NOISE IMPACT ASSESSMENT

RESIDENTIAL SUBDIVISION
3455 MILTON ROAD, NAVAN
CITY OF OTTAWA

August 2014

Prepared for:

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1.0 INTRODUCTION

This Noise Impact Assessment (NIA) has been prepared on behalf of 3223701 Canada Inc. in order to assess the potential environmental noise impact on the proposed residential subdivision in the Village of Navan, due to vehicular traffic on Milton Road and Smith Road. The Study outlines the required noise attenuation measures to satisfy the criteria of the City of Ottawa Environmental Noise Control Guidelines (approved by City Council May 10, 2006). Refer to Section 4.0 for a summary of the recommendations.

2.0 PROJECT DESCRIPTION

The lands subject of this Report, which are shown on Figure 1, are described as Part of Lot 10, Concession 9, bounded by vacant land to the north, existing residential to the east, the Prescott-Russell Trail Link to the south, and Milton Road to the west. The subject property has an area of approximately 12.6 ha and will include a total of 21 dwelling units.

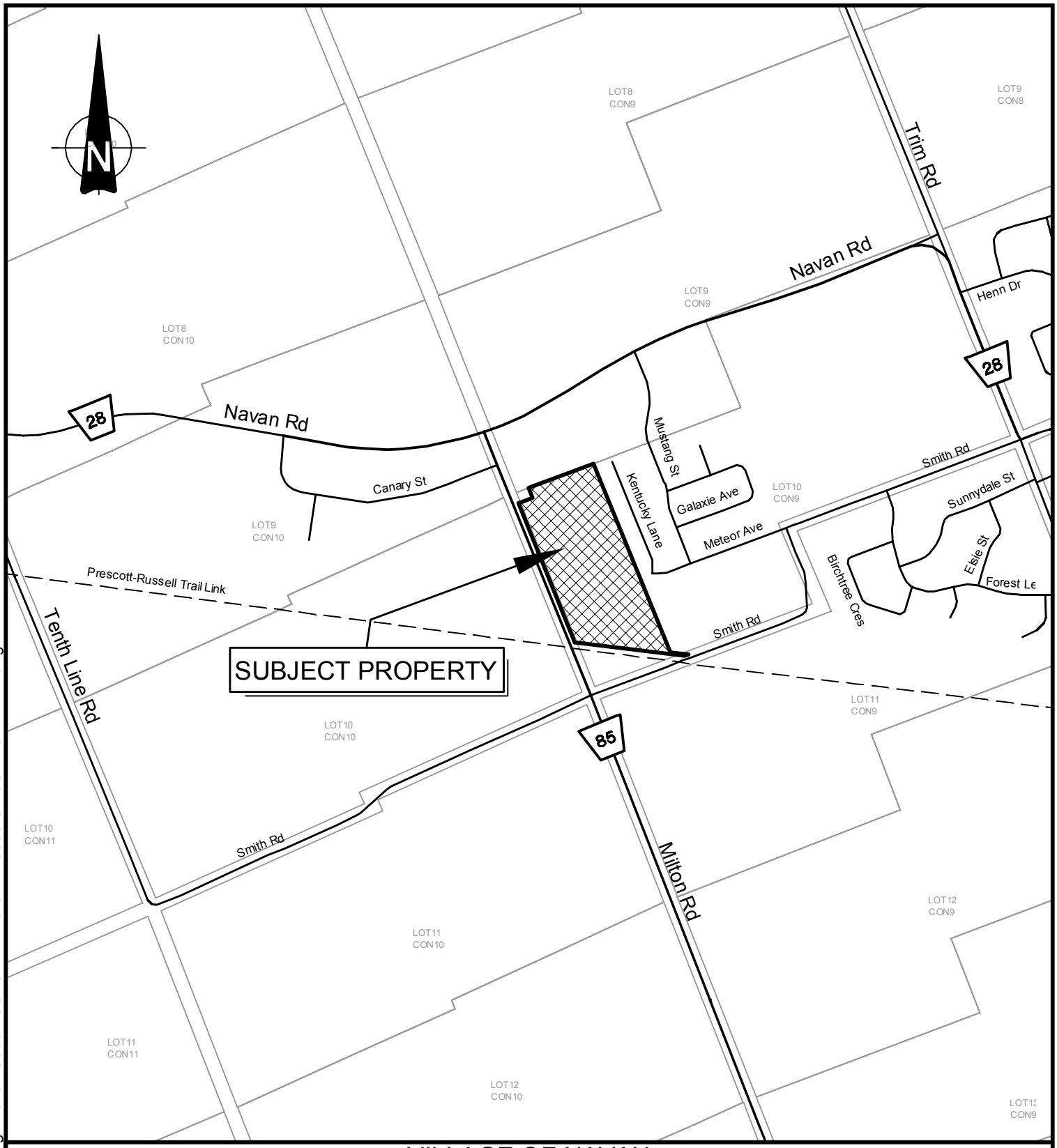
Specific requirements of the NIA (such as construction standards for buildings and fencing) will be incorporated into the City's Subdivision Agreement, where applicable.

