Noise Assessment Report
360 Carroll Street E
Strathroy ON

December 12, 2022

Prepared for:

Litera Group

Prepared by:

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1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

Stantec Consulting Ltd. has been retained by Litera Group to prepare an environmental noise assessment for a site located in the Municipality of Strathroy-Caradoc. The site is located along the south side of Carroll Street East, as shown in Figure 1. A Noise Assessment Study is required to address municipal policies regarding residential development adjacent to County roads.

The purpose of this report is to:

- Outline the Ministry's guidelines and criteria for noise levels and residential land use;
- Apply the noise level standards of the Ministry of the Environment, Conservation and Parks (MECP) to the site;
- Determine the extent to which noise levels will be of concern to future residents of the proposed development, using the computerized version (STAMSON 5.03) of the MECP noise model;
- Outline recommendations for noise attenuation, as necessary, to achieve acceptable noise levels for future residents of the proposed development.

1.2 LOCATION

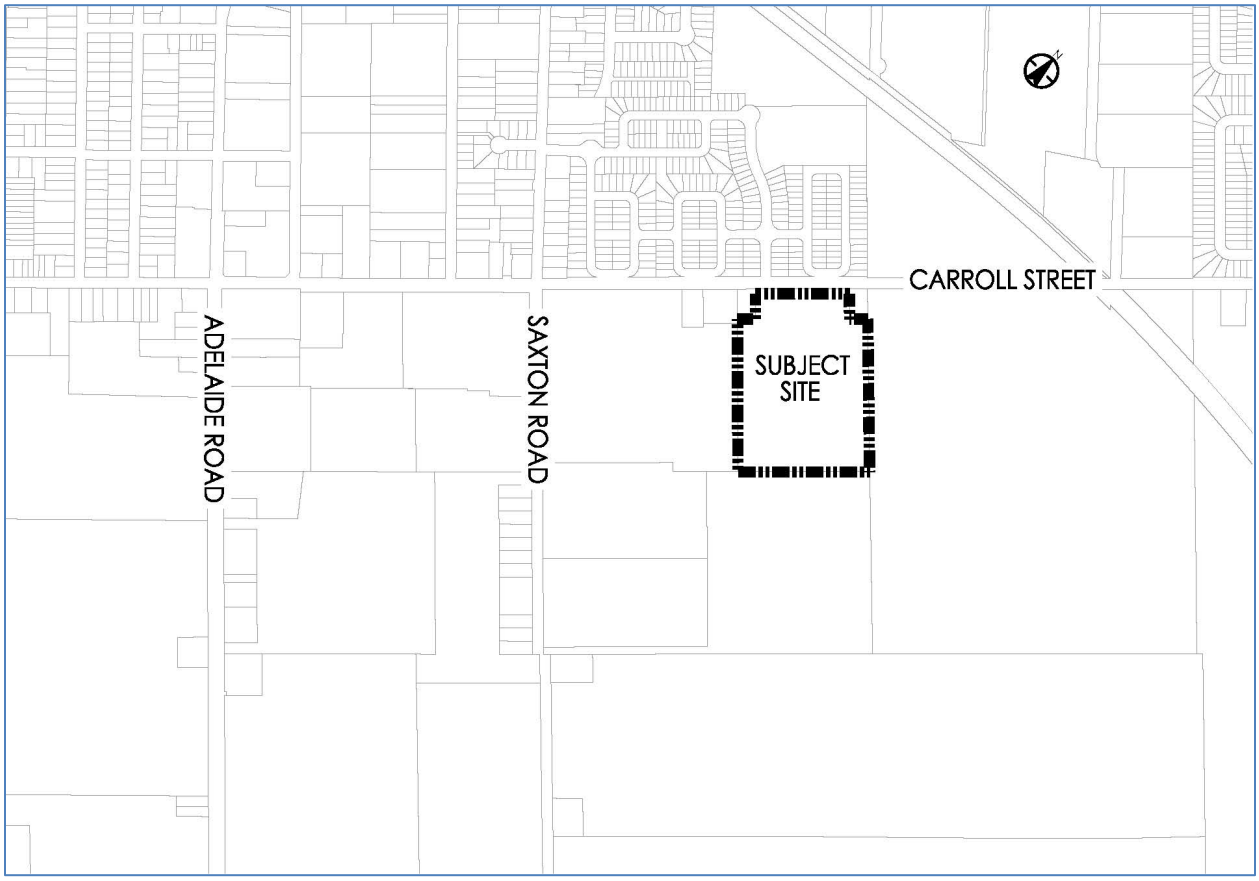
The site will consist of a mix of single family and multi-family residential. The future medium density block (Block 118) within the subject area will require a Noise Assessment Study during the site plan approval stage.

