Environmental Noise Feasibility Study

759 Maple Avenue

Proposed Residential Development

City of Burlington

October 1, 2024
Project: 123-0391

Prepared for

Structured Creations Inc.

Prepared by



Brett Lipson, M.Eng., P.Eng.

Reviewed by



Guangsheng (Sam) Du, M.Sc., P.Eng.

VALCOUSTICS
Canada Ltd.

Version History

Version #	Date	Comments
1.0	April 30, 2024	Final – Issued to Client
2.0	October 1, 2024	Update based on changes to Site Plan and city comments

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Environmental Noise Feasibility Study

759 Maple Avenue

Proposed Residential Development

City of Burlington

EXECUTIVE SUMMARY

Valcoustics Canada Ltd. (VCL) previously prepared an Environmental Noise Feasibility Study dated April 30, 2024, in support of the Zoning By-law Amendment (ZBA) application submission to the City of Burlington. This update has been prepared to address changes to the Site Plan as well as comments from the City of Burlington.

The proposed development will consist of a 4-unit, 3-storey plus loft townhouse block. Each unit will have small private balconies and a rear yard.

The transportation noise source with the potential for significant noise impact onto the subject site is road traffic on Maple Avenue and the Queen Elizabeth Way (QEW). There are no stationary sources with the potential for significant noise impact on the proposed development.

The sound levels on the subject site have been determined and compared with the applicable Ministry of the Environment, Conservation and Parks (MECP) and the Region of Halton noise guideline limits to determine the need for noise mitigation.

To meet the applicable transportation noise source guideline limits, the noise mitigation requirements are:

- Exterior wall construction as shown on the elevation drawings (with the brick components meeting Sound Transmission Class (STC) 54 and the non-brick components meeting STC 37);
- Exterior windows meeting STC 27;
- Mandatory air conditioning for all dwelling units to allow windows to remain closed for noise control purposes; and
- A 2.0 m high sound barrier for the westernmost rear yard.

1.0 INTRODUCTION

VCL previously prepared an Environmental Noise Feasibility Study dated April 30, 2024, in support of the ZBA application submission to the City of Burlington. This update has been prepared to address changes to the Site Plan as well as comments from the City of Burlington.

The comments from the City of Burlington and responses are summarized in Appendix D.

The predicted sound levels and noise mitigation measures needed for the proposed development to comply with noise guidelines of the MECP and the Region of Halton are outlined herein.

1.1 THE SITE AND SURROUNDING AREA

The proposed development is located at 759 Maple Avenue in the City of Burlington and is bounded by:

- Existing low-rise residential dwellings to the north, east and south; and
- Maple Avenue, with Maple Park beyond, to the west.

The site is currently occupied by an existing dwelling that will be demolished as part of the development.

A Key Plan is included as Figure 1.

This report was prepared using the Site Plan prepared by Arcadis., last revised August 19, 2024. The Site Plan is shown as Figure 2.

1.2 THE PROPOSED DEVELOPMENT

The proposed development will consist of a 4-unit, 3-storey plus loft townhouse block. Each unit will have small (less than 4 m deep) private balconies and a rear yard.

2.0 NOISE SOURCES

2.1 TRANSPORTATION NOISE SOURCES

The main transportation noise source with potential for impact on the proposed development is road traffic on Maple Avenue and the QEW.

AADT volume applicable to the year 2017 was obtained from the City of Burlington Open Data website. A growth rate of 2% compounded annually was applied to obtain year 2034 volumes. Medium/heavy truck percentages were assumed to be 3% and 2%, respectively, of the total traffic volume. A day/night split of 90%/10% was assumed as is typical for well-travelled roadways.

Ultimate traffic data for the QEW was obtained from the Ministry of Transportation (MTO). The ultimate traffic volumes included both AADT and SADT volumes. To be conservative, the higher SADT volume was used in the analysis. Heavy and medium trucks were assumed to be 75% and 25% of the total truck volume provided, as recommended by the MTO for freeways. A day/night split of 67%/33% was assumed.

Other roadways are further removed from the subject site or have low traffic volumes and are not anticipated to have a significant noise impact on the subject site and thus have not been included in the assessment.

Table 1 summarizes the road traffic data. The road traffic data correspondence is included in Appendix A.

TABLE 1 ROAD TRAFFIC DATA

Roadway	Year	AADT[1]	% Trucks		Speed Limit (kph)	Day/Night Split (%)
			Medium	Heavy		
Maple Avenue[2]	2017 (2034)	16 059 (22 486)	3.0	2.0	50	90/10
QEW[3]	Ultimate SADT	282 000	3.0	9.0	100	67/33

Notes:

(1) AADT – Annual Average Daily Traffic

(2) AADT volume applicable to the year 2017 was obtained from the City of Burlington Open Data website. Truck percentages and day/night split were assumed. The volume shown in brackets was extrapolated to the year 2034 design condition using a 2% growth rate compounded annually.

(3) Ultimate SADT (Summer Annual Daily Traffic) and total truck percentage provided by MTO. Heavy and medium trucks were assumed to be 75% and 25% of the total truck percentage provided. The day/night split was assumed.

2.2 STATIONARY NOISE SOURCES

The existing Mapleview Shopping Centre is located at 900 Maple Avenue, approximately 200 m northwest of the subject site. The main noise sources associated with the shopping centre are the rooftop mechanical equipment and truck deliveries on site. Due to the distance separation, relatively high ambient road traffic noise from the intervening roadway (Maple Avenue) and the presence of existing residential development located at a closer setback distance, noise from this facility is not expected to have a significant impact on the subject site. Thus, this facility has not been considered further in the assessment.

The existing Burlington Gymnastics Club is located at 710 Maple Avenue, approximately 180 m southwest of the subject site. The main noise sources associated with this facility is anticipated to be the rooftop mechanical equipment. Due to the distance separation, relatively high ambient road traffic noise from the intervening roadway (Maple Avenue) and the presence of existing residential development located at a closer setback distance, noise from this facility is not expected to have a significant impact on the subject site. Thus, this facility has not been considered further in the assessment.

During the site visit by VCL staff on April 1, 2024, noise from the above facilities was not audible at the subject site.

3.0 ENVIRONMENTAL NOISE GUIDELINES

3.1 MECP PUBLICATION NPC-300

The applicable noise guideline limits for new residential development are those in MECP Publication NPC-300, "Environmental Noise Guideline, Stationary, and Transportation Sources-Approval and Planning". These are discussed briefly below and are summarized in Appendix B.

3.1.1 Transportation Noise Sources

3.1.1.1 Architectural Elements

In the daytime (0700 to 2300), the indoor criterion for road noise is $L_{eq\ Day}$(1) of 45 dBA for sensitive spaces such as living/dining rooms, dens and bedrooms. At night, the indoor criterion for road noise is $L_{eq\ Night}$(2) of 45 dBA for sensitive spaces such as living/dining rooms and dens and 40 dBA for bedrooms.

The architectural design of the building envelope (walls, windows, etc.) must provide adequate sound isolation to achieve the above indoor sound level limits applying the outdoor sound level predicted at the facades.

3.1.1.2 Ventilation

If the daytime sound level, $L_{eq\ Day}$, at the exterior face of a noise sensitive window is greater than 65 dBA, central air conditioning should be provided so that windows can be kept closed for noise control purposes. For daytime sound levels between 56 dBA and 65 dBA inclusive, there need only be the provision for adding air conditioning. A warning clause advising the occupant of the potential interference with some activities is also required. At nighttime, air conditioning would be required when the sound level exceeds 60 dBA ($L_{eq\ Night}$) at a noise sensitive window (provision for adding air conditioning is required when the sound level is greater than 50 dBA).