3.0 NOISE SOURCE

For the purposes of this Report, the noise source is Milton Road and Smith Road. Figure 1 shows the location of the existing and proposed roadways in relation to the proposed residential development. No rail noise sources are located in close proximity to this site.

3.1 Sound Level Criteria

For the purpose of determining the predicted noise levels, and based on the sound level criteria established by the Ministry of the Environment (MOE) and the City of Ottawa Environmental Noise Control Guidelines, the following will be used as the maximum acceptable sound levels (Leq) for residential development and other land uses, such as nursing homes, schools and daycare centres:



PROJECT:

VILLAGE OF NAVAN
PROPOSED RESIDENTIAL SUBDIVISION
3455 MILTON ROAD, OTTAWA, ONTARIO

DRAWING:

LOCATION PLAN

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS
www.jlrichards.ca

DESIGN:	MR
DRAWN:	TB / KTK
CHECKED:	MR
JLR NO:	26558
DRAWING NO.:	FIGURE 1

File Location: P:\26000\26558 - Brigil Navan Subdivision\JLR DWG\Civil\26558 C LOCATION PLAN.dwg

Receiver Location	Criteria	Time Period
Outdoor living area:	55 dBA	Daytime (0700 - 2300 hrs)
Indoor living/dining rooms (inside):	45 dBA	Daytime (0700 - 2300 hrs)
General Office, Reception Area (inside):	50 dBA	Daytime (0700 - 2300 hrs)
Sleeping Quarters (inside):	40 dBA	Nighttime (2300 - 0700 hrs)
Sleeping Quarters (outside):	50 dBA	Nighttime (2300 - 0700 hrs)

Outdoor Living Areas (OLA) are defined as that portion of the outdoor amenity area of a dwelling for the quiet enjoyment of the outdoor environment during the daytime period. Typically, the point of assessment in an OLA is 3.0 m from the building façade and 1.5 m above the ground within the designated OLA for each individual unit and for the townhouse type units having an area greater than 37 m^2. The personal amenity area excludes balconies as per the City of Ottawa Environmental Noise Control Guidelines.

Where standard building construction is used that complies with Part 4 of the Ontario Building Code, the indoor noise level should be at least 20 dBA below the outdoor level when the windows are closed, and 10 dBA below the outdoor level with the windows open. If the daytime sound levels at the outside walls are no more than 65 dBA and the nighttime sound levels at the outside walls containing sleeping quarter windows are no more than 60 dBA, then all the indoor requirements could normally be met by constructing the units in accordance with the standards established by the Ontario Building Code.

3.2 Noise Attenuation Requirements

When the sound levels are equal to or less than the specified criteria, no noise attenuation (control) measures are required.

When the excess above the recommended sound level limits is between 1 dBA and 5 dBA for the outdoor sound level criterion, the proposed development can be completed with no noise control measures incorporated into the site, but prospective occupants of the land should be made aware by suitable Warning Clauses.

Noise attenuation measures may include any or all of the following:

- noise attenuation barrier (wall or berm or a berm/wall combination);
- forced air heating system with provisions for the installation of central air conditioning;
- central air conditioning; and

- architectural components designed to provide additional acoustic insulation.

