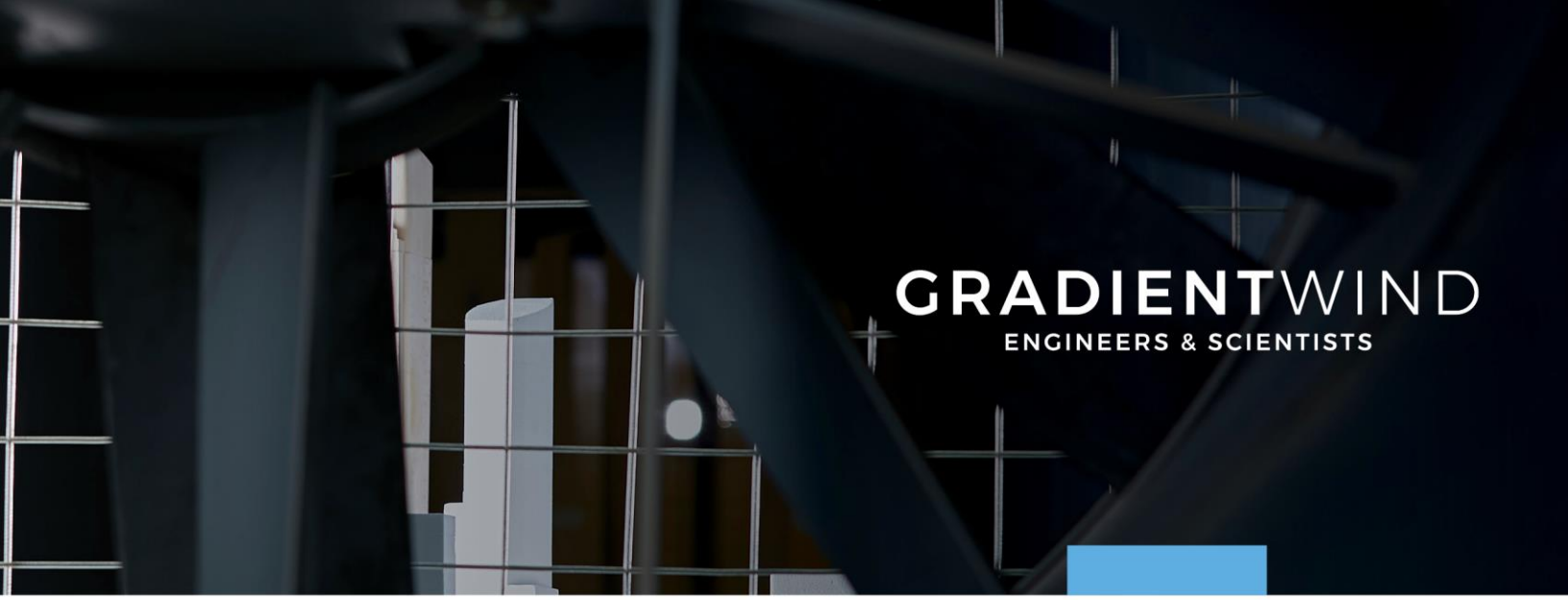

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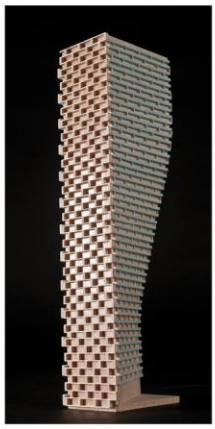
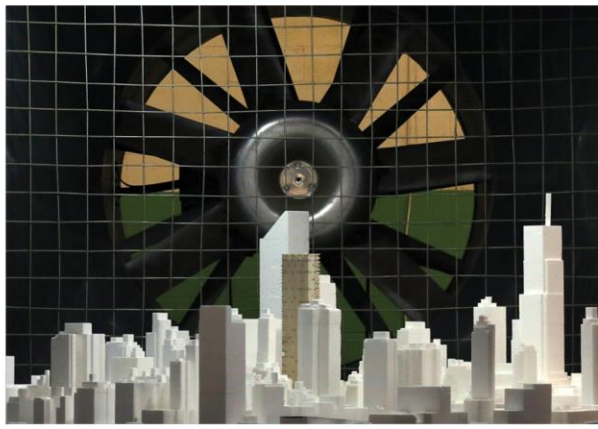
ROADWAY TRAFFIC NOISE ASSESSMENT

70 Richmond Road
Ottawa, Ontario

REPORT: 20-143 – Traffic Noise





August 12, 2021

PREPARED FOR

Devtrin (Island Park) Inc.
c/o Trinity Development Group Inc.
77 Bloor Street West, Suite 1601
Toronto, ON M5S 1M2

PREPARED BY

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

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EXECUTIVE SUMMARY

This report describes a roadway traffic noise assessment undertaken in support of applications for Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) for a proposed mixed-use, commercial and residential development located at 70 Richmond Road in Ottawa, Ontario. The proposed development comprises a 9-storey mixed-use building. The ground floor provides retail space, a residential lobby, and a lounge. Residential units occupy Levels 2 through 9, the roof contains a mechanical room and indoor and outdoor amenity space. The primary sources of roadway traffic noise are Richmond Road and Island Park Drive. Figure 1 illustrates a complete site plan 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) and City of Ottawa requirements; (ii) noise level criteria as specified by MECP's and 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) architectural drawings provided by Hobin Architecture Inc. in July 2021.

The results of the current analysis indicate that unattenuated noise levels will range between 53 and 70 dBA during the daytime period (07:00-23:00) and between 56 and 62 dBA during the nighttime period (23:00-07:00). The highest noise level (70 dBA) occurs at the north façade, which is the most exposed to Richmond Road. Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA, as indicated in Figure 3.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. A Warning Clause will also be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6.

Unattenuated noise levels at the Level 8 terrace (Receptor 8) are expected to reach 62 dBA during the daytime period. Noise control measures are required to reduce noise levels to 55 dBA where technically and administratively feasible. Further analysis investigated the noise mitigating impact of the proposed 1.1 m tall perimeter guard along the east and south perimeter. Results of the investigation proved that noise levels can be reduced below 55 dBA with the proposed 1.1 m guard. Therefore, no additional mitigation is required. The guardrail must be constructed from materials having a minimum surface

density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guards will conform to the requirements outlined in Part 5 of the ENCG and summarized in Section 6.

With regard to stationary noise impacts, a stationary noise study will be performed for the site during the detailed design once mechanical plans for the proposed building become available. This study would assess impacts of stationary noise from rooftop mechanical units serving the proposed building on surrounding noise-sensitive areas. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels meet ENCG limits. Noise impacts can generally be minimized by judicious selection and placement of the equipment. The building is much taller than the surroundings so by placing large pieces of equipment such as cooling towers, condensers, and air handling equipment on the centre of the roof or in a mechanical penthouse, the surrounding points of reception will be shielded by the building massing. Where necessary noise screens and silencers can be placed into the design.

TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Devtrin (Island Park) Inc. to undertake a roadway traffic noise assessment in support of a proposed mixed-use, commercial and residential development located at 70 Richmond 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] noise guidelines. Noise calculations were based on architectural drawings provided by Hobin Architecture Inc. in July 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 development located at 70 Richmond Road in Ottawa, Ontario. The study site is located on a parcel of land on the southwest corner of the intersection of Richmond Road and Island Park Drive in Ottawa, Ontario. The site is bound by Richmond Road to the north, Island Park Drive to the east, low-rise residential land to the south, and commercial land to the west.

The proposed development comprises a 9-storey mixed-use building. The development includes two levels of underground parking, accessed by Richmond Road via a laneway on the west elevation. The ground floor provides retail space, a residential lobby, and a lounge. A heritage gas bar building will remain on site, attached to the proposed building at the northeast corner. Residential units occupy Levels 2 through 9, the roof contains a mechanical room and indoor and outdoor amenity spaces.

Balconies and terraces are located on the north, east, and south façades. The building is stepped back at the south façade on Level 2, as well as the north, east, and south façades on Level 5 and Level 8 to produce terraces. Outdoor amenity terraces are located on the roof deck to the northwest corner, and along the east

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

and south perimeter. Terraces extending less than 4 metres in depth from the façade are not considered as Outdoor Living Areas (OLA) in the ENCG. The only sources of roadway traffic noise are Richmond Road and Island Park Drive. Figure 1 illustrates a complete site plan 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 and the MECP 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 50, 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 is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA, mitigation must be provided to reduce noise levels where technically and administratively feasible to acceptable levels at or below the criterion.

[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] MOECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8
[6] MOECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

4.2.2 Theoretical Roadway Noise Predictions

Noise predictions were performed with the aid of the MECP computerized noise assessment program, STAMSON 5.04, for road analysis. Appendix A includes the STAMSON 5.04 input and output data.

Roadway traffic noise calculations were performed by treating each roadway segment as separate line sources of noise. In addition to the traffic volumes summarized in Table 2, theoretical noise predictions were based on the following parameters:

- Richmond Road continues as Wellington Street West east of Island Park Drive with the same classification as Richmond Road. For the purpose of this report, the road is solely identified as Richmond Road.
- Truck traffic on all roadways was assumed to comprise 5% heavy trucks and 7% medium trucks, as per ENCG requirements for noise level predictions.
- The day/night split for all streets was taken to be 92%/8%, respectively.
- Ground surfaces were taken to be reflective due to the presence of hard (paved) ground.
- Topography was assumed to be a flat/gentle slope surrounding the study building.
- For select receptors where appropriate, the proposed building was assumed to act as a barrier partially or fully obstructing exposure to the source as illustrated by exposure angles in Figures 4-7.
- Noise receptors were placed at 8 locations around the study area (see Figure 2).
- Receptor distances and exposure angles are illustrated in Figures 4-7.

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[7] 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. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment.

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

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes
Richmond Road	2-Lane Urban Arterial Undivided (2-UAU)	50	**15,000**
Island Park Drive	2-Lane Urban Arterial Undivided (2-UAU)	50	**15,000**

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 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. The calculation procedure[8] considers:

- Indoor sound level criteria, which varies according to the intended use of a space
- 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

[8] Building Practice Note: Controlling Sound Transmission into Buildings by J.D. Quirt, National Research Council of Canada, September 1985

Based on published research[9], 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 and building elevations 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).

5. RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

The results of the roadway traffic noise calculations are summarized in Table 3 below. A complete set of input and output data from all STAMSON 5.04 calculations are available in Appendix A.

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROAD TRAFFIC

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
1	28.5	POW – 9th Floor – North Façade	70	62
2	28.5	POW – 9th Floor – North Façade	68	61
3	28.5	POW – 9th Floor – East Façade	69	61
4	4.5	POW – 1st Floor Mezzanine – South Façade	64	57
5	28.5	POW – 9th Floor – West Façade	65	58
6	31.5	OLA – Rooftop Terrace	53	N/A*
7	28.5	POW – 9th Floor – South Façade	64	56
8	25.5	OLA – Level 8 Terrace	62	N/A*

*Noise levels during the nighttime are not considered as per ENCG

[9] CMHC, Road & Rail Noise: Effects on Housing

The results of the current analysis indicate that unattenuated noise levels will range between 53 and 70 dBA during the daytime period (07:00-23:00) and between 56 and 62 dBA during the nighttime period (23:00-07:00). The highest noise level (70 dBA) occurs at the north façade, which is closer to Richmond Road.

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 have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels). As per city of Ottawa requirements, detailed STC calculations will be required to be completed prior to building permit application for each unit type. The STC requirements for the windows are summarized below for various units within the development (see Figure 3):

- **Bedroom Windows**

(i) Bedroom windows facing north and east will require a minimum STC of 33

(ii) All other bedroom windows are to satisfy Ontario Building Code (OBC 2012) requirements

- **Living Room Windows**

(i) Living room windows facing north and east will require a minimum STC of 28

(ii) All other living room windows are to satisfy Ontario Building Code (OBC 2012) requirements

- **Retail Windows**

(i) Retail windows facing north and east will require a minimum STC of 23

(ii) All other living room windows are to satisfy Ontario Building Code (OBC 2012) requirements

- **Exterior Walls**

(i) Exterior wall components on the north and east façades will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[10]

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

The STC requirements apply to windows, doors, spandrel panels and curtainwall elements. Exterior wall components on these façades are recommended to have a minimum STC of 45, where a window/wall system is used. A review of window supplier literature indicates that the specified STC ratings can be achieved by a variety of window systems having a combination of glass thickness and inter-pane spacing. We have specified an example window configuration, however several manufacturers and various combinations of window components, such as those proposed, will offer the necessary sound attenuation rating. The specified STC requirements also apply to swinging and/or sliding patio doors.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to ventilation requirements, Warning Clauses will also be required in all Agreements of Purchase and Sale and Lease Agreements, as summarized in Section 6.

5.3 Noise Barrier Calculation

Unattenuated noise levels at the Level 8 terrace (Receptor 8) are expected to reach 62 dBA during the daytime period. If this area is to be used as an outdoor living area, noise control measures are required to reduce noise levels to 55 dBA. Further analysis investigated the noise mitigating impact of the proposed 1.1 m tall perimeter guard along the east and south perimeter. Results of the investigation proved that noise levels can be reduced below 55 dBA with the proposed 1.1 m guard. Therefore, no additional mitigation is required.

TABLE 4: RESULTS OF NOISE BARRIER INVESTIGATION

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	Daytime L_{eq} Noise Levels (dBA)	
			No Barrier	With 1.1m Barrier
8	25.5	OLA – Level 8 Terrace	62	45

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that unattenuated noise levels will range between 53 and 70 dBA during the daytime period (07:00-23:00) and between 56 and 62 dBA during the nighttime period (23:00-07:00). The highest noise level (70 dBA) occurs at the north façade, which is closer to Richmond Road. Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA, as indicated in Figure 3.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. The following Warning Clause[11] will also be required be placed on all Lease, Purchase and Sale Agreements, as summarized below:

> *"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing roadway traffic may, on occasion, interfere with some activities of the dwelling occupants, as the sound levels exceed the sound level limits of the City and the Ministry of the Environment, Conservation and Parks. To help address the need for sound attenuation, this development includes:*
>
> - *STC rated multi-pane glazing elements*
> - *North and east façade bedroom/living room/retail: STC 33/28/23*
> - *STC rated exterior walls*
> - *North and east façade: STC 45*
>
> *This dwelling unit has also been designed with air conditioning. Air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment, Conservation and Parks.*

[11] City of Ottawa Environmental Noise Control Guidelines, January 2016

To ensure that provincial sound level limits are not exceeded, it is important to maintain these sound attenuation features."

