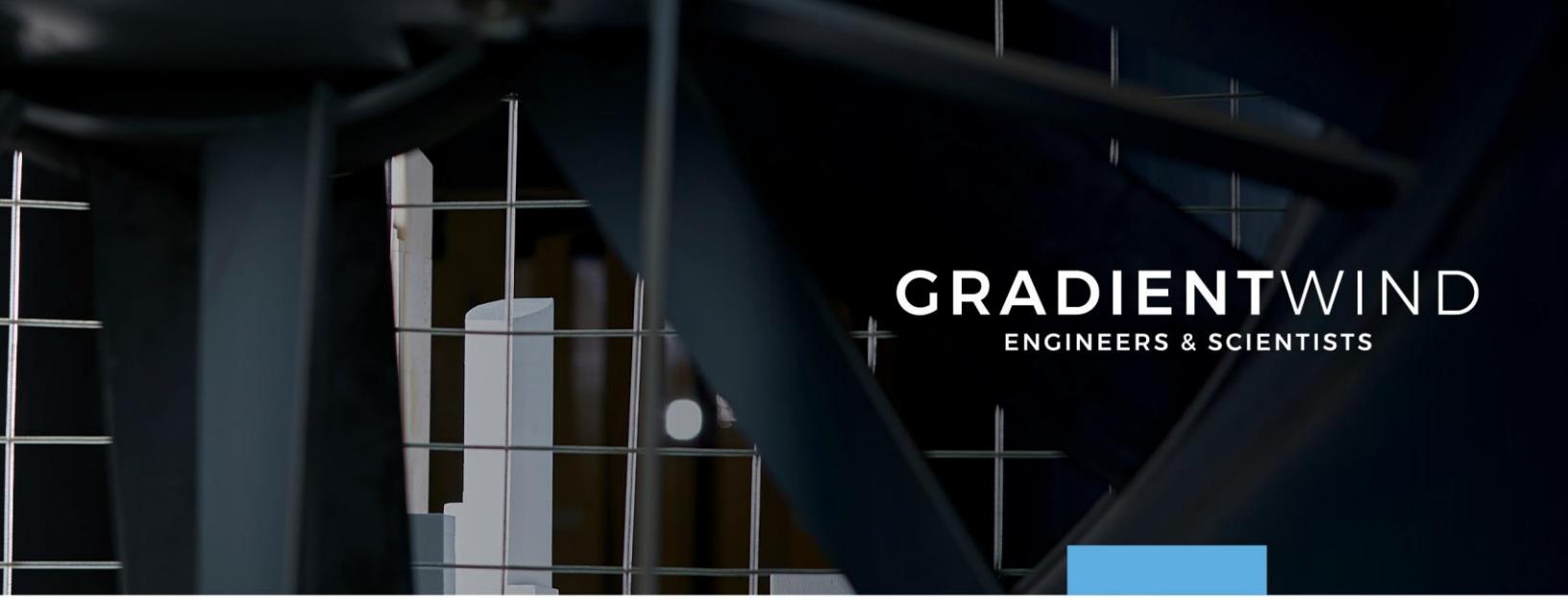

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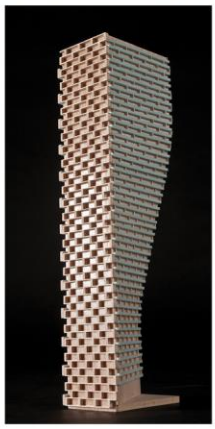
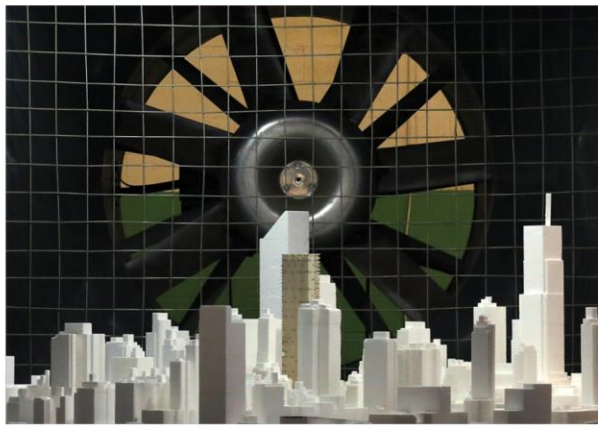
TRAFFIC NOISE ASSESSMENT

58 Florence Street
Ottawa, Ontario

GRADIENT WIND REPORT: 19-085 – Traffic Noise





June 14, 2019

PREPARED FOR

Novatech Engineering Consultants
Attn: Danna See-Har
240 Michael Cowpland Drive, Suite 200
Ottawa, ON
K2M 1P6

PREPARED BY

Cindy Hachem, Junior Environmental Scientist
Joshua Foster, P.Eng., Principal

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

This report describes a traffic noise assessment undertaken in support of a minor Zoning By-law Amendment and Site Plan Control application for a proposed residential development at 58 Florence Street in Ottawa, Ontario. The development is a three-storey, rectangular planform apartment building. Outdoor amenity areas are provided on the south side of the development at grade and at the north and south sides of the roof top. The major sources of traffic noise are Kent Street, Gladstone Avenue and the 417 Highway to the west and south sides of the site respectively. Figure 1 illustrates a complete site plan with surrounding context.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) and City of Ottawa requirements; (ii) noise level criteria as specified by 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 Novatech Engineering Consultants dated April 08, 2019.

The results of the current analysis indicate that noise levels will range between 52 and 65 dBA during the daytime period (07:00-23:00) and between 45 and 57 dBA during the nighttime period (23:00-07:00). The highest noise level (65 dBA) occurs at the north façade on the rooftop, which is nearest and most exposed to Kent Street. Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA.

Building components in compliance with the Ontario Building Code will be sufficient to ensure indoor sound levels remain below the ENCG criteria when windows are closed. The development will require a forced air heating system with provisions for central air conditioning, to be installed at the building owners discretion, and would allow occupants to keep windows closed and maintain a comfortable living environment. Warning Clauses outlined in Section 6 will be required to be placed on all purchase, sale, and lease agreements.

Sound levels at the outdoor amenity areas on the South and North facades of the rooftop reach 62 dBA and 65 dBA, respectively without the presence of a parapet. With consideration of a parapet height of 1.2 meters, sound levels at the outdoor amenity areas on the rooftop reduce to 61 dBA and 62 dBA,

respectively. A barrier or parapet height of more than 1.2 meters would interfere with the views from the terrace and would not be aesthetically desirable. As required by ENCG sound levels are to be reduced to 55 dBA. The noise barrier investigation indicates that is not feasible to attenuate the sound levels to 55 dBA by adding a parapet. Reducing noise levels to 59 dBA for both rooftop terraces can only be achieved by using a minimum parapet height of 4.0 and 4.5 meters for Receptors 6 and 7, respectively. As a result, a warning clause has been recommended in Section 6. As for the OLA amenity area at grade level, noise levels are expected to fall below the ENCG criterion of 55 dBA. Therefore, no acoustic mitigation strategies are required for this area.

A stationary traffic noise assessment will be conducted during the time of the site plan application. The stationary noise study will address potential high noise levels that may be propagated by various stationary mechanical equipment located near the development. These noise generating applications involve stationary objects such as rooftop air handling units, cooling towers, and emergency generators. The software used to determine the sound levels emitted by various mechanical appliances would be Predictor-Lima. Predictor-Lima provides theoretical environmental noise results and is a useful tool for conducting stationary noise studies. This software is capable of predicting noise levels by placing receptors at the expected locations of highest noise level occurrence. In addition, the ENCG establishes the regulations for noise control by locating the sound generating sources and installing silencers or noise screens in required areas found on the development.

TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Novatech Engineering Consultants to undertake a traffic noise assessment in support of a minor Zoning By-law Amendment and Site Plan Control applications for a proposed residential development at 58 Florence Street in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior and interior noise levels generated by local roadway traffic.

Our work is based on theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment, Conservation and Parks (MECP)[2] guidelines. Noise calculations were based on architectural drawings prepared by Novatech Engineering Consultants dated April 8, 2019, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The focus of this traffic noise assessment is a proposed residential development located at 58 Florence Street in Ottawa, ON. The study site is bounded by Kent Street to the east, Gladstone Avenue to the south, and Florence Street to the north. Beyond Gladstone Avenue lies Highway 417 which is within 500 meters of the study site.

The proposed development is a 3-storey rectangular shaped low-rise apartment building and contains an outdoor amenity area at grade to the south and on the rooftop at the north and south façades. The building contains soft landscaping to the east, north and south as well as, a ramp to the east. The development is located near the intersection of Kent Street and Florence Street. The site is surrounded by a 5-storey development to the south and west.

The major sources of noise are related to traffic along Kent Steet, Gladestone Avenue and the 417 Highway, where Kent Street and Gladstone Avenue are arterial and major collector roadways respectively.

[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

All other surrounding streets are local and insignificant sources of noise. Figure 1 illustrates a complete site plan with surrounding context.

3. OBJECTIVES

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

4. METHODOLOGY

4.1 Background

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

4.2 Roadway Traffic Noise

4.2.1 Criteria for Roadway Traffic Noise

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

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

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

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

Sound level criterion for outdoor living areas, such as rear yards and roof top terraces, is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA, mitigation must be provided to reduce noise levels where technically and administratively feasible to acceptable levels at or below the criterion.

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

4.2.2 Theoretical Roadway Noise Predictions

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

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

- 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 receptors 2-7.
- Ground surfaces were taken to be absorptive due to the presence of grass lands (soft) ground for receptor 1 located at grade in the outdoor living area.
- Ground surfaces for all segments corresponding to Highway 417 were taken to be absorptive due to the large quantity of houses present in between the 417 Highway and the development.
- Topography was assumed to be a flat/gentle slope surrounding the study building. Highway 417 is elevated approximately 2 m above local grade.
- Height for POW receptors 2-5 was taken to be 9.2 metres at Level 3 for the centre of the window.
- Height for OLA receptors 6 and 7 was taken to be 12.55 meters above grade for the rooftop terraces.
- The mid-rise building surrounding the development changes in height and was considered as a noise barrier with a height of 12-metres at the North West façade and 15-meters at the South-West and South Façade..
- The mid-rise building surrounding the development from the north was considered as a noise barrier with a height of 17-metres.
- For the receptors 7 and 6 located on the rooftop, the study building was considered as a noise barrier with a height of 11.05-metres.

- The low-rise building at the east of the study building was considered as a noise barrier with a height of 6-metres.
- Noise receptors were strategically placed at 7 locations around the study building (see Figure 2).
- Receptor distances and exposure angles are illustrated in Figures 3-9.

4.2.3 Roadway Traffic Volumes

The ENCG dictates that noise calculations should consider future sound levels based on a roadway's classification at the mature state of development. Therefore, traffic volumes are based on the roadway classifications outlined in the City of Ottawa's Official Plan (OP) and Transportation Master Plan[7] which provide additional details on future roadway expansions. Average Annual Daily Traffic (AADT) volumes are then based on data in Table B1 of the ENCG for each roadway classification. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment.

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes
Kent Street	2 Lane Urban Arterial Roadway	50	**15,000**
Gladstone Avenue	2 Lane Major Collector Roadway	40	**12,000**
Queensway (Highway 417)	6 Lane Freeway	100	**109,998**

5. RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

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

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

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROAD TRAFFIC

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
1	1.5	OLA – Amenity Area at Grade Level	52	N/A
2	9.2	POW – South Façade of the Building	58	51
3	9.2	POW – West Façade of the Building	60	53
4	9.2	POW – North Façade of the Building	57	50
5	9.2	POW – East Façade of the Building	58	50
6	12.5	OLA – South Façade of Rooftop Amenity Area	62	N/A
7	12.5	OLA – North Façade of Rooftop Amenity Area	65	N/A

The results of the current analysis indicate that noise levels will range between 52 and 65 dBA during the daytime period (07:00-23:00) and between 45 and 57 dBA during the nighttime period (23:00-07:00). The highest noise level (65 dBA) occurs at the north façade on the rooftop, which is nearest and most exposed to Kent Street.

5.2 Noise Control Measures

The noise levels predicted due to roadway traffic do not exceed the criteria listed in Section 4.2 for building components. Therefore, window and exterior walls in compliance with the Ontario Building Code will be sufficient to attenuate indoor sound levels assuming windows are closed. However, a forced air heating system with provisions for central air conditioning is required for this development. This will allow occupants to keep windows closed thereby ensuring a comfortable and quite indoor environment. Warning Clauses will also be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6.

Sound levels at the outdoor amenity areas on the South and North facades of the rooftop reach 62 dBA and 65 dBA, respectively without the presence of a parapet. With consideration of a parapet height of 1.2 meters, sound levels at the outdoor amenity areas on the rooftop reduce to 61 dBA and 62 dBA, respectively. A barrier or parapet height of more than 1.2 meters would interfere with the views from the terrace and would not be aesthetically desirable. As required by ENCG sound levels are to be reduced to 55 dBA. The noise barrier investigation indicates that is not feasible to attenuate the sound levels to 55

dBA by adding a parapet. Reducing noise levels to 59 dBA for both rooftop terraces can only be achieved by using a minimum parapet height of 4.0 and 4.5 meters for Receptors 6 and 7, respectively. As a result, a warning clause has been recommended in Section 6. As for the OLA amenity area at grade level, noise levels are expected to fall below the ENCG criterion of 55 dBA. Therefore, no acoustic mitigation strategies are required for this area.

