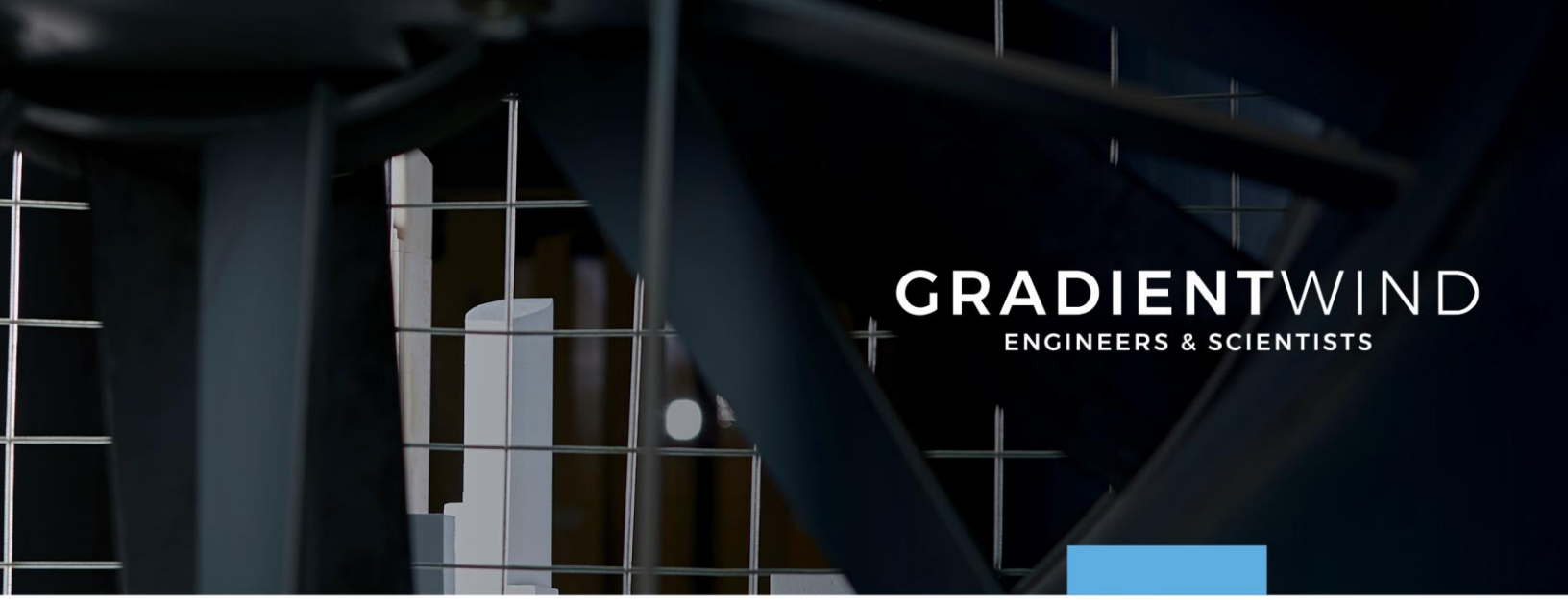

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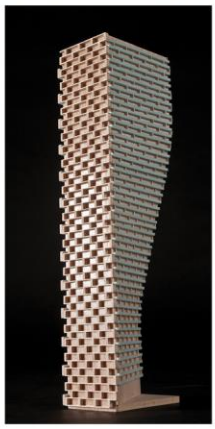
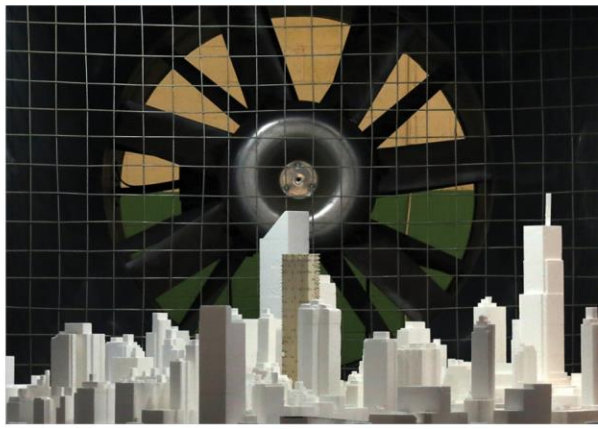
ROADWAY TRAFFIC NOISE ASSESSMENT

3718 Greenbank Road
Ottawa, Ontario

Report: 20-279 – Roadway Traffic Noise





December 17, 2021

PREPARED FOR

Mattamy Homes
50 Hines Road, Suite 100
Ottawa, Ontario
K2K 2M5

PREPARED BY

Giuseppe Garro, MASc., Junior Environmental Scientist
Joshua Foster, P.Eng., Lead Engineer

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
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EXECUTIVE SUMMARY

This report describes a traffic noise assessment undertaken in support of a Site Plan Control (SPC) application for a proposed mixed-use residential/commercial development, located at 3718 Greenbank Road in Ottawa, Ontario. Buildings within the development consist of back-to-back townhouse blocks as well as communal park/parkette areas. The major sources of roadway traffic noise include the realigned Greenbank Road, the proposed minor collector referred to as Dundonald Drive (as part of a separate subdivision application to the north), and the Bus Rapid Transit (BRT) lane in the center of the realigned Greenbank Road. Figure 1 illustrates the site location with surrounding context.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP), Ministry of Transportation of Ontario (MTO), and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications; and (iv) site plan drawings provided by Mattamy Homes in November 2021.

The results of the current analysis indicated that noise levels at Plane of Window (POW) receptors will range between 56 and 73 dBA during the daytime period (07:00-23:00) and between 57 and 66 dBA during the nighttime period (23:00-07:00). The highest noise level (73 dBA) occurs at the northeast façades of Blocks 3-5, 10, and 13-16, which are nearest and most exposed to the realigned Greenbank Road.

Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA. The results of the analysis also indicate some dwellings will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment, and some dwellings will require forced air heating with provisions for central air conditioning as summarized in Table 4 and outlined in Figure 4. Warning Clauses will also be required on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

Parks/parkettes are not defined as Outdoor Living Areas or noise sensitive spaces within NPC-300. Therefore, noise levels at the outdoor amenity spaces are included for informational purposes only. The amenity space with the highest expected noise level was found to be the space between Blocks 10 and 13 closest to the realigned Greenbank Road. Barriers rising approximately 2.2m surrounding the amenity

space to the northwest, northeast, and southeast would be needed to reduce noise levels to 60 dBA which is considered economically and administratively unfeasible. The barrier would also take away from the "open feel" of the amenity space which is typically not desired for this type of development layout. The omission of barriers would also assist in fostering a safer environment for the community in-line with Crime Prevention Through Environmental Design (CPTED) strategies. Furthermore, as the development will be comprised of stacked townhouse blocks, no rear yards are proposed. As such, there are no noise barriers proposed for the site.

It should be noted that additional residential developments are currently proposed to the immediate north of the subject site which will provide additional blockage from roadway traffic noise once construction begins, slightly reducing noise levels along the north property line.

TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Mattamy Homes to undertake a roadway traffic noise assessment for a proposed mixed-use residential/commercial development, located at 3718 Greenbank Road in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior and interior noise levels generated by local roadway traffic.

Our work is based on theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment, Conservation and Parks (MECP)[2] guidelines. Noise calculations were based on site plan drawings provided by Mattamy Homes in November 2021, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The focus of this roadway traffic noise assessment is a proposed mixed-use residential/commercial development located at 3718 Greenbank Road in Ottawa, Ontario. The proposed development is located on a rectangular 4.30-hectare (ha) parcel of land fronted by the future realigned Greenbank Road to the east and nestled between adjacent townhomes to the west (future Caivan Communities development), and a 3.10-ha community park across future Greenbank Road to the northeast of the site. The focus of this assessment is the residential portion of the development. A separate development application and assessment will be submitted for the future commercial portion to the south.

The proposed residential development comprises 19 blocks of 228 stacked back-to-back townhomes, separated by internal driveways. At-grade parking spaces serving the townhomes are accessed from internal driveways. The site also comprises several outdoor park/parkette amenity areas situated to the north, south, and center of the proposed development.

Primary sources of noise impacting the site include roadway traffic along the realigned Greenbank Road, the proposed minor collector referred to as Dundonald Drive (as part of a separate subdivision application to

[1] City of Ottawa Environmental Noise Control Guidelines, January 2016
[2] Ontario Ministry of the Environment, Conservation and Parks – Environmental Noise Guidelines, Publication NPC-300, Queens Printer for Ontario, Toronto, 2013

the north), and the Bus Rapid Transit (BRT) lane in the center of the realigned Greenbank Road. Figure 1 illustrates the site location with surrounding context.

3. OBJECTIVES

The principal objectives of this study are to (i) calculate the future noise levels on the study buildings produced by local roadway traffic, and (ii) ensure that interior and exterior noise levels do not exceed the allowable limits specified by the City of Ottawa's Environmental Noise Control Guidelines as outlined in Section 4.2 of this report.

4. METHODOLOGY

4.1 Background

Noise can be defined as any obtrusive sound. It is created at a source, transmitted through a medium, such as air, and intercepted by a receiver. Noise may be characterized in terms of the power of the source or the sound pressure at a specific distance. While the power of a source is characteristic of that particular source, the sound pressure depends on the location of the receiver and the path that the noise takes to reach the receiver. Measurement of noise is based on the decibel unit, dBA, which is a logarithmic ratio referenced to a standard noise level (2×10^{-5} Pascals). The 'A' suffix refers to a weighting scale, which better represents how the noise is perceived by the human ear. With this scale, a doubling of power results in a 3 dBA increase in measured noise levels and is just perceptible to most people. An increase of 10 dBA is often perceived to be twice as loud.

