REPORT
Project: 135925 – 6.04-01

ENVIRONMENTAL NOISE IMPACT ASSESSMENT BARRETT LANDS PHASE 3 – BLOCK 178 LEITRIM COMMUNITY

Prepared for Barrett Co-Tenancy
by IBI Group

May 9, 2022

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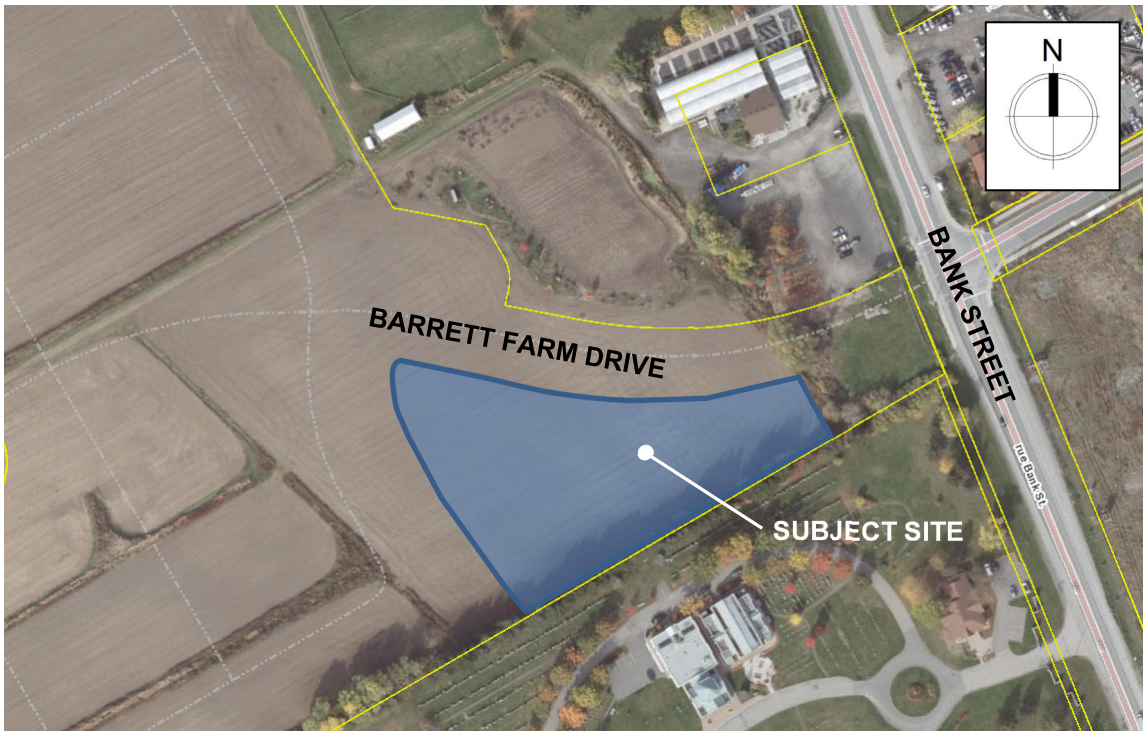
1 Introduction

IBI Group was retained by Barrett Co-Tenancy to conduct an Environmental Noise Impact Assessment in support of a Site Plan Control application for a proposed low- to mid-rise residential development within the Leitrim Community of Ottawa, referred to as 'Barrett Lands Phase 3 – Block 178' and located near the southwest corner of the Bank Street and Barrett Farm Drive intersection. The objective of this study is to evaluate the impacts of transportation-related noise on residential uses proposed within the subject lands and provide recommendations for appropriate noise control measures or warning clauses, as required, for these sensitive uses.

The proposed development will consist of a combination of street and back-to-back townhome units on an approximate 1.1-hectare parcel of land. The site is bound by Barrett Farm Drive to the north, an undeveloped parcel to the east, previous phases of Barrett Lands to the west and Hope Cemetery to the south. Bank Street is located an approximate 90-metre distance east of the site.

The proposed development and its surrounding context is illustrated in **Figure 1** below.

Figure 1 – Site Location



2 Background

2.1 Noise Sources

The proposed development is primarily subjected to traffic noise externally from Barrett Farm Drive and Bank Street. There are no other collector or higher-order roads existing or proposed within 100 metres of the subject site.

The site is located entirely within the Airport Vicinity Development Zone (AVDZ), as shown on Schedule C-14 of the 2021 Draft Official Plan, therefore aircraft noise was considered in this study.

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

2.2 Sound Level Limits for Road Traffic

Sound level criteria for road traffic is referenced from the City of Ottawa Environmental Noise Control (ENC) Guidelines and from the Ministry of the Environment, Conservation and Parks Environmental Noise Guideline Publication NPC-300. 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

The recommended indoor sound level criteria for road noise from Table 2.2b of the ENC Guidelines is provided below:

- Bedrooms – 23:00 to 07:00 – 40 dBA Leq (8)
- Living/Dining 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 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 are greater than 55 dBA and less than or equal to 65 dBA at the living room window and/or greater than 50 dBA and less than or equal to 60 dBA at the bedroom window, then a warning clause is compulsory. This warning clause specifies that forced air heating with a provision for central air conditioning is required. Should the receptor location at the building face exceed these criteria, central air conditioning is mandatory and a warning clause is required.

