

# **ENVIRONMENTAL NOISE ASSESSMENT -REVISED-**

**PROPOSED RESIDENTIAL TOWNHOUSE  
DEVELOPMENT  
3770 MONTROSE ROAD  
PART OF LOTS 62 AND 71; PARTS 5 AND 7 ON  
REFERENCE PLAN 59R-7092  
CITY OF NIAGARA FALLS  
(REGIONAL MUNICIPALITY OF NIAGARA)**

**PREPARED FOR:  
CASSONE DWELLINGS INC.**

## EXECUTIVE SUMMARY

---

The proposed residential townhouse development will be located east of Montrose Road, west of The Queen Elizabeth Way (QEW) and approximately 400m north of Thorold Stone Road in the City of Niagara Falls.

The Revised October 2025 Environmental Noise Assessment is issued to present the assessment of the proposed development and recommend any noise abatement features necessary to achieve sound levels acceptable to the City of Niagara Falls and the Ministry of Environment, Conservation and Parks.

The transportation noise sources having the potential to affect the living environment within the proposed development area include Montrose Road and The Queen Elizabeth Way (QEW). The ultimate traffic volume on this noise source is used as input to the Stamson's 5.04 to generate the resultant sound levels. Copies of the correspondence regarding traffic data is included in Appendix 2 in this report.

The stationary noise sources having the potential to affect the proposed residential development are the mechanical roof top units, the loading activities from the commercial developments to the south.

Recommended noise abatement measures are described in Sections 5.1, 5.2, 5.3 and 5.4 and summarized in Table 5 of this report and on the attached Figure 3. These measures include:

1. Mandatory air conditioning for Blocks 1 to 6, 8 to 11, 15 to 26, 31 and 32 (All Units).
2. Provision for air conditioning is required for Blocks 7, 12, 13, 14, 27 to 30 (All Units).
3. Upgraded windows are required for the townhouse units within Blocks 1 to 4, 19 to 22 and 32 (All Units). The STC requirements are summarized in Table 5.
4. All applicable warning clauses shall be listed in the City of Niagara's Development Agreement and also be inserted in the Agreements of Purchase and Sale or Lease and registered on title.
5. We recommend the acoustic barrier height, configuration to be reviewed once the detail grading plans are available.
6. We recommend that prior to issuance of building permits, once final architectural drawings, final grading plans; the acoustical analysis would need to be reviewed to confirm the MOE noise guidelines are met.
7. Prior to final occupancy an inspection of all installed equipment should be undertaken by a qualified acoustical engineer to confirm compliance with the MOE noise guidelines.

## TABLE OF CONTENTS

---

	PAGE
<b>1.0 INTRODUCTION .....</b>	<b>1</b>
PURPOSE	
SITE DESCRIPTION AND LOCATION	
<b>2.0 SOUND LEVEL CRITERIA.....</b>	<b>2</b>
<b>3.0 NOISE SOURCES .....</b>	<b>3</b>
TABLE 1 MONTROSE ROAD TRAFFIC DATA	
TABLE 2 THE QUEEN ELIZABETH WAY (QEW) TRAFFIC DATA	
<b>4.0 NOISE ASSESSMENT .....</b>	<b>5</b>
<b>4.1 ROAD TRAFFIC NOISE ASSESSMENT</b>	
TABLE 3 UNATTENUATED SOUND LEVELS	
<b>4.2 STATIONARY NOISE SOURCES ASSESSMENT .....</b>	<b>6</b>
EXISTING STATIONARY NOISE SOURCES	
TABLE 4 STATIONARY SOURCES SOUND LEVELS -UNMITIGATED	
<b>4.3 NOISE FROM THE PROPOSED DEVELOPMENT</b>	
<b>ON ITSELF AND SURROUNDING ENVIRONMENT</b>	
<b>5.0 RECOMMENDED MITIGATION MEASURES .....</b>	<b>8</b>
<b>5.1 OUTDOOR MEASURES</b>	
<b>5.1.1 TRAFFIC NOISE OUTDOOR MEASURES</b>	
<b>5.1.2 STATIONARY NOISE OUTDOOR MEASURES</b>	
TABLE 6 STATIONARY SOURCES SOUND LEVELS-MITIGATED	
<b>5.2 VENTILATION REQUIREMENTS .....</b>	<b>8</b>
<b>5.2.1 VENTILATION REQUIREMENTS (ROAD TRAFFIC)</b>	
MANDATORY CENTRAL AIR CONDITIONERS	
PROVISION FOR CENTRAL AIR CONDITIONERS	
<b>5.2.2 VENTILATION REQUIREMENTS (STATIONARY NOISE SOURCES)</b>	
<b>5.3 BUILDING COMPONENTS .....</b>	<b>10</b>
<b>5.3.1 BUILDING COMPONENTS DUE TO TRAFFIC NOISE</b>	
DAYTIME SOUND LEVELS	
NIGHT-TIME SOUND LEVELS	
BUILDING COMPONENT REQUIREMENTS	
<b>5.3.2 BUILDING COMPONENTS DUE TO STATIONARY NOISE</b>	
<b>5.4 WARNING CLAUSES.....</b>	<b>11</b>
<b>6.0 SUMMARY OF NOISE MITIGATION MEASURES .....</b>	<b>12</b>
TABLE 5 SUMMARY OF NOISE MITIGATION MEASURES	
<b>7.0 RECOMMENDATIONS AND CONCLUSION .....</b>	<b>13</b>
RECOMMENDATIONS	
CONCLUSION	

**FIGURES**

FIGURE 1 ..... KEY PLAN

FIGURE 2 ..... DISTANCES FROM STATIONARY NOISE SOURCES

FIGURE 3 ..... SITE PLAN - NOISE MITIGATION MEASURES

**APPENDICES**

APPENDIX 1 ..... FIGURES

APPENDIX 2 ..... TRAFFIC DATA

APPENDIX 3 ..... SOUND LEVEL CALCULATIONS

APPENDIX 4 ..... SOUND LEVEL CRITERIA

APPENDIX 5 ..... SAMPLE WINDOW AND EXTERIOR WALL CONFIGURATIONS

## 1.0 INTRODUCTION

---

### PURPOSE

A residential townhouse condominium development has been proposed by Cassone Dwellings Inc. in the City of Niagara Falls. This report is an analysis of future sound levels within the development and describes the types and locations of noise mitigation measures which will be required based on the latest Site Plan dated October 2025.

### SITE DESCRIPTION AND LOCATION

The proposed development will consist of 2 rental apartment stacked townhouse blocks (Blocks 1 and 2) and 30 rear lane townhouse blocks (two and three stories) located east of Montrose Road, west of The Queen Elizabeth Way (QEW) and at approximately 400m north of Thorold Stone Road in the City of Niagara Falls.

The surrounding land uses are existing commercial developments to the south, existing residential developments to the north and east of Montrose Road and further east of QEW.

### KEY PLAN

The location of the proposed development is further indicated by the Key Plan below.



**FIGURE 1**

## 2.0 SOUND LEVEL CRITERIA

---

The sound level descriptors ( $L_{eq}$  in dBA) are for 16 hours (daytime), and 8 hours (night-time) based on MECP Guideline NPC-300:

Outdoor Activity Areas (7 a.m. – 11 p.m.) – 16 Hr. Leq. = 55 dBA Roads

If daytime outdoor sound levels at the backyards (outdoor activity areas) exceed 60 dBA, physical noise attenuation measures such as acoustical fences, increased building setbacks or reorientation of the buildings must be employed to reduce the sound levels. In some cases, outdoor sound levels may be allowed to exceed the above criteria by a maximum of 5 dBA. If such excesses occur, purchasers must be informed of the existence of potentially annoying sound levels by means of warning clauses registered on title.

Living/Dining Area and Bedroom (7 a.m.–11 p.m.) = 45 dBA Roads,

Living/Dining Area (11 p.m.–7 a.m.) = 45 dBA Roads

Bedrooms (11 p.m. – 7 a.m.) = 40 dBA Roads

Appropriate building components such as walls, doors and windows are chosen with reference to the following. If daytime sound levels at the external walls are 65 dBA or less (roadways), and 60 dBA or less (railways), then the indoor sound level criteria described above will be achieved using standard (Ontario Building Code) construction methods and building components. If night-time sound levels are 60 dBA or less (roadways) and 55 dBA or less (railways), standard construction methods and building components can be utilized. If the external sound levels exceed the above criteria, then components having extra sound insulation properties may be required.

Ventilation requirements are determined with reference to the following. If night-time sound levels at the bedroom/sleeping quarters window of a unit are in the range of 50 to 60 dBA, the ventilation system must be designed to allow the optional installation of central air conditioning at the owner's discretion. If night-time sound levels are greater than 60 dBA, central air conditioning must be installed. If daytime sound levels at the living area/room windows are in the range of 55 to 65 dBA, the ventilation system must be designed to allow optional installation of central air conditioning. For daytime sound levels greater than 65 dBA, central air conditioning must be installed.

### STATIONARY SOURCES

As per the M.E.C.P. guidelines (Publication NPC-300), this area is considered to be a Class 1 classification area. The noise produced by a stationary source at the plane of window for noise sensitive spaces is the energy equivalent sound level ( $L_{EQ}$ ), 50 dBA during daytime and evening time (0700-2300) or 45 dBA during night-time (2300-0700). For outdoor receptors, the energy equivalent sound level ( $L_{EQ}$ ) is 50 dBA during daytime (0700-1900) or 50 dBA during evening-time (1900-0700).

### 3.0 NOISE SOURCES

---

#### ROAD TRAFFIC

As indicated on Figures 1 and 2, the proposed development will be located east of Montrose Road, 50m west of QEW and approximately 400m north of Thorold Stone Road in the City of Niagara Falls.

Noise generated by Montrose Road and The QEW have the potential to affect future development. All other roads within or near this site are considered acoustically insignificant due to low traffic volumes and distance separation.

Traffic volume information for Montrose Road was obtained from the Regional Municipality of Niagara dated October 2021. The traffic counts were projected to the year 2041 at a growth rate of 3% per year. The traffic data obtained is summarized in Table 1 below:

<b>TABLE 1: MONTROSE ROAD TRAFFIC DATA</b>	
Projected Annual Average Daily Traffic*	17,000
Percent Trucks	8%
Heavy and Medium trucks ratio	50/50
Speed (km/hr)	60
Number of Lanes	4
Day/Night Traffic split	90/10

\* Projected traffic provided by the Regional Municipality of Niagara.

The ultimate traffic volume information for The QEW was obtained from Ministry of Transportation dated October 2021 and is summarized in Table 2 below:

<b>TABLE 2: QUEEN ELIZABETHS WAY (QEW) TRAFFIC DATA</b>	
Projected Annual Average Daily Traffic *	125,700
Percent Trucks	15%
Heavy and Medium trucks ratio	50:50
Speed (km/hr)	100
Day/Night Split	67/33
Number of Lanes	6

\* Ultimate Traffic information provided by the Ministry of Transportation.

