Final Report

720 Erbsville Road
Waterloo, Ontario
Noise Report

Prepared for Sunvest Development Corp.
by IBI Group

October 2021

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ORIGINATOR:	Tiffany Chan, Andy Kroess
REVIEWER:	
AUTHORIZATION:	
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1 Introduction

IBI Group was retained to undertake an environmental noise study to examine the impacts of traffic noise for a proposed development at 720 Erbsville Road in the City of Waterloo.

The subject property is 9.31 ha in area with 3.1 ha being developed. For purposes of description, Erbsville Road runs north-south. The subject property is bounded by residential development to the north, south and west and is bounded by Laurel Creek to the east. On the other side of Laurel Creek the lands are subject to zone change for future residential development.

The subject property contains one (1) single detached home outside of the development area. The site will be redeveloped into a subdivision with six (6) stacked townhouse buildings and twelve (12) townhouse blocks. The site will also contain landscaped areas and surface parking.

Refer to the Noise Information Plan in Appendix A for a plan of the site and adjacent areas.

This report documents the noise analysis and findings to review the feasibility of the site from a noise perspective.

2 Background and Noise Criteria

The Ministry of Environment, Conservation and Parks (MECP, formerly MOE and MOECC) environmental noise guideline NPC-300 “Stationary and Transportation Sources – Approval and Planning” was used to determine the noise criteria for this project.

The primary noise sources that may impact the proposed residential sensitive receivers on the subject development are:

1. **Traffic Noise:**
    - Erbsville Road

Upon review of the surrounding environs, there are no significant off-site stationary noise sources. There is a Go-Kart track approximately 150m to the northeast of the property, however this site will cease operation in 2021 to allow for the development of residential lands. There is no proposed on-site stationary noise sources that will affect any off-site receivers.

On review of the site location, it was determined that the proposed development is outside the zone of influence of airports and railways and therefore air and rail noise are assumed not to be an issue and will not be reviewed further in this report.

2.1 Traffic Noise Criteria

For road traffic noise, Section C6 and C7 of NPC-300 were used to determine the noise criteria for the development. The traffic noise criteria are summarized in Table 1.

Table 1 – Traffic Noise Level Criteria

LOCATION	NOISE LEVELS (DBA)	REQUIREMENT
Outdoor Living Areas (Daytime- 0700 to 2300)	Less than 55	i) No control required
	55-60	i) Physical control required -or- ii) Type A warning clause required
	Greater than 60	i) Physical control required -and- ii) Type B warning clause required
Outside Living Room Window (Daytime- 0700 to 2300)	Less than 55	i) No control required
	55-65	i) Forced air heating required -and- ii) Type C warning clause required
	Greater than 65	i) Central air conditioning required -and- ii) Type D warning clause required -and- iii) Special building components required
Outside Bedroom Window (Night time- 2300 to 0700)	Less than 50	i) No control required
	50-60	i) Forced air heating required -and- ii) Type C warning clause required
	Greater than 60	i) Central air conditioning required -and- ii) Type D warning clause required -and- iii) Special building components required

3 Noise Sources & Modelling Methods

The following sections describe the identified noise sources.

3.1 Traffic Noise

The traffic volumes for Erbsville Road were provided by the Region of Waterloo on August 13, 2021. Refer to Appendix B.

The MECP requires that all traffic data be projected ten (10) years into the future from the date of construction such that the proposed mitigation will be relevant for future volumes.

The provided traffic volumes along with other relevant traffic data are summarized in Table 2.

Table 2 – Traffic Data (2031)

ITEM	ERBSVILLE ROAD (2031)
AADT	8,200
Years of Growth	-
% Growth	-
% Medium Trucks	1.0%
% Heavy Trucks	5.0%
Road Grade	2.8%
Speed Limit	50 kph
Day/Night Split	90/10

The noise levels produced by road traffic along Erbsville Road were modelled/predicted utilizing MECP's computer modelling software "STAMSON 5.04".

4 Receiver Locations

To facilitate analysis and description, sensitive Receiver locations were established and labeled. These Receivers were located at worst case locations (most exposed). Note, for daytime and nighttime noise, the receiver is located flush with the outside of living room and bedroom windows.

