REPORT
PROJECT: 115496-5.2.2

NOISE FEASIBILITY REPORT
THE MEADOWS IN HALF MOON BAY
PHASE 5

Prepared for TAMARACK HOMES
by IBI GROUP

UPDATED: DECEMBER 2018

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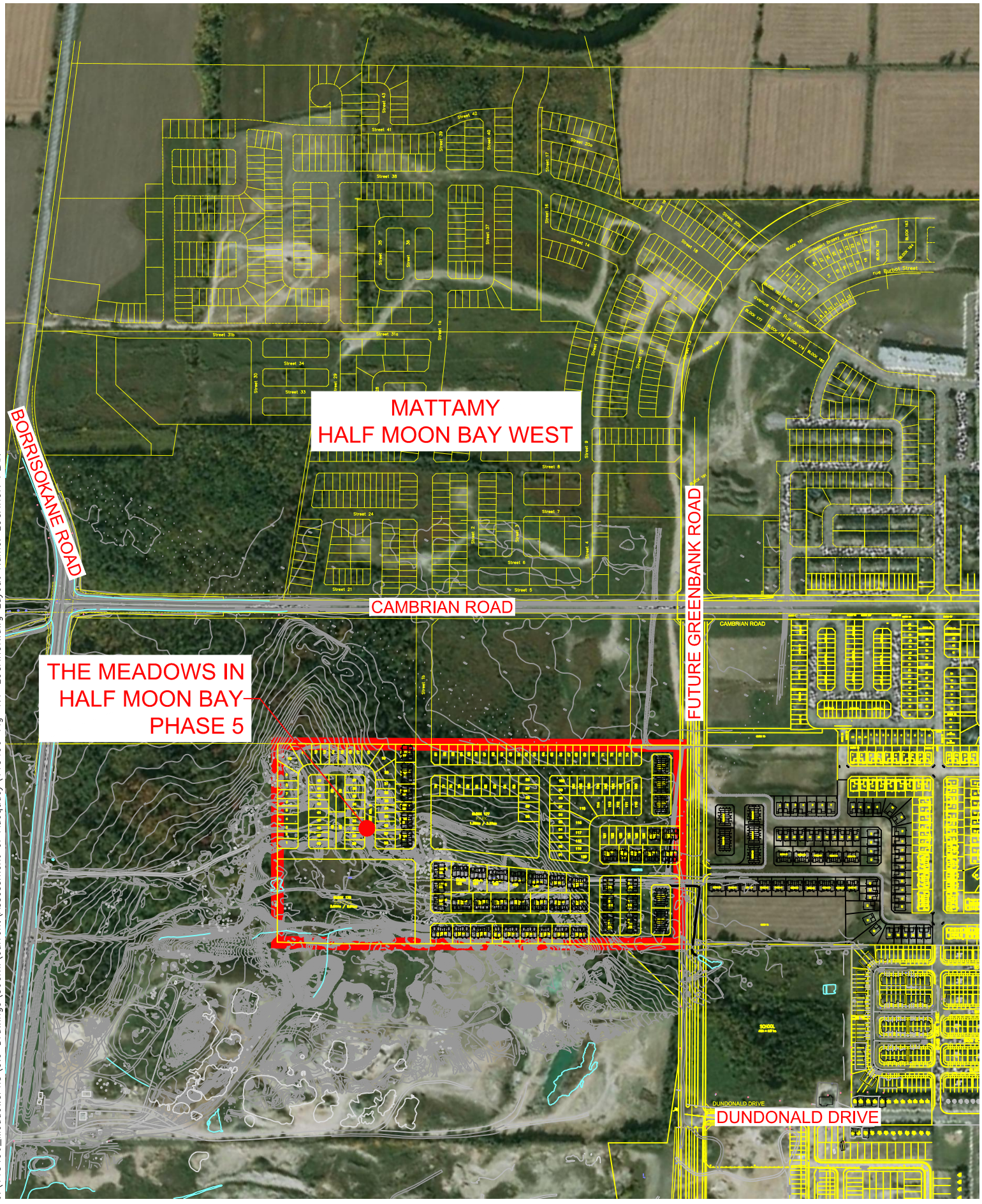
1 INTRODUCTION

This report has been prepared to determine the impact of roadway traffic noise and potential stationary noise on the residential lands of the Meadows in Half Moon Bay Phase 5 developed by Tamarack Homes. The report identifies potential noise levels in the development and any potential required noise control measures.

