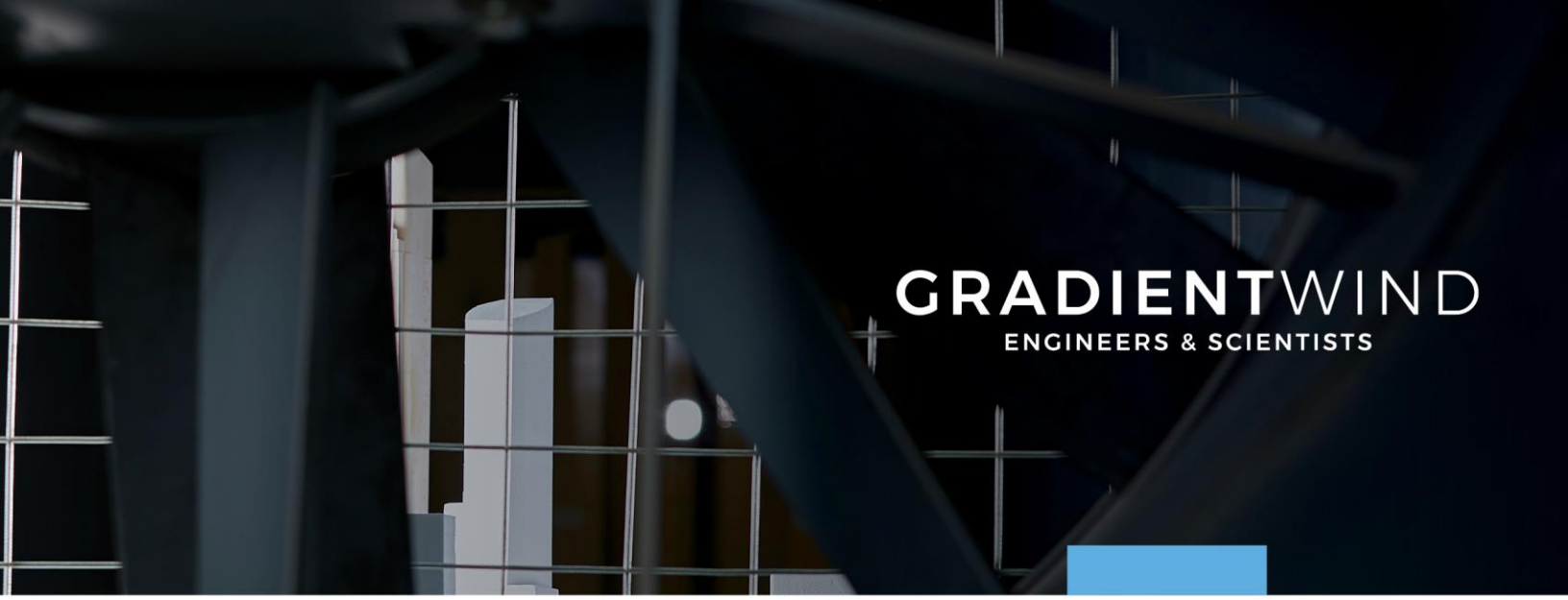

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ENVIRORNMENTAL NOISE ASSESSMENT

1131 – 1151 Teron Road
Ottawa, Ontario

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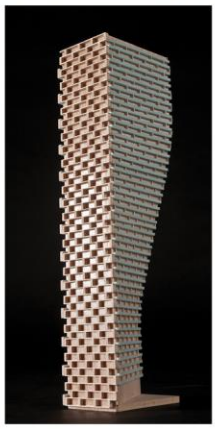

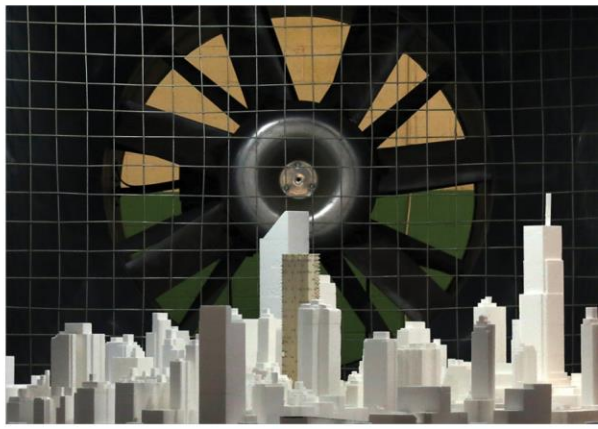

August 20, 2019

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EXECUTIVE SUMMARY

This report describes an environmental noise assessment undertaken in support of a rezoning and site plan application for a proposed mixed-use 9-storey building and a residential 3-storey development located at 1131-1151 Teron Road in Kanata, Ontario. The major sources of traffic noise are March Road and Teron Road to the northeast and southwest of the site, respectively. The development site is bound by existing residential developments to the southeast and southwest. Sources of stationary noise include a cooling tower, a generator and an MUA. Figure 1 illustrates a 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 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 prepared by NEUF Architect(e)s, dated March 7, 2019.

The results of the current analysis indicate that noise levels will range between 52 and 67 dBA during the daytime period (07:00-23:00) and between 44 and 59 dBA during the nighttime period (23:00-07:00). The highest noise level (69 dBA) occurs at the northwest corner of the study site, which is nearest and most exposed to March Road and Teron 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 13.

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 on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

Noise levels at the 4th, 6th, 9th Floor terraces, as well as the rooftop terrace (Receptor 3-6, respectively) are expected to approach exceed 55 dBA during the daytime period. If these areas are to be used as outdoor living areas, noise control measures are required to reduce the L_{eq} to 55 dBA. Further analysis investigated the noise mitigating impact of raising the perimeter guards surrounding these terraces (see Figure 14). Results of the investigation proved that noise levels can be feasibly reduced close to 55 dBA, while higher perimeter guards would be required to achieve 55 dBA. Perimeter guards/noise screens greater than 1.5 m in height are not recommended, as these may compromise terrace views and are not architecturally

compatible with the space. Perimeter guards/noise screens 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.

The results of the stationary noise study indicate that noise levels from surrounding existing stationary noise sources are expected to fall below the ENCG noise criteria around the noise sensitive buildings. As such, the proposed development is expected to be compatible with the surrounding commercial areas. At the time of the study, mechanical equipment for the proposed building was yet to be determined. A review of the HVAC equipment will need to be competed by qualified acoustical engineer prior to instillation of the equipment. Predictor-Lima modelling data is available upon request.

TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by 11021028 Canada Inc. to undertake an environmental noise assessment in support of a rezoning and site plan application for a proposed 9-storey mixed-use development and a 3-storey residential development at 1131-1151 Teron Road in Kanata, Ontario. This report summarizes the methodology, results, and recommendations related to an environmental noise assessment.

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 and NPC-300. Noise calculations were based on architectural drawings prepared by NEUF Architect(e)s dated March 7, 2019, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications. The environmental noise assessment was based on Gradient Wind's experience with various types of heating and cooling equipment and satellite imagery of the surrounding properties.

2. TERMS OF REFERENCE

The focus of this environmental noise assessment is a proposed 9-storey mixed-use development and 3-storey residential development located at 1131-1151 Teron Road in Kanata, Ontario. The study site is located at the intersection of March Road and Teron Road with townhomes located to the southeast of the study site.

The proposed mixed-use 9-storey development contains 109 residential and commercial units; as well as, underground parking consisting of 53 parking spaces, where outdoor parking is also provided to the northeast of the building nearest to March Road. The ground floor contains a restaurant, two indoor amenity areas and two commercial units. The 9-storey mixed-use development is located at the southwest corner of the study site to the northwest of the 3-storey residential building. Outdoor balconies are located on the northeast façade of the development and a total of five roof top terraces are found on levels two, four, six, eight and nine. A ground level outdoor amenity area is located in the northwest corner of the site at the

[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

intersection of Teron Road and March Road; because this area is not directly accessible from the building, it is not considered as an Outdoor Living Area (OLA). The 3-storey residential building comprises a total of 30 units and contains underground parking including six visitor parking spaces. A ground level outdoor amenity area is situated in the southeast corner of the site, nearest to the 3-storey development. The major sources of roadway traffic noise are March Road and Teron Road to the of the northeast and southwest of the site, respectively. Figure 1 illustrates a complete site plan with surrounding context.

Stationary noise sources associated with the development include rooftop equipment and a generator. HVAC equipment will be in operation during all hours of the day while certain sources are likely to have reduced operation during the nighttime period between 23:00 and 07:00, in exception to the generator that will not be operating during the nighttime period. Figure 16 illustrates the location of all stationary noise sources included in this study.

3. OBJECTIVES

The principal objectives of this environmental noise study are to (i) calculate the future noise levels on the study buildings produced by local roadway traffic and stationary sources, 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 and 4.3 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, 40 and 50 dBA for living rooms, sleeping quarters and general offices, respectively for roadway as listed in Table 1.

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

Type of Space	Time Period	Leq (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

[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

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.

4.2.2 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.

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes
March Road	4-Lane Urban Arterial Divided Roadway	80	**35,000**
Teron Road	2-Lane Major Collector Roadway	50	**12,000**

[6] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3
[7] City of Ottawa Transportation Master Plan, November 2013

4.2.3 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:

- 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 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 for all receptors angles that include the parking lot to the northeast of the 9-storey building.
- Topography was assumed to be a flat/gentle slope surrounding the study building.
- POW Receptor heights were taken to be 4.5, 7.5 and 25.5 metres at Level 2, 3 and 9, respectively, for the centre of the window (height to n^{th} floor slab + 1.5 metres) for Receptors 8-14.
- OLA Receptor heights were taken to be 1.5 meters at ground level and at 7.5, 13.5, 19.5, 25.5 and 28.5 meters for rooftop terraces at levels 2, 4, 6, 8 and 9, respectively, for receptors 1-7.
- The mid-rise buildings to the southeast were considered as a noise barrier with heights of 8-metres.
- The proposed 9-storey mixed use development was considered as a noise barrier with various heights of 27, 24, 18 and 12 meters for the OLA rooftop receptors 2-6. A standard 3.0, 2.0, 1.6 and 1.1 m tall parapet was assumed to enclose the 4^{th}, 6^{th}, 8^{th} and 9^{th} rooftop terraces, respectively.
- Noise receptors were strategically placed at 13 locations around the study area (see Figure 2).
- Receptor distances and exposure angles are illustrated in Figures 3-12.

4.2.4 Indoor Noise Calculations for Roadway Noise

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 and rail 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:

- 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[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, which was prepared for rezoning and site plan approval, 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).

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

4.3 Stationary Noise

4.3.1 Criteria for Stationary Noise

The equivalent sound energy level, L_{eq}, provides a weighted 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 selected period of time. For stationary sources, the L_{eq} is commonly calculated on an hourly interval, while for roadways, the L_{eq} is calculated on the basis of a 16-hour daytime/8-hour nighttime split.

Noise criteria taken from the ENCG and NPC-300 apply to outdoor points of reception (POR). A POR is defined under NPC-300 as "any location on a noise sensitive land use where noise from a stationary source is received"[10]. A POR can be located on an existing or zoned for future use premises of permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, campgrounds, and noise sensitive buildings such as schools and places of worship. The recommended maximum noise levels for a Class 1 area in a suburban environment adjacent to arterial roadways at a POR are outlined in Table 3 below. The study site is considered to be in a Class 1 area because it is located at the intersection of two arterial roadways. These conditions indicate that the sound field is dominated by manmade sources.

TABLE 3: EXCLUSIONARY LIMITS FOR CLASS 1 AREA

Time of Day	Outdoor Points of Reception	Plane of Window
07:00 – 19:00	50	50
19:00 – 23:00	50	50
23:00 – 07:00	N/A	45

[10] NPC – 300, page 14

4.3.2 Assumptions

Information for stationary noise sources is largely based on experience with similar projects. Based on the information gathered, the following assumptions have been included in the analysis:

(i) Locations and quantity of mechanical equipment is based on Gradient Wind's experience with similar projects.

(ii) Sound power data for mechanical equipment is based on Gradient Wind's experience and manufacturer's sound data of typical pieces of equipment

(iii) The MUA is assumed to operate continuously over a 1-hour period during the daytime and evening periods, and at 50% of the time during the nighttime period. This is to account for the decreased occupancy loads in the building overnight.

(iv) The generator was evaluated separately as it is considered to be used during an emergency and was assumed to only operate during the daytime period.

(v) The cooling tower was assumed to operate continuously during a typical 24-hour period with a low noise fan. This assumption is somewhat conservative, as cooling tower requirements typically scale down during the overnight period when summer temperatures are less than daytime highs.

(vi) Screening effects of a 1.1 m parapet around the mechanical equipment have been assumed.

4.3.3 Determination of Noise Source Power Levels

Sound power data for stationary sources was assumed based on Gradient Wind's experience with similar types of retail developments and typical pieces of equipment associated with similar developments. Table 4 summarizes the sound power assumed for each source used in the analysis.

TABLE 4: EQUIPMENT SOUND POWER LEVELS (dBA)

Source ID	Description	Height Above Grade/Roof (m)	Frequency (Hz)								
			63	125	250	500	1000	2000	4000	8000	Total
S1	Generator	1	N/A	N/A	N/A	N/A	101	N/A	N/A	N/A	101
S2	Cooling Tower	1	N/A	N/A	N/A	N/A	95	N/A	N/A	N/A	95
S3	MUA	1	N/A	N/A	N/A	N/A	90	N/A	N/A	N/A	90

4.3.4 Stationary Source Noise Predictions

The impact of stationary noise sources on nearby residential areas was determined by computer modelling using the software program Predictor-Lima. This program was developed from the International Standards Organization (ISO) standard 9613 Parts 1 and 2 and is capable of representing three-dimensional surfaces and first reflections of sound waves over a suitable spectrum for human hearing. The methodology has been used on numerous assignments and has been accepted by the Ministry of the Environment, Conservation and Parks (MOECP) as part of Environmental Compliance Approval applications.

A total of 24 receptor locations were chosen around the site to measure the noise impact at points of reception (POR) during the daytime/evening period (07:00 – 23:00), as well as during the nighttime period (23:00 – 07:00). POR locations include outdoor points of reception (OPOR) and the plane of windows (POW) of the adjacent residential properties. Sensor locations are described in Table 5 and illustrated in Figure 15. All units were represented as point sources in the Predictor model. Table 6 below contains Predictor-Lima calculation settings. These are typical settings that have been based on ISO 9613 standards and guidance from the MECP.

Ground absorption over the study area was determined based on topographical features (such as water, concrete, grassland, etc.). An absorption value of 0 is representative of hard ground, while a value of 1 represents grass and similar soft surface conditions. Existing and proposed buildings were added to the model to account for screening and reflection effects from building façades. A Predictor-Lima sample output is available in Appendix B. Further modelling data is available upon request.

TABLE 5: RECEPTOR LOCATIONS

Receptor Number	Receptor Location	Height Above Grade (m)
R1	POW – 39 Jackson Crescent (Northeast Façade)	4.5
R2	OPOR – 39 Jackson Crescent	1.5
R3	POW – 41 Jackson Crescent (Northeast Façade)	4.5
R4	OPOR – 41 Jackson Crescent	1.5
R5	POW – 43 Jackson Crescent (Northeast Façade)	4.5
R6	OPOR – 43 Jackson Crescent	1.5
R7	POW – 45 Jackson Crescent (Northeast Façade)	4.5
R8	OPOR – 45 Jackson Crescent	1.5
R9	POW – 45 Jackson Crescent (Southeast Façade)	4.5
R10	OPOR – 45 Jackson Crescent	1.5
R11	POW – 41 Weeping Willow Lane (Northeast Facade)	4.5
R12	OPOR – 41 Weeping Willow Lane	1.5
R13	POW – 41 Weeping Willow Lane (Northeast Facade)	5.5
R14	OPOR – 41 Weeping Willow Lane	1.5
R15	POW – 41 Weeping Willow Lane (Northwest Facade)	5.5
R16	OPOR – 41 Weeping Willow Lane	1.5
R17	POW – 1 Bethune Way (Northwest Facade)	6.5
R18	OPOR – 1 Bethune Way	1.5
R19	POW – 1131 Teron Road (Northwest Facade)	7.5
R20	OPOR – 1131 Teron Road	1.5
R21	OPOR – 1 Gingras Crescent	1.5
R22	POW - 1 Gingras Crescent (Northwest Facade)	4.5
R23	OPOR – 32 Bethune Way	1.5
R24	POW – 32 Bethune Way (Northwest Facade)	4.5

TABLE 6: CALCULATION SETTINGS

Parameter	Setting
Meteorological correction method	Single value for C0
Value C0	2.0
Default ground attenuation factor	1
Ground attenuation factor for roadways and paved areas	0
Temperature (K)	283.15
Pressure (kPa)	101.33
Air humidity (%)	70

5. RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

The results of the roadway traffic noise calculations are summarized in Table 7 below. A complete set of input and output data from all STAMSON 5.04 calculations are available in Appendix A.

TABLE 7: 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	1.5	OLA – 3-storey	56	49
2	7.5	OLA – 9-storey 2nd Level Terrace	52	45
3	13.5	OLA – 9-storey 4th Level Terrace	61	54
4	19.5	OLA – 9-storey 6th Level Terrace	59	52
5	25.5	OLA – 9-storey 9th Level Terrace	58	51
6	28.5	OLA – 9-storey Rooftop Terrace	60	53
7	25.5	POW – 9-Storey 9th Level (Northwest Façade)	66	59
8	25.5	POW – 9-Storey 9th Level (West Façade)	67	59
9	4.5	POW – 9-Storey 2nd Level (Southwest Façade)	65	57
10	25.5	POW – 9-Storey 9th level (Northeast Façade)	67	59
11	7.5	POW – 3-Storey 3rd Level (Southeast Façade)	62	54
12	7.5	POW – 3-Storey 3rd Level (Southwest Façade)	66	58
13	7.5	POW – 3-Storey 3rd Level (Northwest Façade)	62	55

The results of the current analysis indicate that noise levels will range between 52 and 67 dBA during the daytime period (07:00-23:00) and between 44 and 59 dBA during the nighttime period (23:00-07:00). The highest noise level (69 dBA) occurs at the northwest corner of the study site, which is nearest and most exposed to March Road and Teron Road.

5.1.1 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 13):

- **Bedroom Windows**

(i) Bedroom windows for the 9-storey building facades facing northwest, southwest and northeast; as well as the 3-storey building facade facing southwest will require a minimum STC of 30

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

- **Living Room Windows**

(i) Living room windows for the 9-storey building facades facing northwest, southwest and northeast; as well as, the 3-storey building façade facing southwest will require a minimum STC of 25

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

- **Exterior Walls**

(i) Exterior wall components on the north, east, south and west façades will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[11]

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. 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.

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

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 Lease, Purchase and Sale Agreements, as summarized in Section 6.

5.1.2 Noise Barrier Calculation

Noise levels at the 4th, 6th, 9th Floor terraces, as well as the rooftop terrace (Receptor 3-6, respectively) are expected to approach exceed 55 dBA during the daytime period. If these areas are to be used as outdoor living areas, noise control measures are required to reduce the L_{eq} to 55 dBA. Further analysis investigated the noise mitigating impact of raising the perimeter guards surrounding these terraces (see Figure 14). Results of the investigation proved that noise levels can be feasibly reduced close to 55 dBA, while higher perimeter guards would be required to achieve 55 dBA. Perimeter guards/noise screens greater than 1.5 m in height are not recommended, as these may compromise terrace views and are not architecturally compatible with the space. Table 8 summarizes the results of the barrier investigation.

TABLE 8: RESULTS OF NOISE BARRIER INVESTIGATION

Location	Reference Receptor	Barrier Height/Parapet (m)	Daytime Leq Noise Levels (dBA)	
			With Barrier/Parapet	Without Barrier/Parapet
OLA – 9-storey 4th Level Terrace	3	1.5/3.0	58/55	61
OLA – 9-storey 6th Level Terrace	4	1.5/2.0	57/55	59
OLA – 9-storey 9th Level Terrace	5	1.1/1.6	56/55	58
OLA – 9-storey Rooftop Terrace	6	1.1	54	60

5.2 Stationary Noise Levels

The anticipated sound levels across the development for the MUA and cooling tower are summarized in Table 9 and are based on the assumptions outlined in Section 4.3.2.