2.2.2 Outdoor Sound Level Criterion

As per Table 2.2a of the ENC Guidelines, the sound level criterion for the outdoor living area (OLA) for the daytime period between 07:00 and 23:00 hours is 55 dBA Leq (16). Receptor locations for OLAs are typically located 3 metres from the building face at the centre of the unit at a height of 1.5 metres above the ground.

If the Leq sound level is less than or equal to 55 dBA (daytime), no further action is required by the proponent. In the event that the sound level exceeds the criteria by less than 5 dBA, a warning clause may be provided to prospective purchasers or the proponent may install physical attenuation. For sound levels greater than 5 dBA above the criteria (i.e. greater than 60 dBA), 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, including windows, walls and doors must be designed to achieve indoor sound level criteria described previously and extracted from Table 2.2b of the ENC Guidelines.

3 Roadway Noise

3.1 Traffic Volume Data

The major sources of road noise impacting the subject site are expected to result from vehicular traffic on Bank Street and Barrett Farm Drive, as described below:

Bank Street is currently a two-lane, undivided rural roadway with a posted speed limit of 70 km/h within the vicinity of the subject site. Ultimately, this section of Bank Street will be reconstructed as a four-lane urban arterial divided (4-UAD) roadway. The noise analysis conducted for this study has been conservatively based on Bank Street with its ultimate, four-lane cross-section and a posted speed limit of 70 km/h.

Barrett Farm Drive is planned as a two-lane urban collector road connecting Kelly Farm Drive in the west and Bank Street in the east. The *Leitrim Master Transportation Study (MTS)*, completed by IBI Group in March 2017, includes peak hour traffic volumes along Barrett Farm Drive up to the City's 2031 planning horizon, as shown in Exhibit 17 (see **Appendix A**). These traffic volumes projections considered all known adjacent developments proposed within the Leitrim Community including the subject site and other developments in its vicinity that would have the highest potential to utilize Barrett Farm Drive.

Applying a factor of 10, the resulting Annual Average Daily Traffic (AADT) for Barrett Farm Drive is projected to be 1,060 vehicles. The smallest AADT that can be entered into the STAMSON Noise Model is 4,001 vehicles, therefore this level of traffic flow was conservatively used to represent two-way volume projections along Barrett Farm Drive. Other traffic parameters were extracted from Appendix B: Table B1 of the ENC Guidelines for a two-lane urban collector (2-UCU) road.

Table 3.1 below summarizes the relevant traffic and road parameters assumptions, as extracted from Appendix B of the ENC Guidelines.

TABLE 3.1: TRAFFIC AND ROAD DATA SUMMARY

	BARRETT FARM DRIVE (2-UCU)	BANK STREET (4-UAD)
Annual Average Daily Traffic (AADT)	4,001	35,000
Posted Speed Limit (km/h)	50	70
% Medium Trucks	7%	7%
% Heavy Trucks	5%	5%
% Daytime Traffic	92%	92%

3.2 Calculation Methods

The roadway noise analysis for this study was conducted using STAMSON v5.04, an industry-standard software program developed by the Ontario Ministry of the Environment (MOE). Detailed results of this analysis are provided in **Appendix A**.

As indicated on **Noise Plan Drawing No. 135925-N1**, receptor locations were selected to determine the limits of the noise criteria at the building face, as well as within the outdoor living areas. The noise limit at the building face was calculated based on the closest dwelling unit which falls below the 55 dBA (daytime) and 50 dBA (nighttime) thresholds, while the outdoor living area (OLA) only required analysis during daytime conditions for one unit beyond the 55 dBA criteria. When performing the noise analysis, if the lotting of dwelling units mirrored the arrangement for

which the noise analysis was conducted, then it was not necessary to repeat the analysis, as both scenarios would yield the same overall result.

Since Bank Street is modelled with its ultimate configuration as an arterial, four-lane divided road, the noise levels are calculated separately for the northbound and southbound lanes and then combined as per standard practice.

The results of the indoor noise analysis are presented in **Table 3.2** below.