In addition to the implementation of noise attenuation features, if required, and depending on the severity of the noise problem, Warning Clauses may be recommended to advise the prospective purchasers/tenants of affected units of the potential environmental noise problem. These Warning Clauses should be included in the Site Plan Agreement and in the Offers of Purchase and Sale, and must be registered on Title. A building component review is required in cases where the noise levels at the building face exceed 65 dBa daytime and/or 60 dBa nighttime. The Acoustic Insulation Factor Method is to be used in the review, as per the "Road and Rail Noise: Effects on Housing" manual published by the Canada Mortgage and Housing Corporation.

The following tables outline the noise attenuation requirements for the Exterior Walls Containing Sleeping Quarters and/or Living Rooms for the daytime and nighttime periods.

Table 1: Outdoor Living Area (OLA)
Daytime (0700 - 2300) and Nighttime (2300 - 0700)

Leq (16 hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause Requirements
Leq 16 hr ≤ 55 dBA	N/A	None required	None required
55 dBA < Leq ≤ 60 dBA	N/A	Control measures (barriers) not required but should be considered	Required if resulting Leq exceeds 55 dBA Type A
Leq > 60 dBA	N/A	Control measures (barriers) required to reduce Leq to below 60 dBA and as close to 55 dBA as technically, economically and administratively possible	Required if resulting Leq exceeds 55 dBA Type B

Table 2: Plane of Living/Dining Room Window
Daytime (0700 - 2300) and Nighttime (2300 - 0700)

Leq (16 hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause Requirements
Leq 16 hr ≤ 55 dBA	None required	N/A	None required
55 dBA < Leq 16 hr ≤ 65 dBA	Forced air heating with provision for air conditioning	N/A	Required Type C
Leq 16 hr > 65 dBA*	Central air conditioning	N/A	Required Type D

* In cases where sound levels exceed 65 dBa, building components must be designed to achieve indoor sound level criteria

Table 3: Plane of Sleeping Quarters Window
Daytime (0700 - 2300) and Nighttime (2300 - 0700)

Leq (8 hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause Requirements
50 dBA < Leq 8 hr ≤ 60 dBA	Forced air heating with provision for central air conditioning	N/A	Required Type C
60 dBA < Leq 8 hr*	Central air conditioning	N/A	Required Type D

* In cases where sound levels exceed 60 dBa, building components must be designed to achieve indoor sound level criteria

The wording of the notices to be placed on Title and included in the Site Plan Agreement, as well as the Offers of Purchase and Sale, are provided below:

Type A

"Purchasers/tenants are advised that noise levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the City's and 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 traffic **may** on occasions interfere with some activities of the dwelling occupants as the sound level exceeds the City's and the Ministry of the Environment's noise criteria."

Type C

"This 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 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."

Type E

"Purchasers/tenants are advised that due to the proximity of the adjacent industry (facility) (utility), sound levels from the industry (facility) (utility) may at times be audible."

3.3 Prediction of Noise Levels

3.3.1 Road Traffic Data

The following traffic data was used to predict noise levels:

Table 4: Road Traffic Data to Predict Noise Levels

	Milton Road	Smith Road
Total Traffic Volume (AADT)	10,000	8,000
Day/Night Split (%)	92/8	92/8
Medium Trucks (%)	7	7
Heavy Trucks (%)	5	5
Posted Speed (km/hr)	80	50
Road Gradient (%)	1	1
Wood Depth [1.] (m)	30 - 60	0

1. This report assumes that a minimum depth of 30 m of the existing trees between the septic enveloped and Milton Road for Lots 5-13 will remain. Natural screening mitigates noise levels that can be incorporated into the noise analysis calculations.

Annex 1 and Schedule G of the City of Ottawa Official Plan (May 2003) was utilized to determine the correct road classification and protected right-of-way. These findings were compared to Table 1.7 of the City of Ottawa Environmental Noise Control Guidelines in order to determine an appropriate AADT value.

3.3.2 Noise Level Calculations

The noise levels for the daytime and nighttime periods were calculated for a number of representative receivers described in Table 5 and shown on Drawing No. 1, using the MOE Road Traffic Noise Computer program Stamson, Version 5.03.

