

REPORT
PROJECT: 123888-6.04

NOISE CONTROL FEASIBILITY STUDY
SPRING VALLEY TRAILS SUBDIVISION -
PHASE 5/6
3252 NAVAN ROAD



Prepared for CLARIGE HOMES
by IBI GROUP

OCTOBER 2020

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1 INTRODUCTION

This report has been prepared to determine the impact of roadway traffic on the residential lands of the Spring Valley Trails (SVT) Phase 5/6 development area. The subject site is located at 3252 Navan Road in the Chapel Hill South Community of Ottawa. The report analyses the expected noise levels in the development and any required noise control measures.

According to the Draft Plan, the proposed development will consist of single-family homes, townhomes and condominium units. The condominium units and single-family lots are located beyond the noise contour lines required for this study, therefore the focus of the analysis will be on the townhome units.

Phase 5/6 is bound by Navan Road to the north, the Trans Canada Trail (formerly Canadian Pacific Railway corridor) and Mer Bleue Conservation Area to the south, existing phases of Spring Valley Trails to the west, and undeveloped rural land and the Navan Road waste management facility (BFI Canada Inc.) to the east.

The site location and its surrounding context is shown in **Figure 1**.

J:\125868_SV\PHASE5\7.0_Production\7.03_Design\04_CIVIL\LAND\Adapancy Report\Figure 1 LOCATION MAP.dwg Layout Name: LOCATION MAP Plot Scale: 1:5,133 Plotted At: 8/18/2020 Last Saved By: adore Last Saved At: Aug 11, 20



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SPRING VALLEY TRAILS
PHASE 5 & 6

Drawing Title

LOCATION MAP

Sheet No.

FIGURE 1

2 BACKGROUND

2.1 Noise Sources

The study area will be subject to roadway noise from existing Navan Road, as well as the extension of Joshua Street.

The subject site is outside of the Airport Vicinity Development Zone (AVDZ), as shown on Annex 10 and Schedule K of the 2013 Official Plan, therefore aircraft noise from the Ottawa International Airport has not been considered in this study.

There are no rail lines within 500 metres of the site, therefore no consideration has been given to the noise impacts from rail traffic in accordance with the *City of Ottawa Environmental Noise Control Guidelines (January 2016)*.

2.2 Sound Level Limits for Road Traffic

Sound level criteria for road traffic is taken from the *City of Ottawa Environmental Noise Control (ENC) 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 Indoor sound level criterion – ventilation and warning clause requirements

The recommended indoor sound, the sound level criteria from Table 2.2b of the ENC Guidelines are as follows:

- 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, 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.

As per NPC-300 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 and forced air heating with provision for central air conditioning is required.

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.

2.2.2 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.

2.2.3 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 this 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 sources of road noise impacting the site are expected to originate from traffic flows on Navan Road and the extension of Joshua Street through the proposed development:

Navan Road

Navan Road is presently a two-lane rural arterial road (2-RAU) with a posted speed limit of 60km/h adjacent to the proposed development. The road has a right-of-way protection of 37.5 metres. Consistent with noise studies conducted for previous phases of the Spring Valley Trails subdivision, an allowance for future urbanization and widening to four lanes (4-UAU) is included in the noise analysis.

Joshua Street

Joshua Street is a two-lane urban collector road (2-UCU) that presently exists west of the proposed development. The Draft Plan proposes to extend Joshua Street through the subject lands, maintaining the existing cross-section. The entire road will have a posted speed limit of 50km/h and a 26m right-of-way.

Traffic volume parameters were extracted from Appendix B: Table B1 of the ENC Guidelines for each of corresponding road classifications and are conservatively based on the capacity of each roadway.

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

TABLE 3.1: TRAFFIC AND ROAD DATA SUMMARY

	NAVAN ROAD (4-UAU)	JOSHUA STREET (2-UCU)
Annual Average Daily Traffic (AADT)	30,000	8,000
Posted Speed Limit (km/h)	60	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 noise contours generated by the traffic on Navan Road and Joshua Street, as described in Section 3.1. 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 following table provides the offset from centreline of the roadway to the noise contours. The distances in **Table 3.2** below are measured from the right-of-way centreline for each roadway identified previously in **Table 3.1**.