1.1 Subject Property

The subject property is located in the Barrhaven South Community in the City of Ottawa as shown on the Location Plan **Figure 1.1**. The site is located west of Phase 4 of the Meadows and future Greenbank Road and is surrounded by undeveloped land on the north and west boundaries. An existing aggregate extraction pit is located along the south boundary of the site.

The residential site consists of a mixed single family lots, street townhouse units, back to back townhouse units and semi-detached units. A park is and a school block is located in the site.



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Project Title

THE MEADOWS IN
HALF MOON BAY
PHASE 5

Drawing Title

SITE LOCATION

Sheet No.

FIG. 1.1

2 BACKGROUND

2.1 Noise Sources

The study area is subject to traffic noise from future Greenbank Road and from the internal collector road Street No.1. The nearest major roadway in this area is the extension of Cambrian Road which is located approximately 240 meters north of the site and will not be included in this noise analysis. As stated in Section 1.1, there is an existing aggregate (sand and gravel) extraction pit along the south boundary which is identified as a stationary source of noise.

Aircraft noise from the Ottawa International Airport and rail noise is not a factor as the airport and rail lines are not in close proximity to the study areas.

2.2 Sound Level Limits for Road Traffic

Sound level criteria for road traffic is taken from the City of Ottawa Environmental Noise Control Guidelines hereafter referred to as the guidelines and from the Ministry of the Environment 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 Outdoor sound level criterion

As per Table 2.2a of the guidelines 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 center of the OLA at a height of 1.5 meters above the ground.

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

2.2.2 Indoor sound level criterion – ventilation and warning clause requirements

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

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

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

For the purpose of assessing indoor sound levels, the outdoor sound levels are observed at the plane of the living room window at 2.5 meters above the ground for daytime noise and at the plane of the bedroom window 4.5 meters 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.

2.2.3 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.

2.3 Stationary Noise

The proposed residential development is located in an existing suburban area of the City of Ottawa and would likely be classified as a Class 2 area as defined in Table 3.0 of the guidelines. A Class 2 area has sound characteristics of a major population center in the daytime and of a rural area in the evening and nighttime.

Sound level limits for new noise sensitive land uses in proximity to existing stationary noise sources for steady and varying sound is outlined in Table 3.2a of the guidelines and summarized as follows:

• Plane of Window	-	Daytime (07:00 - 19:00)	50 dBA Leq(1)
	-	Evening (19:00 – 23:00)	50 dBA Leq(1)
	-	Night (23:00 – 07:00)	45 dBA Leq(1)
• Outdoor Living Area	-	Daytime (07:00 – 19:00)	50 dBA Leq(1)
	-	Evening (19:00 – 23:00)	45 dBA Leq(1)

3 ROADWAY NOISE

3.1 Road Traffic Data

The major source of road noise impacting the study area is the traffic moving along future Greenbank Road and Street No.1b.

Future Greenbank Road will be a four lane divided arterial roadway with a posted speed limit of 60 km/hr through the urban area. The future Greenbank Road has Bus Rapid Transit (BRT) lanes in the center median. The City of Ottawa has provided a volume of 270 buses per day, a daytime/nighttime split of 74%/26% and a speed limit of 80 km/hr reduced to 60 km/hr near Cambrian Road which is within the site limits. Street No. 1 will be a two lane urban collector road with a posted speed limit of 50 km/hr. Traffic volumes are taken from Appendix B Table 1 of the guidelines with Greenbank classified as a 4-UAD roadway and Street No. 1 as a 2-UCU road. Table 3.1 summarizes the traffic and road parameters used to assess the noise; traffic volume parameters are taken from Appendix B Table B1 of the guidelines.

