REPORT
PROJECT: 39124-5.2.2

NOISE CONTROL FEASIBILITY STUDY
1919 MAPLE GROVE ROAD
STITTSVILLE

Prepared for FORMASIAN DEVELOPMENT CORP.
by IBI GROUP

APRIL 2021 UPDATE

Table of Contents

List of Tables

List of Appendices

1 INTRODUCTION

This Noise Control Feasibility Study has been prepared to determine the impact of roadway traffic on the residential lands of 1919 Maple Grove Road, located in Ottawa's Stittsville community. The report provides preliminary analyses through a review of noise contour lines to help identify potential locations for noise control measures and warning clauses for the subject development, as required.

The proposed development is a residential subdivision consisting of semi-detached units, back-to-back townhomes and four-storey apartment buildings. The site is bound to the north by undeveloped greenfield lands, to the south by Maple Grove Road and to the east by an existing residential subdivision and to the west by the future 1981 Maple Grove Road residential subdivision (by others). A park is proposed at the northwest corner of the subject site. It is assumed that existing single-family residences situated near the southwest and southeast corners of the proposed development are to remain.

2 BACKGROUND

2.1 Noise Sources

The study area is primarily subject to roadway noise from existing Maple Grove Road, and from the future Stittsville Main Street Extension, both of which are classified as major collector roads.

The proposed development is not located in the Airport Vicinity Development Zone (AVDZ) according to Schedule K of the Official Plan, nor is it within 300 metres of a rail line. As such, noise generated from aircraft or rail traffic was not considered in this study.

2.2 Sound Level Limits for Road Traffic

Sound level criteria for road traffic is taken from the *City of Ottawa Environmental Noise Control Guidelines* and the *Ministry of Environment Publication NPC-300 (August 2013)*. Noise levels are expressed in the form Leq (T), which refers to a weighted level of a steady sound carrying the same total energy in the time period T (in hours) as the observed fluctuation sound.

2.2.1 Outdoor sound level criterion

As per Table 2.2a of NPC-300, the sound level criteria for the outdoor living area (OLA) for the daytime period between 07:00 and 23:00 hours is 55 dBA Leq (16). Sound levels for the OLA are calculated 3 metres from the building face at the centre of the unit or within the centre of the OLA at a height of 1.5 metres above the ground.

If the Leq sound level is less than or equal to the above criteria then no further action is required by the developer. If the sound level exceeds the criteria by less than 5 dBA then the developer may, with City approval, either provide a warning clause to prospective purchasers or install physical attenuation. For sound levels greater than 5 dBA above the criteria control measures are required to reduce the noise levels as close to 55 dBA as technically, economically and administratively possible. Should the sound levels with the barrier in place exceed 55 dBA, a warning clause is also required.

2.2.2 Indoor sound level criterion – ventilation and warning clause requirements

Similar to outdoor noise levels, the recommended indoor sound, the sound level criteria from Table 2.2b of the guidelines are:

- Bedrooms – 23:00 to 07:00 – 40 dBA Leq (8)
- Other areas – 07:00 to 23:00 – 45 dBA Leq (16)

The sound levels are based on the windows and doors to an indoor space being closed.

For the purpose of assessing indoor sound levels of the semi-detached units, the outdoor sound levels are observed at the plane of the living room window at 1.5 metres above the ground for daytime noise and at the plane of the bedroom window 4.5 metres above the ground for nighttime noise. In the four-storey apartment buildings shown in **Noise Plan Drawing No. 39124-N1**, noise levels are observed at 10.5 metres above ground level for both the plane of the living room and bedroom windows for the daytime and nighttime, respectively.

As per the MOE Environmental Noise Guideline NPC-300 sections C7.1.2.1 and C7.1.2.2, when the outdoor noise levels at the living room are greater than 55 dBA and less than or equal to 65 dBA and/or greater than 50 dBA and less than or equal to 60 dBA at the bedroom window, then a warning clause is required, along with forced air heating and a provision for central air conditioning.

Should the outdoor noise levels exceed 65 dBA at the living room and/or exceed 60 dBA at the bedroom then central air conditioning is mandatory and a warning clause is required.