TABLE 4: RESULTS OF NOISE BARRIER INVESTIGATION

Location	Receptor Height Above Grade (m)	Receptor Location	Daytime Leq Noise Levels (dBA)			
			Barrier Height (1.2 m)	Barrier Height (4.0 m)	Barrier Height (4.5 m)	No Barrier
6	12.5	OLA – South Façade of Rooftop Amenity Area	61	59	N/A	62
7	12.5	OLA – North Façade of Rooftop Amenity Area	62	N/A	59	65

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 52 and 65 dBA during the daytime period (07:00-23:00) and between 45 and 57 dBA during the nighttime period (23:00-07:00). The highest noise level (65 dBA) occurs at the north façade on the rooftop, which is nearest and most exposed to Kent Street.

Results of the calculations also indicate that building components in compliance with the Ontario Building Code will be sufficient to ensure indoor sound levels remain below the ENCG criteria when windows are closed. The development will require a forced air heating system with provisions for central air conditioning, to be installed at the building owners discretion, which will allow occupants to keep windows closed and maintain a comfortable living environment. The following Warning Clause[8] will also be required be placed on all Lease, Purchase and Sale Agreements, as summarized below:

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

"Purchasers/tenants are advised that sound levels due to increasing roadway traffic may, on occasion, interfere with some activities of the dwelling occupants and outdoor activities on the rooftop terrace, as the sound levels exceed the sound level limits of the City and the Ministry of the Environment, Conservation and Parks.

This dwelling unit has also been designed with the provision for adding central air conditioning at the occupant's discretion. Air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment, Conservation and Parks."

Sound levels at the outdoor amenity areas on the South and North facades of the rooftop reach 62 dBA and 65 dBA, respectively without the presence of a parapet. With consideration of a parapet height of 1.2 meters, sound levels at the outdoor amenity areas on the rooftop reduce to 61 dBA and 62 dBA, respectively. A barrier or parapet height of more than 1.2 meters would interfere with the views from the terrace and would not be aesthetically desirable. As required by ENCG sound levels are to be reduced to 55 dBA. The noise barrier investigation indicates that is not feasible to attenuate the sound levels to 55 dBA by adding a parapet. Reducing noise levels to 59 dBA for both rooftop terraces can only be achieved by using a minimum parapet height of 4.0 and 4.5 meters for Receptors 6 and 7, respectively. As for the OLA amenity area at grade level, noise levels are expected to fall below the ENCG criterion of 55 dBA. Therefore, no acoustic mitigation strategies are required for this area.

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

Sincerely,

Gradient Wind Engineering Inc.

Cindy Hachem
Junior Environmental Scientist
Gradient Wind File #19-085 – Traffic Noise

Joshua Foster, P.Eng.
Principal

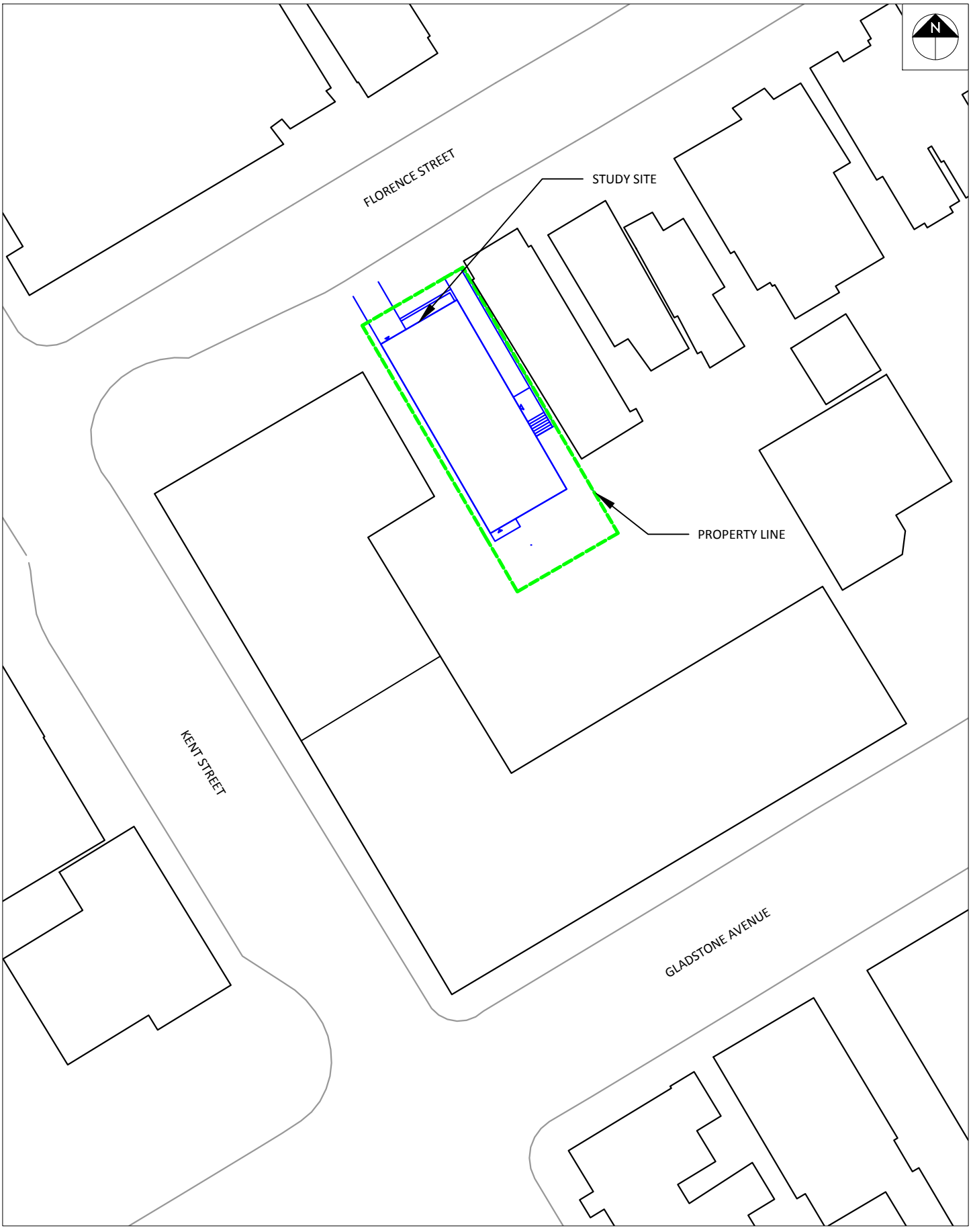

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FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT

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FIGURE 2:
RECEPTOR LOCATIONS

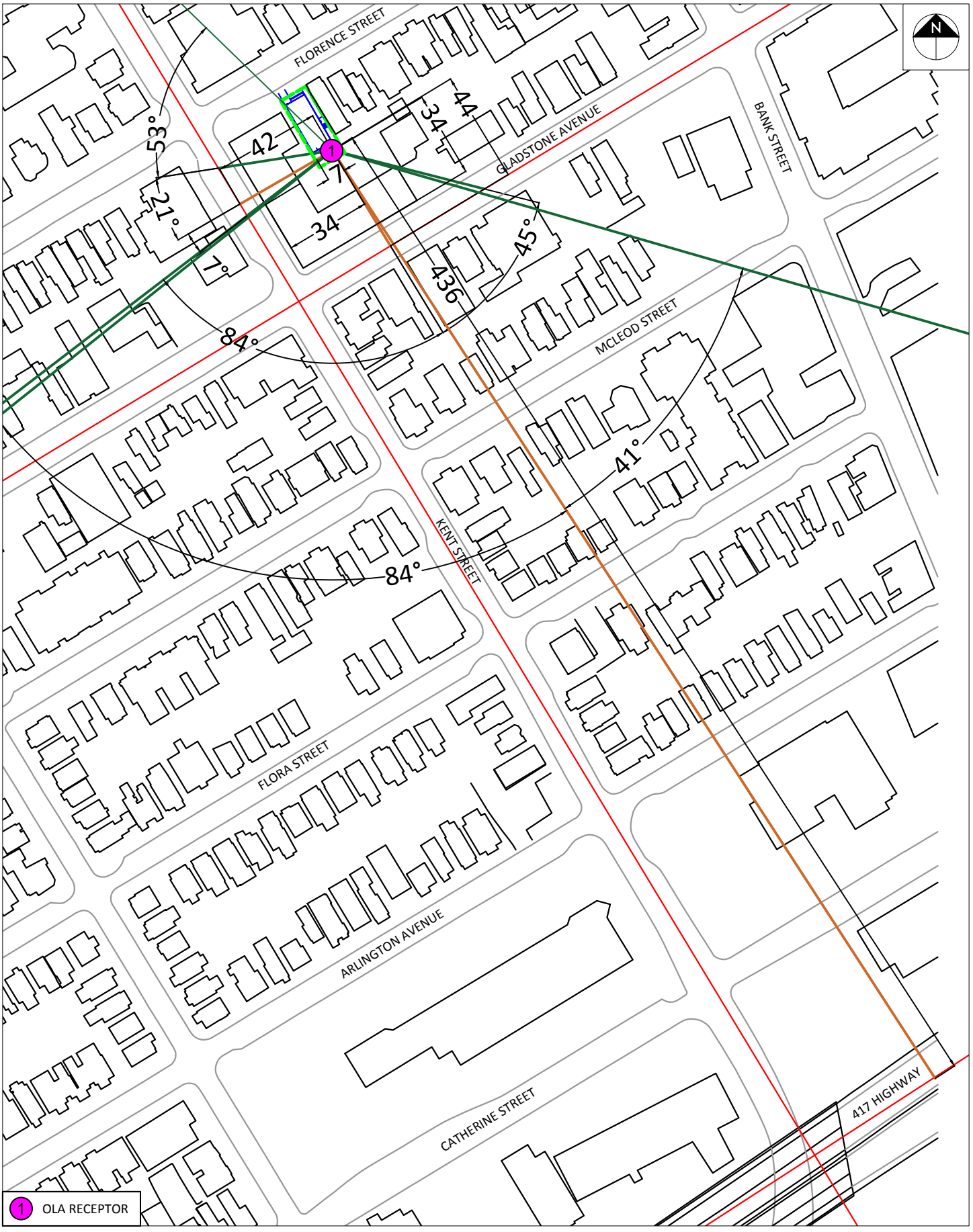

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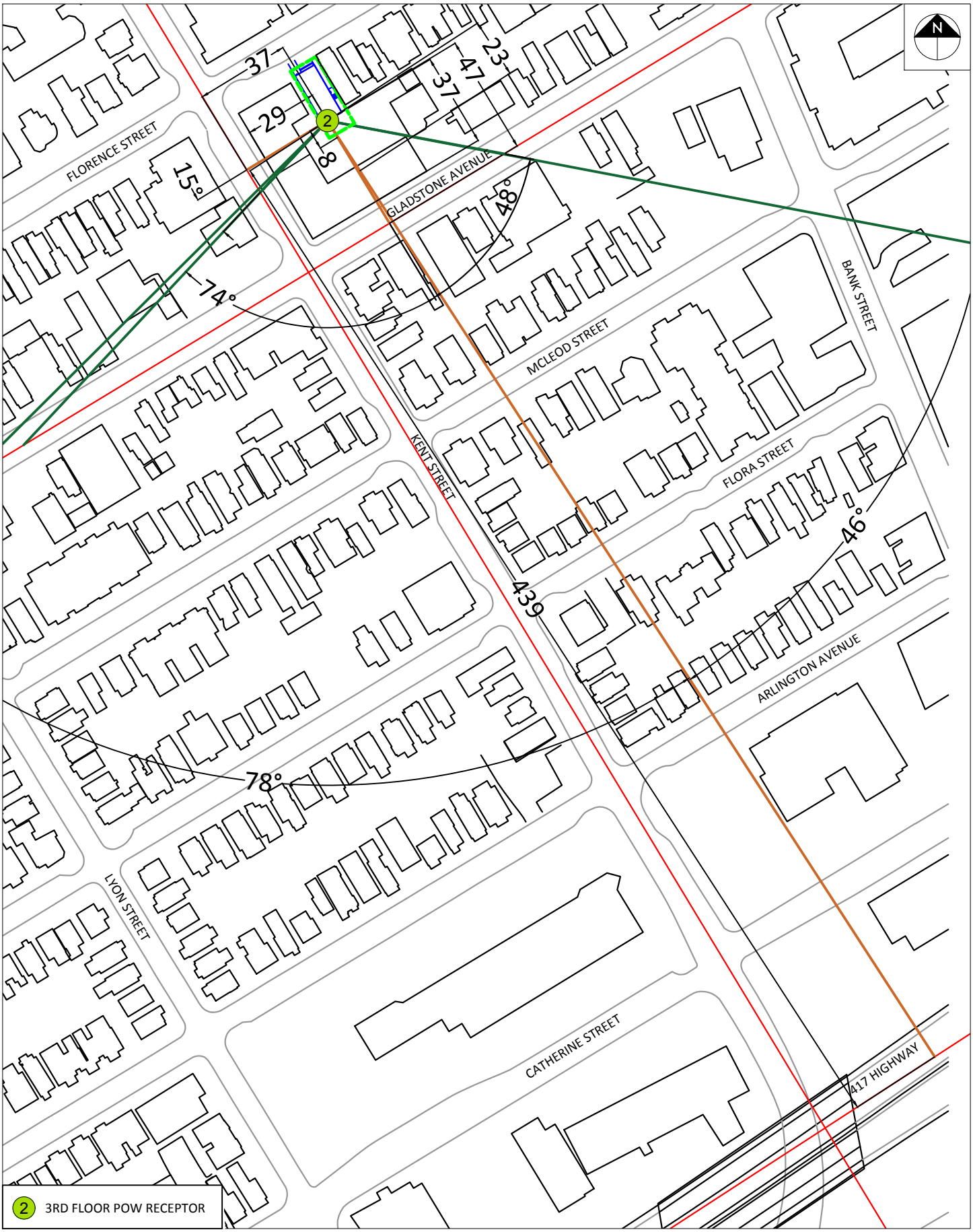
FIGURE 3:
RECEPTOR 1 STAMSON INPUT PARAMETERS



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DATE	JUNE 14, 2019	DRAWN BY	C.H.