Computer printouts are included in Appendix 'B'.

Table 5: Predicted Freefield Noise Levels

		Noise Levels (dBA)	
Receiver No. and File Names	**Receiver Description and Location**	**Daytime**	**Nighttime**
		Freefield	
R1 mil_r1	Outdoor Living Area of Lot 9 (also represents Lots 6-13) fronting on proposed Street No. 1 at a distance of 89.0 m from the centreline of Milton Road.	54.31	47.61
R2 mil_r2	Exterior Wall (rear) of Lot 8 (also represents Lots 6-13) at a distance of 91.9 m from the centreline of Milton Road.	54.35	47.43
R3 mil_r3	Outdoor Living Area of Lot 5 fronting on proposed Street No. 1 at a distance of 96.8m from the centreline of Milton Road.	54.94	48.24
R4 mil_r4	Exterior Wall (rear) of Lot 5 at a distance of 99.2 m from the centreline of Milton Road.	55.00	48.08
R5 smith_r5	Outdoor Living Area of Lot 2 fronting on proposed Street No. 2 at a distance of 83.0 m from the centreline of Smith Road.	51.96	45.19
R6 smith_r6	Exterior Wall (side) of Lot 2 at a distance of 86.0 m from the centreline of Smith Road.	51.91	44.95

4.0 RECOMMENDATIONS

4.1 Outdoor Noise Control Features

No mitigation is required in order to protect the outdoor living areas of Lots 2, 5-13.

4.2 Indoor Noise Control Features

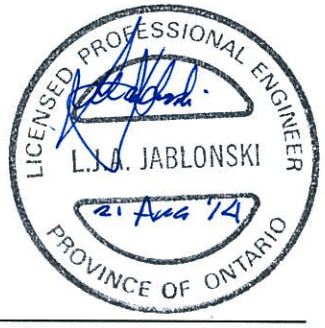
No mitigation is required for Lots 2, 5-13.

4.3 Site Plan Agreement and Notices on Title

It is recommended that no mitigation or Warning Clauses are to be included in the Site Plan Agreement and in the Offers of Purchase and Sale and/or lease of the affected units, and be registered on Title.

Prepared by: _____

Thomas Blais, A.Sc.T.
J.L. RICHARDS & ASSOCIATES LIMITED



Reviewed by: _____

Lee Jablonski, P.Eng.
J.L. RICHARDS & ASSOCIATES LIMITED

A P P E N D I X ‘A’

DRAWINGS

KENTUCKY LANE

EXISTING RESIDENTIAL

METEOR AVENUE

Erosion Hazard Limit (Setback - 6 m)

Approximate Crest of Slope

Approximate Toe of Slope

R5

R6

83.0

86.0

PRESCOTT-RUSSELL TRAIL LINK

SMITH ROAD (AADT 8,000)

130.0

CENTERLINE

102.6

BLOCK 23

14 15 16 17 18 19 20

21

STREET No. 1

STREET No. 2

POND

BLOCK 22

13 12 11 10 9 8 7 6 5 4 3 2 1

R1 R2 R3 R4

89.0 91.9 99.2 96.8

CENTERLINE

MILTON ROAD (AADT 10,000)

LEGEND

APPROXIMATE LOCATION OF SEPTIC ENVELOPE

OUTDOOR RECEIVER

INDOOR RECEIVER

PROJECT:

VILLAGE OF NAVAN
PROPOSED RESIDENTIAL SUBDIVISION
3455 MILTON ROAD, OTTAWA, ONTARIO

DRAWING:

NOISE IMPACT ASSESSMENT
RECEIVER LOCATIONS

J.L.Richards
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DESIGN: LJ/TB
DRAWN: TB
CHECKED: LJ

JLR NO: 26558
DRAWING NO.: N1

File Location: P:\26000\26558 - Brigil Navan Subdivision\JLR DWG\Civil\26558 C N1.dwg

PLOT DATE: August 19, 2014 4:32:17 PM

A P P E N D I X ‘B’