TABLE 3.1
TRAFFIC AND ROAD DATA SUMMARY

	FUTURE GREENBANK ROAD	BRT	STREET NO. 1
Annual Average Daily Traffic (AADT)	35,000	270 buses	8,000
Posted Speed Limit (km/hr)	60	60	50
% Medium Trucks	7%	--	7%
% Heavy Trucks	5%	--	5%
% Daytime Traffic	92%	74%	92%

3.2 Calculation Methods

Roadway noise is calculated using the STAMSON 5.04 computer program from the Ontario Ministry of the Environment. The BRT noise is calculated with the RT/Custom function in STAMSON which is used for rapid transit applications. Noise for the northbound and southbound future Greenbank Road lanes are calculated separately and combined together with the BRT noise.

This study will identify the noise contours generated by the traffic for various scenarios. To determine the requirement for an indoor noise warning clause, the contours for the 55 dBA daytime and 50 dBA nighttime levels are determined. For the requirement to evaluate building components, the 65 dBA daytime and 60 dBA night time contours are used. To determine the requirements for noise barriers, the 55 dBA and 60 dBA daytime noise contours are used. The following table provides the offset from centerline of the roadway to the noise contours.

TABLE 3.2
NOISE CONTOUR OFFSETS

NOISE CRITERIA		DISTANCE FROM CENTRELINE (M)	
		FUTURE GREENBANK ROAD	STREET NO. 1
Indoor Daytime	65 dBA	45.4	12.7
	55 dBA	166.5	54.5
Indoor Nighttime	60 dBA	36.3	7.3
	50 dBA	138.2	41.0
Outdoor Living Area	60 dBA	84.9	27.2
	55 dBA	166.5	54.5

Based on the above table, for indoor noise evaluation, the daytime contours are further from centerline than the nighttime levels for each criterion; therefore, only the daytime levels will be used in the evaluation. Noise contours for indoor noise and outdoor living area noise evaluation are shown on **Figure 1.2**. The noise contours have not been adjusted to reflect screening from proposed buildings or combined at intersections.

4 RESULTS

4.1 Indoor Sound Levels

The 65 dBA daytime noise contour shown on **Figure 1.2** represents the limit in which central air conditioning and an acoustical review/design of building components is required along with a Type 'D' warning clause to be included in an Agreement of Purchase and Sale. Based on the offset from centreline, buildings directly facing or flanking future Greenbank Road will exceed the 65 dBA noise level. Between the 65 dBA and 55 dBA contour, a forced air heating system with provision for central air conditioning is required along with a Type 'C' warning clause to be included in the Agreement of Purchase and Sale. The 55 dBA contour impacts all units fronting or flanking the collector roads, requiring the Type 'C' warning clause; these buildings will also screen the noise for the units directly behind the fronting and flanking units. The exact location of the units requiring the Type 'C' and 'D' warning clauses will be determined during detailed design.

Warning clauses for indoor noise from NPC-300 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 60 dBA outdoor noise contour shown on **Figure 1.2** represents the limit in which physical attenuation is required while the 55 dBA represents the limits in which no action is required for noise at the outdoor living areas. For areas above 60 dBA where a noise barrier reduces the noise below 60 dBA but remains above 55 dBA, a Type 'B' warning clause is required in the Agreement of Purchase and Sale. For areas that fall between the 60 dBA and 55 dBA contours a Type 'A' warning clause could be used in lieu of a noise barrier. The back to back townhouses adjacent to future Greenbank Road have no outdoor living areas and are not included in outdoor noise analysis. Street townhouses flanking Greenbank Road will require a noise barrier; due to the high traffic volume on the arterial road, it may not be practical to reduce noise levels below 55 dBA so a Type 'B' warning clause may be required for the units adjacent to future Greenbank Road. Along Street No. 1, there are several units that flank the road exposing the outdoor living areas to noises levels above 60 dBA. Noise barriers are likely required at four locations shown on **Figure 1.2**.