Unattenuated noise levels at the Level 8 terrace (Receptor 8) are expected to reach 62 dBA during the daytime period. Noise control measures are required to reduce noise levels to 55 dBA where technically and administratively feasible. Further analysis investigated the noise mitigating impact of the proposed 1.1 m tall perimeter guard along the east and south perimeter. Results of the investigation proved that noise levels can be reduced below 55 dBA with the proposed 1.1 m guard. Therefore, no additional mitigation is required. The guardrail must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guardrail will conform to the requirements outlined in Part 5 of the ENCG. The following information will be required by the City for review prior to installation of the barrier:

1. Shop drawings, signed and sealed by a qualified Professional Engineer licenced by the Professional Engineers of Ontario, showing the details of the acoustic barrier systems components, including material specifications.
2. Structural drawing(s), signed by a qualified Professional Engineer licenced by the Professional Engineers of Ontario, showing foundation details, and specifying design criteria, climatic design loads, as well as applicable geotechnical data used in the design.
3. Layout plan, and wall elevations, showing proposed colours and patterns.

With regard to stationary noise impacts, a stationary noise study will be performed for the site during the detailed design once mechanical plans for the proposed building become available. This study would assess impacts of stationary noise from rooftop mechanical units serving the proposed building on surrounding noise-sensitive areas. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below ENCG limits. Noise impacts can generally be minimized by judicious selection and placement of the equipment. The building is much taller than the surroundings so by placing large pieces of equipment, such as cooling towers, condensers, and air handling equipment on the centre of the roof or in a mechanical penthouse, the surrounding points of reception will be shielded by the building massing. Where necessary noise screens and silencers can be placed into the design.

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.

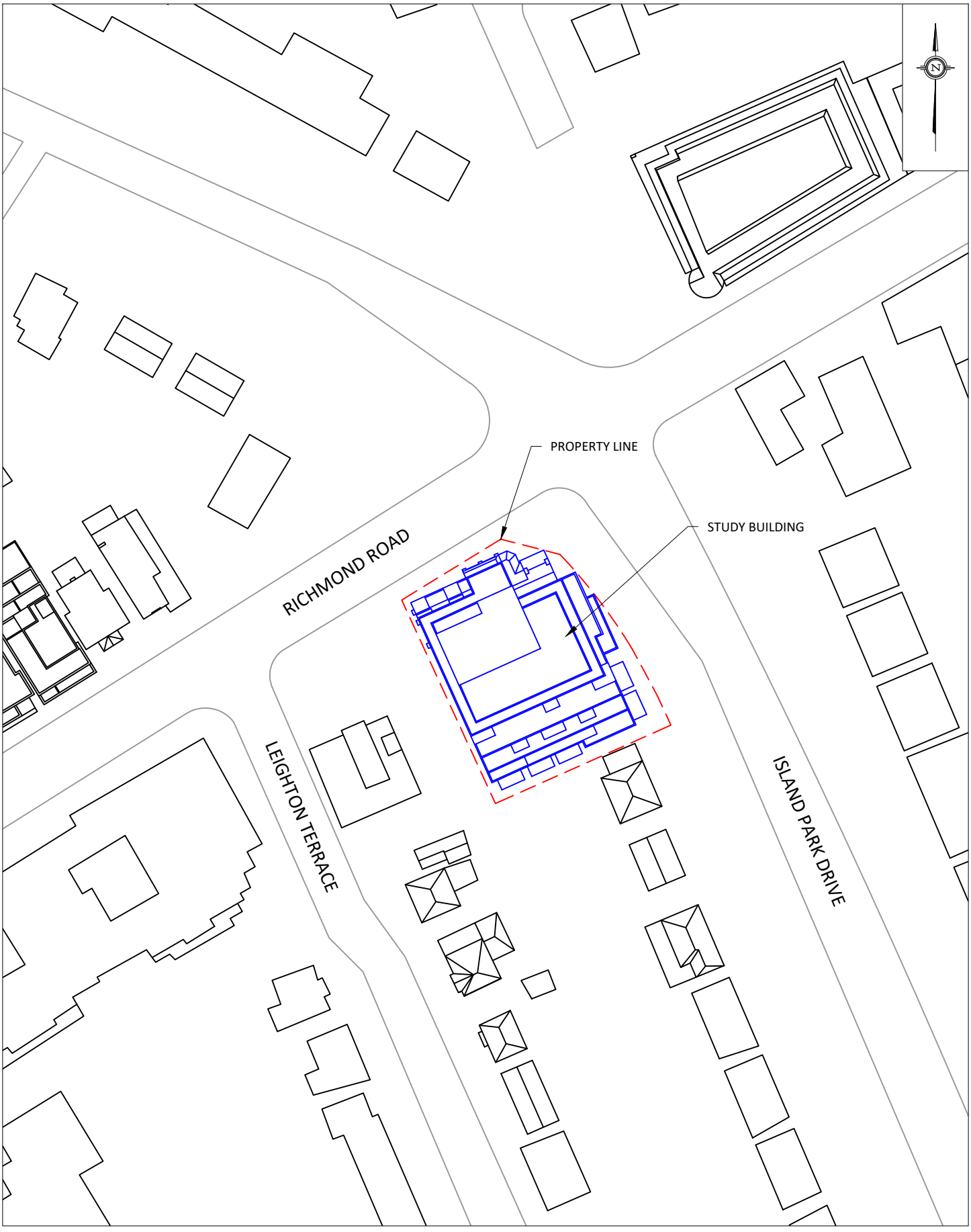
Sincerely,

Gradient Wind Engineering Inc.

Giuseppe Garro, MASc.
Junior Environmental Scientist

Joshua Foster, P.Eng.
Principal

Gradient Wind File #20-143-Traffic Noise



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PROJECT	70 RICHMOND ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		
SCALE	1:1000	DRAWING NO.	20-143-1
DATE	AUGUST 10, 2021	DRAWN BY	G.G.