FIGURE 4:
RECEPTOR 2 STAMSON INPUT PARAMETERS

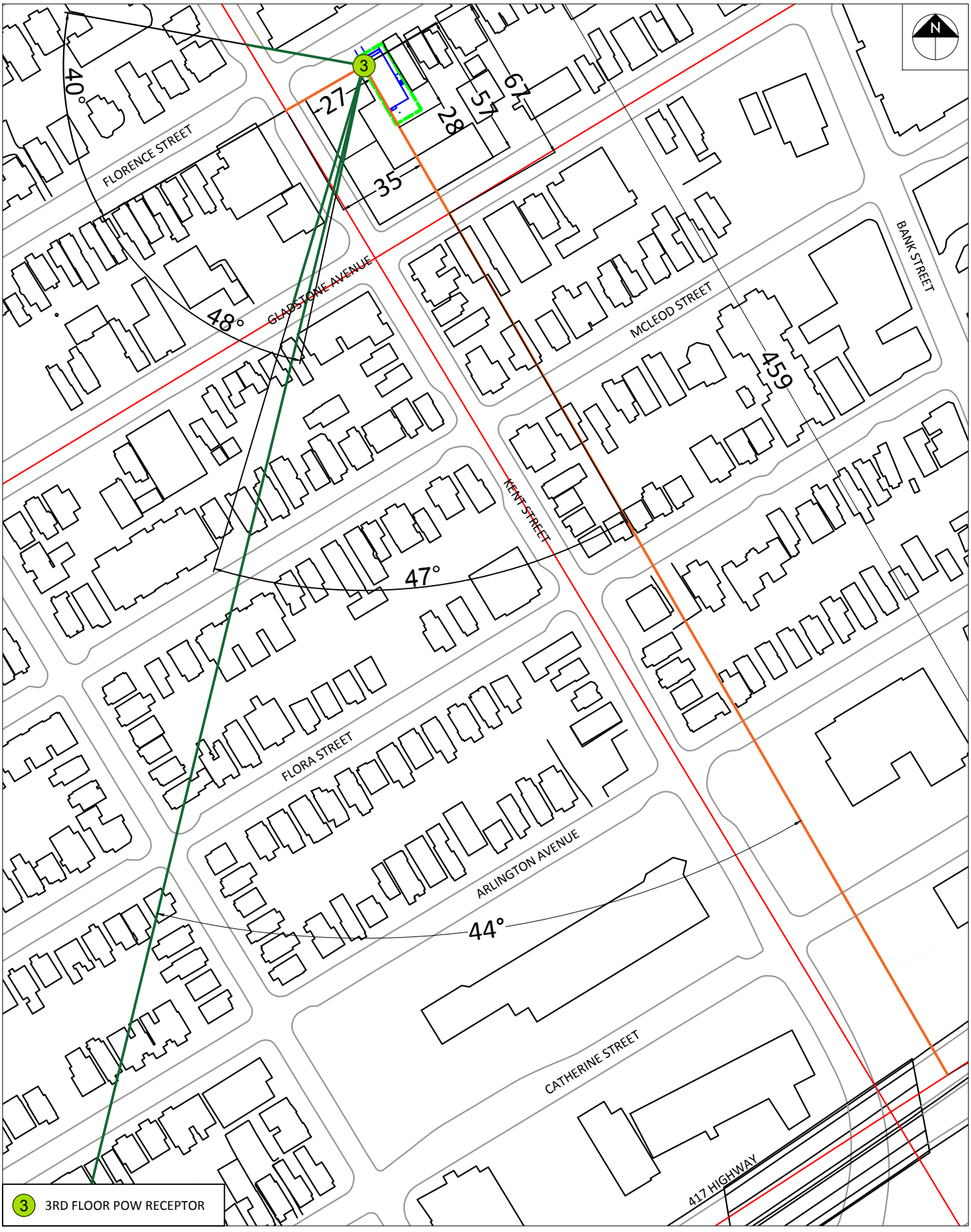

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FIGURE 5:
RECEPTOR 3 STAMSON INPUT PARAMETERS

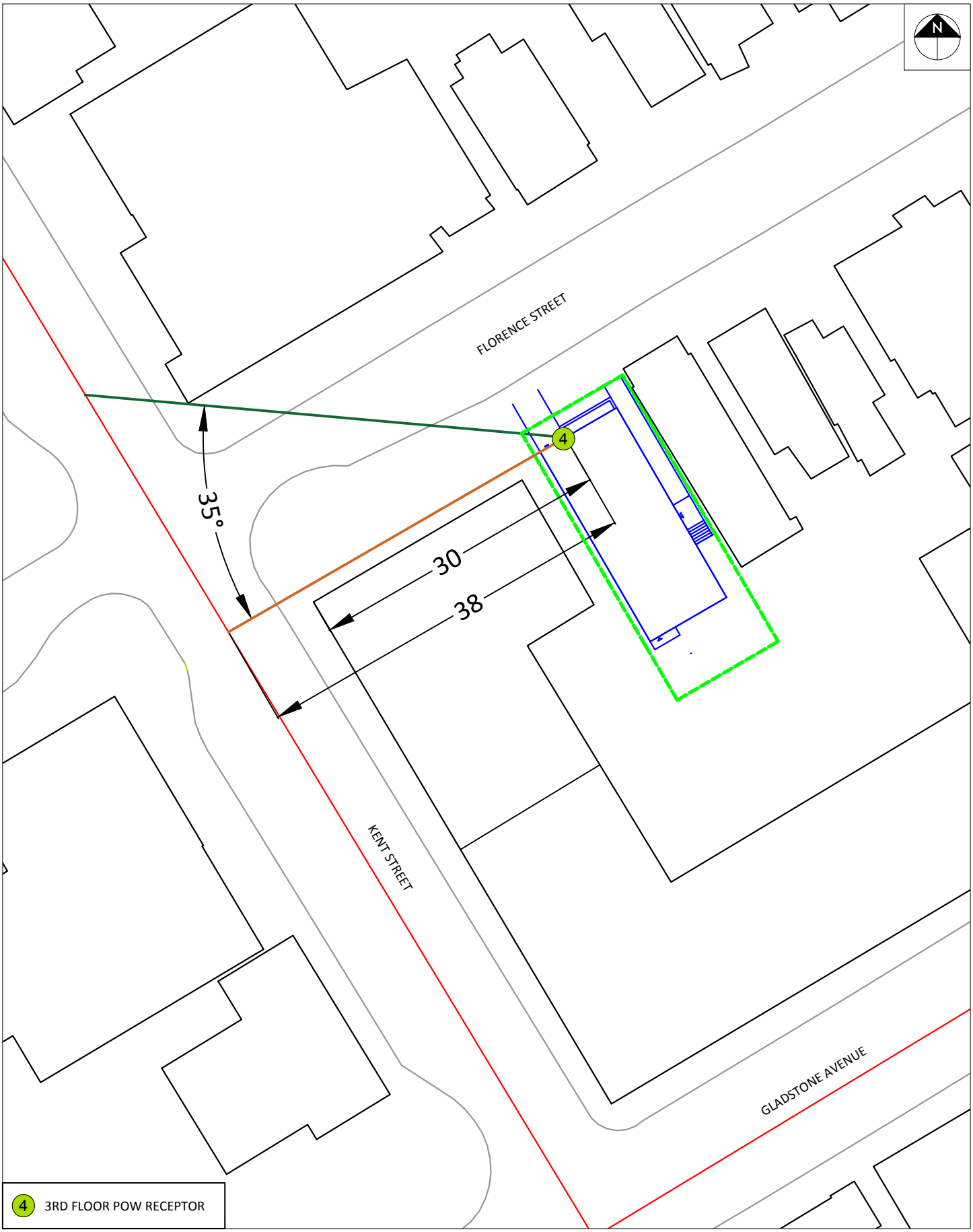

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FIGURE 6:
RECEPTOR 4 STAMSON INPUT PARAMETERS

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DESCRIPTION

FIGURE 7:
RECEPTOR 5 STAMSON INPUT PARAMETERS

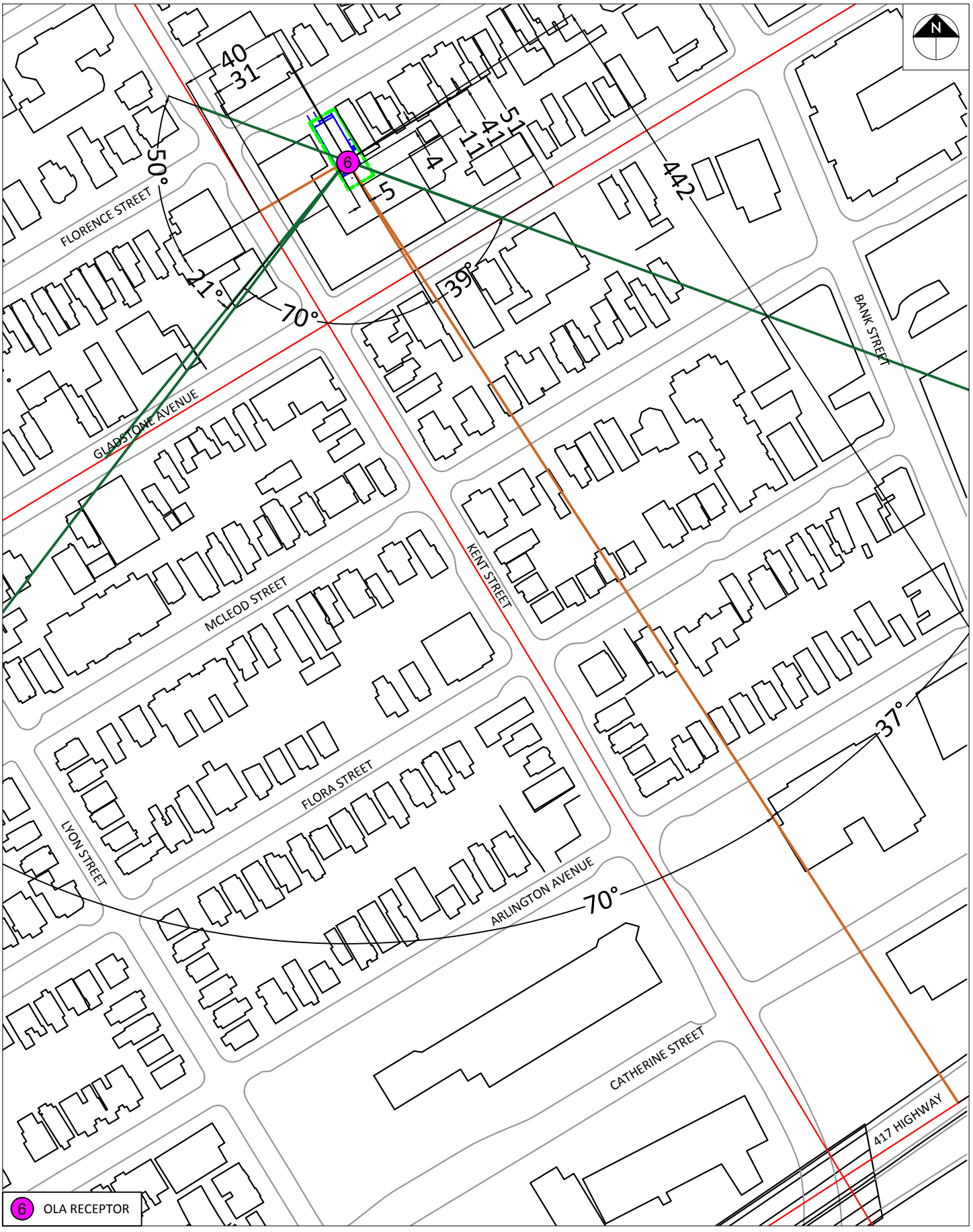

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FIGURE 8:
RECEPTOR 6 STAMSON INPUT PARAMETERS

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DESCRIPTION

FIGURE 9:
RECEPTOR 7 STAMSON INPUT PARAMETERS

APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

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```
STAMSON 5.0        NORMAL REPORT        Date: 13-06-2019 11:39:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -7.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -7.00 deg
Barrier height            :  15.00 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 # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           :  -7.00 deg   21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -7.00 deg   Angle2 : 21.00 deg
Barrier height            :  12.00 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: Kent s3 (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: Kent s3 (day/night)
-----------------------------------------
Angle1   Angle2           :  21.00 deg   53.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  21.00 deg   Angle2 : 53.00 deg
Barrier height            :  11.05 m
Barrier receiver distance :   7.00 / 7.00   m
```

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

Road data, segment # 4: Kent s4 (day/night)
-------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Kent s4 (day/night)
-----------------------------------------
Angle1   Angle2           :  53.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  52.00 / 52.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  53.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 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 # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -45.00 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           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -45.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  19.00 / 19.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: Gladstone s6 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 6: Gladstone s6 (day/night)
-----------------------------------------------
Angle1   Angle2           : -45.00 deg   84.00 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           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -45.00 deg   Angle2 : 84.00 deg
Barrier height            :  15.00 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 # 7: Highway 417a (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2          : -90.00 deg   -41.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 436.00 / 436.00 m
Receiver height          :   1.50 / 1.50   m
Topography               :      2       (Flat/gentle slope; with barrier)
Barrier angle1           : -90.00 deg   Angle2 : -41.00 deg
Barrier height           :   6.00 m
Barrier receiver distance :  19.00 / 19.00  m
Source elevation         :   2.00 m
Receiver elevation       :   0.00 m
Barrier elevation        :   0.00 m
Reference angle          :   0.00

Road data, segment # 8: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           : -41.00 deg   84.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 436.00 / 436.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -41.00 deg   Angle2 : 84.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  34.00 / 34.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 + 41.89 + 0.00) = 41.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     -7   0.00  68.48   0.00  -4.47  -3.36   0.00   0.00 -18.75  41.89
-------------------------------------------------------------------------------

Segment Leq : 41.89 dBA

Results segment # 2: Kent s2 (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 + 35.93 + 0.00) = 35.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -7     21   0.00  68.48   0.00  -4.47  -8.08   0.00   0.00 -20.00  35.93
```

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

Segment Leq : 35.93 dBA

Results segment # 3: Kent s3 (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 + 36.51 + 0.00) = 36.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
    21     53   0.00  68.48   0.00  -4.47  -7.50   0.00   0.00 -20.00  36.51
--------------------------------------------------------------------------------

Segment Leq : 36.51 dBA

Results segment # 4: Kent s4 (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 + 38.86 + 0.00) = 38.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
    53     90   0.00  68.48   0.00  -5.40  -6.87   0.00   0.00 -17.35  38.86
--------------------------------------------------------------------------------

Segment Leq : 38.86 dBA

Results segment # 5: Gladstone s5 (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 + 40.71 + 0.00) = 40.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -45   0.30  65.72   0.00  -6.08  -7.53   0.00   0.00 -11.40  40.71
-------------------------------------------------------------------------------

Segment Leq : 40.71 dBA

Results segment # 6: Gladstone s6 (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 + 39.64 + 0.00) = 39.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -45     84   0.00  65.72   0.00  -4.67  -1.45   0.00   0.00 -19.95  39.64
-------------------------------------------------------------------------------

Segment Leq : 39.64 dBA

Results segment # 7: Highway 417a (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 !        1.59 !         1.59

ROAD (0.00 + 47.03 + 0.00) = 47.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -41   0.30  83.16   0.00 -19.03  -7.06   0.00   0.00 -10.05  47.03
-------------------------------------------------------------------------------

Segment Leq : 47.03 dBA

Results segment # 8: Highway 417b (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 !        1.66 !         1.66

ROAD (0.00 + 48.02 + 0.00) = 48.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41     84   0.00  83.16   0.00 -14.63  -1.58   0.00   0.00 -18.92  48.02
-------------------------------------------------------------------------------

Segment Leq : 48.02 dBA

Total Leq All Segments: 52.21 dBA

Results segment # 1: Kent s1 (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 + 34.30 + 0.00) = 34.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     -7   0.00  60.88   0.00  -4.47  -3.36   0.00   0.00 -18.75  34.30
-------------------------------------------------------------------------------

Segment Leq : 34.30 dBA

Results segment # 2: Kent s2 (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 + 28.33 + 0.00) = 28.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -7     21   0.00  60.88   0.00  -4.47  -8.08   0.00   0.00 -20.00  28.33
```

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

Segment Leq : 28.33 dBA

Results segment # 3: Kent s3 (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 + 28.91 + 0.00) = 28.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
    21     53   0.00  60.88   0.00  -4.47  -7.50   0.00   0.00 -20.00  28.91
--------------------------------------------------------------------------------

Segment Leq : 28.91 dBA

Results segment # 4: Kent s4 (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 + 31.27 + 0.00) = 31.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
    53     90   0.00  60.88   0.00  -5.40  -6.87   0.00   0.00 -17.35  31.27
--------------------------------------------------------------------------------

Segment Leq : 31.27 dBA

Results segment # 5: Gladstone s5 (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 + 33.12 + 0.00) = 33.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -45   0.30  58.12   0.00  -6.08  -7.53   0.00   0.00 -11.40  33.12
-------------------------------------------------------------------------------

Segment Leq : 33.12 dBA

Results segment # 6: Gladstone s6 (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 + 32.04 + 0.00) = 32.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -45     84   0.00  58.12   0.00  -4.67  -1.45   0.00   0.00 -19.95  32.04
-------------------------------------------------------------------------------

Segment Leq : 32.04 dBA

Results segment # 7: Highway 417a (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 !        1.59 !         1.59

ROAD (0.00 + 39.43 + 0.00) = 39.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -41   0.30  75.56   0.00 -19.03  -7.06   0.00   0.00 -10.05  39.43
-------------------------------------------------------------------------------

Segment Leq : 39.43 dBA