3.1.1.3 Outdoors

For Outdoor Living Areas (OLA's), the guideline objective is $L_{eq\ Day}$ of 55 dBA with an excess not exceeding 5 dBA considered acceptable if it is technically not practicable to meet the 55 dBA objective, providing warning clauses are also registered on title.

A balcony or elevated terrace is not considered an OLA unless it is:

- The only OLA for the occupant;
- at least 4 m in depth; and
- unenclosed.

(1) $L_{eq,\ Day}$ 16-hour energy equivalent sound level (0700-2300 hours).
(2) $L_{eq,\ Night}$ 8-hour energy equivalent sound level (0700-2300 hours).

3.2 REGION OF HALTON

The site is not located adjacent to any Regional Roads. Thus, there are no regional requirements over and above those of the MECP that apply.

4.0 NOISE IMPACT ASSESSMENT – TRANSPORTATION SOURCES

4.1 ANALYSIS METHOD

Using the road data in Table 1, the sound levels, in terms of $L_{eq\ Day}$ and $L_{eq\ Night}$, were determined using STAMSON V5.04 – ORNAMENT, the computerized road traffic noise prediction model of the MECP.

As requested by the City, reflective surface was used in the assessment of noise from Maple Avenue.

The daytime and nighttime sound levels at the building facades were determined at the top (loft) floor, worst-case height of 11 m. The rear yards are less than 6 m in depth. Thus, the daytime sound levels for the grade-level OLAs were calculated at a height of 1.5 m above grade, at the center of the space, in accordance with NPC-300.

Inherent screening of each building face due to its orientation to the noise source was taken into account. In addition, screening from the existing development in the vicinity was included in the assessment of the OLA's.

4.2 PREDICTED SOUND LEVELS

The highest unmitigated daytime/nighttime sound levels of 69 dBA/67 dBA are predicted to occur at the west facade of the building, with the most exposure to Maple Avenue and the QEW.

The highest unmitigated daytime OLA sound level is predicted to be 61 dBA at the rear yard of the westernmost unit.

Table 2 summarizes the unmitigated daytime and nighttime sound level predictions. A sample Stamson calculation is included as Appendix C.

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS

Location[(1)]	Source	Distance (m)[(2)]	$L_{eq\ Day}$ (dBA)	$L_{eq\ Night}$ (dBA)
A Northwest Corner (West Facade)	Maple Avenue	27	64	58
	QEW (Toronto Bound)	358	64	64
	QEW (Fort Erie Bound)	390	63	63
	TOTAL	–	**69**	**67**
B Northwest Corner (North Facade)	Maple Avenue	27	61	54
	QEW (Toronto Bound)	358	61	61
	QEW (Fort Erie Bound)	390	60	60
	TOTAL	–	**66**	**64**
C Southwest Corner (West Facade)	Maple Avenue	24	65	58
	QEW (Toronto Bound)	358	64	64
	QEW (Fort Erie Bound)	390	63	63
	TOTAL	–	**69**	**67**
D Southwest Corner (South Facade)	Maple Avenue	24	63	57
	QEW (Toronto Bound)	358	61	61
	QEW (Fort Erie Bound)	390	60	60
	TOTAL	–	**66**	**65**
E Westernmost Rear Yard (OLA)	Maple Avenue	27	59	–
	QEW (Toronto Bound)	362	55	–
	QEW (Fort Erie Bound)	394	54	–
	TOTAL	–	**61**	–

Notes:

(1) See Figure 2.

(2) Distance indicated is from the centreline of the noise source.

4.3 NOISE ABATEMENT REQUIREMENTS

The noise control measures can generally be classified into two categories which are interrelated, but which can be treated separately for the most part:

a) Architectural elements to achieve the indoor noise guidelines.

b) Design features to protect the OLA's.

Noise abatement requirements are summarized on Figure 2 and in Table 3 along with the notes to Table 3.

4.3.1 Indoors

4.3.1.1 Architectural Elements

The indoor noise guidelines for the transportation sources can be achieved by using appropriate construction for exterior walls, windows and doors. In determining the worst-case architectural requirements, the room dimensions and wall and window areas relative to the associated floor area were calculated using the floor plans and elevation drawings prepared by Structured Creations, last revised January 10, 2024. The elevation drawings show both brick veneer and non-brick facades. Brick veneer facades were assumed to meet STC 54 while non-brick facades were assumed to meet STC 37.

The worst-case location was determined to be the 3rd floor northwest corner primary bedroom. The north wall (brick) and window areas were calculated to be 31% and 30%, respectively. The west wall, brick and non-brick components, were calculated to be 29% and 30%, respectively.

To meet the indoor noise guideline limits, exterior windows meeting STC 27 would be required.

Note, the window frames themselves must be designed to ensure that the overall sound isolation performance for the entire window unit meets the sound isolation requirement. This must be confirmed by the window manufacturer through the submission of acoustical test data.

The final sound isolation requirements should be reviewed if the floor plans and elevations are changed.

4.3.1.2 Ventilation Requirements

The predicted sound levels are such that the townhouse block requires mandatory air conditioning to allow windows to remain closed for noise control purposes.

The air conditioning units shall be located such that they meet NPC-216.

4.3.2 Outdoors

The unmitigated OLA sound level at the westernmost rear yard is predicted to exceed 55 dBA. A 2.0 m high sound barrier is predicted to mitigate the daytime OLA sound levels to below 55 dBA.

The above sound barrier requirements were determined using assumed flat, level topography and should be checked once grading information is available.

The sound barriers must be of solid construction with no gaps, cracks or holes (except for small openings required for water drainage) and must have a minimum surface weight of 20 kg/m². A variety of materials are available, including concrete, masonry, glass, wood, specialty composite materials, or a combination of the above.

5.0 WARNING CLAUSES

Warning clauses are a tool to inform prospective owners/occupants of potential annoyance due to existing noise sources. Where the guideline sound level limits are exceeded, appropriate warning clauses should be registered on title or included in the development agreement that is registered on title. The warning clauses should also be included in Offers of Purchase and Sale and lease/rental agreements to make future occupants aware of the potential noise situation. Locations requiring warning clauses and the MECP recommended wording are given in Table 3.

TABLE 3 SUMMARY OF MINIMUM NOISE ABATEMENT REQUIREMENTS

Location	Air Conditioning(1)	Exterior Wall(2)	Exterior Window (2)	Sound Barrier(3)	Warning Clauses(4)
Proposed Townhouse Block	Mandatory	STC 54/37 (as shown on elevation drawings)	STC 27	2.0 m high at westernmost rear yard	A + B + C

Notes:

(1) Where methods must be provided to allow windows to remain closed for noise control purposes, a commonly used technique is that of air conditioning. The air conditioning units should be located such that they meet NPC-216.

(2) STC - Sound Transmission Class Rating (Reference ASTM-E413).

The requirements are based on the floor plans and elevation drawings prepared by Structured Creations, last revised January 10, 2024. The requirements should be checked if the plans are revised.

A sliding glass walkout door should be considered as a window and be included in the percentage of glazing.

(3) Sound barriers must be of solid construction with no gaps, cracks or holes and must have a minimum surface density of 20 kg/m². A variety of materials are available including wood, masonry, composites, plastics, earth berms, or a combination of materials.

(4) Warning clauses to be registered on title and be included in Offers of Purchase and Sale and Leases on designated units:

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

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

C. "Purchasers/tenants are advised that due to the proximity of the existing shopping centre and park, sound levels from these facilities may at times be audible."

(5) Conventional roof construction meeting Ontario Building Code requirements is satisfactory in all cases.

6.0 IMPACT OF THE PROJECT ON THE EXISTING ENVIRONMENT

The main source of noise associated with this development, with the potential for impact on surrounding buildings, is the mechanical equipment.