Warning clauses for outdoor noise from NPC-300 are as follows:

Type 'A'

"Purchasers/tenants are advised that sound levels due to Future Greenbank Road and BRT/Street No. 1 road traffic 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 Future Greenbank Road and BRT/Street No. 1 road traffic 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 STATIONARY NOISE

A study for stationary noise is required for a new noise sensitive land uses within 300 meters of a pit licensed under the Aggregate Resources Act per Section 3.1 of the guidelines. As almost the entire site is within 300 meters from the south boundary a detailed stationary Noise Study is required and is included in the Mineral Resource Impact Assessment prepared by Paterson Group.

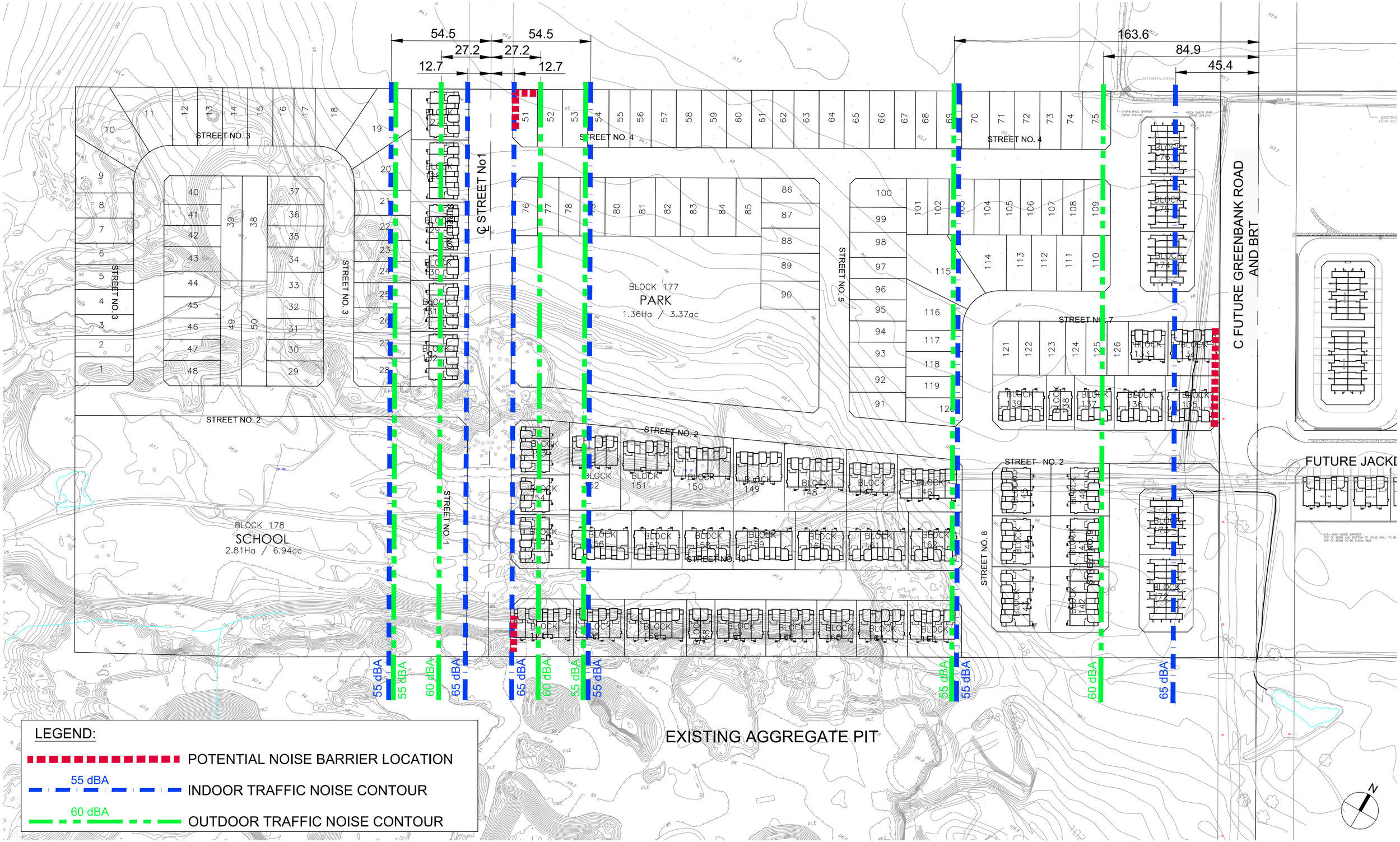
6 CONCLUSIONS

This report outlines the impact of roadway noise on the Meadows in Half Moon Bay Phase 5 development. The exact location of residential units requiring noise warning clauses, ventilation, air conditioning requirements, acoustical review/design of building components, and the potential location and size of noise barriers will be determined during the detailed design phase when site plans and grading plans are finalized.

As this site is located within 300 meters of a pit licensed under the Aggregate Resource Act, a stationary Noise Study is included in the Mineral Resource Impact Assessment prepared by Paterson Group.

Prepared by:

Lance Erion, P. Eng.



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Scale	Project Title	Drawing Title	Sheet No.
N.T.S.	THE MEADOWS IN HALF MOON BAY PHASE 5	NOISE CONTOURS	FIG. 1.2

Appendix

STAMSON 5.0 NORMAL REPORT Date: 04-12-2018 14:39:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ph5gb65d.te Time Period: Day/Night 16/8 hours
Description: Future Greenbank and BRT 65 dBA daytime

