



June 8, 2023

2855078 Ontario Ltd.  
1511 Hixon Street  
Oakville, Ontario L6L 1S4

E-mail: [nouman@develecoconstructions.com](mailto:nouman@develecoconstructions.com)

Attention: Shahrez Alvi

**Re: Noise Impact Study of the Proposed Residential Development**

3090 Montrose Road, Niagara Falls, Ontario  
Pinchin File: 317565

Pinchin Ltd. (Pinchin) was retained by 2855078 Ontario Ltd. (Client) to prepare a noise impact study report for its proposed residential development (development) at 3090 Montrose Road, Niagara Falls, Ontario. This report has been prepared to satisfy the comments provided in the Pre-Consultation Checklist, dated September 15, 2022.

Based on the information available to Pinchin, it is understood that the Client is proposing to construct a 6-unit residential townhouse block (Units 1-6) and a semi-detached residence (Units 7 and 8).

Figure 1, Appendix B, shows the area plan for the development and nearby roads. Figure 2, Appendix B, shows the site plan with onsite receptors.

## **1.0 NOISE CRITERIA**

In this study, the applicable guideline limits were taken from the Niagara Region Publication [1] and the Ontario Ministry of Environment, Conservation and Parks (MECP) Publication NPC-300 [2]. The guideline limits outlined in the two publications are very similar. Note that the Niagara Region requires the prediction of traffic noise impact shall be based on a 20-year traffic forecast. The applicable noise criteria for this proposed development are described as follows:

### **1.1 Outdoor Noise Criteria**

The daytime noise criterion for outdoor living areas (OLAs) is 55 dBA for road noise sources. Where it is not technically, economically, or administratively feasible to meet the 55 dBA limit, up to 60 dBA is permissible with warning clauses. Where the daytime sound level is greater than 60 dBA, control measures are required to reduce the sound level to 60 dBA or less.

### **1.2 External Building Façade Criteria**

Where the sound levels at the exterior of the building facades exceed 55 dBA at bedroom or living/dining room windows during daytime hours and 50 dBA during nighttime periods, the unit should be designed



with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

Where the sound levels exceed by more than 10 dB (i.e. 65 dBA during daytime hours and 60 dBA during nighttime hours), installation of central air conditioning should be implemented, with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits.

### **1.3 Noise Impact from Stationary Sources**

A review of aerial photos shows that there are no significant stationary sources in the vicinity of the development. Consequently, the noise impact from stationary sources was deemed insignificant.

## **2.0 POINT OF RECEPTION DESCRIPTION**

To evaluate the traffic noise impacts from the Queen Elizabeth Way (QEW) and Montrose Road (Regional Road 98) on the development, fourteen (14) noise sensitive receptors were selected from the development's most affected locations. The selected receptors represent the upper floor windows on different facades and outdoor living areas (OLAs) in the rear yards. Figure 2, Appendix B, shows the locations of onsite receptors.

## **3.0 NOISE IMPACT ASSESSMENT**

### **3.1 Noise Impact from External Sources on the Development**

A review of aerial photos shows that there are two major roadways near the proposed development: the QEW to the east and Montrose Road to the west.

The recent Annual Average Daily Traffic (AADT) volumes and growth information were obtained from the MTO and the Niagara Region. The vehicle volumes for both the QEW and Montrose Road were projected to year 2043 using appropriate annual growth rates. Information on commercial vehicle breakdowns and day/night splits was obtained from the MTO website, the Region's traffic count report and applicable guidelines. For Regional Road, similar to other noise studies in the Region, "Small Trucks" were considered to be medium trucks. "Tractor Trailers" were considered to be heavy trucks. "Trucks/Buses" were split at 60% and 40% for medium and heavy trucks, respectively.

Details of traffic data and projections are provided in Appendix C.

### **3.2 Traffic Noise Modelling Results and Recommendations**

The sound levels at the proposed development receptors due to road traffic noise were calculated using the CadnaA implementation of the Traffic Noise Model (TNM). CadnaA calculates sound levels according



to the ISO standard 9613-2 [3], “Acoustics – Attenuation of Sound during Propagation Outdoors.” The TNM Version 3.1 [4] was published by the United States Federal Highway Administration in 2021.