Mechanical equipment interfacing to the outdoors must comply with the MECP noise guideline limits in NPC-300 and NPC-216. By proper engineering design, all requirements can be met and no significant noise impact would be created for surrounding uses. Appropriate choice of location, equipment type, and noise control features should be considered during detailed design for such items as air conditioning units and air intakes and exhausts.

7.0 CONCLUSIONS

With the incorporation of the recommended noise mitigation measures, the applicable MECP noise guidelines can be met, and a suitable acoustical environment provided for the occupants.

The approvals and administrative procedures are available to ensure that the acoustical requirements are implemented. Warning clauses are recommended to advise the future occupants of the potential noise situation.

8.0 REFERENCES

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

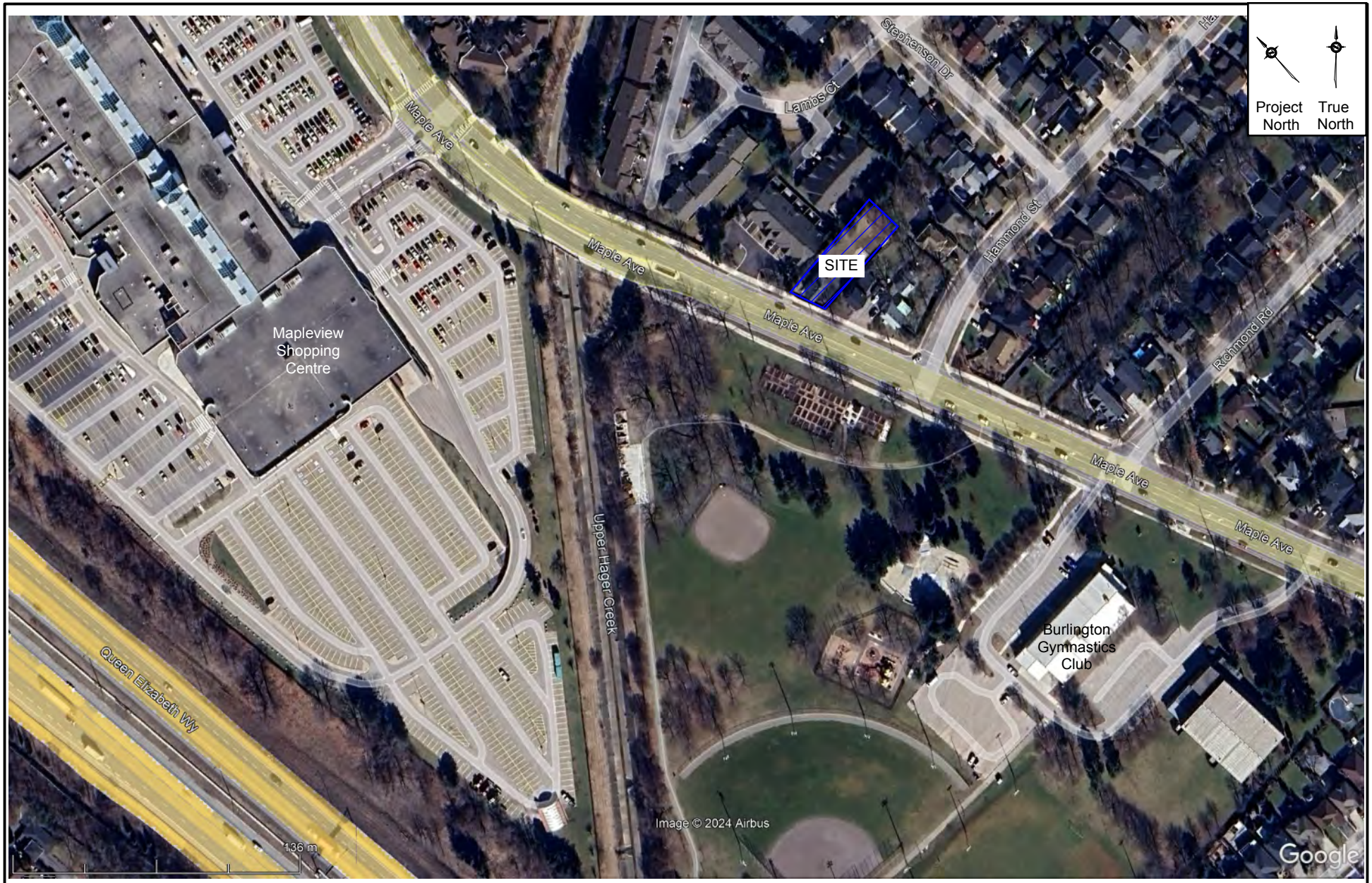
2. PC STAMSON 5.04, “Computer Program for Road Traffic Noise Assessment”, Ontario Ministry of the Environment.

3. Building Practice Note No. 56: "Controlling Sound Transmission into Buildings", by J. D. Quirt, Division of Building Research, National Council of Canada, September 1985.

4. “Environmental Noise Assessment in Land-Use Planning 1987", Ontario Ministry of the Environment, February 1987, ISBN 0-7729-2804-5.

5. “Environmental Noise Feasibility Study, 759 Maple Avenue, Proposed Residential Development, City of Burlington”, Valcoustics Canada Ltd., April 30, 2024, Project: 123-0391.

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759 Maple Avenue, Burlington - Noise v2_0.docx



VALCOUSTICS Canada Ltd.
consulting acoustical engineers

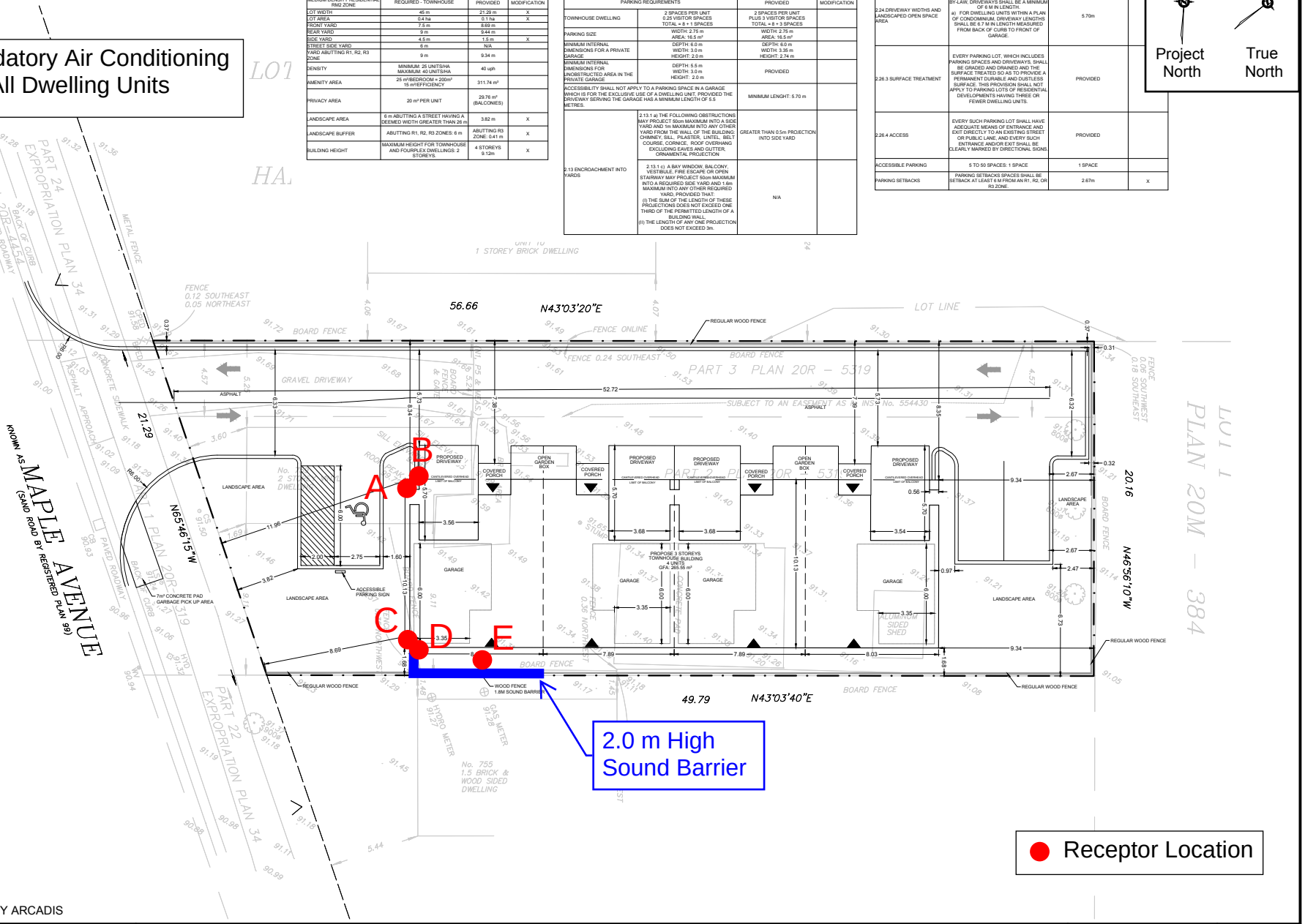
Title	Date	Figure
Key Plan	**Apr. 24, 2024**	**1**
Project Name: **759 Maple Avenue, Burlington**	Project No.: **123-0391**	