Road data, segment # 1: F Greenbelt (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 : 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): 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 # 1: F Greenbelt (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 : 33.35 / 33.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: F Greenbelt (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 : 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): 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: F Greenbelt (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	:	57.35 / 57.35	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Results segment # 1: F Greenbelt (day)

Source height = 1.50 m

ROAD (0.00 + 63.45 + 0.00) = 63.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.67	0.00	-5.76	-1.46	0.00	0.00	0.00	63.45

Segment Leq : 63.45 dBA

Results segment # 2: F Greenbelt (day)

Source height = 1.50 m

ROAD (0.00 + 59.54 + 0.00) = 59.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.67	0.00	-9.67	-1.46	0.00	0.00	0.00	59.54

Segment Leq : 59.54 dBA

Total Leq All Segments: 64.93 dBA

Results segment # 1: F Greenbelt (night)

Source height = 1.50 m

ROAD (0.00 + 56.29 + 0.00) = 56.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	63.07	0.00	-5.48	-1.30	0.00	0.00	0.00	56.29

Segment Leq : 56.29 dBA

Results segment # 2: F Greenbelt (night)

Source height = 1.50 m

ROAD (0.00 + 52.62 + 0.00) = 52.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	63.07	0.00	-9.15	-1.30	0.00	0.00	0.00	52.62

Segment Leq : 52.62 dBA

Total Leq All Segments: 57.84 dBA

RT/Custom data, segment # 1: BRT (day/night)
---
1 - Bus:
Traffic volume : 200/0 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: BRT (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 : 45.35 / 45.35 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 0.50 m

RT/Custom (0.00 + 47.20 + 0.00) = 47.20 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	56.63	-7.98	-1.46	0.00	0.00	0.00	47.20

Segment Leq : 47.20 dBA

Total Leq All Segments: 47.20 dBA

Results segment # 1: BRT (night)

Source height = 0.50 m

RT/Custom (0.00 + -9.04 + 0.00) = 0.00 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	0.00	-7.69	-1.35	0.00	0.00	0.00	-9.04