Surrounding land uses are as follows:

- North – future residential;
- East – existing nursery;
- South – existing residential;
- West – existing agriculture.

The main potential noise source that may impact the subject site is vehicular traffic on Carroll Street East. Current traffic volumes for this segment of Carroll Street East were provided by Middlesex County.

Figure 1-1 – Key Plan



2.0 NOISE LEVEL CRITERIA

2.1 GUIDELINES

The MECP has produced guidelines for noise levels for use in noise assessment and land use planning. Noise level criteria for residential land use are summarized in Table 2.1 below.

Table 2-1 Noise Criteria for Residential Land Use

Location	7a.m.-11 p.m.	11 p.m.-7 a.m.
Outdoor Living Areas	55 dBA	n/a
Indoor Living Areas	55 dBA at plane of living room windows	50 dBA at plane of bedroom windows

Noise levels in excess of the guidelines presented in Table 2.1 are acceptable under certain conditions and with certain provisions. Tables 2.2 and 2.3 set out noise levels in excess of the criteria and the required provisions to allow residential activity in locations where noise level criteria are exceeded.

The MECP also specifies building component requirements when indoor noise levels exceed the criteria by certain levels. These requirements are summarized in Table 2.4.

Table 2-2: Combination of Road Noise, Day-Time Outdoor, Ventilation and Warning Clause Requirements

Location	Leq (16 hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
Outdoor Living Area	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 Leq exceeds 55 dBA Type A
	Greater than 60 dBA	n/a	Control measures (barriers) required to reduce the Leq to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible	Required if resultant Leq exceeds 55 dBA Type B

Noise Level Criteria

Location	Leq (16 hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
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 condition	n/a	Required Type C
	Greater than 65 dBA	Central air conditioning	n/a	Required Type D

(Source: Ministry of the Environment, Environmental Noise Guidelines, Stationary and Transportation Sources-Approval and Planning, Publication NPC-300)

Table 2-3: Combination of Road Noise, Nighttime Ventilation and Warning Clause Requirements

Location	Leq (8 hr) (dBA)	Ventilation Requirements	Warning Clause
Plane of Bedroom Window	Greater than 50 dBA to less 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

(Source: Ministry of the Environment, Environmental Noise Guideline, Stationary and Transportation Sources-Approval and Planning, Publication NPC-300)

Noise Level Criteria

Table 2-4: Road Noise - Building Component Requirements

Location		**Leq (16 hr) (dBA)**	**Building Component Requirements**
Plane of Living Room Window – Daytime	Road	Less than or equal to 65 dBA	Building compliant with the Ontario Building Code
		Greater than 65 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
Location		**Leq (8 hr) (dBA)**	**Building Component Requirements**
Plane of Bedroom Window – Nighttime	Road	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
		Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria

(Source: Ministry of the Environment, Environmental Noise Guideline, Stationary and Transportation Sources-Approval and Planning, Publication NPC-300)

3.0 OBSERVATIONS AND CALCULATIONS

3.1 NOISE LEVEL PREDICTIONS

Noise predictions in this report were completed using the computerized version (STAMSON 5.03) of the MECP noise model, ORNAMENT to calculate noise levels from various sources. The program accepts variables related to noise sources and receivers, road traffic volumes and the nature and extent of noise attenuation barriers, if required.