Mandatory Air Conditioning For All Dwelling Units

CITY OF BURLINGTON ZONING BY-LAW 2020			
MEDIUM DENSITY RESIDENTIAL RM2 ZONE	REQUIRED - TOWNHOUSE	PROVIDED	MODIFICATION
LOT WIDTH	45 m	21.29 m	X
LOT AREA	0.4 ha	0.1 ha	X
FRONT YARD	7.5 m	8.69 m	
REAR YARD	9 m	9.44 m	
SIDE YARD	4.5 m	1.5 m	X
STREET SIDE YARD	6 m	N/A	
YARD ABUTTING R1, R2, R3 ZONE	9 m	9.34 m	
DENSITY	MINIMUM: 25 UNITS/HA MAXIMUM: 40 UNITS/HA	40 uph	
AMENITY AREA	25 m²/BEDROOM = 200m² 15 m²/EFFICIENCY	311.74 m²	
PRIVACY AREA	20 m² PER UNIT	29.76 m² (BALCONIES)	
LANDSCAPE AREA	6 m ABUTTING A STREET HAVING A DEEMED WIDTH GREATER THAN 26 m	3.82 m	X
LANDSCAPE BUFFER	ABUTTING R1, R2, R3 ZONES: 6 m	ABUTTING R3 ZONE: 0.41 m	X
BUILDING HEIGHT	MAXIMUM HEIGHT FOR TOWNHOUSE AND FOURPLEX DWELLINGS: 2 STOREYS.	4 STOREYS 9.12m	X

CITY OF BURLINGTON ZONING BY-LAW 2020			
PARKING REQUIREMENTS		PROVIDED	MODIFICATION
TOWNHOUSE DWELLING	2 SPACES PER UNIT 0.25 VISITOR SPACES TOTAL = 8 + 1 SPACES	2 SPACES PER UNIT PLUS 3 VISITOR SPACES TOTAL = 8 + 3 SPACES	
PARKING SIZE	WIDTH: 2.75 m AREA: 16.5 m²	WIDTH: 2.75 m AREA: 16.5 m²	
MINIMUM INTERNAL DIMENSIONS FOR A PRIVATE GARAGE	DEPTH: 6.0 m WIDTH: 3.0 m HEIGHT: 2.0 m	DEPTH: 6.0 m WIDTH: 3.35 m HEIGHT: 2.74 m	
MINIMUM INTERNAL DIMENSIONS FOR UNOBSTRUCTED AREA IN THE PRIVATE GARAGE	DEPTH: 5.5 m WIDTH: 3.0 m HEIGHT: 2.0 m	PROVIDED	
ACCESSIBILITY SHALL NOT APPLY TO A PARKING SPACE IN A GARAGE WHICH IS FOR THE EXCLUSIVE USE OF A DWELLING UNIT, PROVIDED THE DRIVEWAY SERVING THE GARAGE HAS A MINIMUM LENGTH OF 5.5 METRES.		MINIMUM LENGHT: 5.70 m	
2.13 ENCROACHMENT INTO YARDS	2.13.1 a) THE FOLLOWING OBSTRUCTIONS MAY PROJECT 50cm MAXIMUM INTO A SIDE YARD AND 1m MAXIMUM INTO ANY OTHER YARD FROM THE WALL OF THE BUILDING: CHIMNEY, SILL, PILASTER, LINTEL, BELT COURSE, CORNICE, ROOF OVERHANG EXCLUDING EAVES AND GUTTER, ORNAMENTAL PROJECTION	GREATER THAN 0.5m PROJECTION INTO SIDE YARD	
	2.13.1 c) A BAY WINDOW, BALCONY, VESTIBULE, FIRE ESCAPE OR OPEN STAIRWAY MAY PROJECT 50cm MAXIMUM INTO A REQUIRED SIDE YARD AND 1.6m MAXIMUM INTO ANY OTHER REQUIRED YARD, PROVIDED THAT: (i) THE SUM OF THE LENGTH OF THESE PROJECTIONS DOES NOT EXCEED ONE THIRD OF THE PERMITTED LENGTH OF A BUILDING WALL; (ii) THE LENGTH OF ANY ONE PROJECTION DOES NOT EXCEED 3m.	N/A	

2.24 DRIVEWAY WIDTHS AND LANDSCAPED OPEN SPACE AREA	3. UNLESS OTHERWISE SPECIFIED IN THIS BY-LAW, DRIVEWAYS SHALL BE A MINIMUM OF 6 M IN LENGTH. a) FOR DWELLING UNITS WITHIN A PLAN OF CONDOMINIUM, DRIVEWAY LENGTHS SHALL BE 6.7 M IN LENGTH MEASURED FROM BACK OF CURB TO FRONT OF GARAGE.	5.70m	
2.26.3 SURFACE TREATMENT	EVERY PARKING LOT, WHICH INCLUDES PARKING SPACES AND DRIVEWAYS, SHALL BE GRADED AND DRAINED AND THE SURFACE TREATED SO AS TO PROVIDE A PERMANENT DURABLE AND DUSTLESS SURFACE. THIS PROVISION SHALL NOT APPLY TO PARKING LOTS OF RESIDENTIAL DEVELOPMENTS HAVING THREE OR FEWER DWELLING UNITS.	PROVIDED	
2.26.4 ACCESS	EVERY SUCH PARKING LOT SHALL HAVE ADEQUATE MEANS OF ENTRANCE AND EXIT DIRECTLY TO AN EXISTING STREET OR PUBLIC LANE, AND EVERY SUCH ENTRANCE AND/OR EXIT SHALL BE CLEARLY MARKED BY DIRECTIONAL SIGNS.	PROVIDED	
ACCESSIBLE PARKING	5 TO 50 SPACES: 1 SPACE	1 SPACE	
PARKING SETBACKS	PARKING SETBACKS SPACES SHALL BE SETBACK AT LEAST 6 M FROM AN R1, R2, OR R3 ZONE.	2.67m	X



BASE DRAWING BY ARCADIS

VALCOUSTICS Canada Ltd. consulting acoustical engineers

Title: **Site Plan**		Date: **Sep. 25, 2024**	Figure: **2**
Project Name: **759 Maple Avenue, Burlington**		Project No.: **123-0391**	

APPENDIX A
ROAD TRAFFIC DATA

Brett Lipson

From: Patrau, Florin <Florin.Patrau@burlington.ca>
Sent: Monday, February 12, 2024 10:29 AM
To: Brett Lipson
Subject: RE: Traffic Data Request (VCL File: 1230391)

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning Bret,

Unfortunately we don't have much data for this location, please feel free to use this link to access our open data portal for the aadt values https://navburl-burlington.opendata.arcgis.com/maps/fcd514cc40244d63b4a5b8fd3e337953/about

The rest of the info needed (# of lanes, speed, gradient) you will have to get it from Google Streetview. Percentage of trucks is not available however the area does not serve as a through trucks routes.