NOISE PREDICTIONS – SELECTED RECEIVERS

STAMSON 5.0 NORMAL REPORT Date: 19-08-2014 10:33:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mil_r1.te Time Period: Day/Night 16/8 hours
Description: 3455 Milton Rd, Navan; r1 ola

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

Car traffic volume : 8096/704 veh/TimePeriod *
Medium truck volume : 644/56 veh/TimePeriod *
Heavy truck volume : 460/40 veh/TimePeriod *
Posted speed limit : 80 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): 10000
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: milton rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 89.00 / 89.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: milton rd (day)

Source height = 1.50 m

ROAD (0.00 + 54.31 + 0.00) = 54.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.36	70.73	0.00	-10.52	-0.90	-5.00	0.00	0.00	54.31

Segment Leq : 54.31 dBA

Total Leq All Segments: 54.31 dBA

Results segment # 1: milton rd (night)

Source height = 1.50 m

ROAD (0.00 + 47.61 + 0.00) = 47.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.27	63.13	0.00	-9.82	-0.70	-5.00	0.00	0.00	47.61

Segment Leq : 47.61 dBA

Total Leq All Segments: 47.61 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.31
(NIGHT): 47.61

STAMSON 5.0 NORMAL REPORT Date: 19-08-2014 10:36:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mil_r2.te Time Period: Day/Night 16/8 hours
Description: 3455 Milton Rd, Navan; r2 ila

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

Car traffic volume : 8096/704 veh/TimePeriod *
Medium truck volume : 644/56 veh/TimePeriod *
Heavy truck volume : 460/40 veh/TimePeriod *
Posted speed limit : 80 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): 10000
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: milton rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg

Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 91.90 / 91.90 m
Receiver height : 2.25 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: milton rd (day)

Source height = 1.50 m

ROAD (0.00 + 54.35 + 0.00) = 54.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.34	70.73	0.00	-10.53	-0.85	-5.00	0.00	0.00	54.35

Segment Leq : 54.35 dBA

Total Leq All Segments: 54.35 dBA

Results segment # 1: milton rd (night)

Source height = 1.50 m

ROAD (0.00 + 47.43 + 0.00) = 47.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.27	63.13	0.00	-10.00	-0.70	-5.00	0.00	0.00	47.43

Segment Leq : 47.43 dBA

Total Leq All Segments: 47.43 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.35
(NIGHT): 47.43

STAMSON 5.0 NORMAL REPORT Date: 19-08-2014 11:02:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mil_r3.te Time Period: Day/Night 16/8 hours
Description: 3455 Milton Rd, Navan; r3 ola

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

Car traffic volume : 8096/704 veh/TimePeriod *
Medium truck volume : 644/56 veh/TimePeriod *
Heavy truck volume : 460/40 veh/TimePeriod *
Posted speed limit : 80 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): 10000
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: milton rd (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 96.80 / 96.80 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: milton rd (day/night)

Car traffic volume : 8096/704 veh/TimePeriod *
Medium truck volume : 644/56 veh/TimePeriod *
Heavy truck volume : 460/40 veh/TimePeriod *
Posted speed limit : 80 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): 10000
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 # 2: milton rd (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 96.80 / 96.80 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: milton rd (day)

Source height = 1.50 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	0	0.36	70.73	0.00	-11.01	-3.91	-5.00	0.00	0.00	50.80

Segment Leq : 50.80 dBA

Results segment # 2: milton rd (day)

Source height = 1.50 m

ROAD (0.00 + 52.82 + 0.00) = 52.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.66	70.73	0.00	-13.44	-4.47	0.00	0.00	0.00	52.82

Segment Leq : 52.82 dBA

Total Leq All Segments: 54.94 dBA

Results segment # 1: milton rd (night)

Source height = 1.50 m

ROAD (0.00 + 44.13 + 0.00) = 44.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.27	63.13	0.00	-10.29	-3.71	-5.00	0.00	0.00	44.13

Segment Leq : 44.13 dBA

Results segment # 2: milton rd (night)

Source height = 1.50 m

ROAD (0.00 + 46.10 + 0.00) = 46.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.57	63.13	0.00	-12.71	-4.31	0.00	0.00	0.00	46.10