3.2 ROAD TRAFFIC VOLUMES

Traffic volume data for this section of Carroll Street East was provided by Middlesex County. Additional information obtained regarding applicable assumptions and ratios for day/night traffic and car/ truck traffic is summarized as follows:

- Current traffic volumes for this section of Carroll Street East as provided by Middlesex County is 3,219 vehicles per day;
- Combined medium and heavy truck traffic for this segment of Carroll Street East is estimated to be 3% of total traffic volume; the remainder is assumed to be car traffic;
- Speed limit for this section of Carroll Street East is 50 km/hour.
- Daytime (7 am – 11 pm) traffic is assumed to be 90%, with the remaining 10% at night (11 pm – 7 am);

For the purposed of this report the maximum traffic volumes used to reflect a 2% increase in use per year over a 20-year time period.

Table 3.1 summarizes the projected traffic volumes used for calculations in this report.

Table 3-1: Projected Traffic Volumes – Carroll Street East

	20 Year Projected – 2% increase per year		
	Day	**Night**	**Total**
Car	4,176	464	4,640
Truck	129	14	143
Total	4,305	478	4,783
Speed Limit	50 km/hr		
Gradient	0%		
Surface	Asphalt		

3.3 PROJECTED NOISE LEVELS

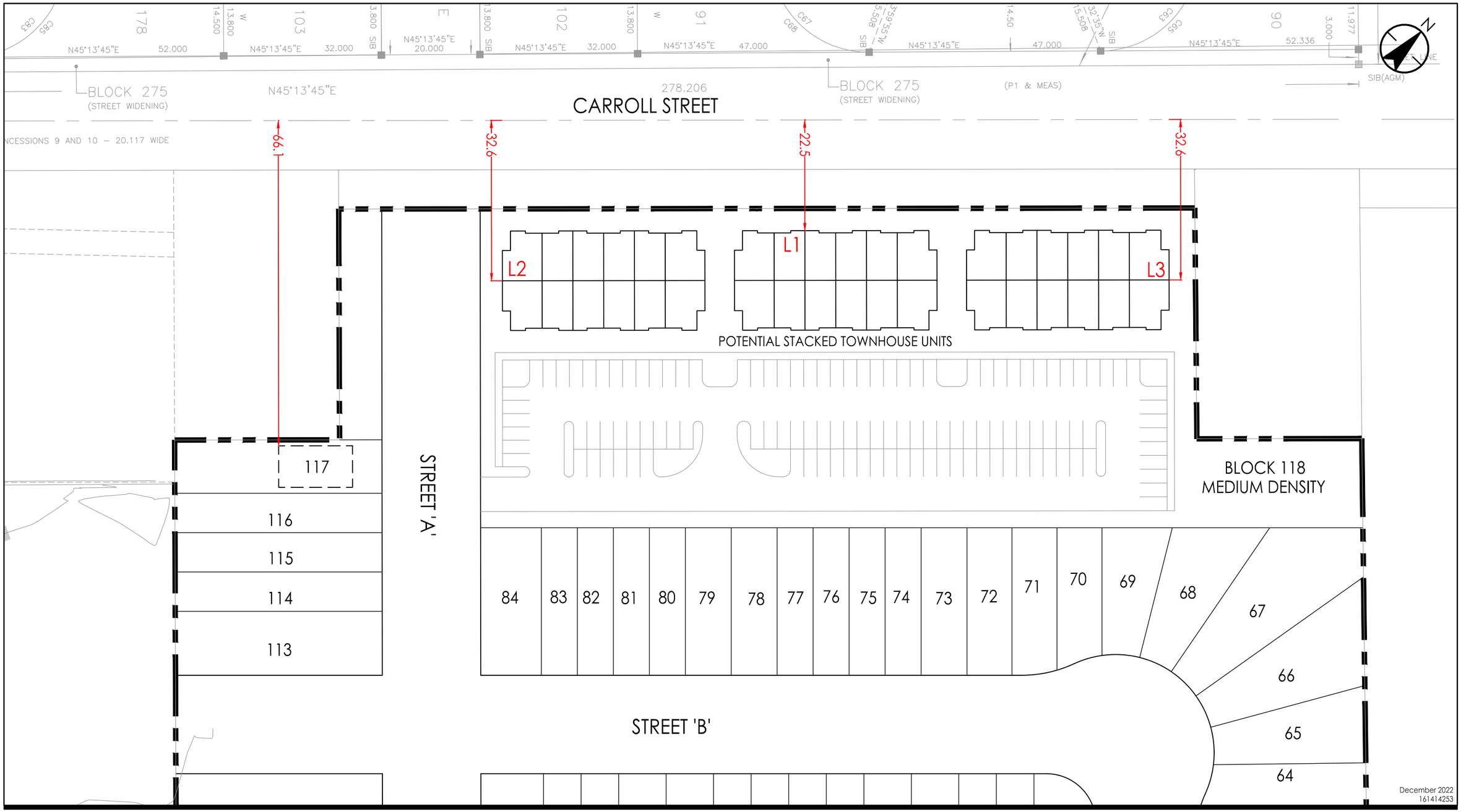
Using the MECP noise model, ORNAMENT, unattenuated noise levels were calculated for indoor living area (ILA) and outdoor living area (OLA) conditions at the point representing the anticipated building locations based on the draft plan of subdivision prepared by Zelinka Priamo Ltd., as shown in Figures 2 & 3. The conceptual design shown within Block 118 represents a potential stacked townhouse product (3.5 storeys). The locations chosen represent the worst case scenario in regards to setback and exposure to Carroll Street East.