4.2 Roadway Traffic Noise

4.2.1 Criteria for Roadway Traffic Noise

For surface roadway traffic noise, the equivalent sound energy level, L_{eq}, provides a measure of the time-varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time-varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of a 16-hour (L_{eq16}) daytime (07:00-23:00) / 8-hour (L_{eq8}) nighttime (23:00-07:00) split to assess its impact on residential buildings. The City of Ottawa's Environmental Noise Control Guidelines (ENCG) specifies that the recommended indoor noise limit range

(that is relevant to this study) is 45 and 40 dBA for living rooms and sleeping quarters respectively for roadway as listed in Table 1.

TABLE 1: INDOOR SOUND LEVEL CRITERIA (ROAD) [3]

Type of Space	Time Period	L_{eq} (dBA)
General offices, reception areas, retail stores, etc.	07:00 – 23:00	50
Living/dining/den areas of **residences**, hospitals, schools, nursing/retirement homes, day-care centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, etc.	07:00 – 23:00	45
Sleeping quarters of hotels/motels	23:00 – 07:00	45
Sleeping quarters of **residences**, hospitals, nursing/retirement homes, etc.	23:00 – 07:00	40

Predicted noise levels at the plane of window (POW) dictate the action required to achieve the recommended sound levels. An open window is considered to provide a 10 dBA reduction in noise, while a standard closed window is capable of providing a minimum 20 dBA noise reduction[4]. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment[5]. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the need for having windows and doors closed, which triggers the need for forced air heating with provision for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, air conditioning will be required and building components will require higher levels of sound attenuation[6].

The sound level criterion for outdoor living areas (OLA) is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA, mitigation should be provided to reduce noise levels where technically and administratively feasible to acceptable levels at or below the criterion. Furthermore, noise levels at the OLA must not exceed 60 dBA if mitigation can be technically and administratively achieved.

[3] Adapted from ENCG 2016 – Tables 2.2b and 2.2c
[4] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[5] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8
[6] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

As per NPC-300, parks/parkettes are not defined as Outdoor Living Areas or noise sensitive spaces, therefore, noise levels at the outdoor amenity spaces are included for informational purposes only. As the development will be comprised of stacked townhouse blocks, there are no OLAs proposed for the site.

4.2.2 Theoretical Roadway Noise Predictions

The impact of transportation noise sources on the development was determined by two computer modelling programs. To provide a general sense of noise across the site, the employed software program was Predictor-Lima which utilizes the United States Federal Highway Administration's Traffic Noise Model (TNM) to represent the roadway line sources. The TNM model is also being accepted in the updated Environmental Guide for Noise of Ontario, 2021 by the Ministry of Transportation (MTO)[7]. This computer program can represent three-dimensional surfaces and first reflections of sound waves over a suitable spectrum for human hearing. A set of comparative calculations were performed in the current Ontario traffic noise prediction model STAMSON for comparisons to Predictor simulation results. The STAMSON model is, however, older and requires each receptor to be calculated separately. STAMSON also does not accurately account for building reflections and multiple screening elements, and curved road geometry. A total of nine receptor locations were identified around the site, as illustrated in Figure 2.

Roadway noise calculations were performed by treating each road segment as separate line sources of noise, and by using existing and proposed building locations as noise barriers. In addition to the traffic volumes summarized in Table 2, theoretical noise predictions were based on the following parameters:

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks, as per ENCG requirements for noise level predictions.
- The day/night split was taken to be 92% / 8% respectively for all streets.
- Receptor heights taken to be 7.5 m and 1.5 m above grade, representative of the third level Plane of Window (POW) and at-grade amenity areas, respectively.
- Absorptive and reflective intermediate ground surfaces based on specific source-receiver path ground characteristics.

[7] Ministry of Transportation, Environmental Guide for Noise, 2021. Retrieved from https://prod-environmental-registry.s3.amazonaws.com/2021-08/Environmental%20Guide%20for%20Noise%20 2021%20%28Aug%202021%29.pdf

- The study site was treated as having flat or gently sloping topography.
- Massing associated with the study site was included as potential noise screening elements.
- Nine receptors were strategically placed throughout the study area.
- Receptor distances and exposure angles are illustrated in Figures 5 and 6.
- The site elevation was based on a grading plan provided by Mattamy Homes in November 2021.

4.2.3 Roadway Traffic Volumes

The ENCG dictates that noise calculations should consider future sound levels based on a roadway's classification at the mature state of development. Therefore, traffic volumes are based on the roadway classifications outlined in the City of Ottawa's Official Plan (OP) and Transportation Master Plan[8] which provide additional details on future roadway expansions. Average Annual Daily Traffic (AADT) volumes are then based on data in Table B1 of the ENCG for each roadway classification. As for the BRT, volumes were used based on Gradient Wind's experience with similar developments. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment.

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes	Assumed Volumes
Greenbank Road (Realigned)	4-Lane Urban Arterial Divided (4-UAD)	70	**35,000**	-
Bus Rapid Transit	BRT	80	-	**191/67***
Dundonald Drive	2-Lane Urban Collector Undivided (2-UCU)	40	**8,000**	-

*Daytime and nighttime volumes based on correspondence with the City of Ottawa

[8] City of Ottawa Transportation Master Plan, November 2013

4.3 Indoor Noise Calculations

The difference between outdoor and indoor noise levels is the noise attenuation provided by the building envelope. According to common industry practice, complete walls and individual wall elements are rated according to the Sound Transmission Class (STC). The STC ratings of common residential walls built in conformance with the Ontario Building Code (2012) typically exceed STC 35, depending on exterior cladding, thickness and interior finish details. For example, brick veneer walls can achieve STC 50 or more. Standard commercially sided exterior metal stud walls have around STC 45. Standard good quality double-glazed non-operable windows can have STC ratings ranging from 25 to 40, depending on the window manufacturer, pane thickness and inter-pane spacing. As previously mentioned, the windows are the known weak point in a partition.

As per Section 4.2, when daytime noise levels from road sources at the plane of the window exceed 65 dBA, calculations must be performed to evaluate the sound transmission quality of the building components to ensure acceptable indoor noise levels are achieved. The calculation procedure[9] considers:

- Window type and total area as a percentage of total room floor area
- Exterior wall type and total area as a percentage of the total room floor area
- Acoustic absorption characteristics of the room
- Outdoor noise source type and approach geometry
- Indoor sound level criteria, which varies according to the intended use of a space

Based on published research[10], exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. Due to the limited information available at the time of the study, detailed floor layouts have not been finalized; therefore, detailed STC calculations could not be performed at this time. As a guideline, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = Outdoor Noise Level – Targeted Indoor Noise Levels).

[9] Building Practice Note: Controlling Sound Transmission into Buildings by J.D. Quirt, National Research Council of Canada, September 1985
[10] CMHC, Road & Rail Noise: Effects on Housing

5. RESULTS

5.1 Roadway Traffic Noise Levels

The results of the roadway traffic noise calculations are summarized in Table 3 below.

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROADWAY TRAFFIC

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)		Predictor-Lima Noise Level (dBA)	
			Day	Night	Day	Night
1	7.5	POW - Block 3- Northeast Facade	73	66	70	63
2	7.5	POW - Block 3 - Northwest Facade	69	62	66	59
3	7.5	POW - Block 17 - Northeast Facade	64	57	61	54
4	7.5	POW - Block 12 - Northeast Facade	64	57	61	54
5*	1.5	Outdoor Amenity Area (Parkette)	56	N/A	58	N/A
6*	1.5	Outdoor Amenity Area (Parkette)	60	N/A	62	N/A
7*	1.5	Outdoor Amenity Area (Parkette)	67	N/A	68	N/A
8	7.5	POW - Block 2- Northwest Facade	66	59	63	56
9	7.5	POW - Block 1- Northwest Facade	65	58	62	55

*Noise levels at the outdoor amenity areas were provided for informational purposes only as parks/parkettes are not considered noise sensitive spaces in NPC-300

The results of the current analysis indicated that noise levels at Plane of Window (POW) receptors will range between 56 and 73 dBA during the daytime period (07:00-23:00) and between 57 and 66 dBA during the nighttime period (23:00-07:00). The highest noise level (73 dBA) occurs at the northeast façades of Blocks 3-5, 10, and 13-16, which are nearest and most exposed to the realigned Greenbank Road. Figures 7 and 8 illustrate daytime and nighttime noise contours throughout the site at a height of 4.5 m above grade.

Upgraded building components will be required for the dwellings where noise levels exceed 65 dBA at the Plane of Window (POW), as per ENCG criteria. Building components compliant with the Ontario Building Code (OBC 2020) will be sufficient for all other dwellings

5.2 Noise Control Measures

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. As discussed in Section 4.3, the anticipated STC requirements for windows and walls have been estimated based on the overall noise reduction required for each intended use of space (STC = Outdoor Noise Level – Targeted Indoor Noise Levels). The STC requirements for the windows are summarized below for various units within the development (see Figure 3):

- **Bedroom Windows**

(i) Bedroom windows facing northwest, northeast, and southeast on Blocks 3-5, 10, 13-16 will require a minimum STC of 36.

(ii) Bedroom windows facing northwest on Block 2 will require a minimum STC of 29.

(iii) All other bedroom windows are to satisfy Ontario Building Code (OBC 2020) requirements.

- **Living Room Windows**

(i) Living room windows facing northwest, northeast, and southeast on Blocks 3-5, 10, 13-16 will require a minimum STC of 31.

(ii) Living room windows facing northwest on Block 2 will require a minimum STC of 24.

(iii) All other living room windows are to satisfy Ontario Building Code (OBC 2020) requirements.

- **Exterior Walls**

(i) Exterior wall components on the northwest, northeast, and southeast façades of Blocks 3-5, 10, 13-16, and northwest façade of Block 2 will require a minimum STC of 35, which will be achieved with standard 152 mm x 38 mm wood stud construction or an acoustical equivalent according to NRC test data[11]

[11] J.S. Bradley and J.A. Birta. Laboratory Measurements of the Sound Insulation of Building Façade Elements, National Research Council October 2000.