Segment Leq : 46.10 dBA

Total Leq All Segments: 48.24 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.94
(NIGHT): 48.24

STAMSON 5.0 NORMAL REPORT Date: 19-08-2014 11:46:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mil_r4.te Time Period: Day/Night 16/8 hours
Description: 3455 Milton Rd, Navan; r4 ila

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

Car traffic volume : 8096/704 veh/TimePeriod *
Medium truck volume : 644/56 veh/TimePeriod *
Heavy truck volume : 460/40 veh/TimePeriod *
Posted speed limit : 80 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): 10000
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: milton rd (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 99.20 / 99.20 m
Receiver height : 2.25 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: milton rd (day/night)

Car traffic volume : 8096/704 veh/TimePeriod *
Medium truck volume : 644/56 veh/TimePeriod *
Heavy truck volume : 460/40 veh/TimePeriod *
Posted speed limit : 80 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): 10000
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 # 2: milton rd (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 99.20 / 99.20 m
Receiver height : 2.25 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: milton rd (day)

Source height = 1.50 m

ROAD (0.00 + 50.89 + 0.00) = 50.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.34	70.73	0.00	-10.97	-3.86	-5.00	0.00	0.00	50.89

Segment Leq : 50.89 dBA

Results segment # 2: milton rd (day)

Source height = 1.50 m

ROAD (0.00 + 52.86 + 0.00) = 52.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.64	70.73	0.00	-13.44	-4.43	0.00	0.00	0.00	52.86

Segment Leq : 52.86 dBA

Total Leq All Segments: 55.00 dBA

Results segment # 1: milton rd (night)

Source height = 1.50 m

ROAD (0.00 + 44.00 + 0.00) = 44.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.27	63.13	0.00	-10.42	-3.71	-5.00	0.00	0.00	44.00

Segment Leq : 44.00 dBA

Results segment # 2: milton rd (night)

Source height = 1.50 m

ROAD (0.00 + 45.93 + 0.00) = 45.93 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.57	63.13	0.00	-12.88	-4.31	0.00	0.00	0.00	45.93

Segment Leq : 45.93 dBA

Total Leq All Segments: 48.08 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.00
(NIGHT): 48.08

STAMSON 5.0 NORMAL REPORT Date: 19-08-2014 12:24:03
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: smith_r5.te Time Period: Day/Night 16/8 hours
Description: 3455 Milton Rd, Navan; r5 ola

Road data, segment # 1: smith rd (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 : 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): 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: smith 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 : 83.00 / 83.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: smith rd (day)

Source height = 1.50 m

ROAD (0.00 + 51.96 + 0.00) = 51.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.75	0.00	-12.33	-1.46	0.00	0.00	0.00	51.96

Segment Leq : 51.96 dBA

Total Leq All Segments: 51.96 dBA

Results segment # 1: smith rd (night)

Source height = 1.50 m

ROAD (0.00 + 45.19 + 0.00) = 45.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.16	0.00	-11.67	-1.30	0.00	0.00	0.00	45.19

Segment Leq : 45.19 dBA

Total Leq All Segments: 45.19 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.96
(NIGHT): 45.19

STAMSON 5.0 NORMAL REPORT Date: 19-08-2014 12:24:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: smith_r6.te Time Period: Day/Night 16/8 hours
Description: 3455 Milton Rd, Navan; r6 ila

Road data, segment # 1: smith rd (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 : 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): 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: smith 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 : 86.00 / 86.00 m
Receiver height : 2.25 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: smith rd (day)

Source height = 1.50 m

ROAD (0.00 + 51.91 + 0.00) = 51.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.64	65.75	0.00	-12.42	-1.42	0.00	0.00	0.00	51.91

Segment Leq : 51.91 dBA

Total Leq All Segments: 51.91 dBA

Results segment # 1: smith rd (night)

Source height = 1.50 m

ROAD (0.00 + 44.95 + 0.00) = 44.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.16	0.00	-11.91	-1.30	0.00	0.00	0.00	44.95

Segment Leq : 44.95 dBA

Total Leq All Segments: 44.95 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.91
(NIGHT): 44.95