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT

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DRAWING NO.	20-143-2
DATE	AUGUST 10, 2021
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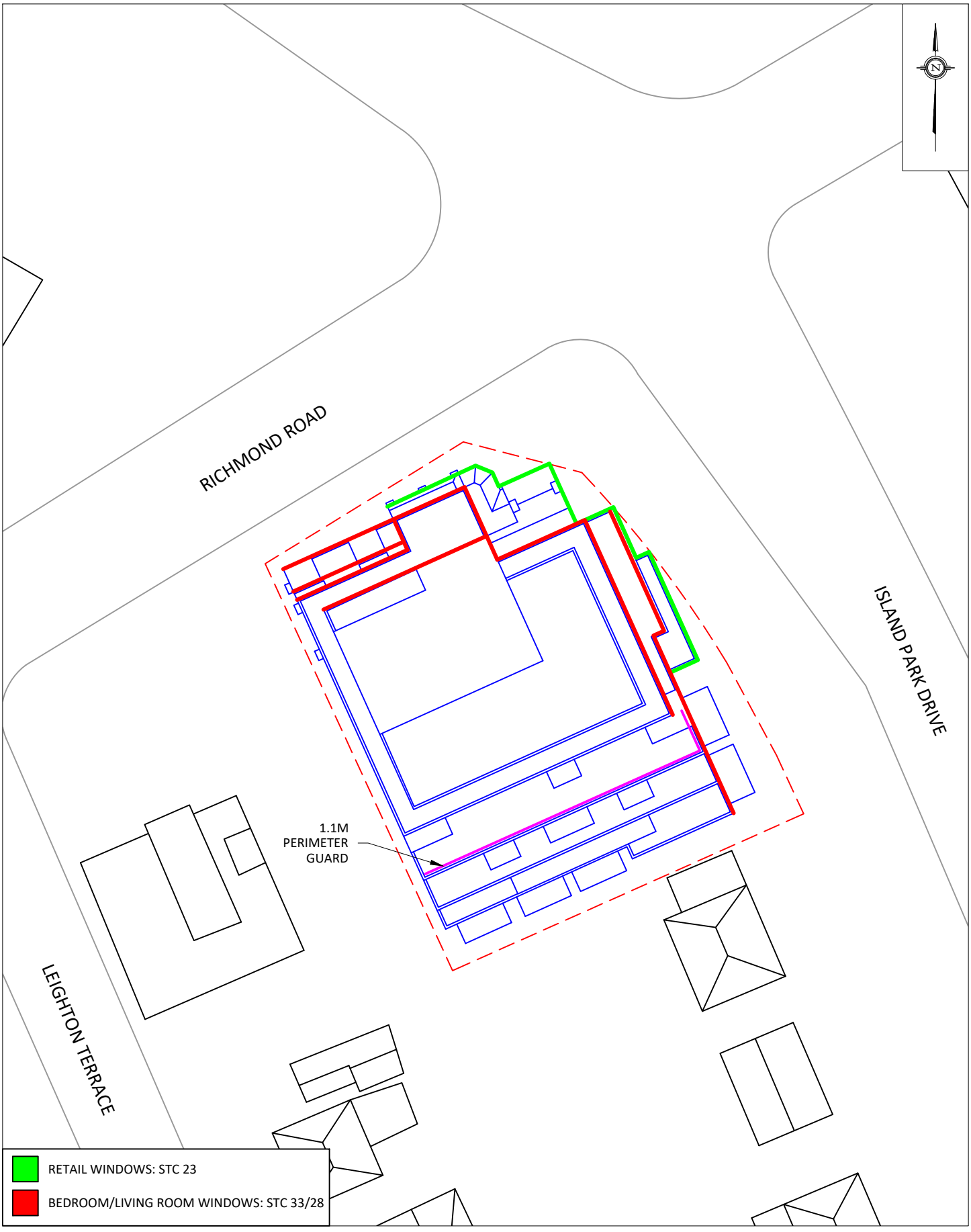
DESCRIPTION

FIGURE 2:
RECEPTOR LOCATION



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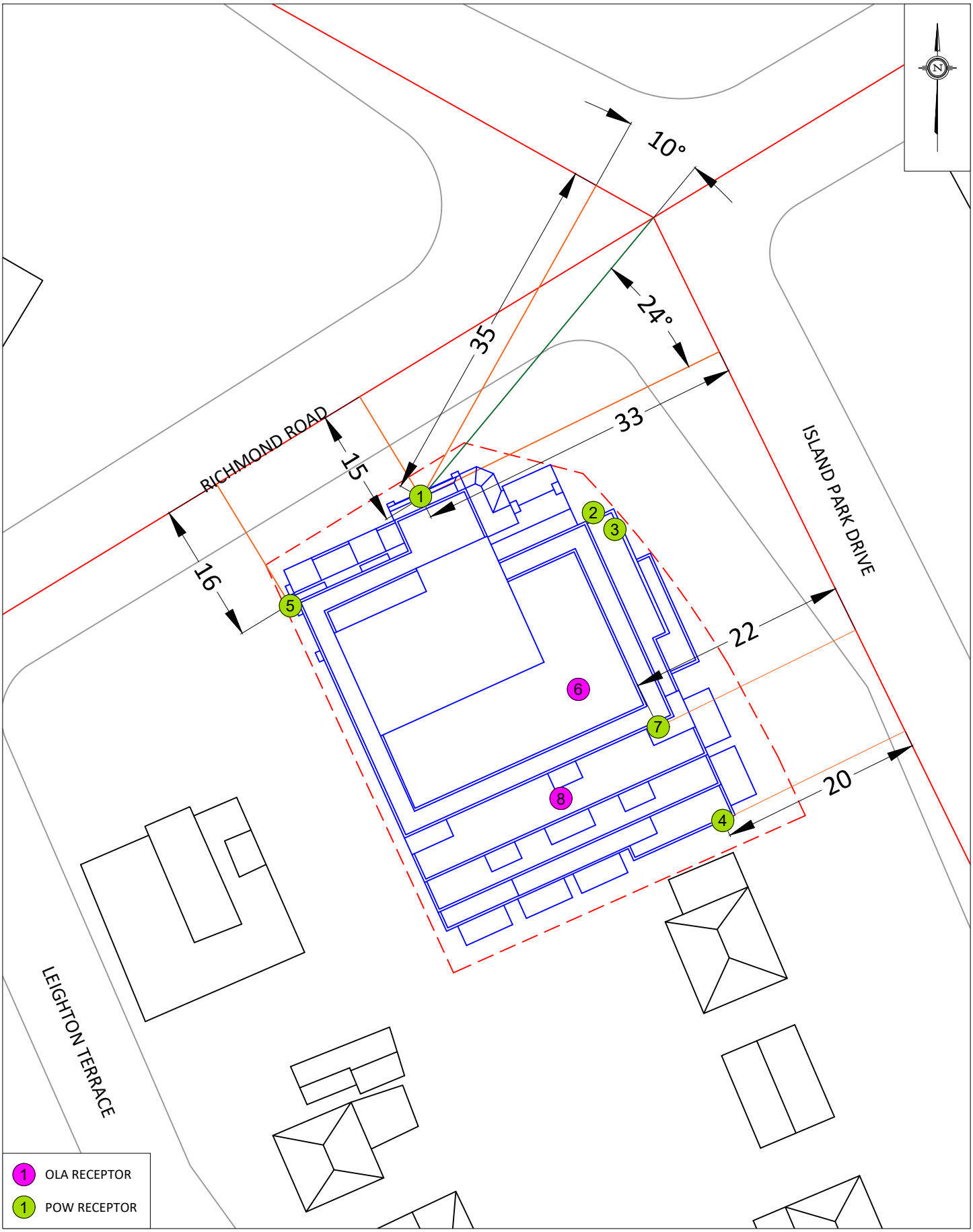
SCALE	1:500
DRAWING NO.	20-143-3
DATE	AUGUST 10, 2021
DRAWN BY	G.G.