TABLE 9: NOISE LEVELS FROM STATIONARY SOURCES [MUA AND COOLING TOWER]

Receptor Number	Plane of Window Receptor Location	Noise Level (dBA)		Sound Level Limits		Meets ENCG Class 1 Criteria	
		Day	Night	Day	Night	Day	Night
R1	POW – 39 Jackson Crescent (Northeast Façade)	30	30	50	45	Yes	Yes
R2	OPOR – 39 Jackson Crescent	28	28	50	-	Yes	Yes
R3	POW – 41 Jackson Crescent (Northeast Façade)	30	30	50	45	Yes	Yes
R4	OPOR – 41 Jackson Crescent	26	25	50	-	Yes	Yes
R5	POW – 43 Jackson Crescent (Northeast Façade)	31	31	50	45	Yes	Yes
R6	OPOR – 43 Jackson Crescent	30	30	50	-	Yes	Yes
R7	POW – 45 Jackson Crescent (Northeast Façade)	32	32	50	45	Yes	Yes
R8	OPOR – 45 Jackson Crescent	31	31	50	-	Yes	Yes
R9	POW – 45 Jackson Crescent (Southeast Façade)	33	33	50	45	Yes	Yes
R10	OPOR – 45 Jackson Crescent	31	31	50	-	Yes	Yes
R11	POW – 41 Weeping Willow Lane (Northeast Facade)	34	34	50	45	Yes	Yes
R12	OPOR – 41 Weeping Willow Lane	32	32	50	-	Yes	Yes
R13	POW – 41 Weeping Willow Lane (Northeast Facade)	35	34	50	45	Yes	Yes
R14	OPOR – 41 Weeping Willow Lane	35	35	50	-	Yes	Yes
R15	POW – 41 Weeping Willow Lane (Northwest Facade)	34	34	50	45	Yes	Yes
R16	OPOR – 41 Weeping Willow Lane	36	35	50	-	Yes	Yes
R17	POW – 1 Bethune Way (Northwest Facade)	30	29	50	45	Yes	Yes
R18	OPOR – 1 Bethune Way	28	27	50	-	Yes	Yes
R19	POW – 1131 Teron Road (Northwest Facade)	34	34	50	45	Yes	Yes
R20	OPOR – 1131 Teron Road	30	29	50	-	Yes	Yes
R21	OPOR – 1 Gingras Crescent	34	33	50	-	Yes	Yes
R22	POW - 1 Gingras Crescent (Northwest Facade)	34	33	50	45	Yes	Yes
R23	OPOR – 32 Bethune Way	27	26	50	-	Yes	Yes
R24	POW – 32 Bethune Way (Northwest Facade)	28	28	50	45	Yes	Yes

The anticipated sound levels across the development for the Generator are summarized in Table 10 and are based on the assumptions outlined in Section 4.3.2.

TABLE 10: NOISE LEVELS FROM STATIONARY SOURCES [GENERATOR]

Receptor Number	Plane of Window Receptor Location	Noise Level (dBA)		Sound Level Limits		Meets ENCG Class 1 Criteria	
		Day	Night	Day	Night	Day	Night
R1	POW – 39 Jackson Crescent (Northeast Façade)	33	-	55	-	Yes	Yes
R2	OPOR – 39 Jackson Crescent	33	-	55	45	Yes	Yes
R3	POW – 41 Jackson Crescent (Northeast Façade)	34	-	55	45	Yes	Yes
R4	OPOR – 41 Jackson Crescent	32	-	55	-	Yes	Yes
R5	POW – 43 Jackson Crescent (Northeast Façade)	35	-	55	45	Yes	Yes
R6	OPOR – 43 Jackson Crescent	35	-	55	-	Yes	Yes
R7	POW – 45 Jackson Crescent (Northeast Façade)	36	-	55	-	Yes	Yes
R8	OPOR – 45 Jackson Crescent	35	-	55	45	Yes	Yes
R9	POW – 45 Jackson Crescent (Southeast Façade)	36	-	55	45	Yes	Yes
R10	OPOR – 45 Jackson Crescent	35	-	55	-	Yes	Yes
R11	POW – 41 Weeping Willow Lane (Northeast Facade)	36	-	55	45	Yes	Yes
R12	OPOR – 41 Weeping Willow Lane	35	-	55	-	Yes	Yes
R13	POW – 41 Weeping Willow Lane (Northeast Facade)	36	-	55	45	Yes	Yes
R14	OPOR – 41 Weeping Willow Lane	37	-	55	-	Yes	Yes
R15	POW – 41 Weeping Willow Lane (Northwest Facade)	35	-	55	45	Yes	Yes
R16	OPOR – 41 Weeping Willow Lane	37	-	55	-	Yes	Yes
R17	POW – 1 Bethune Way (Northwest Facade)	33	-	55	45	Yes	Yes
R18	OPOR – 1 Bethune Way	33	-	55	-	Yes	Yes
R19	POW – 1131 Teron Road (Northwest Facade)	39	-	55	45	Yes	Yes
R20	OPOR – 1131 Teron Road	34	-	55	-	Yes	Yes
R21	OPOR – 1 Gingras Crescent	38	-	55	-	Yes	Yes
R22	POW - 1 Gingras Crescent (Northwest Facade)	39	-	55	45	Yes	Yes
R23	OPOR – 32 Bethune Way	32	-	55	-	Yes	Yes
R24	POW – 32 Bethune Way (Northwest Facade)	32	-	55	45	Yes	Yes

As Table 9 and 10 summarizes, noise levels from existing stationary sources of noise fall below ENCG criteria at all receptors. Noise contours at 4.5 m above grade for the stationary sources can be seen in Figures 17-19 for daytime and nighttime conditions. With consideration of Gradient Wind's recommendations, the proposed development is expected to be compatible with the existing land uses.

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 52 and 67 dBA during the daytime period (07:00-23:00) and between 44 and 59 dBA during the nighttime period (23:00-07:00). The highest noise level (69 dBA) occurs at the northwest corner of the study site, which is nearest and most exposed to March Road and Teron 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 13.

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[12] will also be required 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 and Climate Change. To help address the need for sound attenuation, this development includes:*
>
> - *STC rated multi-pane glazing elements and spandrel panels*
> - *(9-Storey Building) Northeast, Southwest and west façade bedroom/living room: STC 30/25*
> - *(3-Storey Building) South west façade bedroom/living room: STC 30/25*

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

- *STC rated exterior walls*
    - *(9-Storey Building) Northeast, Southwest and west façade: STC 45*
    - *(3-Storey Building) South west 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 and Climate Change.

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

Noise levels at the 4th, 6th, 9th Floor terraces, as well as the rooftop terrace (Receptor 3-6, respectively) are expected to approach exceed 55 dBA during the daytime period. If these areas are to be used as outdoor living areas, noise control measures are required to reduce the L_{eq} to 55 dBA. Further analysis investigated the noise mitigating impact of raising the perimeter guards surrounding these terraces (see Figure 14). Results of the investigation proved that noise levels can be feasibly reduced close to 55 dBA, while higher perimeter guards would be required to achieve 55 dBA. Perimeter guards/noise screens greater than 1.5 m in height are not recommended, as these may compromise terrace views and are not architecturally compatible with the space.

The results of the stationary noise study indicate that noise levels from surrounding existing stationary noise sources are expected to fall below the ENCG noise criteria around the noise sensitive buildings. As such, the proposed development is expected to be compatible with the surrounding commercial areas. At the time of the study, mechanical equipment for the proposed building was yet to be determined. A review of the HVAC equipment will need to be competed by qualified acoustical engineer prior to instillation of the equipment. Predictor-Lima modelling data is available upon request.

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.

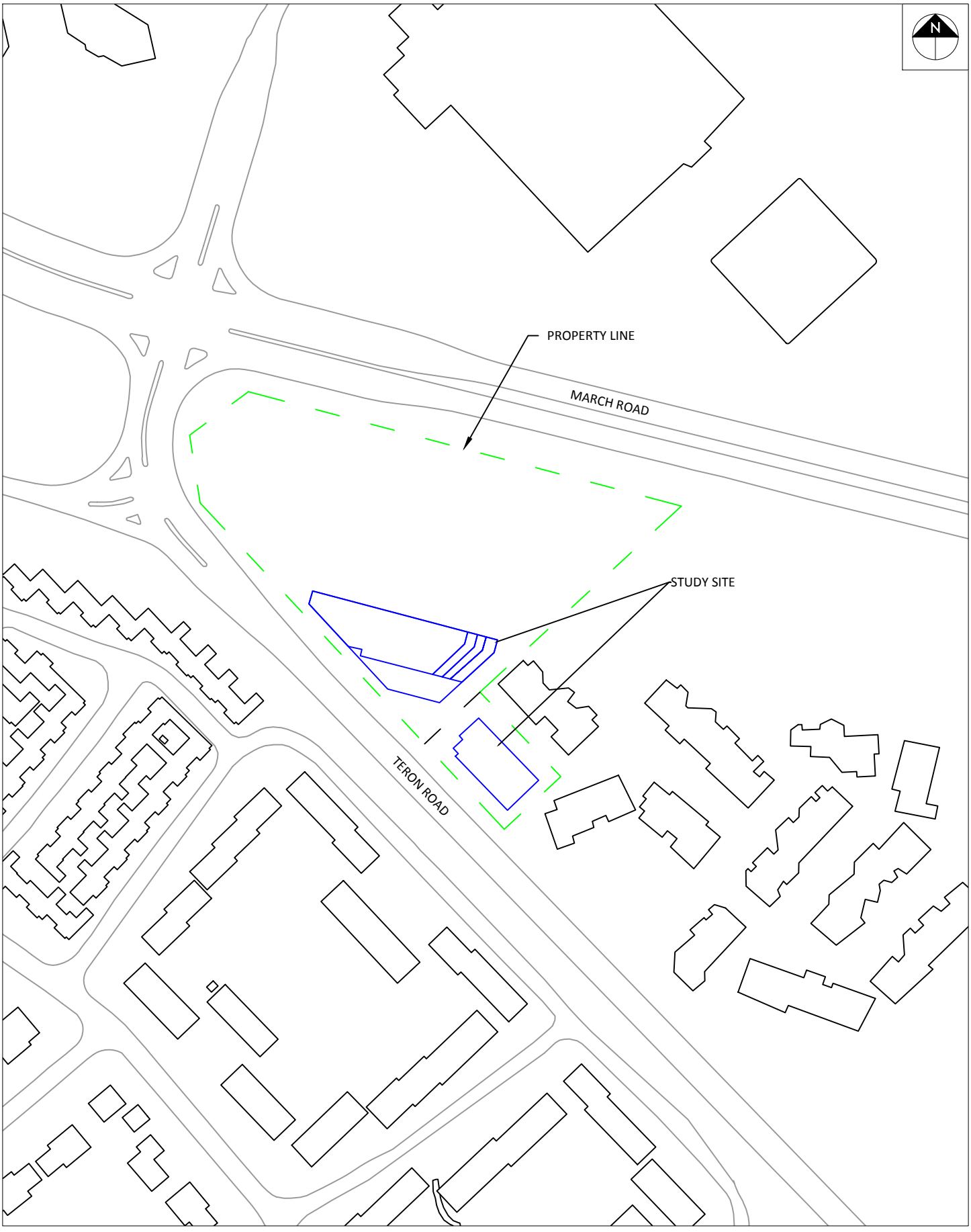
P.P.

Cindy Hachem
Junior Environmental Scientist

LICENSED PROFESSIONAL ENGINEER
J. R. FOSTER
100155655
AUG 20, 2019
PROVINCE OF ONTARIO

Joshua Foster, P.Eng.
Principal

Gradient Wind File #19-111 – Environmental Noise



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SCALE	1:2000 (APPROX.)
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DATE	AUG 02, 2019
DRAWN BY	C.H.

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT

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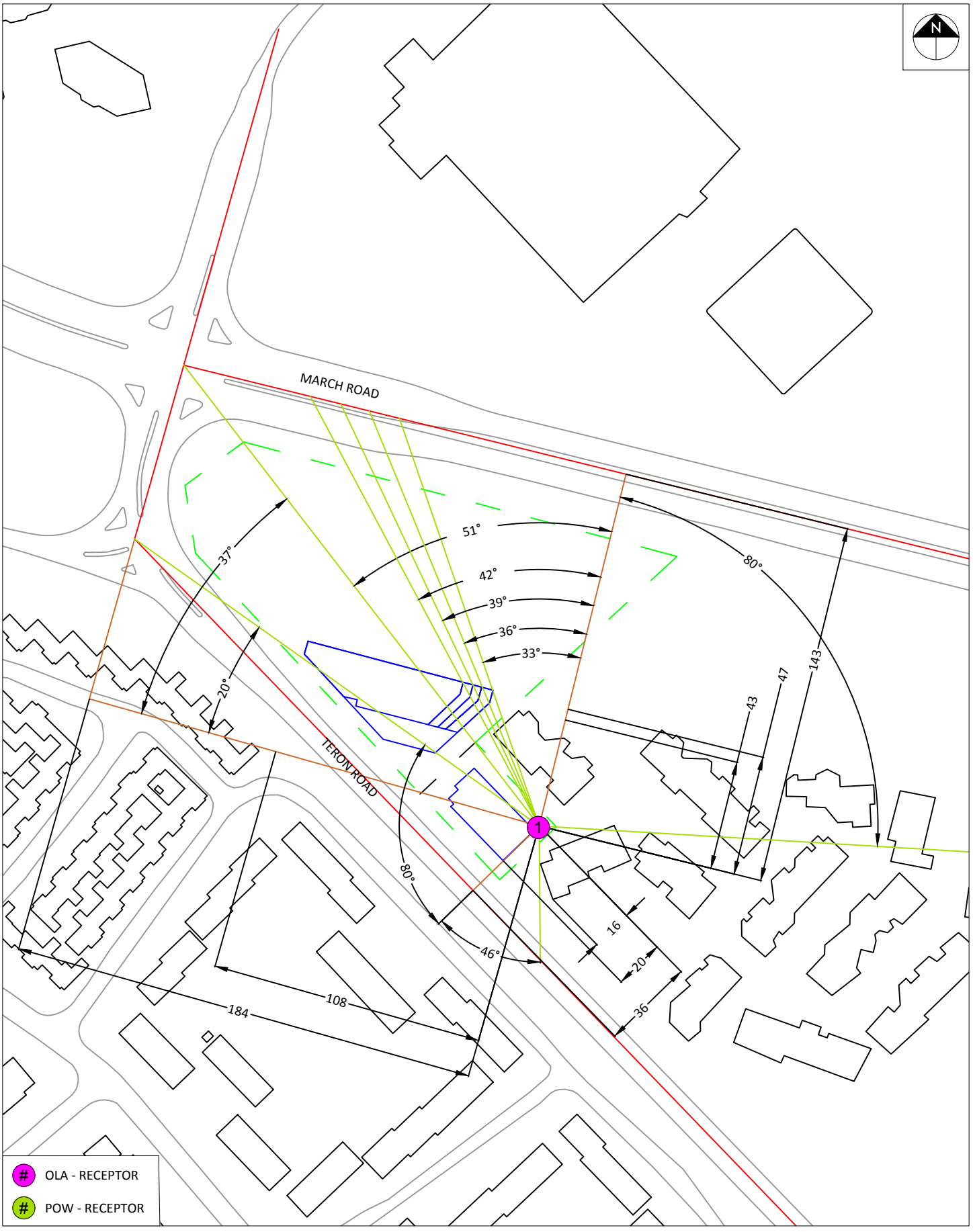
DESCRIPTION

FIGURE 2:
RECEPTOR LOCATIONS



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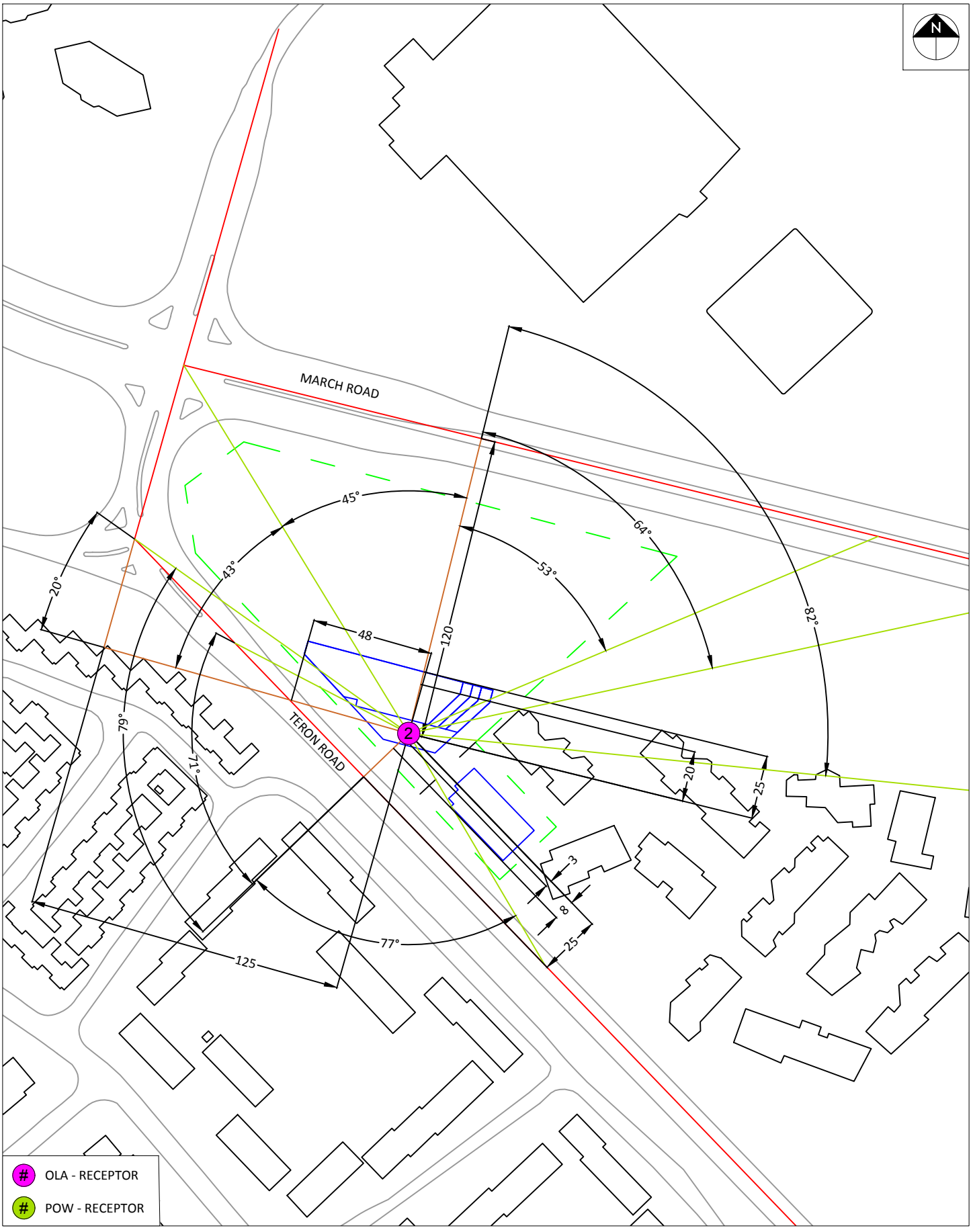
DRAWING NO.	GWE19-111-3
DATE	AUG 02, 2019
DRAWN BY	C.H.