TABLE 3.2: UNATTENUATED NOISE LEVELS AT BUILDING FACE (INDOOR)

LOCATION	ROADWAY	SOURCE - RECEIVER DISTANCE (m)	SEGMENT ANGLES		INDOOR NOISE LEVELS (dBA)	
UNIT #			LEFT	RIGHT	DAYTIME	NIGHTTIME
Unit 1	Barrett Farm Drive	16.5	-90	90	60.60	53.18
Unit 2	Barrett Farm Drive	22.5	-10	90	55.98	48.66
Unit 3	Barrett Farm Drive	28.5	-10	80	54.16	46.91
Unit 15	Barrett Farm Drive	26.0	-70	50	56.40	49.08
Unit 19	Barrett Farm Drive	20.5	-85	90	59.01	51.67
Unit 20	Barrett Farm Drive	25.5	-40	90	56.46	49.16
Unit 34	Barrett Farm Drive	39.0	-60	-30	47.03	39.93
Unit 38	Barrett Farm Drive	23.0	-85	70	57.97	50.65
Unit 39	Barrett Farm Drive	29.0	-35	60	54.79	47.49
Unit 44	Barrett Farm Drive	28.5	-75	-25	51.14	43.96
Unit 47	Barrett Farm Drive Bank Street NB Bank Street SB	15.5 101.5 89.5	-90 -90 -90	90 90 90	63.67	56.57
Unit 48	Bank Street NB Bank Street SB Barrett Farm Drive	100.5 88.5 21.0	-90 -90 -20	90 90 90	61.98	55.06
Unit 50	Bank Street NB Bank Street SB Barrett Farm Drive	99.0 86.5 33.5	-90 -90 -20	90 90 90	61.27	54.46

As indicated in **Table 3.2** above, noise levels exceed the 55 dBA (daytime) or 50 dBA (nighttime) thresholds at select locations indicated above and therefore abatement measures will be reviewed for the impacted dwelling units in subsequent sections of this report.

The results of the outdoor living area (OLA) noise analysis are presented in **Table 3.3** below. It should be noted that only street townhomes require outdoor noise analysis, while the majority of dwelling units are back-to-back townhomes which do not include OLAs as defined in the ENC Guidelines.

TABLE 3.3: UNATTENUATED NOISE LEVELS AT OUTDOOR LIVING AREA (OLA)

LOCATION	ROADWAY	SOURCE - RECEIVER DISTANCE (m)	SEGMENT ANGLES		INDOOR NOISE LEVELS (dBA)
UNIT #			LEFT	RIGHT	DAYTIME
Unit 1	Barrett Farm Drive	22.5	-65	40	56.98
Unit 2	Barrett Farm Drive	28.5	-55	10	53.30

As per **Table 3.3** above, the daytime noise levels exceed 55 dBA at numerous locations and therefore the need for abatement measures, including warning clauses or physical attenuation, will be reviewed for the impacted outdoor living areas (OLAs) of each dwelling unit.

Once the property parcel abutting the site to the east is built out, it is expected that the noise levels for Lots 49 to 50 will be reduced significantly to below 55 dBA (daytime) and therefore will no longer require a warning clause Type ‘C’ on the Agreement of Purchase or Sale in the longer-term.

4 Abatement Measures

4.1 Indoor Sound Levels

Based on the results of the indoor noise analysis presented previously in **Table 3.2**, all townhome units within closest proximity to either Barrett Farm Drive or Bank Street will have noise levels at the building face greater than 55 dBA but less than 65 dBA and will therefore require a Type 'C' warning clause. An alternative means of ventilation is also required in the Agreement of Purchase and Sale of each dwelling unit which usually consists of a forced air heating system with ducts sized for future installation of central air conditioning.

As indicated through the analysis conducted for this study, there are no units within the subject development which exceed the 65 dBA (daytime) or 60 dBA (nighttime) and therefore no units within the proposed development trigger a Type 'D' warning clause.

4.2 Outdoor Sound Levels

With respect to the OLA noise analysis presented in **Table 3.3** above, warning clause Type 'A' is proposed for Lot 1 in lieu of a noise barrier, as the unattenuated noise levels are within its OLA are shown to remain below 60 dBA but will still exceed 55 dBA during the daytime.

Abatement measures for aircraft noise are discussed in Section 5.2 below.

5 Summary of Attenuation Measures

5.1 Warning Clauses

A noise warning clause must appear on the Agreement of Purchase and Sale for all dwelling units indicated on the **Noise Plan Drawing No. 135925-N1** and listed in **Table 5.1** below.

Table 5.1 – Warning Clause Summary

WARNING CLAUSE	APPLICABLE UNIT
Type 'A'	- Unit 1
Type 'C'	- Units 1, 2, 15, 19, 20, 33, 38, 43, 47, 48, 49, 50
Aircraft Warning Clause	- All Dwelling Units

The following warning clauses are taken from Section C8.1 of NPC-300 Guidelines:

Type 'A'	"Purchasers/tenants are advised that sound levels due to Barrett Farm Drive and Bank Street traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment's noise criteria."
Type 'C'	"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

5.2 Aircraft Sound Levels

As stated in Section 2.1, Barret Lands Phase 3 – Block 178 is entirely located within the Airport Vicinity Development Zone (AVDZ). The site is, however, situated outside of the 25 NEF/NEP contour line, so the building components and ventilation requirements of Part 6: Prescribed Measures for Aircraft Noise of the ENC Guidelines do not apply. A warning clause is required for the residential units inside the AVDZ.

The warning clause for aircraft noise is as follows:

"Purchasers/tenants are advised that due to the proximity of the airport, noise from the airport and individual aircraft may at times interfere with outdoor or indoor activities".