4.1 On-Site Receivers

Sensitive receiver locations were established on the proposed development's 3-storey buildings. These on-site receiver locations are shown on the Noise Information Plan in Appendix A. Only balconies and terraces greater than 4m in depth are considered sensitive to noise. There is one (1) designated Amenity area on the site.

The landscaped areas along Erbsville Road are not backyards and are therefore not considered Outdoor Living Areas since residents will not have access to these areas from the rear of buildings.

The onsite sensitive receivers for traffic noise are summarized in Table 3.

Table 3 –On-Site Traffic Noise Receiver Locations

RECEIVER	LOCATION	DISTANCE FROM ERBSVILLE RD.
Receiver A	Stacked Townhouse Unit S2 (Floors 1 to 3)	21.7m
Receiver B	Stacked Townhouse Unit S3 (Floors 1 to 3)	21.6m
Receiver C	Stacked Townhouse Unit S4 (Floors 1 to 3)	21.6m
Receiver D	Stacked Townhouse Unit S5 (Floors 1 to 3)	22.2m
Receiver E	Stacked Townhouse Unit S6 (Floors 1 to 3)	49.0m
Receiver F	Stacked Townhouse Unit S6 (Floors 1 to 3)	49.0m
Receiver G	Townhouse Unit T8 (Floors 1 to 3)	95.7m
Receiver H	Townhouse Unit T1 (Floors 1 to 3)	81.1m
Receiver J	Stacked Townhouse Unit S1 (Floors 1 to 3)	20.7m
OLA 1	Amenity Space – (Height – 1.5m)	62.7m

5 Free Field Analysis

A free field analysis was completed using STAMSON for the road noise along Erbsville Road. This analysis is the assessment of traffic noise impacts on the proposed development without any proposed structures or features to provide noise mitigation. From this analysis, the limits at which warning clauses and/or building components are required can be established.

The results of this analysis are shown in Table 4 and graphically in Appendix A.

Table 4 – Traffic Noise Free Field Analysis Results

FREE FIELD LIMIT	DISTANCE FROM ERBSVILLE ROAD
65 dBA (Day)	<15m
60 dBA (Day)	27m
55 dBA (Day)	54m
60 dBA (Night)	<15m
50 dBA (Night)	48m

In reference to Table 4 and Appendix A's Free Field plan, the following observations are made:

Erbsville Road

- The daytime acoustical impact on sensitive areas located within 54 metres of the centreline of Erbsville Road will have noise levels in excess of 55 dBA which exceeds the minimum daytime noise level criteria. Portions of the development are within this offset distance.
- The nighttime acoustical impact on sensitive areas located within 48 metres of the centreline of Erbsville Road will have noise levels in excess of 50 dBA which exceeds the minimum nighttime noise level criteria. Portions of the development are within this offset distance.

Given that the closest receiver to the road is approximately 20.7m, further analysis is needed to determine the extent of mitigation and warning clauses required.

6 Results

The following sections review the modelled/predicted noise impacts.

6.1 Traffic Noise Sources

STAMSON was used to model and predict noise levels and the output results are included in Appendix B, and summarized in Table 5. Note, the intermediate surface between the noise source and the receivers were modelled as having an absorptive surface.

Table 5 – Predicted Un-Attenuated Traffic Noise Levels

RECEIVER	DAYTIME (DBA)	NIGHTTIME (DBA)	CRITERIA DAY/NIGHT (DBA)
A	62	55	65/60
B	62	55	65/60
C	62	55	65/60
D	61	55	65/60
E	56	50	65/60
F	53	47	65/60
G	51	45	65/60
H	52	46	65/60
J	59	53	65/60
OLA 1 (Amenity Area)	54	-	60/-

Receivers A to J do not exceed 65 dBA (day) or 60 dBA (night), but as they exceed the 55 dBA daytime free field limit, warning clauses are required.

Noise levels at OLA 1 does not exceed 55 dBA during the daytime, therefore no additional mitigation is required.