DESCRIPTION

FIGURE 3:
RECEPTOR 1 - STAMSON INPUT PARAMETERS



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DRAWING NO.	GWE19-111-4
DATE	AUG 02, 2019
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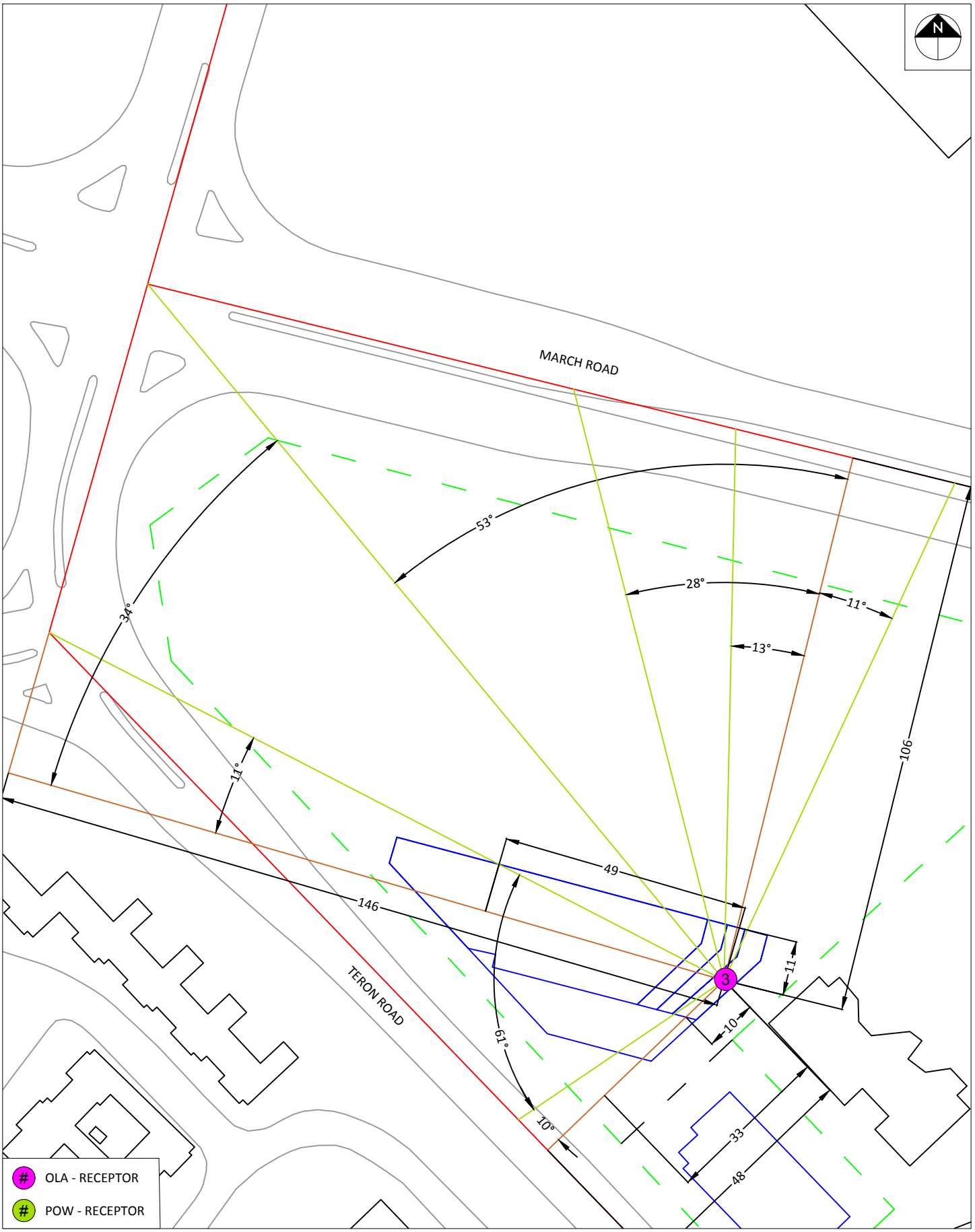
DESCRIPTION

FIGURE 4:
RECEPTOR 2 - STAMSON INPUT PARAMETERS



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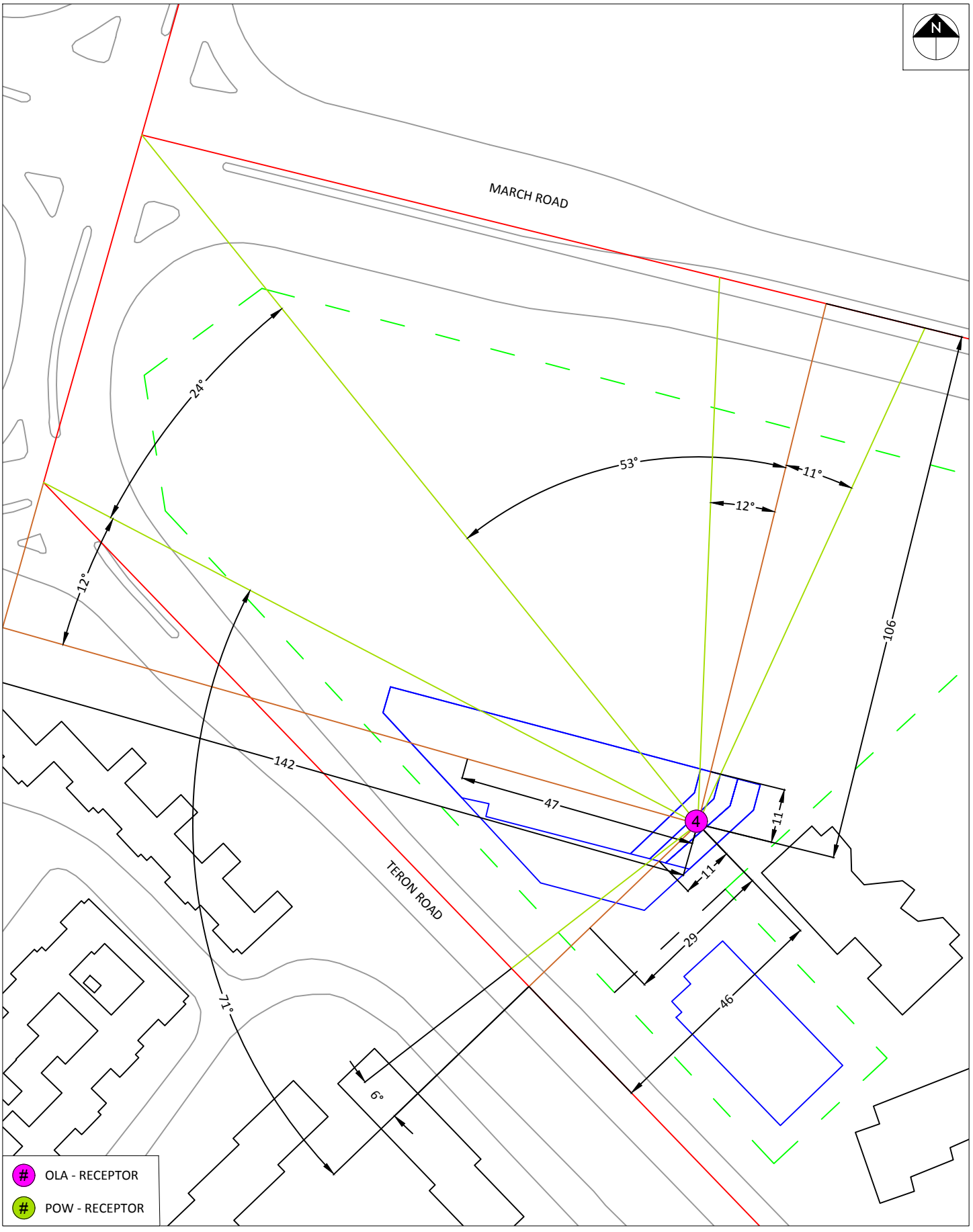
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE19-111-5
DATE	AUG 02, 2019
DRAWN BY	C.H.

DESCRIPTION

FIGURE 5:
RECEPTOR 3 - STAMSON INPUT PARAMETERS



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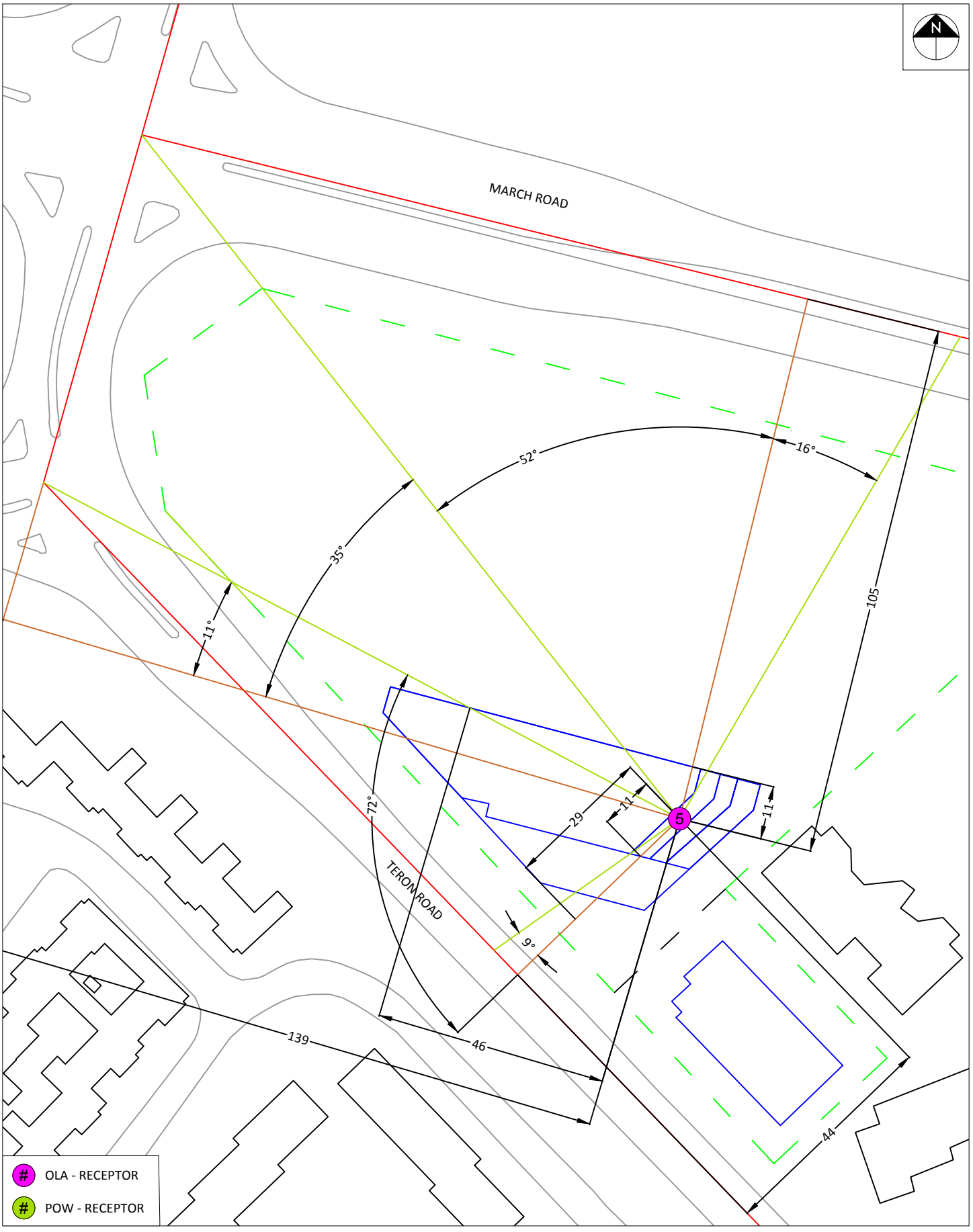
SCALE	1:1000 (APPROX.)	DRAWING NO.	GWE19-111-6
DATE	AUG 02, 2019	DRAWN BY	C.H.

DESCRIPTION

FIGURE 6:
RECEPTOR 4 - STAMSON INPUT PARAMETERS



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SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE19-111-7
DATE	AUG 02, 2019
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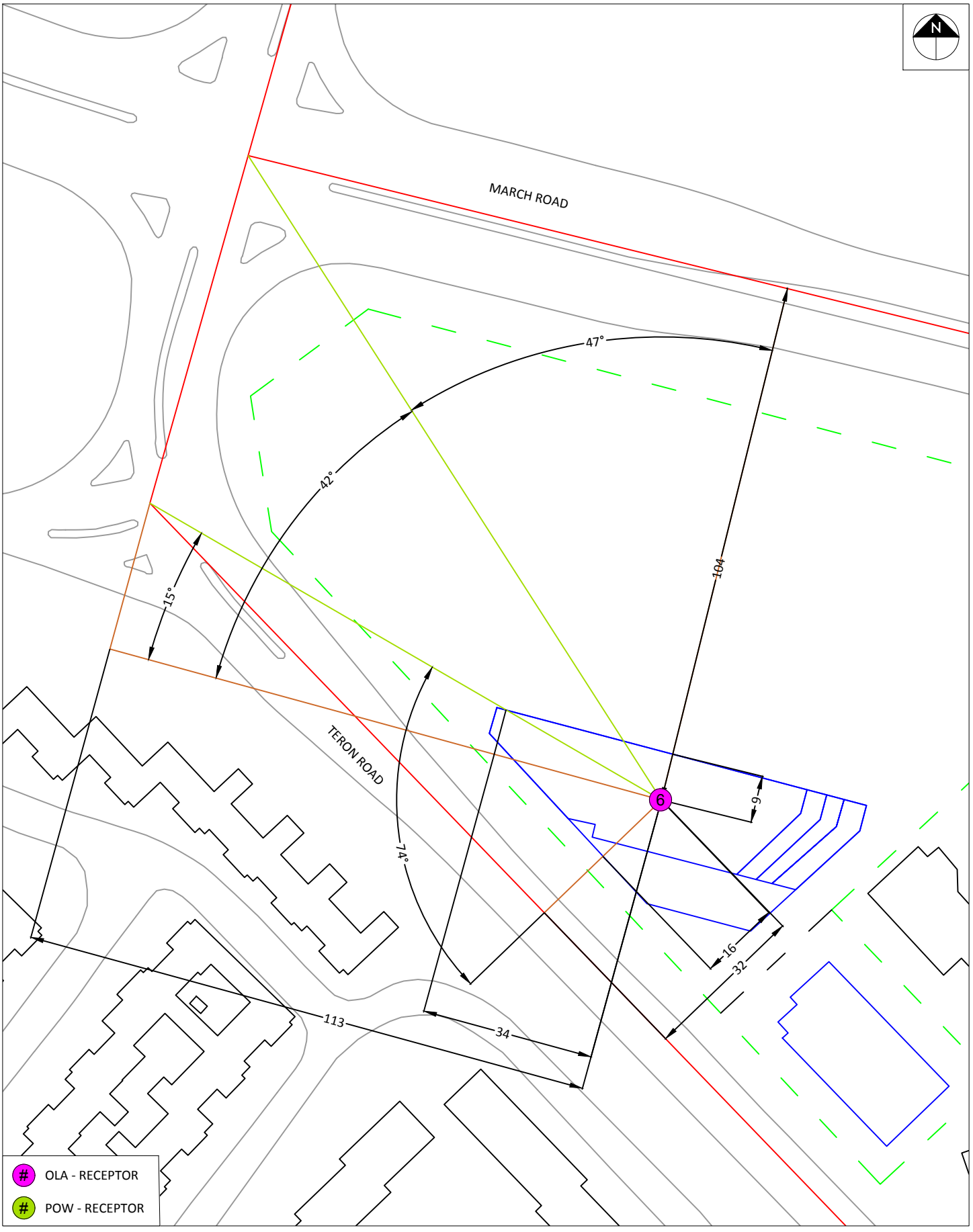
DESCRIPTION

FIGURE 7:
RECEPTOR 5 - STAMSON INPUT PARAMETERS



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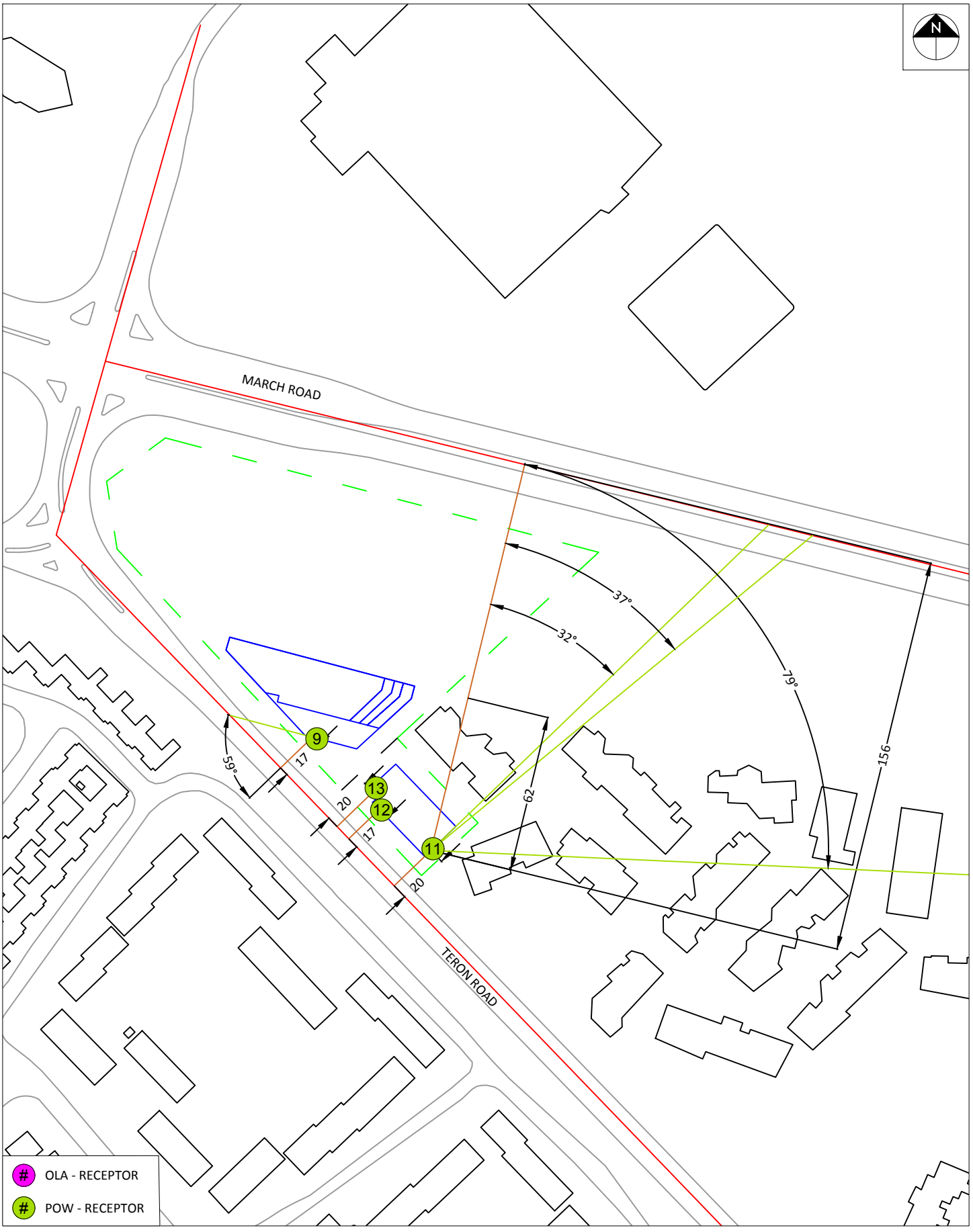
SCALE	1:1000 (APPROX.)	DRAWING NO.	GWE19-111-8
DATE	AUG 02, 2019	DRAWN BY	C.H.