TABLE 3.2: NOISE CONTOUR OFFSETS

NOISE CRITERIA		DISTANCE FROM CENTRELINE (M)	
		NAVAN ROAD (4-UAU)	JOSHUA STREET (2-UCU)
Indoor Daytime	65 dBA	37.2	12.7
	55 dBA	149.0	54.4
Indoor Nighttime	60 dBA	27.4	7.3
	50 dBA	118.7	41.0
Outdoor Living Area (Daytime Only)	60 dBA	74.4	27.2
	55 dBA	149.0	54.4

Based on **Table 3.2** above for the indoor noise evaluation, the daytime contours for Navan Road and Joshua Street 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 when evaluating noise impacts associated for either of these roads. Noise contours for both indoor (daytime only) and outdoor noise evaluation are shown on **Figure 2**. These contours have not been adjusted to reflect screening from proposed buildings. For clarity purposes, the noise contours have not been extended where they intersect with the noise contours from the larger roadway.

For the 65dBA contour line associated with Joshua Street, the road centreline offset was 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, the results of which are attached in **Appendix A**. Given that Joshua Street has a 26m ROW and that the limit of the 65dBA noise level would occur approximately 12.7m from the road centreline, however, it can be concluded that no dwelling units on Joshua Street would experience these noise levels.

4 RESULTS

4.1 Indoor Sound Levels

The daytime indoor 55 dBA contour shown on **Figure 2** 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:

Navan Road (4-UAU) – The 65 dBA indoor contour, located 37.2 metres from the centreline of Navan Road, impacts only a select number of dwelling units within closest proximity to roadway. The 55 dBA noise contour, extending 149.0 metres from centreline, impacts a larger number of units, however the noise impacts will be reduced due to screening from the buildings closer to the road.

Joshua Street (2-UCU) – As shown on **Figure 2**, the 65 dBA contour falls within the road ROW and therefore would not impact any dwelling units adjacent to the road. All units directly flanking Joshua Street 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.

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 **Figure 2** 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:

Navan Road (4-UAU) – As the 60 dBA outdoor contour is located 74.4 m from the centreline of the road, all outdoor living areas (OLA) in this range will require physical attenuation. A potential noise barrier for the dwelling units backing onto Navan Road is shown in **Figure 2**. This noise barrier should be 2.5 metres consistent with previous phases of Spring Valley Trails. 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.

Joshua Street (2-UCU) – As the 60 dBA outdoor contour is located 27.2 m from the centreline of the road, all outdoor living areas (OLAs) in this range will require physical attenuation. Appropriate noise barrier locations for the proposed extension of Joshua Street through the proposed development lands are indicated in **Figure 2**. These noise barriers should be 2.2 metres high, consistent with previous phases of Spring Valley Trails. 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 either Joshua Street or Navan Road to screen noise for 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 Navan Road and Joshua Street 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 Joshua Street and Navan Road 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 Spring Valley Trails Phase 5 & 6 development located at 3252 Navan Road in Ottawa. 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 determined during the detailed design phase when the Draft Plan and grading plan are finalized.