Segment Leq : 0.00 dBA

Total Leq All Segments: 0.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.00
(NIGHT): 57.84

STAMSON 5.0 NORMAL REPORT Date: 04-12-2018 14:34:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ph5gb55d.te Time Period: Day/Night 16/8 hours
Description: Future Greenbank and BRT 55 dBA daytime

Road data, segment # 1: F Greenbelt (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 : 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): 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 # 1: F Greenbelt (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 : 154.50 / 154.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: F Greenbelt (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 : 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): 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: F Greenbelt (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	: 178.50 / 178.50 m	
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Results segment # 1: F Greenbelt (day)

Source height = 1.50 m

ROAD (0.00 + 52.40 + 0.00) = 52.40 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.67	0.00	-16.81	-1.46	0.00	0.00	0.00	52.40

Segment Leq : 52.40 dBA

Results segment # 2: F Greenbelt (day)

Source height = 1.50 m

ROAD (0.00 + 51.36 + 0.00) = 51.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.67	0.00	-17.85	-1.46	0.00	0.00	0.00	51.36

Segment Leq : 51.36 dBA

Total Leq All Segments: 54.92 dBA

Results segment # 1: F Greenbelt (night)

Source height = 1.50 m

ROAD (0.00 + 45.86 + 0.00) = 45.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	63.07	0.00	-15.90	-1.30	0.00	0.00	0.00	45.86

Segment Leq : 45.86 dBA

Results segment # 2: F Greenbelt (night)

Source height = 1.50 m

ROAD (0.00 + 44.88 + 0.00) = 44.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	63.07	0.00	-16.89	-1.30	0.00	0.00	0.00	44.88

Segment Leq : 44.88 dBA

Total Leq All Segments: 48.41 dBA

RT/Custom data, segment # 1: BRT (day/night)
---
1 - Bus:
Traffic volume : 200/0 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: BRT (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 : 166.50 / 166.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 0.50 m

RT/Custom (0.00 + 37.82 + 0.00) = 37.82 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	56.63	-17.35	-1.46	0.00	0.00	0.00	37.82

Segment Leq : 37.82 dBA

Total Leq All Segments: 37.82 dBA

Results segment # 1: BRT (night)

Source height = 0.50 m

RT/Custom (0.00 + -18.08 + 0.00) = 0.00 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	0.00	-16.73	-1.35	0.00	0.00	0.00	-18.08

Segment Leq : 0.00 dBA

Total Leq All Segments: 0.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.01
(NIGHT): 48.41

STAMSON 5.0 NORMAL REPORT Date: 04-12-2018 15:10:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ph5gb60n.te Time Period: Day/Night 16/8 hours
Description: Future Greenbank and BRT 60 dBA nighttime

Road data, segment # 1: F Greenbelt (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 : 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): 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 # 1: F Greenbelt (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 : 24.32 / 24.32 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: F Greenbelt (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 : 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): 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: F Greenbelt (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	: 48.32 / 48.32	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Results segment # 1: F Greenbelt (day)

Source height = 1.50 m

ROAD (0.00 + 65.73 + 0.00) = 65.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.67	0.00	-3.48	-1.46	0.00	0.00	0.00	65.73

Segment Leq : 65.73 dBA

Results segment # 2: F Greenbelt (day)

Source height = 1.50 m

ROAD (0.00 + 60.78 + 0.00) = 60.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.67	0.00	-8.43	-1.46	0.00	0.00	0.00	60.78

Segment Leq : 60.78 dBA

Total Leq All Segments: 66.94 dBA

Results segment # 1: F Greenbelt (night)

Source height = 1.50 m

ROAD (0.00 + 58.47 + 0.00) = 58.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	63.07	0.00	-3.30	-1.30	0.00	0.00	0.00	58.47

Segment Leq : 58.47 dBA

Results segment # 2: F Greenbelt (night)