DESCRIPTION

FIGURE 8:
RECEPTOR 6 - STAMSON INPUT PARAMETERS



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SCALE	1:2000 (APPROX.)
DRAWING NO.	GWE19-111-9
DATE	AUG 02, 2019
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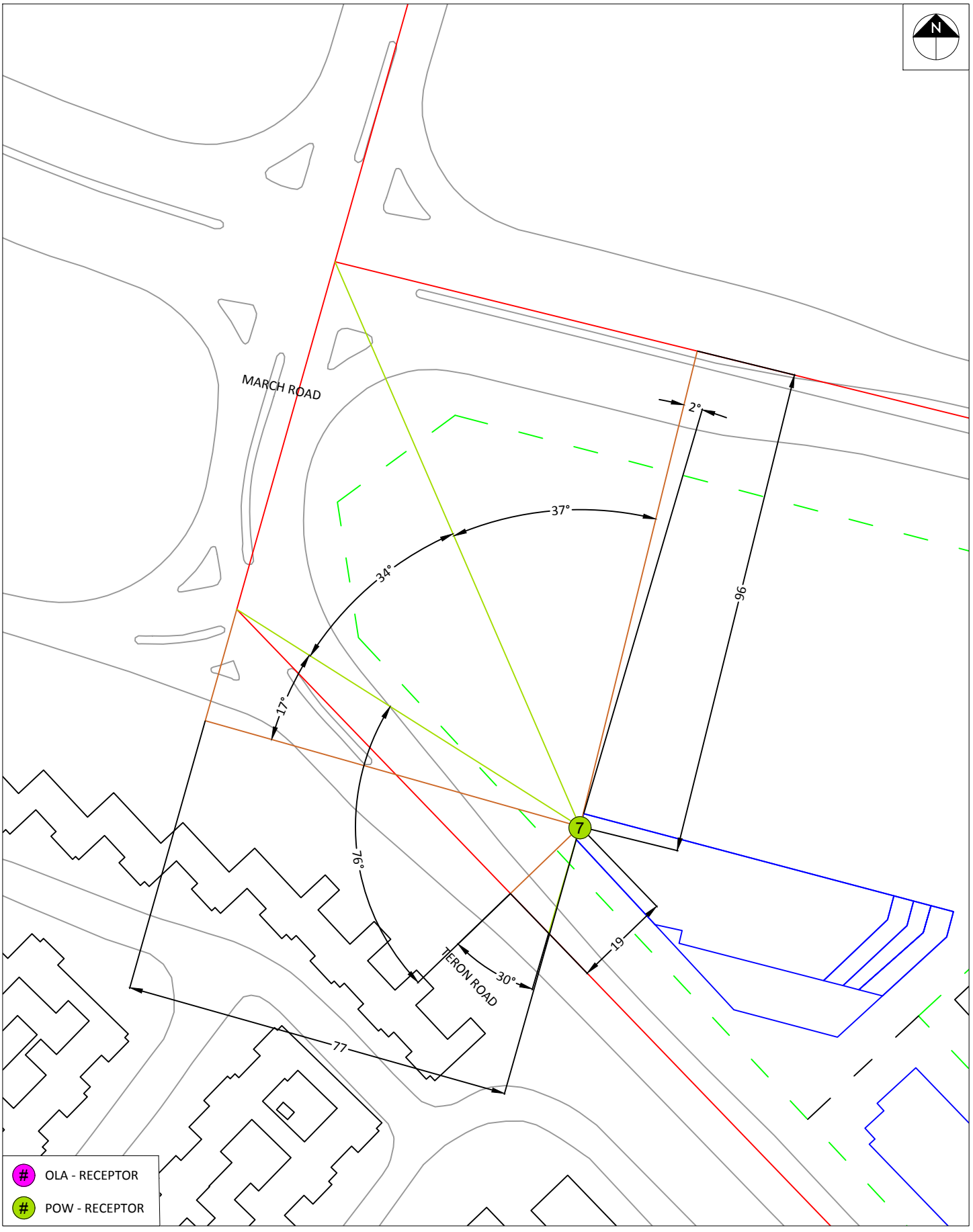
DESCRIPTION

FIGURE 9:
RECEPTOR 9, 11-13 - STAMSON INPUT PARAMETERS



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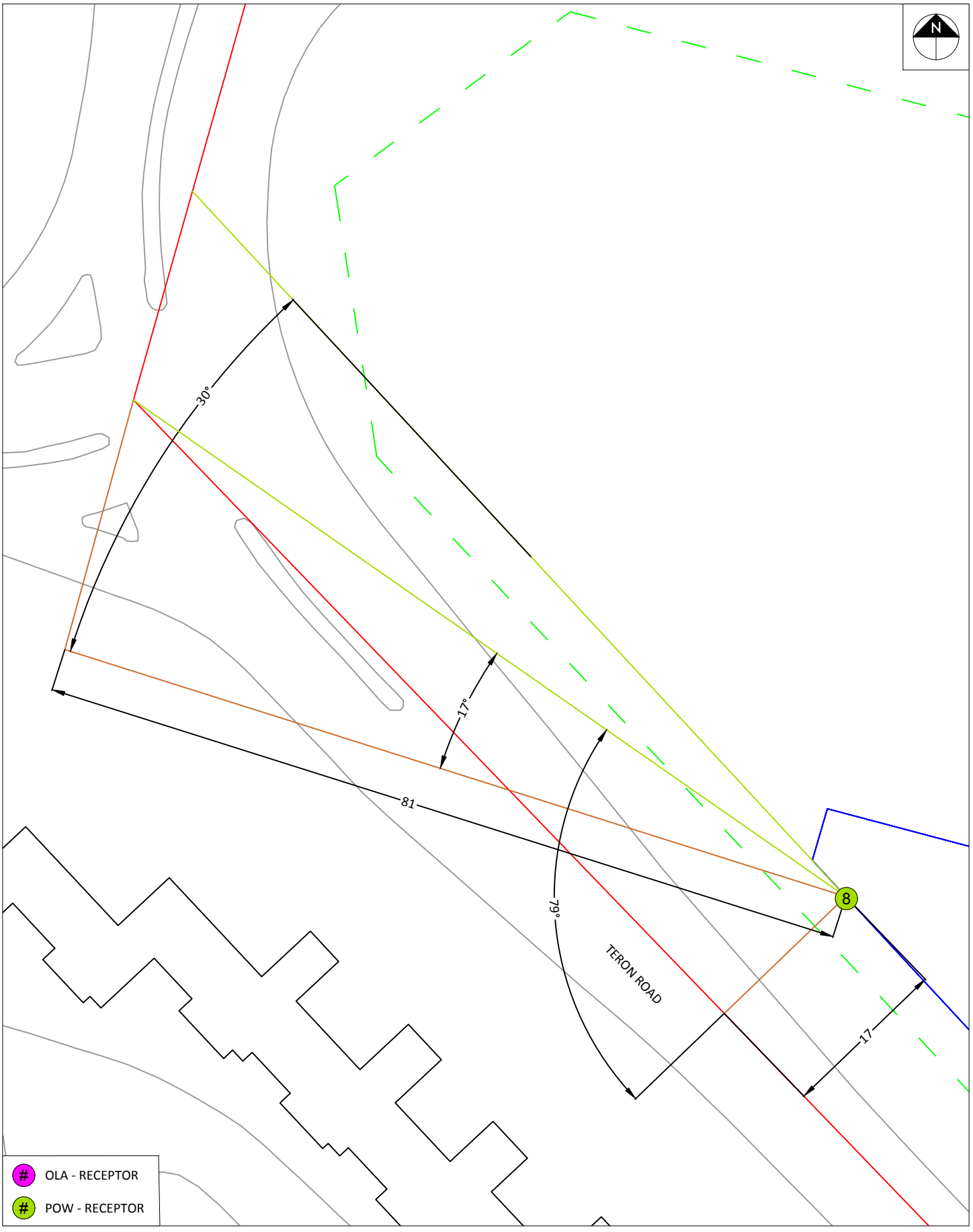
DATE	AUG 02, 2019
DRAWN BY	C.H.

DESCRIPTION

FIGURE 10:
RECEPTOR 7 - STAMSON INPUT PARAMETERS



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SCALE	1:500 (APPROX.)
DRAWING NO.	GWE19-111-11
DATE	AUG 02, 2019
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DESCRIPTION

FIGURE 11:
RECEPTOR 8 - STAMSON INPUT PARAMETERS

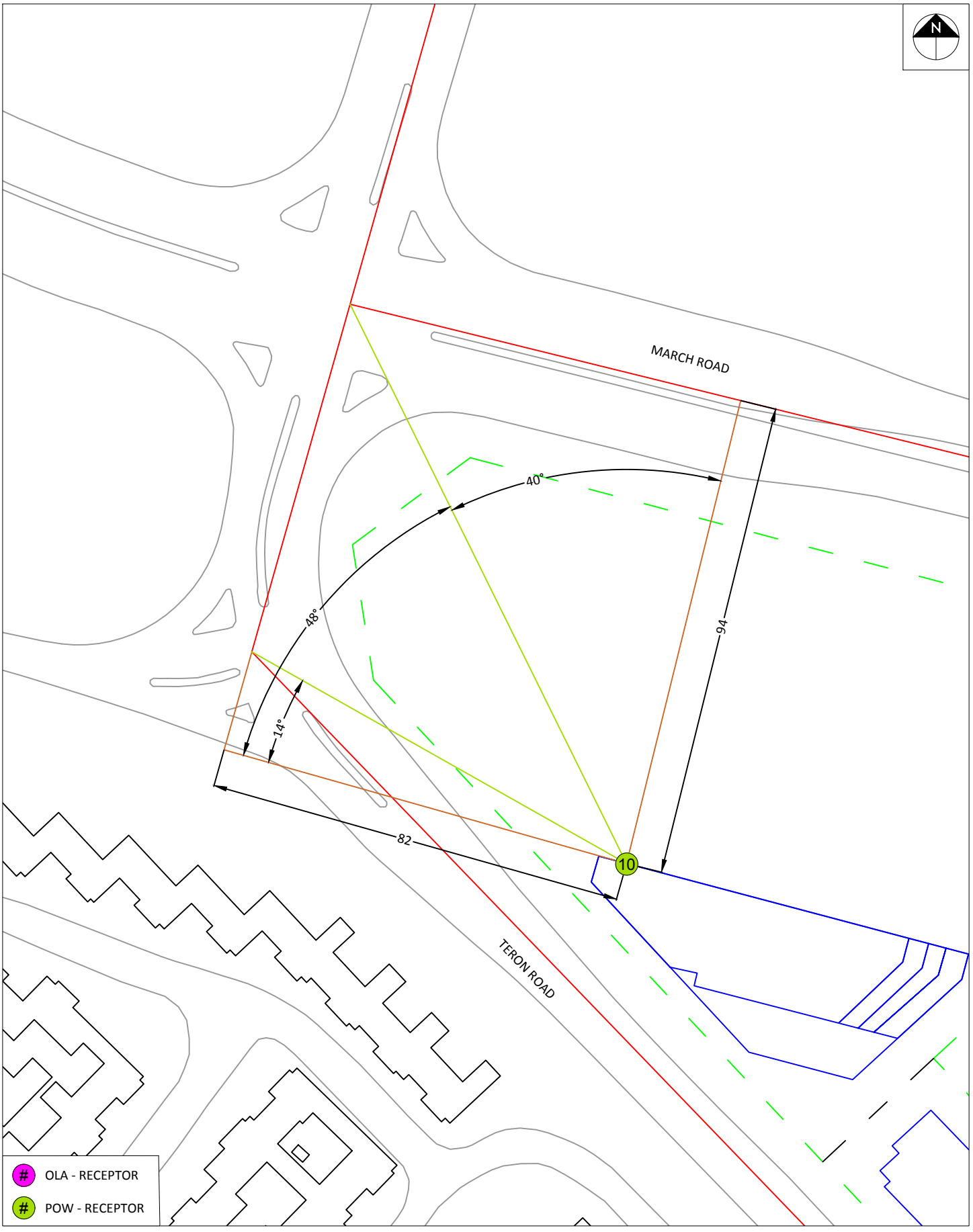

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FIGURE 12:
RECEPTOR 10 - STAMSON INPUT PARAMETERS

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SCALE	1:500 (APPROX.)
DRAWING NO.	GWE19-111-13
DATE	AUG 02, 2019
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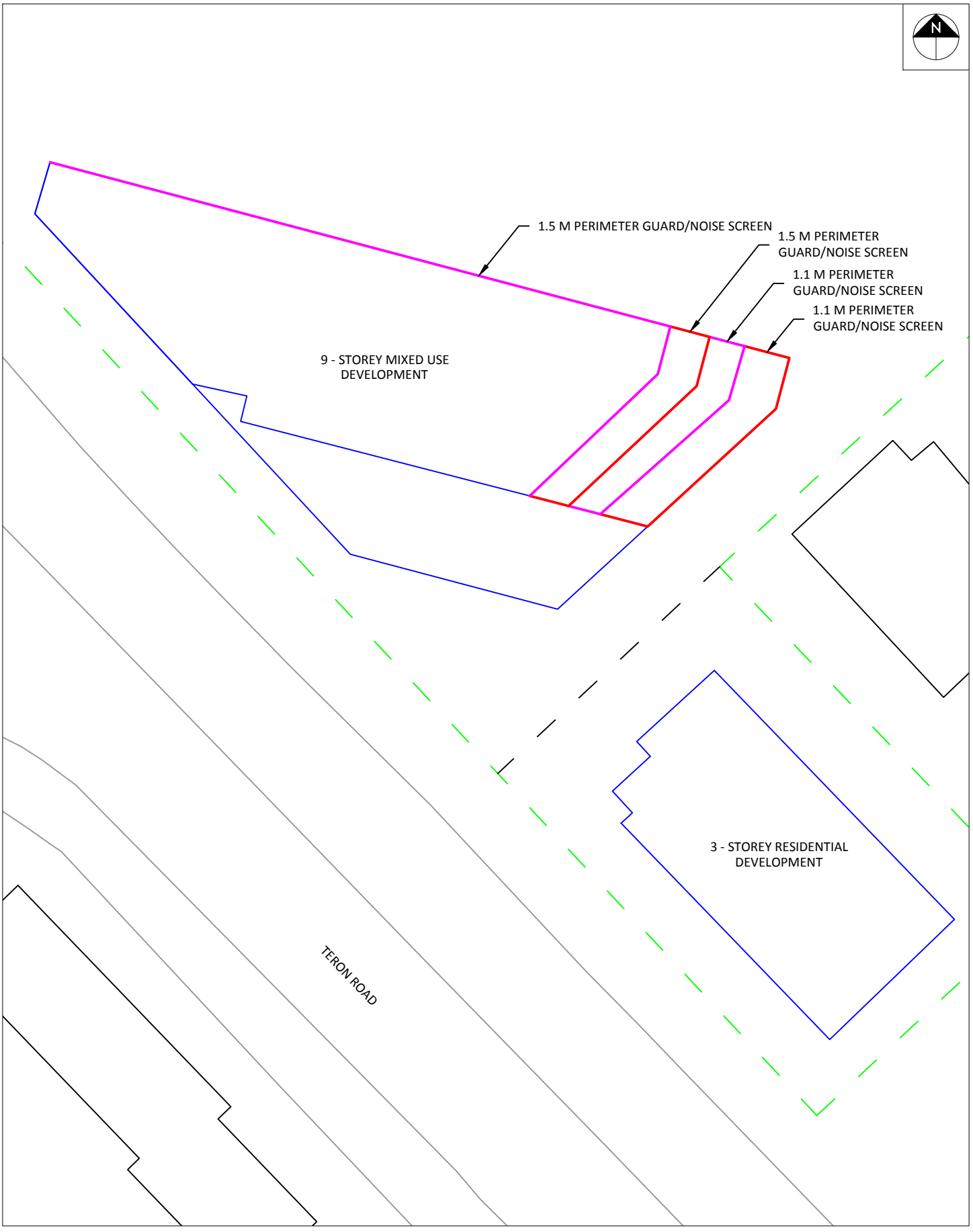
DESCRIPTION

FIGURE 13:
STC WINDOW REQUIREMENTS



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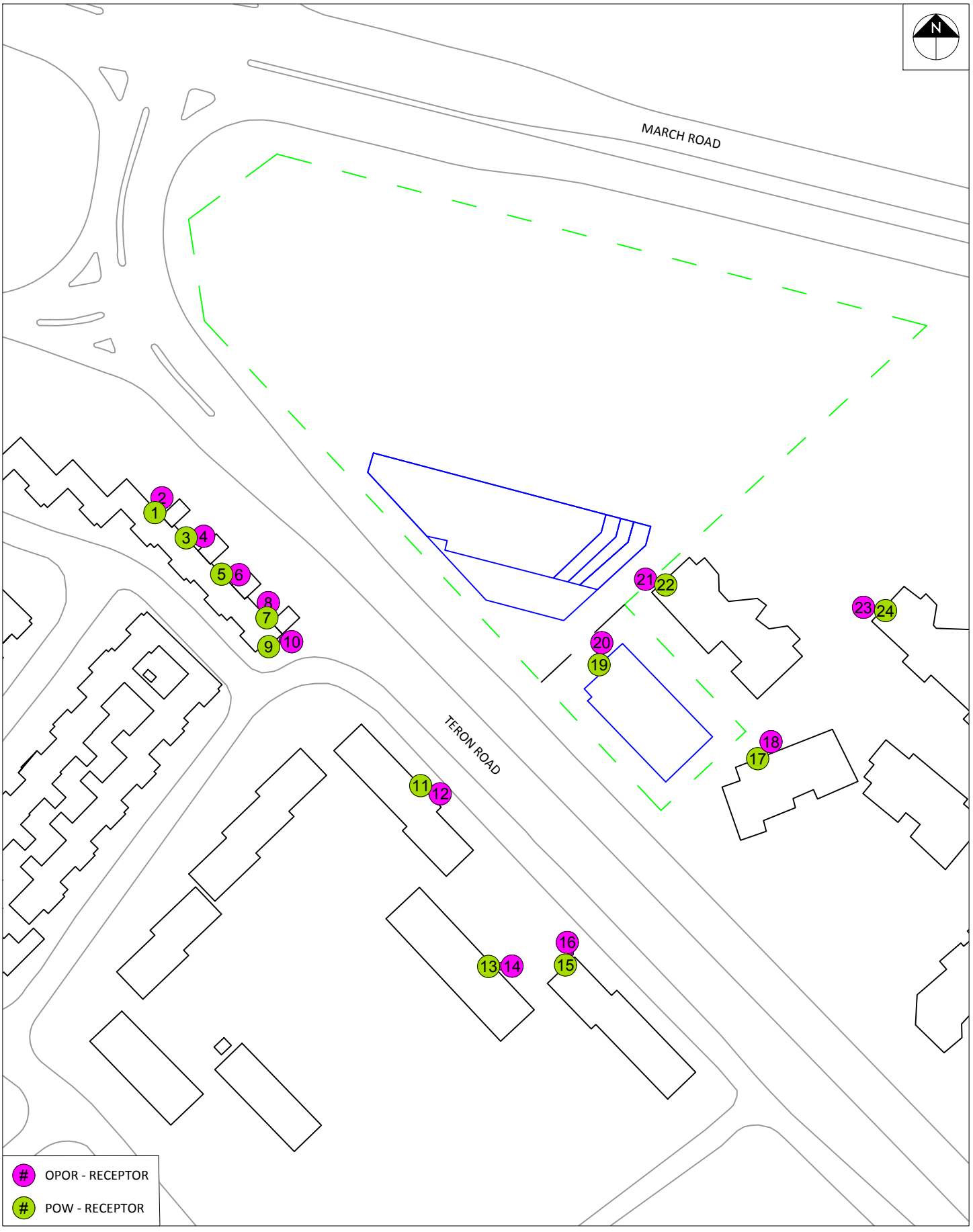
SCALE	1:500 (APPROX.)	DRAWING NO.	GWE19-111-14
DATE	AUG 02, 2019	DRAWN BY	C.H.

