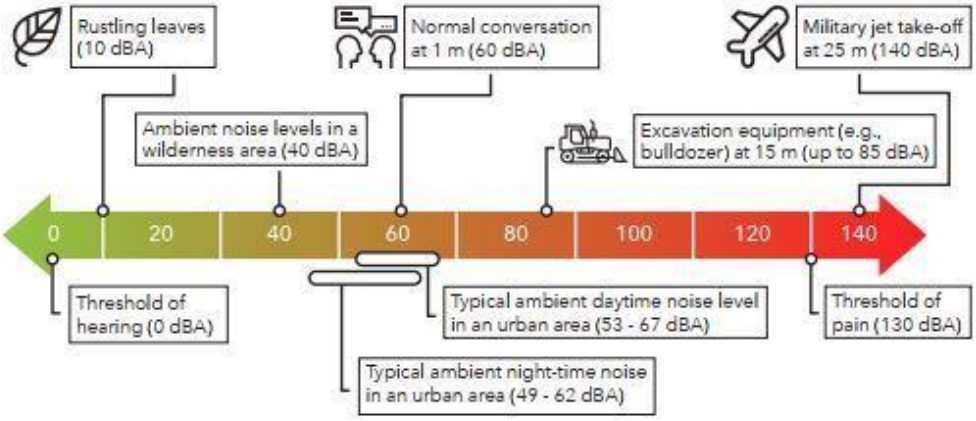
January 2020

Noise & Vibration Management Approach

Metrolinx is commited to continually improving our approach to managing noise and vibration. Metrolinx's Subway Program noise and vibration management approach will follow both the Ontario Ministry of the Environment and Energy/ GO Transit Protocol for Noise and Vibration Assessment (MOEE/GO Transit, 1994) and Ontario Ministry of the Environment and Energy/ Toronto Transit Commission Protocol for Noise and Vibration Assessment (MOEE/ TTC, 1993).

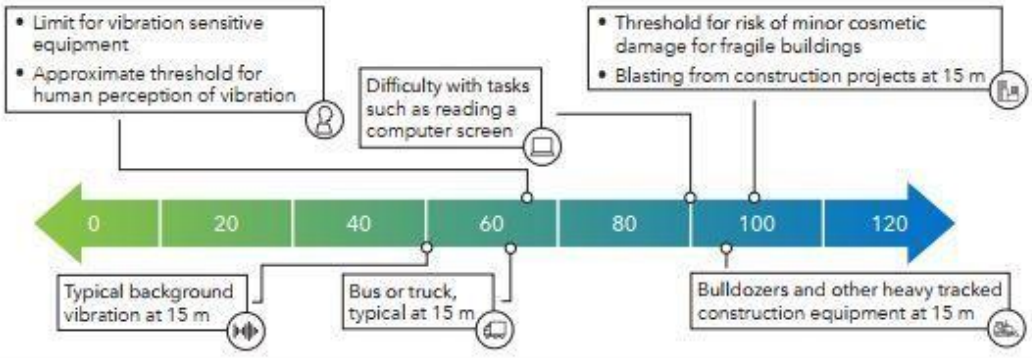
Comparing sources of noise (dBA)

Noise is one of the most frequent complaints about transit service operations, and it's particularly relevant to residences close to highly travelled transit routes. The graphic below compares sources of noise and their associated noise levels in dBA (A-weighted decibels, further defined in the table of terms on page 2).



Comparing sources of vibration (VdB)

The graphic below compares sources of vibration and their associated vibration levels in VdB (vibration decibels, further defined in the table of terms on page 2).



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Operations Noise and Vibration Management

Sources of Subway Train Noise and Vibration

Main sources of noise and vibration associated with subway trains are power equipment/ propulsion unit operation and interaction between rail infrastructure (tracks) and rolling stock (wheels). Track curves, rail roughness, rail welds, wheel flat spots and uneven wear contribute to subway train noise and vibration. Other variables include train size (length and weight) and speed.

In accordance with provincial guidance (MOEE/ GO Transit, 1994 and MOEE/ TTC, 1993), noise and vibration mitigation will be investigated if a project is predicted to exceed any of the following criteria:

Rail Noise and Vibration Limits Applicable at Residences

Effect	Metric	Limit
Air-borne Noise	Daytime Adjusted Noise Impact (16-hour average, 7 a.m. to 11 p.m.)	5 dB relative to the higher of pre-project sound levels or 55 dBA
	Night-time Adjusted Noise Impact (8-hour average, 11 p.m. to 7 a.m.)	5 dB relative to the higher of pre-project sound levels or 50 dBA
	Subway vehicle L_{passby}	80 dBA
Ground-borne Noise	Subway vehicle L_{passby}	35 dBA
Ground-borne Vibration	Vibration Velocity RMS	0.1 mm/s RMS (equivalent to 72 VdB)

Limits apply outside building, except ground borne noise.