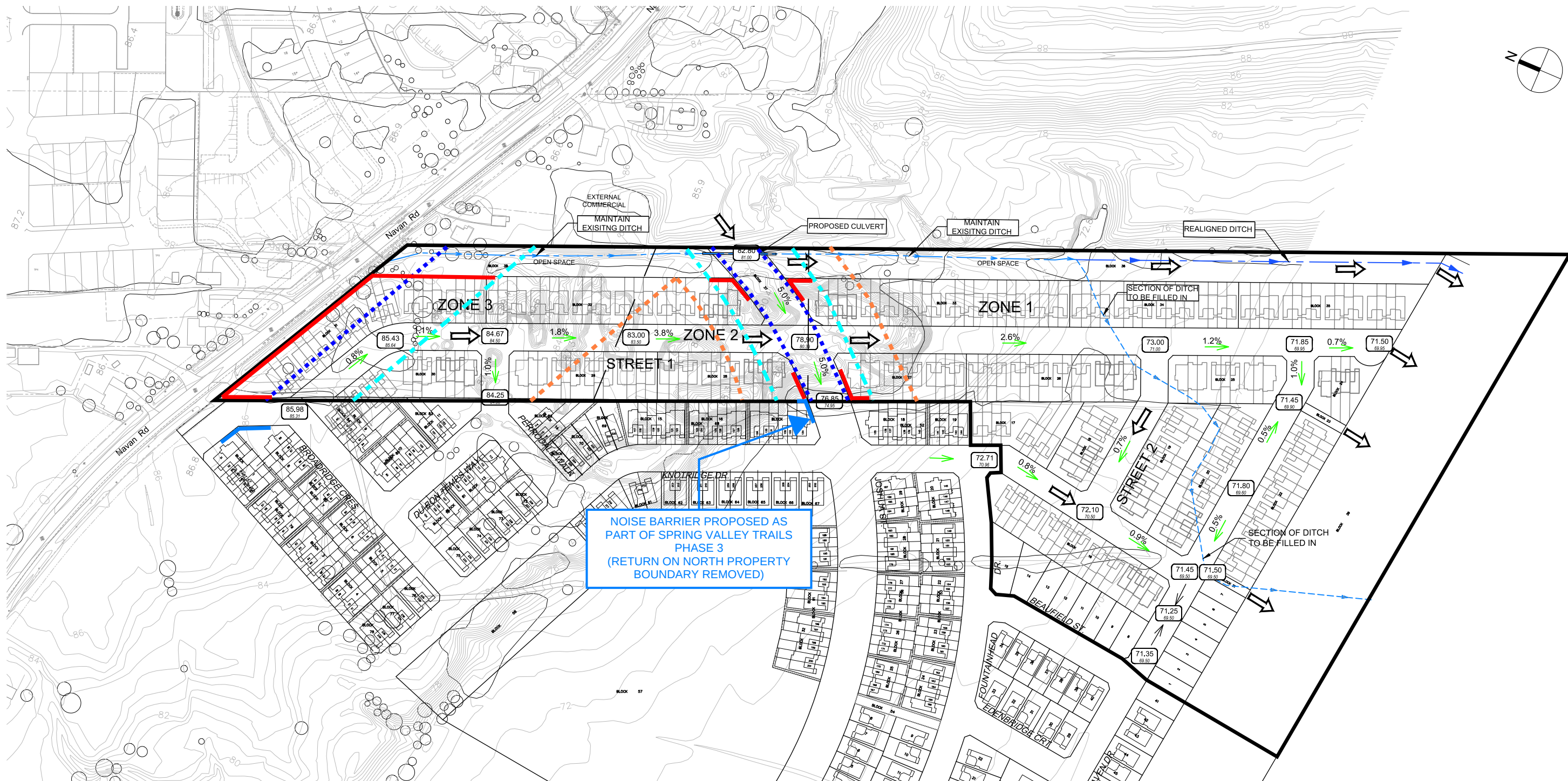
6 Professional Authorization

Prepared by:

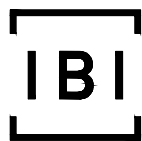


Ben Pascolo-Neveu, P. Eng.

J:\120866_LV\PH05\6\7\02_Production\7\02_Design\04_04m_LAND_Measurery Report_Sheets\SheetFigure 6.1 MACRO GRADING.dwg Layout Name: MACRO GRADING Plot Style: ----- Plot Scale: 1:4.526 Plotted At: 8/19/2020 12:27 PM Last Saved By: dore Last Saved At: Aug. 18, 20



	CENTRELINE OFFSETS	
	NAVAN ROAD 4-UAU	JOSHUA STREET 2-UCU
NOISE BARRIER (SPRING VALLEY TRAILS PHASE 3)		
POTENTIAL NOISE BARRIER LOCATION		
65 dBA INDOOR NOISE CONTOUR	65 dBA INDOOR (DAY)	37.2m
60 dBA OUTDOOR NOISE CONTOUR	60 dBA OUTDOOR (DAY)	74.4m
55 dBA INDOOR AND OUTDOOR NOISE CONTOUR	55 dBA INDOOR/ OUTDOOR (DAY)	149.0m



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Drawing Title

FIGURE 2 - NOISE PLAN

Sheet No.