Exterior wall components on these façades are recommended to have a minimum STC of 35, which is achievable with standard wood frame exterior wall construction. A review of window supplier literature indicates that the specified STC ratings can be achieved by a variety of window systems that have a combination of glass thickness and inter-pane spacing. It is the responsibility of the manufacturer to ensure that the specified window achieves the required STC. This can only be assured by using window configurations that have been certified by laboratory testing. The requirements for STC ratings assume that the remaining components of the building are constructed and installed according to the minimum standards of the Ontario Building Code. The specified STC requirements also apply to swinging and/or sliding patio doors.

Results of the calculations also indicate that some dwellings will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment, and some dwellings will require forced air heating with provisions for central air conditioning (see Figure 4). In addition to ventilation requirements, Warning Clauses will also be required in all Lease, Purchase and Sale Agreements, as summarized in Table 4 below. The wording for Warning Clauses is presented in Section 6.

TABLE 4: WARNING CLAUSE REQUIREMENTS

Warning Clause	Applicable Blocks/Dwellings
Type A	N/A
Type B	N/A
Type C	1, 2 (six southeast units), 8 (southeast units), 9 (southeast and northeast units), 11 (northwest units), 12 (northwest and northeast units), 17 (southeast and northeast units), 18 (southeast and northeast units)
Type D	2 (two northwest units), 3-5, 10, 13-16

As previously mentioned, parks/parkettes are not defined as Outdoor Living Areas or noise sensitive spaces within NPC-300. Therefore, noise levels at the outdoor amenity spaces are included for informational purposes only. The amenity space with the highest expected noise level was found to be the space between Blocks 10 and 13 closest to the realigned Greenbank Road. Barriers rising approximately 2.2m surrounding the amenity space to the northwest, northeast, and southeast would be

needed to reduce noise levels to 60 dBA which is considered economically and administratively unfeasible. The barrier would also take away from the "open feel" of the amenity space which is typically not desired for this type of development layout. The omission of barriers would also assist in fostering a safer environment for the community in-line with Crime Prevention Through Environmental Design (CPTED) strategies. Furthermore, as the development will be comprised of stacked townhouse blocks, no rear yards are proposed. As such, there are no noise barriers proposed for the site.

It should be noted that additional residential developments are currently proposed to the immediate north of the subject site which will provide additional blockage from roadway traffic noise once construction begins, slightly reducing noise levels along the north property line.

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicated that noise levels at Plane of Window (POW) receptors will range between 56 and 73 dBA during the daytime period (07:00-23:00) and between 57 and 66 dBA during the nighttime period (23:00-07:00). The highest noise level (73 dBA) occurs at the northeast façades of Blocks 3-5, 10, and 13-16, which are nearest and most exposed to the realigned Greenbank Road. Figures 7 and 8 illustrate daytime and nighttime noise contours throughout the site at a height of 4.5 m above grade.

Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA. The results of the analysis also indicate some dwellings will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment, and some dwellings will require forced air heating with provisions for central air conditioning as summarized in Table 4 and outlined in Figure 4. Warning Clauses will also be required be placed on all Lease, Purchase and Sale Agreements, as summarized below:

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, Conservation and Parks."*

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 sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."*

Parks/parkettes are not defined as Outdoor Living Areas or noise sensitive spaces within NPC-300. Therefore, noise levels at the outdoor amenity spaces are included for informational purposes only. The amenity space with the highest expected noise level was found to be the space between Blocks 10 and 13 closest to the realigned Greenbank Road. Barriers rising approximately 2.2m surrounding the amenity space to the northwest, northeast, and southeast would be needed to reduce noise levels to 60 dBA which is considered economically and administratively unfeasible. The barrier would also take away from the "open feel" of the amenity space which is typically not desired for this type of development layout. The omission of barriers would also assist in fostering a safer environment for the community in-line with Crime Prevention Through Environmental Design (CPTED) strategies. Furthermore, as the development will be comprised of stacked townhouse blocks, no rear yards are proposed. As such, there are no noise barriers proposed for the site.

It should be noted that additional residential developments are currently proposed to the immediate north of the subject site which will provide additional blockage from roadway traffic noise once construction begins, slightly reducing noise levels along the north property line.

This concludes our roadway traffic noise assessment and report. If you have any questions or wish to discuss our findings, please advise us. In the interim, we thank you for the opportunity to be of service.

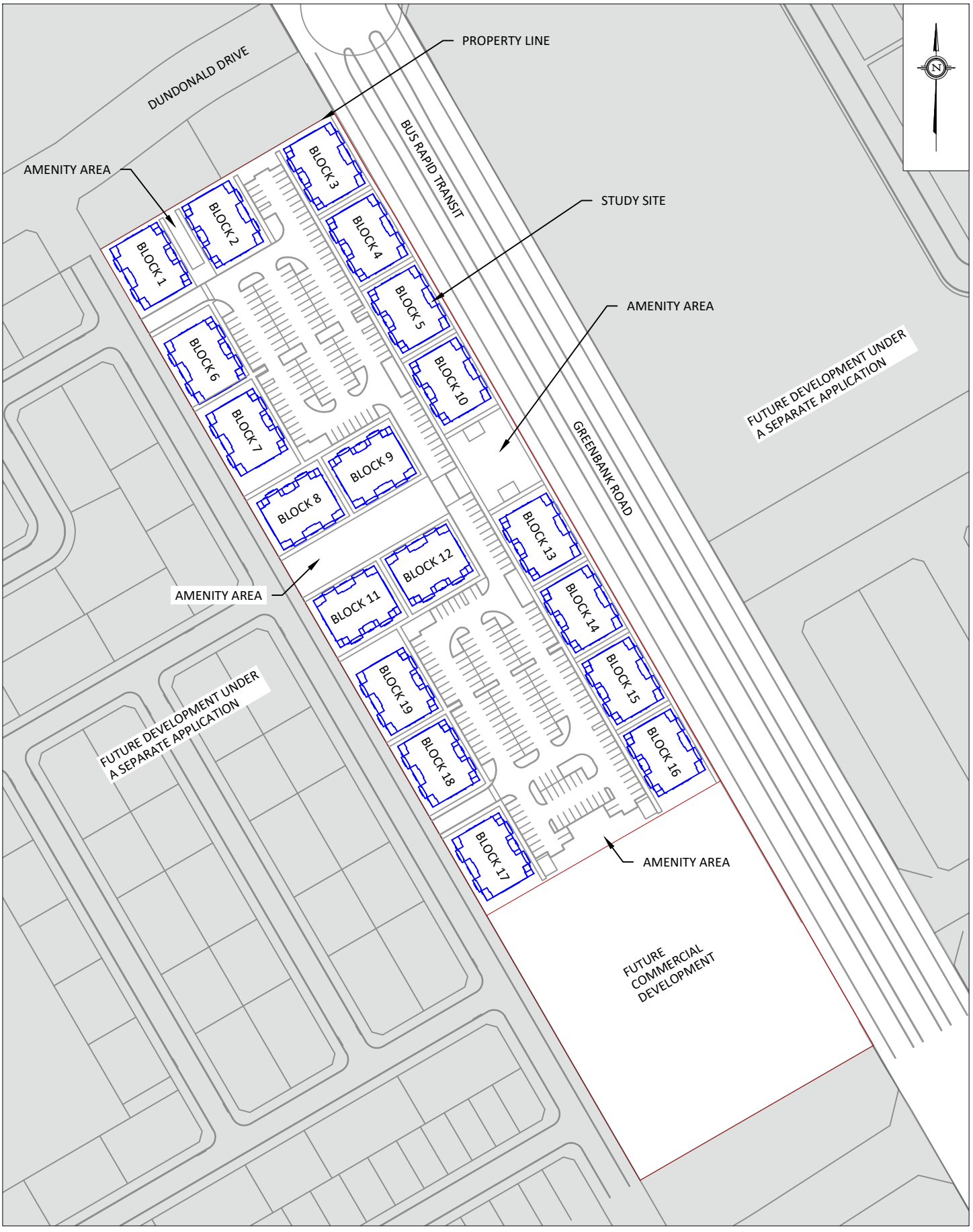
Sincerely,

Gradient Wind Engineering Inc.

Giuseppe Garro, MASc.
Junior Environmental Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File #20-279 – Roadway Traffic Noise