Results segment # 8: Highway 417b (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 !        1.66 !         1.66

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
-------------------------------------------------------------------------------
   -41     84   0.00  75.56   0.00 -14.63  -1.58   0.00   0.00 -18.92  40.43
-------------------------------------------------------------------------------

Segment Leq : 40.43 dBA

Total Leq All Segments: 44.62 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 52.21
                           (NIGHT): 44.62
```

```
STAMSON 5.0         NORMAL REPORT         Date: 13-06-2019 12:23:04
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -15.00 deg
Barrier height            :  15.00 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 # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           : -15.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -15.00 deg   Angle2 : 0.00 deg
Barrier height            :  12.00 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: Gladstone s3 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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: Gladstone s3 (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   -48.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  47.00 / 47.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -48.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  23.00 / 23.00  m
Source elevation          :   0.00 m
```

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

Road data, segment # 4: Gladstone s4 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 4: Gladstone s4 (day/night)
-----------------------------------------------
Angle1   Angle2           : -48.00 deg   74.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  47.00 / 47.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -48.00 deg   Angle2 : 74.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  37.00 / 37.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
-----------------------------------------------
Angle1   Angle2           :  74.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  47.00 / 47.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  74.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 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 # 6: Highway 417a (day/night)
-------------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (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  : 439.00 / 439.00 m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -46.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  23.00 / 23.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           : -46.00 deg   78.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 439.00 / 439.00 m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -46.00 deg   Angle2 : 78.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  37.00 / 37.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: Highway 417c (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417c (day/night)
-----------------------------------------------
Angle1   Angle2           :  78.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 439.00 / 439.00 m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  78.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 !        9.20 !        3.16 !         3.16

ROAD (0.00 + 42.54 + 0.00) = 42.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -15   0.00  68.48   0.00  -3.92  -3.80   0.00   0.00 -18.22  42.54
-------------------------------------------------------------------------------

Segment Leq : 42.54 dBA

Results segment # 2: Kent s2 (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 !        9.20 !        3.16 !         3.16

ROAD (0.00 + 33.77 + 0.00) = 33.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -15      0   0.00  68.48   0.00  -3.92 -10.79   0.00   0.00 -20.00  33.77
-------------------------------------------------------------------------------
```

```
Segment Leq : 33.77 dBA

Results segment # 3: Gladstone s3 (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 !        9.20 !        5.43 !         5.43

ROAD (0.00 + 49.20 + 0.00) = 49.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -48   0.00  65.72   0.00  -4.96  -6.32   0.00   0.00  -5.24  49.20
-------------------------------------------------------------------------------

Segment Leq : 49.20 dBA

Results segment # 4: Gladstone s4 (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 !        9.20 !        3.13 !         3.13

ROAD (0.00 + 39.07 + 0.00) = 39.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48     74   0.00  65.72   0.00  -4.96  -1.69   0.00   0.00 -20.00  39.07
-------------------------------------------------------------------------------

Segment Leq : 39.07 dBA

Results segment # 5: Gladstone s5 (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 !        9.20 !        7.89 !         7.89
```

```
ROAD (0.00 + 40.81 + 0.00) = 40.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    74     90   0.00  65.72   0.00  -4.96 -10.51   0.00   0.00  -9.44  40.81
-------------------------------------------------------------------------

Segment Leq : 40.81 dBA

Results segment # 6: Highway 417a (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 !        9.20 !        8.90 !         8.90

ROAD (0.00 + 53.96 + 0.00) = 53.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -46   0.07  83.16   0.00 -15.68  -6.50   0.00   0.00  -0.98  60.00*
   -90    -46   0.43  83.16   0.00 -20.96  -8.24   0.00   0.00   0.00  53.96
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 53.96 dBA

Results segment # 7: Highway 417b (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 !        9.20 !        8.72 !         8.72

ROAD (0.00 + 53.09 + 0.00) = 53.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -46     78   0.00  83.16   0.00 -14.66  -1.62   0.00   0.00 -13.78  53.09
-------------------------------------------------------------------------

Segment Leq : 53.09 dBA

Results segment # 8: Highway 417c (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 !        9.20 !        9.10 !         9.10

ROAD (0.00 + 49.64 + 0.00) = 49.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    78     90   0.00  83.16   0.00 -14.66 -11.76   0.00   0.00  -7.10  49.64
-------------------------------------------------------------------------------

Segment Leq : 49.64 dBA

Total Leq All Segments: 58.25 dBA

Results segment # 1: Kent s1 (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 !        9.20 !        3.16 !         3.16

ROAD (0.00 + 34.94 + 0.00) = 34.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -15   0.00  60.88   0.00  -3.92  -3.80   0.00   0.00 -18.22  34.94
-------------------------------------------------------------------------------

Segment Leq : 34.94 dBA

Results segment # 2: Kent s2 (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 !        9.20 !        3.16 !         3.16

ROAD (0.00 + 26.17 + 0.00) = 26.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
```

```
-------------------------------------------------------------------------------
   -15      0   0.00  60.88   0.00  -3.92 -10.79   0.00   0.00 -20.00  26.17
-------------------------------------------------------------------------------

Segment Leq : 26.17 dBA

Results segment # 3: Gladstone s3 (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 !        9.20 !        5.43 !         5.43

ROAD (0.00 + 41.60 + 0.00) = 41.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -48   0.00  58.12   0.00  -4.96  -6.32   0.00   0.00  -5.24  41.60
-------------------------------------------------------------------------------

Segment Leq : 41.60 dBA

Results segment # 4: Gladstone s4 (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 !        9.20 !        3.13 !         3.13

ROAD (0.00 + 31.47 + 0.00) = 31.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48     74   0.00  58.12   0.00  -4.96  -1.69   0.00   0.00 -20.00  31.47
-------------------------------------------------------------------------------

Segment Leq : 31.47 dBA

Results segment # 5: Gladstone s5 (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 !        9.20 !        7.89 !         7.89

ROAD (0.00 + 33.21 + 0.00) = 33.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    74     90   0.00  58.12   0.00  -4.96 -10.51   0.00   0.00  -9.44  33.21
-------------------------------------------------------------------------------

Segment Leq : 33.21 dBA

Results segment # 6: Highway 417a (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 !        9.20 !        8.90 !         8.90

ROAD (0.00 + 46.37 + 0.00) = 46.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -46   0.07  75.56   0.00 -15.68  -6.50   0.00   0.00  -0.98  52.41*
   -90    -46   0.43  75.56   0.00 -20.96  -8.24   0.00   0.00   0.00  46.37
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.37 dBA

Results segment # 7: Highway 417b (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 !        9.20 !        8.72 !         8.72