The combination of CadnaA-TNM enables the modelling of complex terrain, barrier configurations and the utilization of advanced traffic noise modelling algorithms. Another consideration for the selection of CadnaA-TNM in this study is that the program enables the calculations of multiple roads and receptors at the same time. Sample comparisons in Appendix C show that the predictions between CadnaA-TNM and STAMSON (Version 5.04) [5] are in good agreement.

The CadnaA-TNM traffic noise impact prediction results are provided in Table 1, Appendix A.

The predicted sound levels at the selected outdoor living areas range from 58 dBA to 60 dBA. Since the predictions already included both existing and proposed barrier walls of approximately 6.4 m high, it is our opinion that additional barrier walls are not recommended. Warning Clause Type A is required to be included in agreements of offers of purchase/sale, and lease/rental.

The predicted sound levels at the planes of windows range from 58 dBA and 72 dBA. The predicted highest sound level is on the north façade of Unit 1. This means that if Unit 1 has windows for sensitive spaces on the north façade, upgrades on the windows and doors will be required. Specifically, the selected windows should provide a sound transmission class (STC) of 36 or higher. For the side wall, an STC of 47 or higher is required.

For all other unit windows, doors and walls, construction meeting the minimum non-acoustical requirements outlined in the Ontario Building Code (OBC) would be sufficient to provide the required sound attenuation.

All units should be designed with the installation of central air conditioning systems. If central air conditioning devices are going to be installed in the units, the devices should meet the applicable requirements outlined in MECP Publication NPC-216 [5], and applicable local by-laws.

Details of building component calculations and recommendations are provided in Appendix D.

Warning Clause Type D is also required to be included in agreements of offers of purchase/sale, and lease/rental. Details of warning clauses are provided in Appendix E.

#### **4.0 CONCLUSIONS**

A noise impact assessment of the proposed development was completed by modelling the noise impact of road traffic at selected receptor locations on the development. The predicted noise impacts from road traffic on the development meet the NPC-300 criteria, with slight upgrades on Unit 1 windows (STC 36 or higher) and wall (EW1R or higher), construction of a barrier wall along the property line, installation of



central air conditioning systems, and the inclusion of warning clauses. Consequently, the development meets MECP and the Nagara Region's noise requirements.

## 5.0 TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

## 6.0 CLOSURE

Contact the undersigned with any questions.

Sincerely,

**Pinchin Ltd.**

Prepared by:

Reviewed by:

Weidong Li, Ph.D., P.Eng.  
Senior Project Engineer  
647.287.1677  
[wli@pinchin.com](mailto:wli@pinchin.com)

Aidan Maher, P.Eng.  
Senior Project Manager  
416.271.9333  
[amaher@pinchin.com](mailto:amaher@pinchin.com)





## 7.0 REFERENCES

1. Niagara Region, Regional Road Traffic Noise Control, November 1, 2006.
2. Ministry of the Environment Publication NPC-300, Environmental Noise Guideline – Stationary and Transportation Sources-Approval and Planning, August 2013.
3. ISO 9613-2: 1996, Acoustics –Attenuation of Sound During Propagation outdoors. Part 2 – General Method of Calculation.
4. U.S. Department of Transportation, Federal Highway Administration, Traffic Noise Model Version 3.1, 2021.
5. Ministry of the Environment's STAMSON/STEAM Computer Programme, (Version 5.04), 1989.
6. Ministry of the Environment Publication NPC-216, Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, September 1994.

\\pinchin.com\Miss\Job\317000s\0317565.000 2855078OntarioLtd,3090Montrose,ERC,NOISE\Deliverables\317565 - Noise Impact Study, 3090 Montrose Rd, June 8, 2023.docx