2.2.3 Indoor Sound Level Criterion – Building Components

As per NPC-300 C7.1.3, when the outdoor sound levels are less than or equal to 65 dBA at the living room window and/or less than or equal to 60 dBA at the bedroom level then the building must be compliant with the Ontario Building Code. Should the outdoor sound levels exceed these criteria then the building component (walls, windows etc.) must be designed to achieve indoor sound level criteria.

3 ROADWAY NOISE

3.1 Road Traffic Data

The major source of road noise impacting the site is the traffic moving along Maple Grove Road along the southern property boundary, as well as the future Stittsville Main Street Extension, which will extend along the northern boundary of the subject site.

The major sources of road noise impacting the site are expected to originate from the traffic flows on Maple Grove Road and the future Stittsville Main Street Extension, as described below:

Maple Grove Road

The section of Maple Grove Road adjacent to the site is currently a two-lane urban collector road (2-UCU) with a posted speed limit of 40 km/h.

Stittsville Main Street Extension

A 26m right-of-way is currently being protected along the northern boundary of the subject site to accommodate the future Stittsville Main Street Extension. According to the Transportation Master Plan (TMP), this will be a major collector road (2-UMCU). It is assumed that the Stittsville Main Street Extension will be designed as a two-lane urban road with a posted speed limit of 50 km/h, consistent with the existing section Stittsville Main Street south of Maple Grove Road.

Traffic volume parameters for both of the above noted roads were extracted from Appendix B of the ENC Guidelines and are conservatively based on the capacity of each road.

Table 3.1 below summarizes the traffic and road parameters used to assess the noise levels.

TABLE 3.1 – TRAFFIC AND ROAD DATA SUMMARY

PARAMETERS	MAPLE GROVE ROAD	STITTSVILLE MAIN STREET EXTENSION
Annual Average Daily Traffic (AADT)	8,000	12,000
Posted Speed Limit (km/hr)	40	50
% Medium Trucks	7%	7%
% Heavy Trucks	5%	5%
% Daytime Traffic	92%	92%

3.2 Calculation Methods

Roadway noise is calculated using the STAMSON 5.04 computer program from the Ontario Ministry of the Environment.

This study will identify the noise contours generated by the traffic for various scenarios. To determine the indoor noise level requirements for ventilation and noise clauses, the contours for the 55 dBA daytime and 50 dBA nighttime levels are used. For the indoor noise level requirement to evaluate building components, mandatory air conditioning and warning clauses, the 65 dBA daytime and 60 dBA night time contours are used. To determine the requirements for outdoor noise levels on the outdoor living area, the 55 dBA and 60 dBA daytime noise contours are used.

The distances in **Table 3.2** below are measured from the right-of-way centreline for each corresponding road.

TABLE 3.2: NOISE CONTOUR OFFSETS

NOISE CRITERIA		DISTANCE FROM CENTRELINE (M)	
		MAPLE GROVE ROAD (2-UCU)	STITTSVILLE MAIN STREET EXTENSION (2-UMCU)
Indoor Daytime	65 dBA	8.4	19.4
	55 dBA	42.5	101.7
Indoor Nighttime	60 dBA	4.8	11.8
	50 dBA	31.5	66.0
Outdoor Living Area (Daytime Only)	60 dBA	21.2	34.7
	55 dBA	42.5	69.5

Based on **Table 3.2** above for the indoor noise evaluation, the daytime contours are further from centreline than the nighttime levels for each criterion. As such, only the daytime levels will be considered in the noise analysis for this study. The noise contours have not been adjusted to reflect screening from proposed buildings.

For the 65dBA contour line associated with Maple Grove Road, the road centreline offsets were determined to be less than 15m and thus the calculation could not be performed using the STAMSON noise software. Instead, a divergence calculation was completed, and the results of which are attached in the **Appendix**. Given that Maple Grove Road has a 26m ROW along the site's frontage and that the limit of the 65dBA noise level would fall within this right-of-way, however, it can be concluded that no dwelling units along Maple Grove Road would experience these noise levels.