ROAD (0.00 + 45.49 + 0.00) = 45.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -46     78   0.00  75.56   0.00 -14.66  -1.62   0.00   0.00 -13.78  45.49
-------------------------------------------------------------------------------

Segment Leq : 45.49 dBA
```

```
Results segment # 8: Highway 417c (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 !        9.20 !        9.10 !         9.10

ROAD (0.00 + 42.04 + 0.00) = 42.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    78     90   0.00  75.56   0.00 -14.66 -11.76   0.00   0.00  -7.10  42.04
-------------------------------------------------------------------------------

Segment Leq : 42.04 dBA

Total Leq All Segments: 50.65 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.25
                           (NIGHT): 50.65
```

```
STAMSON 5.0         NORMAL REPORT         Date: 13-06-2019 12:36:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -48.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -48.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  27.00 / 27.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           : -48.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -48.00 deg   Angle2 : 0.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  27.00 / 27.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Kent s3 (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: Kent s3 (day/night)
-----------------------------------------
Angle1   Angle2           :   0.00 deg   40.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 4: Kent s4 (day/night)
-------------------------------------------
```

```
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Kent s4 (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  :  35.00 / 35.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  40.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 m
Barrier receiver distance :  27.00 / 27.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
----------------------------------------------
Angle1   Angle2           :   0.00 deg   47.00 deg
```

```
Wood depth                 :      0        (No woods.)
No of house rows           :      0 / 0
Surface                    :      2        (Reflective ground surface)
Receiver source distance   :  67.00 / 67.00  m
Receiver height            :   9.20 / 9.20   m
Topography                 :      2        (Flat/gentle slope; with barrier)
Barrier angle1             :   0.00 deg   Angle2 : 47.00 deg
Barrier height             :  15.00 m
Barrier receiver distance  :  57.00 / 57.00  m
Source elevation           :   0.00 m
Receiver elevation         :   0.00 m
Barrier elevation          :   0.00 m
Reference angle            :   0.00

Road data, segment # 6: Gladstone s6 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 6: Gladstone s6 (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   :  67.00 / 67.00  m
Receiver height            :   9.20 / 9.20   m
Topography                 :      2        (Flat/gentle slope; with barrier)
Barrier angle1             :  47.00 deg   Angle2 : 90.00 deg
Barrier height             :  12.00 m
Barrier receiver distance  :  28.00 / 28.00  m
Source elevation           :   0.00 m
Receiver elevation         :   0.00 m
Barrier elevation          :   0.00 m
Reference angle            :   0.00

Road data, segment # 7: Highway 417a (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
```

```
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   44.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 459.00 / 459.00 m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 44.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  57.00 / 57.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           :  44.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
```

```
Receiver source distance  : 457.00 / 457.00 m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  44.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  28.00 / 28.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 !        9.20 !        3.26 !         3.26

ROAD (0.00 + 41.28 + 0.00) = 41.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -48   0.00  68.48   0.00  -3.68  -6.32   0.00   0.00 -17.20  41.28
-------------------------------------------------------------------------------

Segment Leq : 41.28 dBA

Results segment # 2: Kent s2 (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 !        9.20 !        3.26 !         3.26

ROAD (0.00 + 39.06 + 0.00) = 39.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48      0   0.00  68.48   0.00  -3.68  -5.74   0.00   0.00 -20.00  39.06
-------------------------------------------------------------------------------

Segment Leq : 39.06 dBA

Results segment # 3: Kent s3 (day)
----------------------------------
```

```
Source height = 1.50 m

ROAD (0.00 + 58.27 + 0.00) = 58.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     40   0.00  68.48   0.00  -3.68  -6.53   0.00   0.00   0.00  58.27
-------------------------------------------------------------------------------

Segment Leq : 58.27 dBA

Results segment # 4: Kent s4 (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 !        9.20 !        3.26 !         3.26

ROAD (0.00 + 41.24 + 0.00) = 41.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    40     90   0.00  68.48   0.00  -3.68  -5.56   0.00   0.00 -18.00  41.24
-------------------------------------------------------------------------------

Segment Leq : 41.24 dBA

Results segment # 5: Gladstone s5 (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 !        9.20 !        2.65 !         2.65

ROAD (0.00 + 33.39 + 0.00) = 33.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     47   0.00  65.72   0.00  -6.50  -5.83   0.00   0.00 -20.00  33.39
-------------------------------------------------------------------------------

Segment Leq : 33.39 dBA

Results segment # 6: Gladstone s6 (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 !        9.20 !        5.98 !         5.98

ROAD (0.00 + 41.26 + 0.00) = 41.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    47     90   0.00  65.72   0.00  -6.50  -6.22   0.00   0.00 -11.74  41.26
-------------------------------------------------------------------------------

Segment Leq : 41.26 dBA

Results segment # 7: Highway 417a (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 !        9.20 !        8.49 !         8.49

ROAD (0.00 + 48.67 + 0.00) = 48.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     44   0.00  83.16   0.00 -14.86  -6.12   0.00   0.00 -13.51  48.67
-------------------------------------------------------------------------------

Segment Leq : 48.67 dBA

Results segment # 8: Highway 417b (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 !        9.20 !        8.85 !         8.85

ROAD (0.00 + 54.82 + 0.00) = 54.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    44     90   0.00  83.16   0.00 -14.84  -5.93   0.00   0.00  -7.58  54.82
-------------------------------------------------------------------------------
```

```
Segment Leq : 54.82 dBA

Total Leq All Segments: 60.41 dBA

Results segment # 1: Kent s1 (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 !        9.20 !        3.26 !         3.26

ROAD (0.00 + 33.68 + 0.00) = 33.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -48   0.00  60.88   0.00  -3.68  -6.32   0.00   0.00 -17.20  33.68
-------------------------------------------------------------------------------

Segment Leq : 33.68 dBA

Results segment # 2: Kent s2 (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 !        9.20 !        3.26 !         3.26

ROAD (0.00 + 31.46 + 0.00) = 31.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48      0   0.00  60.88   0.00  -3.68  -5.74   0.00   0.00 -20.00  31.46
-------------------------------------------------------------------------------

Segment Leq : 31.46 dBA

Results segment # 3: Kent s3 (night)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 50.67 + 0.00) = 50.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     40   0.00  60.88   0.00  -3.68  -6.53   0.00   0.00   0.00  50.67
-------------------------------------------------------------------------------
```

```
Segment Leq : 50.67 dBA

Results segment # 4: Kent s4 (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 !        9.20 !        3.26 !         3.26

ROAD (0.00 + 33.64 + 0.00) = 33.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    40     90   0.00  60.88   0.00  -3.68  -5.56   0.00   0.00 -18.00  33.64
-------------------------------------------------------------------------------

Segment Leq : 33.64 dBA

Results segment # 5: Gladstone s5 (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 !        9.20 !        2.65 !         2.65

ROAD (0.00 + 25.79 + 0.00) = 25.79 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     47   0.00  58.12   0.00  -6.50  -5.83   0.00   0.00 -20.00  25.79
-------------------------------------------------------------------------------

Segment Leq : 25.79 dBA

Results segment # 6: Gladstone s6 (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 !        9.20 !        5.98 !         5.98
```

```
ROAD (0.00 + 33.66 + 0.00) = 33.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    47     90   0.00  58.12   0.00  -6.50  -6.22   0.00   0.00 -11.74  33.66
-------------------------------------------------------------------------------

Segment Leq : 33.66 dBA

Results segment # 7: Highway 417a (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 !        9.20 !        8.49 !         8.49

ROAD (0.00 + 41.07 + 0.00) = 41.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     44   0.00  75.56   0.00 -14.86  -6.12   0.00   0.00 -13.51  41.07
-------------------------------------------------------------------------------

Segment Leq : 41.07 dBA

Results segment # 8: Highway 417b (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 !        9.20 !        8.85 !         8.85

ROAD (0.00 + 47.22 + 0.00) = 47.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    44     90   0.00  75.56   0.00 -14.84  -5.93   0.00   0.00  -7.58  47.22
-------------------------------------------------------------------------------

Segment Leq : 47.22 dBA

Total Leq All Segments: 52.81 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.41
                           (NIGHT): 52.81
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-06-2019 12:39:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Kent Street (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: Kent Street (day/night)
---------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  38.00 / 38.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  35.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 m
Barrier receiver distance :  30.00 / 30.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent Street (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 !        9.20 !        3.12 !         3.12
```

```
ROAD (57.33 + 41.15 + 0.00) = 57.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     35   0.00  68.48   0.00  -4.04  -7.11   0.00   0.00   0.00  57.33
-------------------------------------------------------------------------------
    35     90   0.00  68.48   0.00  -4.04  -5.15   0.00   0.00 -18.14  41.15
-------------------------------------------------------------------------------

Segment Leq : 57.43 dBA

Total Leq All Segments: 57.43 dBA

Results segment # 1: Kent Street (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 !        9.20 !        3.12 !         3.12

ROAD (49.73 + 33.56 + 0.00) = 49.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     35   0.00  60.88   0.00  -4.04  -7.11   0.00   0.00   0.00  49.73
-------------------------------------------------------------------------------
    35     90   0.00  60.88   0.00  -4.04  -5.15   0.00   0.00 -18.14  33.56
-------------------------------------------------------------------------------
Segment Leq : 49.84 dBA

Total Leq All Segments: 49.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.43
                           (NIGHT): 49.84
STAMSON 5.0        NORMAL REPORT        Date: 13-06-2019 13:01:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Gladstone s1 (day/night)
------------------------------------------------
Car traffic volume  :  9826/854   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   442/38    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

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

    24 hr Traffic Volume (AADT or SADT):  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      :   4.00
    Day (16 hrs) % of Total Volume      :  92.00

Data for Segment # 1: Gladstone s1 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -8.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  66.00 / 66.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -8.00 deg
Barrier height            :  11.00 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Gladstone s2 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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: Gladstone s2 (day/night)
-----------------------------------------------
Angle1   Angle2           :  -8.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  66.00 / 66.00  m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -8.00 deg   Angle2 : 0.00 deg
```

```
Barrier height            :  15.00 m
Barrier receiver distance :  56.00 / 56.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Highway 417a (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -8.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 457.00 / 457.00 m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -8.00 deg
Barrier height            :  11.00 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
```

```
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           :  -8.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 457.00 / 457.00 m
Receiver height           :   9.20 / 9.20   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -8.00 deg   Angle2 : 0.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  56.00 / 56.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Gladstone s1 (day)
---------------------------------------

Source height = 1.41 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.41 !        9.20 !        7.19 !         7.19

ROAD (0.00 + 43.71 + 0.00) = 43.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     -8   0.00  65.09   0.00  -6.43  -3.41   0.00   0.00 -11.53  43.71
-------------------------------------------------------------------------------

Segment Leq : 43.71 dBA

Results segment # 2: Gladstone s2 (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 !        9.20 !        2.66 !         2.66
```

```
ROAD (0.00 + 25.76 + 0.00) = 25.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -8      0   0.00  65.72   0.00  -6.43 -13.52   0.00   0.00 -20.00  25.76
-------------------------------------------------------------------------------

Segment Leq : 25.76 dBA

Results segment # 3: Highway 417a (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 !        9.20 !        8.99 !         8.99

ROAD (0.00 + 57.21 + 0.00) = 57.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     -8   0.00  83.16   0.00 -14.84  -3.41   0.00   0.00  -7.70  57.21
-------------------------------------------------------------------------------

Segment Leq : 57.21 dBA

Results segment # 4: Highway 417b (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 !        9.20 !        8.50 !         8.50

ROAD (0.00 + 40.80 + 0.00) = 40.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -8      0   0.00  83.16   0.00 -14.84 -13.52   0.00   0.00 -14.00  40.80
-------------------------------------------------------------------------------

Segment Leq : 40.80 dBA

Total Leq All Segments: 57.50 dBA

Results segment # 1: Gladstone s1 (night)
-----------------------------------------
```

```
Source height = 1.41 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.41 !        9.20 !        7.19 !         7.19

ROAD (0.00 + 36.08 + 0.00) = 36.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     -8   0.00  57.46   0.00  -6.43  -3.41   0.00   0.00 -11.53  36.08
-------------------------------------------------------------------------------

Segment Leq : 36.08 dBA

Results segment # 2: Gladstone s2 (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 !        9.20 !        2.66 !         2.66

ROAD (0.00 + 18.16 + 0.00) = 18.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -8      0   0.00  58.12   0.00  -6.43 -13.52   0.00   0.00 -20.00  18.16
-------------------------------------------------------------------------------

Segment Leq : 18.16 dBA

Results segment # 3: Highway 417a (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 !        9.20 !        8.99 !         8.99

ROAD (0.00 + 49.61 + 0.00) = 49.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     -8   0.00  75.56   0.00 -14.84  -3.41   0.00   0.00  -7.70  49.61
-------------------------------------------------------------------------------
```

```
Segment Leq : 49.61 dBA
Results segment # 4: Highway 417b (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 !        9.20 !        8.50 !         8.50

ROAD (0.00 + 33.20 + 0.00) = 33.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -8      0   0.00  75.56   0.00 -14.84 -13.52   0.00   0.00 -14.00  33.20
-------------------------------------------------------------------------------