DESCRIPTION

FIGURE 14:
PERIMETER GUARD/NOISE SCREEN
RECOMMENDATIONS



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SCALE	3:4000 (APPROX.)
DRAWING NO.	GWE19-111-15
DATE	AUG 02, 2019
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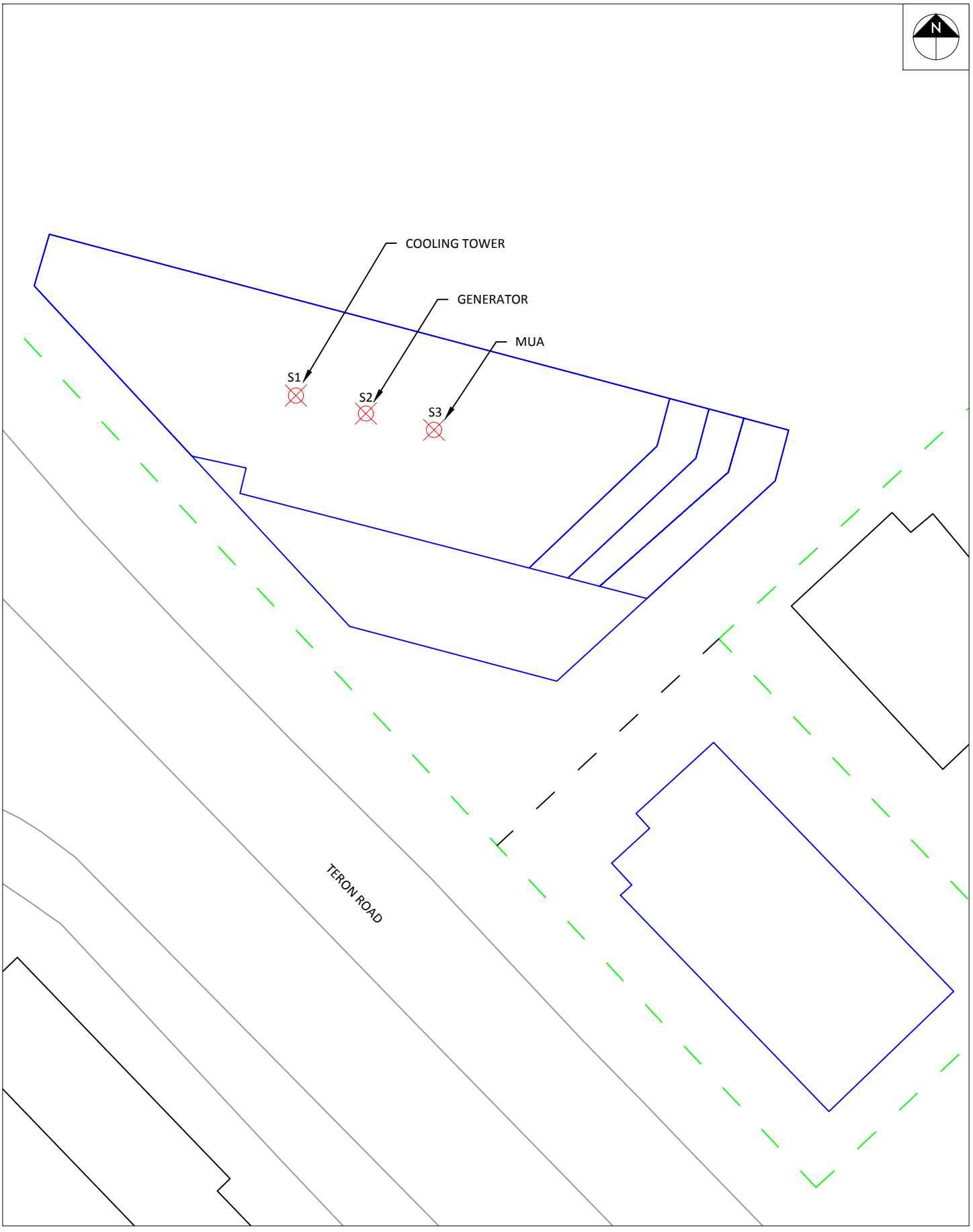
DESCRIPTION

FIGURE 15:
STATIONARY NOISE RECEPTOR LOCATIONS



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PROJECT	1131 - 1151 TERON ROAD - ENVIRONMENTAL NOISE STUDY		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO.	GWE19-111-16
DATE	AUG 02, 2019	DRAWN BY	C.H.

FIGURE 16:
STATIONARY NOISE SOURCE LOCATIONS

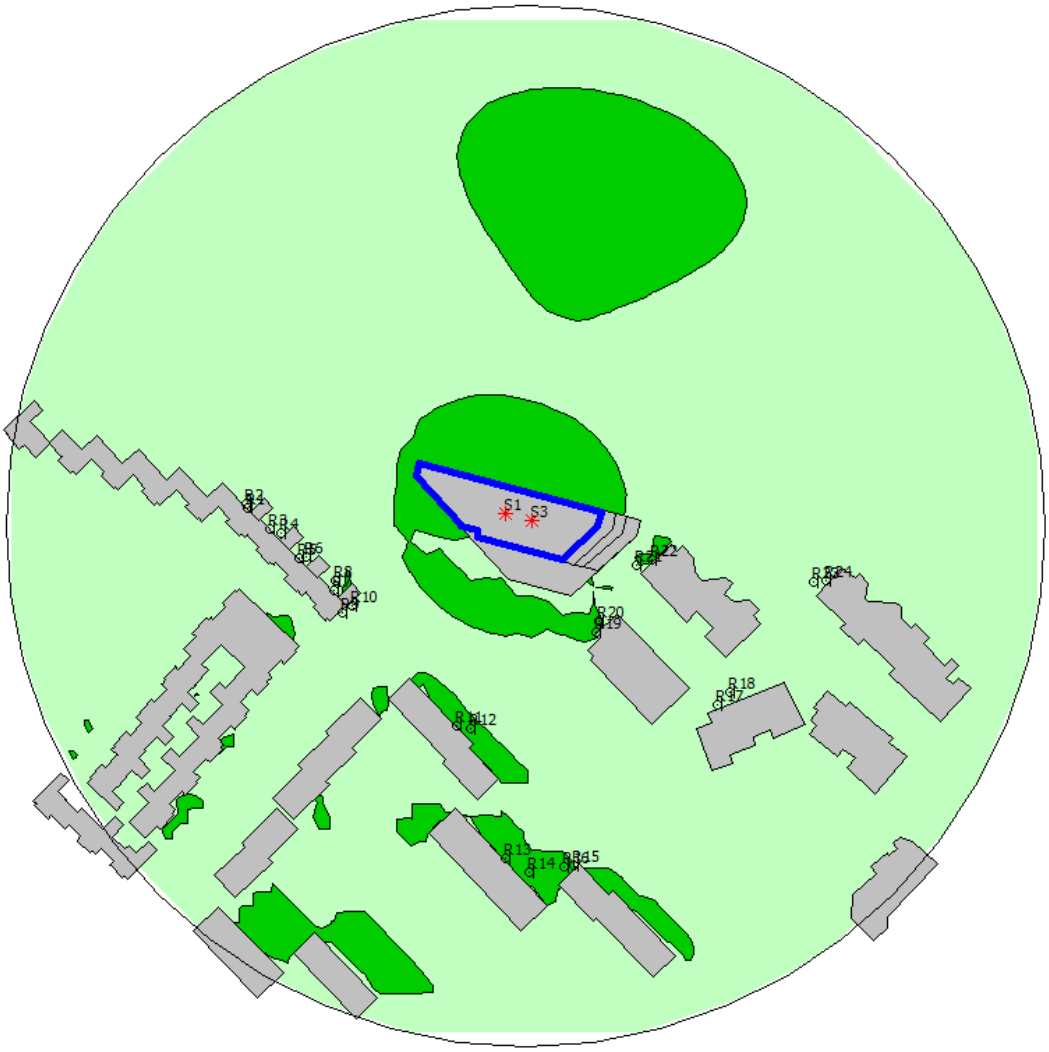

FIGURE 17: HVAC NOISE CONTOURS FOR THE SITE AT 4.5 M (DAYTIME PERIOD)

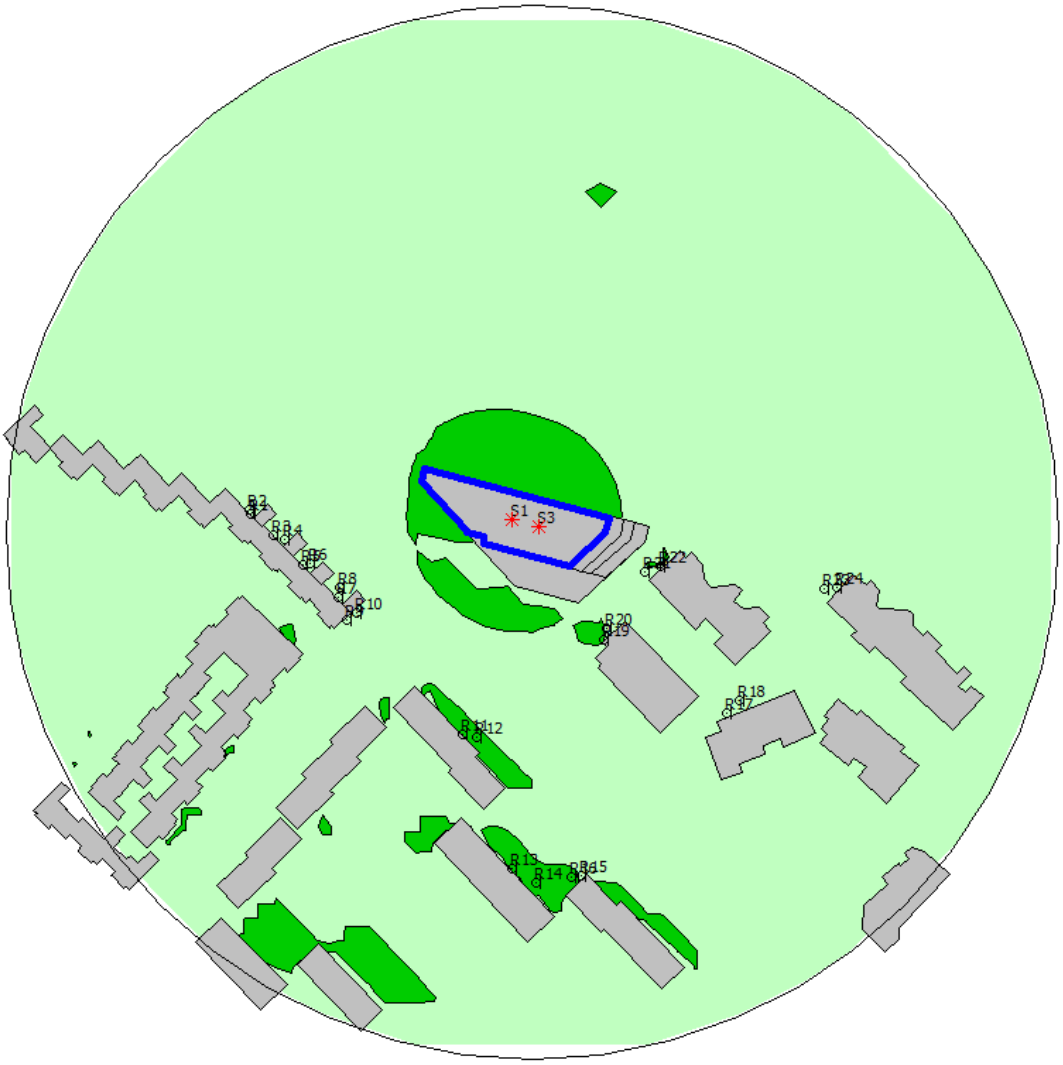

FIGURE 18: HVAC NOISE CONTOURS FOR THE SITE AT 4.5 M (NIGHTTIME PERIOD)

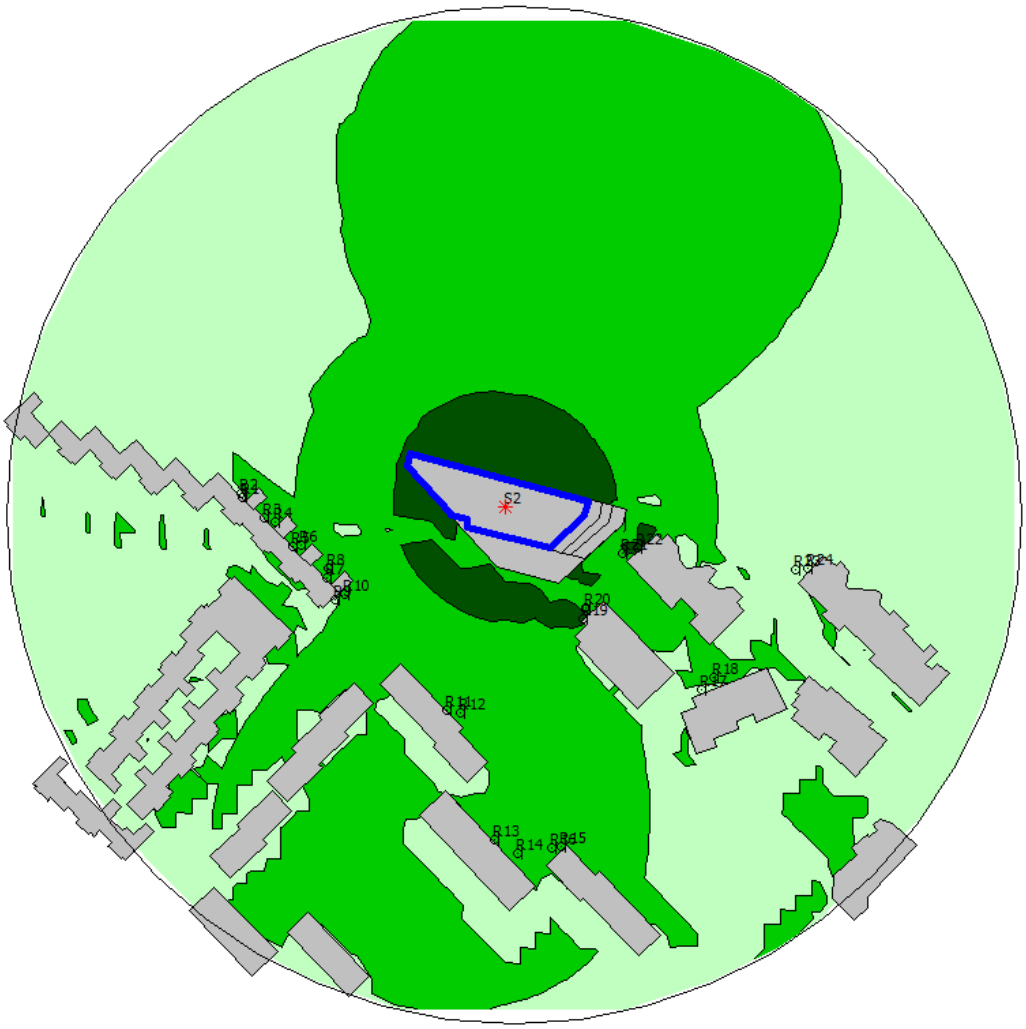

FIGURE 19: GENERATOR NOISE CONTOURS FOR THE SITE AT 4.5 M (DAYTIME PERIOD)

APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
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```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 15:51:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (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  :  36.00 / 36.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -46.00 deg
Barrier height            :   8.00 m
Barrier receiver distance :  16.00 / 16.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
```

```
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :   0.00 deg   80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 80.00 deg
Barrier height            :  11.00 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Teron 3 (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: Teron 3 (day/night)
-----------------------------------------
Angle1   Angle2           :  20.00 deg   37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 184.00 / 184.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  20.00 deg   Angle2 : 37.00 deg
Barrier height            :  27.00 m
Barrier receiver distance : 108.00 / 108.00 m
Source elevation          :   0.00 m
```

```
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: March 1 (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  :    80 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 # 4: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -51.00 deg   -42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -51.00 deg   Angle2 : -42.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  47.00 / 47.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: March 2 (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  :    80 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 # 5: March 2 (day/night)
-----------------------------------------
Angle1   Angle2           : -33.00 deg   80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -33.00 deg   Angle2 : 80.00 deg
Barrier height            :   8.00 m
Barrier receiver distance :  43.00 / 43.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: March 3 (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  :    80 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 # 6: March 3 (day/night)
-----------------------------------------
Angle1   Angle2           : -36.00 deg   -33.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -36.00 deg   Angle2 : -33.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  47.00 / 47.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: March 4 (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  :    80 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 # 7: March 4 (day/night)
-----------------------------------------
Angle1   Angle2           : -39.00 deg   -36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -39.00 deg   Angle2 : -36.00 deg
Barrier height            :  18.00 m
Barrier receiver distance :  47.00 / 47.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: March 5 (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  :    80 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 # 8: March 5 (day/night)
-----------------------------------------
Angle1   Angle2           : -42.00 deg   -39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -42.00 deg   Angle2 : -39.00 deg
Barrier height            :  24.00 m
Barrier receiver distance :  47.00 / 47.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Teron 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 41.81 + 54.95) = 55.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -46   0.18  67.51   0.00  -4.49  -7.07   0.00   0.00 -14.14  41.81
-------------------------------------------------------------------------------
   -46      0   0.66  67.51   0.00  -6.31  -6.25   0.00   0.00   0.00  54.95
-------------------------------------------------------------------------------

Segment Leq : 55.16 dBA

Results segment # 2: Teron 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 40.43 + 0.00) = 40.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
```

```
     0     80   0.00  67.51   0.00  -3.80  -3.52   0.00   0.00 -19.76  40.43
-------------------------------------------------------------------------------

Segment Leq : 40.43 dBA

Results segment # 3: Teron 3 (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 + 27.34 + 0.00) = 27.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    20     37   0.00  68.48   0.00 -10.89 -10.25   0.00   0.00 -20.00  27.34
-------------------------------------------------------------------------------

Segment Leq : 27.34 dBA

Results segment # 4: March 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 33.36 + 0.00) = 33.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -51    -42   0.00  76.17   0.00  -9.79 -13.01   0.00   0.00 -20.00  33.36
-------------------------------------------------------------------------------

Segment Leq : 33.36 dBA

Results segment # 5: March 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 48.00 + 0.00) = 48.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -33     80   0.18  76.17   0.00 -11.56  -2.26   0.00   0.00 -14.35  48.00
-------------------------------------------------------------------------------

Segment Leq : 48.00 dBA

Results segment # 6: March 3 (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 + 29.42 + 0.00) = 29.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36    -33   0.00  76.17   0.00  -9.79 -17.78   0.00   0.00 -19.17  29.42
-------------------------------------------------------------------------------

Segment Leq : 29.42 dBA

Results segment # 7: March 4 (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 + 28.59 + 0.00) = 28.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -39    -36   0.00  76.17   0.00  -9.79 -17.78   0.00   0.00 -20.00  28.59
-------------------------------------------------------------------------------

Segment Leq : 28.59 dBA

Results segment # 8: March 5 (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 + 28.59 + 0.00) = 28.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -42    -39   0.00  76.17   0.00  -9.79 -17.78   0.00   0.00 -20.00  28.59
-------------------------------------------------------------------------------

Segment Leq : 28.59 dBA

Total Leq All Segments: 56.10 dBA

Results segment # 1: Teron 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 34.21 + 47.36) = 47.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -46   0.18  59.91   0.00  -4.49  -7.07   0.00   0.00 -14.14  34.21
-------------------------------------------------------------------------------
   -46      0   0.66  59.91   0.00  -6.31  -6.25   0.00   0.00   0.00  47.36
-------------------------------------------------------------------------------

Segment Leq : 47.56 dBA

Results segment # 2: Teron 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 32.83 + 0.00) = 32.83 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     80   0.00  59.91   0.00  -3.80  -3.52   0.00   0.00 -19.76  32.83
-------------------------------------------------------------------------------

Segment Leq : 32.83 dBA

Results segment # 3: Teron 3 (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 + 19.75 + 0.00) = 19.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    20     37   0.00  60.88   0.00 -10.89 -10.25   0.00   0.00 -20.00  19.75
-------------------------------------------------------------------------------

Segment Leq : 19.75 dBA

Results segment # 4: March 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 25.77 + 0.00) = 25.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -51    -42   0.00  68.57   0.00  -9.79 -13.01   0.00   0.00 -20.00  25.77
-------------------------------------------------------------------------------

Segment Leq : 25.77 dBA

Results segment # 5: March 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 40.40 + 0.00) = 40.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -33     80   0.18  68.57   0.00 -11.56  -2.26   0.00   0.00 -14.35  40.40
-------------------------------------------------------------------------------

Segment Leq : 40.40 dBA

Results segment # 6: March 3 (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 + 21.82 + 0.00) = 21.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36    -33   0.00  68.57   0.00  -9.79 -17.78   0.00   0.00 -19.17  21.82
-------------------------------------------------------------------------------

Segment Leq : 21.82 dBA

Results segment # 7: March 4 (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 + 21.00 + 0.00) = 21.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -39    -36   0.00  68.57   0.00  -9.79 -17.78   0.00   0.00 -20.00  21.00
-------------------------------------------------------------------------------

Segment Leq : 21.00 dBA

Results segment # 8: March 5 (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 + 21.00 + 0.00) = 21.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -42    -39   0.00  68.57   0.00  -9.79 -17.78   0.00   0.00 -20.00  21.00
-------------------------------------------------------------------------------

Segment Leq : 21.00 dBA

Total Leq All Segments: 48.50 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.10
                           (NIGHT): 48.50
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 15:59:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1a.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -46.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -46.00 deg
Barrier height            :   8.00 m
Barrier receiver distance :  16.00 / 16.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
```