Template: Master Noise Impact Study Letter, ERC, March 5, 2020

**APPENDIX A**  
**Table**  
**(1 Page)**

Table 1 - Road Traffic Noise Impact Predictions

Receptor ID	Receptor Description	Height Above Ground, m [1]	Total Noise Level (Leq, dBA) <sup>[2]</sup>		Windows /Walls [3]	Noise Control Measures [4]	Warning Clause [5]
			Daytime (16 hr)	Nighttime (8 hr)			
U1-E	Unit 1 East Facade	5.5	64	64	OBC / EW2	Central AC	Type D
U1-N	Unit 1 North Facade	5.5	72	72	STC 36 / EW1R	Central AC	Type D
U1-OLA	Unit 1 OLA	1.5	58	58	n/a	Barrier Wall	Type A
U4_E	Unit 4 East Facade	5.5	62	62	OBC	Central AC	Type D
U4_OLA	Unit 4 OLA	1.5	59	59	n/a	Barrier Wall	Type A
U6_E	Unit 6 East Facade	5.5	62	62	OBC / OBC	Central AC	Type D
U6_OLA	Unit 6 OLA	1.5	59	59	n/a	Barrier Wall	Type A
U6_S	Unit 6 South Facade	5.5	59	59	OBC / OBC	Central AC	Type D
U7_E	Unit 7 East Facade	5.5	60	60	OBC / OBC	Central AC	Type D
U7_OLA	Unit 7 OLA	1.5	59	58	n/a	Barrier Wall	Type A
U7_S	Unit 7 South Facade	5.5	58	55	OBC / OBC	Central AC	Type D
U8_N	Unit 8 North Facade	5.5	65	64	OBC / OBC	Central AC	Type D
U8_OLA	Unit 8 OLA	1.5	60	60	n/a	Barrier Wall	Type A
U8_W	Unit 8 West Facade	5.5	64	60	OBC / OBC	Central AC	Type D

Notes:

- Daytime hours are between 7:00 am and 11:00 pm and nighttime hours are between 11:00 pm and 7:00 am.
- [1] Typical height for upper storey windows.
- [2] CadnaA-TNM predicted sound levels in dBA.
- [3] OBC - means the windows and doors should be constructed to meet the minimum requirements outlined in the Ontario Building Code.
- [4] Central AC - means the dwelling should be designed with the installation of central air conditioning system.  
The common structure of walls EW1 to EW5 is composed of 12.7 mm gypsum board, vapour barrier, and 38 x 89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in the inter-stud cavities.  
EW1 denotes exterior wall as in Note 2), plus sheathing, plus wood siding or metal siding and fibre backer board.  
R signifies the mounting of the interior gypsum board on resilient clips.  
EW2 denotes exterior wall as in Note 2), plus rigid insulation (25-50 mm), and wood siding or metal siding and fibre backer board.
- [5] For details on warning clause, see Appendix E.