4 ABATEMENT MEASURES

4.1 Indoor Sound Levels

The daytime indoor 55 dBA contour shown on **Noise Plan Drawing No. 39124-N1** represent the limit in which a Type 'C' Warning Clause and forced air heating with provision for central air conditioning are required for the residential units.

The daytime indoor 65 dBA contour is the limit in which a Type 'D' warning clause, central air conditioning and an acoustical review/ design of the building components are required. As noted in Section 3.2, the noise contours have not been adjusted to account for screening by the proposed buildings. A summary of the results of each roadway is as follows:

Maple Grove Road (2-UCU) – As shown on **Noise Plan Drawing No. 39124-N1**, the 65 dBA contour falls within the Maple Grove ROW and therefore would not impact any dwelling units adjacent to the road. All units directly fronting, backing onto or flanking Maple Grove Road will experience noise levels above 55 dBA, requiring alternative means of ventilation and a Type 'C' warning clause. The exact number of units that exceed 55 dBA will be determined during detailed design stage. The 55 dBA noise contour does extend 42.5 metres from centreline of Maple Grove Road, however these impacts will be reduced due to screening from the buildings closer to the road

Stittsville Main Street Extension (2-UMCU) – The 65 dBA indoor contour, located 19.4 metres from the centreline of the Stittsville Main Street Extension ROW protection, impacts only a select number of dwelling units within closest proximity to roadway. The 55 dBA noise contour, extending 101.7 metres from centreline, impacts a larger number of units, however these impacts will be reduced due to screening from the buildings closer to the road.

Warning clauses for indoor noise are as follows:

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 City'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 City's and the Ministry of the Environment's noise criteria."

4.2 Outdoor Sound Levels

The outdoor 60 dBA contour on **Noise Plan Drawing No. 39124-N1** represents the limit in which physical attenuation is required in the outdoor living areas of residential units. For units between the 60 dBA and 55 dBA contours, physical attenuation may not be required but should be considered as stated in Part 4, Section 3.4 of the ENC Guidelines. A summary of the results for each roadway is as follows:

Maple Grove Road (2-UCU) – As the 60 dBA outdoor contour is located approximately 21.2 m from the centreline of the road, all outdoor living areas (OLAs) in this range will require physical

attenuation. A potential noise barrier is proposed at the southwest corner of the site to shield the semi-detached units flanking Maple Grove Road from traffic noise, as shown on **Noise Plan Drawing No. 39124-N1**. This noise barrier should be 2.2 metres in height, consistent with typical noise barriers for collector roads. At locations where the unattenuated noise level is below 60 dBA but above 55 dBA a Type 'A' warning clause could be considered in lieu of a barrier.

Stittsville Main Street Extension (2-UMCU) – As the 60 dBA outdoor contour is located approximately 34.7 m from the centreline of the road, all outdoor living areas (OLAs) in this range will require physical attenuation. A noise barrier is proposed at the northeast corner of the site to shield the semi-detached units closest to the Stittsville Main Street Extension from future traffic noise, as shown on **Noise Plan Drawing No. 39124-N1**. This noise barrier should be 2.2 metres high, consistent with typical noise barriers for collector-type roadways. At locations where the noise level is below 60 dBA but above 55 dBA, a Type 'A' warning clause could be considered in lieu of a barrier.

Due to overland flow routes drainage and access easements, it may not be practical to construct a continuous barrier along Maple Grove Road or the Stittsville Main Street Extension adjacent to the proposed development. In these situations, implementing a partial barrier will help reduce the noise levels below 60 dBA but may not reduce below 55 dBA, therefore a Type 'B' warning clause may still be required for select units.

Warning clauses for outdoor noise are as follows:

Type 'A'

"Purchasers/ tenants are advised that sound levels due to increasing Maple Grove Road and the Stittsville Main Street Extension traffic volumes may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the City'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 Maple Grove Road and the Stittsville Main Street Extension traffic volumes may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the City's and the Ministry of the Environment's noise criteria."