7 Conclusions and Recommendations

Given the results of this analysis, the following recommendations are provided:

Traffic Noise

Recommendation #1 (All Units)

Due to the exceedance of the MECP noise criteria for the daytime and nighttime period due to road traffic, all residential units are to be fitted with the provision for air conditioning. Further, these residential units shall include Warning Clause Type 'C':

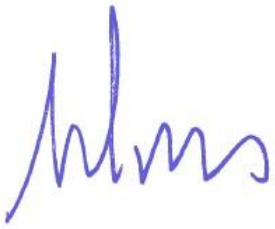
> *"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."*

Based on the preceding we conclude that the subject development can be designed appropriately to address noise impacts.

* * * * * * * * * * * * * * * *

Yours truly

IBI GROUP

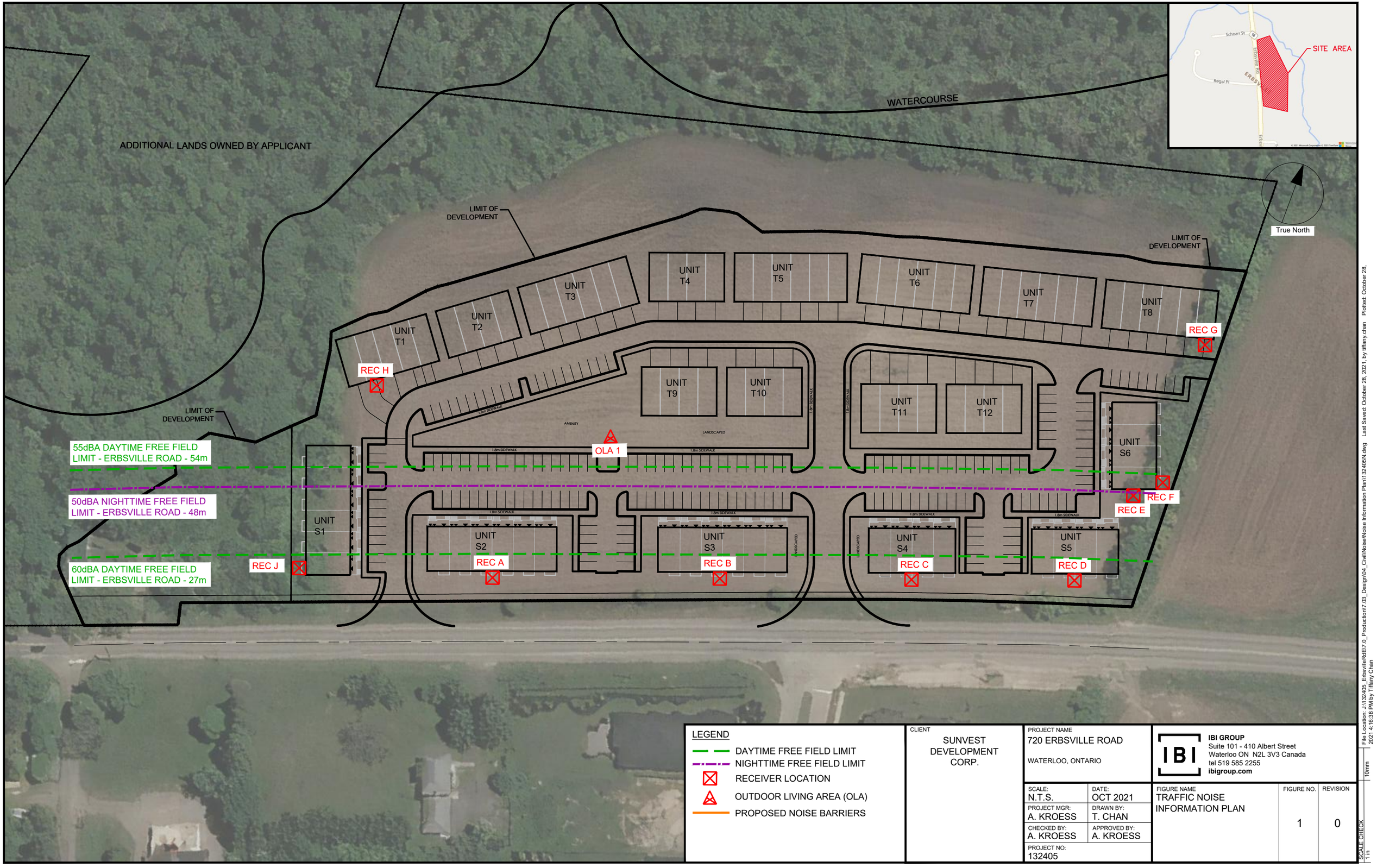




Andy Kroess, M.Eng., P.Eng
Senior Engineer

Tiffany Chan, P.Eng.
Civil Engineer

Appendix A – Noise Information Plan



LEGEND

- DAYTIME FREE FIELD LIMIT
- NIGHTTIME FREE FIELD LIMIT
- RECEIVER LOCATION
- OUTDOOR LIVING AREA (OLA)
- PROPOSED NOISE BARRIERS

CLIENT
SUNVEST DEVELOPMENT CORP.

PROJECT NAME
720 ERBSVILLE ROAD

WATERLOO, ONTARIO

IBI GROUP
Suite 101 - 410 Albert Street
Waterloo ON N2L 3V3 Canada
tel 519 585 2255
ibigroup.com

SCALE:	DATE:
N.T.S.	OCT 2021
PROJECT MGR:	DRAWN BY:
A. KROESS	T. CHAN
CHECKED BY:	APPROVED BY:
A. KROESS	A. KROESS
PROJECT NO:	
132405	

FIGURE NAME: TRAFFIC NOISE INFORMATION PLAN
FIGURE NO.: 1
REVISION: 0

SCALE CHECK 10mm 1 in

File Location: J:\132405_ErbsvilleRd\E7.0_Production\7.03_Design\04_Civil\Noise\Noise Information Plan\132405N.dwg Last Saved: October 28, 2021 4:16:38 PM by Tiffany Chan Plotted: October 28, 2021 by tiffany.chan

Appendix B – Traffic Information and STAMSON Output

Region of Waterloo AADT Forecast for Noise Studies

1. Development/Location	720 Erbsville Rd, Waterloo, ON	
2. Current AADT (2021)	Erbsville Rd	6,700
3. Forecast AADT (2031)	Erbsville Rd	8,200
4. Commercial Vehicle Rates		Erbsville Rd
	% Medium Trucks	1%
	% Heavy Trucks	5%
5. Posted Speed Limit	Erbsville Rd	50 km/h
6. Day/Night Splits	Regional Standard 90/10 Day/Night Split	
7. Expiry	Dec 31 2022	

8. Notes