```
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2            :   0.00 deg   80.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      1       (Absorptive ground surface)
Receiver source distance   :  36.00 / 36.00  m
Receiver height            :   1.50 / 1.50   m
Topography                 :      2       (Flat/gentle slope; with barrier)
Barrier angle1             :   0.00 deg   Angle2 : 80.00 deg
Barrier height             :  11.00 m
Barrier receiver distance  :  20.00 / 20.00  m
Source elevation           :   0.00 m
Receiver elevation         :   0.00 m
Barrier elevation          :   0.00 m
Reference angle            :   0.00

Road data, segment # 3: Teron 3 (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: Teron 3 (day/night)
-----------------------------------------
Angle1   Angle2            :  20.00 deg   37.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      2       (Reflective ground surface)
Receiver source distance   : 184.00 / 184.00 m
Receiver height            :   1.50 / 1.50   m
Topography                 :      2       (Flat/gentle slope; with barrier)
Barrier angle1             :  20.00 deg   Angle2 : 37.00 deg
Barrier height             :  27.00 m
Barrier receiver distance  : 108.00 / 108.00 m
Source elevation           :   0.00 m
```

```
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: March 1 (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  :    80 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 # 4: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -51.00 deg   -42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -51.00 deg   Angle2 : -42.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  47.00 / 47.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: March 2 (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  :    80 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 # 5: March 2 (day/night)
-----------------------------------------
Angle1   Angle2           : -33.00 deg   80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -33.00 deg   Angle2 : 80.00 deg
Barrier height            :   8.00 m
Barrier receiver distance :  43.00 / 43.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: March 3 (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  :    80 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 # 6: March 3 (day/night)
-----------------------------------------
Angle1   Angle2           : -36.00 deg   -33.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -36.00 deg   Angle2 : -33.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  47.00 / 47.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: March 4 (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  :    80 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 # 7: March 4 (day/night)
-----------------------------------------
Angle1   Angle2           : -39.00 deg   -36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -39.00 deg   Angle2 : -36.00 deg
Barrier height            :  18.00 m
Barrier receiver distance :  47.00 / 47.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: March 5 (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  :    80 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 # 8: March 5 (day/night)
-----------------------------------------
Angle1   Angle2           : -42.00 deg   -39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -42.00 deg   Angle2 : -39.00 deg
Barrier height            :  24.00 m
Barrier receiver distance :  47.00 / 47.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 9: Teron 4 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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 # 9: Teron 4 (day/night)
-----------------------------------------
Angle1   Angle2           : -46.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -46.00 deg   Angle2 : 0.00 deg
Barrier height            :   2.20 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Teron 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 41.81 + 0.00) = 41.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -46   0.18  67.51   0.00  -4.49  -7.07   0.00   0.00 -14.14  41.81
-------------------------------------------------------------------------------

Segment Leq : 41.81 dBA

Results segment # 2: Teron 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 40.43 + 0.00) = 40.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     80   0.00  67.51   0.00  -3.80  -3.52   0.00   0.00 -19.76  40.43
-------------------------------------------------------------------------------

Segment Leq : 40.43 dBA

Results segment # 3: Teron 3 (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 + 27.34 + 0.00) = 27.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    20     37   0.00  68.48   0.00 -10.89 -10.25   0.00   0.00 -20.00  27.34
```

```
--------------------------------------------------------------------------------

Segment Leq : 27.34 dBA

Results segment # 4: March 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 33.36 + 0.00) = 33.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -51    -42   0.00  76.17   0.00  -9.79 -13.01   0.00   0.00 -20.00  33.36
--------------------------------------------------------------------------------

Segment Leq : 33.36 dBA

Results segment # 5: March 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 48.00 + 0.00) = 48.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -33     80   0.18  76.17   0.00 -11.56  -2.26   0.00   0.00 -14.35  48.00
--------------------------------------------------------------------------------

Segment Leq : 48.00 dBA

Results segment # 6: March 3 (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 + 29.42 + 0.00) = 29.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36    -33   0.00  76.17   0.00  -9.79 -17.78   0.00   0.00 -19.17  29.42
-------------------------------------------------------------------------------

Segment Leq : 29.42 dBA

Results segment # 7: March 4 (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 + 28.59 + 0.00) = 28.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -39    -36   0.00  76.17   0.00  -9.79 -17.78   0.00   0.00 -20.00  28.59
-------------------------------------------------------------------------------

Segment Leq : 28.59 dBA

Results segment # 8: March 5 (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 + 28.59 + 0.00) = 28.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -42    -39   0.00  76.17   0.00  -9.79 -17.78   0.00   0.00 -20.00  28.59
-------------------------------------------------------------------------------

Segment Leq : 28.59 dBA

Results segment # 9: Teron 4 (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 + 47.36 + 0.00) = 47.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -46      0   0.53  67.51   0.00  -5.81  -6.18   0.00   0.00  -8.16  47.36
-------------------------------------------------------------------------------

Segment Leq : 47.36 dBA

Total Leq All Segments: 51.73 dBA

Results segment # 1: Teron 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 34.21 + 0.00) = 34.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -46   0.18  59.91   0.00  -4.49  -7.07   0.00   0.00 -14.14  34.21
-------------------------------------------------------------------------------

Segment Leq : 34.21 dBA

Results segment # 2: Teron 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 32.83 + 0.00) = 32.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     80   0.00  59.91   0.00  -3.80  -3.52   0.00   0.00 -19.76  32.83
```

```
--------------------------------------------------------------------------------

Segment Leq : 32.83 dBA

Results segment # 3: Teron 3 (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 + 19.75 + 0.00) = 19.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
    20     37   0.00  60.88   0.00 -10.89 -10.25   0.00   0.00 -20.00  19.75
--------------------------------------------------------------------------------

Segment Leq : 19.75 dBA

Results segment # 4: March 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 25.77 + 0.00) = 25.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -51    -42   0.00  68.57   0.00  -9.79 -13.01   0.00   0.00 -20.00  25.77
--------------------------------------------------------------------------------

Segment Leq : 25.77 dBA

Results segment # 5: March 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 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 40.40 + 0.00) = 40.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -33     80   0.18  68.57   0.00 -11.56  -2.26   0.00   0.00 -14.35  40.40
-------------------------------------------------------------------------------

Segment Leq : 40.40 dBA

Results segment # 6: March 3 (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 + 21.82 + 0.00) = 21.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36    -33   0.00  68.57   0.00  -9.79 -17.78   0.00   0.00 -19.17  21.82
-------------------------------------------------------------------------------

Segment Leq : 21.82 dBA

Results segment # 7: March 4 (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 + 21.00 + 0.00) = 21.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -39    -36   0.00  68.57   0.00  -9.79 -17.78   0.00   0.00 -20.00  21.00
-------------------------------------------------------------------------------

Segment Leq : 21.00 dBA

Results segment # 8: March 5 (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 + 21.00 + 0.00) = 21.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -42    -39   0.00  68.57   0.00  -9.79 -17.78   0.00   0.00 -20.00  21.00
-------------------------------------------------------------------------------

Segment Leq : 21.00 dBA

Results segment # 9: Teron 4 (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 + 39.76 + 0.00) = 39.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -46      0   0.53  59.91   0.00  -5.81  -6.18   0.00   0.00  -8.16  39.76
-------------------------------------------------------------------------------

Segment Leq : 39.76 dBA

Total Leq All Segments: 44.13 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.73
                           (NIGHT): 44.13
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 09:04:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   71.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 120.00 / 120.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 71.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  25.00 / 25.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
```

```
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  71.00 deg   79.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  71.00 deg   Angle2 : 79.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Teron 3 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 3 (day/night)
-----------------------------------------
Angle1   Angle2           :  20.00 deg   43.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 125.00 / 125.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  20.00 deg   Angle2 : 43.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  48.00 / 48.00  m
Source elevation          :   0.00 m
```

```
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: March 1 (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  :    80 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 # 4: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -45.00 deg   53.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 120.00 / 120.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -45.00 deg   Angle2 : 53.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  25.00 / 25.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: March 2 (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  :    80 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 # 5: March 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  53.00 deg   64.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 120.00 / 120.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  53.00 deg   Angle2 : 64.00 deg
Barrier height            :  24.00 m
Barrier receiver distance :  25.00 / 25.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: March 3 (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  :    80 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 # 6: March 3 (day/night)
-----------------------------------------
Angle1   Angle2           :  64.00 deg   82.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 120.00 / 120.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  64.00 deg   Angle2 : 82.00 deg
Barrier height            :   8.00 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Teron 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 !        7.50 !        6.25 !         6.25

ROAD (0.00 + 38.71 + 0.00) = 38.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     71   0.00  67.51   0.00  -9.03  -0.48   0.00   0.00 -19.29  38.71
-------------------------------------------------------------------------------

Segment Leq : 38.71 dBA

Results segment # 2: Teron 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 !        7.50 !        5.58 !         5.58

ROAD (0.00 + 31.77 + 0.00) = 31.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    71     79   0.00  67.51   0.00  -2.22 -13.52   0.00   0.00 -20.00  31.77
-------------------------------------------------------------------------------

Segment Leq : 31.77 dBA

Results segment # 3: Teron 3 (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 !        5.19 !         5.19

ROAD (0.00 + 29.37 + 0.00) = 29.37 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    20     43   0.00  67.51   0.00  -9.21  -8.94   0.00   0.00 -20.00  29.37
-------------------------------------------------------------------------------

Segment Leq : 29.37 dBA

Results segment # 4: March 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 !        7.50 !        6.25 !         6.25

ROAD (0.00 + 44.50 + 0.00) = 44.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -45     53   0.00  76.17   0.00  -9.03  -2.64   0.00   0.00 -20.00  44.50
-------------------------------------------------------------------------------

Segment Leq : 44.50 dBA

Results segment # 5: March 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 !        7.50 !        6.25 !         6.25

ROAD (0.00 + 35.00 + 0.00) = 35.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    53     64   0.00  76.17   0.00  -9.03 -12.14   0.00   0.00 -20.00  35.00
-------------------------------------------------------------------------------

Segment Leq : 35.00 dBA

Results segment # 6: March 3 (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 !        6.50 !         6.50

ROAD (0.00 + 51.19 + 0.00) = 51.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    64     82   0.00  76.17   0.00  -9.03 -10.00   0.00   0.00  -5.95  51.19
-------------------------------------------------------------------------------

Segment Leq : 51.19 dBA

Total Leq All Segments: 52.37 dBA

Results segment # 1: Teron 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 !        7.50 !        6.25 !         6.25

ROAD (0.00 + 31.11 + 0.00) = 31.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     71   0.00  59.91   0.00  -9.03  -0.48   0.00   0.00 -19.29  31.11
-------------------------------------------------------------------------------

Segment Leq : 31.11 dBA

Results segment # 2: Teron 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 !        7.50 !        5.58 !         5.58

ROAD (0.00 + 24.17 + 0.00) = 24.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    71     79   0.00  59.91   0.00  -2.22 -13.52   0.00   0.00 -20.00  24.17
-------------------------------------------------------------------------------

Segment Leq : 24.17 dBA
```

```
Results segment # 3: Teron 3 (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 !        5.19 !         5.19

ROAD (0.00 + 21.77 + 0.00) = 21.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    20     43   0.00  59.91   0.00  -9.21  -8.94   0.00   0.00 -20.00  21.77
-------------------------------------------------------------------------------

Segment Leq : 21.77 dBA

Results segment # 4: March 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 !        7.50 !        6.25 !         6.25

ROAD (0.00 + 36.90 + 0.00) = 36.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -45     53   0.00  68.57   0.00  -9.03  -2.64   0.00   0.00 -20.00  36.90
-------------------------------------------------------------------------------

Segment Leq : 36.90 dBA

Results segment # 5: March 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 !        7.50 !        6.25 !         6.25

ROAD (0.00 + 27.40 + 0.00) = 27.40 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    53     64   0.00  68.57   0.00  -9.03 -12.14   0.00   0.00 -20.00  27.40
-------------------------------------------------------------------------------

Segment Leq : 27.40 dBA

Results segment # 6: March 3 (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 !        6.50 !         6.50

ROAD (0.00 + 43.59 + 0.00) = 43.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    64     82   0.00  68.57   0.00  -9.03 -10.00   0.00   0.00  -5.95  43.59
-------------------------------------------------------------------------------

Segment Leq : 43.59 dBA

Total Leq All Segments: 44.77 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 52.37
                           (NIGHT): 44.77
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 16:22:11
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 10.00 deg
Barrier height            :  12.00 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: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
```

```
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  10.00 deg   61.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  10.00 deg   Angle2 : 61.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  33.00 / 33.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Teron 3 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 3 (day/night)
-----------------------------------------
Angle1   Angle2           :  11.00 deg   34.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 146.00 / 146.00 m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  11.00 deg   Angle2 : 34.00 deg
Barrier height            :  27.00 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

Road data, segment # 4: March 1 (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  :    80 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 # 4: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -53.00 deg   -28.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -53.00 deg   Angle2 : -28.00 deg
Barrier height            :  27.00 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 # 5: March 2 (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  :    80 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 # 5: March 2 (day/night)
-----------------------------------------
Angle1   Angle2           : -28.00 deg   -13.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -28.00 deg   Angle2 : -13.00 deg
Barrier height            :  24.00 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 # 6: March 3 (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  :    80 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 # 6: March 3 (day/night)
-----------------------------------------
Angle1   Angle2           : -13.00 deg   11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -13.00 deg   Angle2 : 11.00 deg
Barrier height            :  18.00 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 # 7: March 4 (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  :    80 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 # 7: March 4 (day/night)
-----------------------------------------
Angle1   Angle2           :  11.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  11.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 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: Teron 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 !       13.50 !       11.00 !        11.00

ROAD (0.00 + 53.22 + 0.00) = 53.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     10   0.00  67.51   0.00  -5.05  -2.55   0.00   0.00  -6.68  53.22
-------------------------------------------------------------------------------
```

```
Segment Leq : 53.22 dBA

Results segment # 2: Teron 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 !       13.50 !        5.25 !         5.25

ROAD (0.00 + 36.98 + 0.00) = 36.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    10     61   0.00  67.51   0.00  -5.05  -5.48   0.00   0.00 -20.00  36.98
-------------------------------------------------------------------------------

Segment Leq : 36.98 dBA

Results segment # 3: Teron 3 (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 !       13.50 !        9.47 !         9.47

ROAD (0.00 + 28.69 + 0.00) = 28.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11     34   0.00  67.51   0.00  -9.88  -8.94   0.00   0.00 -20.00  28.69
-------------------------------------------------------------------------------

Segment Leq : 28.69 dBA

Results segment # 4: March 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 !       13.50 !       12.25 !        12.25
```

```
ROAD (0.00 + 39.10 + 0.00) = 39.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -53    -28   0.00  76.17   0.00  -8.49  -8.57   0.00   0.00 -20.00  39.10
-------------------------------------------------------------------------------

Segment Leq : 39.10 dBA

Results segment # 5: March 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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 36.88 + 0.00) = 36.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -28    -13   0.00  76.17   0.00  -8.49 -10.79   0.00   0.00 -20.00  36.88
-------------------------------------------------------------------------------

Segment Leq : 36.88 dBA

Results segment # 6: March 3 (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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 39.21 + 0.00) = 39.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -13     11   0.00  76.17   0.00  -8.49  -8.75   0.00   0.00 -19.72  39.21
-------------------------------------------------------------------------------

Segment Leq : 39.21 dBA

Results segment # 7: March 4 (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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 60.66 + 0.00) = 60.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11     90   0.00  76.17   0.00  -8.49  -3.58   0.00   0.00  -4.90  59.20*
    11     90   0.30  76.17   0.00 -11.04  -4.46   0.00   0.00   0.00  60.66
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 60.66 dBA

Total Leq All Segments: 61.46 dBA

Results segment # 1: Teron 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 !       13.50 !       11.00 !        11.00

ROAD (0.00 + 45.62 + 0.00) = 45.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     10   0.00  59.91   0.00  -5.05  -2.55   0.00   0.00  -6.68  45.62
-------------------------------------------------------------------------------

Segment Leq : 45.62 dBA

Results segment # 2: Teron 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 !       13.50 !        5.25 !         5.25

ROAD (0.00 + 29.38 + 0.00) = 29.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
```

```
    10      61    0.00  59.91    0.00  -5.05  -5.48    0.00    0.00 -20.00  29.38
-------------------------------------------------------------------------------

Segment Leq : 29.38 dBA

Results segment # 3: Teron 3 (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 !       13.50 !        9.47 !         9.47

ROAD (0.00 + 21.09 + 0.00) = 21.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11      34    0.00  59.91    0.00  -9.88  -8.94    0.00    0.00 -20.00  21.09
-------------------------------------------------------------------------------

Segment Leq : 21.09 dBA

Results segment # 4: March 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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 31.50 + 0.00) = 31.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -53     -28    0.00  68.57    0.00  -8.49  -8.57    0.00    0.00 -20.00  31.50
-------------------------------------------------------------------------------

Segment Leq : 31.50 dBA

Results segment # 5: March 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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 29.29 + 0.00) = 29.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -28    -13   0.00  68.57   0.00  -8.49 -10.79   0.00   0.00 -20.00  29.29
-------------------------------------------------------------------------------

Segment Leq : 29.29 dBA

Results segment # 6: March 3 (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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 31.61 + 0.00) = 31.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -13     11   0.00  68.57   0.00  -8.49  -8.75   0.00   0.00 -19.72  31.61
-------------------------------------------------------------------------------

Segment Leq : 31.61 dBA

Results segment # 7: March 4 (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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 53.06 + 0.00) = 53.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11     90   0.00  68.57   0.00  -8.49  -3.58   0.00   0.00  -4.90  51.60*
    11     90   0.30  68.57   0.00 -11.04  -4.46   0.00   0.00   0.00  53.06
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 53.06 dBA
```

```
Total Leq All Segments: 53.86 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.46
                           (NIGHT): 53.86
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 16:21:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3a.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 10.00 deg
Barrier height            :  15.00 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: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
```

```
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  10.00 deg   61.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  10.00 deg   Angle2 : 61.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  33.00 / 33.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Teron 3 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 3 (day/night)
-----------------------------------------
Angle1   Angle2           :  11.00 deg   34.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 146.00 / 146.00 m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  11.00 deg   Angle2 : 34.00 deg
Barrier height            :  27.00 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

Road data, segment # 4: March 1 (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  :    80 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 # 4: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -53.00 deg   -28.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -53.00 deg   Angle2 : -28.00 deg
Barrier height            :  27.00 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 # 5: March 2 (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  :    80 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 # 5: March 2 (day/night)
-----------------------------------------
Angle1   Angle2           : -28.00 deg   -13.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -28.00 deg   Angle2 : -13.00 deg
Barrier height            :  24.00 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 # 6: March 3 (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  :    80 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 # 6: March 3 (day/night)
-----------------------------------------
Angle1   Angle2           : -13.00 deg   11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -13.00 deg   Angle2 : 11.00 deg
Barrier height            :  18.00 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 # 7: March 4 (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  :    80 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 # 7: March 4 (day/night)
-----------------------------------------
Angle1   Angle2           :  11.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  11.00 deg   Angle2 : 90.00 deg
Barrier height            :  15.00 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: Teron 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 !       13.50 !       11.00 !        11.00

ROAD (0.00 + 46.21 + 0.00) = 46.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     10   0.00  67.51   0.00  -5.05  -2.55   0.00   0.00 -13.70  46.21
-------------------------------------------------------------------------------
```

```
Segment Leq : 46.21 dBA

Results segment # 2: Teron 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 !       13.50 !        5.25 !         5.25

ROAD (0.00 + 36.98 + 0.00) = 36.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    10     61   0.00  67.51   0.00  -5.05  -5.48   0.00   0.00 -20.00  36.98
-------------------------------------------------------------------------------

Segment Leq : 36.98 dBA

Results segment # 3: Teron 3 (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 !       13.50 !        9.47 !         9.47

ROAD (0.00 + 28.69 + 0.00) = 28.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11     34   0.00  67.51   0.00  -9.88  -8.94   0.00   0.00 -20.00  28.69
-------------------------------------------------------------------------------

Segment Leq : 28.69 dBA

Results segment # 4: March 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 !       13.50 !       12.25 !        12.25
```