5.3 Ventilation Requirements & Building Components

All townhome units requiring a Type 'C' warning clause listed in Section 5.1 should be fitted with a forced air heating system and sized to accommodate a central air conditioning system.

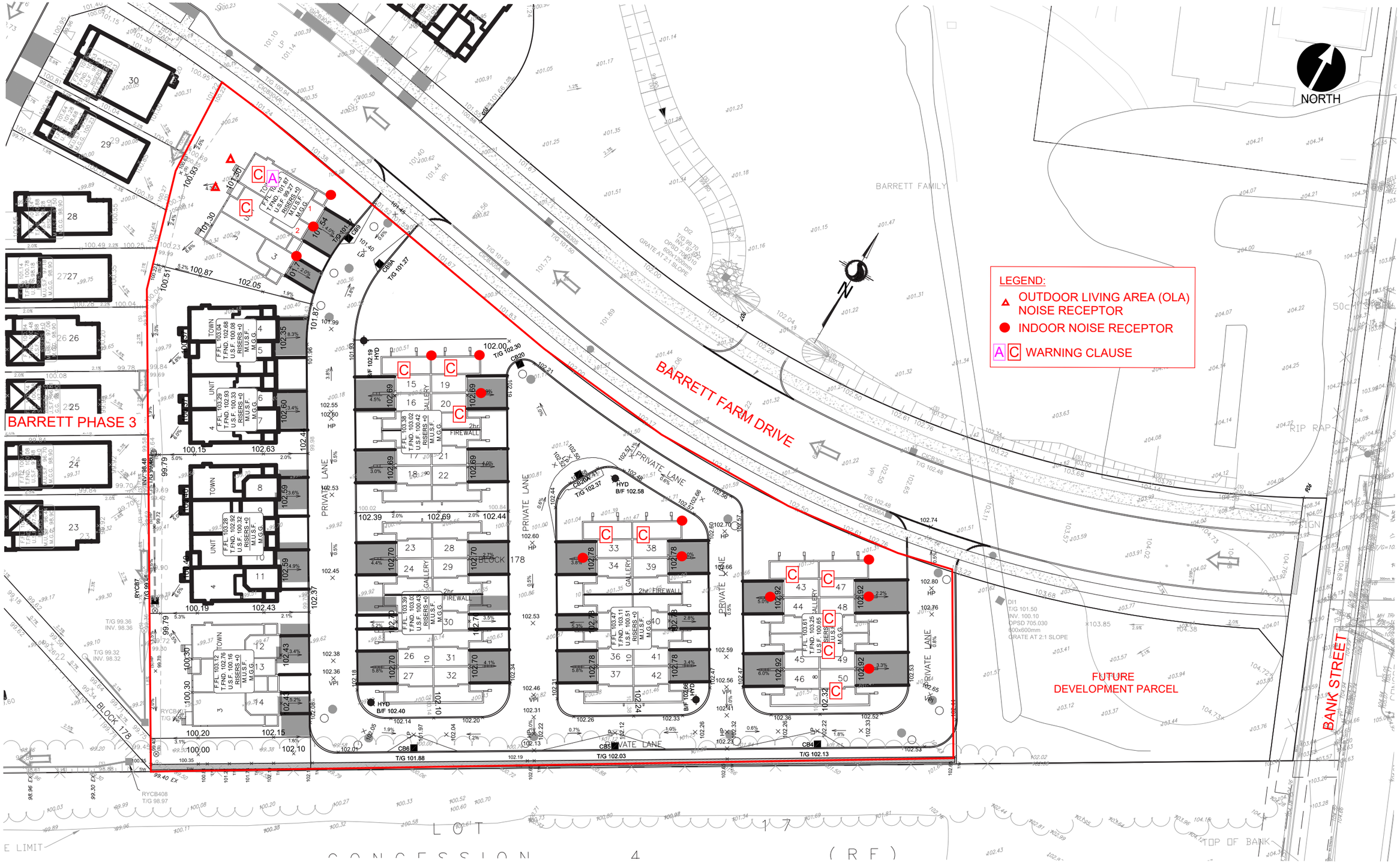
6 Conclusion

This Environmental Noise Impact Assessment was conducted in support of a Site Plan Control application for a proposed residential development for the Barrett Lands Phase 3 – Block 178 residential development within the Leitrim community of Ottawa. The impacts of transportation-related noise within the proposed development were evaluated and, based on the analysis conducted for this study, it is expected that noise levels will remain within the standards established by the City of Ottawa and Ministry of the Environment (MOE) with the exception of select units identified on **Noise Plan Drawing No. 135925-N1**. For these dwelling units, appropriate warning clauses and associated noise abatement measures must be provided on the Agreement of Purchase and Sale. Since the site is entirely located within the Airport Vicinity Development Zone (ADVZ), a warning clause pertaining to aircraft noise is also required for each dwelling unit.

7 Professional Authorization

Prepared By:

Ben Pascolo-Neveu, P.Eng.