This forecast is intended for the purpose of carrying out a noise study for **720 Erbsville Rd** only. The above AADT represents the traffic volumes for Erbsville Rd adjacent to the property.

This forecast remains valid up to the date indicated above. The Region of Waterloo should be contacted for an updated forecast if there are plans to use this forecast beyond the above validity period.

FREE FIELD ANALYSIS

STAMSON 5.0 NORMAL REPORT Date: 28-10-2021 09:22:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: erbville.te Time Period: Day/Night 16/8 hours
Description: Erbsville Rd Free Field Day 60/Night 60

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 27.14 / 47.74 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Erbsville Rd (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 65.73 0.00 -4.27 -1.46 0.00 0.00 0.00 0.00 60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

Results segment # 1: Erbsville Rd (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 59.19 0.00 -7.89 -1.30 0.00 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

STAMSON 5.0 NORMAL REPORT Date: 28-10-2021 09:23:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: erbville.te Time Period: Day/Night 16/8 hours
Description: Erbsville Rd Free Field Day 55/Night 60

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 54.31 / 47.74 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Erbsville Rd (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 65.73 0.00 -9.28 -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: Erbsville Rd (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 59.19 0.00 -7.89 -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): 55.00
(NIGHT): 50.00

RECEIVER NOISE LEVELS

STAMSON 5.0 NORMAL REPORT Date: 28-10-2021 09:41:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: reca.te Time Period: Day/Night 16/8 hours
Description: Receiver A Noise Levels

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 21.70 / 21.70 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Erbsville Rd (day)

Source height = 1.50 m

ROAD (0.00 + 61.61 + 0.00) = 61.61 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.66 65.73 0.00 -2.66 -1.46 0.00 0.00 0.00 0.00 61.61