Table 3-2: Summary of Projected Unattenuated Noise Levels

The resulting noise level calculations are summarized below. Calculations are provided in Appendix A

Location	Daytime building face ILA (dBA)	Nighttime building face ILA (dBA)	Daytime OLA (dBA)
Lot 117	48.79	42.88	47.16
L1 – 1st floor	56.56	49.96	
L1 – 2nd floor	56.75	50.15	
L1 – 3rd floor	57.07	50.47	
L1 – 4th floor	57.40	50.80	
L2 & L3 – 1st floor	50.88	44.28	
L2 & L3 – 2nd floor	51.15	44.55	
L2 & L3 – 3rd floor	51.62	45.02	
L2 & L3 – 4th floor	52.09	45.49	

Figure 3-1 - Noise Assessment Plan



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360 CARROLL STREET EAST
Strathroy, ON Canada

Figure No.
2.0

Title
NOISE ASSESSMENT PLAN
INDOOR LIVING AREA

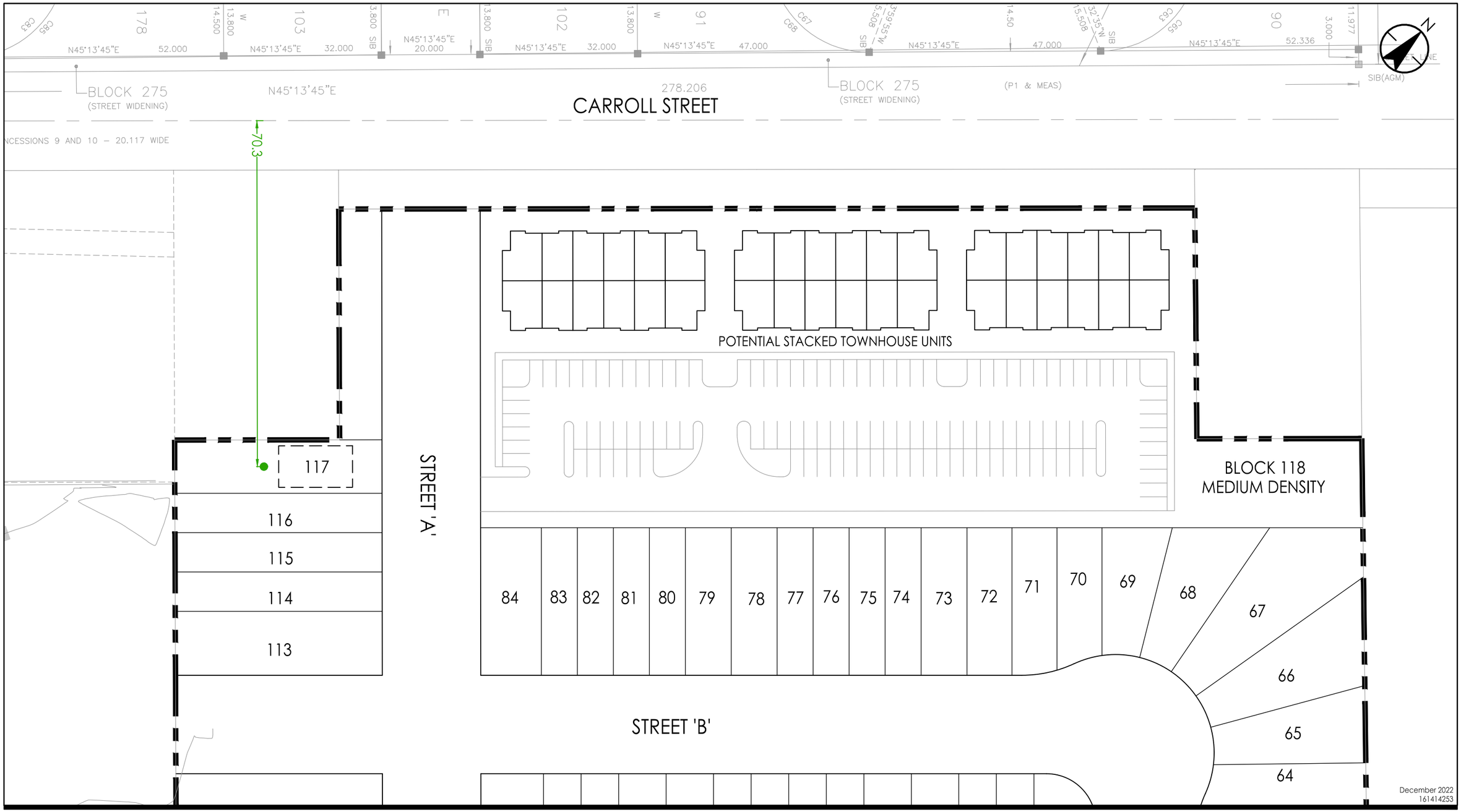

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Figure No.
3.0

Title
NOISE ASSESSMENT PLAN
OUTDOOR LIVING AREA

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

Predicted noise levels are below MECP criteria at the daytime and nighttime indoor living areas as well as the outdoor living areas for the single family lots of the proposed development.

Predicted noise levels are above MECP criteria at the daytime and nighttime indoor living areas for the potential stacked townhouse units within Block 118 with exposure to Carroll Street East.

Block 118 will require a subsequent noise study to be completed once the site plan for this block has been finalized. If Block 118 were to move forward with the conceptual design as shown in Figures 2 & 3, the following summarizes the measures required by MECP criteria for the development to occur within accepted standards:

- The owner shall be advised that Noise Warning Clause Type C is to be included for all units (Location 1) facing north toward Carroll Street East;
- Forced air conditioning is to be installed for all units (Location 1) facing north toward Carroll Street East.

No additional measures are required for Lots 1 through 117.

Noise warning clauses are provided in Appendix B.

Appendix A NOISE LEVEL CALCULATIONS