DESCRIPTION

FIGURE 3:
WINDOW STC REQUIREMENTS



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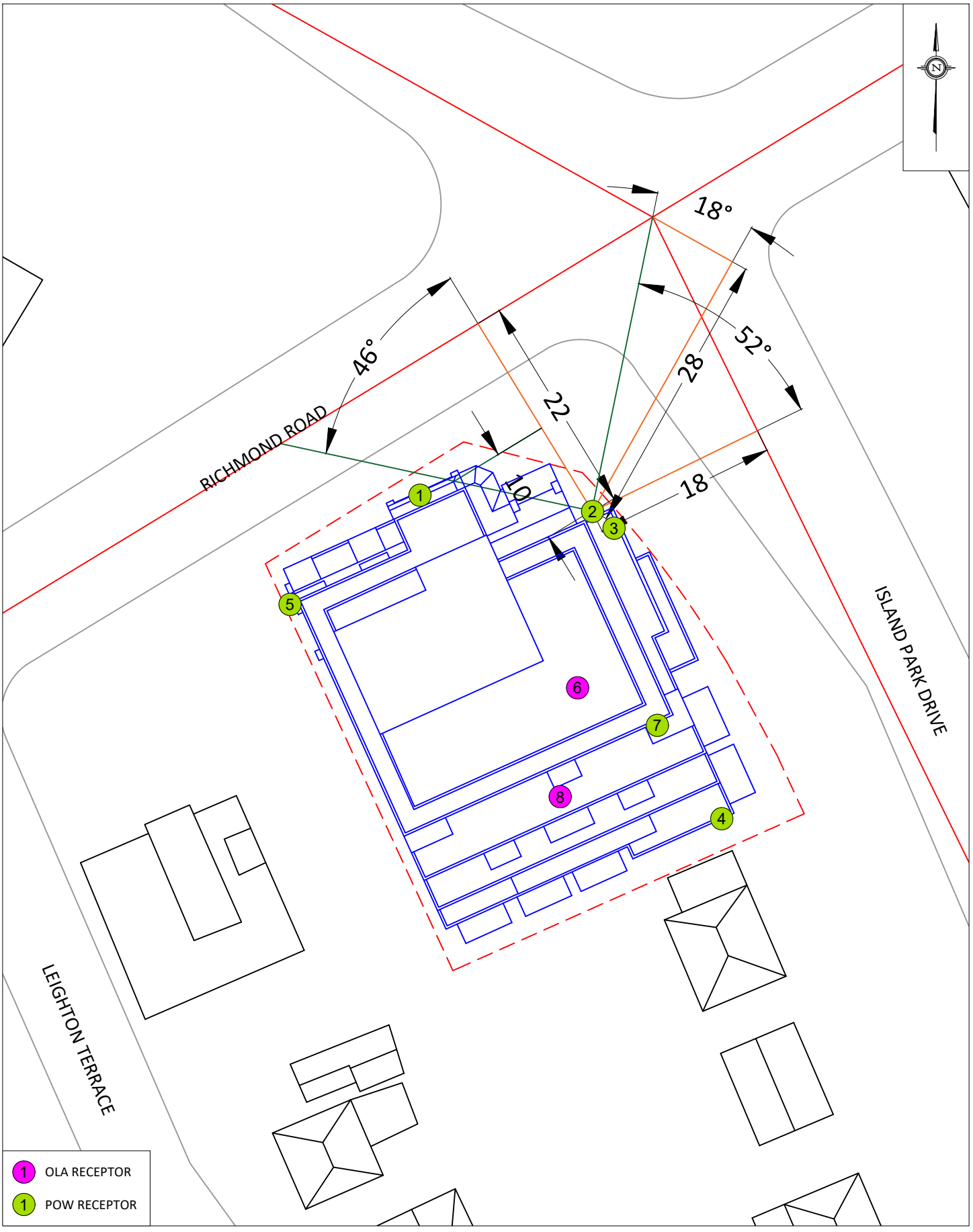
SCALE	1:500
DRAWING NO.	20-143-4
DATE	AUGUST 10, 2021
DRAWN BY	G.G.

DESCRIPTION

FIGURE 4:
RECEPTOR 1, 4, 5, AND 7 STAMSON INPUT PARAMETERS



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SCALE	1:500
DRAWING NO.	20-143-5
DATE	AUGUST 10, 2021
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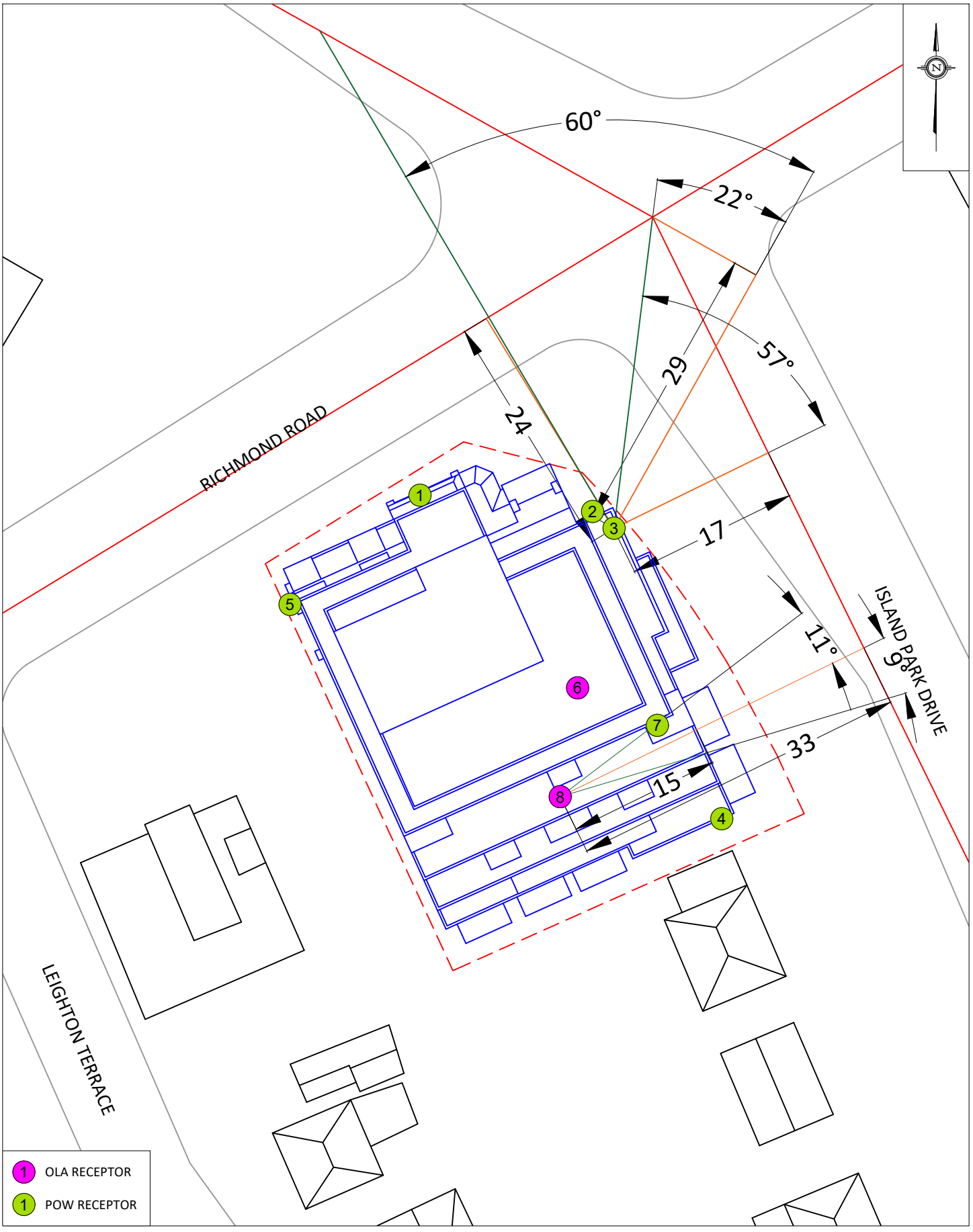
DESCRIPTION