Segment Leq : 33.20 dBA

Total Leq All Segments: 49.90 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.50
                           (NIGHT): 49.90
```

```
STAMSON 5.0         NORMAL REPORT         Date: 14-06-2019 15:03:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           : -21.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -21.00 deg   Angle2 : 50.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Kent s3 (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: Kent s3 (day/night)
-----------------------------------------
Angle1   Angle2           :  50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  50.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
```

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

Road data, segment # 4: Gladstone s4 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 4: Gladstone s4 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -39.00 deg
Barrier height            :  11.05 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
-----------------------------------------------
Angle1   Angle2           : -39.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -39.00 deg   Angle2 : 70.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: Gladstone s6 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 6: Gladstone s6 (day/night)
-----------------------------------------------
Angle1   Angle2           :  70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  70.00 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
```

```
Road data, segment # 7: Highway 417a (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -37.00 deg
Barrier height            :  11.05 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           : -37.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -37.00 deg   Angle2 : 70.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 9: Highway 417c (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417c (day/night)
-----------------------------------------------
Angle1   Angle2           :  70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  70.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 42.38 + 0.00) = 42.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  68.48   0.00  -4.26  -4.16   0.00   0.00 -17.68  42.38
-------------------------------------------------------------------------------

Segment Leq : 42.38 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 40.18 + 0.00) = 40.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     50   0.00  68.48   0.00  -4.26  -4.04   0.00   0.00 -20.00  40.18
-------------------------------------------------------------------------------

Segment Leq : 40.18 dBA

Results segment # 3: Kent s3 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 40.52 + 0.00) = 40.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    50     90   0.00  68.48   0.00  -4.26  -6.53   0.00   0.00 -17.17  40.52
```

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

Segment Leq : 40.52 dBA

Results segment # 4: Gladstone s4 (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 !       12.55 !       11.68 !        11.68

ROAD (0.00 + 54.92 + 0.00) = 54.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90    -39   0.00  65.72   0.00  -5.31  -5.48   0.00   0.00  -3.71  51.21*
   -90    -39   0.00  65.72   0.00  -5.31  -5.48   0.00   0.00   0.00  54.92
--------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 54.92 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        3.66 !         3.66

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
--------------------------------------------------------------------------------
   -39     70   0.00  65.72   0.00  -5.31  -2.18   0.00   0.00 -20.00  38.22
--------------------------------------------------------------------------------

Segment Leq : 38.22 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !       10.17 !        10.17

ROAD (0.00 + 44.48 + 0.00) = 44.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  65.72   0.00  -5.31  -9.54   0.00   0.00  -6.38  44.48
-------------------------------------------------------------------------------

Segment Leq : 44.48 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.47 !        12.47

ROAD (0.00 + 56.90 + 0.00) = 56.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -37   0.00  83.16   0.00 -14.69  -5.31   0.00   0.00  -0.61  62.54*
   -90    -37   0.33  83.16   0.00 -19.52  -6.74   0.00   0.00   0.00  56.90
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.90 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.71 !        11.71

ROAD (0.00 + 57.00 + 0.00) = 57.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37     70   0.00  83.16   0.00 -14.69  -2.26   0.00   0.00  -9.21  57.00
-------------------------------------------------------------------------------
```

```
Segment Leq : 57.00 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.32 !        12.32

ROAD (0.00 + 51.35 + 0.00) = 51.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  83.16   0.00 -14.69  -9.54   0.00   0.00  -4.95  53.97*
    70     90   0.33  83.16   0.00 -19.52 -12.29   0.00   0.00   0.00  51.35
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 51.35 dBA

Total Leq All Segments: 61.79 dBA

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 34.78 + 0.00) = 34.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  60.88   0.00  -4.26  -4.16   0.00   0.00 -17.68  34.78
-------------------------------------------------------------------------------

Segment Leq : 34.78 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 32.58 + 0.00) = 32.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     50   0.00  60.88   0.00  -4.26  -4.04   0.00   0.00 -20.00  32.58
-------------------------------------------------------------------------------

Segment Leq : 32.58 dBA

Results segment # 3: Kent s3 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 32.92 + 0.00) = 32.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    50     90   0.00  60.88   0.00  -4.26  -6.53   0.00   0.00 -17.17  32.92
-------------------------------------------------------------------------------

Segment Leq : 32.92 dBA

Results segment # 4: Gladstone s4 (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 !       12.55 !       11.68 !        11.68

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
-------------------------------------------------------------------------------
   -90    -39   0.00  58.12   0.00  -5.31  -5.48   0.00   0.00  -3.71  43.61*
   -90    -39   0.00  58.12   0.00  -5.31  -5.48   0.00   0.00   0.00  47.33
-------------------------------------------------------------------------------

 * Bright Zone !
```

```
Segment Leq : 47.33 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        3.66 !         3.66

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
-------------------------------------------------------------------------------
   -39     70   0.00  58.12   0.00  -5.31  -2.18   0.00   0.00 -20.00  30.62
-------------------------------------------------------------------------------

Segment Leq : 30.62 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !       10.17 !        10.17

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
-------------------------------------------------------------------------------
    70     90   0.00  58.12   0.00  -5.31  -9.54   0.00   0.00  -6.38  36.88
-------------------------------------------------------------------------------

Segment Leq : 36.88 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.47 !        12.47
```

```
ROAD (0.00 + 49.30 + 0.00) = 49.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -37   0.00  75.56   0.00 -14.69  -5.31   0.00   0.00  -0.61  54.95*
   -90    -37   0.33  75.56   0.00 -19.52  -6.74   0.00   0.00   0.00  49.30
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.30 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.71 !        11.71

ROAD (0.00 + 49.40 + 0.00) = 49.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37     70   0.00  75.56   0.00 -14.69  -2.26   0.00   0.00  -9.21  49.40
-------------------------------------------------------------------------------

Segment Leq : 49.40 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.32 !        12.32

ROAD (0.00 + 43.75 + 0.00) = 43.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  75.56   0.00 -14.69  -9.54   0.00   0.00  -4.95  46.37*
    70     90   0.33  75.56   0.00 -19.52 -12.29   0.00   0.00   0.00  43.75
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 43.75 dBA
```

```
Total Leq All Segments: 54.20 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.79
                           (NIGHT): 54.20
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-06-2019 14:45:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6-a~1.te            Time Period: Day/Night 16/8 hours
Description: Parapet height of 2 meters


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Road data, segment # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           : -21.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -21.00 deg   Angle2 : 50.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Kent s3 (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: Kent s3 (day/night)
-----------------------------------------
Angle1   Angle2           :  50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  50.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 m
Barrier receiver distance :  31.00 / 31.00  m
```

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

Road data, segment # 4: Gladstone s4 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 4: Gladstone s4 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -39.00 deg
Barrier height            :  13.05 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
-----------------------------------------------
Angle1   Angle2           : -39.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -39.00 deg   Angle2 : 70.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: Gladstone s6 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 6: Gladstone s6 (day/night)
-----------------------------------------------
Angle1   Angle2           :  70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  70.00 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

Road data, segment # 7: Highway 417a (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2          : -90.00 deg   -37.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 442.00 / 442.00 m
Receiver height          :  12.55 / 12.55  m
Topography               :      2       (Flat/gentle slope; with barrier)
Barrier angle1           : -90.00 deg   Angle2 : -37.00 deg
Barrier height           :  13.05 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation         :   2.00 m
Receiver elevation       :   0.00 m
Barrier elevation        :   0.00 m
Reference angle          :   0.00

Road data, segment # 8: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           : -37.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -37.00 deg   Angle2 : 70.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 9: Highway 417c (day/night)
-------------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417c (day/night)
-----------------------------------------------
Angle1   Angle2           :  70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  70.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 42.38 + 0.00) = 42.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  68.48   0.00  -4.26  -4.16   0.00   0.00 -17.68  42.38
-------------------------------------------------------------------------------

Segment Leq : 42.38 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 40.18 + 0.00) = 40.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     50   0.00  68.48   0.00  -4.26  -4.04   0.00   0.00 -20.00  40.18
-------------------------------------------------------------------------------

Segment Leq : 40.18 dBA

Results segment # 3: Kent s3 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 40.52 + 0.00) = 40.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
```

```
    50      90    0.00  68.48    0.00  -4.26  -6.53    0.00    0.00 -17.17  40.52
-------------------------------------------------------------------------------

Segment Leq : 40.52 dBA

Results segment # 4: Gladstone s4 (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 !       12.55 !       11.68 !        11.68

ROAD (0.00 + 46.63 + 0.00) = 46.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -39    0.00  65.72   0.00  -5.31  -5.48   0.00   0.00  -8.29  46.63
-------------------------------------------------------------------------------

Segment Leq : 46.63 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        3.66 !         3.66

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
-------------------------------------------------------------------------------
   -39     70    0.00  65.72   0.00  -5.31  -2.18   0.00   0.00 -20.00  38.22
-------------------------------------------------------------------------------

Segment Leq : 38.22 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !       10.17 !        10.17

ROAD (0.00 + 44.48 + 0.00) = 44.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  65.72   0.00  -5.31  -9.54   0.00   0.00  -6.38  44.48
-------------------------------------------------------------------------------

Segment Leq : 44.48 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.47 !        12.47

ROAD (0.00 + 57.29 + 0.00) = 57.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -37   0.00  83.16   0.00 -14.69  -5.31   0.00   0.00  -5.86  57.29
-------------------------------------------------------------------------------

Segment Leq : 57.29 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.71 !        11.71

ROAD (0.00 + 57.00 + 0.00) = 57.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37     70   0.00  83.16   0.00 -14.69  -2.26   0.00   0.00  -9.21  57.00
-------------------------------------------------------------------------------

Segment Leq : 57.00 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.32 !        12.32

ROAD (0.00 + 51.35 + 0.00) = 51.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  83.16   0.00 -14.69  -9.54   0.00   0.00  -4.95  53.97*
    70     90   0.33  83.16   0.00 -19.52 -12.29   0.00   0.00   0.00  51.35
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 51.35 dBA

Total Leq All Segments: 61.12 dBA

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 34.78 + 0.00) = 34.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  60.88   0.00  -4.26  -4.16   0.00   0.00 -17.68  34.78
-------------------------------------------------------------------------------

Segment Leq : 34.78 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98
```

```
ROAD (0.00 + 32.58 + 0.00) = 32.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     50   0.00  60.88   0.00  -4.26  -4.04   0.00   0.00 -20.00  32.58
-------------------------------------------------------------------------------

Segment Leq : 32.58 dBA

Results segment # 3: Kent s3 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 32.92 + 0.00) = 32.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    50     90   0.00  60.88   0.00  -4.26  -6.53   0.00   0.00 -17.17  32.92
-------------------------------------------------------------------------------

Segment Leq : 32.92 dBA

Results segment # 4: Gladstone s4 (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 !       12.55 !       11.68 !        11.68

ROAD (0.00 + 39.03 + 0.00) = 39.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -39   0.00  58.12   0.00  -5.31  -5.48   0.00   0.00  -8.29  39.03
-------------------------------------------------------------------------------

Segment Leq : 39.03 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        3.66 !         3.66

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
-------------------------------------------------------------------------------
   -39     70   0.00  58.12   0.00  -5.31  -2.18   0.00   0.00 -20.00  30.62
-------------------------------------------------------------------------------

Segment Leq : 30.62 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !       10.17 !        10.17

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
-------------------------------------------------------------------------------
    70     90   0.00  58.12   0.00  -5.31  -9.54   0.00   0.00  -6.38  36.88
-------------------------------------------------------------------------------

Segment Leq : 36.88 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.47 !        12.47

ROAD (0.00 + 49.70 + 0.00) = 49.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -37   0.00  75.56   0.00 -14.69  -5.31   0.00   0.00  -5.86  49.70
-------------------------------------------------------------------------------

Segment Leq : 49.70 dBA
```

```
Results segment # 8: Highway 417b (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 !       12.55 !       11.71 !        11.71

ROAD (0.00 + 49.40 + 0.00) = 49.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37     70   0.00  75.56   0.00 -14.69  -2.26   0.00   0.00  -9.21  49.40
-------------------------------------------------------------------------------

Segment Leq : 49.40 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.32 !        12.32

ROAD (0.00 + 43.75 + 0.00) = 43.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  75.56   0.00 -14.69  -9.54   0.00   0.00  -4.95  46.37*
    70     90   0.33  75.56   0.00 -19.52 -12.29   0.00   0.00   0.00  43.75
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 43.75 dBA

Total Leq All Segments: 53.52 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.12
                           (NIGHT): 53.52
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-06-2019 14:42:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6-b~1.te            Time Period: Day/Night 16/8 hours
Description: Parapet height of 1.2 meters


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           : -21.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -21.00 deg   Angle2 : 50.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Kent s3 (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: Kent s3 (day/night)
-----------------------------------------
Angle1   Angle2           :  50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  50.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
```