#### RAIL TRAFFIC

The closest railway is located more than 2km from the proposed residential development. Due to distance separation, the noise impact from the railway is considered acoustically insignificant.

## EXISTING STATIONARY NOISE SOURCES

**Food Basics (3770 Montrose Road):** is an existing Food Basics grocery store to the south approximately 100 from the nearest residential block. The noise sources of concern are mechanical roof top units and the loading area is located approximately 170m south of the building, facing away from the proposed residential development.

**Swiss Chalet (3770 Montrose Road):** is located to the south at the west portion of the commercial development approximately 45m from the nearest receptor location. The noise sources of concern are the mechanical roof top units and the occasional delivery activities.

**Fast Food Restaurants, Pharmacy and Retail Commercial (3770 Montrose Road):** located south within the east portion of the commercial development at 15m from the nearest receptor location. The restaurants and retail commercial units operate during the days and evenings. The noise sources of concern are the mechanical roof top units and the occasional delivery activities.

**Tim Hortons, Restaurants and Retail Commercial (3930 Montrose Road):** located approximately 230m to the south. The restaurants and retail commercial units operate during the days and evenings. The noise sources of concern are the mechanical roof top units and the occasional delivery activities. The Tim Horton's operation hours are 24 hours with drive through activities.

**Commercial Plaza (3969 Montrose Road) and Gales Gas Bar (7537 Regional Rd 57/ Thorold Stone Road):** located at more than 250m to the southwest and south. The restaurants and retail commercial units operate during the days and evenings. The gas bar operating hours are 24 hours. The noise sources of concern are the mechanical roof top units and the occasional delivery activities. However, due to distance separation and shielding from the existing residential and commercial developments the noise impact from these commercial developments is considered insignificant.



## 4.0 NOISE ASSESSMENT

### 4.1 ROAD TRAFFIC NOISE ASSESSMENT

Figure 3 is based on the latest Site Plan dated October 2025 prepared by Hunt Design Associates Inc. showing various noise analysis locations and noise mitigation measures within the proposed development. Sound levels were calculated using the Ministry of Environment's Stamson 5.04 computer-based noise prediction model.

The noise criteria and warning clauses are listed in Appendix 4. Table 3 lists the unattenuated sound levels at various locations.

TABLE 3: UNATTENUATED SOUND LEVELS					
LOCATIONS		DISTANCE TO CENTRELINE OF ROAD (m)		DAYTIME 16 Hr. Leq dBA	NIGHT-TIME 8 Hr. Leq dBA
Block 1	Rear Wall	57.0 <sup>1</sup>	-	72.72	73.41
Block 3 (East Unit)	Rear Wall	54.0 <sup>1</sup>	-	73.74	74.41
Block 5 (East Unit)	Front Wall	180.0 <sup>1</sup>	-	60.71	61.84
Block 8 (South Unit)	Side Wall	300.0 <sup>1</sup> 18.0 <sup>2</sup>	-	54.48 66.92 (67.16)	55.82 60.63 (61.87)
Block 13 (West Unit)	Front Wall	275.0 <sup>1</sup> 45.0 <sup>2</sup>	-	53.61 57.22 (58.79)	56.15 51.79 (57.51)
Block 30	Side Wall	200.0 <sup>1</sup>	-	58.54	59.72
	Rear Yard	202.0 <sup>1</sup>	<55	-	-
Block 31	Side Wall	150.0 <sup>1</sup>	-	61.87	62.94
	Rear Yard	152.0 <sup>1</sup>	56.73	-	-
Block 32	Side Wall	100.0 <sup>1</sup>	-	69.55	70.46
	Rear Yard	102.0 <sup>1</sup>	62.32	-	-
Urban Parkette 1		270.0 <sup>1</sup> 48.0 <sup>2</sup>	53.73 52.78 (56.29)	-	-
Parkette 2		135.0 <sup>1</sup>	57.53	-	-

<sup>1</sup> Queen Elizabeth Way (QEW)

<sup>2</sup> Montrose Road

## 4.2 STATIONARY NOISE SOURCES ASSESSMENT

The sound levels were calculated using the CadnaA Version 2021 computer program using the International Standard ISO 9613-2.

### EXISTING STATIONARY NOISE SOURCES:

#### Mechanical Roof Top Units:

The mechanical roof top units from all surrounding commercial buildings have the potential to generate sound levels exceeding the sound level limits at the proposed residential development. The air condensing units and exhaust fans are located at the roof tops of all commercial buildings as shown on the attached Figure 2. The Sound Power Levels for all the mechanical equipment were taken to be between a typical 78dBA and 95dBA. All roof top units are assumed to be operating 100% of the time during the daytime/evening and operating 50% of the time during the night-time based on similar roof top units sound levels.

#### Loading Activities and Garbage Compactor:

The loading activities of concern are from the grocery store loading area and garbage compactor which is located south of the building shield by the grocery store building itself. The delivery activities and garbage compactor activities have been taken into account in the noise analysis with an idling time of 30minutes per hour. Based on the delivery truck sizes, truck movements are taken to be 110 dBA as line sources. The garbage compactor has been assumed to operate 20 minutes per hour.

#### Garbage pickups and Infrequent deliveries:

The garbage pick-ups and infrequent deliveries for all remaining buildings are expected to occur during the daytime. The garbage pickups and infrequent/unscheduled deliveries are generally short in duration and are excluded from the stationary source noise sources. However, some activities may be audible at times.

The following Table 4 summarizes the sound levels from the surrounding stationary noise sources on the proposed receptor locations:

<b>TABLE 4 - UNMITIGATED SOUND LEVELS, Leq 1 hour (dBA)</b>			
<b>RECEPTOR</b>	<b>DAYTIME/ EVENING (0700 - 2300)</b>	<b>NIGHTTIME (2300 - 0700)</b>	<b>Exceedance</b>
R1* (Block 8- Side wall 3rd floor)	46.3	43.3	No
R2* (Block 6 - Front wall, 3rd floor)	47.3	44.3	No
R3* (Block 5- Front wall, 3rd floor)	47.2	44.2	No
R4* (Block 4 - Front Wall, 3rd floor)	47.2	44.2	No
R5* (Block 3- Front Wall, 3rd floor)	47.5	44.5	No

\* Receptors analysed at 3rd floor of buildings (7.5m above ground)

The total sound level results from the proposed mechanical rooftop units, loading activities, are expected to meet the sound level limits of 50dBA during the daytime/evenings and 45 dBA during the night-time.

Therefore, noise mitigation measures are not required due to the existing stationary noise sources.

#### **4.3 NOISE FROM THE PROPOSED DEVELOPMENT ON ITSELF AND SURROUNDING ENVIRONMENT**

The proposed development is all residential and the possible noise sources of concern are the air conditioner units within the proposed residential development which are the proposed stationary noise sources.

The air conditioning condenser units must comply with the MOE NPC-216 and must be in accordance with the City's zoning by-law in order to meet the sound level requirements on the surrounding environment and the proposed development itself.

## **5.0 RECOMMENDED NOISE MITIGATION MEASURES**

---

### **5.1 OUTDOOR MEASURES**

#### **5.1.1 TRAFFIC NOISE OUTDOOR MEASURES**

The outdoor amenity areas for some of the Blocks 1 to 32 are the balconies above garages. According to M.E.C.P. policy (Publication NPC-300), balconies that have a maximum depth of less than 4 metres are not considered to be outdoor living areas that would need to be mitigated. Based on the architectural plans, the proposed buildings will incorporate balconies having a depth of less than 4 metres. For this reason, the balconies were not assessed as designated outdoor living areas for noise mitigation purposes.

The designated outdoor amenity area for Blocks 1 to 32 are the Parkettes (Urban Parkette 1 and Parkette 2). Based on the noise analysis in Table 3, the sound level at the Parkette is expected to be 58 dBA or less due to road traffic.

Therefore, outdoor noise mitigation measures are not required for the proposed residential development.

#### **5.1.2 STATIONARY NOISE OUTDOOR MEASURES**

As per the sound level results in Table 4, the stationary noise sources from the proposed commercial developments are not expected to exceed the sound level limits at the outdoor amenity areas of the proposed residential development due to stationary noise sources.

### **5.2 VENTILATION REQUIREMENTS**

#### **5.2.1 VENTILATION REQUIREMENTS DUE TO ROAD TRAFFIC**

Ventilation requirements were determined using the sound levels at the building facades listed in Table 3 due to road traffic noise source.

#### **MANDATORY AIR CONDITIONERS**

Based on the information in Table 3, the following locations are expected to be above 65dBA during the daytime and/or above 60dBA during the nighttime. Therefore, mandatory air conditioning is required for the following locations:

- Blocks 1 to 6, 8 to 11, 15 to 26, 31 and 32 (All Units)

The following warning clause Type D must be incorporated into the Development Agreement, which will be registered on title and should be included in all offers of purchase, sale and lease of dwelling units noted above:

Warning Clause Type D:

*“This dwelling unit was fitted with a central air conditioner/ventilation system to allow the windows and exterior doors to remain closed, thereby achieving indoor sound levels within the limits recommended by the Ministry of Environment. (Note: The location and installation of the outdoor air conditioning device should be done so as to comply with noise criteria of MOE NPC-216 thus minimize the noise impacts both on and in the immediate vicinity of the subject property).”*

#### PROVISION FOR AIR CONDITIONERS

The following units must be constructed with a forced air heating system with ducting sized to accommodate an air conditioning unit, in order to allow the homeowner the option of installing air conditioning should he or she wish to do so in the future as per Table 3 sound level results:

- Blocks 7, 12, 13, 14, 27 to 30 (All Units)

The following warning clause Type C must be incorporated into the Development Agreement, which will be registered on title and should be included in all Offers of Purchase, Sale or Lease of the above residential units:

Warning Clause Type C:

*“This dwelling unit was fitted with ducting sized to accommodate a central air conditioning unit/ventilation system. The installation of central air conditioning by the homeowner will allow windows and exterior doors to be kept closed, thereby achieving indoor sound levels within the limits recommended by the Ministry of Environment. (Note: The location and installation of the outdoor air conditioning device should be done so as to comply with noise criteria of MOE NPC-216 and thus minimize the noise impacts both on and in the immediate vicinity of the subject property).”*

#### **5.2.2 VENTILATION REQUIREMENTS DUE TO STATIONARY NOISE SOURCES**

Based on the MECP Noise Guideline, the use of air conditioning is not acceptable for noise mitigation in the context of controlling the noise from a stationary source. However, if a building is designed with air conditioning due to transportation noise sources, then air conditioning may provide further noise mitigation for stationary noise sources given that the windows are kept closed if the stationary noise sources are audible at times.

## **5.3 BUILDING COMPONENTS**

### **5.3.1 BUILDING COMPONENTS DUE TO TRAFFIC NOISE**

Building components within the proposed development were analyzed using the STC (Sound Transmission Class) method recommended by the M.E.C.P.