I hope this helps, for any questions please let me know.

Regards

Florin Patrau
Traffic Technologist
Transportation Services

(905) 335-7671 ext.7838
florin.patrau@burlington.ca

Our working hours may be different. You are not obligated to reply outside of your typical working hours.

From: Brett Lipson <blipson@valcoustics.com>
Sent: Tuesday, February 6, 2024 9:43 AM

Brett Lipson

From: Tai, Arthur (MTO) <Arthur.Tai@ontario.ca>
Sent: Thursday, February 15, 2024 5:08 PM
To: Brett Lipson
Subject: RE: Traffic Data Request (VCL File: 1230391)

Importance: Low

Hi Brett

In response to your request please find below the revised information available from this office for the QEW south of Fairview Street

2019 AADT = 170,300
2019 SADT = 197,600
Number of through lanes = 9
Ultimate AADT = 252,000
Ultimate SADT = 292,000
Posted Speed = 100 km/hr
Percentage of Trucks = 12%

Please note that the above information is estimated based upon our current knowledge of the area, which may be subject to change in the future.

If you require further information, please don't hesitate to contact me.

Regards,

Arthur

From: Brett Lipson <blipson@valcoustics.com>
Sent: Tuesday, February 6, 2024 9:35 AM
To: Tai, Arthur (MTO) <Arthur.Tai@ontario.ca>
Subject: Traffic Data Request (VCL File: 1230391)

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hello Arthur,

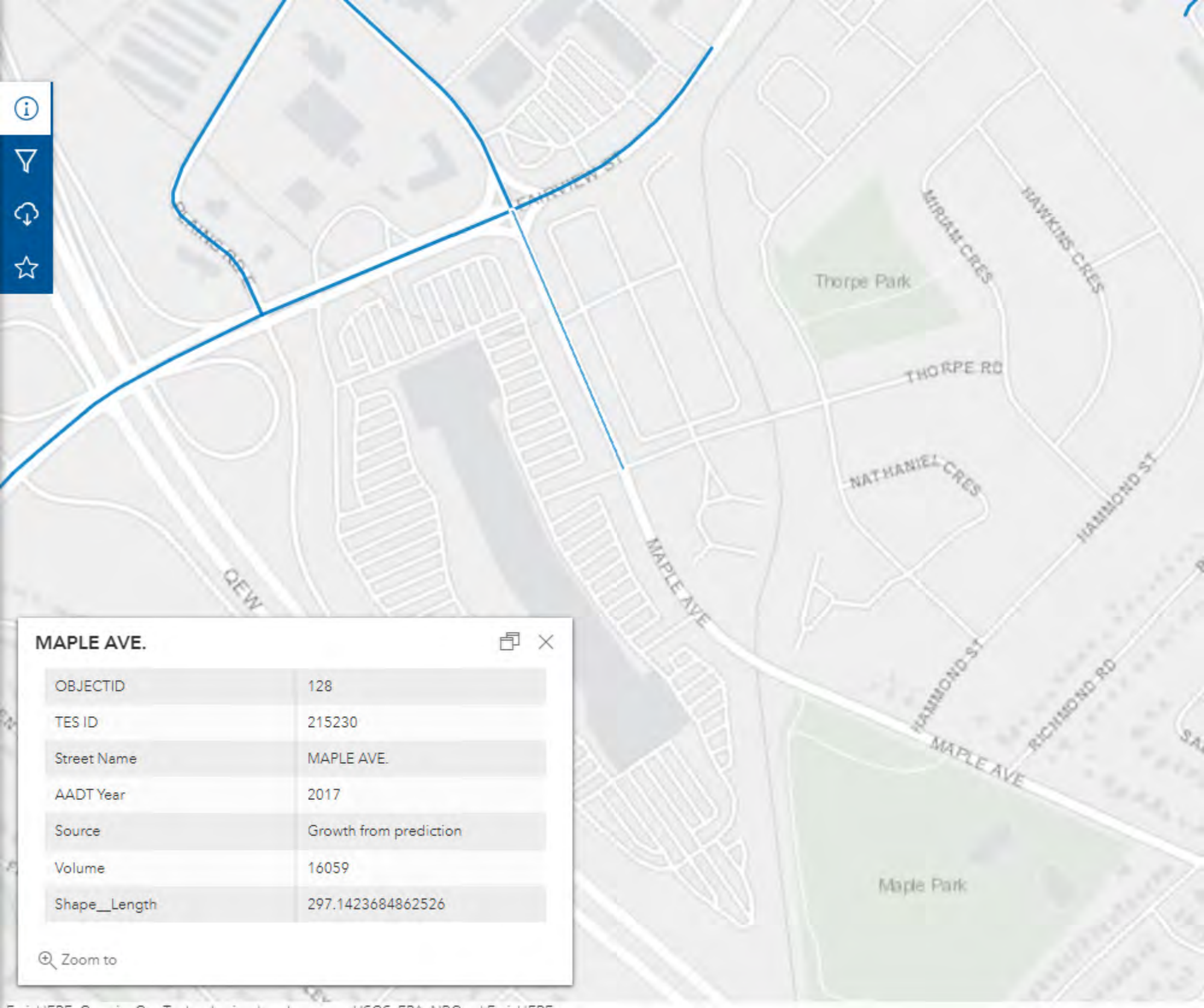
We are currently working on a noise report for a proposed development on Maple Avenue, south of Fairview St in Burlington.
We are looking for ultimate traffic data for the QEW, south of Fairview St. Can you please provide us with the data?

Thank you,

Brett Lipson, M.Eng., P.Eng.

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consulting acoustical engineers

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Fax: 905-764-6813
solutions@valcoustics.com



MAPLE AVE.

OBJECTID	128
TES ID	215230
Street Name	MAPLE AVE.
AADT Year	2017
Source	Growth from prediction
Volume	16059
Shape__Length	297.1423684862526

Zoom to

APPENDIX B
ENVIRONMENTAL NOISE GUIDELINES

APPENDIX B

ENVIRONMENTAL NOISE GUIDELINES

MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP)

Reference: MECP Publication NPC-300, October 2013: *"Environmental Noise Guideline, Stationary and Transportation Source – Approval and Planning"*.