```
ROAD (0.00 + 39.10 + 0.00) = 39.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -53    -28   0.00  76.17   0.00  -8.49  -8.57   0.00   0.00 -20.00  39.10
-------------------------------------------------------------------------------

Segment Leq : 39.10 dBA

Results segment # 5: March 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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 36.88 + 0.00) = 36.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -28    -13   0.00  76.17   0.00  -8.49 -10.79   0.00   0.00 -20.00  36.88
-------------------------------------------------------------------------------

Segment Leq : 36.88 dBA

Results segment # 6: March 3 (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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 39.21 + 0.00) = 39.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -13     11   0.00  76.17   0.00  -8.49  -8.75   0.00   0.00 -19.72  39.21
-------------------------------------------------------------------------------

Segment Leq : 39.21 dBA


Results segment # 7: March 4 (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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 53.81 + 0.00) = 53.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11     90   0.00  76.17   0.00  -8.49  -3.58   0.00   0.00 -10.29  53.81
-------------------------------------------------------------------------------

Segment Leq : 53.81 dBA

Total Leq All Segments: 54.90 dBA

Results segment # 1: Teron 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 !       13.50 !       11.00 !        11.00

ROAD (0.00 + 38.61 + 0.00) = 38.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     10   0.00  59.91   0.00  -5.05  -2.55   0.00   0.00 -13.70  38.61
-------------------------------------------------------------------------------

Segment Leq : 38.61 dBA

Results segment # 2: Teron 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 !       13.50 !        5.25 !         5.25

ROAD (0.00 + 29.38 + 0.00) = 29.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    10     61   0.00  59.91   0.00  -5.05  -5.48   0.00   0.00 -20.00  29.38
-------------------------------------------------------------------------------
```

```
Segment Leq : 29.38 dBA

Results segment # 3: Teron 3 (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 !       13.50 !        9.47 !         9.47

ROAD (0.00 + 21.09 + 0.00) = 21.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11     34   0.00  59.91   0.00  -9.88  -8.94   0.00   0.00 -20.00  21.09
-------------------------------------------------------------------------------

Segment Leq : 21.09 dBA

Results segment # 4: March 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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 31.50 + 0.00) = 31.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -53    -28   0.00  68.57   0.00  -8.49  -8.57   0.00   0.00 -20.00  31.50
-------------------------------------------------------------------------------

Segment Leq : 31.50 dBA

Results segment # 5: March 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 !       13.50 !       12.25 !        12.25
```

```
ROAD (0.00 + 29.29 + 0.00) = 29.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -28    -13   0.00  68.57   0.00  -8.49 -10.79   0.00   0.00 -20.00  29.29
-------------------------------------------------------------------------------

Segment Leq : 29.29 dBA

Results segment # 6: March 3 (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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 31.61 + 0.00) = 31.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -13     11   0.00  68.57   0.00  -8.49  -8.75   0.00   0.00 -19.72  31.61
-------------------------------------------------------------------------------

Segment Leq : 31.61 dBA

Results segment # 7: March 4 (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 !       13.50 !       12.25 !        12.25

ROAD (0.00 + 46.21 + 0.00) = 46.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11     90   0.00  68.57   0.00  -8.49  -3.58   0.00   0.00 -10.29  46.21
-------------------------------------------------------------------------------

Segment Leq : 46.21 dBA

Total Leq All Segments: 47.30 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.90
                           (NIGHT): 47.30
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 11:33:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   6.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  46.00 / 46.00  m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 6.00 deg
Barrier height            :  18.00 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: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
```

```
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :   6.00 deg   71.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  46.00 / 46.00  m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   6.00 deg   Angle2 : 71.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  29.00 / 29.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Teron 3 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 3 (day/night)
-----------------------------------------
Angle1   Angle2           :  12.00 deg   24.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 142.00 / 142.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  12.00 deg   Angle2 : 24.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  47.00 / 47.00  m
Source elevation          :   0.00 m
```

```
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: March 1 (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  :    80 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 # 4: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -53.00 deg   16.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -53.00 deg   Angle2 : 16.00 deg
Barrier height            :  27.00 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 # 5: March 2 (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  :    80 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 # 5: March 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  16.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  16.00 deg   Angle2 : 90.00 deg
Barrier height            :  18.00 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: Teron 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 !       19.50 !       15.19 !        15.19

ROAD (0.00 + 49.05 + 0.00) = 49.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      6   0.00  67.51   0.00  -4.87  -2.73   0.00   0.00 -10.86  49.05
-------------------------------------------------------------------------------

Segment Leq : 49.05 dBA

Results segment # 2: Teron 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 !       19.50 !        8.15 !         8.15

ROAD (0.00 + 38.22 + 0.00) = 38.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
```

```
-------------------------------------------------------------------------------
     6     71   0.00  67.51   0.00  -4.87  -4.42   0.00   0.00 -20.00  38.22
-------------------------------------------------------------------------------

Segment Leq : 38.22 dBA

Results segment # 3: Teron 3 (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 !       19.50 !       13.54 !        13.54

ROAD (0.00 + 25.99 + 0.00) = 25.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    12     24   0.00  67.51   0.00  -9.76 -11.76   0.00   0.00 -20.00  25.99
-------------------------------------------------------------------------------

Segment Leq : 25.99 dBA

Results segment # 4: March 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 !       19.50 !       17.63 !        17.63

ROAD (0.00 + 43.51 + 0.00) = 43.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -53     16   0.00  76.17   0.00  -8.49  -4.16   0.00   0.00 -20.00  43.51
-------------------------------------------------------------------------------

Segment Leq : 43.51 dBA

Results segment # 5: March 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 !       19.50 !       17.63 !        17.63

ROAD (0.00 + 58.62 + 0.00) = 58.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    16     90   0.00  76.17   0.00  -8.49  -3.86   0.00   0.00  -5.19  58.62
-------------------------------------------------------------------------------

Segment Leq : 58.62 dBA

Total Leq All Segments: 59.23 dBA

Results segment # 1: Teron 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 !       19.50 !       15.19 !        15.19

ROAD (0.00 + 41.45 + 0.00) = 41.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      6   0.00  59.91   0.00  -4.87  -2.73   0.00   0.00 -10.86  41.45
-------------------------------------------------------------------------------

Segment Leq : 41.45 dBA

Results segment # 2: Teron 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 !       19.50 !        8.15 !         8.15

ROAD (0.00 + 30.62 + 0.00) = 30.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     6     71   0.00  59.91   0.00  -4.87  -4.42   0.00   0.00 -20.00  30.62
-------------------------------------------------------------------------------

Segment Leq : 30.62 dBA
```

```
Results segment # 3: Teron 3 (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 !       19.50 !       13.54 !        13.54

ROAD (0.00 + 18.39 + 0.00) = 18.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    12     24   0.00  59.91   0.00  -9.76 -11.76   0.00   0.00 -20.00  18.39
-------------------------------------------------------------------------------

Segment Leq : 18.39 dBA

Results segment # 4: March 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 !       19.50 !       17.63 !        17.63

ROAD (0.00 + 35.91 + 0.00) = 35.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -53     16   0.00  68.57   0.00  -8.49  -4.16   0.00   0.00 -20.00  35.91
-------------------------------------------------------------------------------

Segment Leq : 35.91 dBA

Results segment # 5: March 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 !       19.50 !       17.63 !        17.63

ROAD (0.00 + 51.03 + 0.00) = 51.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
```

```
-------------------------------------------------------------------------------
    16      90    0.00  68.57   0.00  -8.49  -3.86   0.00   0.00  -5.19  51.03
-------------------------------------------------------------------------------

Segment Leq : 51.03 dBA

Total Leq All Segments: 51.64 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.23
                           (NIGHT): 51.64
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 12:46:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   9.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  44.00 / 44.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 9.00 deg
Barrier height            :  24.00 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: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
```

```
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :   9.00 deg   72.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  44.00 / 44.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   9.00 deg   Angle2 : 72.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  29.00 / 29.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Teron 3 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 3 (day/night)
-----------------------------------------
Angle1   Angle2           :  11.00 deg   35.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 139.00 / 139.00 m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  11.00 deg   Angle2 : 35.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  46.00 / 46.00  m
Source elevation          :   0.00 m
```

```
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: March 1 (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  :    80 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 # 4: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -51.00 deg   16.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 105.00 / 105.00 m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -51.00 deg   Angle2 : 16.00 deg
Barrier height            :  27.00 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 # 5: March 2 (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  :    80 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 # 5: March 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  16.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 105.00 / 105.00 m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  16.00 deg   Angle2 : 90.00 deg
Barrier height            :  24.00 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: Teron 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 !       25.50 !       19.50 !        19.50

ROAD (0.00 + 46.70 + 0.00) = 46.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      9   0.00  67.51   0.00  -4.67  -2.60   0.00   0.00 -13.54  46.70
-------------------------------------------------------------------------------

Segment Leq : 46.70 dBA

Results segment # 2: Teron 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 !        9.68 !         9.68

ROAD (0.00 + 38.28 + 0.00) = 38.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
```

```
-------------------------------------------------------------------------------
     9     72   0.00  67.51   0.00  -4.67  -4.56   0.00   0.00 -20.00  38.28
-------------------------------------------------------------------------------

Segment Leq : 38.28 dBA

Results segment # 3: Teron 3 (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 !       17.56 !        17.56

ROAD (0.00 + 30.40 + 0.00) = 30.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11     35   0.00  67.51   0.00  -9.67  -8.75   0.00   0.00 -18.69  30.40
-------------------------------------------------------------------------------

Segment Leq : 30.40 dBA

Results segment # 4: March 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 !       25.50 !       22.99 !        22.99

ROAD (0.00 + 47.33 + 0.00) = 47.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -51     16   0.00  76.17   0.00  -8.45  -4.29   0.00   0.00 -16.10  47.33
-------------------------------------------------------------------------------

Segment Leq : 47.33 dBA

Results segment # 5: March 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 !       22.99 !        22.99

ROAD (0.00 + 57.62 + 0.00) = 57.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    16     90   0.00  76.17   0.00  -8.45  -3.86   0.00   0.00  -6.24  57.62
-------------------------------------------------------------------------------

Segment Leq : 57.62 dBA

Total Leq All Segments: 58.37 dBA

Results segment # 1: Teron 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 !       25.50 !       19.50 !        19.50

ROAD (0.00 + 39.10 + 0.00) = 39.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      9   0.00  59.91   0.00  -4.67  -2.60   0.00   0.00 -13.54  39.10
-------------------------------------------------------------------------------

Segment Leq : 39.10 dBA

Results segment # 2: Teron 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 !        9.68 !         9.68

ROAD (0.00 + 30.68 + 0.00) = 30.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     9     72   0.00  59.91   0.00  -4.67  -4.56   0.00   0.00 -20.00  30.68
-------------------------------------------------------------------------------

Segment Leq : 30.68 dBA
```

```
Results segment # 3: Teron 3 (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 !       17.56 !        17.56

ROAD (0.00 + 22.80 + 0.00) = 22.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11     35   0.00  59.91   0.00  -9.67  -8.75   0.00   0.00 -18.69  22.80
-------------------------------------------------------------------------------

Segment Leq : 22.80 dBA

Results segment # 4: March 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 !       25.50 !       22.99 !        22.99

ROAD (0.00 + 39.73 + 0.00) = 39.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -51     16   0.00  68.57   0.00  -8.45  -4.29   0.00   0.00 -16.10  39.73
-------------------------------------------------------------------------------

Segment Leq : 39.73 dBA

Results segment # 5: March 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 !       22.99 !        22.99

ROAD (0.00 + 50.02 + 0.00) = 50.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
```

```
-------------------------------------------------------------------------------
    16      90    0.00  68.57    0.00  -8.45  -3.86    0.00    0.00  -6.24  50.02
-------------------------------------------------------------------------------

Segment Leq : 50.02 dBA

Total Leq All Segments: 50.77 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.37
                           (NIGHT): 50.77
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 12:59:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   74.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  32.00 / 32.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 74.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  16.00 / 16.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
```

```
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  15.00 deg   42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 113.00 / 113.00 m
Receiver height           :  28.50 / 28.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  15.00 deg   Angle2 : 42.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  34.00 / 34.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: March 1 (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  :    80 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 # 3: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -47.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :  28.50 / 28.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -47.00 deg   Angle2 : 90.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :   0.00 m
```

```
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Teron 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 !       28.50 !       15.00 !        15.00

ROAD (0.00 + 45.32 + 0.00) = 45.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     74   0.00  67.51   0.00  -3.29  -0.40   0.00   0.00 -18.50  45.32
-------------------------------------------------------------------------------

Segment Leq : 45.32 dBA

Results segment # 2: Teron 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 !       28.50 !       20.37 !        20.37

ROAD (0.00 + 34.11 + 0.00) = 34.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    15     42   0.00  67.51   0.00  -8.77  -8.24   0.00   0.00 -16.39  34.11
-------------------------------------------------------------------------------

Segment Leq : 34.11 dBA

Results segment # 3: March 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 !       28.50 !       26.16 !        26.16

ROAD (0.00 + 60.27 + 0.00) = 60.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -47     90   0.00  76.17   0.00  -8.41  -1.19   0.00   0.00  -6.30  60.27
-------------------------------------------------------------------------------

Segment Leq : 60.27 dBA

Total Leq All Segments: 60.42 dBA

Results segment # 1: Teron 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 !       28.50 !       15.00 !        15.00

ROAD (0.00 + 37.72 + 0.00) = 37.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     74   0.00  59.91   0.00  -3.29  -0.40   0.00   0.00 -18.50  37.72
-------------------------------------------------------------------------------

Segment Leq : 37.72 dBA

Results segment # 2: Teron 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 !       28.50 !       20.37 !        20.37

ROAD (0.00 + 26.51 + 0.00) = 26.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    15     42   0.00  59.91   0.00  -8.77  -8.24   0.00   0.00 -16.39  26.51
-------------------------------------------------------------------------------

Segment Leq : 26.51 dBA

Results segment # 3: March 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 !       28.50 !       26.16 !        26.16

ROAD (0.00 + 52.67 + 0.00) = 52.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -47     90   0.00  68.57   0.00  -8.41  -1.19   0.00   0.00  -6.30  52.67
-------------------------------------------------------------------------------

Segment Leq : 52.67 dBA

Total Leq All Segments: 52.82 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.42
                           (NIGHT): 52.82
```

```
STAMSON 5.0         NORMAL REPORT         Date: 08-08-2019 16:12:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6b.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   74.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  32.00 / 32.00  m
Receiver height           :  28.50 / 28.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 74.00 deg
Barrier height            :  29.60 m
Barrier receiver distance :  16.00 / 16.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
```

```
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  15.00 deg   42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 113.00 / 113.00 m
Receiver height           :  28.50 / 28.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  15.00 deg   Angle2 : 42.00 deg
Barrier height            :  27.00 m
Barrier receiver distance :  34.00 / 34.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: March 1 (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  :    80 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 # 3: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -47.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :  28.50 / 28.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -47.00 deg   Angle2 : 90.00 deg
Barrier height            :  29.60 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :   0.00 m
```

```
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Teron 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 !       28.50 !       15.00 !        15.00

ROAD (0.00 + 44.84 + 0.00) = 44.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     74   0.00  67.51   0.00  -3.29  -0.40   0.00   0.00 -18.97  44.84
-------------------------------------------------------------------------------

Segment Leq : 44.84 dBA

Results segment # 2: Teron 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 !       28.50 !       20.37 !        20.37

ROAD (0.00 + 34.11 + 0.00) = 34.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    15     42   0.00  67.51   0.00  -8.77  -8.24   0.00   0.00 -16.39  34.11
-------------------------------------------------------------------------------

Segment Leq : 34.11 dBA

Results segment # 3: March 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 !       28.50 !       26.16 !        26.16

ROAD (0.00 + 53.37 + 0.00) = 53.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -47     90   0.00  76.17   0.00  -8.41  -1.19   0.00   0.00 -13.20  53.37
-------------------------------------------------------------------------------

Segment Leq : 53.37 dBA

Total Leq All Segments: 53.99 dBA

Results segment # 1: Teron 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 !       28.50 !       15.00 !        15.00

ROAD (0.00 + 37.24 + 0.00) = 37.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     74   0.00  59.91   0.00  -3.29  -0.40   0.00   0.00 -18.97  37.24
-------------------------------------------------------------------------------

Segment Leq : 37.24 dBA

Results segment # 2: Teron 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 !       28.50 !       20.37 !        20.37

ROAD (0.00 + 26.51 + 0.00) = 26.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    15     42   0.00  59.91   0.00  -8.77  -8.24   0.00   0.00 -16.39  26.51
-------------------------------------------------------------------------------

Segment Leq : 26.51 dBA

Results segment # 3: March 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 !       28.50 !       26.16 !        26.16

ROAD (0.00 + 45.77 + 0.00) = 45.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -47     90   0.00  68.57   0.00  -8.41  -1.19   0.00   0.00 -13.20  45.77
-------------------------------------------------------------------------------

Segment Leq : 45.77 dBA

Total Leq All Segments: 46.39 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.99
                           (NIGHT): 46.39
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 13:23:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -30.00 deg   76.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  17.00 deg   34.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  77.00 / 77.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: March 1 (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  :    80 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 # 3: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -37.00 deg   2.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  96.00 / 96.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 64.18 + 0.00) = 64.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -30     76   0.00  67.51   0.00  -1.03  -2.30   0.00   0.00   0.00  64.18
-------------------------------------------------------------------------------

Segment Leq : 64.18 dBA

Results segment # 2: Teron 2 (day)
```

```
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 50.16 + 0.00) = 50.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    17     34   0.00  67.51   0.00  -7.10 -10.25   0.00   0.00   0.00  50.16
-------------------------------------------------------------------------------

Segment Leq : 50.16 dBA

Results segment # 3: March 1 (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 61.46 + 0.00) = 61.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37      2   0.00  76.17   0.00  -8.06  -6.64   0.00   0.00   0.00  61.46
-------------------------------------------------------------------------------

Segment Leq : 61.46 dBA

Total Leq All Segments: 66.15 dBA


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

Source height = 1.50 m

ROAD (0.00 + 56.59 + 0.00) = 56.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -30     76   0.00  59.91   0.00  -1.03  -2.30   0.00   0.00   0.00  56.59
-------------------------------------------------------------------------------

Segment Leq : 56.59 dBA

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

Source height = 1.50 m

ROAD (0.00 + 42.56 + 0.00) = 42.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    17     34   0.00  59.91   0.00  -7.10 -10.25   0.00   0.00   0.00  42.56
-------------------------------------------------------------------------------

Segment Leq : 42.56 dBA
```

```
Results segment # 3: March 1 (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.87 + 0.00) = 53.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37      2   0.00  68.57   0.00  -8.06  -6.64   0.00   0.00   0.00  53.87
-------------------------------------------------------------------------------

Segment Leq : 53.87 dBA

Total Leq All Segments: 58.56 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.15
                           (NIGHT): 58.56
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 13:27:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   79.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  17.00 / 17.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Teron 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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  17.00 deg   30.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  81.00 / 81.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 66.69 + 0.00) = 66.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     79   0.00  67.51   0.00  -0.54  -0.27   0.00   0.00   0.00  66.69
-------------------------------------------------------------------------------

Segment Leq : 66.69 dBA

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

Source height = 1.50 m

ROAD (0.00 + 49.74 + 0.00) = 49.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    17     30   0.00  68.48   0.00  -7.32 -11.41   0.00   0.00   0.00  49.74
-------------------------------------------------------------------------------

Segment Leq : 49.74 dBA

Total Leq All Segments: 66.78 dBA

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

Source height = 1.50 m

ROAD (0.00 + 59.09 + 0.00) = 59.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     79   0.00  59.91   0.00  -0.54  -0.27   0.00   0.00   0.00  59.09
-------------------------------------------------------------------------------

Segment Leq : 59.09 dBA

Results segment # 2: Teron 2 (night)
------------------------------------
```

```
Source height = 1.50 m

ROAD (0.00 + 42.15 + 0.00) = 42.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    17     30   0.00  60.88   0.00  -7.32 -11.41   0.00   0.00   0.00  42.15
-------------------------------------------------------------------------------

Segment Leq : 42.15 dBA

Total Leq All Segments: 59.18 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.78
                           (NIGHT): 59.18
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 13:29:15
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   59.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  17.00 / 17.00  m
Receiver height           :   4.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 64.88 + 0.00) = 64.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     59   0.57  67.51   0.00  -0.85  -1.78   0.00   0.00   0.00  64.88
-------------------------------------------------------------------------------