Detailed floor plans of the proposed dwelling units are required in order to best determine the required building components. Although this information is not yet available for the proposed development, the result is based on the assumption that a living, dining or recreation room is located at the side of the house closest to the roadway and contains three components (two exterior walls and a set of windows). The windows are assumed to be 25% of the floor area and the same side exterior walls are assumed to be 80% of the floor area.

#### **DAYTIME SOUND LEVELS**

For the worst-case residential location during daytime, (Block 53) a daytime sound level of 74dBA was calculated due to road traffic. To ensure acceptable daytime indoor sound levels of 45dBA from road noise sources, the building components must provide an STC rating of 37 for windows, STC 44 for exterior wall construction.

#### **NIGHT-TIME SOUND LEVELS**

For the worst-case residential location during night-time, (Block 3) night-time sound level of 74dBA was calculated. To ensure acceptable nighttime indoor sound levels of 40dBA from road noise sources, the building components must provide an STC rating of 40 for windows, STC 43 for exterior wall construction

#### **BUILDING COMPONENT REQUIREMENTS**

The minimum standard window and exterior wall construction of the Ontario Building Code meets STC 30 and STC 38, respectively.

Therefore, upgraded windows will be required for Blocks 1 to 4, 19 to 22 and 32. The STC requirements are summarized in Table 5.

#### **WINDOWS**

The following are some window configurations meeting an STC rating of 32, assuming the ratio of window area to room floor area is 25%:

- double glazing 3mm x 3mm thickness with 13mm air space (Casement/Fixed) or
- double glazing 4mm x 4mm thickness with 6mm air space (Casement/Fixed) or
- double glazing 3mm x 3mm thickness with 20mm air space (Sliders) or
- double glazing 4mm x 4mm thickness with 16mm air space (Sliders) or
- any other window type yielding a similar or greater STC rating

## EXTERIOR WALLS

The following exterior wall constructions EW1 meet the STC 38 rating, assuming a ratio of wall area to room floor area of 80%:

EW1            12.7mm gypsum board, vapour barrier and 38 x 89mm studs with 50mm (or thicker) mineral wool or fiberglass batts in interstud cavities, plus sheathing, 25mm air space and stucco/vinyl siding

### **5.3.2 BUILDING COMPONENTS DUE TO STATIONARY NOISES**

There are no building component requirements due to stationary noise sources.

Sample window and exterior wall configurations are included in Appendix 5 for additional options. Please note that the final building components and details should be determined once the final building plans and details become available.

### **5.4 WARNING CLAUSES**

We recommend the following warning clauses to be incorporated into the Development Agreement, which will be registered on title and included in all offers of purchase and sale or lease of suites noted below.

- Blocks 1 to 32 (All Units)

Warning Clause Type A:

*"Occupants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound level will exceed the Ministry of Environment's noise criteria."*

- Blocks 3 to 8 (All Units)

Warning Clause Type E:

*"Occupants are advised that due to the proximity of the existing commercial development, noise from these facilities may at times be audible"*

## 6.0 SUMMARY OF NOISE MITIGATION MEASURES

The summary of noise abatement measures are listed in the following Table 7 identifying ventilation requirements, building components, barrier requirements and warning clauses.

<b>TABLE 7: SUMMARY OF NOISE MITIGATION MEASURES</b>				
<b>LOCATIONS</b>	<b>VENTILATION REQUIREMENTS</b>	<b>BUILDING COMPONENTS</b>	<b>SOUND BARRIERS</b>	<b>WARNING CLAUSES</b>
Blocks 1, 2 (All Units)	Mandatory air conditioning	Windows: STC 34 Walls: STC 54	-	Type A, D
Block 3 (East Unit)	Mandatory air conditioning	Windows: STC 35 Walls: STC 54	-	Type A, D, E
Block 3 (Remaining Units) Block 6 (All Units)	Mandatory air conditioning	Windows: STC 32 Walls: STC 54	-	Type A, D, E
Block 5,6, 8 (All Units)	Mandatory air conditioning	Windows: OBC Walls: OBC	-	Type A, D, E
Blocks 7 (All Units)	Provision for air conditioning	Windows: OBC Walls: OBC	-	Type A, C, E
Blocks 9, 10, 11 (All Units)	Mandatory air conditioning	Windows: OBC Walls: OBC	-	Type A, D
Blocks 12, 13, 14, 27, to 30 (All Units)	Provision for air conditioning	Windows: OBC Walls: OBC	-	Type A, C
Block 15 to 18, 23 to 26 (All Units)	Mandatory air conditioning	Windows: OBC Walls: OBC		Type A, D
Blocks 19 to 22 (All Units)	Mandatory air conditioning	Windows: STC 32 Walls: STC 38		Type A, D
Block 31	Mandatory air conditioning	Windows: OBC Walls: OBC	-	Type A, D
Block 32	Mandatory air conditioning	Windows: STC 32 Walls: STC 54	-	Type A, D
Parkettes	-	-	No	-

\* OBC: Ontario Building Code Standard



## 7.0 RECOMMENDATIONS AND CONCLUSION

---

### RECOMMENDATIONS

1. Mandatory air conditioning is required for Blocks 1 to 6, 8 to 11, 15 to 26, 31 and 32 (All Units).
2. Provision for air conditioning is required for Blocks 7, 12, 13, 14, 27 to 30 (All Units).
3. Upgraded windows will be required for the townhouse units within Blocks 1 to 4, 19 to 22 and 32 (All Units). The STC requirements are summarized in Table 5. Standard windows and exterior wall constructions are sufficient for the remaining Blocks.
4. All applicable warning clauses shall be listed in the City of Niagara's Development Agreement and also be inserted in the Agreements of Purchase and Sale or Lease and registered on title.
5. We recommend the acoustic barrier height, configuration to be reviewed once the detail grading plans are available.
6. We recommend that prior to issuance of building permits, once final architectural drawings, final grading plans; the acoustical analysis would need to be reviewed to confirm the MOE noise guidelines are met.
7. Prior to final occupancy an inspection of all installed equipment should be undertaken by a qualified acoustical engineer to confirm compliance with the MOE noise guidelines.

### CONCLUSION

This report has determined that sound levels acceptable to the Ministry of Environment, Conservation and Parks, and the City of Niagara Falls are expected to be achieved using the abatement measures in this report and as shown on the attached Figure 3.

Respectfully submitted,

**YCA ENGINEERING Limited**

Hava Jouharchi, P. Eng.  
Senior Project Engineer



# **APPENDIX 1**

## **FIGURES**



**FIGURE 2**

**DISTANCES FROM THE STATIONARY NOISE SOURCES**





LEGEND:

- MANDATORY CENTRAL AIR CONDITIONING AND WARNING CLAUSE D
- OPTIONAL CENTRAL AIR CONDITIONING AND WARNING CLAUSE C
- WARNING CLAUSE A
- ALL RESIDENTIAL UNITS REQUIRE WARNING CLAUSE E

NOTE:

UPGRADED WINDOWS AND EXTERIOR WALLS FOR BLOCKS 33, 34 AND BLOCKS 1 TO 4, 19 TO 22

YCA ENGINEERING Limited

9580 Yonge Street, Suite 9557  
Richmond Hill, ON, L4C 1Y6  
Tel: 416-894-3213  
Email: [havo@ycanengineering.com](mailto:havo@ycanengineering.com)

SITE PLAN

NOISE

MITIGATION MEASURES

3770 MONTROSE ROAD

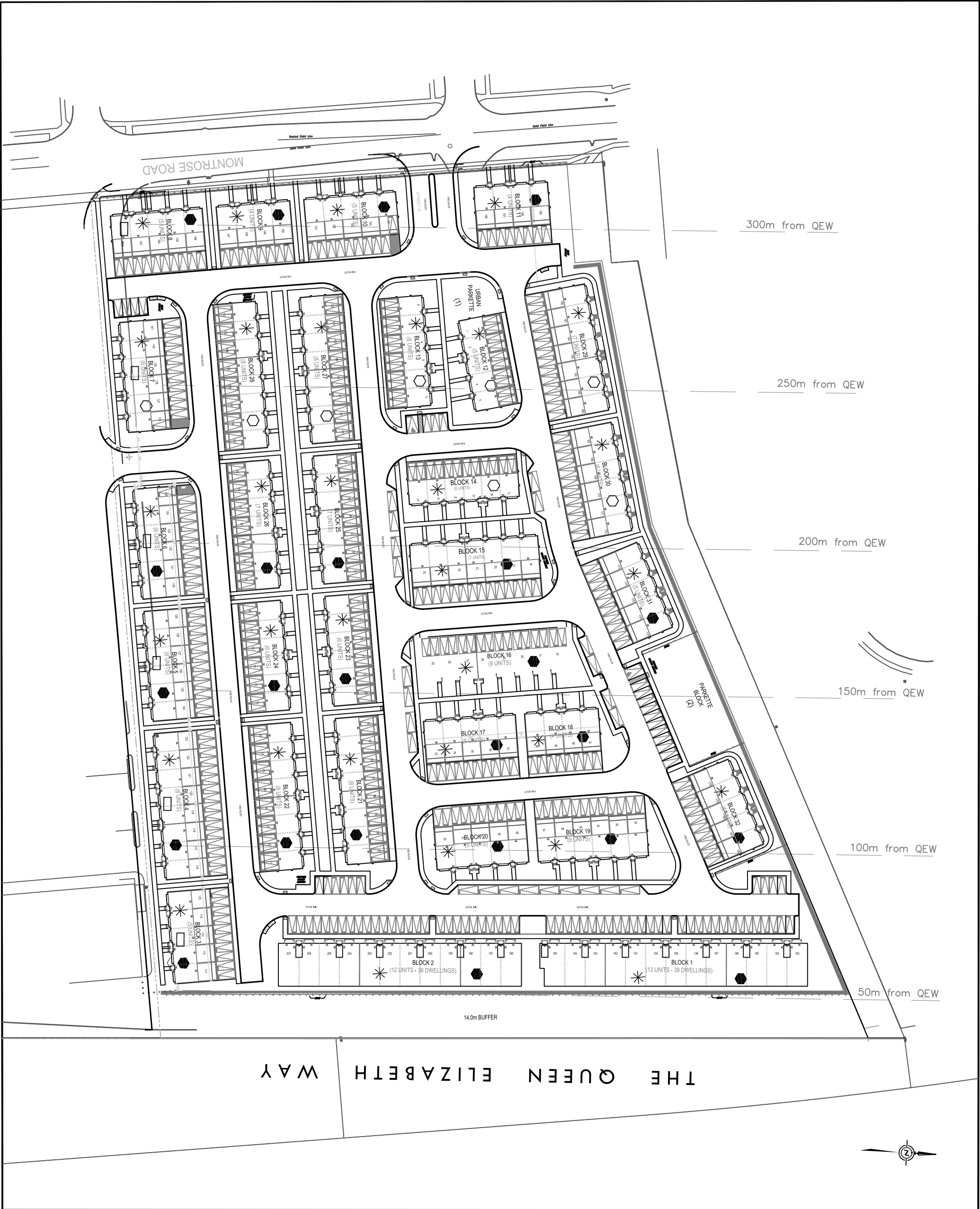
PROPOSED RESIDENTIAL  
TOWNHOUSE DEVELOPMENT

CITY OF NIAGARA FALLS

FIGURE 3

Scale: NTS

DATE: Oct. 2025



# **APPENDIX 2**

## **TRAFFIC DATA**

**From:** Du, Shuming (MTO) <Shuming.Du@ontario.ca>  
**Sent:** October 29, 2021 5:15 PM  
**To:** Hava Jouharchi  
**Cc:** Tai, Arthur (MTO); Wells, Kara (MTO)  
**Subject:** RE: Traffic Data Request, QEW Niagara (Oct20, 21)

Hi Hava,

In response to your request please find below the information available from this office for Queen Elizabeth Way near Montrose Road North and Thorold Stone Road.