FIGURE 5:
RECEPTOR 2 STAMSON INPUT PARAMETERS



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SCALE	1:500
DRAWING NO.	20-143-6
DATE	AUGUST 10, 2021
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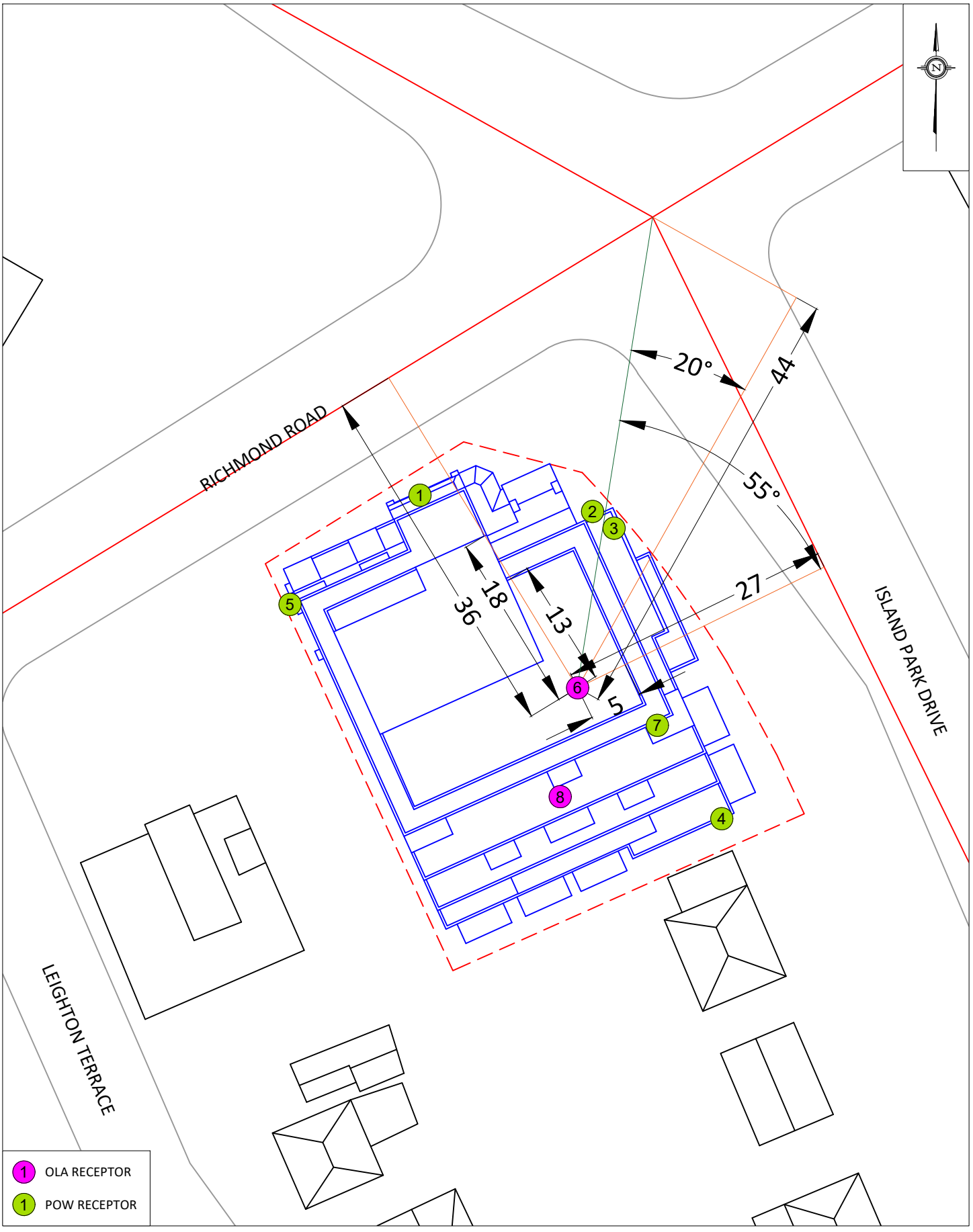
DESCRIPTION

FIGURE 6:
RECEPTOR 3 AND 8 STAMSON INPUT PARAMETERS



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SCALE	1:500	DRAWING NO.	20-143-7
DATE	AUGUST 10, 2021	DRAWN BY	G.G.

DESCRIPTION

FIGURE 7:
RECEPTOR 6 STAMSON INPUT PARAMETERS

APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

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```
STAMSON 5.0        NORMAL REPORT        Date: 11-08-2020 19:33:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Richmond Rd (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: Richmond 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  :  15.00 / 15.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: IPD 1 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: IPD 1 (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: IPD 2 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: IPD 2 (day/night)
---------------------------------------
Angle1   Angle2           : -24.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  33.00 / 33.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Richmond Rd (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 68.48 + 0.00) = 68.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
```

```
-------------------------------------------------------------------------
--
   -90     90    0.00   68.48    0.00    0.00    0.00    0.00    0.00    0.00
68.48
-------------------------------------------------------------------------
--

Segment Leq : 68.48 dBA

Results segment # 2: IPD 1 (day)
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 62.25 + 0.00) = 62.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     10    0.00   68.48    0.00   -3.68   -2.55    0.00    0.00    0.00
62.25
-------------------------------------------------------------------------
--

Segment Leq : 62.25 dBA

Results segment # 3: IPD 2 (day)
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.31 + 0.00) = 56.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -24      0    0.00   68.48    0.00   -3.42   -8.75    0.00    0.00    0.00
56.31
-------------------------------------------------------------------------
--

Segment Leq : 56.31 dBA

Total Leq All Segments: 69.62 dBA

Results segment # 1: Richmond Rd (night)
----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.88 + 0.00) = 60.88 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  60.88   0.00   0.00   0.00   0.00   0.00   0.00
60.88
-------------------------------------------------------------------------
--