2

Appendix A – Noise Calculations

STAMSON 5.0 NORMAL REPORT Date: 26-10-2020 13:30:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nvn6560.te Time Period: Day/Night 16/8 hours
Description: Navan Road - 65/ 60 dBA (day/ night)

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
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: Navan (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 : 37.20 / 27.40 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: Navan (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	0.66	73.01	0.00	-6.55	-1.46	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.00 dBA

↑

Results segment # 1: Navan (night)

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	0.57	65.41	0.00	-4.11	-1.30	0.00	0.00	0.00	60.00
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 65.00

(NIGHT): 60.00

↑

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STAMSON 5.0 NORMAL REPORT Date: 26-10-2020 13:40:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nvn6050.te Time Period: Day/Night 16/8 hours
Description: Navan Road - 60/ 50 dBA (day/ night)

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
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: Navan (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 : 74.41 / 118.70 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: Navan (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	73.01	0.00	-11.55	-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: Navan (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	65.41	0.00	-14.11	-1.30	0.00	0.00	0.00	50.00
-----	----	------	-------	------	--------	-------	------	------	------	-------

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

(NIGHT): 50.00

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STAMSON 5.0 NORMAL REPORT Date: 26-10-2020 13:35:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nvn5550.te Time Period: Day/Night 16/8 hours
Description: Navan Road - 55/ 50 dBA (day/ night)

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
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: Navan (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 : 149.00 / 118.70 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: Navan (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	73.01	0.00	-16.55	-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: Navan (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	65.41	0.00	-14.11	-1.30	0.00	0.00	0.00	50.00
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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: 26-10-2020 13:20:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: josh6560.te Time Period: Day/Night 16/8 hours
Description: Joshua Street - 65/ 60 dBA (day/ night)

Road data, segment # 1: joshua (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: joshua (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: joshua (day)

Source height = 1.50 m

ROAD (0.00 + 64.29 + 0.00) = 64.29 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	0.00	-1.46	0.00	0.00	0.00	64.29

Segment Leq : 64.29 dBA

Total Leq All Segments: 64.29 dBA

↑

Results segment # 1: joshua (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 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	0.00	-1.30	0.00	0.00	0.00	56.85
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 56.85 dBA

Total Leq All Segments: 56.85 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 64.29

(NIGHT): 56.85

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 26-10-2020 13:19:34
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: josh6060.te Time Period: Day/Night 16/8 hours
 Description: Joshua Street - 60/ 60 dBA (day/ night)

Road data, segment # 1: joshua (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: joshua (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 : 27.20 / 15.00 m
Receiver height     : 1.50 / 4.50 m
Topography          : 1          (Flat/gentle slope; no barrier)
Reference angle     : 0.00
```

↑
 Results segment # 1: joshua (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	65.75	0.00	-4.29	-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: joshua (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 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	0.00	-1.30	0.00	0.00	0.00	56.85
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Segment Leq : 56.85 dBA

Total Leq All Segments: 56.85 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

(NIGHT): 56.85

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 26-10-2020 13:16:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: josh5550.te Time Period: Day/Night 16/8 hours
Description: Joshua Street - 55/ 50 dBA (day/ night)

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 54.43 / 40.99 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: joshua (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	65.75	0.00	-9.29	-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: joshua (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
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-90	90	0.57	58.16	0.00	-6.86	-1.30	0.00	0.00	0.00	50.00
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Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 55.00

(NIGHT): 50.00

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↑

Divergence Calculations - For Source-Receiver Distances < 15m Apart

Divergence - Line Source - 65 dBA (Daytime) - 2-UCU - Joshua Street

Origin	Distance	d1	15	m
	Noise	n1	64.29	dBA
Receiver	Noise	n2	65	dBA
Distance (est)		d2	12.737707	

Note: Distance (est) = $d1 / (10^{((n2-n1)/10)})$

*When $n2 > n1$

Divergence - Line Source - 60 dBA (Nighttime) - 2-UCU - Joshua Street

Origin	Distance	d1	15	m
	Noise	n1	56.85	dBA
Receiver	Noise	n2	60	dBA
Distance (est)		d2	7.2625855	

Note: Distance (est) = $d1 / (10^{((n2-n1)/10)})$

*When $n2 > n1$