2016 AADT: 67400  
2016 SADT: 76200  
Number of Lanes: 4  
Ultimate AADT: 111300  
Ultimate SADT: 125700  
Ultimate Number of Lanes: 6  
Posted Speed: 100 km/h  
Percentage of Trucks: 15%

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. Other information related to ratio of medium/heavy trucks may be available from other offices.

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

**From:** Hava Jouharchi <[hava@ycaengineering.com](mailto:hava@ycaengineering.com)>  
**Sent:** October 20, 2021 9:41 AM  
**To:** Du, Shuming (MTO) <[Shuming.Du@ontario.ca](mailto:Shuming.Du@ontario.ca)>  
**Cc:** Tai, Arthur (MTO) <[Arthur.Tai@ontario.ca](mailto:Arthur.Tai@ontario.ca)>  
**Subject:** FW: Traffic Data Request, QEW Niagara (Oct20, 21)

Good Morning Shuming,

I will be preparing a noise study in the City of Niagara Falls. The proposed site is located east of Montrose Road north of Thorold Stone Road.  
Site Location is attached.  
Could you please provide the following data at your earliest convenience for Queen Elizabeth Way (north of Thorold Stone Rd):  
Development expected to be completed in 10-15 years.

- . Ultimate/Forecasted AADT
- . Percentage of Trucks
- . Ratio of Medium to Heavy Trucks
- . Posted speed
- . Ultimate # of lanes

Thank you in advance.  
Hava

*Hava Jouharchi, P.Eng.  
Senior Project Engineer  
**YCA Engineering Ltd.**  
9251 Yonge Street, Suite 8557  
Richmond Hill, ON, L4C 9T3  
Tel: 416-894-3213  
Email: [hava@ycaengineering.com](mailto:hava@ycaengineering.com)*

Location..... Montrose Road @ Thorold Stone Road

GeolD..... 01421

Municipality. NIAGARA FALLS

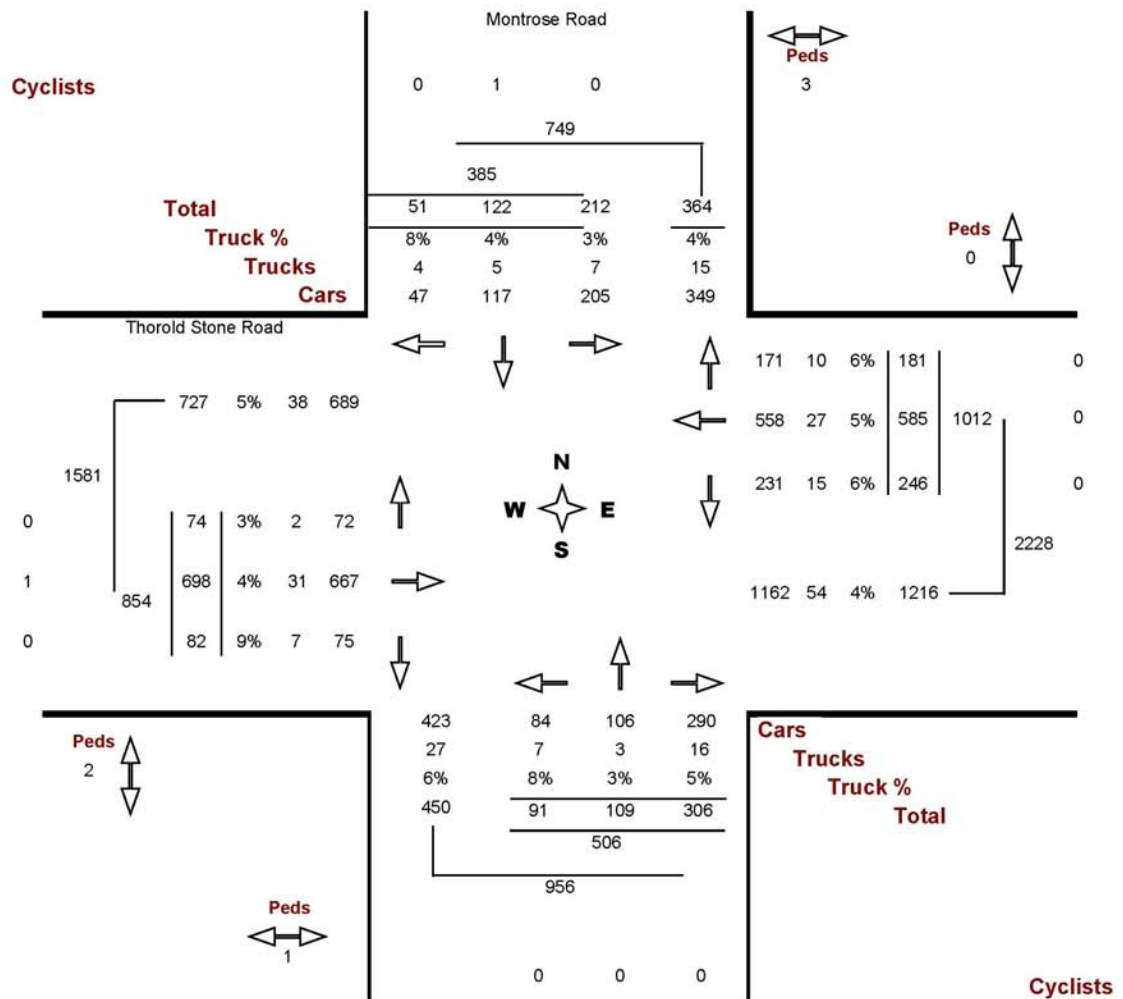
Count Date. Tuesday, 07 February, 2017

Traffic Cont.

Count Time. 07:00 AM — 09:00 AM

Major Dir..... East west

Peak Hour.. 08:00 AM — 09:00 AM



Location..... Montrose Road @ Thorold Stone Road

GeoID..... 01421

Municipality. NIAGARA FALLS

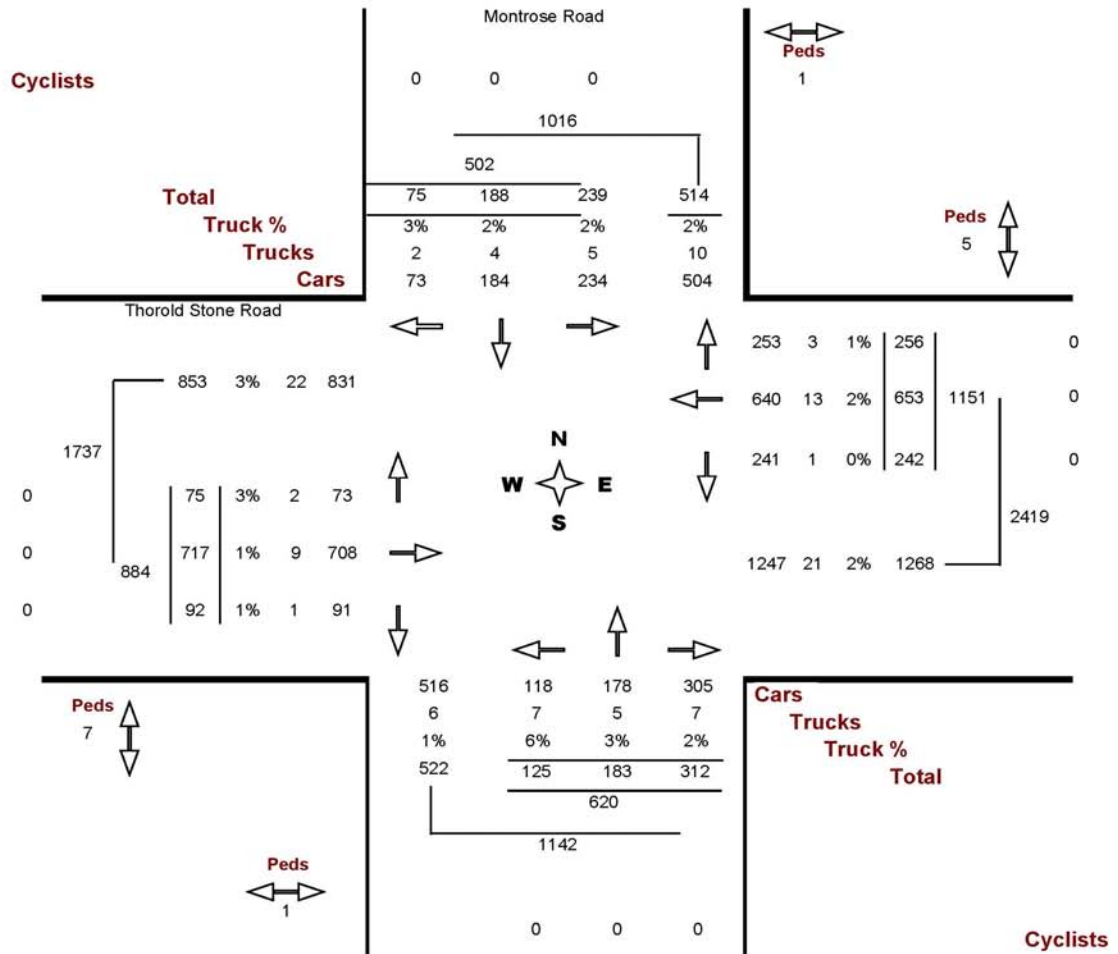
Count Date. Tuesday, 07 February, 2017

Traffic Cont.