5 CONCLUSION

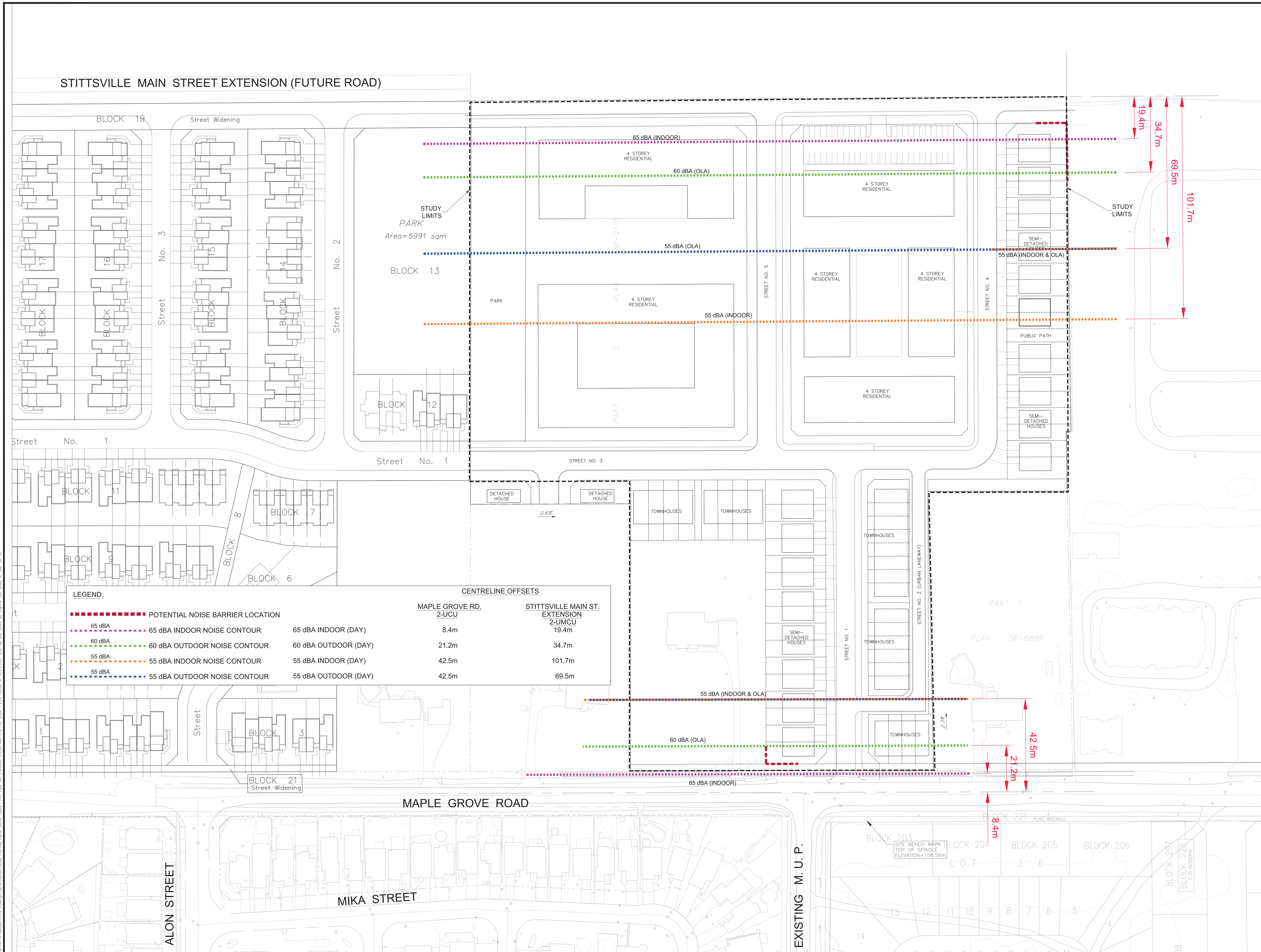
This report outlines the impact of roadway noise on the proposed development at 1919 Maple Grove Road. As indicated through the analysis conducted for this study, it is anticipated that noise levels will remain within the standards established by the City of Ottawa and Ministry of the Environment with the exception of select units located within close proximity to either Maple Grove Road or the Stittsville Main Street Extension. The exact location of residential units requiring noise warning clauses, ventilation, air conditioning requirements, acoustical review/design of building components, and the location and size of noise barriers will be confirmed during the detailed design phase.