SPACE	SOURCE	TIME PERIOD	CRITERION
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	Road	23:00 to 07:00	45 dBA
	Rail	23:00 to 07:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Sleeping quarters	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 0
Sleeping quarters	Road	23:00 to 07:00	40 dBA
	Rail	23:00 to 07:00	35 dBA
	Aircraft	24-hour period	NEF/NEP 0
Outdoor Living Areas	Road and Rail	07:00 to 23:00	55 dBA
Outdoor Point of Reception	Aircraft	24-hour period	NEF/NEP 30#
	Stationary Source		
	Class 1 Area	07:00 to 19:00(1)	50* dBA
		19:00 to 23:00(1)	50* dBA
	Class 2 Area	07:00 to 19:00(2)	50* dBA
		19:00 to 23:00(2)	45* dBA
	Class 3 Area	07:00 to 19:00(3)	45* dBA
		19:00 to 23:00(3)	40* dBA
	Class 4 Area	07:00 to 19:00(4)	55* dBA
		19:00 to 23:00(4)	55* dBA

SPACE	SOURCE	TIME PERIOD	CRITERION
Plane of a Window of Noise Sensitive Spaces	Stationary Source		
	Class 1 Area	07:00 to 19:00(1)	50* dBA
		19:00 to 23:00(1)	50* dBA
		23:00 to 07:00(1)	45* dBA
	Class 2 Area	07:00 to 19:00(2)	50* dBA
		19:00 to 23:00(2)	50* dBA
		23:00 to 07:00(2)	45* dBA
	Class 3 Area	07:00 to 19:00(3)	45* dBA
		19:00 to 23:00(3)	45* dBA
		23:00 to 07:00(3)	40* dBA
	Class 4 Area	07:00 to 19:00(4)	60* dBA
		19:00 to 23:00(4)	60* dBA
		23:00 to 07:00(4)	55* dBA

\# may not apply to in-fill or re-development.
* or the minimum hourly background sound exposure $L_{eq(1)}$, due to road traffic, if higher.
(1) Class 1 Area: Urban.
(2) Class 2 Area: Urban during day; rural-like evening and night.
(3) Class 3 Area: Rural.
(4) Class 4 Area: Subject to land use planning authority's approval.

Reference: MECP Publication ISBN 0-7729-2804-5, 1987: *"Environmental Noise Assessment in Land-Use Planning"*.

EXCESS ABOVE RECOMMENDED SOUND LEVEL LIMITS (dBA)	CHANGE IN SUBJECTIVE LOUDNESS ABOVE	MAGNITUDE OF THE NOISE PROBLEM	NOISE CONTROL MEASURES (OR ACTION TO BE TAKEN)
No excess (<55 dBA)	—	No expected noise problem	None
1 to 5 inclusive (56 to 60 dBA)	Noticeably louder	Slight noise impact	If no physical measures are taken, then prospective purchasers or tenants should be made aware by suitable warning clauses.
6 to 10 inclusive (61 - 65 dBA)	Almost twice as loud	Definite noise impact	Recommended.
11 to 15 inclusive (66 - 70 dBA)	Almost three times as loud	Serious noise impact	Strongly Recommended.
16 and over (>70 dBA)	Almost four times as loud	Very serious noise impact	Strongly Recommended (may be mandatory).

APPENDIX C

TRANSPORTATION NOISE CALCULATIONS

```
STAMSON 5.04        NORMAL REPORT        Date: 30-09-2024 12:34:44
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: nw_wfl.te            Time Period: Day/Night 16/8 hours
Description: A - Northwest Corner, West Facade


Road data, segment # 1: Maple (day/night)
-----------------------------------------
Car traffic volume  : 19226/2136  veh/TimePeriod  *
Medium truck volume :   607/67    veh/TimePeriod  *
Heavy truck volume  :   405/45    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  16059
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  17.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Maple (day/night)
---------------------------------------
Angle1   Angle2           : -71.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 2: QEW TO (day/night)
------------------------------------------
Car traffic volume  : 85658/42822 veh/TimePeriod  *
Medium truck volume :  2920/1460  veh/TimePeriod  *
Heavy truck volume  :  8760/4380  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 146000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67
```

```
Data for Segment # 2: QEW TO (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 358.00 / 358.00 m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: QEW FE (day/night)
------------------------------------------
Car traffic volume  : 85658/42822 veh/TimePeriod  *
Medium truck volume :  2920/1460  veh/TimePeriod  *
Heavy truck volume  :  8760/4380  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 146000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67

Data for Segment # 3: QEW FE (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 390.00 / 390.00 m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Maple (day)
--------------------------------

Source height = 1.19 m

ROAD (0.00 + 64.30 + 0.00) = 64.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -71     90   0.00  67.34   0.00  -2.55  -0.48   0.00   0.00   0.00  64.30
-------------------------------------------------------------------------------

Segment Leq : 64.30 dBA
```

Results segment # 2: QEW TO (day)

Source height = 1.73 m

ROAD (0.00 + 63.98 + 0.00) = 63.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.37	83.74	0.00	-18.85	-0.91	0.00	0.00	0.00	63.98

Segment Leq : 63.98 dBA

Results segment # 3: QEW FE (day)

Source height = 1.73 m

ROAD (0.00 + 63.47 + 0.00) = 63.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.37	83.74	0.00	-19.36	-0.91	0.00	0.00	0.00	63.47

Segment Leq : 63.47 dBA

Total Leq All Segments: 68.70 dBA

Results segment # 1: Maple (night)

Source height = 1.19 m

ROAD (0.00 + 57.77 + 0.00) = 57.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-71	90	0.00	60.81	0.00	-2.55	-0.48	0.00	0.00	0.00	57.77

Segment Leq : 57.77 dBA

Results segment # 2: QEW TO (night)

Source height = 1.73 m

ROAD (0.00 + 63.98 + 0.00) = 63.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.37	83.74	0.00	-18.85	-0.91	0.00	0.00	0.00	63.98

Segment Leq : 63.98 dBA

```
Results segment # 3: QEW FE (night)
-----------------------------------

Source height = 1.73 m

ROAD (0.00 + 63.47 + 0.00) = 63.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.37  83.74   0.00 -19.36  -0.91   0.00   0.00   0.00  63.47
-------------------------------------------------------------------------------

Segment Leq : 63.47 dBA

Total Leq All Segments: 67.26 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 68.70
                           (NIGHT): 67.26
```

```
STAMSON 5.04        NORMAL REPORT        Date: 30-09-2024 12:35:07
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: nw_nfl.te            Time Period: Day/Night 16/8 hours
Description: B - Northwest Corner, North Facade


Road data, segment # 1: Maple (day/night)
-----------------------------------------
Car traffic volume  : 19226/2136  veh/TimePeriod  *
Medium truck volume :   607/67    veh/TimePeriod  *
Heavy truck volume  :   405/45    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  16059
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  17.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Maple (day/night)
---------------------------------------
Angle1   Angle2           :  19.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 2: QEW TO (day/night)
------------------------------------------
Car traffic volume  : 85658/42822 veh/TimePeriod  *
Medium truck volume :  2920/1460  veh/TimePeriod  *
Heavy truck volume  :  8760/4380  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 146000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67
```

```
Data for Segment # 2: QEW TO (day/night)
----------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 358.00 / 358.00 m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: QEW FE (day/night)
------------------------------------------
Car traffic volume  : 85658/42822 veh/TimePeriod  *
Medium truck volume :  2920/1460  veh/TimePeriod  *
Heavy truck volume  :  8760/4380  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 146000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67

Data for Segment # 3: QEW FE (day/night)
----------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 390.00 / 390.00 m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Maple (day)
--------------------------------

Source height = 1.19 m

ROAD (0.00 + 60.75 + 0.00) = 60.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    19     90   0.00  67.34   0.00  -2.55  -4.04   0.00   0.00   0.00  60.75
-------------------------------------------------------------------------------

Segment Leq : 60.75 dBA
```

Results segment # 2: QEW TO (day)

Source height = 1.73 m

ROAD (0.00 + 60.97 + 0.00) = 60.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.37	83.74	0.00	-18.85	-3.93	0.00	0.00	0.00	60.97

Segment Leq : 60.97 dBA

Results segment # 3: QEW FE (day)

Source height = 1.73 m

ROAD (0.00 + 60.46 + 0.00) = 60.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.37	83.74	0.00	-19.36	-3.93	0.00	0.00	0.00	60.46

Segment Leq : 60.46 dBA

Total Leq All Segments: 65.50 dBA

Results segment # 1: Maple (night)

Source height = 1.19 m

ROAD (0.00 + 54.21 + 0.00) = 54.21 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
19	90	0.00	60.81	0.00	-2.55	-4.04	0.00	0.00	0.00	54.21