Count Time. 03:00 PM — 06:00 PM

Major Dir..... East west

Peak Hour.. 04:15 PM — 05:15 PM





# **APPENDIX 3**

## **SOUND LEVEL CALCULATIONS**

STAMSON 5.0 SUMMARY REPORT Date: 17-11-2023 12:16:57  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: bklrw.te Time Period: Day/Night 16/8 hours  
 Description: Block 1, Rear Wall

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

```
-----
Car traffic volume : 72742/36366 veh/TimePeriod *
Medium truck volume : 6285/3142 veh/TimePeriod *
Heavy truck volume : 4777/2388 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
  24 hr Traffic Volume (AADT or SADT): 125700
  Percentage of Annual Growth : 0.00
  Number of Years of Growth : 0.00
  Medium Truck % of Total Volume : 7.50
  Heavy Truck % of Total Volume : 5.70
  Day (16 hrs) % of Total Volume : 66.67
```

Data for Segment # 1: QEW (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 : 57.00 / 57.00 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.QEW ! 1.55 ! 72.72 ! 72.72
-----+-----+-----+-----
Total 72.72 dBA
```

Result summary (night)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.QEW ! 1.55 ! 73.41 ! 73.41
-----+-----+-----+-----
Total 73.41 dBA
```

TOTAL Leq FROM ALL SOURCES (DAY): 72.72  
 (NIGHT): 73.41

STAMSON 5.0 SUMMARY REPORT Date: 17-11-2023 12:17:30  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: bk4sw.te Time Period: Day/Night 16/8 hours  
 Description: Block 3, Side Wall

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

```
-----
Car traffic volume   : 71234/35611 veh/TimePeriod *
Medium truck volume  : 6285/3142  veh/TimePeriod *
Heavy truck volume   : 6285/3142  veh/TimePeriod *
Posted speed limit   : 100 km/h
Road gradient        : 2 %
Road pavement        : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
  24 hr Traffic Volume (AADT or SADT): 125700
  Percentage of Annual Growth          : 0.00
  Number of Years of Growth            : 0.00
  Medium Truck % of Total Volume       : 7.50
  Heavy Truck % of Total Volume        : 7.50
  Day (16 hrs) % of Total Volume       : 66.67
-----
```

Data for Segment # 1: QEW (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 : 54.00 / 54.00 m
Receiver height     : 4.50 / 7.50 m
Topography          : 1 (Flat/gentle slope; no barrier)
-----
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.QEW ! 1.65 ! 73.74 ! 73.74
-----+-----+-----+-----
Total 73.74 dBA
-----
```

Result summary (night)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.QEW ! 1.65 ! 74.41 ! 74.41
-----+-----+-----+-----
Total 74.41 dBA
-----
```

TOTAL Leq FROM ALL SOURCES (DAY): 73.74  
 (NIGHT): 74.41

STAMSON 5.0                      SUMMARY REPORT                      Date: 17-11-2023 12:19:14  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: bk8fw.te                      Time Period: Day/Night 16/8 hours  
 Description: Block 8, Front Wall

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

```
-----
Car traffic volume   : 71234/35611 veh/TimePeriod *
Medium truck volume : 6285/3142  veh/TimePeriod *
Heavy truck volume  : 6285/3142  veh/TimePeriod *
Posted speed limit  : 100 km/h
Road gradient       : 2 %
Road pavement      : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
  24 hr Traffic Volume (AADT or SADT): 125700
  Percentage of Annual Growth         : 0.00
  Number of Years of Growth           : 0.00
  Medium Truck % of Total Volume      : 7.50
  Heavy Truck % of Total Volume       : 7.50
  Day (16 hrs) % of Total Volume      : 66.67
-----
```

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

```
-----
Angle1   Angle2      : -90.00 deg   90.00 deg
Wood depth      : 0 (No woods.)
No of house rows : 3 / 3
House density   : 75 %
Surface         : 1 (Absorptive ground surface)
Receiver source distance : 300.00 / 300.00 m
Receiver height : 4.50 / 7.50 m
Topography     : 1 (Flat/gentle slope; no barrier)
-----
```

Road data, segment # 2: Montrose Rd (day/night)

```
-----
Car traffic volume   : 14076/1564 veh/TimePeriod *
Medium truck volume : 612/68  veh/TimePeriod *
Heavy truck volume  : 612/68  veh/TimePeriod *
Posted speed limit  : 60 km/h
Road gradient       : 1 %
Road pavement      : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
  24 hr Traffic Volume (AADT or SADT): 17000
  Percentage of Annual Growth         : 0.00
  Number of Years of Growth           : 0.00
  Medium Truck % of Total Volume      : 4.00
  Heavy Truck % of Total Volume       : 4.00
  Day (16 hrs) % of Total Volume      : 90.00
-----
```

Data for Segment # 2: Montrose Rd (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 : 18.00 / 18.00 m
Receiver height : 4.50 / 7.50 m
Topography     : 1 (Flat/gentle slope; no barrier)
-----
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.QEW ! 1.65 ! 54.48 ! 54.48
2.Montrose Rd ! 1.41 ! 66.92 ! 66.92
-----+-----+-----+-----
```

67.16 dBA

-----

1.QEW	!	1.65 !	55.82 !	55.82
2.Montrose Rd	!	1.41 !	60.63 !	60.63

TOTAL Leq FROM ALL SOURCES (DAY): 67.16  
(NIGHT): 61.87

STAMSON 5.0                      SUMMARY REPORT                      Date: 17-11-2023 08:38:07  
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
Filename: bk8ola.te                      Time Period: Day/Night 16/8 hours  
Description: Block 8, OLA

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

-----  
Car traffic volume : 71234/35611 veh/TimePeriod \*  
Medium truck volume : 6285/3142 veh/TimePeriod \*  
Heavy truck volume : 6285/3142 veh/TimePeriod \*  
Posted speed limit : 100 km/h  
Road gradient : 2 %  
Road pavement : 1 (Typical asphalt or concrete)  
\* Refers to calculated road volumes based on the following input:  
24 hr Traffic Volume (AADT or SADT): 125700  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.50  
Heavy Truck % of Total Volume : 7.50  
Day (16 hrs) % of Total Volume : 66.67

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

-----  
Angle1 Angle2 : -80.00 deg 80.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 3 / 3  
House density : 75 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 298.00 / 298.00 m  
Receiver height : 1.50 / 7.50 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -80.00 deg Angle2 : 80.00 deg  
Barrier height : 0.00 m  
Barrier receiver distance : 3.00 / 3.00 m  
Source elevation : 0.00 m  
Receiver elevation : 4.80 m  
Barrier elevation : 2.80 m

Road data, segment # 2: Montrose Rd (day/night)

-----  
Car traffic volume : 14076/1564 veh/TimePeriod \*  
Medium truck volume : 612/68 veh/TimePeriod \*  
Heavy truck volume : 612/68 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)  
\* Refers to calculated road volumes based on the following input:  
24 hr Traffic Volume (AADT or SADT): 17000  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 4.00  
Heavy Truck % of Total Volume : 4.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Montrose Rd (day/night)

-----  
Angle1 Angle2 : -80.00 deg -50.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 28.00 / 28.00 m  
Receiver height : 1.50 / 7.50 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -80.00 deg Angle2 : -50.00 deg  
Barrier height : 0.00 m  
Barrier receiver distance : 3.00 / 3.00 m  
Source elevation : 0.00 m

Receiver elevation : 2.80 m  
 Barrier elevation : 2.80 m  
 Road data, segment # 3: Montrose Rd (day/night)

-----  
 Car traffic volume : 14076/1564 veh/TimePeriod \*  
 Medium truck volume : 612/68 veh/TimePeriod \*  
 Heavy truck volume : 612/68 veh/TimePeriod \*  
 Posted speed limit : 60 km/h  
 Road gradient : 1 %  
 Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 17000  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 4.00  
 Heavy Truck % of Total Volume : 4.00  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 3: Montrose Rd (day/night)

-----  
 Angle1 Angle2 : -50.00 deg 80.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 28.00 / 28.00 m  
 Receiver height : 1.50 / 7.50 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : -50.00 deg Angle2 : 80.00 deg  
 Barrier height : 3.00 m  
 Barrier receiver distance : 3.00 / 3.00 m  
 Source elevation : 0.00 m  
 Receiver elevation : 2.80 m  
 Barrier elevation : 2.80 m  
 Result summary (day)

-----  

	! source !	Road !	Total
	! height !	Leq !	Leq
	! (m) !	(dBA) !	(dBA)
1.QEW	! 1.65 !	53.07 !	53.07 *
2.Montrose Rd	! 1.41 !	54.63 !	54.63 *
3.Montrose Rd	! 1.41 !	49.73 !	49.73
-----			
	Total		57.69 dBA

STAMSON 5.0                      SUMMARY REPORT                      Date: 20-11-2023 09:18:04  
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
Filename: bbk16sw.te                      Time Period: Day/Night 16/8 hours  
Description: Blk 13, Side Wall

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

-----  
Car traffic volume : 71234/35611 veh/TimePeriod \*  
Medium truck volume : 6285/3142 veh/TimePeriod \*  
Heavy truck volume : 6285/3142 veh/TimePeriod \*  
Posted speed limit : 100 km/h  
Road gradient : 2 %  
Road pavement : 1 (Typical asphalt or concrete)  
\* Refers to calculated road volumes based on the following input:  
24 hr Traffic Volume (AADT or SADT): 125700  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.50  
Heavy Truck % of Total Volume : 7.50  
Day (16 hrs) % of Total Volume : 66.67

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

-----  
Angle1 Angle2 : -80.00 deg 80.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 3 / 3  
House density : 75 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 275.00 / 275.00 m  
Receiver height : 1.50 / 7.50 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -80.00 deg Angle2 : 80.00 deg  
Barrier height : 0.00 m  
Barrier receiver distance : 3.00 / 3.00 m  
Source elevation : 0.00 m  
Receiver elevation : 0.00 m  
Barrier elevation : 0.00 m

Road data, segment # 2: Montrose Rd (day/night)

-----  
Car traffic volume : 14076/1564 veh/TimePeriod \*  
Medium truck volume : 612/68 veh/TimePeriod \*  
Heavy truck volume : 612/68 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)  
\* Refers to calculated road volumes based on the following input:  
24 hr Traffic Volume (AADT or SADT): 17000  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 4.00  
Heavy Truck % of Total Volume : 4.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Montrose Rd (day/night)

-----  
Angle1 Angle2 : -80.00 deg 80.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 1 / 1  
House density : 50 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 45.00 / 45.00 m  
Receiver height : 1.50 / 7.50 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -80.00 deg Angle2 : 80.00 deg  
Barrier height : 0.00 m  
Barrier receiver distance : 3.00 / 3.00 m  
Source elevation : 0.00 m  
Receiver elevation : 0.00 m



Barrier elevation : 0.00 m  
Result summary (day)

	!	source	!	Road	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.QEW	!	1.65	!	53.61	!	53.61 *
2.Montrose Rd	!	1.41	!	57.22	!	57.22 *
Total						58.79 dBA
* Bright Zone !						

Result summary (night)

	!	source	!	Road	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.QEW	!	1.65	!	56.15	!	56.15 *
2.Montrose Rd	!	1.41	!	51.79	!	51.79 *
Total						57.51 dBA
* Bright Zone !						

TOTAL Leq FROM ALL SOURCES (DAY): 58.79  
(NIGHT): 57.51

STAMSON 5.0 SUMMARY REPORT Date: 17-11-2023 12:18:30  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: bkl2sw.te Time Period: Day/Night 16/8 hours  
 Description: Blk 30, Side Wall

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

-----  
 Car traffic volume : 71234/35611 veh/TimePeriod \*  
 Medium truck volume : 6285/3142 veh/TimePeriod \*  
 Heavy truck volume : 6285/3142 veh/TimePeriod \*  
 Posted speed limit : 100 km/h  
 Road gradient : 2 %  
 Road pavement : 1 (Typical asphalt or concrete)  
 \* Refers to calculated road volumes based on the following input:  
 24 hr Traffic Volume (AADT or SADT): 125700  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 7.50  
 Heavy Truck % of Total Volume : 7.50  
 Day (16 hrs) % of Total Volume : 66.67

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

-----  
 Angle1 Angle2 : -90.00 deg 90.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 2 / 2  
 House density : 75 %  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 200.00 / 200.00 m  
 Receiver height : 4.50 / 7.50 m  
 Topography : 1 (Flat/gentle slope; no barrier)  
 Result summary (day)

	! source !	Road	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)
1.QEW	! 1.65 !	58.54	! 58.54
Total			58.54 dBA

Result summary (night)

	! source !	Road	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)
1.QEW	! 1.65 !	59.72	! 59.72
Total			59.72 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.54  
 (NIGHT): 59.72

STAMSON 5.0                      SUMMARY REPORT                      Date: 17-11-2023 12:18:01  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: bkl4sw.te                      Time Period: Day/Night 16/8 hours  
 Description: Blk 31, Side Wall

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