6 PROFESSIONAL AUTHORIZATION

Prepared By:

Ben Pascolo-Neveu, P.Eng.

APPENDIX



LEGEND:

	CENTRELINE OFFSETS	MAPLE GROVE RD. 2-UCU	STITTSVILLE MAIN ST. EXTENSION 2-UMCU
POTENTIAL NOISE BARRIER LOCATION			
65 dBA INDOOR NOISE CONTOUR	65 dBA INDOOR (DAY)	8.4m	19.4m
60 dBA OUTDOOR NOISE CONTOUR	60 dBA OUTDOOR (DAY)	21.2m	34.7m
55 dBA INDOOR NOISE CONTOUR	55 dBA INDOOR (DAY)	42.5m	101.7m
55 dBA OUTDOOR NOISE CONTOUR	55 dBA OUTDOOR (DAY)	42.5m	69.5m

LEGEND:

PROPERTY LINE

0.30m

NOISE BARRIER TO BE LOCATED ON PRIVATE PROPERTY. BARRIER TO HAVE A MINIMUM SURFACE DENSITY OF 20kg/m² AND SHALL HAVE NO HOLES OR GAPS

No.	REVISIONS	By	Date
14			
13			
12			
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9			
8			
7			
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3			
2			
1	ISSUED FOR REVIEW	BPN	2020:09:29

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Project Title

MAPLE GROVE LANDS
1919 MAPLE GROVE ROAD

Drawing Title

NOISE PLAN

Scale 1:750

Design BPN | Date SEPT. 2020

Drawn DPS | Checked LME

Project No. 39124 | Drawing No. N1

STAMSON 5.0 NORMAL REPORT Date: 14-09-2020 15:52:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mg.te Time Period: Day/Night 16/8 hours
Description: Maple Grove Rd - 65/ 60 dBA (day/ night)

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maple Grove (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 : 15.00 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Maple Grove (day)

Source height = 1.50 m

ROAD (0.00 + 62.50 + 0.00) = 62.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	63.96	0.00	0.00	-1.46	0.00	0.00	0.00	62.50

Segment Leq : 62.50 dBA

Total Leq All Segments: 62.50 dBA

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Results segment # 1: Maple Grove (night)

Source height = 1.50 m

ROAD (0.00 + 55.06 + 0.00) = 55.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	56.36	0.00	0.00	-1.30	0.00	0.00	0.00	55.06

Segment Leq : 55.06 dBA

Total Leq All Segments: 55.06 dBA

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TOTAL Leq FROM ALL SOURCES (DAY): 62.50
(NIGHT): 55.06

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STAMSON 5.0 NORMAL REPORT Date: 14-09-2020 15:49:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mg.te Time Period: Day/Night 16/8 hours
Description: Maple Grove Rd - 60/ 50 dBA (day/ night)

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maple Grove (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 : 21.22 / 31.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Maple Grove (day)

Source height = 1.50 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	63.96	0.00	-2.50	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

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Results segment # 1: Maple Grove (night)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	56.36	0.00	-5.06	-1.30	0.00	0.00	0.00	50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

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TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 50.00

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STAMSON 5.0 NORMAL REPORT Date: 14-09-2020 15:46:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mg.te Time Period: Day/Night 16/8 hours
Description: Maple Grove Rd - 55/ 50 dBA (day/ night)

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maple Grove (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 : 42.47 / 31.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Maple Grove (day)

Source height = 1.50 m

ROAD (0.00 + 55.00 + 0.00) = 55.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	63.96	0.00	-7.50	-1.46	0.00	0.00	0.00	55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

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Results segment # 1: Maple Grove (night)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	56.36	0.00	-5.06	-1.30	0.00	0.00	0.00	50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

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TOTAL Leq FROM ALL SOURCES (DAY): 55.00
(NIGHT): 50.00