Segment Leq : 64.88 dBA

Total Leq All Segments: 64.88 dBA

Results segment # 1: Teron 1 (night)
------------------------------------
```

```
Source height = 1.50 m

ROAD (0.00 + 57.28 + 0.00) = 57.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     59   0.57  59.91   0.00  -0.85  -1.78   0.00   0.00   0.00  57.28
-------------------------------------------------------------------------------

Segment Leq : 57.28 dBA

Total Leq All Segments: 57.28 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.88
                           (NIGHT): 57.28
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 13:34:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r10.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Teron 2 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 2 (day/night)
-----------------------------------------
Angle1   Angle2           :  14.00 deg   48.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  82.00 / 82.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: March 1 (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  :    80 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: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -40.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  94.00 / 94.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 52.90 + 0.00) = 52.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     48   0.00  67.51   0.00  -7.38  -7.24   0.00   0.00   0.00  52.90
-------------------------------------------------------------------------------

Segment Leq : 52.90 dBA

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

Source height = 1.50 m

ROAD (0.00 + 66.78 + 0.00) = 66.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -40     90   0.00  76.17   0.00  -7.97  -1.41   0.00   0.00   0.00  66.78
-------------------------------------------------------------------------------

Segment Leq : 66.78 dBA

Total Leq All Segments: 66.95 dBA

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

Source height = 1.50 m

ROAD (0.00 + 45.30 + 0.00) = 45.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     48   0.00  59.91   0.00  -7.38  -7.24   0.00   0.00   0.00  45.30
-------------------------------------------------------------------------------

Segment Leq : 45.30 dBA

Results segment # 2: March 1 (night)
------------------------------------
```

```
Source height = 1.50 m

ROAD (0.00 + 59.19 + 0.00) = 59.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -40     90   0.00  68.57   0.00  -7.97  -1.41   0.00   0.00   0.00  59.19
-------------------------------------------------------------------------------

Segment Leq : 59.19 dBA

Total Leq All Segments: 59.36 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.95
                           (NIGHT): 59.36
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 14:29:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r11.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (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  :  20.00 / 20.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: March 1 (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  :    80 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: March 1 (day/night)
-----------------------------------------
Angle1   Angle2           : -79.00 deg   -32.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 156.00 / 156.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -79.00 deg   Angle2 : -37.00 deg
Barrier height            :   8.00 m
Barrier receiver distance :  62.00 / 62.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 61.51 + 0.00) = 61.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.48  67.51   0.00  -1.85  -4.15   0.00   0.00   0.00  61.51
-------------------------------------------------------------------------------

Segment Leq : 61.51 dBA

Results segment # 2: March 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 !        7.50 !        5.11 !         5.11

ROAD (0.00 + 52.30 + 45.15) = 53.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -79    -37   0.00  76.17   0.00 -10.17  -6.32   0.00   0.00  -7.37  52.30
-------------------------------------------------------------------------------
   -37    -32   0.48  76.17   0.00 -15.05 -15.97   0.00   0.00   0.00  45.15
-------------------------------------------------------------------------------

Segment Leq : 53.07 dBA

Total Leq All Segments: 62.09 dBA
```

```
Results segment # 1: Teron 1 (night)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.91 + 0.00) = 53.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.48  59.91   0.00  -1.85  -4.15   0.00   0.00   0.00  53.91
-------------------------------------------------------------------------------

Segment Leq : 53.91 dBA

Results segment # 2: March 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 !        7.50 !        5.11 !         5.11

ROAD (0.00 + 44.70 + 37.55) = 45.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -79    -37   0.00  68.57   0.00 -10.17  -6.32   0.00   0.00  -7.37  44.70
-------------------------------------------------------------------------------
   -37    -32   0.48  68.57   0.00 -15.05 -15.97   0.00   0.00   0.00  37.55
-------------------------------------------------------------------------------

Segment Leq : 45.47 dBA

Total Leq All Segments: 54.49 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.09
                           (NIGHT): 54.49
```

```
STAMSON 5.0         NORMAL REPORT         Date: 26-07-2019 14:31:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r12.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Teron 1 (day/night)
-------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    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: Teron 1 (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  :  17.00 / 17.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 65.57 + 0.00) = 65.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.48  67.51   0.00  -0.80  -1.14   0.00   0.00   0.00  65.57
-------------------------------------------------------------------------------

Segment Leq : 65.57 dBA

Total Leq All Segments: 65.57 dBA

Results segment # 1: Teron 1 (night)
------------------------------------
```

```
Source height = 1.50 m

ROAD (0.00 + 57.97 + 0.00) = 57.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.48  59.91   0.00  -0.80  -1.14   0.00   0.00   0.00  57.97
-------------------------------------------------------------------------------

Segment Leq : 57.97 dBA

Total Leq All Segments: 57.97 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.57
                           (NIGHT): 57.97
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-07-2019 14:33:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r13.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Teron 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: Teron 1 (day/night)
-----------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  20.00 / 20.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 62.48 + 0.00) = 62.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.48  68.48   0.00  -1.85  -4.15   0.00   0.00   0.00  62.48
-------------------------------------------------------------------------------

Segment Leq : 62.48 dBA

Total Leq All Segments: 62.48 dBA

Results segment # 1: Teron 1 (night)
------------------------------------
```

```
Source height = 1.50 m

ROAD (0.00 + 54.89 + 0.00) = 54.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.48  60.88   0.00  -1.85  -4.15   0.00   0.00   0.00  54.89
-------------------------------------------------------------------------------

Segment Leq : 54.89 dBA

Total Leq All Segments: 54.89 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.48
                           (NIGHT): 54.89
```

APPENDIX B

PREDICTOR LIMA SAMPLE CALCULATION INPUT/OUTPUT

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

```
================================================================================
Testfile openend: 09/08/2019 11:33:01 AM
================================================================================


--------------------------------------------------------------------------------
Cross section for receiver R5 (Id=-25636) and source S1 (Id=5780)

ItemType        Id           Distance           X           Y     Hgrnd     Height  GrndFact
Cluster
Receiver        R5              0.000   366618.87  4785104.44      0.09       6.50      0.00
Heightline      Tri 1256.1      2.081   366620.90  4785104.89      0.09       0.00      0.00
Heightline      Tri 1201.1      2.081   366620.90  4785104.89      0.09       0.00      0.00
Heightline      Tri 1256.3      8.827   366627.50  4785106.32      0.09       0.00      0.00
Heightline      Tri 1292.3      8.827   366627.50  4785106.32      0.09       0.00      0.00
Heightline      Tri 1292.1      9.038   366627.70  4785106.36      0.09       0.00      0.00
Heightline      Tri 1300.1      9.038   366627.70  4785106.36      0.09       0.00      0.00
Heightline      Tri 1300.2      9.156   366627.82  4785106.39      0.09       0.00      0.00
Heightline      Tri 1306.2      9.156   366627.82  4785106.39      0.09       0.00      0.00
Heightline      Tri 1306.3     10.853   366629.47  4785106.75      0.09       0.00      0.00
Heightline      Tri 1330.1     10.853   366629.47  4785106.75      0.09       0.00      0.00
Heightline      Tri 1343.1     17.497   366635.97  4785108.16      0.09       0.00      0.00
Heightline      Tri 1330.3     17.497   366635.97  4785108.16      0.09       0.00      0.00
Heightline      Tri 1343.3     18.172   366636.63  4785108.31      0.09       0.00      0.00
Heightline      Tri 1366.3     18.172   366636.63  4785108.31      0.09       0.00      0.00
Heightline      Tri 1411.3     28.350   366646.57  4785110.47      0.09       0.00      0.00
Heightline      Tri 1366.1     28.350   366646.57  4785110.47      0.09       0.00      0.00
Heightline      Tri 1411.1     35.922   366653.97  4785112.08      0.09       0.00      0.00
Heightline      Tri 1382.1     35.922   366653.97  4785112.08      0.09       0.00      0.00
Heightline      Tri 1409.3     40.687   366658.63  4785113.09      0.09       0.00      0.00
Heightline      Tri 1382.3     40.687   366658.63  4785113.09      0.09       0.00      0.00
Heightline      Tri 1409.2     47.178   366664.97  4785114.47      0.09       0.00      0.00
Heightline      Tri 1445.3     47.178   366664.97  4785114.47      0.09       0.00      0.00
Heightline      Tri 1445.1     52.392   366670.06  4785115.58      0.09       0.00      0.00
Heightline      Tri 1472.1     52.392   366670.06  4785115.58      0.09       0.00      0.00
Heightline      Tri 1472.2     52.796   366670.46  4785115.67      0.09       0.00      0.00
Heightline      Tri 1485.3     52.796   366670.46  4785115.67      0.09       0.00      0.00
Building        LWPOLYLINE     53.008   366670.67  4785115.71      0.09       6.00      0.00
17
Building        LWPOLYLINE     53.008   366670.67  4785115.71      0.09      27.00      0.00
17
Barrier         Id=5809        53.659   366671.30  4785115.85     27.09       1.10      0.00
17
Heightline      Tri 1550.3     61.637   366679.10  4785117.55      0.09       0.00      0.00
Heightline      Tri 1485.2     61.637   366679.10  4785117.55      0.09       0.00      0.00
Heightline      Tri 1550.1     64.578   366681.97  4785118.17      0.09       0.00      0.00
Heightline      Tri 1595.2     64.578   366681.97  4785118.17      0.09       0.00      0.00
Pointsource     S1             68.863   366686.16  4785119.09     27.09       1.00      0.00
--------------------------------------------------------------------------------
L(wr)               --      --      --      --      --   95.00      --      --      --
A(ground)        -3.00   -3.00   -3.00   -3.00   -3.00   -3.00   -3.00   -3.00   -3.00

A(barrier)        6.14    7.60    9.47   11.74   14.31   17.09   19.93   19.97   19.98
A(veg)            0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
A(sit)            0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
A(bld)            0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
A(air)            0.00    0.01    0.03    0.08    0.14    0.26    0.70    2.36    8.43
A(geo)           48.16   48.16   48.16   48.16   48.16   48.16   48.16   48.16   48.16
D(i)              0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
C(meteo)          0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
--------------------------------------------------------------------------------
L(p)                --      --      --      --      --   32.49      --      --      -- |
32.49

--------------------------------------------------------------------------------
Cross section for receiver R5 (Id=-25636) and source S2 (Id=5781)
```

ItemType	Id	Distance	X	Y	Hgrnd	Height	GrndFact
Cluster							
Receiver	R5	0.000	366618.87	4785104.44	0.09	6.50	0.00
Heightline	Tri 1256.1	2.126	366620.96	4785104.83	0.09	0.00	0.00
Heightline	Tri 1201.1	2.126	366620.96	4785104.83	0.09	0.00	0.00
Heightline	Tri 1256.2	9.067	366627.78	4785106.11	0.09	0.00	0.00
Heightline	Tri 1302.2	9.067	366627.78	4785106.11	0.09	0.00	0.00
Heightline	Tri 1302.1	9.087	366627.80	4785106.12	0.09	0.00	0.00
Heightline	Tri 1330.2	9.087	366627.80	4785106.12	0.09	0.00	0.00
Heightline	Tri 1343.1	17.426	366636.00	4785107.66	0.09	0.00	0.00
Heightline	Tri 1330.3	17.426	366636.00	4785107.66	0.09	0.00	0.00
Heightline	Tri 1343.3	18.478	366637.03	4785107.85	0.09	0.00	0.00
Heightline	Tri 1366.3	18.478	366637.03	4785107.85	0.09	0.00	0.00
Heightline	Tri 1411.3	27.755	366646.15	4785109.56	0.09	0.00	0.00
Heightline	Tri 1366.1	27.755	366646.15	4785109.56	0.09	0.00	0.00
Heightline	Tri 1382.1	34.222	366652.51	4785110.75	0.09	0.00	0.00
Heightline	Tri 1411.1	34.222	366652.51	4785110.75	0.09	0.00	0.00
Heightline	Tri 1409.3	39.819	366658.01	4785111.78	0.09	0.00	0.00
Heightline	Tri 1382.3	39.819	366658.01	4785111.78	0.09	0.00	0.00
Heightline	Tri 1409.2	47.953	366666.00	4785113.28	0.09	0.00	0.00
Heightline	Tri 1445.3	47.953	366666.00	4785113.28	0.09	0.00	0.00
Heightline	Tri 1445.1	51.345	366669.34	4785113.91	0.09	0.00	0.00
Heightline	Tri 1472.1	51.345	366669.34	4785113.91	0.09	0.00	0.00
Heightline	Tri 1472.2	51.597	366669.58	4785113.96	0.09	0.00	0.00
Heightline	Tri 1485.3	51.597	366669.58	4785113.96	0.09	0.00	0.00
Building	LWPOLYLINE	53.947	366671.89	4785114.39	0.09	6.00	0.00
17							
Building	LWPOLYLINE	53.947	366671.89	4785114.39	0.09	27.00	0.00
17							
Barrier	Id=5809	55.657	366673.57	4785114.71	27.09	1.10	0.00
17							
Heightline	Tri 1550.3	60.657	366678.49	4785115.63	0.09	0.00	0.00
Heightline	Tri 1485.2	60.657	366678.49	4785115.63	0.09	0.00	0.00
Heightline	Tri 1550.1	63.139	366680.93	4785116.08	0.09	0.00	0.00
Heightline	Tri 1595.2	63.139	366680.93	4785116.08	0.09	0.00	0.00
Pointsource	S2	72.444	366690.07	4785117.80	27.09	1.00	0.00

L(wr)	--	--	--	--	--	101.00	--	--	--
A(ground)	-3.00	-3.00	-3.00	-3.00	-3.00	-3.00	-3.00	-3.00	-3.00
A(barrier)	6.18	7.65	9.51	11.78	14.35	17.13	19.94	19.97	19.98
A(veg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A(sit)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A(bld)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A(air)	0.00	0.01	0.03	0.08	0.15	0.28	0.73	2.48	8.83
A(geo)	48.56	48.56	48.56	48.56	48.56	48.56	48.56	48.56	48.56
D(i)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C(meteo)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L(p)	--	--	--	--	--	38.04	--	--	--

38.04

Cross section for receiver R5 (Id=-25636) and source S3 (Id=5782)

ItemType	Id	Distance	X	Y	Hgrnd	Height	GrndFact
Cluster							
Receiver	R5	0.000	366618.87	4785104.44	0.09	6.50	0.00
Heightline	Tri 1256.1	2.171	366621.01	4785104.79	0.09	0.00	0.00
Heightline	Tri 1201.1	2.171	366621.01	4785104.79	0.09	0.00	0.00
Building	LWPOLYLINE	6.505	366625.29	4785105.47	0.09	0.00	0.00
10							
Building	LWPOLYLINE	6.532	366625.32	4785105.48	0.09	0.00	0.00
10							
Heightline	Tri 1256.2	8.972	366627.73	4785105.86	0.09	0.00	0.00
Heightline	Tri 1302.2	8.972	366627.73	4785105.86	0.09	0.00	0.00
Heightline	Tri 1302.1	9.355	366628.11	4785105.92	0.09	0.00	0.00
Heightline	Tri 1330.2	9.355	366628.11	4785105.92	0.09	0.00	0.00

```
Heightline      Tri 1343.1      17.374   366636.03  4785107.19      0.09      0.00      0.00
Heightline      Tri 1330.3      17.374   366636.03  4785107.19      0.09      0.00      0.00
Heightline      Tri 1343.3      18.784   366637.42  4785107.41      0.09      0.00      0.00
Heightline      Tri 1366.3      18.784   366637.42  4785107.41      0.09      0.00      0.00
Heightline      Tri 1411.3      27.245   366645.77  4785108.75      0.09      0.00      0.00
Heightline      Tri 1366.1      27.245   366645.77  4785108.75      0.09      0.00      0.00
Heightline      Tri 1382.1      32.809   366651.27  4785109.63      0.09      0.00      0.00
Heightline      Tri 1411.1      32.809   366651.27  4785109.63      0.09      0.00      0.00
Heightline      Tri 1409.3      39.076   366657.45  4785110.62      0.09      0.00      0.00
Heightline      Tri 1382.3      39.076   366657.45  4785110.62      0.09      0.00      0.00
Heightline      Tri 1409.2      48.731   366666.99  4785112.15      0.09      0.00      0.00
Heightline      Tri 1445.3      48.731   366666.99  4785112.15      0.09      0.00      0.00
Heightline      Tri 1445.1      50.449   366668.68  4785112.42      0.09      0.00      0.00
Heightline      Tri 1472.1      50.449   366668.68  4785112.42      0.09      0.00      0.00
Heightline      Tri 1472.2      50.572   366668.81  4785112.44      0.09      0.00      0.00
Heightline      Tri 1485.3      50.572   366668.81  4785112.44      0.09      0.00      0.00
Building        LWPOLYLINE      54.888   366673.07  4785113.12      0.09      6.00      0.00
17
Building        LWPOLYLINE      57.538   366675.68  4785113.54      0.09     27.00      0.00
17
Barrier         Id=5809         58.988   366677.12  4785113.77     27.09      1.10      0.00
17
Heightline      Tri 1550.3      59.820   366677.94  4785113.90      0.09      0.00      0.00
Heightline      Tri 1485.2      59.820   366677.94  4785113.90      0.09      0.00      0.00
Heightline      Tri 1550.1      61.908   366680.00  4785114.23      0.09      0.00      0.00
Heightline      Tri 1595.2      61.908   366680.00  4785114.23      0.09      0.00      0.00
Pointsource     S3              77.160   366695.06  4785116.64     27.09      1.00      0.00
-------------------------------------------------------------------------------------------
L(wr)                --      --      --      --      --   90.00      --      --      --
A(ground)         -3.00   -3.00   -3.00   -3.00   -3.00   -3.00   -3.00   -3.00   -3.00

A(barrier)         6.15    7.58    9.39   11.62   14.18   16.94   19.82   19.97   19.98
A(veg)             0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
A(sit)             0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
A(bld)             0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
A(air)             0.00    0.01    0.03    0.08    0.15    0.29    0.77    2.62    9.36
A(geo)            49.06   49.06   49.06   49.06   49.06   49.06   49.06   49.06   49.06
D(i)               0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
C(meteo)           0.06    0.06    0.06    0.06    0.06    0.06    0.06    0.06    0.06
-------------------------------------------------------------------------------------------
L(p)                 --      --      --      --      --   26.64      --      --      -- |
26.64

===========================================================================================

  Height      Source  Per      LAeq        32        63       125       250       500      1000
2000      4000      8000
    6.50          S1    1     32.49        --        --        --        --        --     32.49
--        --        --
    6.50          S1    2        --        --        --        --        --        --        --
--        --        --
    6.50          S1    3     32.49        --        --        --        --        --     32.49
--        --        --
    6.50          S1    4        --        --        --        --        --        --        --
--        --        --
    6.50          S2    1     38.04        --        --        --        --        --     38.04
--        --        --
    6.50          S2    2        --        --        --        --        --        --        --
--        --        --
    6.50          S2    3        --        --        --        --        --        --        --
--        --        --
    6.50          S2    4        --        --        --        --        --        --        --
--        --        --
    6.50          S3    1     26.64        --        --        --        --        --     26.64
--        --        --
    6.50          S3    2        --        --        --        --        --        --        --
--        --        --
```

```
    6.50          S3    3     23.63        --        --        --        --        --     23.63
--        --        --
    6.50          S3    4        --        --        --        --        --        --        --
--        --        --

================================================================================================

  Height              Per      LAeq        32        63       125       250       500      1000
2000      4000      8000
    6.50                1     39.35        --        --        --        --        --     39.35
--        --        --
    6.50                2        --        --        --        --        --        --        --
--        --        --
    6.50                3     33.03        --        --        --        --        --     33.03
--        --        --
    6.50                4        --        --        --        --        --        --        --
--        --        --

------------------------------------------------------------------------------------------------
      0.0001;        376;    0.0000001; "TTimerSet - overhead"
      0.0008;        188;    0.0000041; "WriteTestString"
------------------------------------------------------------------------------------------------


================================================================================================
Testfile closed: 09/08/2019 11:33:01 AM
================================================================================================
```