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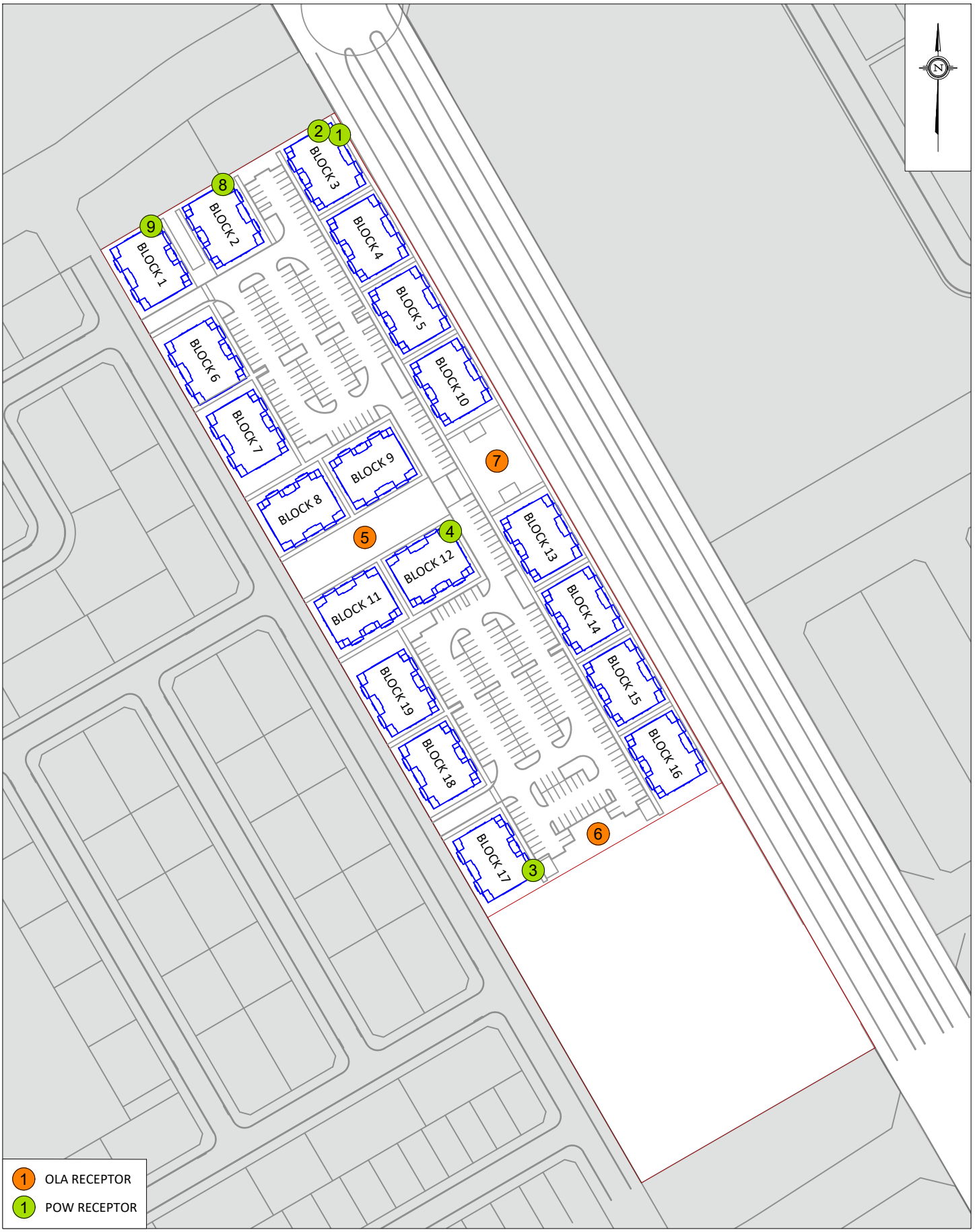
PROJECT	3718 GREENBANK ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		
SCALE	1:2000 (APPROX.)	DRAWING NO.	GW20-279-1
DATE	DECEMBER 14, 2021	DRAWN BY	G.G.

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT



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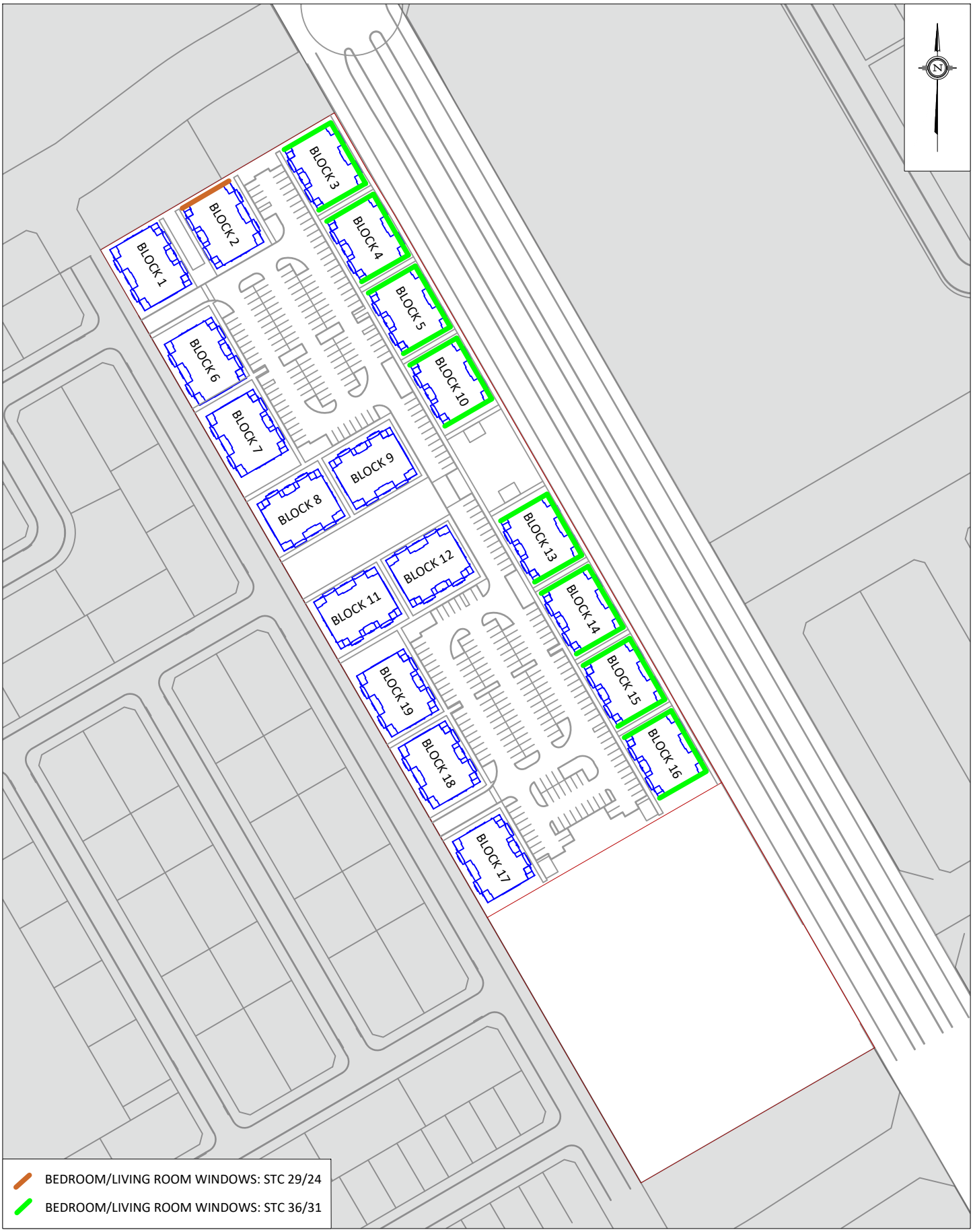
SCALE	1:2000 (APPROX.)
DRAWING NO.	GW20-279-2
DATE	DECEMBER 14, 2021
DRAWN BY	G.G.

DESCRIPTION

FIGURE 2:
RECEPTOR LOCATIONS



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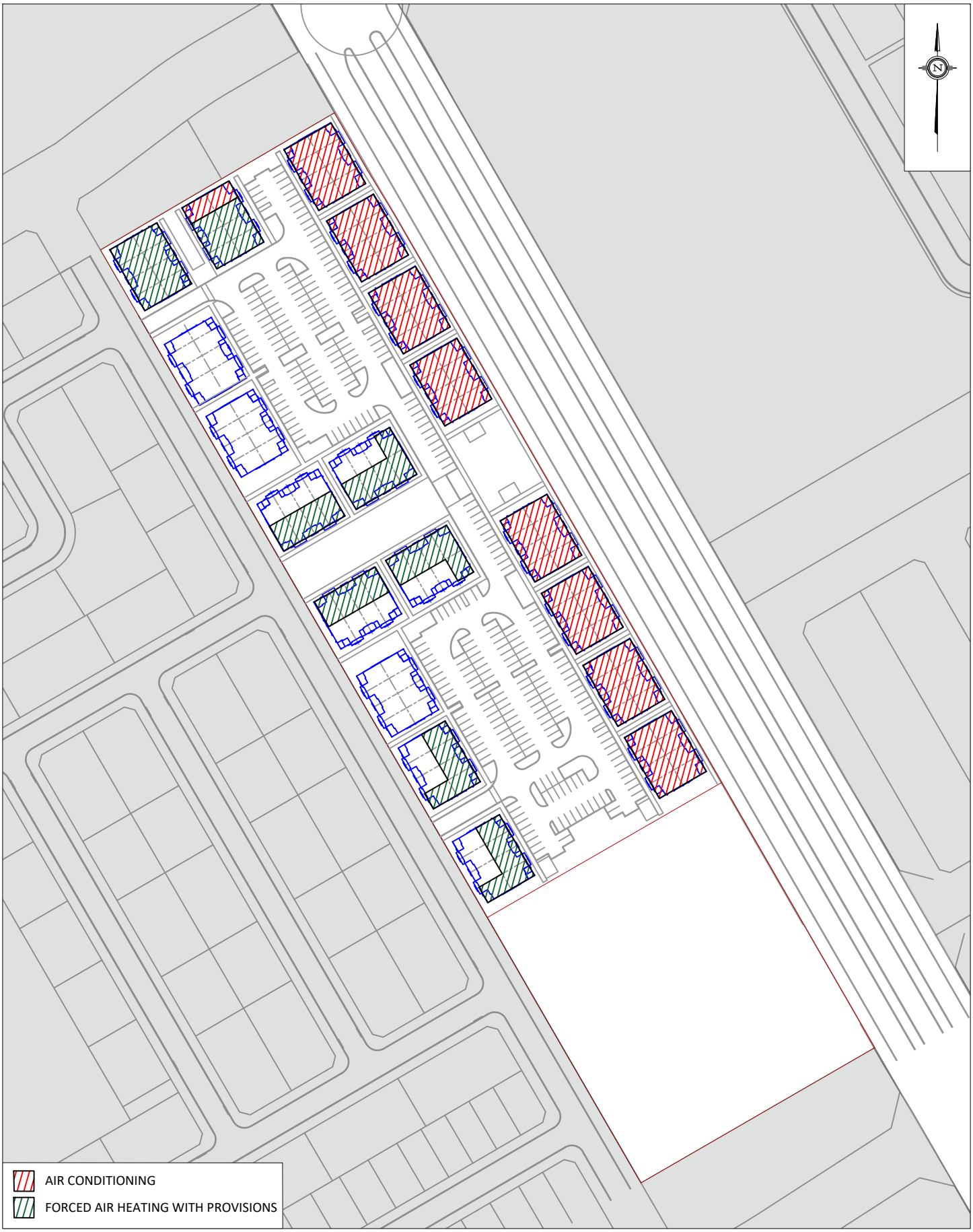
SCALE	1:2000 (APPROX.)	DRAWING NO.	GW20-279-3
DATE	DECEMBER 14, 2021	DRAWN BY	G.G.