IBI

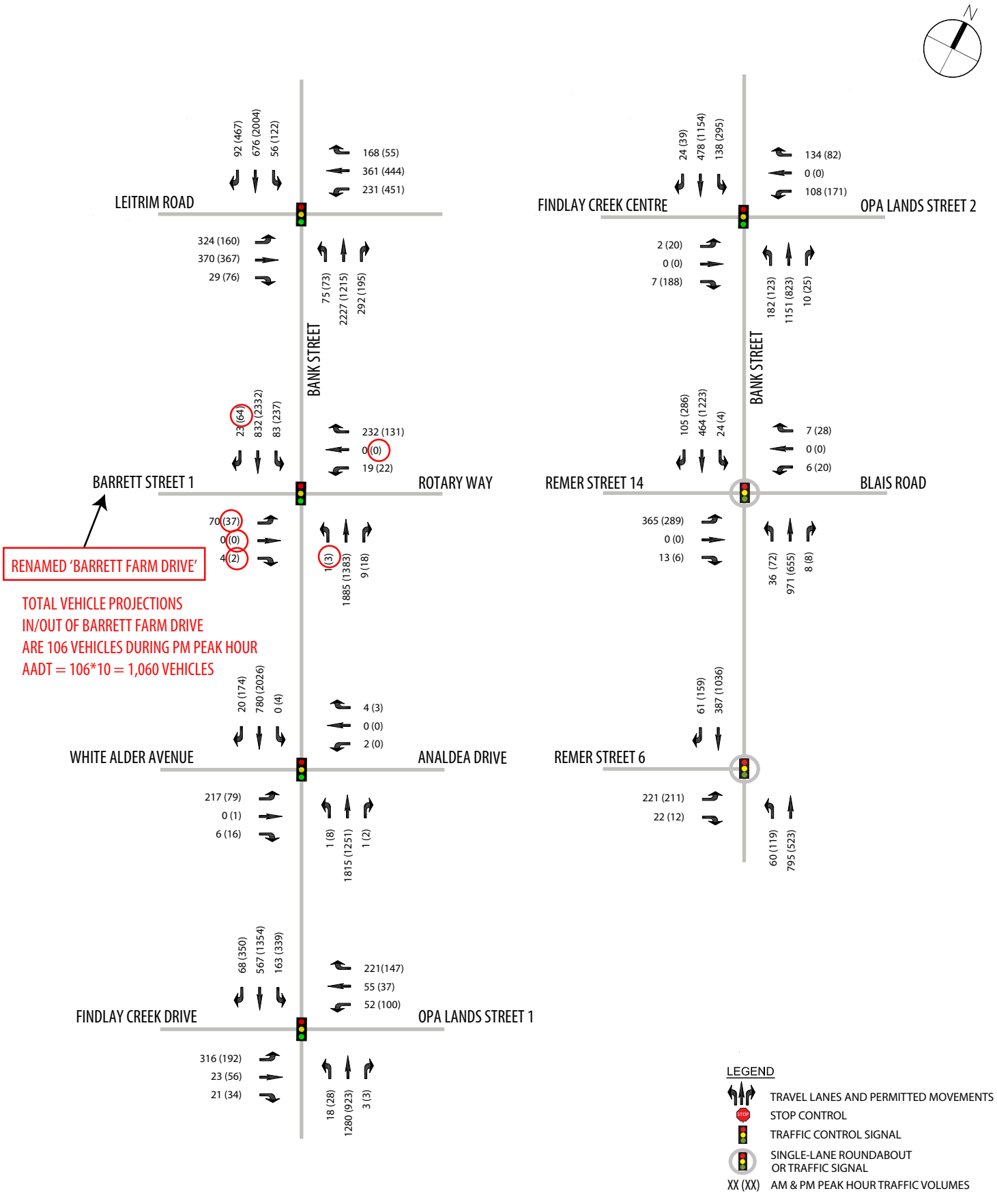
Barrett Lands Phase 3 - Block 178
Environmental Noise Impact Assessment

Noise Plan - Drawing No. 135925-N1

PROJECT No. 135925

SCALE: 0m 10m 20m

Appendix A –
Leitrim MTS 2031 Traffic Volume Projections



IBI

Leitrim Community
Master Transportation Study

EXHIBIT 17
Future Total (2031)
AM & PM Peak Hour Traffic Volumes

PROJECT No. 103500
DATE: MARCH 2017
SCALE: NTS

Appendix B –
STAMSON Noise Calculations

Appendix B-1
Indoor Noise at Building Face

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 14:14:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: bfd.te Time Period: Day/Night 16/8 hours
Description: Unit 1 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (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 : 16.50 / 16.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 60.60 + 0.00) = 60.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	62.74	0.00	-0.69	-1.46	0.00	0.00	0.00	60.60

Segment Leq : 60.60 dBA

Total Leq All Segments: 60.60 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 53.18 + 0.00) = 53.18 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	55.13	0.00	-0.65	-1.30	0.00	0.00	0.00	53.18

Segment Leq : 53.18 dBA

Total Leq All Segments: 53.18 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 60.60
(NIGHT): 53.18