```
-----
Car traffic volume   : 71234/35611 veh/TimePeriod *
Medium truck volume  : 6285/3142  veh/TimePeriod *
Heavy truck volume   : 6285/3142  veh/TimePeriod *
Posted speed limit   : 100 km/h
Road gradient        : 2 %
Road pavement        : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
  24 hr Traffic Volume (AADT or SADT): 125700
  Percentage of Annual Growth         : 0.00
  Number of Years of Growth           : 0.00
  Medium Truck % of Total Volume       : 7.50
  Heavy Truck % of Total Volume        : 7.50
  Day (16 hrs) % of Total Volume       : 66.67
```

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

```
-----
Angle1   Angle2      : -90.00 deg   90.00 deg
Wood depth      : 0 (No woods.)
No of house rows      : 1 / 1
House density     : 75 %
Surface          : 1 (Absorptive ground surface)
Receiver source distance : 150.00 / 150.00 m
Receiver height    : 4.50 / 7.50 m
Topography       : 1 (Flat/gentle slope; no barrier)
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----
1.QEW ! 1.65 ! 61.87 ! 61.87
-----+-----+-----
Total 61.87 dBA
```

Result summary (night)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----
1.QEW ! 1.65 ! 62.94 ! 62.94
-----+-----+-----
Total 62.94 dBA
```

TOTAL Leq FROM ALL SOURCES (DAY): 61.87  
 (NIGHT): 62.94

STAMSON 5.0 SUMMARY REPORT Date: 17-11-2023 12:34:31  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: sdllsw.te Time Period: Day/Night 16/8 hours  
 Description: Blk 32, Side Wall

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

```
-----
Car traffic volume : 71234/35611 veh/TimePeriod *
Medium truck volume : 6285/3142 veh/TimePeriod *
Heavy truck volume : 6285/3142 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
  24 hr Traffic Volume (AADT or SADT): 125700
  Percentage of Annual Growth : 0.00
  Number of Years of Growth : 0.00
  Medium Truck % of Total Volume : 7.50
  Heavy Truck % of Total Volume : 7.50
  Day (16 hrs) % of Total Volume : 66.67
```

Data for Segment # 1: QEW (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 : 100.00 / 100.00 m
Receiver height : 4.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 0.00 m
Barrier receiver distance : 20.00 / 20.00 m
Source elevation : 194.70 m
Receiver elevation : 195.20 m
Barrier elevation : 195.20 m
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+
1.QEW ! 1.65 ! 69.55 ! 69.55 *
-----+-----+-----+
Total 69.55 dBA
```

\* Bright Zone !

Result summary (night)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+
1.QEW ! 1.65 ! 70.46 ! 70.46 *
-----+-----+-----+
Total 70.46 dBA
```

\* Bright Zone !

TOTAL Leq FROM ALL SOURCES (DAY): 69.55  
 (NIGHT): 70.46

STAMSON 5.0                      SUMMARY REPORT                      Date: 20-11-2023 09:18:40  
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
Filename: ola2.te                      Time Period: Day/Night 16/8 hours  
Description: Urban Parkette 1

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

-----  
Car traffic volume : 71234/35611 veh/TimePeriod \*  
Medium truck volume : 6285/3142 veh/TimePeriod \*  
Heavy truck volume : 6285/3142 veh/TimePeriod \*  
Posted speed limit : 100 km/h  
Road gradient : 2 %  
Road pavement : 1 (Typical asphalt or concrete)  
\* Refers to calculated road volumes based on the following input:  
24 hr Traffic Volume (AADT or SADT): 125700  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.50  
Heavy Truck % of Total Volume : 7.50  
Day (16 hrs) % of Total Volume : 66.67

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

-----  
Angle1 Angle2 : -80.00 deg 80.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 3 / 3  
House density : 75 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 270.00 / 270.00 m  
Receiver height : 1.50 / 7.50 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -80.00 deg Angle2 : 80.00 deg  
Barrier height : 0.00 m  
Barrier receiver distance : 3.00 / 3.00 m  
Source elevation : 0.00 m  
Receiver elevation : 0.00 m  
Barrier elevation : 0.00 m

Road data, segment # 2: Montrose Rd (day/night)

-----  
Car traffic volume : 14076/1564 veh/TimePeriod \*  
Medium truck volume : 612/68 veh/TimePeriod \*  
Heavy truck volume : 612/68 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 1 %  
Road pavement : 1 (Typical asphalt or concrete)  
\* Refers to calculated road volumes based on the following input:  
24 hr Traffic Volume (AADT or SADT): 17000  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 4.00  
Heavy Truck % of Total Volume : 4.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Montrose Rd (day/night)

-----  
Angle1 Angle2 : -80.00 deg -40.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 48.00 / 48.00 m  
Receiver height : 1.50 / 7.50 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -80.00 deg Angle2 : -40.00 deg  
Barrier height : 0.00 m

Barrier receiver distance : 3.00 / 3.00 m  
 Source elevation : 0.00 m  
 Receiver elevation : 0.00 m  
 Barrier elevation : 0.00 m  
 Road data, segment # 3: Montrose Rd (day/night)

-----  
 Car traffic volume : 14076/1564 veh/TimePeriod \*  
 Medium truck volume : 612/68 veh/TimePeriod \*  
 Heavy truck volume : 612/68 veh/TimePeriod \*  
 Posted speed limit : 60 km/h  
 Road gradient : 1 %  
 Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 17000  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 4.00  
 Heavy Truck % of Total Volume : 4.00  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 3: Montrose Rd (day/night)

-----  
 Angle1 Angle2 : -40.00 deg 80.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 48.00 / 48.00 m  
 Receiver height : 1.50 / 7.50 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : -40.00 deg Angle2 : 80.00 deg  
 Barrier height : 6.00 m  
 Barrier receiver distance : 3.00 / 3.00 m  
 Source elevation : 0.00 m  
 Receiver elevation : 0.00 m  
 Barrier elevation : 0.00 m

Result summary (day)

	!	source	!	Road	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.QEW	!	1.65	!	53.73	!	53.73 *
2.Montrose Rd	!	1.41	!	52.44	!	52.44 *
3.Montrose Rd	!	1.41	!	41.51	!	41.51
	+		+		+	
		Total				56.29 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.29

STAMSON 5.0 SUMMARY REPORT Date: 17-11-2023 12:35:14  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: prk11.te Time Period: Day/Night 16/8 hours  
 Description: Parkette 2

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

```
-----
Car traffic volume : 71234/35611 veh/TimePeriod *
Medium truck volume : 6285/3142 veh/TimePeriod *
Heavy truck volume : 6285/3142 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
  24 hr Traffic Volume (AADT or SADT): 125700
  Percentage of Annual Growth : 0.00
  Number of Years of Growth : 0.00
  Medium Truck % of Total Volume : 7.50
  Heavy Truck % of Total Volume : 7.50
  Day (16 hrs) % of Total Volume : 66.67
```

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

```
-----
Angle1 Angle2 : -80.00 deg -25.00 deg
Wood depth : 0 (No woods.)
No of house rows : 2 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 135.00 / 135.00 m
Receiver height : 1.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -80.00 deg Angle2 : -25.00 deg
Barrier height : 0.00 m
Barrier receiver distance : 20.00 / 20.00 m
Source elevation : 194.70 m
Receiver elevation : 196.00 m
Barrier elevation : 195.20 m
```

Data for Segment # 2: QEW (day/night)

```
-----
Angle1 Angle2 : -5.00 deg 80.00 deg
Wood depth : 0 (No woods.)
No of house rows : 2 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 135.00 / 135.00 m
Receiver height : 1.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -5.00 deg Angle2 : 80.00 deg
Barrier height : 0.00 m
Barrier receiver distance : 20.00 / 20.00 m
Source elevation : 194.70 m
Receiver elevation : 196.00 m
Barrier elevation : 195.20 m
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.QEW ! 1.65 ! 54.14 ! 54.14 *
2.QEW ! 1.65 ! 54.87 ! 54.87 *
-----+-----+-----+-----
Total 57.53 dBA
```

**Project No:** Y2129  
**Project Name:** 3770 Montrose Rd Development  
**Date:** October 2025

**Receiver Table**

Name	ID	Level Lr		Limit. Value		Height		Coordinates		
		Day	Night	Day	Night			X	Y	Z
		(dBA)	(dBA)	(dBA)	(dBA)	(m)		(m)	(m)	(m)
R1	R1	46.3	43.3	50.0	45.0	7.50	r	232.77	530.33	7.50
R2	R2	47.3	44.3	50.0	45.0	7.50	r	275.96	531.32	7.50
R3	R3	47.2	44.2	50.0	45.0	7.50	r	337.38	533.26	7.50
R4	R4	47.2	44.2	50.0	45.0	7.50	r	405.38	539.26	7.50
R5	R5	47.5	44.5	50.0	45.0	7.50	r	457.98	544.76	7.50