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

Road data, segment # 4: Gladstone s4 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 4: Gladstone s4 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -39.00 deg
Barrier height            :  12.25 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
-----------------------------------------------
Angle1   Angle2           : -39.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -39.00 deg   Angle2 : 70.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: Gladstone s6 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 6: Gladstone s6 (day/night)
-----------------------------------------------
Angle1   Angle2           :  70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  70.00 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
```

```
Road data, segment # 7: Highway 417a (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -37.00 deg
Barrier height            :  12.25 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           : -37.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -37.00 deg   Angle2 : 70.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 9: Highway 417c (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417c (day/night)
-----------------------------------------------
Angle1   Angle2           :  70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  70.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 42.38 + 0.00) = 42.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  68.48   0.00  -4.26  -4.16   0.00   0.00 -17.68  42.38
-------------------------------------------------------------------------------

Segment Leq : 42.38 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 40.18 + 0.00) = 40.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     50   0.00  68.48   0.00  -4.26  -4.04   0.00   0.00 -20.00  40.18
-------------------------------------------------------------------------------

Segment Leq : 40.18 dBA

Results segment # 3: Kent s3 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 40.52 + 0.00) = 40.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    50     90   0.00  68.48   0.00  -4.26  -6.53   0.00   0.00 -17.17  40.52
```

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

Segment Leq : 40.52 dBA

Results segment # 4: Gladstone s4 (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 !       12.55 !       11.68 !        11.68

ROAD (0.00 + 49.11 + 0.00) = 49.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90    -39   0.00  65.72   0.00  -5.31  -5.48   0.00   0.00  -5.82  49.11
--------------------------------------------------------------------------------

Segment Leq : 49.11 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        3.66 !         3.66

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
--------------------------------------------------------------------------------
   -39     70   0.00  65.72   0.00  -5.31  -2.18   0.00   0.00 -20.00  38.22
--------------------------------------------------------------------------------

Segment Leq : 38.22 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !       10.17 !        10.17

ROAD (0.00 + 44.48 + 0.00) = 44.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  65.72   0.00  -5.31  -9.54   0.00   0.00  -6.38  44.48
-------------------------------------------------------------------------------

Segment Leq : 44.48 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.47 !        12.47

ROAD (0.00 + 56.90 + 0.00) = 56.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -37   0.00  83.16   0.00 -14.69  -5.31   0.00   0.00  -4.86  58.29*
   -90    -37   0.33  83.16   0.00 -19.52  -6.74   0.00   0.00   0.00  56.90
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.90 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.71 !        11.71

ROAD (0.00 + 57.00 + 0.00) = 57.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37     70   0.00  83.16   0.00 -14.69  -2.26   0.00   0.00  -9.21  57.00
-------------------------------------------------------------------------------

Segment Leq : 57.00 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.32 !        12.32

ROAD (0.00 + 51.35 + 0.00) = 51.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  83.16   0.00 -14.69  -9.54   0.00   0.00  -4.95  53.97*
    70     90   0.33  83.16   0.00 -19.52 -12.29   0.00   0.00   0.00  51.35
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 51.35 dBA

Total Leq All Segments: 61.08 dBA

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 34.78 + 0.00) = 34.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  60.88   0.00  -4.26  -4.16   0.00   0.00 -17.68  34.78
-------------------------------------------------------------------------------

Segment Leq : 34.78 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 32.58 + 0.00) = 32.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     50   0.00  60.88   0.00  -4.26  -4.04   0.00   0.00 -20.00  32.58
-------------------------------------------------------------------------------

Segment Leq : 32.58 dBA

Results segment # 3: Kent s3 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 32.92 + 0.00) = 32.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    50     90   0.00  60.88   0.00  -4.26  -6.53   0.00   0.00 -17.17  32.92
-------------------------------------------------------------------------------

Segment Leq : 32.92 dBA

Results segment # 4: Gladstone s4 (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 !       12.55 !       11.68 !        11.68

ROAD (0.00 + 41.51 + 0.00) = 41.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -39   0.00  58.12   0.00  -5.31  -5.48   0.00   0.00  -5.82  41.51
-------------------------------------------------------------------------------

Segment Leq : 41.51 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        3.66 !         3.66

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
-------------------------------------------------------------------------------
   -39     70   0.00  58.12   0.00  -5.31  -2.18   0.00   0.00 -20.00  30.62
-------------------------------------------------------------------------------

Segment Leq : 30.62 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !       10.17 !        10.17

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
-------------------------------------------------------------------------------
    70     90   0.00  58.12   0.00  -5.31  -9.54   0.00   0.00  -6.38  36.88
-------------------------------------------------------------------------------

Segment Leq : 36.88 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.47 !        12.47

ROAD (0.00 + 49.30 + 0.00) = 49.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -37   0.00  75.56   0.00 -14.69  -5.31   0.00   0.00  -4.86  50.70*
   -90    -37   0.33  75.56   0.00 -19.52  -6.74   0.00   0.00   0.00  49.30
-------------------------------------------------------------------------------
```

```
 * Bright Zone !

Segment Leq : 49.30 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.71 !        11.71

ROAD (0.00 + 49.40 + 0.00) = 49.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37     70   0.00  75.56   0.00 -14.69  -2.26   0.00   0.00  -9.21  49.40
-------------------------------------------------------------------------------

Segment Leq : 49.40 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.32 !        12.32

ROAD (0.00 + 43.75 + 0.00) = 43.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  75.56   0.00 -14.69  -9.54   0.00   0.00  -4.95  46.37*
    70     90   0.33  75.56   0.00 -19.52 -12.29   0.00   0.00   0.00  43.75
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 43.75 dBA

Total Leq All Segments: 53.48 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.08
                           (NIGHT): 53.48
```

```
STAMSON 5.0        NORMAL REPORT        Date: 14-06-2019 15:09:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6-c~1.te            Time Period: Day/Night 16/8 hours
Description: Parapet hieght of 4 - meters


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           : -21.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -21.00 deg   Angle2 : 50.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Kent s3 (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: Kent s3 (day/night)
-----------------------------------------
Angle1   Angle2           :  50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  50.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
```

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

Road data, segment # 4: Gladstone s4 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 4: Gladstone s4 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -39.00 deg
Barrier height            :  15.05 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
-----------------------------------------------
Angle1   Angle2           : -39.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -39.00 deg   Angle2 : 70.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: Gladstone s6 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 6: Gladstone s6 (day/night)
-----------------------------------------------
Angle1   Angle2           :  70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  70.00 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
```

```
Road data, segment # 7: Highway 417a (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -37.00 deg
Barrier height            :  15.05 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           : -37.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -37.00 deg   Angle2 : 70.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Road data, segment # 9: Highway 417c (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417c (day/night)
-----------------------------------------------
Angle1   Angle2           :  70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 442.00 / 442.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  70.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 42.38 + 0.00) = 42.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  68.48   0.00  -4.26  -4.16   0.00   0.00 -17.68  42.38
-------------------------------------------------------------------------------

Segment Leq : 42.38 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 40.18 + 0.00) = 40.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     50   0.00  68.48   0.00  -4.26  -4.04   0.00   0.00 -20.00  40.18
-------------------------------------------------------------------------------

Segment Leq : 40.18 dBA

Results segment # 3: Kent s3 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 40.52 + 0.00) = 40.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
```

```
    50      90    0.00  68.48    0.00  -4.26  -6.53    0.00    0.00 -17.17  40.52
-------------------------------------------------------------------------------

Segment Leq : 40.52 dBA

Results segment # 4: Gladstone s4 (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 !       12.55 !       11.68 !        11.68

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    -39    0.00  65.72    0.00  -5.31  -5.48    0.00    0.00 -13.11  41.81
-------------------------------------------------------------------------------

Segment Leq : 41.81 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        3.66 !         3.66

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
-------------------------------------------------------------------------------
   -39     70    0.00  65.72    0.00  -5.31  -2.18    0.00    0.00 -20.00  38.22
-------------------------------------------------------------------------------

Segment Leq : 38.22 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !       10.17 !        10.17

ROAD (0.00 + 44.48 + 0.00) = 44.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  65.72   0.00  -5.31  -9.54   0.00   0.00  -6.38  44.48
-------------------------------------------------------------------------------

Segment Leq : 44.48 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.47 !        12.47

ROAD (0.00 + 51.83 + 0.00) = 51.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -37   0.00  83.16   0.00 -14.69  -5.31   0.00   0.00 -11.33  51.83
-------------------------------------------------------------------------------

Segment Leq : 51.83 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.71 !        11.71

ROAD (0.00 + 57.00 + 0.00) = 57.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37     70   0.00  83.16   0.00 -14.69  -2.26   0.00   0.00  -9.21  57.00
-------------------------------------------------------------------------------

Segment Leq : 57.00 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.32 !        12.32

ROAD (0.00 + 51.35 + 0.00) = 51.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  83.16   0.00 -14.69  -9.54   0.00   0.00  -4.95  53.97*
    70     90   0.33  83.16   0.00 -19.52 -12.29   0.00   0.00   0.00  51.35
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 51.35 dBA

Total Leq All Segments: 59.44 dBA

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 34.78 + 0.00) = 34.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  60.88   0.00  -4.26  -4.16   0.00   0.00 -17.68  34.78
-------------------------------------------------------------------------------

Segment Leq : 34.78 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98
```

```
ROAD (0.00 + 32.58 + 0.00) = 32.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     50   0.00  60.88   0.00  -4.26  -4.04   0.00   0.00 -20.00  32.58
-------------------------------------------------------------------------------

Segment Leq : 32.58 dBA

Results segment # 3: Kent s3 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 32.92 + 0.00) = 32.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    50     90   0.00  60.88   0.00  -4.26  -6.53   0.00   0.00 -17.17  32.92
-------------------------------------------------------------------------------

Segment Leq : 32.92 dBA

Results segment # 4: Gladstone s4 (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 !       12.55 !       11.68 !        11.68

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    -39   0.00  58.12   0.00  -5.31  -5.48   0.00   0.00 -13.11  34.21
-------------------------------------------------------------------------------

Segment Leq : 34.21 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        3.66 !         3.66

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
-------------------------------------------------------------------------------
   -39     70   0.00  58.12   0.00  -5.31  -2.18   0.00   0.00 -20.00  30.62
-------------------------------------------------------------------------------

Segment Leq : 30.62 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !       10.17 !        10.17

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
-------------------------------------------------------------------------------
    70     90   0.00  58.12   0.00  -5.31  -9.54   0.00   0.00  -6.38  36.88
-------------------------------------------------------------------------------

Segment Leq : 36.88 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.47 !        12.47

ROAD (0.00 + 44.23 + 0.00) = 44.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -37   0.00  75.56   0.00 -14.69  -5.31   0.00   0.00 -11.33  44.23
-------------------------------------------------------------------------------

Segment Leq : 44.23 dBA
```

```
Results segment # 8: Highway 417b (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 !       12.55 !       11.71 !        11.71

ROAD (0.00 + 49.40 + 0.00) = 49.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37     70   0.00  75.56   0.00 -14.69  -2.26   0.00   0.00  -9.21  49.40
-------------------------------------------------------------------------------

Segment Leq : 49.40 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.32 !        12.32

ROAD (0.00 + 43.75 + 0.00) = 43.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    70     90   0.00  75.56   0.00 -14.69  -9.54   0.00   0.00  -4.95  46.37*
    70     90   0.33  75.56   0.00 -19.52 -12.29   0.00   0.00   0.00  43.75
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 43.75 dBA

Total Leq All Segments: 51.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.44
                           (NIGHT): 51.84
```

```
STAMSON 5.0         NORMAL REPORT         Date: 14-06-2019 13:55:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -41.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -41.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           : -41.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -41.00 deg   Angle2 : 0.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Kent s3 (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: Kent s3 (day/night)
-----------------------------------------
Angle1   Angle2           :   0.00 deg   38.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 38.00 deg
Barrier height            :  11.05 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
```

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

Road data, segment # 4: Kent s4 (day/night)
-------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Kent s4 (day/night)
-----------------------------------------
Angle1   Angle2           :  38.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  38.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -23.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -23.00 deg
Barrier height            :  11.05 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: Gladstone s6 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 6: Gladstone s6 (day/night)
-----------------------------------------------
Angle1   Angle2           : -23.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -23.00 deg   Angle2 : 90.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: Highway 417a (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  11.05 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           : -21.00 deg   52.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -21.00 deg   Angle2 : 52.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 9: Highway 417c (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417c (day/night)
-----------------------------------------------
Angle1   Angle2           :  52.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  52.00 deg   Angle2 : 90.00 deg
Barrier height            :  11.05 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 41.57 + 0.00) = 41.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -41   0.00  68.48   0.00  -4.26  -5.65   0.00   0.00 -17.00  41.57
-------------------------------------------------------------------------------

Segment Leq : 41.57 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 37.80 + 0.00) = 37.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41      0   0.00  68.48   0.00  -4.26  -6.42   0.00   0.00 -20.00  37.80
-------------------------------------------------------------------------------

Segment Leq : 37.80 dBA

Results segment # 3: Kent s3 (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 !       12.55 !       11.17 !        11.17

ROAD (0.00 + 57.47 + 0.00) = 57.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     38   0.00  68.48   0.00  -4.26  -6.75   0.00   0.00  -4.93  52.54*
     0     38   0.00  68.48   0.00  -4.26  -6.75   0.00   0.00   0.00  57.47
```

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

 * Bright Zone !