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 16 hours
Description: Lot 117, daytime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 4176 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 129 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 66.10 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.32 m

ROAD (0.00 + 48.79 + 0.00) = 48.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	60.94	0.00	-10.69	-1.46	0.00	0.00	0.00	48.79

Segment Leq : 48.79 dBA

Total Leq All Segments: 48.79 dBA

TOTAL Leq FROM ALL SOURCES: 48.79

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 8 hours
Description: Lot 117, nighttime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 464 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 66.10 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.31 m

ROAD (0.00 + 42.88 + 0.00) = 42.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.58	54.34	0.00	-10.15	-1.31	0.00	0.00	0.00	42.88

Segment Leq : 42.88 dBA

Total Leq All Segments: 42.88 dBA

TOTAL Leq FROM ALL SOURCES: 42.88

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 16 hours
Description: Lot 117, outdoor living area

Road data, segment # 1: Carroll

Car traffic volume : 4176 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 129 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 35.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 70.30 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.32 m

ROAD (0.00 + 47.16 + 0.00) = 47.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	35	0.66	60.94	0.00	-11.14	-2.64	0.00	0.00	0.00	47.16

Segment Leq : 47.16 dBA

Total Leq All Segments: 47.16 dBA

TOTAL Leq FROM ALL SOURCES: 47.16

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 16 hours
Description: Block 118, Location 1 - 1st floor, daytime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 4176 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 129 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 m
Receiver height : 0.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.32 m