**Point Source Table**

Name	Result. PWL			Lw / Li		Operating Time			Freq.	Height		Coordinates		
	Day	Evening	Night	Type	Value	Day	Special	Night				X	Y	Z
	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)	(Hz)	(m)		(m)	(m)	(m)
S1	80.4	80.4	80.4	Lw	RTU2	720.00	240.00	240.00		1.20	g	247.87	472.88	6.20
S2	82.2	82.2	82.2	Lw	RTU3	720.00	240.00	240.00		1.20	g	262.25	476.34	6.20
S3	87.2	87.2	87.2	Lw	RTU4	720.00	240.00	240.00		1.20	g	262.92	466.17	6.20
S4	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	245.92	476.84	6.20
S5	82.2	82.2	82.2	Lw	RTU3	720.00	240.00	240.00		1.20	g	330.00	402.85	7.20
S6	87.2	87.2	87.2	Lw	RTU4	720.00	240.00	240.00		1.20	g	333.17	421.19	7.20
S7	90.3	90.3	90.3	Lw	RTU5	720.00	240.00	240.00		1.20	g	359.51	421.02	7.20
S8	82.2	82.2	82.2	Lw	RTU3	720.00	240.00	240.00		1.20	g	350.01	409.19	7.20
S9	92.5	92.5	92.5	Lw	RTU6	720.00	240.00	240.00		1.20	g	351.51	396.01	7.20
S10	95.2	95.2	95.2	Lw	RTY7	720.00	240.00	240.00		1.20	g	351.84	388.51	7.20
S11	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	339.84	392.68	7.20
S12	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	404.36	428.95	6.20
S13	80.4	80.4	80.4	Lw	RTU2	720.00	240.00	240.00		1.20	g	410.86	428.95	6.20
S14	82.2	82.2	82.2	Lw	RTU3	720.00	240.00	240.00		1.20	g	416.53	429.45	6.20
S15	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	420.70	429.28	6.20
S16	80.4	80.4	80.4	Lw	RTU2	720.00	240.00	240.00		1.20	g	425.70	429.62	6.20
S17	82.2	82.2	82.2	Lw	RTU3	720.00	240.00	240.00		1.20	g	430.54	429.62	6.20
S18	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	436.20	430.28	6.20
S19	82.2	82.2	82.2	Lw	RTU3	720.00	240.00	240.00		1.20	g	444.17	435.72	6.20
S20	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	447.84	442.39	6.20
S21	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	450.50	448.06	6.20
S22	80.4	80.4	80.4	Lw	RTU2	720.00	240.00	240.00		1.20	g	454.67	454.56	6.20
S23	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	459.21	462.39	6.20
S24	82.2	82.2	82.2	Lw	RTU3	720.00	240.00	240.00		1.20	g	459.20	466.73	6.20
S25	82.2	82.2	82.2	Lw	RTU3	720.00	240.00	240.00		1.20	g	454.48	475.74	6.20
S26	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	454.22	483.15	6.20
S27	80.4	80.4	80.4	Lw	RTU2	720.00	240.00	240.00		1.20	g	453.86	491.38	6.20
S28	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	453.43	498.64	6.20
S29	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	453.56	505.61	6.20
S30	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.00	g	453.30	510.17	6.00
S31	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.00	g	453.24	514.30	6.00
S34	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	282.34	307.26	5.20
S35	87.2	87.2	87.2	Lw	RTU4	720.00	240.00	240.00		1.20	g	278.90	304.08	5.20
S36	90.3	90.3	90.3	Lw	RTU5	720.00	240.00	240.00		1.20	g	273.61	301.96	5.20
S37	92.5	92.5	92.5	Lw	RTU6	720.00	240.00	240.00		1.20	g	279.96	297.46	5.20
S38	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	324.66	313.15	6.20
S39	82.2	82.2	82.2	Lw	RTU3	720.00	240.00	240.00		1.20	g	329.42	313.02	6.20
S40	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	334.98	313.02	6.20



S41	80.4	80.4	80.4	Lw	RTU2	720.00	240.00	240.00		1.20	g	340.80	312.76	6.20
S42	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	347.16	312.89	6.20
S43	82.2	82.2	82.2	Lw	RTU3	720.00	240.00	240.00		1.20	g	353.97	312.76	6.20
S44	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	361.18	313.28	6.20
S45	87.2	87.2	87.2	Lw	RTU4	720.00	240.00	240.00		1.20	g	368.73	302.04	6.20
S46	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	368.86	294.62	6.20
S47	90.3	90.3	90.3	Lw	RTU5	720.00	240.00	240.00		1.20	g	369.12	289.20	6.20
S48	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	369.26	284.30	6.20
S49	80.4	80.4	80.4	Lw	RTU2	720.00	240.00	240.00		1.20	g	368.99	278.74	6.20
S50	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.20	g	369.39	273.45	6.20
L1	99.7	99.7	99.7	Lw	Tridling	30.00	20.00	10.00		2.50	r	348.71	378.34	2.50
L2	99.7	99.7	99.7	Lw	Tridling	30.00	20.00	10.00		2.50	r	365.91	378.14	2.50
L3	99.7	99.7	99.7	Lw	Tridling	30.00	20.00	10.00		2.50	r	365.98	382.38	2.50
GC	100.0	100.0	100.0	Lw	100	20.00	20.00	10.00	500	2.50	r	347.18	382.57	2.50
TrRef1	102.4	102.4	102.4	Lw	TrRef	30.00	30.00	30.00		2.50	r	346.34	378.36	2.50
TrRef2	102.4	102.4	102.4	Lw	TrRef	30.00	30.00	30.00		2.50	r	367.66	378.15	2.50
TrRef3	102.4	102.4	102.4	Lw	TrRef	30.00	30.00	30.00		2.50	r	367.51	382.40	2.50
S32	78.1	78.1	78.1	Lw	RTU1	720.00	240.00	240.00		1.00	g	464.08	514.56	6.00

### Line Source Table

Name	Result. PWL			Result. PWL'			Lw / Li		Operating Time			Freq.	Moving Pt. Src			
	Day	Evening	Night	Day	Evening	Night	Type	Value	Day	Special	Night		Number			Speed
	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)		Day	Evening	Night	(km/h)
T1	95.8	93.6	91.8	75.2	73.0	71.2	PWL-Pt	TrMov	20.00	20.00	10.00		10.0	6.0	4.0	30.0
T2	98.8	96.6	94.8	75.2	73.0	71.2	PWL-Pt	TrMov	20.00	20.00	10.00		10.0	6.0	4.0	30.0

### Partial Level Table

Source			Partial Level Day				
Name	M.	ID	R1	R2	R3	R4	R5
S1		S1	34.9	34.1	29.2	24.4	19.7
S2		S2	36.5	37.3	32.6	27.8	22.9
S3		S3	40.2	40.8	37.0	32.5	27.7
S4		S4	33.2	32.1	26.9	22.0	17.1
S5		S5	26.9	27.9	28.6	26.5	24.2
S6		S6	32.8	34.7	35.7	33.6	31.2
S7		S7	34.1	36.1	38.1	37.0	34.8
S8		S8	25.7	27.8	29.3	28.1	25.6
S9		S9	34.9	36.6	38.0	36.8	34.8
S10		S10	37.1	38.6	39.8	38.8	36.9
S11		S11	20.9	22.2	23.2	21.7	19.6
S12		S12	20.9	22.8	25.5	26.6	24.8
S13		S13	23.1	25.0	27.7	29.1	27.4
S14		S14	24.4	26.3	29.4	31.0	29.6
S15		S15	19.6	21.6	24.8	26.5	25.3
S16		S16	21.9	23.9	27.1	29.0	27.9
S17		S17	23.7	25.7	28.7	30.8	29.9
S18		S18	16.9	20.9	24.1	26.4	25.7
S19		S19	21.7	25.7	28.5	31.0	30.6
S20		S20	17.1	21.1	24.1	27.0	26.9
S21		S21	17.1	21.1	24.2	27.4	27.5
S22		S22	19.7	23.6	26.7	30.1	30.6
S23		S23	16.8	20.8	24.1	28.1	29.1
S24		S24	21.4	25.3	28.7	32.8	33.8
S25		S25	21.9	26.0	29.5	34.0	35.0
S26		S26	17.4	21.6	25.3	30.4	31.8
S27		S27	20.1	24.3	28.1	33.7	35.4
S28		S28	17.6	19.7	25.8	32.0	34.4
S29		S29	17.6	19.8	25.9	32.7	35.8

S30		S30	17.4	19.7	26.0	33.1	36.3
S31		S31	17.5	19.7	26.1	32.7	36.9
S34		S34	18.5	19.6	19.2	13.2	12.0
S35		S35	28.0	29.0	28.6	22.6	21.5
S36		S36	30.4	31.4	30.9	25.0	23.8
S37		S37	32.8	33.8	33.4	27.7	26.5
S38		S38	18.5	19.6	15.5	14.6	13.5
S39		S39	23.0	24.2	20.1	19.3	18.2
S40		S40	18.3	19.5	15.5	14.8	13.7
S41		S41	20.8	17.8	18.1	17.4	16.4
S42		S42	18.1	15.1	15.5	14.9	13.9
S43		S43	22.5	19.6	20.1	19.6	21.4
S44		S44	14.1	14.9	15.5	15.1	17.0
S45		S45	23.1	23.9	24.5	24.2	26.3
S46		S46	15.9	14.1	14.6	14.3	16.4
S47		S47	28.3	26.0	26.5	26.2	28.3
S48		S48	15.9	13.7	14.2	13.9	16.0
S49		S49	18.1	16.1	16.6	18.5	18.3
S50		S50	15.3	13.3	13.8	16.4	15.6
L1		L1	19.2	20.2	18.3	17.8	16.2
L2		L2	15.5	16.1	18.4	17.7	17.8
L3		L3	13.2	15.4	16.2	14.9	13.4
GC		GC	13.4	14.0	14.2	13.4	12.4
TrRef1		TrRef1	21.4	23.4	21.2	20.6	18.8
TrRef2		TrRef2	20.1	20.7	21.3	20.4	19.3
TrRef3		TrRef3	19.0	18.5	19.3	17.9	16.4
S32		S32	16.6	18.7	24.8	29.1	36.9
T1		T1	22.7	23.8	23.3	18.6	15.1
T2		T2	22.6	23.5	23.0	22.2	16.3

## Result Table

Receiver		Limiting Value		rel. Axis			Lr w/o Noise Control		dL req.		Lr w/ Noise Control		Exceeding	
Name	ID	Day	Night	Station	Distance	Height	Day	Night	Day	Night	Day	Night	Day	Night
		dB(A)	dB(A)	m	m	m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
R1	R1	50	45	112	137.99	5.00	46.3	43.3	-	-	0.0	0.0	-	-
R2	R2	50	45	87	142.58	5.00	47.3	44.3	-	-	0.0	0.0	-	-
R3	R3	50	45	0	155.21	5.00	47.2	44.2	-	-	0.0	0.0	-	-
R4	R4	50	45	37	155.99	7.50	47.2	44.2	-	-	0.0	0.0	-	-
R5	R5	50	45	37	168.82	7.50	47.5	44.5	-	-	0.0	0.0	-	-

**APPENDIX 4**

**SOUND LEVEL CRITERIA**

# MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS

## ENVIRONMENTAL NOISE GUIDELINE

### Stationary and Transportation Sources - Approval and Planning Publication NPC-300

August 2013

#### Day-time Outdoor Sound Level Limit

Table C-1 gives the equivalent sound level ( $L_{eq}$ ) limit for designated Outdoor Living Areas. The limit applies to the entire day-time period from 07:00 to 23:00.