**APPENDIX B**  
**Figures**  
**(2 Pages)**





**Figure 1 - Scaled Area Plan, Showing the Development and Nearby Roads**

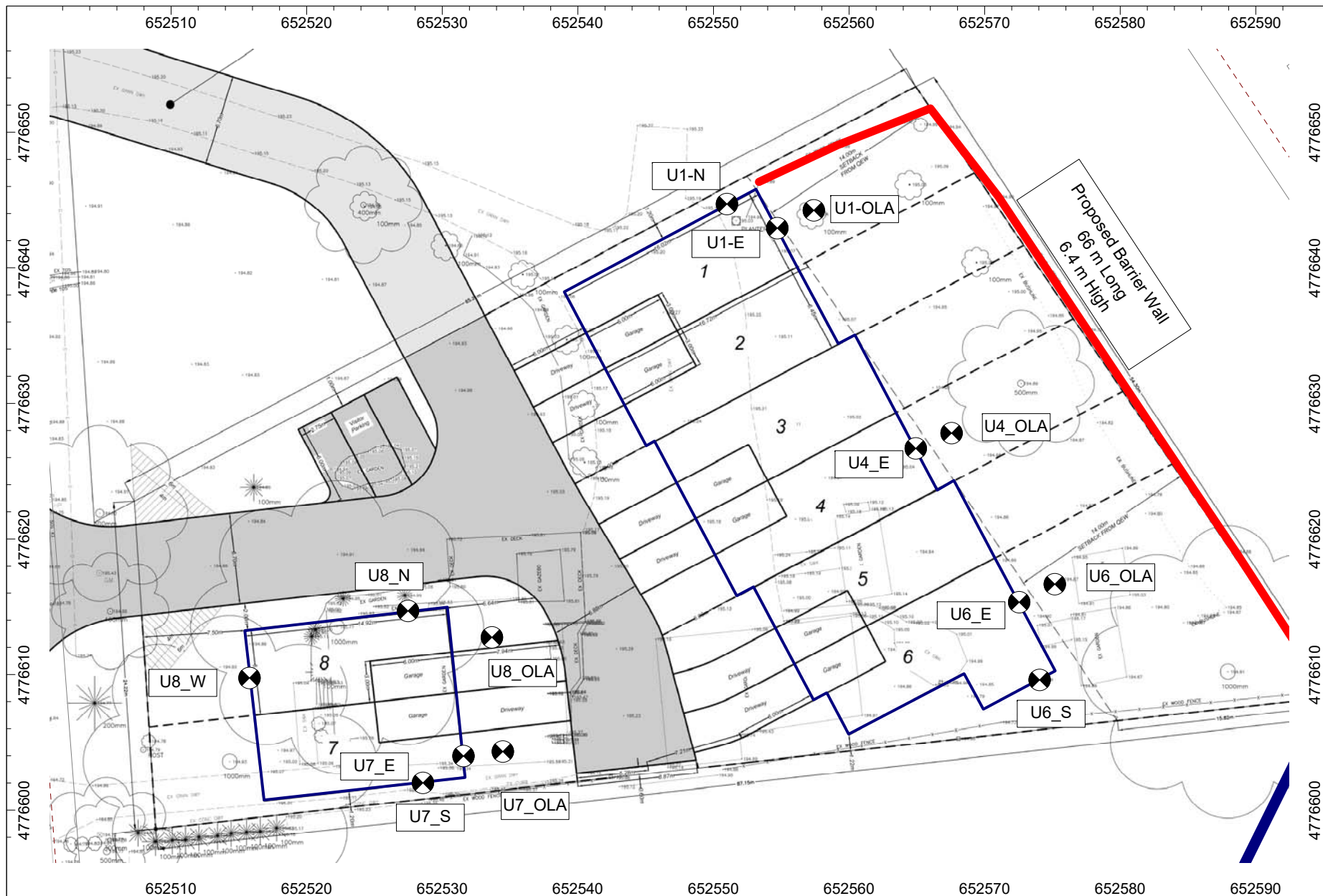


Drawn by: WNL

Scale: 1:2,000

Date: June 6, 2023





**Figure 2 - Site Plan, Showing Onsite Receptors**

2855078 Ontario Ltd., 3090 Montrose Road, Niagara Falls, ON



Pinchin Project: 317565

Drawn by: WNL

Scale: 1:400

Date: June 6, 2023



**APPENDIX C**  
**Traffic Data and STAMSON / CadnaA-TNM Comparisons**  
**(7 Pages)**

**Table C1 - Summary of Traffic Data and Projections**

	QEW	Notes
AADT - Year 2016	67400	From MTO iCorridor
Annual Growth	2.00%	From study in the nearby area
Years of Growth	27	Projected to year 2043
AADT - 2043	115044	Projected AADT
Day / Night Split	67 / 33	Per STAMSON Guide
Cars	97788	85% for cars, 15% for trucks, per Truck AADTT
Medium Trucks	4314	3.75% for medium trucks, per MTO Guide and Truck AADTT
Heavy Trucks	12942	11.25% for Heavy trucks, per MTO Guide and Truck AADTT
Posted Speed Limit, km/hr	100	

**Table C2 - Summary of Road Traffic Counts on Montrose Road**

AADT - 2021 [1]	5735				By Niagara Region
AADT - Projected to 2043, 2% Annual Increase [2]	8866				Projected volume
Day / Night (90/10)	Breakdown	24-hour	Day - 90%	Night - 10%	Per traffic count results
Passenger Cars	96.0%	8512	7660	851	Estimated from 24-hour count
Medium Trucks [3]	2.0%	177	160	18	Estimated from 24-hour count
Heavy Trucks [4]	2.0%	177	160	18	Estimated from 24-hour count

Notes

1. The road traffic data were provided by the Niagara Region.
2. The volumes in 2043 were projected based on an annual 2% compounded growth rate, as advised by the Niagara Region.
3. Medium trucks include small trucks and 60% of trucks/buses.
4. Heavy trucks include 40% of trucks/buses and tractor trailers.