ROAD (0.00 + 56.56 + 0.00) = 56.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	60.94	0.00	-2.92	-1.46	0.00	0.00	0.00	56.56

Segment Leq : 56.56 dBA

Total Leq All Segments: 56.56 dBA

TOTAL Leq FROM ALL SOURCES: 56.56

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 8 hours
Description: Block 118, Location 1 - 1st floor, nighttime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 464 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 m
Receiver height : 0.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.31 m

ROAD (0.00 + 49.96 + 0.00) = 49.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	54.34	0.00	-2.92	-1.46	0.00	0.00	0.00	49.96

Segment Leq : 49.96 dBA

Total Leq All Segments: 49.96 dBA

TOTAL Leq FROM ALL SOURCES: 49.96

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 16 hours
Description: Block 118, Location 1 - 2nd floor, daytime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 4176 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 129 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 m
Receiver height : 3.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.32 m

ROAD (0.00 + 56.75 + 0.00) = 56.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.61	60.94	0.00	-2.83	-1.36	0.00	0.00	0.00	56.75

Segment Leq : 56.75 dBA

Total Leq All Segments: 56.75 dBA

TOTAL Leq FROM ALL SOURCES: 56.75

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 8 hours
Description: Block 118, Location 1 - 2nd floor, nighttime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 464 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 m
Receiver height : 3.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.31 m

ROAD (0.00 + 50.15 + 0.00) = 50.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.61	54.34	0.00	-2.83	-1.36	0.00	0.00	0.00	50.15

Segment Leq : 50.15 dBA

Total Leq All Segments: 50.15 dBA

TOTAL Leq FROM ALL SOURCES: 50.15

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 16 hours
Description: Block 118, Location 1 - 3rd floor, daytime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 4176 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 129 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 m
Receiver height : 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.32 m

ROAD (0.00 + 57.07 + 0.00) = 57.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.52	60.94	0.00	-2.67	-1.20	0.00	0.00	0.00	57.07

Segment Leq : 57.07 dBA

Total Leq All Segments: 57.07 dBA

TOTAL Leq FROM ALL SOURCES: 57.07

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 8 hours
Description: Block 118, Location 1 - 3rd floor, nighttime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 464 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 m
Receiver height : 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.31 m

ROAD (0.00 + 50.47 + 0.00) = 50.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.52	54.34	0.00	-2.67	-1.20	0.00	0.00	0.00	50.47

Segment Leq : 50.47 dBA

Total Leq All Segments: 50.47 dBA

TOTAL Leq FROM ALL SOURCES: 50.47

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 16 hours
Description: Block 118, Location 1 - 4th floor, daytime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 4176 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 129 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 m
Receiver height : 9.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.32 m

ROAD (0.00 + 57.40 + 0.00) = 57.40 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.43	60.94	0.00	-2.51	-1.03	0.00	0.00	0.00	57.40

Segment Leq : 57.40 dBA

Total Leq All Segments: 57.40 dBA

TOTAL Leq FROM ALL SOURCES: 57.40

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 8 hours
Description: Block 118, Location 1 - 4th floor, nighttime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 464 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 m
Receiver height : 9.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.31 m

ROAD (0.00 + 50.80 + 0.00) = 50.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.43	54.34	0.00	-2.51	-1.03	0.00	0.00	0.00	50.80

Segment Leq : 50.80 dBA

Total Leq All Segments: 50.80 dBA

TOTAL Leq FROM ALL SOURCES: 50.80

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 16 hours
Description: Block 118, Location 2 & 3 - 1st floor, daytime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 4176 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 129 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 32.60 m
Receiver height : 0.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.32 m

ROAD (0.00 + 50.88 + 0.00) = 50.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	60.94	0.00	-5.60	-4.47	0.00	0.00	0.00	50.88

Segment Leq : 50.88 dBA

Total Leq All Segments: 50.88 dBA

TOTAL Leq FROM ALL SOURCES: 50.88

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 8 hours
Description: Block 118, Location 2 & 3 - 1st floor, nighttime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 464 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 32.60 m
Receiver height : 0.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.31 m