Segment Leq : 54.21 dBA

Results segment # 2: QEW TO (night)

Source height = 1.73 m

ROAD (0.00 + 60.97 + 0.00) = 60.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.37	83.74	0.00	-18.85	-3.93	0.00	0.00	0.00	60.97

Segment Leq : 60.97 dBA

Results segment # 3: QEW FE (night)

Source height = 1.73 m

ROAD (0.00 + 60.46 + 0.00) = 60.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.37	83.74	0.00	-19.36	-3.93	0.00	0.00	0.00	60.46

Segment Leq : 60.46 dBA

Total Leq All Segments: 64.19 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.50
(NIGHT): 64.19

```
STAMSON 5.04        NORMAL REPORT        Date: 30-09-2024 12:35:40
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: sw_wfl.te            Time Period: Day/Night 16/8 hours
Description: C - Southwest Corner, West Facade


Road data, segment # 1: Maple (day/night)
-----------------------------------------
Car traffic volume  : 19226/2136  veh/TimePeriod  *
Medium truck volume :   607/67    veh/TimePeriod  *
Heavy truck volume  :   405/45    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  16059
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  17.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Maple (day/night)
---------------------------------------
Angle1   Angle2           : -71.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  24.00 / 24.00  m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 2: QEW TO (day/night)
------------------------------------------
Car traffic volume  : 85658/42822 veh/TimePeriod  *
Medium truck volume :  2920/1460  veh/TimePeriod  *
Heavy truck volume  :  8760/4380  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 146000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67
```

```
Data for Segment # 2: QEW TO (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 358.00 / 358.00 m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: QEW FE (day/night)
------------------------------------------
Car traffic volume  : 85658/42822 veh/TimePeriod  *
Medium truck volume :  2920/1460  veh/TimePeriod  *
Heavy truck volume  :  8760/4380  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 146000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67

Data for Segment # 3: QEW FE (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 390.00 / 390.00 m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Maple (day)
--------------------------------

Source height = 1.19 m

ROAD (0.00 + 64.82 + 0.00) = 64.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -71     90   0.00  67.34   0.00  -2.04  -0.48   0.00   0.00   0.00  64.82
-------------------------------------------------------------------------------

Segment Leq : 64.82 dBA
```

Results segment # 2: QEW TO (day)

Source height = 1.73 m

ROAD (0.00 + 63.98 + 0.00) = 63.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.37	83.74	0.00	-18.85	-0.91	0.00	0.00	0.00	63.98

Segment Leq : 63.98 dBA

Results segment # 3: QEW FE (day)

Source height = 1.73 m

ROAD (0.00 + 63.47 + 0.00) = 63.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.37	83.74	0.00	-19.36	-0.91	0.00	0.00	0.00	63.47

Segment Leq : 63.47 dBA

Total Leq All Segments: 68.90 dBA

Results segment # 1: Maple (night)

Source height = 1.19 m

ROAD (0.00 + 58.28 + 0.00) = 58.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-71	90	0.00	60.81	0.00	-2.04	-0.48	0.00	0.00	0.00	58.28

Segment Leq : 58.28 dBA

Results segment # 2: QEW TO (night)

Source height = 1.73 m

ROAD (0.00 + 63.98 + 0.00) = 63.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.37	83.74	0.00	-18.85	-0.91	0.00	0.00	0.00	63.98

Segment Leq : 63.98 dBA

```
Results segment # 3: QEW FE (night)
-----------------------------------

Source height = 1.73 m

ROAD (0.00 + 63.47 + 0.00) = 63.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.37  83.74   0.00 -19.36  -0.91   0.00   0.00   0.00  63.47
-------------------------------------------------------------------------------

Segment Leq : 63.47 dBA

Total Leq All Segments: 67.32 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 68.90
                           (NIGHT): 67.32
```

STAMSON 5.04 NORMAL REPORT Date: 30-09-2024 12:36:01
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: sw_sfl.te Time Period: Day/Night 16/8 hours
Description: **D - Southwest Corner, South Facade**

Road data, segment # 1: Maple (day/night)

Car traffic volume : 19226/2136 veh/TimePeriod *
Medium truck volume : 607/67 veh/TimePeriod *
Heavy truck volume : 405/45 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 16059
Percentage of Annual Growth : 2.00
Number of Years of Growth : 17.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Maple (day/night)

Angle1 Angle2 : -90.00 deg 19.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 24.00 / 24.00 m
Receiver height : 11.00 / 11.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: QEW TO (day/night)

Car traffic volume : 85658/42822 veh/TimePeriod *
Medium truck volume : 2920/1460 veh/TimePeriod *
Heavy truck volume : 8760/4380 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 146000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 9.00
Day (16 hrs) % of Total Volume : 66.67

```
Data for Segment # 2: QEW TO (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 358.00 / 358.00 m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: QEW FE (day/night)
------------------------------------------
Car traffic volume  : 85658/42822 veh/TimePeriod  *
Medium truck volume :  2920/1460  veh/TimePeriod  *
Heavy truck volume  :  8760/4380  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 146000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67

Data for Segment # 3: QEW FE (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 390.00 / 390.00 m
Receiver height           :  11.00 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Maple (day)
--------------------------------

Source height = 1.19 m

ROAD (0.00 + 63.12 + 0.00) = 63.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     19   0.00  67.34   0.00  -2.04  -2.18   0.00   0.00   0.00  63.12
-------------------------------------------------------------------------------

Segment Leq : 63.12 dBA
```

Results segment # 2: QEW TO (day)

Source height = 1.73 m

ROAD (0.00 + 60.97 + 0.00) = 60.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.37	83.74	0.00	-18.85	-3.93	0.00	0.00	0.00	60.97

Segment Leq : 60.97 dBA

Results segment # 3: QEW FE (day)

Source height = 1.73 m

ROAD (0.00 + 60.46 + 0.00) = 60.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.37	83.74	0.00	-19.36	-3.93	0.00	0.00	0.00	60.46

Segment Leq : 60.46 dBA

Total Leq All Segments: 66.45 dBA

Results segment # 1: Maple (night)

Source height = 1.19 m

ROAD (0.00 + 56.59 + 0.00) = 56.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	19	0.00	60.81	0.00	-2.04	-2.18	0.00	0.00	0.00	56.59

Segment Leq : 56.59 dBA

Results segment # 2: QEW TO (night)

Source height = 1.73 m

ROAD (0.00 + 60.97 + 0.00) = 60.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.37	83.74	0.00	-18.85	-3.93	0.00	0.00	0.00	60.97

Segment Leq : 60.97 dBA

```
Results segment # 3: QEW FE (night)
-----------------------------------

Source height = 1.73 m

ROAD (0.00 + 60.46 + 0.00) = 60.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.37  83.74   0.00 -19.36  -3.93   0.00   0.00   0.00  60.46
-------------------------------------------------------------------------------

Segment Leq : 60.46 dBA

Total Leq All Segments: 64.50 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 66.45
                           (NIGHT): 64.50
```

```
STAMSON 5.04        NORMAL REPORT        Date: 30-09-2024 12:36:49
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: w_ola.te             Time Period: Day/Night 16/8 hours
Description: E - Westernmost Rear Yard (OLA)


Road data, segment # 1: Maple (day/night)
-----------------------------------------
Car traffic volume  : 19226/2136  veh/TimePeriod  *
Medium truck volume :   607/67    veh/TimePeriod  *
Heavy truck volume  :   405/45    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  16059
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  17.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Maple (day/night)
---------------------------------------
Angle1   Angle2           : -14.00 deg   31.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :   1.50 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 2: QEW TO (day/night)
------------------------------------------
Car traffic volume  : 85658/42822 veh/TimePeriod  *
Medium truck volume :  2920/1460  veh/TimePeriod  *
Heavy truck volume  :  8760/4380  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 146000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67
```

```
Data for Segment # 2: QEW TO (day/night)
----------------------------------------
Angle1   Angle2           : -29.00 deg   16.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 362.00 / 362.00 m
Receiver height           :   1.50 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: QEW FE (day/night)
------------------------------------------
Car traffic volume  : 85658/42822 veh/TimePeriod  *
Medium truck volume :  2920/1460  veh/TimePeriod  *
Heavy truck volume  :  8760/4380  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 146000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67

Data for Segment # 3: QEW FE (day/night)
----------------------------------------
Angle1   Angle2           : -29.00 deg   16.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 394.00 / 394.00 m
Receiver height           :   1.50 / 11.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Maple (day)
--------------------------------

Source height = 1.19 m

ROAD (0.00 + 58.77 + 0.00) = 58.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -14     31   0.00  67.34   0.00  -2.55  -6.02   0.00   0.00   0.00  58.77
-------------------------------------------------------------------------------

Segment Leq : 58.77 dBA
```