Segment Leq : 60.88 dBA

Results segment # 2: IPD 1 (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.65 + 0.00) = 54.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     10   0.00  60.88   0.00  -3.68  -2.55   0.00   0.00   0.00
54.65
-------------------------------------------------------------------------
--

Segment Leq : 54.65 dBA

Results segment # 3: IPD 2 (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 48.71 + 0.00) = 48.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -24      0   0.00  60.88   0.00  -3.42  -8.75   0.00   0.00   0.00
48.71
-------------------------------------------------------------------------
--

Segment Leq : 48.71 dBA

Total Leq All Segments: 62.02 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.62
                           (NIGHT): 62.02
```

```
STAMSON 5.0        NORMAL REPORT        Date: 11-08-2020 19:33:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Richmond Rd (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: Richmond 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  :  22.00 / 22.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -46.00 deg
Barrier height            :  30.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: IPD 1 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: IPD 1 (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  28.00 / 28.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: IPD 2 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: IPD 2 (day/night)
---------------------------------------
Angle1   Angle2           : -52.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  18.00 / 18.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Richmond 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 !       28.50 !       16.23 !        16.23

ROAD (0.00 + 43.80 + 65.60) = 65.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -46   0.00  68.48   0.00  -1.66  -6.12   0.00   0.00 -16.90
43.80
-------------------------------------------------------------------------------
--
   -46     90   0.00  68.48   0.00  -1.66  -1.22   0.00   0.00   0.00
65.60
-------------------------------------------------------------------------------
--

Segment Leq : 65.63 dBA

Results segment # 2: IPD 1 (day)
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 61.79 + 0.00) = 61.79 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -18   0.00  68.48   0.00  -2.71  -3.98   0.00   0.00   0.00
61.79
-------------------------------------------------------------------------------
--

Segment Leq : 61.79 dBA

Results segment # 3: IPD 2 (day)
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 62.30 + 0.00) = 62.30 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -52      0   0.00  68.48   0.00  -0.79  -5.39   0.00   0.00   0.00
62.30
-------------------------------------------------------------------------
--

Segment Leq : 62.30 dBA

Total Leq All Segments: 68.37 dBA

Results segment # 1: Richmond 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 !       28.50 !       16.23 !        16.23

ROAD (0.00 + 36.20 + 58.00) = 58.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -46   0.00  60.88   0.00  -1.66  -6.12   0.00   0.00 -16.90
36.20
-------------------------------------------------------------------------
--
   -46     90   0.00  60.88   0.00  -1.66  -1.22   0.00   0.00   0.00
58.00
-------------------------------------------------------------------------
--

Segment Leq : 58.03 dBA

Results segment # 2: IPD 1 (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.19 + 0.00) = 54.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
```

```
   -90    -18   0.00  60.88   0.00  -2.71  -3.98   0.00   0.00   0.00
54.19
-------------------------------------------------------------------------
--

Segment Leq : 54.19 dBA

Results segment # 3: IPD 2 (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.70 + 0.00) = 54.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -52      0   0.00  60.88   0.00  -0.79  -5.39   0.00   0.00   0.00
54.70
-------------------------------------------------------------------------
--

Segment Leq : 54.70 dBA

Total Leq All Segments: 60.77 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.37
                           (NIGHT): 60.77
```

```
STAMSON 5.0        NORMAL REPORT        Date: 11-08-2020 19:34:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Richmond Rd (day/night)
-----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: Richmond 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  :  24.00 / 24.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: IPD 1 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: IPD 1 (day/night)
---------------------------------------
Angle1   Angle2           : -60.00 deg   -22.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  29.00 / 29.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: IPD 2 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: IPD 2 (day/night)
---------------------------------------
Angle1   Angle2           : -57.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  17.00 / 17.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Richmond Rd (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.43 + 0.00) = 63.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
```

```
-------------------------------------------------------------------------
--
     0     90    0.00   68.48    0.00   -2.04   -3.01    0.00    0.00    0.00
63.43
-------------------------------------------------------------------------
--

Segment Leq : 63.43 dBA

Results segment # 2: IPD 1 (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.86 + 0.00) = 58.86 dBA
Angle1 Angle2   Alpha RefLeq   P.Adj   D.Adj   F.Adj   W.Adj   H.Adj   B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -60    -22    0.00   68.48    0.00   -2.86   -6.75    0.00    0.00    0.00
58.86
-------------------------------------------------------------------------
--

Segment Leq : 58.86 dBA

Results segment # 3: IPD 2 (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 67.06 + 0.00) = 67.06 dBA
Angle1 Angle2   Alpha RefLeq   P.Adj   D.Adj   F.Adj   W.Adj   H.Adj   B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -57     90    0.00   68.48    0.00   -0.54   -0.88    0.00    0.00    0.00
67.06
-------------------------------------------------------------------------
--

Segment Leq : 67.06 dBA

Total Leq All Segments: 69.06 dBA

Results segment # 1: Richmond Rd (night)
----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.83 + 0.00) = 55.83 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  60.88   0.00  -2.04  -3.01   0.00   0.00   0.00
55.83
-------------------------------------------------------------------------
--

Segment Leq : 55.83 dBA

Results segment # 2: IPD 1 (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.27 + 0.00) = 51.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -60    -22   0.00  60.88   0.00  -2.86  -6.75   0.00   0.00   0.00
51.27
-------------------------------------------------------------------------
--

Segment Leq : 51.27 dBA

Results segment # 3: IPD 2 (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.46 + 0.00) = 59.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -57     90   0.00  60.88   0.00  -0.54  -0.88   0.00   0.00   0.00
59.46
-------------------------------------------------------------------------
--

Segment Leq : 59.46 dBA

Total Leq All Segments: 61.46 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.06
                           (NIGHT): 61.46
```

```
STAMSON 5.0        NORMAL REPORT        Date: 10-08-2021 13:54:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: IPD 2 (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: IPD 2 (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  :  20.00 / 20.00  m
Receiver height           :   4.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: IPD 2 (day)
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 64.22 + 0.00) = 64.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  68.48   0.00  -1.25  -3.01   0.00   0.00   0.00
64.22
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 64.22 dBA

Total Leq All Segments: 64.22 dBA

Results segment # 1: IPD 2 (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.62 + 0.00) = 56.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  60.88   0.00  -1.25  -3.01   0.00   0.00   0.00
56.62
-------------------------------------------------------------------------
--

Segment Leq : 56.62 dBA

Total Leq All Segments: 56.62 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.22
                           (NIGHT): 56.62
```

```
STAMSON 5.0         NORMAL REPORT         Date: 11-08-2020 19:34:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Richmond Rd (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: Richmond 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  :  16.00 / 16.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Richmond Rd (day)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.19 + 0.00) = 65.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90      0   0.00  68.48   0.00  -0.28  -3.01   0.00   0.00   0.00
65.19
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 65.19 dBA

Total Leq All Segments: 65.19 dBA

Results segment # 1: Richmond Rd (night)
----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.59 + 0.00) = 57.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  60.88   0.00  -0.28  -3.01   0.00   0.00   0.00
57.59
-------------------------------------------------------------------------
--