FIGURE 3:
WINDOW STC REQUIREMENTS



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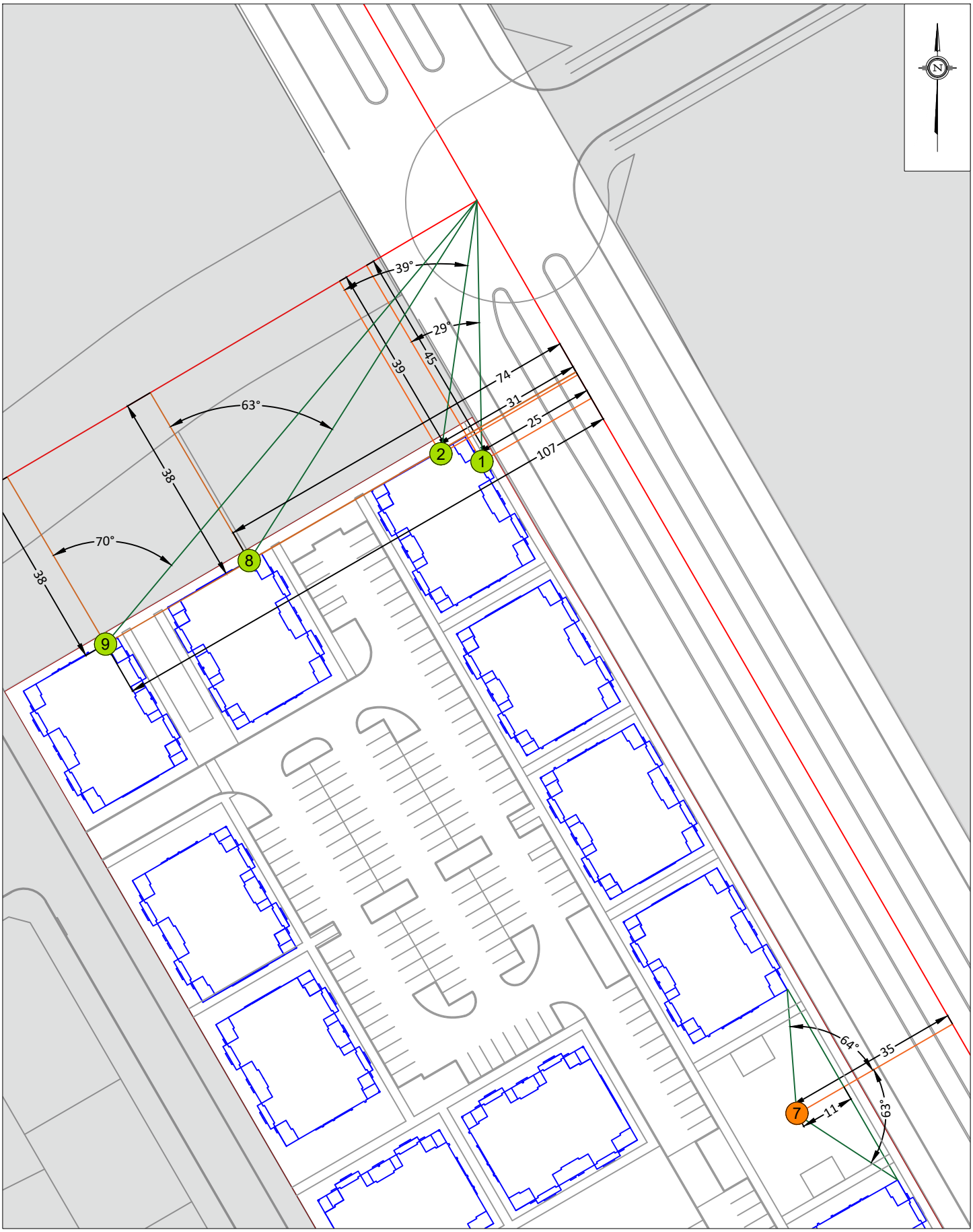
SCALE	1:2000 (APPROX.)	DRAWING NO.	GW20-279-4
DATE	DECEMBER 14, 2021	DRAWN BY	G.G.

FIGURE 4:
VENTILATION REQUIREMENTS



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SCALE	1:1000 (APPROX.)
DRAWING NO.	GW20-279-5
DATE	DECEMBER 14, 2021
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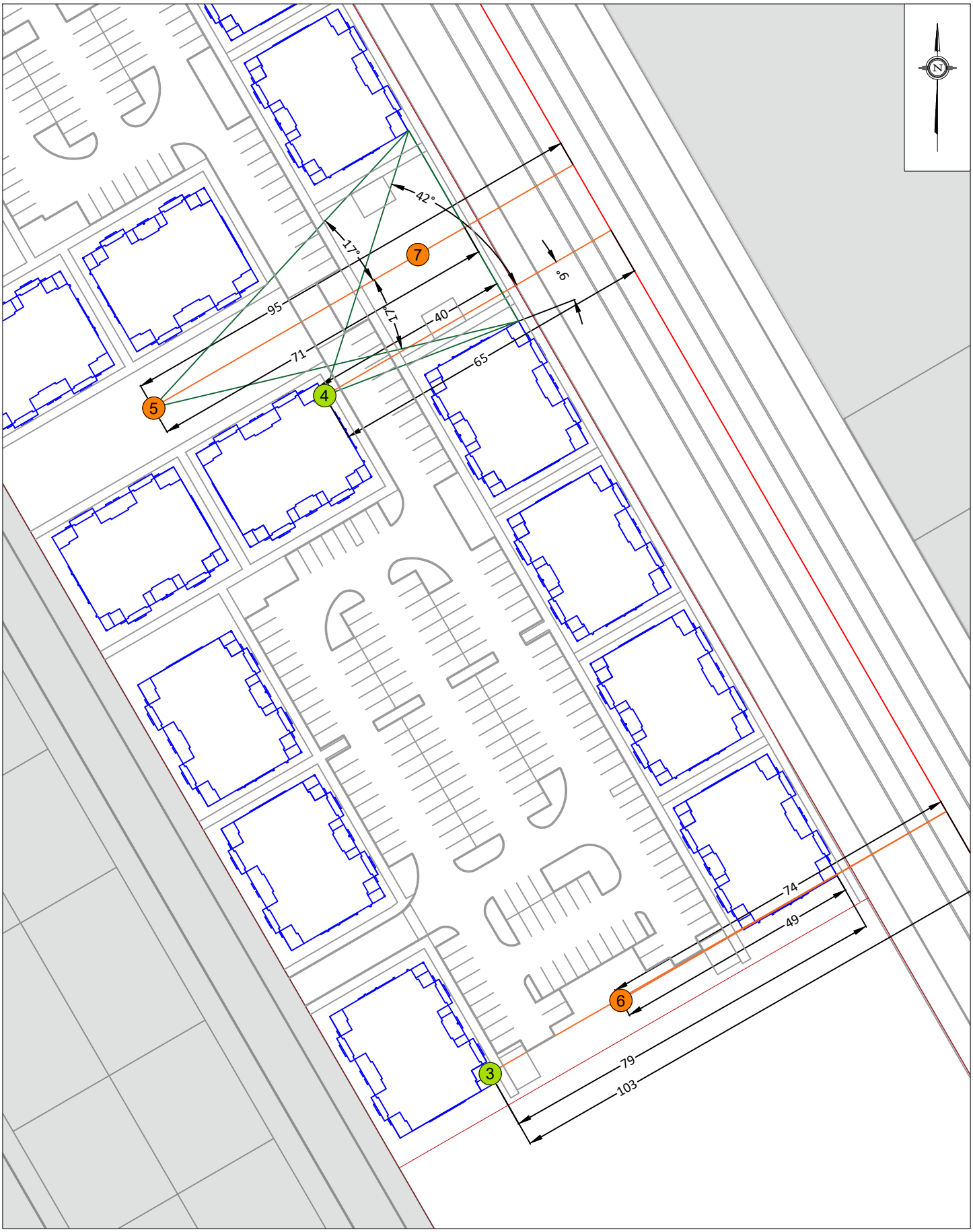
DESCRIPTION

FIGURE 5:
STAMSON RECEPTOR INPUT PARAMETERS



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PROJECT	3718 GREENBANK ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1000 (APPROX.)	DRAWING NO.	GW20-279-6
DATE	DECEMBER 14, 2021	DRAWN BY	G.G.

FIGURE 6:
STAMSON RECEPTOR INPUT PARAMETERS

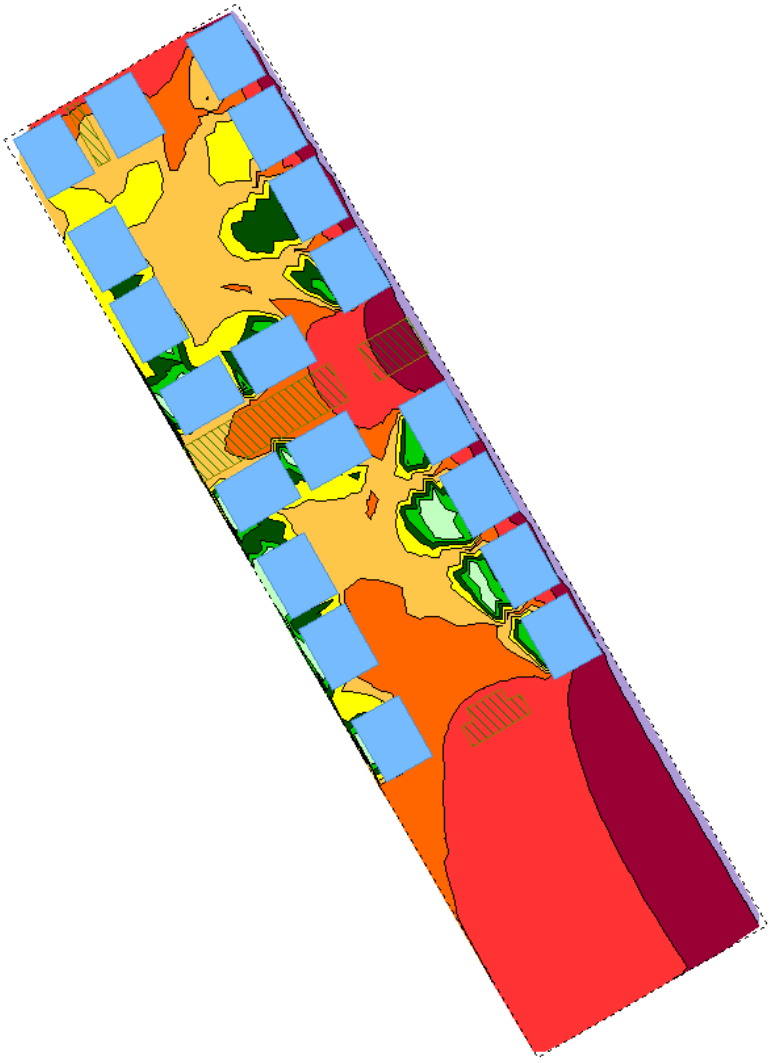

FIGURE 7: DAYTIME TRAFFIC NOISE CONTOURS (4.5 M ABOVE GRADE)