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STAMSON 5.0 NORMAL REPORT Date: 14-09-2020 18:00:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: sms.te Time Period: Day/Night 16/8 hours
Description: SME - 65/ 50 dBA Indoor (day/ night)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 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): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: sms ext (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 : 19.40 / 66.03 m
Receiver height : 10.50 / 10.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: sms ext (day)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.39	67.51	0.00	-1.55	-0.96	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.00 dBA

↟
Results segment # 1: sms ext (night)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.39	59.91	0.00	-8.95	-0.96	0.00	0.00	0.00	50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

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TOTAL Leq FROM ALL SOURCES (DAY): 65.00
(NIGHT): 50.00

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STAMSON 5.0 NORMAL REPORT Date: 14-09-2020 18:02:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: sms.te Time Period: Day/Night 16/8 hours
Description: SME - 55/ 50 dBA Indoor (day/ night)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 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): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: sms ext (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 : 101.67 / 66.03 m
Receiver height : 10.50 / 10.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: sms ext (day)

Source height = 1.50 m

ROAD (0.00 + 55.00 + 0.00) = 55.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.39	67.51	0.00	-11.55	-0.96	0.00	0.00	0.00	55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

↟
Results segment # 1: sms ext (night)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.39	59.91	0.00	-8.95	-0.96	0.00	0.00	0.00	50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

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TOTAL Leq FROM ALL SOURCES (DAY): 55.00
(NIGHT): 50.00

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STAMSON 5.0 NORMAL REPORT Date: 14-09-2020 18:05:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: sms.te Time Period: Day/Night 16/8 hours
Description: SME - 60 dBA OLA (day only)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 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): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: sms ext (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 : 34.74 / 66.03 m
Receiver height : 1.50 / 10.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: sms ext (day)

Source height = 1.50 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	67.51	0.00	-6.05	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

↟
Results segment # 1: sms ext (night)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.39	59.91	0.00	-8.95	-0.96	0.00	0.00	0.00	50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

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TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 50.00

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STAMSON 5.0 NORMAL REPORT Date: 14-09-2020 18:06:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: sms.te Time Period: Day/Night 16/8 hours
Description: SME - 55 dBA OLA (day only)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 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): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: sms ext (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 : 69.47 / 66.03 m
Receiver height : 1.50 / 10.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: sms ext (day)

Source height = 1.50 m

ROAD (0.00 + 55.00 + 0.00) = 55.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	67.51	0.00	-11.05	-1.46	0.00	0.00	0.00	55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

↟
Results segment # 1: sms ext (night)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.39	59.91	0.00	-8.95	-0.96	0.00	0.00	0.00	50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

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TOTAL Leq FROM ALL SOURCES (DAY): 55.00
(NIGHT): 50.00

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↟

Maple Grove Road - Divergence Calculations - For Source-Receiver Distances < 15m

Divergence - Line Source - 60 dBA (Nighttime) - 2-UCU - Speed Limit 40 km/h

Origin	Distance	d1	15	m
	Noise	n1	55.06	dBA
Receiver	Noise	n2	60	dBA
Distance (est)		d2	4.809404	

Note: Distance (est) = d1 / (10^((n2-n1)/10))
*When n2>n1

Divergence - Line Source - 65 dBA (Daytime) - 2-UCU - Speed Limit 40 km/h

Origin	Distance	d1	15	m
	Noise	n1	62.5	dBA
Receiver	Noise	n2	65	dBA
Distance (est)		d2	8.4351199	

Note: Distance (est) = d1 / (10^((n2-n1)/10))
*When n2>n1

Stittsville Main Street Extension - Divergence Calculations - Source-Receiver Distances < 15m

Divergence - Line Source - 60 dBA (Nighttime) - 2-UMCU - Speed Limit 50 km/h

Origin	Distance	d1	15	m
	Noise	n1	58.95	dBA
Receiver	Noise	n2	60	dBA
Distance (est)		d2	11.778535	

Note: Distance (est) = d1 / (10^((n2-n1)/10))
*When n2>n1