ROAD (0.00 + 44.28 + 0.00) = 44.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	54.34	0.00	-5.60	-4.47	0.00	0.00	0.00	44.28

Segment Leq : 44.28 dBA

Total Leq All Segments: 44.28 dBA

TOTAL Leq FROM ALL SOURCES: 44.28

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 16 hours
Description: Block 118, Location 2 & 3 - 2nd floor, daytime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 4176 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 129 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 32.60 m
Receiver height : 3.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.32 m

ROAD (0.00 + 51.15 + 0.00) = 51.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.61	60.94	0.00	-5.41	-4.38	0.00	0.00	0.00	51.15

Segment Leq : 51.15 dBA

Total Leq All Segments: 51.15 dBA

TOTAL Leq FROM ALL SOURCES: 51.15

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 8 hours
Description: Block 118, Location 2 & 3 - 2nd floor, nighttime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 464 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 32.60 m
Receiver height : 3.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.31 m

ROAD (0.00 + 44.55 + 0.00) = 44.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.61	54.34	0.00	-5.41	-4.38	0.00	0.00	0.00	44.55

Segment Leq : 44.55 dBA

Total Leq All Segments: 44.55 dBA

TOTAL Leq FROM ALL SOURCES: 44.55

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 16 hours
Description: Block 118, Location 2 & 3 - 3rd floor, daytime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 4176 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 129 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 32.60 m
Receiver height : 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.32 m

ROAD (0.00 + 51.62 + 0.00) = 51.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.52	60.94	0.00	-5.11	-4.21	0.00	0.00	0.00	51.62

Segment Leq : 51.62 dBA

Total Leq All Segments: 51.62 dBA

TOTAL Leq FROM ALL SOURCES: 51.62

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 8 hours
Description: Block 118, Location 2 & 3 - 3rd floor, nighttime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 464 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 32.60 m
Receiver height : 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.31 m

ROAD (0.00 + 45.02 + 0.00) = 45.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.52	54.34	0.00	-5.11	-4.22	0.00	0.00	0.00	45.02

Segment Leq : 45.02 dBA

Total Leq All Segments: 45.02 dBA

TOTAL Leq FROM ALL SOURCES: 45.02

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 16 hours
Description: Block 118, Location 2 & 3 - 4th floor, daytime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 4176 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 129 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 32.60 m
Receiver height : 9.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.32 m

ROAD (0.00 + 52.09 + 0.00) = 52.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.43	60.94	0.00	-4.81	-4.04	0.00	0.00	0.00	52.09

Segment Leq : 52.09 dBA

Total Leq All Segments: 52.09 dBA

TOTAL Leq FROM ALL SOURCES: 52.09

STAMSON 5.0 NORMAL REPORT Date: December 3, 2022
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 360 Carroll St Time Period: 8 hours
Description: Block 118, Location 2 & 3 - 4th floor, nighttime indoor living area

Road data, segment # 1: Carroll

Car traffic volume : 464 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Carroll

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 32.60 m
Receiver height : 9.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Carroll

Source height = 1.31 m

ROAD (0.00 + 45.49 + 0.00) = 45.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.43	54.34	0.00	-4.81	-4.04	0.00	0.00	0.00	45.49

Segment Leq : 45.49 dBA

Total Leq All Segments: 45.49 dBA

TOTAL Leq FROM ALL SOURCES: 45.49

Appendix B NOISE WARNING CLAUSES

Conclusions and Recommendations

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

TYPE A:

“Purchasers / tenants are advised that sound levels due to increasing road (rail) (air) traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the Municipality’s and the Ministry of the Environment’s noise criteria.”

TYPE B

“Purchasers / tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road (rail) (air) traffic may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the Municipality’s and the Ministry of the Environment’s noise criteria.”

TYPE C

“This dwelling unit has been fitted with a forced air heating system and the ducting, etc. was sized to accommodate central air conditioning. Installation of central air conditioning by the occupant will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the Municipality’s and the Ministry of the Environment’s noise criteria. (Note: The location and installation of the outdoor air conditioning device should be done so as to comply with noise criteria of MOE Publication NPC-216, Residential Air Conditioning Devices and thus minimize the noise impacts both on and in the immediate vicinity of the subject property.)”

TYPE D

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