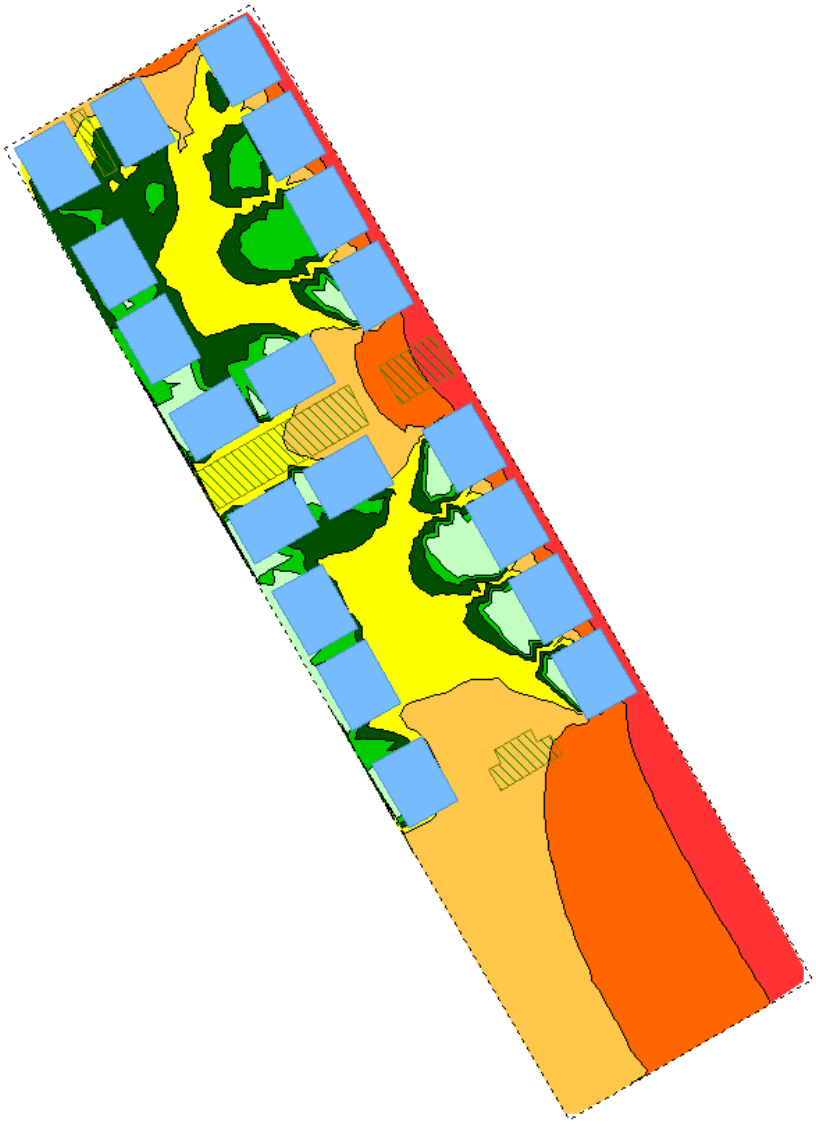

FIGURE 8: NIGHTTIME TRAFFIC NOISE CONTOURS (4.5 M ABOVE GRADE)

APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
GRADIENTWIND.COM

```
STAMSON 5.0        NORMAL REPORT        Date: 14-12-2021 17:19:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK RD (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Block 195 (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  :    40 km/h
Road gradient       :     0 %
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 # 2: Block 195 (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   29.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  45.00 / 45.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 72.78 + 0.00) = 72.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  75.00   0.00  -2.22   0.00   0.00   0.00   0.00
72.78
-------------------------------------------------------------------------------
--

Segment Leq : 72.78 dBA

Results segment # 2: Block 195 (day)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.26 + 0.00) = 51.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     29   0.00  63.96   0.00  -4.77  -7.93   0.00   0.00   0.00
51.26
-------------------------------------------------------------------------------
--

Segment Leq : 51.26 dBA

Total Leq All Segments: 72.81 dBA
```

```
Results segment # 1: GREENBANK RD (night)
------------------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.18 + 0.00) = 65.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  67.40   0.00  -2.22   0.00   0.00   0.00   0.00
65.18
-------------------------------------------------------------------------------
--

Segment Leq : 65.18 dBA

Results segment # 2: Block 195 (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 43.66 + 0.00) = 43.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     29   0.00  56.36   0.00  -4.77  -7.93   0.00   0.00   0.00
43.66
-------------------------------------------------------------------------------
--

Segment Leq : 43.66 dBA

Total Leq All Segments: 65.21 dBA

RT/Custom data, segment # 1: BRT (day/night)
---------------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 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                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :   7.50 / 7.50   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 + 57.20 + 0.00) = 57.20 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  59.41  -2.22   0.00   0.00   0.00   0.00  57.20
-------------------------------------------------------------------------

Segment Leq : 57.20 dBA

Total Leq All Segments: 57.20 dBA

Results segment # 1: BRT (night)
--------------------------------

Source height = 0.50 m

RT/Custom (0.00 + 55.66 + 0.00) = 55.66 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  57.87  -2.22   0.00   0.00   0.00   0.00  55.66
-------------------------------------------------------------------------

Segment Leq : 55.66 dBA

Total Leq All Segments: 55.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 72.93
                           (NIGHT): 65.67
```

```
STAMSON 5.0        NORMAL REPORT        Date: 14-12-2021 17:19:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK RD (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  31.00 / 31.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Block 195 (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  :    40 km/h
Road gradient       :     0 %
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 # 2: Block 195 (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  39.00 / 39.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 68.83 + 0.00) = 68.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90      0   0.00  75.00   0.00  -3.15  -3.01   0.00   0.00   0.00
68.83
-------------------------------------------------------------------------------
--

Segment Leq : 68.83 dBA

Results segment # 2: Block 195 (day)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.36 + 0.00) = 58.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     39   0.00  63.96   0.00  -4.15  -1.45   0.00   0.00   0.00
58.36
-------------------------------------------------------------------------------
--

Segment Leq : 58.36 dBA

Total Leq All Segments: 69.20 dBA
```

```
Results segment # 1: GREENBANK RD (night)
------------------------------------------

Source height = 1.50 m

ROAD (0.00 + 61.24 + 0.00) = 61.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90      0   0.00  67.40   0.00  -3.15  -3.01   0.00   0.00   0.00
61.24
-------------------------------------------------------------------------------
--

Segment Leq : 61.24 dBA

Results segment # 2: Block 195 (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 50.77 + 0.00) = 50.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     39   0.00  56.36   0.00  -4.15  -1.45   0.00   0.00   0.00
50.77
-------------------------------------------------------------------------------
--

Segment Leq : 50.77 dBA

Total Leq All Segments: 61.61 dBA

RT/Custom data, segment # 1: BRT (day/night)
--------------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: BRT (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  31.00 / 31.00  m
Receiver height           :   7.50 / 7.50   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 + 53.25 + 0.00) = 53.25 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.00  59.41  -3.15  -3.01   0.00   0.00   0.00  53.25
-------------------------------------------------------------------------

Segment Leq : 53.25 dBA

Total Leq All Segments: 53.25 dBA

Results segment # 1: BRT (night)
--------------------------------

Source height = 0.50 m

RT/Custom (0.00 + 51.71 + 0.00) = 51.71 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.00  57.87  -3.15  -3.01   0.00   0.00   0.00  51.71
-------------------------------------------------------------------------

Segment Leq : 51.71 dBA

Total Leq All Segments: 51.71 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.31
                           (NIGHT): 62.04
```

```
STAMSON 5.0        NORMAL REPORT        Date: 14-12-2021 17:19:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK RD (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 103.00 / 103.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  79.00 / 79.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
```

```
------------+-------------+-------------+--------------
       1.50 !        7.50 !        2.89 !         2.89

ROAD (0.00 + 52.55 + 63.62) = 63.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  75.00   0.00  -8.37  -3.01   0.00   0.00 -11.07
52.55
-------------------------------------------------------------------------
--
     0     90   0.00  75.00   0.00  -8.37  -3.01   0.00   0.00   0.00
63.62
-------------------------------------------------------------------------
--

Segment Leq : 63.94 dBA

Total Leq All Segments: 63.94 dBA

Results segment # 1: GREENBANK RD (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        2.89 !         2.89

ROAD (0.00 + 44.95 + 56.02) = 56.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  67.40   0.00  -8.37  -3.01   0.00   0.00 -11.07
44.95
-------------------------------------------------------------------------
--
     0     90   0.00  67.40   0.00  -8.37  -3.01   0.00   0.00   0.00
56.02
-------------------------------------------------------------------------
--

Segment Leq : 56.35 dBA

Total Leq All Segments: 56.35 dBA
```

```
RT/Custom data, segment # 1: BRT (day/night)
----------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 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                   :      2       (Reflective ground surface)
Receiver source distance  : 103.00 / 103.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  79.00 / 79.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: BRT (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        2.13 !         2.13

RT/Custom (0.00 + 35.96 + 48.04) = 48.30 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.00  59.41  -8.37  -3.01   0.00   0.00 -12.08  35.96
-------------------------------------------------------------------------
     0     90   0.00  59.41  -8.37  -3.01   0.00   0.00   0.00  48.04
-------------------------------------------------------------------------

Segment Leq : 48.30 dBA

Total Leq All Segments: 48.30 dBA

Results segment # 1: BRT (night)
--------------------------------

Source height = 0.50 m
```

```
Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        2.13 !         2.13

RT/Custom (0.00 + 34.42 + 46.50) = 46.76 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.00  57.87  -8.37  -3.01   0.00   0.00 -12.08  34.42
-------------------------------------------------------------------------
     0     90   0.00  57.87  -8.37  -3.01   0.00   0.00   0.00  46.50
-------------------------------------------------------------------------

Segment Leq : 46.76 dBA

Total Leq All Segments: 46.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.06
                           (NIGHT): 56.80
```

```
STAMSON 5.0        NORMAL REPORT        Date: 14-12-2021 17:19:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK RD (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -42.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK RD (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   6.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        3.80 !         3.80

ROAD (0.00 + 54.10 + 62.31) = 62.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -42   0.00  75.00   0.00  -6.37  -5.74   0.00   0.00  -8.79
54.10
-------------------------------------------------------------------------------
--
   -42      0   0.00  75.00   0.00  -6.37  -6.32   0.00   0.00   0.00
62.31
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 62.92 dBA

Results segment # 2: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        3.80 !         3.80

ROAD (53.86 + 55.32 + 0.00) = 57.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0      6   0.00  75.00   0.00  -6.37 -14.77   0.00   0.00   0.00
53.86
-------------------------------------------------------------------------------
--
     6     90   0.00  75.00   0.00  -6.37  -3.31   0.00   0.00 -10.00
55.32
-------------------------------------------------------------------------------
--

Segment Leq : 57.66 dBA

Total Leq All Segments: 64.05 dBA

Results segment # 1: GREENBANK RD (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        3.80 !         3.80

ROAD (0.00 + 46.50 + 54.71) = 55.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
```

```
   -90    -42   0.00  67.40   0.00  -6.37  -5.74   0.00   0.00  -8.79
46.50
-------------------------------------------------------------------------
--
   -42      0   0.00  67.40   0.00  -6.37  -6.32   0.00   0.00   0.00
54.71
-------------------------------------------------------------------------
--

Segment Leq : 55.32 dBA

Results segment # 2: GREENBANK RD (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        3.80 !         3.80

ROAD (46.26 + 47.72 + 0.00) = 50.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0      6   0.00  67.40   0.00  -6.37 -14.77   0.00   0.00   0.00
46.26
-------------------------------------------------------------------------
--
     6     90   0.00  67.40   0.00  -6.37  -3.31   0.00   0.00 -10.00
47.72
-------------------------------------------------------------------------
--

Segment Leq : 50.06 dBA

Total Leq All Segments: 56.45 dBA

RT/Custom data, segment # 1: BRT (day/night)
--------------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: BRT (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
```

```
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -42.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

RT/Custom data, segment # 2: BRT (day/night)
-------------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 2: BRT (day/night)
-------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   6.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: BRT (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        3.19 !         3.19

RT/Custom (0.00 + 37.68 + 46.73) = 47.24 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
```

```
   -90    -42   0.00  59.41  -6.37  -5.74   0.00   0.00  -9.63  37.68
-------------------------------------------------------------------------
   -42      0   0.00  59.41  -6.37  -6.32   0.00   0.00   0.00  46.73
-------------------------------------------------------------------------

Segment Leq : 47.24 dBA

Results segment # 2: BRT (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        3.19 !         3.19

RT/Custom (38.27 + 38.77 + 0.00) = 41.54 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0      6   0.00  59.41  -6.37 -14.77   0.00   0.00   0.00  38.27
-------------------------------------------------------------------------
     6     90   0.00  59.41  -6.37  -3.31   0.00   0.00 -10.97  38.77
-------------------------------------------------------------------------

Segment Leq : 41.54 dBA

Total Leq All Segments: 48.28 dBA

Results segment # 1: BRT (night)
--------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        3.19 !         3.19

RT/Custom (0.00 + 36.14 + 45.19) = 45.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -42   0.00  57.87  -6.37  -5.74   0.00   0.00  -9.63  36.14
-------------------------------------------------------------------------
   -42      0   0.00  57.87  -6.37  -6.32   0.00   0.00   0.00  45.19
-------------------------------------------------------------------------
```

```
Segment Leq : 45.70 dBA

Results segment # 2: BRT (night)
--------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        3.19 !         3.19

RT/Custom (36.74 + 37.23 + 0.00) = 40.00 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0      6   0.00  57.87  -6.37 -14.77   0.00   0.00   0.00  36.74
-------------------------------------------------------------------------
     6     90   0.00  57.87  -6.37  -3.31   0.00   0.00 -10.97  37.23
-------------------------------------------------------------------------

Segment Leq : 40.00 dBA

Total Leq All Segments: 46.74 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.17
                           (NIGHT): 56.89
```

```
STAMSON 5.0        NORMAL REPORT        Date: 14-12-2021 17:19:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK RD (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  95.00 / 95.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -17.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  71.00 / 71.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK 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  :  95.00 / 95.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  17.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  71.00 / 71.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 47.92 + 51.40) = 53.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -17   0.24  75.00   0.00  -9.94  -4.71   0.00   0.00 -12.42
47.92
-------------------------------------------------------------------------------
--
   -17      0   0.66  75.00   0.00 -13.31 -10.29   0.00   0.00   0.00
51.40
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 53.01 dBA

Results segment # 2: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !         1.50

ROAD (51.40 + 47.92 + 0.00) = 53.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     17   0.66  75.00   0.00 -13.31 -10.29   0.00   0.00   0.00
51.40
-------------------------------------------------------------------------------
--
    17     90   0.24  75.00   0.00  -9.94  -4.71   0.00   0.00 -12.42
47.92
-------------------------------------------------------------------------------
--

Segment Leq : 53.01 dBA

Total Leq All Segments: 56.02 dBA

Results segment # 1: GREENBANK RD (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 40.33 + 43.80) = 45.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
```

```
   -90    -17   0.24  67.40   0.00  -9.94  -4.71   0.00   0.00 -12.42
40.33
-------------------------------------------------------------------------
--
   -17      0   0.66  67.40   0.00 -13.31 -10.29   0.00   0.00   0.00
43.80
-------------------------------------------------------------------------
--

Segment Leq : 45.41 dBA

Results segment # 2: GREENBANK RD (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !         1.50

ROAD (43.80 + 40.33 + 0.00) = 45.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     17   0.66  67.40   0.00 -13.31 -10.29   0.00   0.00   0.00
43.80
-------------------------------------------------------------------------
--
    17     90   0.24  67.40   0.00  -9.94  -4.71   0.00   0.00 -12.42
40.33
-------------------------------------------------------------------------
--

Segment Leq : 45.41 dBA

Total Leq All Segments: 48.42 dBA

RT/Custom data, segment # 1: BRT (day/night)
--------------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: BRT (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
```

```