Results segment # 2: QEW TO (day)

Source height = 1.73 m

ROAD (0.00 + 54.77 + 0.00) = 54.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-29	16	0.65	83.74	0.00	-22.86	-6.11	0.00	0.00	0.00	54.77

Segment Leq : 54.77 dBA

Results segment # 3: QEW FE (day)

Source height = 1.73 m

ROAD (0.00 + 54.16 + 0.00) = 54.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-29	16	0.65	83.74	0.00	-23.46	-6.11	0.00	0.00	0.00	54.16

Segment Leq : 54.16 dBA

Total Leq All Segments: 61.19 dBA

Results segment # 1: Maple (night)

Source height = 1.19 m

ROAD (0.00 + 52.23 + 0.00) = 52.23 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-14	31	0.00	60.81	0.00	-2.55	-6.02	0.00	0.00	0.00	52.23

Segment Leq : 52.23 dBA

Results segment # 2: QEW TO (night)

Source height = 1.73 m

ROAD (0.00 + 58.75 + 0.00) = 58.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-29	16	0.37	83.74	0.00	-18.91	-6.07	0.00	0.00	0.00	58.75

Segment Leq : 58.75 dBA

```
Results segment # 3: QEW FE (night)
-----------------------------------

Source height = 1.73 m

ROAD (0.00 + 58.25 + 0.00) = 58.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -29     16   0.37  83.74   0.00 -19.42  -6.07   0.00   0.00   0.00  58.25
-------------------------------------------------------------------------------

Segment Leq : 58.25 dBA

Total Leq All Segments: 62.00 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.19
                           (NIGHT): 62.00
```

APPENDIX D

CITY OF BURLINGTON COMMENTS

The comments from the City of Burlington are shown below with our responses in *italics*.

1. All documents to be prepared in accordance with the MECP's Environmental Noise Guideline Publication NPC-300, as amended.

   Acknowledged.

2. To be stamped and certified by a Professional Engineer.

   Acknowledged.

3. External agency may review the report. If differing requirements exist between them and the City than the most stringent criteria shall apply. The subject properties are within the MTO regulated limits (<400m from the QEW) and within 1000 meters of the CN railway.

   Acknowledged.

4. The study to include but not limited to the following:

   a) Considered a Class 1 property. It was not explicitly stated in the report, however the NPC-300 criteria in the report is Class 1 criteria.

      Noise from the nearby facilities discussed in Section 2.2 is not expected to have a significant impact on the subject site. Thus, the Class of the property was not discussed as a detailed stationary noise assessment was not considered necessary. Note, the class of a property is relevant to stationary noise sources only.

   b) Identify offsite stationary noise sources that may require mitigation for existing and/or proposed development and provide the mitigation requirements. If offsite mitigation is required, then confirmation of a legal agreement between the development and offsite sources is required. Please note, adjacent property owners are not obligated to mitigate their onsite stationary noise sources, as it relates to stationary noise impacts on the subject development. The applicant is responsible for mitigating the exceedances within the limits of the subject development, which may require a site redesign.

      Acknowledged. See also our response to comment 4.a) above.

   c) Provide all model calculations for both onsite and offsite.

      Acknowledged. See Appendix C for sound level prediction details.

   d) Provide any onsite noise measurements.

      Acknowledged. Note, onsite measurements are not needed. Sound level predictions were used in the assessment as per NPC-300.

   e) Use reflective surfaces for model calculations where applicable.

      Revised. See Section 4.1.

   f) Provide capacity volumes received from the City's Transportation Services for roads using model calculations. Include the correspondence within the appendix.

See Appendix A.

g) Provide any correspondence from external agencies to confirm traffic and/or train counts within the appendix.

See Appendix A.

h) Provide all mitigating measure calculations including but not limited to window glazing, facade requirements, noise walls, etc.

Acknowledged. See Section 4.3.

i) Provide a key plan identifying points of reception.

Acknowledged. See Figure 2 for receptor (assessment) locations.

j) Provide a key plan identifying sources of noise for both stationary and linear and including distances from subject property.

Acknowledged. See Figures 1 and 2.

k) NPC-300 exceedances and/or max. points of reception required for every floor and side of the building.

Acknowledged. See Section 4.1.

l) Points of reception required for every neighboring property.

Acknowledged. See Section 6.0.

m) Provide a table for the points of reception and include the allowable noise level under NPC-300, estimated noise level, and the mitigated noise level.

See Table 2 for transportation noise assessment results.

Note noise impact from stationary sources on the subject site is not considered significant. See Section 2.2.

n) Provide warning clause recommendations where applicable.

Acknowledged. See Table 3 and notes to Table 3.

o) Provide a summary and drawing of any required mitigation measures.

Acknowledged. See Table 3 and Figure 2.

p) Individual air conditioning (A/C) units shall meet NPC-216, and the acoustical consultant shall advise of optimal placement of A/C units, which shall be identified on the site plan, etc. We would ask that this is mentioned in the report, as this development will not require a site plan application, so a residential development agreement may be required to ensure warning clauses are on title, and the warning clauses will be based on the Environmental Noise Feasibility Study.

Acknowledged. See Sections 4.3.1.2.and 6.0.

5. Include a Letter of Reliance that allows the City to rely upon the documents. The City is not excluded (i.e., no limitations section) so a letter of reliance isn't necessarily required.

   There is no Limitations section in the report, so a Letter of Reliance is not included.

6. Comments on the Valcoustics Canada Ltd. Environmental Noise Feasibility Study, 759 Maple Ave. dated April 30, 2024:

   a) Generally, the report is satisfactory, and has incorporated the guidance points above provided by the City in the July 21, 2023 pre-consultation memo.

      Acknowledged.

   b) The Maple Ave. STAMSON calculation utilized "absorptive" surface, but we ask that it be revised to "reflective" as there is only a small landscape area fronting the subject property, the use of "absorptive" for QEW is acceptable as there is a large park between the QEW and the subject property. Staff acknowledges that the change to absorptive for Maple may be inconsequential but ask for confirmation.

      The report has been updated to use reflective surface for Maple Avenue. See Section 4.0.

   c) Please include all the STAMSON calculations in the report.

      The report has been updated to include all of the Stamson calculations in Appendix C.

   d) Considering there will be no site plan application, we ask that recommendations are provided in the report, i.e., certification after construction that the recommended noise control measures were installed (windows, barrier, location of a/c, etc.).

      A construction review should be undertaken once the development is built.

   e) Please provide guidance to the builder on location of central air units for each of the units to ensure NPC-216 is met. i.e., place on roof, rear yard, somewhere else?

      The location of central air conditioning units should be determined by the mechanical engineer on the project at a later stage.