In addition to the criteria above, subway stationary facilities such as traction power substations shall be designed to meet applicable sound level limits outlined in the MOE NPC-300 *Environmental Noise Guideline: Stationary and Transportation Sources - Approval and Planning.*

Terminology

Term	Definition
dBA	Noise level adjusted to how humans experience different frequencies.
VdB	Vibration level adjusted to how humans perceive vibration.
Air-borne noise	Noise transmitted by air.
Ground-borne noise	Noise generated by building/ structure components in response to ground vibration.
Ground-borne vibration	Vibration of building/ structure components in response to ground vibration.
L_{passby}	Represents allowable noise level associated with a train passing by.
Vibration Velocity RMS, or Root Mean Square	Measure of vibration amplitude and an indication of vibration energy.
Traction Power Substation	A facility that transforms the utility supply voltage for distribution to the trains.

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Potential Noise and Vibration Mitigation Measures

Metrolinx is committed to deploying state-of-the-art vehicle technologies and optimal maintenance practices to reduce noise and vibration at source as far as possible. Where noise and vibration are predicted to exceed applicable criteria, Metrolinx will deploy noise walls and other mitigation measures as warranted.

Potential Noise and Vibration Mitigation Measures

Reduce at Source	Reduce through operations	Interrupt noise & vibration to residents	Receptor-based mitigation
• Continuously welded rail, rail dampeners, quieter propulsion units, quieter heating and ventilation • Changes to project layout and access, alternate construction methods • Design subway stationary facilities (e.g., traction power substations) such that noise and vibration are minimized	• Optimal maintenance, timely monitoring and inspections of railway tracks and trains, track continuity	• Noise walls • Resiliently supported rail ties, high resilient fasteners, ballast mats, floating slabs • Trenches	• Window treatments, façade treatments • Building modifications

Some examples of noise and vibration mitigation measures are defined below:

Resiliently supported rail ties
Rail ties that are isolated from base structure or ballast to reduce vibration.

Noise reducing window treatments
Include insulated blinds and shutters that lessen noise.

Noise reducing façade treatments
Include usage of high mass façade materials such as stucco, concrete.

Trench
Ditch that acts as a vibration barrier to attenuate vibration travelling along ground surface.

Rail lubrication
Application of a friction-minimizing substance to train tracks/ wheels that reduces noise originating from wheel-track interaction and lessens rail and wheel wear.

Ballast mat
Continuous resilient mat for ballasted tracks installed beneath the ballast bed to offer vibration isolation and protection of the track components.

Rail dampener
A device attached to the sides of rails that reduces railway noise at its source by dampening the vibration level within the rail when the train passes by.

Floating slab
Concrete slabs that are supported by continuous or discrete isolation pads or steel spring mounts to reduce vibration.

Continuously welded rail
In this form of track, the rails are welded together to form one continuous rail, resulting in a smoother ride and less noise because trains can travel with less friction.

Noise wall
Wall that acts as a barrier to reduce the effect of airborne noise.

High resilient fasteners
Isolate rail from support structure; specially designed to be very compressible in the vertical direction to reduce vibration levels.

For more information

For more information about the Ontario Line and to download other materials, check out our website or contact:

www.metrolinx.com/ontarioline

ontarioline@metrolinx.com

416-202-5100

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Construction Noise and Vibration Management

Noise logger capturing ambient noise

Subway construction brings noise and vibration, and Metrolinx is committed to minimizing and managing these impacts.

Key elements of our approach to managing noise and vibration during construction:

- Before construction starts:
  - Establish a comprehensive public relations program to inform affected parties about the project's scope, schedule, noise and vibration management strategies, and communication and complaint resolution protocols.
  - Implement all necessary noise and vibration mitigation measures.
- During construction:
  - Monitor noise and vibration to inform implementation of additional mitigation measures, as necessary.
  - Address public complaints in a timely manner.