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  95.00 / 95.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -17.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  71.00 / 71.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

RT/Custom data, segment # 2: BRT (day/night)
-------------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 2: BRT (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  :  95.00 / 95.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  17.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  71.00 / 71.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: BRT (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        0.75 !         0.75

RT/Custom (0.00 + 31.23 + 35.82) = 37.11 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------
```

```
   -90    -17    0.27  59.41 -10.18  -4.80   0.00   0.00 -13.20  31.23
-------------------------------------------------------------------------
   -17      0    0.66  59.41 -13.31 -10.29   0.00   0.00   0.00  35.82
-------------------------------------------------------------------------

Segment Leq : 37.11 dBA

Results segment # 2: BRT (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        0.75 !         0.75

RT/Custom (35.82 + 31.23 + 0.00) = 37.11 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0     17    0.66  59.41 -13.31 -10.29   0.00   0.00   0.00  35.82
-------------------------------------------------------------------------
    17     90    0.27  59.41 -10.18  -4.80   0.00   0.00 -13.20  31.23
-------------------------------------------------------------------------

Segment Leq : 37.11 dBA

Total Leq All Segments: 40.12 dBA

Results segment # 1: BRT (night)
--------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        0.75 !         0.75

RT/Custom (0.00 + 29.69 + 34.28) = 35.57 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -17    0.27  57.87 -10.18  -4.80   0.00   0.00 -13.20  29.69
-------------------------------------------------------------------------
   -17      0    0.66  57.87 -13.31 -10.29   0.00   0.00   0.00  34.28
-------------------------------------------------------------------------
```

```
Segment Leq : 35.57 dBA

Results segment # 2: BRT (night)
--------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        0.75 !         0.75

RT/Custom (34.28 + 29.69 + 0.00) = 35.57 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0     17   0.66  57.87 -13.31 -10.29   0.00   0.00   0.00  34.28
-------------------------------------------------------------------------
    17     90   0.27  57.87 -10.18  -4.80   0.00   0.00 -13.20  29.69
-------------------------------------------------------------------------

Segment Leq : 35.57 dBA

Total Leq All Segments: 38.58 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 56.13
                           (NIGHT): 48.85
```

```
STAMSON 5.0        NORMAL REPORT        Date: 14-12-2021 17:19:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK 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  :  74.00 / 74.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
```

```
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 49.52 + 59.02) = 59.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.24  75.00   0.00  -8.60  -3.64   0.00   0.00 -13.24
49.52
-------------------------------------------------------------------------
--
     0     90   0.66  75.00   0.00 -11.51  -4.47   0.00   0.00   0.00
59.02
-------------------------------------------------------------------------
--

Segment Leq : 59.48 dBA

Total Leq All Segments: 59.48 dBA

Results segment # 1: GREENBANK RD (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 41.92 + 51.43) = 51.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.24  67.40   0.00  -8.60  -3.64   0.00   0.00 -13.24
41.92
-------------------------------------------------------------------------
--
     0     90   0.66  67.40   0.00 -11.51  -4.47   0.00   0.00   0.00
51.43
-------------------------------------------------------------------------
--

Segment Leq : 51.89 dBA

Total Leq All Segments: 51.89 dBA
```

```
RT/Custom data, segment # 1: BRT (day/night)
----------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 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  :  74.00 / 74.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: BRT (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        0.84 !         0.84

RT/Custom (0.00 + 32.94 + 43.44) = 43.81 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.27  59.41  -8.80  -3.71   0.00   0.00 -13.96  32.94
-------------------------------------------------------------------------
     0     90   0.66  59.41 -11.51  -4.47   0.00   0.00   0.00  43.44
-------------------------------------------------------------------------

Segment Leq : 43.81 dBA

Total Leq All Segments: 43.81 dBA

Results segment # 1: BRT (night)
--------------------------------

Source height = 0.50 m
```

```
Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        0.84 !         0.84

RT/Custom (0.00 + 31.40 + 41.90) = 42.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.27  57.87  -8.80  -3.71   0.00   0.00 -13.96  31.40
-------------------------------------------------------------------------
     0     90   0.66  57.87 -11.51  -4.47   0.00   0.00   0.00  41.90
-------------------------------------------------------------------------

Segment Leq : 42.27 dBA

Total Leq All Segments: 42.27 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 59.60
                           (NIGHT): 52.34
```

```
STAMSON 5.0        NORMAL REPORT        Date: 14-12-2021 17:19:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK RD (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -64.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK 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  :  35.00 / 35.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  63.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 48.28 + 63.75) = 63.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -64   0.24  75.00   0.00  -4.56 -10.17   0.00   0.00 -11.97
48.28
-------------------------------------------------------------------------------
--
   -64      0   0.66  75.00   0.00  -6.11  -5.14   0.00   0.00   0.00
63.75
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 63.87 dBA

Results segment # 2: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !         1.50

ROAD (63.70 + 48.37 + 0.00) = 63.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     63   0.66  75.00   0.00  -6.11  -5.18   0.00   0.00   0.00
63.70
-------------------------------------------------------------------------------
--
    63     90   0.24  75.00   0.00  -4.56  -9.97   0.00   0.00 -12.08
48.37
-------------------------------------------------------------------------------
--

Segment Leq : 63.83 dBA

Total Leq All Segments: 66.86 dBA

Results segment # 1: GREENBANK RD (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 40.69 + 56.15) = 56.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
```

```
   -90    -64    0.24  67.40   0.00  -4.56 -10.17   0.00   0.00 -11.97
40.69
-------------------------------------------------------------------------
--
   -64      0    0.66  67.40   0.00  -6.11  -5.14   0.00   0.00   0.00
56.15
-------------------------------------------------------------------------
--

Segment Leq : 56.27 dBA

Results segment # 2: GREENBANK RD (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !         1.50

ROAD (56.11 + 40.78 + 0.00) = 56.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     63    0.66  67.40   0.00  -6.11  -5.18   0.00   0.00   0.00
56.11
-------------------------------------------------------------------------
--
    63     90    0.24  67.40   0.00  -4.56  -9.97   0.00   0.00 -12.08
40.78
-------------------------------------------------------------------------
--

Segment Leq : 56.23 dBA

Total Leq All Segments: 59.26 dBA

RT/Custom data, segment # 1: BRT (day/night)
--------------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: BRT (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
```

```
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -64.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

RT/Custom data, segment # 2: BRT (day/night)
-------------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 2: BRT (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  :  35.00 / 35.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  63.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: BRT (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        1.19 !         1.19

RT/Custom (0.00 + 32.05 + 48.17) = 48.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------
```

```
   -90    -64    0.27  59.41  -4.67 -10.38   0.00   0.00 -12.31  32.05
-------------------------------------------------------------------------
   -64      0    0.66  59.41  -6.11  -5.14   0.00   0.00   0.00  48.17
-------------------------------------------------------------------------

Segment Leq : 48.27 dBA

Results segment # 2: BRT (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        1.19 !         1.19

RT/Custom (48.12 + 32.14 + 0.00) = 48.23 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0     63    0.66  59.41  -6.11  -5.18   0.00   0.00   0.00  48.12
-------------------------------------------------------------------------
    63     90    0.27  59.41  -4.67 -10.18   0.00   0.00 -12.42  32.14
-------------------------------------------------------------------------

Segment Leq : 48.23 dBA

Total Leq All Segments: 51.26 dBA

Results segment # 1: BRT (night)
--------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        1.19 !         1.19

RT/Custom (0.00 + 30.51 + 46.63) = 46.73 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -64    0.27  57.87  -4.67 -10.38   0.00   0.00 -12.31  30.51
-------------------------------------------------------------------------
   -64      0    0.66  57.87  -6.11  -5.14   0.00   0.00   0.00  46.63
-------------------------------------------------------------------------
```

```
Segment Leq : 46.73 dBA

Results segment # 2: BRT (night)
--------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        1.19 !         1.19

RT/Custom (46.58 + 30.60 + 0.00) = 46.69 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0     63   0.66  57.87  -6.11  -5.18   0.00   0.00   0.00  46.58
-------------------------------------------------------------------------
    63     90   0.27  57.87  -4.67 -10.18   0.00   0.00 -12.42  30.60
-------------------------------------------------------------------------

Segment Leq : 46.69 dBA

Total Leq All Segments: 49.72 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 66.98
                           (NIGHT): 59.72
```

```
STAMSON 5.0        NORMAL REPORT        Date: 14-12-2021 17:20:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK RD (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  74.00 / 74.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Dundonald Rd (day/night)
-----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
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 # 2: Dundonald Rd (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   63.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  38.00 / 38.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: GREENBANK RD (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.05 + 0.00) = 65.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90      0   0.00  75.00   0.00  -6.93  -3.01   0.00   0.00   0.00
65.05
-------------------------------------------------------------------------------
--

Segment Leq : 65.05 dBA

Results segment # 2: Dundonald Rd (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.21 + 0.00) = 59.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     63   0.00  63.96   0.00  -4.04  -0.71   0.00   0.00   0.00
59.21
-------------------------------------------------------------------------------
--

Segment Leq : 59.21 dBA

Total Leq All Segments: 66.06 dBA
```

```
Results segment # 1: GREENBANK RD (night)
------------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.46 + 0.00) = 57.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90      0   0.00  67.40   0.00  -6.93  -3.01   0.00   0.00   0.00
57.46
-------------------------------------------------------------------------------
--

Segment Leq : 57.46 dBA

Results segment # 2: Dundonald Rd (night)
------------------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.62 + 0.00) = 51.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     63   0.00  56.36   0.00  -4.04  -0.71   0.00   0.00   0.00
51.62
-------------------------------------------------------------------------------
--

Segment Leq : 51.62 dBA

Total Leq All Segments: 58.47 dBA

RT/Custom data, segment # 1: BRT (day/night)
-----------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: BRT (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  74.00 / 74.00  m
Receiver height           :   7.50 / 7.50   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 + 49.47 + 0.00) = 49.47 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.00  59.41  -6.93  -3.01   0.00   0.00   0.00  49.47
-------------------------------------------------------------------------

Segment Leq : 49.47 dBA

Total Leq All Segments: 49.47 dBA

Results segment # 1: BRT (night)
--------------------------------

Source height = 0.50 m

RT/Custom (0.00 + 47.93 + 0.00) = 47.93 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.00  57.87  -6.93  -3.01   0.00   0.00   0.00  47.93
-------------------------------------------------------------------------

Segment Leq : 47.93 dBA

Total Leq All Segments: 47.93 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.15
                           (NIGHT): 58.83
```

```
STAMSON 5.0         NORMAL REPORT         Date: 14-12-2021 17:20:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9.te                 Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: GREENBANK RD (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: GREENBANK RD (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 107.00 / 107.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Dundonald Rd (day/night)
-----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
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 # 2: Dundonald Rd (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  38.00 / 38.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: GREENBANK RD (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      0   0.00  75.00   0.00  -8.53  -3.01   0.00   0.00   0.00
63.45
-------------------------------------------------------------------------------
--

Segment Leq : 63.45 dBA

Results segment # 2: Dundonald Rd (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.41 + 0.00) = 59.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     70   0.00  63.96   0.00  -4.04  -0.51   0.00   0.00   0.00
59.41
-------------------------------------------------------------------------------
--

Segment Leq : 59.41 dBA

Total Leq All Segments: 64.89 dBA
```

```
Results segment # 1: GREENBANK RD (night)
------------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.86 + 0.00) = 55.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  67.40   0.00  -8.53  -3.01   0.00   0.00   0.00
55.86
-------------------------------------------------------------------------
--

Segment Leq : 55.86 dBA

Results segment # 2: Dundonald Rd (night)
------------------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.81 + 0.00) = 51.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     70   0.00  56.36   0.00  -4.04  -0.51   0.00   0.00   0.00
51.81
-------------------------------------------------------------------------
--

Segment Leq : 51.81 dBA

Total Leq All Segments: 57.30 dBA

RT/Custom data, segment # 1: BRT (day/night)
-----------------------------------------
1 - Bus:
Traffic volume    :   191/67    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: BRT (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 107.00 / 107.00 m
Receiver height           :   7.50 / 7.50   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 + 47.87 + 0.00) = 47.87 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.00  59.41  -8.53  -3.01   0.00   0.00   0.00  47.87
-------------------------------------------------------------------------

Segment Leq : 47.87 dBA

Total Leq All Segments: 47.87 dBA

Results segment # 1: BRT (night)
--------------------------------

Source height = 0.50 m

RT/Custom (0.00 + 46.33 + 0.00) = 46.33 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.00  57.87  -8.53  -3.01   0.00   0.00   0.00  46.33
-------------------------------------------------------------------------

Segment Leq : 46.33 dBA

Total Leq All Segments: 46.33 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.98
                           (NIGHT): 57.64
```