Segment Leq : 57.59 dBA

Total Leq All Segments: 57.59 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 65.19
                           (NIGHT): 57.59
```

```
STAMSON 5.0        NORMAL REPORT        Date: 10-08-2021 13:55:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: RR 1 (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: RR 1 (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  :  36.00 / 36.00  m
Receiver height           :  31.50 / 31.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :  33.60 m
Barrier receiver distance :  18.00 / 18.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: RR 2 (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: RR 2 (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  :  36.00 / 36.00  m
Receiver height           :  31.50 / 31.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :  30.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: IPD 1 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   7.00
    Heavy Truck  % of Total Volume      :   5.00
    Day (16 hrs) % of Total Volume      :  92.00

Data for Segment # 3: IPD 1 (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   -20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  44.00 / 44.00  m
```

```
Receiver height           :  31.50 / 31.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -20.00 deg
Barrier height            :  30.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: IPD 2 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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 # 4: IPD 2 (day/night)
---------------------------------------
Angle1   Angle2           : -55.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :  31.50 / 31.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -55.00 deg   Angle2 : 90.00 deg
Barrier height            :  30.00 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: RR 1 (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 !       31.50 !       16.50 !        16.50

ROAD (0.00 + 43.10 + 0.00) = 43.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  68.48   0.00  -3.80  -3.01   0.00   0.00 -18.57
43.10
-------------------------------------------------------------------------
--

Segment Leq : 43.10 dBA

Results segment # 2: RR 2 (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 !       31.50 !       20.66 !        20.66

ROAD (0.00 + 44.93 + 0.00) = 44.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  68.48   0.00  -3.80  -3.01   0.00   0.00 -16.74
44.93
-------------------------------------------------------------------------
--

Segment Leq : 44.93 dBA

Results segment # 3: IPD 1 (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 !       31.50 !       22.63 !        22.63

ROAD (0.00 + 44.68 + 0.00) = 44.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -20   0.00  68.48   0.00  -4.67  -4.10   0.00   0.00 -15.03
44.68
-------------------------------------------------------------------------
--

Segment Leq : 44.68 dBA

Results segment # 4: IPD 2 (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 !       31.50 !       25.94 !        25.94

ROAD (0.00 + 50.96 + 0.00) = 50.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -55     90   0.00  68.48   0.00  -2.55  -0.94   0.00   0.00 -14.03
50.96
-------------------------------------------------------------------------
--

Segment Leq : 50.96 dBA

Total Leq All Segments: 53.13 dBA

Results segment # 1: RR 1 (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 !       31.50 !       16.50 !        16.50

ROAD (0.00 + 35.51 + 0.00) = 35.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  60.88   0.00  -3.80  -3.01   0.00   0.00 -18.57
35.51
-------------------------------------------------------------------------
--

Segment Leq : 35.51 dBA

Results segment # 2: RR 2 (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 !       31.50 !       20.66 !        20.66

ROAD (0.00 + 37.33 + 0.00) = 37.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  60.88   0.00  -3.80  -3.01   0.00   0.00 -16.74
37.33
-------------------------------------------------------------------------
--

Segment Leq : 37.33 dBA

Results segment # 3: IPD 1 (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 !       31.50 !       22.63 !        22.63

ROAD (0.00 + 37.08 + 0.00) = 37.08 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -20   0.00  60.88   0.00  -4.67  -4.10   0.00   0.00 -15.03
37.08
-------------------------------------------------------------------------
--

Segment Leq : 37.08 dBA

Results segment # 4: IPD 2 (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 !       31.50 !       25.94 !        25.94

ROAD (0.00 + 43.37 + 0.00) = 43.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -55     90   0.00  60.88   0.00  -2.55  -0.94   0.00   0.00 -14.03
43.37
-------------------------------------------------------------------------
--

Segment Leq : 43.37 dBA

Total Leq All Segments: 45.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.13
                           (NIGHT): 45.54
```

```
STAMSON 5.0        NORMAL REPORT        Date: 10-08-2021 13:54:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: IPD 2 (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: IPD 2 (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  :  22.00 / 22.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: IPD 2 (day)
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.81 + 0.00) = 63.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  68.48   0.00  -1.66  -3.01   0.00   0.00   0.00
63.81
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 63.81 dBA

Total Leq All Segments: 63.81 dBA

Results segment # 1: IPD 2 (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.21 + 0.00) = 56.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  60.88   0.00  -1.66  -3.01   0.00   0.00   0.00
56.21
-------------------------------------------------------------------------
--

Segment Leq : 56.21 dBA

Total Leq All Segments: 56.21 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.81
                           (NIGHT): 56.21
```

```
STAMSON 5.0        NORMAL REPORT        Date: 10-08-2021 13:55:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: IPD 2 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: IPD 2 (day/night)
---------------------------------------
Angle1   Angle2           : -11.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  33.00 / 33.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -11.00 deg   Angle2 : 9.00 deg
Barrier height            :  24.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: IPD 2 (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 !       25.50 !       14.59 !        14.59

ROAD (0.00 + 35.51 + 61.59) = 61.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -11      9   0.00  68.48   0.00  -3.42  -9.54   0.00   0.00 -20.00
35.51
-------------------------------------------------------------------------
--
     9     90   0.00  68.48   0.00  -3.42  -3.47   0.00   0.00   0.00
61.59
-------------------------------------------------------------------------
Segment Leq : 61.60 dBA

Total Leq All Segments: 61.60 dBA

Results segment # 1: IPD 2 (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 !       25.50 !       14.59 !        14.59

ROAD (0.00 + 27.92 + 53.99) = 54.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -11      9   0.00  60.88   0.00  -3.42  -9.54   0.00   0.00 -20.00
27.92
-------------------------------------------------------------------------
--
     9     90   0.00  60.88   0.00  -3.42  -3.47   0.00   0.00   0.00
53.99
-------------------------------------------------------------------------

Segment Leq : 54.00 dBA

Total Leq All Segments: 54.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.60
                           (NIGHT): 54.00
```

```
STAMSON 5.0        NORMAL REPORT        Date: 10-08-2021 13:55:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8b.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: IPD 2 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 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):  15000
    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: IPD 2 (day/night)
---------------------------------------
Angle1   Angle2           : -11.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  33.00 / 33.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -11.00 deg   Angle2 : 90.00 deg
Barrier height            :  25.10 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: IPD 2 (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 !       25.50 !       14.59 !        14.59

ROAD (0.00 + 44.92 + 0.00) = 44.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -11     90   0.00  68.48   0.00  -3.42  -2.51   0.00   0.00 -17.63
44.92
-------------------------------------------------------------------------
--

Segment Leq : 44.92 dBA

Total Leq All Segments: 44.92 dBA

Results segment # 1: IPD 2 (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 !       25.50 !       14.59 !        14.59

ROAD (0.00 + 37.32 + 0.00) = 37.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -11     90   0.00  60.88   0.00  -3.42  -2.51   0.00   0.00 -17.63
37.32
-------------------------------------------------------------------------
--

Segment Leq : 37.32 dBA

Total Leq All Segments: 37.32 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 44.92
                           (NIGHT): 37.32
```