Segment Leq : 61.61 dBA

Total Leq All Segments: 61.61 dBA

Results segment # 1: Erbsville Rd (night)

Source height = 1.50 m

ROAD (0.00 + 55.37 + 0.00) = 55.37 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.57 59.19 0.00 -2.52 -1.30 0.00 0.00 0.00 0.00 55.37

Segment Leq : 55.37 dBA

Total Leq All Segments: 55.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.61
(NIGHT): 55.37

STAMSON 5.0 NORMAL REPORT Date: 28-10-2021 10:41:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: recb.te Time Period: Day/Night 16/8 hours
Description: Receiver B Noise Levels

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 21.60 / 21.60 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Erbsville Rd (day)

Source height = 1.50 m

ROAD (0.00 + 61.64 + 0.00) = 61.64 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.66 65.73 0.00 -2.63 -1.46 0.00 0.00 0.00 61.64

Segment Leq : 61.64 dBA

Total Leq All Segments: 61.64 dBA

Results segment # 1: Erbsville Rd (night)

Source height = 1.50 m

ROAD (0.00 + 55.40 + 0.00) = 55.40 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.57 59.19 0.00 -2.49 -1.30 0.00 0.00 0.00 55.40

Segment Leq : 55.40 dBA

Total Leq All Segments: 55.40 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.64
(NIGHT): 55.40

STAMSON 5.0 NORMAL REPORT Date: 28-10-2021 10:42:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: recc.te Time Period: Day/Night 16/8 hours
Description: Receiver C Noise Levels

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 21.60 / 21.60 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Erbsville Rd (day)

Source height = 1.50 m

ROAD (0.00 + 61.64 + 0.00) = 61.64 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.66 65.73 0.00 -2.63 -1.46 0.00 0.00 0.00 0.00 61.64

Segment Leq : 61.64 dBA

Total Leq All Segments: 61.64 dBA

Results segment # 1: Erbsville Rd (night)

Source height = 1.50 m

ROAD (0.00 + 55.40 + 0.00) = 55.40 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.57 59.19 0.00 -2.49 -1.30 0.00 0.00 0.00 0.00 55.40

Segment Leq : 55.40 dBA

Total Leq All Segments: 55.40 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.64
(NIGHT): 55.40

STAMSON 5.0 NORMAL REPORT Date: 28-10-2021 10:42:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: recd.te Time Period: Day/Night 16/8 hours
Description: Receiver D Noise Levels

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 22.20 / 22.20 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Erbsville Rd (day)

Source height = 1.50 m

ROAD (0.00 + 61.45 + 0.00) = 61.45 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.66 65.73 0.00 -2.83 -1.46 0.00 0.00 0.00 61.45

Segment Leq : 61.45 dBA

Total Leq All Segments: 61.45 dBA

Results segment # 1: Erbsville Rd (night)

Source height = 1.50 m

ROAD (0.00 + 55.22 + 0.00) = 55.22 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.57 59.19 0.00 -2.67 -1.30 0.00 0.00 0.00 55.22

Segment Leq : 55.22 dBA

Total Leq All Segments: 55.22 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.45
(NIGHT): 55.22

STAMSON 5.0 NORMAL REPORT Date: 28-10-2021 10:44:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rece.te Time Period: Day/Night 16/8 hours
Description: Receiver E Noise Levels

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 49.00 / 49.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Erbsville Rd (day)

Source height = 1.50 m

ROAD (0.00 + 55.74 + 0.00) = 55.74 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.66 65.73 0.00 -8.53 -1.46 0.00 0.00 0.00 55.74

Segment Leq : 55.74 dBA

Total Leq All Segments: 55.74 dBA

Results segment # 1: Erbsville Rd (night)

Source height = 1.50 m

ROAD (0.00 + 49.82 + 0.00) = 49.82 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.57 59.19 0.00 -8.07 -1.30 0.00 0.00 0.00 49.82

Segment Leq : 49.82 dBA

Total Leq All Segments: 49.82 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.74
(NIGHT): 49.82

STAMSON 5.0 NORMAL REPORT Date: 28-10-2021 10:44:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: recf.te Time Period: Day/Night 16/8 hours
Description: Receiver F Noise Levels