FF

FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 14:22:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u2.te Time Period: Day/Night 16/8 hours
Description: Unit 2 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (day/night)

Angle1 Angle2 : -10.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 / 22.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 55.98 + 0.00) = 55.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-10	90	0.66	62.74	0.00	-2.92	-3.84	0.00	0.00	0.00	55.98

Segment Leq : 55.98 dBA

Total Leq All Segments: 55.98 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 48.66 + 0.00) = 48.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-10	90	0.57	55.13	0.00	-2.76	-3.71	0.00	0.00	0.00	48.66

Segment Leq : 48.66 dBA

Total Leq All Segments: 48.66 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 55.98
(NIGHT): 48.66

FF

FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 14:21:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u3.te Time Period: Day/Night 16/8 hours
Description: Unit 3 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (day/night)

Angle1 Angle2 : -10.00 deg 80.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 28.50 / 28.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 54.16 + 0.00) = 54.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-10	80	0.66	62.74	0.00	-4.63	-3.95	0.00	0.00	0.00	54.16

Segment Leq : 54.16 dBA

Total Leq All Segments: 54.16 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 46.91 + 0.00) = 46.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-10	80	0.57	55.13	0.00	-4.38	-3.84	0.00	0.00	0.00	46.91

Segment Leq : 46.91 dBA

Total Leq All Segments: 46.91 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 54.16
(NIGHT): 46.91

FF

FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 15:29:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u15.te Time Period: Day/Night 16/8 hours
Description: Unit 15 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (day/night)

Angle1 Angle2 : -70.00 deg 50.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 26.00 / 26.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 56.40 + 0.00) = 56.40 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	50	0.66	62.74	0.00	-3.97	-2.38	0.00	0.00	0.00	56.40

Segment Leq : 56.40 dBA

Total Leq All Segments: 56.40 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 49.08 + 0.00) = 49.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	50	0.57	55.13	0.00	-3.75	-2.30	0.00	0.00	0.00	49.08

Segment Leq : 49.08 dBA

Total Leq All Segments: 49.08 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 56.40
(NIGHT): 49.08

FF

FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 15:31:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u19.te Time Period: Day/Night 16/8 hours
Description: Unit 19 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (day/night)

Angle1 Angle2 : -85.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 20.50 / 20.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 59.01 + 0.00) = 59.01 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-85	90	0.66	62.74	0.00	-2.25	-1.48	0.00	0.00	0.00	59.01

Segment Leq : 59.01 dBA

Total Leq All Segments: 59.01 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 51.67 + 0.00) = 51.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-85	90	0.57	55.13	0.00	-2.13	-1.33	0.00	0.00	0.00	51.67

Segment Leq : 51.67 dBA

Total Leq All Segments: 51.67 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 59.01
(NIGHT): 51.67

FF

FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 15:33:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u20.te Time Period: Day/Night 16/8 hours
Description: Unit 20 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (day/night)

Angle1 Angle2 : -40.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 25.50 / 25.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 56.46 + 0.00) = 56.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-40	90	0.66	62.74	0.00	-3.83	-2.46	0.00	0.00	0.00	56.46

Segment Leq : 56.46 dBA

Total Leq All Segments: 56.46 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 49.16 + 0.00) = 49.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-40	90	0.57	55.13	0.00	-3.62	-2.35	0.00	0.00	0.00	49.16

Segment Leq : 49.16 dBA

Total Leq All Segments: 49.16 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 56.46
(NIGHT): 49.16

FF

FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 15:35:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u34.te Time Period: Day/Night 16/8 hours
Description: Unit 34 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (day/night)

Angle1 Angle2 : -60.00 deg -30.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 39.00 / 39.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 47.03 + 0.00) = 47.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-60	-30	0.66	62.74	0.00	-6.89	-8.82	0.00	0.00	0.00	47.03

Segment Leq : 47.03 dBA

Total Leq All Segments: 47.03 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 39.93 + 0.00) = 39.93 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-60	-30	0.57	55.13	0.00	-6.52	-8.68	0.00	0.00	0.00	39.93

Segment Leq : 39.93 dBA

Total Leq All Segments: 39.93 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 47.03
(NIGHT): 39.93

FF

FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 15:36:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u38.te Time Period: Day/Night 16/8 hours
Description: Unit 38 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (day/night)

Angle1 Angle2 : -85.00 deg 70.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 23.00 / 23.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 57.97 + 0.00) = 57.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-85	70	0.66	62.74	0.00	-3.08	-1.68	0.00	0.00	0.00	57.97

Segment Leq : 57.97 dBA

Total Leq All Segments: 57.97 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 50.65 + 0.00) = 50.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-85	70	0.57	55.13	0.00	-2.91	-1.56	0.00	0.00	0.00	50.65

Segment Leq : 50.65 dBA

Total Leq All Segments: 50.65 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 57.97
(NIGHT): 50.65

FF

FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 15:37:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u39.te Time Period: Day/Night 16/8 hours
Description: Unit 39 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (day/night)