Long-term construction noise monitoring station, with solar power and remote telecommunications

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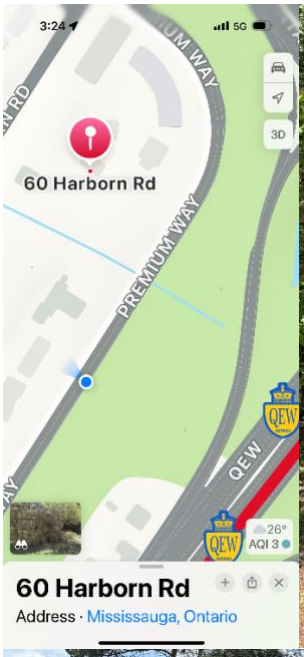
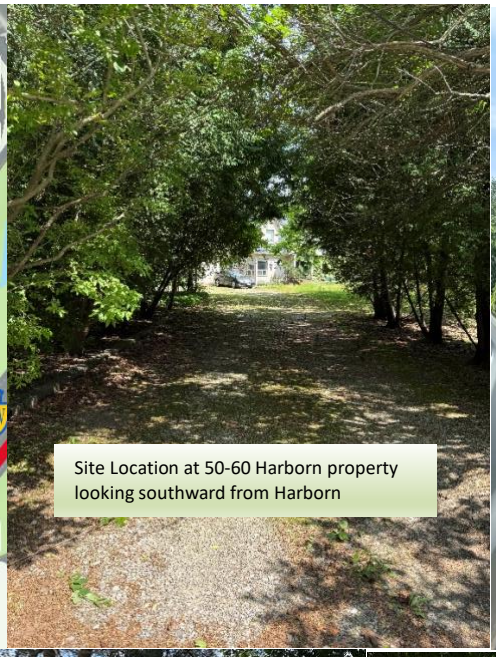
Appendix F: Site Measurements and Observations

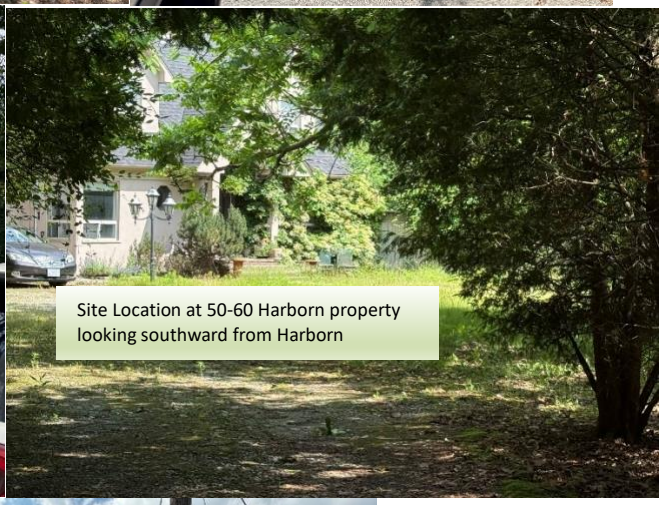




Site Location at 50-60 Harborn property looking southward from Harborn

Location @50-60 Harborn property; looking eastward from proposed project site.

Location on Harborn at N end of property looking at existing homes in area



Site Location at 50-60 Harborn property looking southward from Harborn

Location just south of and looking at min. 30m wooded tree screen

Location just south of QEW on south side of Premium Way and looking eastward (photo on right).

SOund data summary June 20, 2025 from about 315pm to 400 pm

SITE LEQ at 4.5m

62-63 dBA. june 20/25 315-325pm.
335-345 pm
South of wooded tree screen
Sunny 25-26C, wind from S/SW at 18-24kph gusts (i.e. POR is downwind)

TIME LST	Temp Definition °C	Dew Point Definition °C	Rel Hum Definition %	Precip. Amount Definition mm	Wind Dir Definition 10's deg	Wind Spd Definition km/h	Visibility Definition km	Stn Press Definition kPa	Hmdx Definition	Wind Chill Definition	Weather
15:00	25.6	13.3	46	29	24	24.1	99.30	**29**	LegendNANA		
16:00	25.2	14.6	51	24	18	24.1	99.29	**29**	**Mostly Cloudy**		

325-335 pm. at 1.5m on N side of dev ..59-60 dBA

Rush hour local traffic on Harborn and Premium Way
57 Harborn is critical Offsite POR across road
predict impact of AC and traffic..< 7.5 bels, <70 dBA@1m
55 dBA day limit. 50 dBA night