**MH Corbin Traffic Analyzer Study  
Computer Generated Summary Report  
City: Niagara Region  
Street: 619949 - NB  
Location: 619949**

A study of vehicle traffic was conducted with the device having serial number 405067. The study was done in the NB lane at 619949 - NB in Niagara Region, ON in county. The study began on 2021-09-01 at 12:00 AM and concluded on 2021-09-02 at 12:00 AM, lasting a total of 24.00 hours. Traffic statistics were recorded in 15 minute time periods. The total recorded volume showed 2,958 vehicles passed through the location with a peak volume of 78 on 2021-09-01 at [03:45 PM-04:00 PM] and a minimum volume of 0 on 2021-09-01 at [02:45 AM-03:00 AM]. The AADT count for this study was 2,958.

**SPEED**

Chart 1 lists the values of the speed bins and the total traffic volume for each bin. At least half the vehicles were traveling in the 50 - 55 KM/H range or lower. The average speed for all classified vehicles was 51 KM/H with 67.79% vehicles exceeding the posted speed of 50 KM/H. 0.31% percent of the total vehicles were traveling in excess of 89 KM/H. The mode speed for this traffic study was 50KM/H and the 85th percentile was 63.59 KM/H.

< to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 to 104	105 to >
418	189	338	708	551	402	191	80	35	13	9	0	0	0	0

CHART 1

**CLASSIFICATION**

Chart 2 lists the values of the classification bins and the total traffic volume accumulated for each bin. Most of the vehicles classified during the study were Passenger Vehicles. The number of Passenger Vehicles in the study was 2834 which represents 97 percent of the total classified vehicles. The number of Small Trucks in the study was 17 which represents 1 percent of the total classified vehicles. The number of Trucks/Buses in the study was 45 which represents 2 percent of the total classified vehicles. The number of Tractor Trailers in the study was 38 which represents 1 percent of the total classified vehicles.

< to 4.9	5.0 to 7.9	8.0 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 21.9	22.0 to >							
1507	1327	17	45	19	3	15	1							

CHART 2

**HEADWAY**

During the peak traffic period, on 2021-09-01 at [03:45 PM-04:00 PM] the average headway between vehicles was 11.392 seconds. During the slowest traffic period, on 2021-09-01 at [02:45 AM-03:00 AM] the average headway between vehicles was 900 seconds.

**WEATHER**

The roadway surface temperature over the period of the study varied between 24.00 and 41.00 degrees C.

**MH Corbin Traffic Analyzer Study  
 Computer Generated Summary Report  
 City: Niagara Region  
 Street: 619949 - SB  
 Location: 619949**

---

A study of vehicle traffic was conducted with the device having serial number 405289. The study was done in the SB lane at 619949 - SB in Niagara Region, ON in county. The study began on 2021-09-01 at 12:00 AM and concluded on 2021-09-02 at 12:00 AM, lasting a total of 24.00 hours. Traffic statistics were recorded in 15 minute time periods. The total recorded volume showed 2,777 vehicles passed through the location with a peak volume of 74 on 2021-09-01 at [04:30 PM-04:45 PM] and a minimum volume of 0 on 2021-09-01 at [12:45 AM-01:00 AM]. The AADT count for this study was 2,777.

**SPEED**

Chart 1 lists the values of the speed bins and the total traffic volume for each bin. At least half the vehicles were traveling in the 50 - 55 KM/H range or lower. The average speed for all classified vehicles was 48 KM/H with 59.18% vehicles exceeding the posted speed of 50 KM/H. 0.44% percent of the total vehicles were traveling in excess of 89 KM/H. The mode speed for this traffic study was 50KM/H and the 85th percentile was 62.90 KM/H.

< to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 to 104	105 to >
588	182	340	637	400	283	157	68	39	13	12	0	0	0	0

CHART 1

**CLASSIFICATION**

Chart 2 lists the values of the classification bins and the total traffic volume accumulated for each bin. Most of the vehicles classified during the study were Passenger Vehicles. The number of Passenger Vehicles in the study was 2597 which represents 96 percent of the total classified vehicles. The number of Small Trucks in the study was 37 which represents 1 percent of the total classified vehicles. The number of Trucks/Buses in the study was 41 which represents 2 percent of the total classified vehicles. The number of Tractor Trailers in the study was 44 which represents 2 percent of the total classified vehicles.

< to 4.9	5.0 to 7.9	8.0 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 21.9	22.0 to >							
1449	1148	37	41	23	7	14	0							

CHART 2

**HEADWAY**

During the peak traffic period, on 2021-09-01 at [04:30 PM-04:45 PM] the average headway between vehicles was 12 seconds. During the slowest traffic period, on 2021-09-01 at [12:45 AM-01:00 AM] the average headway between vehicles was 900 seconds.