Source height = 1.50 m

ROAD (0.00 + 53.79 + 0.00) = 53.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	63.07	0.00	-7.98	-1.30	0.00	0.00	0.00	53.79

Segment Leq : 53.79 dBA

Total Leq All Segments: 59.74 dBA

RT/Custom data, segment # 1: BRT (day/night)
---
1 - Bus:
Traffic volume : 200/70 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: BRT (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 : 36.32 / 36.32 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 0.50 m

RT/Custom (0.00 + 48.80 + 0.00) = 48.80 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	56.63	-6.38	-1.46	0.00	0.00	0.00	48.80

Segment Leq : 48.80 dBA

Total Leq All Segments: 48.80 dBA

Results segment # 1: BRT (night)

Source height = 0.50 m

RT/Custom (0.00 + 47.58 + 0.00) = 47.58 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	55.08	-6.14	-1.35	0.00	0.00	0.00	47.58

Segment Leq : 47.58 dBA

Total Leq All Segments: 47.58 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.00
(NIGHT): 60.00

STAMSON 5.0 NORMAL REPORT Date: 04-12-2018 15:26:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ph5gb50n.te Time Period: Day/Night 16/8 hours
Description: Future Greenbank and BRT 50 dBA nighttime

Road data, segment # 1: F Greenbelt (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 : 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): 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 # 1: F Greenbelt (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 : 126.20 / 126.20 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: F Greenbelt (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 : 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): 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: F Greenbelt (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	: 150.20 / 150.20 m	
Receiver height	: 1.50 / 4.50 m	
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Results segment # 1: F Greenbelt (day)

Source height = 1.50 m

ROAD (0.00 + 53.85 + 0.00) = 53.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.67	0.00	-15.35	-1.46	0.00	0.00	0.00	53.85

Segment Leq : 53.85 dBA

Results segment # 2: F Greenbelt (day)

Source height = 1.50 m

ROAD (0.00 + 52.60 + 0.00) = 52.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.67	0.00	-16.61	-1.46	0.00	0.00	0.00	52.60

Segment Leq : 52.60 dBA

Total Leq All Segments: 56.28 dBA

Results segment # 1: F Greenbelt (night)

Source height = 1.50 m

ROAD (0.00 + 47.24 + 0.00) = 47.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	63.07	0.00	-14.52	-1.30	0.00	0.00	0.00	47.24

Segment Leq : 47.24 dBA

Results segment # 2: F Greenbelt (night)

Source height = 1.50 m

ROAD (0.00 + 46.06 + 0.00) = 46.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	63.07	0.00	-15.71	-1.30	0.00	0.00	0.00	46.06

Segment Leq : 46.06 dBA

Total Leq All Segments: 49.70 dBA

RT/Custom data, segment # 1: BRT (day/night)
---
1 - Bus:
Traffic volume : 200/70 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: BRT (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 : 138.20 / 138.20 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 0.50 m

RT/Custom (0.00 + 39.16 + 0.00) = 39.16 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	56.63	-16.01	-1.46	0.00	0.00	0.00	39.16

Segment Leq : 39.16 dBA

Total Leq All Segments: 39.16 dBA

Results segment # 1: BRT (night)

Source height = 0.50 m

RT/Custom (0.00 + 38.29 + 0.00) = 38.29 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	55.08	-15.43	-1.35	0.00	0.00	0.00	38.29

Segment Leq : 38.29 dBA

Total Leq All Segments: 38.29 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.36
(NIGHT): 50.00

STAMSON 5.0 NORMAL REPORT Date: 04-12-2018 14:43:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ph5gb65d.te Time Period: Day/Night 16/8 hours
Description: Future Greenbank and BRT 60 dBA daytime

Road data, segment # 1: F Greenbelt (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 : 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): 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 # 1: F Greenbelt (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 : 72.90 / 72.90 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: F Greenbelt (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 : 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): 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: F Greenbelt (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	: 96.90 / 96.90	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Results segment # 1: F Greenbelt (day)