**TABLE C-1**  
**Sound Level Limit for Outdoor Living Areas**  
**Road and Rail**

Time Period	$L_{eq}(16)$ (dBA)
16 hr, 07:00 - 23:00	55

#### Indoor Sound Level Limit

Table C-2 gives the equivalent sound level ( $L_{eq}$ ) limits and the applicable time periods for the indicated types of indoor space. The specified sound level criteria are minimum requirements and apply to the indicated indoor spaces with the windows and doors closed.

**TABLE C- 2**  
**Indoor Sound Level Limits (Road and Rail)**

Type of Space	Time Period	$L_{eq}$ (Time Period) (dBA)	
		Road	Rail
Living/dining, den areas of residences, nursing/retirement homes, hospitals, schools, day-care centers, etc.	07:00-23:00	45	40
Living/dining areas of residences, nursing/retirement homes, hospitals, etc. (except schools or daycare centres)	23:00 - 07:00	45	40
Sleeping quarters	07:00-23:00	45	40
Sleeping quarters	23:00 - 07:00	40	35

## SUPPLEMENTARY NOISE LIMITS

Indoor limits for transportation sources applicable to noise sensitive land uses are specified in Table C-2 and Table C-9.

**TABLE C-9**  
**Indoor Sound Level Limits (Road and Rail)**

Type of Space	Time Period	L <sub>eq</sub> (Time Period) (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00-23:00	50	45
Living/dining areas of residences, hospitals, schools, nursing/retirement, homes day-care centers, theatres, place of worship, libraries, individual or semi-private offices, conference rooms, reading rooms etc.	16 hours between 07:00-23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 - 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes etc	8 hours between 23:00 - 07:00	40	35

## SUMMARY OF MINIMUM NOISE CONTROL AND VENTILATION REQUIREMENTS FOR ROAD AND RAIL NOISE

**TABLE 1**  
**COMBINATION OF ROAD AND RAIL NOISE, DAY-TIME (0700 - 2300)**  
**OUTDOOR, VENTILATION AND WARNING CLAUSE REQUIREMENTS**

ASSESSMENT LOCATION	L <sub>eq</sub> (16 hr) (dBA)	VENTILATION REQUIREMENTS	OUTDOOR CONTROL MEASURES	WARNING CLAUSE
OUTDOOR LIVING AREA (OLA)	Less than or equal to 55 dBA	N/A	None required	Not required
	Greater than 55 dBA to less than or equal to 60 dBA	N/A	Control measures (barriers) not required but should be considered	Required if resultant L <sub>eq</sub> exceeds 55 dBA Type A
	Greater than 60 dBA	N/A	Control measures (barriers) required to reduce the L <sub>eq</sub> below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible	Required if resultant L <sub>eq</sub> exceeds 55 dBA Type B
PLANE OF LIVING ROOM WINDOW	Greater than 50 dBA to less than or equal to 55 dBA	None required	N/A	Not required
	Greater than 55 dBA to less than or equal to 65 dBA	Forced air heating with provision for central air conditioning	N/A	Required Type C
	Greater than 65 dBA	Central air conditioning	N/A	Required Type D

**TABLE 2**  
**COMBINATION OF ROAD AND RAIL NOISE, NIGHT-TIME (2300 - 0700)**  
**VENTILATION AND WARNING CLAUSE REQUIREMENTS**

ASSESSMENT LOCATION	L <sub>eq</sub> (8hr) (dBA)	VENTILATION REQUIREMENTS	WARNING CLAUSE
PLANE OF BEDROOM WINDOW	Greater than 50 dBA to less than or equal to 60 dBA	Forced air heating with provision for central air conditioning	Required Type C
	Greater than 60 dBA	Central air conditioning	Required Type D

**TABLE 3**  
**ROAD AND RAIL NOISE, DAY-TIME (0700 - 2300)**  
**BUILDING COMPONENT REQUIREMENTS**

ASSESSMENT LOCATION		$L_{eq}$ (16 hr)	BUILDING COMPONENT REQUIREMENTS
PLANE OF LIVING ROOM WINDOW	R	Less than or equal to 65 dBA	Building compliant with the Ontario Building Code
	O		
	A	Greater than 65 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	D		
	R	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
	A		
	I	Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	L		

**TABLE 4**  
**ROAD AND RAIL NOISE, NIGHT-TIME (2300-0700)**  
**BUILDING COMPONENT REQUIREMENTS**

ASSESSMENT LOCATION		$L_{eq}$ (8 hr)	BUILDING COMPONENT REQUIREMENTS
PLANE OF BEDROOM WINDOW	R	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
	O		
	A	Greater than 65 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	D		
	R	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
	A		
	I	Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	L		

**TABLE 5**  
**FACADE REQUIREMENT FOR RAIL NOISE ONLY - 24 HOURS**

ASSESSMENT LOCATION	DISTANCE TO RAILWAY (m)	$L_{eq}$ (24 hr) (dBA)	NOISE CONTROL REQUIREMENT
PLANE OF BEDROOM WINDOW	Less than 100 m	Less than or equal to 60 dBA	No additional requirement
		Greater than 60 dBA	Brick veneer or acoustically equivalent
	Greater than 100 m	Less than or equal to 60 dBA	No additional requirement
		Greater than 60 dBA	No additional requirement

**TABLE B- 1**  
**Exclusion Limit Values of One-Hour Equivalent Sound Level ( $L_{eq}$  dBA)**  
**Outdoor Points of Reception**

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00-19:00	50	50	45	55
19:00 -23:00	50	45	40	55

**TABLE B- 2**  
**Exclusion Limit Values of One-Hour Equivalent Sound Level ( $L_{eq}$  dBA)**  
**Plane of Window of Noise Sensitive Spaces**

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00-19:00	50	50	45	60
19:00 -23:00	50	50	40	60
23:00-07:00	45	45	40	55

## **WARNING CLAUSES**

The following warning clauses may be used individually or in combination:

### **TYPE A:**

*"Occupants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound level will exceed the Ministry of Environment's noise criteria."*

### **TYPE B:**

*"Occupants are advised that despite the inclusion of noise abatement features within the development area, sound levels from road traffic and future commercial development may be of concern, occasionally interfering with some activities of the dwelling occupants as the noise level will exceed the Ministry of Environment's noise criteria."*

### **TYPE C:**

*"This dwelling unit was fitted with ducting sized to accommodate a central air conditioning unit/ventilation system. The installation of central air conditioning by the homeowner will allow windows and exterior doors to be kept closed, thereby achieving indoor sound levels within the limits recommended by the Ministry of Environment. (Note: The location and installation of the outdoor air conditioning device should be done so as to comply with noise criteria of MOE NPC-216 and thus minimize the noise impacts both on and in the immediate vicinity of the subject property)."*

### **TYPE D:**

*"This dwelling unit was fitted with a central air conditioner/ventilation system to allow the windows and exterior doors to remain closed, thereby achieving indoor sound levels within the limits recommended by the Ministry of Environment. (Note: The location and installation of the outdoor air conditioning device should be done so as to comply with noise criteria of MOE NPC-216 thus minimize the noise impacts both on and in the immediate vicinity of the subject property)."*

### **TYPE E:**

*"Occupants are advised that due to the proximity of the existing commercial uses, noise from the commercial activities may at times be audible"*

## **APPENDIX 5**

### **SAMPLE WINDOW AND EXTERIOR WALL CONFIGURATIONS**



## WINDOW STC RATINGS

STC	Double Glazing of indicated glass thickness					Triple Glazing	
	2mm and 2mm glass	3mm and 3mm glass	4mm and 4mm glass	3mm and 6mm glass	6mm and 6mm glass	3mm 3mm and 3mm glass	3mm 3mm and 6mm glass
	Interpane Spacing (mm)					Interpane Spacing (mm)	
27	6						
28	13						
29	15	6					
30	18	13	6				
31	22	16	13	6	6	6,6	
32	28	20	16	13	13	6,10	6,6
33	35	25	20	16	16	6,15	6,10
34	42	32	25	20	20	6,20	6,15
35	50	40	32	25	24	6,30	6,20
36	63	50	40	32	30	6,40	6,30
37	80	63	50	40	37	6,50	6,40
38	100	80	63	55	50	6,65	6,50
39	125	100	80	75	70	6,80	6,65
40	150	125	100	95	90	6,100	6,80
41		150	125	110	100		6,100
42			150	135	125		

Source: National Research Council, Division of Building Research

### EXPLANATORY NOTES:

- STC data listed in the table are for the well-fitted weather-stripped units that can be opened. The STC values apply only when the windows are closed. For windows fixed and sealed to the frame, add three to the STC given in the table.
- If the interpane spacing or glass thickness for a specific double-glazed window is not listed in the table, the nearest listed values should be used.
- If the interpane spacing for a specific triple-glazed window are not listed in the table, use the listed case whose combined spacing are nearest the actual combined spacing.
- The STC data listed in the table are for typical windows, but details of glass mounting, window seals, etc., may result in slightly different performance for some manufacturer's products. If the laboratory sound transmission loss data (conforming to ASTM test method E-90) are available, these should be used.

## **EXTERIOR WALL STC RATINGS**

Wall Configuration	EW1	EW2	EW3	EW4	EW1R	EW2R	EW3R	EW5	EW4R	EW6	EW7 EW5R	EW8
<b>STC Rating</b>	<b>38</b>	<b>40</b>	<b>43</b>	<b>46</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>54</b>	<b>55</b>	<b>57</b>	<b>58</b>	<b>62</b>

Source: National Research Council, Division of Building Research

### NOTES:

- 1 The common structure of walls EW1 to EW5 is composed of 12.7mm gypsum board, vapour barrier and 38x89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in inter-stud cavities.
  - EW1 denotes the common structure, plus sheathing, plus wood siding or metal siding and fibre backer board
  - EW2 denotes the common structure, plus rigid insulation (25 to 30 mm), and wood siding or metal siding and fibre backer board.
  - EW3 denotes simulated mansard with the common structure, plus sheathing, 28 X89 mm framing, sheathing and asphalt roofing material
  - EW4 denotes the common structure, plus sheathing and 20 mm stucco.
  - EW5 denotes the common structure, plus sheathing, 25 mm air space, 100mm brick veneer.
  - EW6 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25 to 50 mm), 100 mm back-up block 100 mm face brick.
  - EW7 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25 to 50 mm), 140mm back-up block, 100 mm face brick.
  - EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25 to 50 mm), 200 mm concrete.
- 2 R signifies the mounting of the interior gypsum board on resilient clips.
- 3 An exterior wall conforming to rainscreen design principles and composed of 12.7 mm gypsum board, 100 mm concrete block, rigid insulation (25 to 50 mm), 25 mm air space, and 100 mm brick veneer has the same STC as EW6.
- 4 An exterior wall described in EW1 with the addition of rigid insulation (25 to 50 mm) between the sheathing and the external finish has the same STC as EW2.