**WEATHER**

The roadway surface temperature over the period of the study varied between 24.00 and 42.00 degrees C.

Filename: qr6\_e.te                    Time Period: Day/Night 16/8 hours  
Description: Sample STAMSON Calculations at Receptor U6\_E Without  
Barriers, and Comparison with CadnaA-TNM Calculations

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

-----  
Car traffic volume : 32597/16296 veh/TimePeriod \*  
Medium truck volume : 1438/719 veh/TimePeriod \*  
Heavy truck volume : 4314/2157 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): 33700  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 27.00  
Medium Truck % of Total Volume : 3.75  
Heavy Truck % of Total Volume : 11.25  
Day (16 hrs) % of Total Volume : 66.67

Data for Segment # 1: QEW-South (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 : 37.50 / 37.50 m  
Receiver height : 5.50 / 5.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

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

-----  
Car traffic volume : 32597/16296 veh/TimePeriod \*  
Medium truck volume : 1438/719 veh/TimePeriod \*  
Heavy truck volume : 4314/2157 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): 33700  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 27.00  
Medium Truck % of Total Volume : 3.75  
Heavy Truck % of Total Volume : 11.25  
Day (16 hrs) % of Total Volume : 66.67



Data for Segment # 2: QEW-North (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 : 52.00 / 52.00 m  
Receiver height : 5.50 / 5.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Results segment # 1: QEW-South (day)

-----  
Source height = 1.83 m

ROAD (0.00 + 73.08 + 0.00) = 73.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-----  
---  
-90 90 0.53 80.40 0.00 -6.09 -1.23 0.00 0.00 0.00  
73.08  
-----  
---

Segment Leq : 73.08 dBA

Results segment # 2: QEW-North (day)

-----  
Source height = 1.83 m

ROAD (0.00 + 70.91 + 0.00) = 70.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-----  
---  
-90 90 0.53 80.40 0.00 -8.26 -1.23 0.00 0.00 0.00  
70.91  
-----  
---

Segment Leq : 70.91 dBA

Total Leq All Segments: 75.14 dBA

Results segment # 1: QEW-South (night)

-----  
Source height = 1.83 m

ROAD (0.00 + 73.08 + 0.00) = 73.08 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj  
SubLeq

-----  
---  
-90 90 0.53 80.40 0.00 -6.09 -1.23 0.00 0.00 0.00  
73.08  
-----  
---

Segment Leq : 73.08 dBA

Results segment # 2: QEW-North (night)

-----  
Source height = 1.83 m

ROAD (0.00 + 70.91 + 0.00) = 70.91 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj  
SubLeq

-----  
---  
-90 90 0.53 80.40 0.00 -8.26 -1.23 0.00 0.00 0.00  
70.91  
-----  
---

Segment Leq : 70.91 dBA

Total Leq All Segments: 75.14 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 75.14  
(NIGHT): 75.14

**CadnaA – TNM Calculation Results:**

**TOTAL Leq FROM ALL SOURCES (DAY): 74.9**  
**(NIGHT): 74.9**

**APPENDIX D**  
**Building Component Calculations**  
**(4 Pages)**

**Table D1 - Room Dimensions, Predicted Noise Levels and Control Measures**

Room Reference Number	U1-N			
Room Location	Unit 1 North Facade			
Room Type	Typical Bedroom			
Floor Area, m2	11.1			
	Windows - Day	Windows - Night	Wall	Notes
	71.8	71.8	71.8	QEW_S.te and Chst_S.te
Calculation Adjustment, dBA	0.0	0.0	0.0	No adjustment
Indoor Room Level, dBA	40	40	40	NPC-300 Table C-9
CMHC Room Target, dBA	35	35	35	CMHC Table 1, 24-Hour criteria
Criteria Adjustment, dBA	-5	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	67	67	67	Used in determining AIF
(Window, Wall) Area, m2	1.2	1.2	10.2	Per floor plan
(Window, Wall)/Floor Ratio, %	11%	11%	91%	
Number of Components	4	4	4	Front: window/wall, side: window and wall
Acoustic Insulation Factor (AIF)	40	40	40	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	36	36	47	CMHC: Tables D2, 6.3
Sample Control Measures	3-50-3	3-50-3	EW1R	For windows, walls and doors
Ventilation Requirements	Central AC	Central AC	-	Central AC Required
Warning Clause	Type D	Type D	-	Type D Required