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 49.00 / 49.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Erbsville Rd (day)

Source height = 1.50 m

ROAD (0.00 + 52.73 + 0.00) = 52.73 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
0 90 0.66 65.73 0.00 -8.53 -4.47 0.00 0.00 0.00 52.73

Segment Leq : 52.73 dBA

Total Leq All Segments: 52.73 dBA

Results segment # 1: Erbsville Rd (night)

Source height = 1.50 m

ROAD (0.00 + 46.81 + 0.00) = 46.81 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
0 90 0.57 59.19 0.00 -8.07 -4.31 0.00 0.00 0.00 46.81

Segment Leq : 46.81 dBA

Total Leq All Segments: 46.81 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.73
(NIGHT): 46.81

STAMSON 5.0 NORMAL REPORT Date: 28-10-2021 10:44:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: recg.te Time Period: Day/Night 16/8 hours
Description: Receiver G Noise Levels

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 95.70 / 95.70 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Erbsville Rd (day)

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 0.66 65.73 0.00 -13.36 -1.46 0.00 0.00 0.00 50.91

Segment Leq : 50.91 dBA

Total Leq All Segments: 50.91 dBA

Results segment # 1: Erbsville Rd (night)

Source height = 1.50 m

ROAD (0.00 + 45.25 + 0.00) = 45.25 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.57 59.19 0.00 -12.64 -1.30 0.00 0.00 0.00 45.25

Segment Leq : 45.25 dBA

Total Leq All Segments: 45.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.91
(NIGHT): 45.25

STAMSON 5.0 COMPREHENSIVE REPORT Date: 28-10-2021 10:46:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rech.te Time Period: Day/Night 16/8 hours
Description: Receiver H Noise Levels

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 81.10 / 81.10 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Segment # 1: Erbsville Rd (day)

Source height = 1.50 m

ROAD (0.00 + 52.11 + 0.00) = 52.11 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.66 65.73 0.00 -12.17 -1.46 0.00 0.00 0.00 52.11

Segment Leq : 52.11 dBA

Total Leq All Segments: 52.11 dBA

Segment # 1: Erbsville Rd (night)

Source height = 1.50 m

ROAD (0.00 + 46.38 + 0.00) = 46.38 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.57 59.19 0.00 -11.51 -1.30 0.00 0.00 0.00 46.38

Segment Leq : 46.38 dBA

Total Leq All Segments: 46.38 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.11
(NIGHT): 46.38

STAMSON 5.0 COMPREHENSIVE REPORT Date: 28-10-2021 10:46:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: recj.te Time Period: Day/Night 16/8 hours
Description: Receiver J Noise Levels

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 20.70 / 20.70 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Segment # 1: Erbsville Rd (day)

Source height = 1.50 m

ROAD (0.00 + 58.94 + 0.00) = 58.94 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
0 90 0.66 65.73 0.00 -2.32 -4.47 0.00 0.00 0.00 58.94

Segment Leq : 58.94 dBA

Total Leq All Segments: 58.94 dBA

Segment # 1: Erbsville Rd (night)

Source height = 1.50 m

ROAD (0.00 + 52.68 + 0.00) = 52.68 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
0 90 0.57 59.19 0.00 -2.20 -4.31 0.00 0.00 0.00 52.68

Segment Leq : 52.68 dBA

Total Leq All Segments: 52.68 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.94
(NIGHT): 52.68

OUTDOOR LIVING AREAS (OLAs)

STAMSON 5.0 NORMAL REPORT Date: 28-10-2021 16:19:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola1.te Time Period: Day/Night 16/8 hours
Description: OLA 1 Noise Levels

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

Car traffic volume : 6937/771 veh/TimePeriod *
Medium truck volume : 74/8 veh/TimePeriod *
Heavy truck volume : 369/41 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8200
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Erbsville 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 : 62.70 / 62.70 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Erbsville Rd (day)

Source height = 1.50 m

ROAD (0.00 + 53.96 + 0.00) = 53.96 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.66 65.73 0.00 -10.31 -1.46 0.00 0.00 0.00 53.96

Segment Leq : 53.96 dBA

Total Leq All Segments: 53.96 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.96