Angle1 Angle2 : -35.00 deg 60.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 29.00 / 29.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 54.79 + 0.00) = 54.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-35	60	0.66	62.74	0.00	-4.75	-3.19	0.00	0.00	0.00	54.79

Segment Leq : 54.79 dBA

Total Leq All Segments: 54.79 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 47.49 + 0.00) = 47.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-35	60	0.57	55.13	0.00	-4.50	-3.14	0.00	0.00	0.00	47.49

Segment Leq : 47.49 dBA

Total Leq All Segments: 47.49 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 54.79
(NIGHT): 47.49

FF

FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 15:48:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u47.te Time Period: Day/Night 16/8 hours
Description: Unit 47 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod
Medium truck volume : 258/22 veh/TimePeriod
Heavy truck volume : 184/16 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: barrett farm (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 : 15.50 / 15.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Road data, segment # 2: bank nb (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod *
Medium truck volume : 1127/98 veh/TimePeriod *
Heavy truck volume : 805/70 veh/TimePeriod *
Posted speed limit : 70 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): 17500
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: bank nb (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 : 101.50 / 101.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Road data, segment # 3: bank sb (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod *
Medium truck volume : 1127/98 veh/TimePeriod *
Heavy truck volume : 805/70 veh/TimePeriod *
Posted speed limit : 70 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):  17500
    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 # 3: bank sb (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  :  89.50 / 89.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

FF

```
Results segment # 1: barrett farm (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 61.05 + 0.00) = 61.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  62.74   0.00  -0.24  -1.46   0.00   0.00   0.00  61.05
-------------------------------------------------------------------------------

Segment Leq : 61.05 dBA
```

FF

```
Results segment # 2: bank nb (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.74 + 0.00) = 56.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.98   0.00 -13.78  -1.46   0.00   0.00   0.00  56.74
-------------------------------------------------------------------------------

Segment Leq : 56.74 dBA
```

FF

```
Results segment # 3: bank sb (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.65 + 0.00) = 57.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.98   0.00 -12.88  -1.46   0.00   0.00   0.00  57.65
-------------------------------------------------------------------------------

Segment Leq : 57.65 dBA

Total Leq All Segments: 63.67 dBA
```

FF

Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 53.60 + 0.00) = 53.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	55.13	0.00	-0.22	-1.30	0.00	0.00	0.00	53.60

Segment Leq : 53.60 dBA

FF
Results segment # 2: bank nb (night)

Source height = 1.50 m

ROAD (0.00 + 50.05 + 0.00) = 50.05 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.39	0.00	-13.04	-1.30	0.00	0.00	0.00	50.05

Segment Leq : 50.05 dBA

FF
Results segment # 3: bank sb (night)

Source height = 1.50 m

ROAD (0.00 + 50.91 + 0.00) = 50.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.39	0.00	-12.18	-1.30	0.00	0.00	0.00	50.91

Segment Leq : 50.91 dBA

Total Leq All Segments: 56.57 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 63.67
(NIGHT): 56.57
FF
FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 82:50:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u48.te Time Period: Day/Night 16/8 hours
Description: Unit 48 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod
Medium truck volume : 258/22 veh/TimePeriod
Heavy truck volume : 184/16 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: barrett farm (day/night)

Angle1 Angle2 : -20.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 21.00 / 21.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Road data, segment # 2: bank nb (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod *
Medium truck volume : 1127/98 veh/TimePeriod *
Heavy truck volume : 805/70 veh/TimePeriod *
Posted speed limit : 70 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): 17500
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: bank nb (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 : 100.50 / 100.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Road data, segment # 3: bank sb (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod *
Medium truck volume : 1127/98 veh/TimePeriod *
Heavy truck volume : 805/70 veh/TimePeriod *
Posted speed limit : 70 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):  17500
    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 # 3: bank sb (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  :  88.50 / 88.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

FF

```
Results segment # 1: barrett farm (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.01 + 0.00) = 57.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.66  62.74   0.00  -2.43  -3.31   0.00   0.00   0.00  57.01
-------------------------------------------------------------------------------

Segment Leq : 57.01 dBA
```

FF

```
Results segment # 2: bank nb (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.82 + 0.00) = 56.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.98   0.00 -13.71  -1.46   0.00   0.00   0.00  56.82
-------------------------------------------------------------------------------

Segment Leq : 56.82 dBA
```

FF

```
Results segment # 3: bank sb (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.73 + 0.00) = 57.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.98   0.00 -12.80  -1.46   0.00   0.00   0.00  57.73
-------------------------------------------------------------------------------

Segment Leq : 57.73 dBA

Total Leq All Segments: 61.98 dBA
```

FF

Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 49.65 + 0.00) = 49.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	90	0.57	55.13	0.00	-2.29	-3.19	0.00	0.00	0.00	49.65

Segment Leq : 49.65 dBA

FF
Results segment # 2: bank nb (night)

Source height = 1.50 m

ROAD (0.00 + 50.12 + 0.00) = 50.12 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.39	0.00	-12.97	-1.30	0.00	0.00	0.00	50.12