Source height = 1.50 m

ROAD (0.00 + 57.81 + 0.00) = 57.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.67	0.00	-11.40	-1.46	0.00	0.00	0.00	57.81

Segment Leq : 57.81 dBA

Results segment # 2: F Greenbelt (day)

Source height = 1.50 m

ROAD (0.00 + 55.76 + 0.00) = 55.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.67	0.00	-13.45	-1.46	0.00	0.00	0.00	55.76

Segment Leq : 55.76 dBA

Total Leq All Segments: 59.92 dBA

Results segment # 1: F Greenbelt (night)

Source height = 1.50 m

ROAD (0.00 + 50.99 + 0.00) = 50.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	63.07	0.00	-10.78	-1.30	0.00	0.00	0.00	50.99

Segment Leq : 50.99 dBA

Results segment # 2: F Greenbelt (night)

Source height = 1.50 m

ROAD (0.00 + 49.04 + 0.00) = 49.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	63.07	0.00	-12.72	-1.30	0.00	0.00	0.00	49.04

Segment Leq : 49.04 dBA

Total Leq All Segments: 53.13 dBA

RT/Custom data, segment # 1: BRT (day/night)
---
1 - Bus:
Traffic volume : 200/0 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: BRT (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 : 84.90 / 84.90 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 0.50 m

RT/Custom (0.00 + 42.67 + 0.00) = 42.67 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	56.63	-12.50	-1.46	0.00	0.00	0.00	42.67

Segment Leq : 42.67 dBA

Total Leq All Segments: 42.67 dBA

Results segment # 1: BRT (night)

Source height = 0.50 m

RT/Custom (0.00 + -13.40 + 0.00) = 0.00 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	0.00	-12.05	-1.35	0.00	0.00	0.00	-13.40

Segment Leq : 0.00 dBA

Total Leq All Segments: 0.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 53.13

STAMSON 5.0 NORMAL REPORT Date: 05-04-2018 11:45:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: in60.te Time Period: Day/Night 16/8 hours
Description: Street 1b 55 dBA daytime

Road data, segment # 1: Street 1b (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: Street 1b (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	: 54.45 / 25.54	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Results segment # 1: Street 1b (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: Street 1b (night)

Source height = 1.50 m

ROAD (0.00 + 53.23 + 0.00) = 53.23 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	-3.63	-1.30	0.00	0.00	0.00	53.23

Segment Leq : 53.23 dBA

Total Leq All Segments: 53.23 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.00
(NIGHT): 53.23

STAMSON 5.0 NORMAL REPORT Date: 05-04-2018 11:42:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: in60.te Time Period: Day/Night 16/8 hours
Description: Street 1b 60 dBA daytime

Road data, segment # 1: Street 1b (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: Street 1b (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 / 25.54	m
Receiver height	:	1.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Results segment # 1: Street 1b (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: Street 1b (night)

Source height = 1.50 m

ROAD (0.00 + 53.23 + 0.00) = 53.23 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	-3.63	-1.30	0.00	0.00	0.00	53.23

Segment Leq : 53.23 dBA

Total Leq All Segments: 53.23 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 53.23

STAMSON 5.0 NORMAL REPORT Date: 05-04-2018 11:43:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: in60.te Time Period: Day/Night 16/8 hours
Description: Street 1b noise at 15 m daytime

Road data, segment # 1: Street 1b (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: Street 1b (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 / 25.54 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Street 1b (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: Street 1b (night)

Source height = 1.50 m

ROAD (0.00 + 53.23 + 0.00) = 53.23 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	-3.63	-1.30	0.00	0.00	0.00	53.23

Segment Leq : 53.23 dBA

Total Leq All Segments: 53.23 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.29
(NIGHT): 53.23

Divergence - Line Source Collector Road - 65 dBA indoor

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

Note: Distance (est) = d2 * (10^((n2-n1)/10))
When n2<n1

Distance from centerline for 65 dBA is 12.74m