**Table D2 - Room Dimensions, Predicted Noise Levels and Control Measures**

Room Reference Number	U1-E			
Room Location	Unit 1 East Facade			
Room Type	Typical Bedroom			
Floor Area, m2	11.1			
	Windows - Day	Windows - Night	Wall	Notes
	63.7	63.7	63.7	QEW_S.te and Chst_S.te
Calculation Adjustment, dBA	0.0	0.0	0.0	No adjustment
Indoor Room Level, dBA	40	40	40	NPC-300 Table C-9
CMHC Room Target, dBA	35	35	35	CMHC Table 1, 24-Hour criteria
Criteria Adjustment, dBA	-5	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	59	59	59	Used in determining AIF
(Window, Wall) Area, m2	1.2	1.2	10.2	Per floor plan
(Window, Wall)/Floor Ratio, %	11%	11%	91%	
Number of Components	4	4	4	Front: window/wall, side: window and wall
Acoustic Insulation Factor (AIF)	32	32	32	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	28	28	39	CMHC: Tables D2, 6.3
Sample Control Measures	OBC	OBC	EW2	For windows, walls and doors
Ventilation Requirements	-	Central AC	-	Central AC Required
Warning Clause	-	Type D	-	Type D Required

**Table D3 - Room Dimensions, Predicted Noise Levels and Control Measures**

Room Reference Number	U6_E			
Room Location	Unit 6 East Facade			
Room Type	Typical Bedroom			
Floor Area, m2	11.1			
	Windows - Day	Windows - Night	Wall	Notes
	62.1	62.1	62.1	QEW_S.te and Chst_S.te
Calculation Adjustment, dBA	0.0	0.0	0.0	No adjustment
Indoor Room Level, dBA	40	40	40	NPC-300 Table C-9
CMHC Room Target, dBA	35	35	35	CMHC Table 1, 24-Hour criteria
Criteria Adjustment, dBA	-5	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	57	57	57	Used in determining AIF
(Window, Wall) Area, m2	1.2	1.2	10.2	Per floor plan
(Window, Wall)/Floor Ratio, %	11%	11%	91%	
Number of Components	4	4	4	Front: window/wall, side: window and wall
Acoustic Insulation Factor (AIF)	30	30	30	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	26	26	37	CMHC: Tables D2, 6.3
Sample Control Measures	OBC	OBC	OBC	For windows, walls and doors
Ventilation Requirements	-	Central AC	-	Central AC Required
Warning Clause	-	Type D	-	Type D Required

**Table D4 - Room Dimensions, Predicted Noise Levels and Control Measures**

Room Reference Number	U6_E			
Room Location	Unit 6 East Facade			
Room Type	Typical Living			
Floor Area, m2	20.5			
	Windows - Day	Windows - Night	Wall	Notes
	62.1	62.1	62.1	QEW_S.te and Chst_S.te
Calculation Adjustment, dBA	0.0	0.0	0.0	No adjustment
Indoor Room Level, dBA	45	45	45	NPC-300 Table C-9
CMHC Room Target, dBA	40	40	40	CMHC Table 1, 24-Hour criteria
Criteria Adjustment, dBA	-5	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	57	57	57	Used in determining AIF
(Window, Wall) Area, m2	3.7	3.7	9.2	Per floor plan
(Window, Wall)/Floor Ratio, %	18%	18%	45%	
Number of Components	4	4	4	Front: window/wall, side: window and wall
Acoustic Insulation Factor (AIF)	25	25	25	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	23	23	<37	CMHC: Tables D2, 6.3
Sample Control Measures	OBC	OBC	OBC	For windows, walls and doors
Ventilation Requirements	-	Central AC	-	Central AC Required
Warning Clause	-	Type D	-	Type D Required

**APPENDIX E**  
**Warning Clauses**  
**(1 Page)**



**Warning Clause Type A (For Outdoor Living Areas)**

“Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air traffic) may occasionally 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.”

**Warning Clause Type D (For Units 1 to 8)**

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