Segment Leq : 50.12 dBA

FF
Results segment # 3: bank sb (night)

Source height = 1.50 m

ROAD (0.00 + 50.98 + 0.00) = 50.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.39	0.00	-12.10	-1.30	0.00	0.00	0.00	50.98

Segment Leq : 50.98 dBA

Total Leq All Segments: 55.06 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 61.98
(NIGHT): 55.06
FF
FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 83:09:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u50.te Time Period: Day/Night 16/8 hours
Description: Unit 50 indoor

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

Car traffic volume : 3239/282 veh/TimePeriod
Medium truck volume : 258/22 veh/TimePeriod
Heavy truck volume : 184/16 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: barrett farm (day/night)

Angle1 Angle2 : -20.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 33.50 / 33.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Road data, segment # 2: bank nb (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod *
Medium truck volume : 1127/98 veh/TimePeriod *
Heavy truck volume : 805/70 veh/TimePeriod *
Posted speed limit : 70 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): 17500
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: bank nb (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 : 99.00 / 99.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Road data, segment # 3: bank sb (day/night)

Car traffic volume : 14168/1232 veh/TimePeriod *
Medium truck volume : 1127/98 veh/TimePeriod *
Heavy truck volume : 805/70 veh/TimePeriod *
Posted speed limit : 70 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):  17500
    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 # 3: bank sb (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  :  86.50 / 86.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

FF

```
Results segment # 1: barrett farm (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.64 + 0.00) = 53.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.66  62.74   0.00  -5.79  -3.31   0.00   0.00   0.00  53.64
-------------------------------------------------------------------------------

Segment Leq : 53.64 dBA
```

FF

```
Results segment # 2: bank nb (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.92 + 0.00) = 56.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.98   0.00 -13.60  -1.46   0.00   0.00   0.00  56.92
-------------------------------------------------------------------------------

Segment Leq : 56.92 dBA
```

FF

```
Results segment # 3: bank sb (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.90 + 0.00) = 57.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.98   0.00 -12.63  -1.46   0.00   0.00   0.00  57.90
-------------------------------------------------------------------------------

Segment Leq : 57.90 dBA

Total Leq All Segments: 61.27 dBA
```

FF

Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 46.46 + 0.00) = 46.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	90	0.57	55.13	0.00	-5.48	-3.19	0.00	0.00	0.00	46.46

Segment Leq : 46.46 dBA

FF
Results segment # 2: bank nb (night)

Source height = 1.50 m

ROAD (0.00 + 50.22 + 0.00) = 50.22 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.39	0.00	-12.87	-1.30	0.00	0.00	0.00	50.22

Segment Leq : 50.22 dBA

FF
Results segment # 3: bank sb (night)

Source height = 1.50 m

ROAD (0.00 + 51.14 + 0.00) = 51.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.39	0.00	-11.95	-1.30	0.00	0.00	0.00	51.14

Segment Leq : 51.14 dBA

Total Leq All Segments: 54.46 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 61.27
(NIGHT): 54.46
FF
FF

Appendix B-2
Outdoor Living Area (OLA)

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 14:05:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u1.te Time Period: Day/Night 16/8 hours
Description: Unit 1 ola

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (day/night)

Angle1 Angle2 : -65.00 deg 40.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 / 22.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 56.98 + 0.00) = 56.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-65	40	0.66	62.74	0.00	-2.92	-2.84	0.00	0.00	0.00	56.98

Segment Leq : 56.98 dBA

Total Leq All Segments: 56.98 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 49.59 + 0.00) = 49.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-65	40	0.57	55.13	0.00	-2.76	-2.78	0.00	0.00	0.00	49.59

Segment Leq : 49.59 dBA

Total Leq All Segments: 49.59 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 56.98
(NIGHT): 49.59

FF

FF

STAMSON 5.0 NORMAL REPORT Date: 26-04-2022 14:06:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: u2.te Time Period: Day/Night 16/8 hours
Description: Unit 2 ola

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

Car traffic volume : 3239/282 veh/TimePeriod *
Medium truck volume : 258/22 veh/TimePeriod *
Heavy truck volume : 184/16 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): 4001
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: barrett farm (day/night)

Angle1 Angle2 : -55.00 deg 10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 28.50 / 28.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

FF
Results segment # 1: barrett farm (day)

Source height = 1.50 m

ROAD (0.00 + 53.30 + 0.00) = 53.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	10	0.66	62.74	0.00	-4.63	-4.82	0.00	0.00	0.00	53.30

Segment Leq : 53.30 dBA

Total Leq All Segments: 53.30 dBA

FF
Results segment # 1: barrett farm (night)

Source height = 1.50 m

ROAD (0.00 + 45.99 + 0.00) = 45.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	10	0.57	55.13	0.00	-4.38	-4.77	0.00	0.00	0.00	45.99

Segment Leq : 45.99 dBA

Total Leq All Segments: 45.99 dBA

FF

TOTAL Leq FROM ALL SOURCES (DAY): 53.30
(NIGHT): 45.99

FF

FF