Segment Leq : 57.47 dBA

Results segment # 4: Kent s4 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 41.15 + 0.00) = 41.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
    38     90   0.00  68.48   0.00  -4.26  -5.39   0.00   0.00 -17.68  41.15
--------------------------------------------------------------------------------

Segment Leq : 41.15 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        9.66 !         9.66

ROAD (0.00 + 48.42 + 0.00) = 48.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90    -23   0.00  65.72   0.00  -6.37  -4.29   0.00   0.00  -6.63  48.42
--------------------------------------------------------------------------------

Segment Leq : 48.42 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !        3.37 !         3.37

ROAD (0.00 + 38.95 + 0.00) = 38.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -23     90   0.00  65.72   0.00  -6.37  -2.02   0.00   0.00 -18.37  38.95
-------------------------------------------------------------------------------

Segment Leq : 38.95 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 58.09 + 0.00) = 58.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  83.16   0.00 -14.89  -4.16   0.00   0.00  -3.60  60.50*
   -90    -21   0.33  83.16   0.00 -19.79  -5.27   0.00   0.00   0.00  58.09
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.09 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.49 !        11.49

ROAD (0.00 + 55.16 + 0.00) = 55.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     52   0.00  83.16   0.00 -14.89  -3.92   0.00   0.00  -9.18  55.16
-------------------------------------------------------------------------------

Segment Leq : 55.16 dBA
```

```
Results segment # 9: Highway 417c (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 !       12.55 !       12.22 !        12.22

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
-------------------------------------------------------------------------------
    52     90   0.00  83.16   0.00 -14.89  -6.75   0.00   0.00  -4.22  57.29*
    52     90   0.00  83.16   0.00 -14.89  -6.75   0.00   0.00   0.00  61.51
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 61.51 dBA

Total Leq All Segments: 64.85 dBA

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 33.98 + 0.00) = 33.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -41   0.00  60.88   0.00  -4.26  -5.65   0.00   0.00 -17.00  33.98
-------------------------------------------------------------------------------

Segment Leq : 33.98 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 30.20 + 0.00) = 30.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41      0   0.00  60.88   0.00  -4.26  -6.42   0.00   0.00 -20.00  30.20
-------------------------------------------------------------------------------

Segment Leq : 30.20 dBA

Results segment # 3: Kent s3 (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 !       12.55 !       11.17 !        11.17

ROAD (0.00 + 49.87 + 0.00) = 49.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     38   0.00  60.88   0.00  -4.26  -6.75   0.00   0.00  -4.93  44.94*
     0     38   0.00  60.88   0.00  -4.26  -6.75   0.00   0.00   0.00  49.87
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.87 dBA

Results segment # 4: Kent s4 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 33.55 + 0.00) = 33.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    38     90   0.00  60.88   0.00  -4.26  -5.39   0.00   0.00 -17.68  33.55
-------------------------------------------------------------------------------

Segment Leq : 33.55 dBA
```

```
Results segment # 5: Gladstone s5 (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 !       12.55 !        9.66 !         9.66

ROAD (0.00 + 40.82 + 0.00) = 40.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -23   0.00  58.12   0.00  -6.37  -4.29   0.00   0.00  -6.63  40.82
-------------------------------------------------------------------------------

Segment Leq : 40.82 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !        3.37 !         3.37

ROAD (0.00 + 31.35 + 0.00) = 31.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -23     90   0.00  58.12   0.00  -6.37  -2.02   0.00   0.00 -18.37  31.35
-------------------------------------------------------------------------------

Segment Leq : 31.35 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 50.50 + 0.00) = 50.50 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  75.56   0.00 -14.89  -4.16   0.00   0.00  -3.60  52.91*
   -90    -21   0.33  75.56   0.00 -19.79  -5.27   0.00   0.00   0.00  50.50
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 50.50 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.49 !        11.49

ROAD (0.00 + 47.56 + 0.00) = 47.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     52   0.00  75.56   0.00 -14.89  -3.92   0.00   0.00  -9.18  47.56
-------------------------------------------------------------------------------

Segment Leq : 47.56 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.22 !        12.22

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
-------------------------------------------------------------------------------
    52     90   0.00  75.56   0.00 -14.89  -6.75   0.00   0.00  -4.22  49.70*
    52     90   0.00  75.56   0.00 -14.89  -6.75   0.00   0.00   0.00  53.91
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 53.91 dBA

Total Leq All Segments: 57.26 dBA
```

```
TOTAL Leq FROM ALL SOURCES (DAY): 64.85
                           (NIGHT): 57.26
```

```
STAMSON 5.0         NORMAL REPORT         Date: 14-06-2019 14:05:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7-a~1.te              Time Period: Day/Night 16/8 hours
Description:  Parapet height of 2 meters


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -41.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -41.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           : -41.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -41.00 deg   Angle2 : 0.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Kent s3 (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: Kent s3 (day/night)
-----------------------------------------
Angle1   Angle2           :   0.00 deg   38.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 38.00 deg
Barrier height            :  13.05 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
```

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

Road data, segment # 4: Kent s4 (day/night)
-------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Kent s4 (day/night)
-----------------------------------------
Angle1   Angle2           :  38.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  38.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -23.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -23.00 deg
Barrier height            :  13.05 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: Gladstone s6 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 6: Gladstone s6 (day/night)
-----------------------------------------------
Angle1   Angle2           : -23.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -23.00 deg   Angle2 : 90.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: Highway 417a (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  13.05 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           : -21.00 deg   52.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -21.00 deg   Angle2 : 52.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 9: Highway 417c (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417c (day/night)
-----------------------------------------------
Angle1   Angle2           :  52.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  52.00 deg   Angle2 : 90.00 deg
Barrier height            :  13.05 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 41.57 + 0.00) = 41.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -41   0.00  68.48   0.00  -4.26  -5.65   0.00   0.00 -17.00  41.57
-------------------------------------------------------------------------------

Segment Leq : 41.57 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 37.80 + 0.00) = 37.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41      0   0.00  68.48   0.00  -4.26  -6.42   0.00   0.00 -20.00  37.80
-------------------------------------------------------------------------------

Segment Leq : 37.80 dBA

Results segment # 3: Kent s3 (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 !       12.55 !       11.17 !        11.17

ROAD (0.00 + 44.24 + 0.00) = 44.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     38   0.00  68.48   0.00  -4.26  -6.75   0.00   0.00 -13.23  44.24
```

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

Segment Leq : 44.24 dBA

Results segment # 4: Kent s4 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 41.15 + 0.00) = 41.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
    38     90   0.00  68.48   0.00  -4.26  -5.39   0.00   0.00 -17.68  41.15
--------------------------------------------------------------------------------

Segment Leq : 41.15 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        9.66 !         9.66

ROAD (0.00 + 44.71 + 0.00) = 44.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90    -23   0.00  65.72   0.00  -6.37  -4.29   0.00   0.00 -10.35  44.71
--------------------------------------------------------------------------------

Segment Leq : 44.71 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !        3.37 !         3.37

ROAD (0.00 + 38.95 + 0.00) = 38.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -23     90   0.00  65.72   0.00  -6.37  -2.02   0.00   0.00 -18.37  38.95
-------------------------------------------------------------------------------

Segment Leq : 38.95 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 58.54 + 0.00) = 58.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  83.16   0.00 -14.89  -4.16   0.00   0.00  -5.55  58.54
-------------------------------------------------------------------------------

Segment Leq : 58.54 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.49 !        11.49

ROAD (0.00 + 55.16 + 0.00) = 55.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     52   0.00  83.16   0.00 -14.89  -3.92   0.00   0.00  -9.18  55.16
-------------------------------------------------------------------------------

Segment Leq : 55.16 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 56.17 + 0.00) = 56.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    52     90   0.00  83.16   0.00 -14.89  -6.75   0.00   0.00  -5.34  56.17
-------------------------------------------------------------------------------

Segment Leq : 56.17 dBA

Total Leq All Segments: 61.91 dBA

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 33.98 + 0.00) = 33.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -41   0.00  60.88   0.00  -4.26  -5.65   0.00   0.00 -17.00  33.98
-------------------------------------------------------------------------------

Segment Leq : 33.98 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 30.20 + 0.00) = 30.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41      0   0.00  60.88   0.00  -4.26  -6.42   0.00   0.00 -20.00  30.20
```

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

Segment Leq : 30.20 dBA

Results segment # 3: Kent s3 (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 !       12.55 !       11.17 !        11.17

ROAD (0.00 + 36.64 + 0.00) = 36.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
     0     38   0.00  60.88   0.00  -4.26  -6.75   0.00   0.00 -13.23  36.64
--------------------------------------------------------------------------------

Segment Leq : 36.64 dBA

Results segment # 4: Kent s4 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 33.55 + 0.00) = 33.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
    38     90   0.00  60.88   0.00  -4.26  -5.39   0.00   0.00 -17.68  33.55
--------------------------------------------------------------------------------

Segment Leq : 33.55 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        9.66 !         9.66

ROAD (0.00 + 37.11 + 0.00) = 37.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -23   0.00  58.12   0.00  -6.37  -4.29   0.00   0.00 -10.35  37.11
-------------------------------------------------------------------------------

Segment Leq : 37.11 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !        3.37 !         3.37

ROAD (0.00 + 31.35 + 0.00) = 31.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -23     90   0.00  58.12   0.00  -6.37  -2.02   0.00   0.00 -18.37  31.35
-------------------------------------------------------------------------------

Segment Leq : 31.35 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 50.95 + 0.00) = 50.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  75.56   0.00 -14.89  -4.16   0.00   0.00  -5.55  50.95
-------------------------------------------------------------------------------

Segment Leq : 50.95 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.49 !        11.49

ROAD (0.00 + 47.56 + 0.00) = 47.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     52   0.00  75.56   0.00 -14.89  -3.92   0.00   0.00  -9.18  47.56
-------------------------------------------------------------------------------

Segment Leq : 47.56 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 48.57 + 0.00) = 48.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    52     90   0.00  75.56   0.00 -14.89  -6.75   0.00   0.00  -5.34  48.57
-------------------------------------------------------------------------------

Segment Leq : 48.57 dBA

Total Leq All Segments: 54.32 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.91
                           (NIGHT): 54.32
STAMSON 5.0        NORMAL REPORT        Date: 14-06-2019 14:07:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7-b~1.te            Time Period: Day/Night 16/8 hours
Description:  Parapet height of 1.2 meters


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -41.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -41.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           : -41.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
```

```
Topography                 :      2       (Flat/gentle slope; with barrier)
Barrier angle1             : -41.00 deg   Angle2 : 0.00 deg
Barrier height             :  12.00 m
Barrier receiver distance  :  31.00 / 31.00  m
Source elevation           :   0.00 m
Receiver elevation         :   0.00 m
Barrier elevation          :   0.00 m
Reference angle            :   0.00

Road data, segment # 3: Kent s3 (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: Kent s3 (day/night)
-----------------------------------------
Angle1   Angle2            :   0.00 deg   38.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      2       (Reflective ground surface)
Receiver source distance   :  40.00 / 40.00  m
Receiver height            :  12.55 / 12.55  m
Topography                 :      2       (Flat/gentle slope; with barrier)
Barrier angle1             :   0.00 deg   Angle2 : 38.00 deg
Barrier height             :  12.25 m
Barrier receiver distance  :   5.00 / 5.00   m
Source elevation           :   0.00 m
Receiver elevation         :   0.00 m
Barrier elevation          :   0.00 m
Reference angle            :   0.00

Road data, segment # 4: Kent s4 (day/night)
-------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

```
    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Kent s4 (day/night)
-----------------------------------------
Angle1   Angle2           :  38.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  38.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   -23.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -23.00 deg
Barrier height            :  12.25 m
```

```
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: Gladstone s6 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 6: Gladstone s6 (day/night)
----------------------------------------------
Angle1   Angle2           : -23.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -23.00 deg   Angle2 : 90.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 7: Highway 417a (day/night)
------------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  12.25 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           : -21.00 deg   52.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -21.00 deg   Angle2 : 52.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
```

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

Road data, segment # 9: Highway 417c (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417c (day/night)
-----------------------------------------------
Angle1   Angle2           :  52.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  52.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.25 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 41.57 + 0.00) = 41.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -41   0.00  68.48   0.00  -4.26  -5.65   0.00   0.00 -17.00  41.57
```

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

Segment Leq : 41.57 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 37.80 + 0.00) = 37.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -41      0   0.00  68.48   0.00  -4.26  -6.42   0.00   0.00 -20.00  37.80
--------------------------------------------------------------------------------

Segment Leq : 37.80 dBA

Results segment # 3: Kent s3 (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 !       12.55 !       11.17 !        11.17

ROAD (0.00 + 48.27 + 0.00) = 48.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
     0     38   0.00  68.48   0.00  -4.26  -6.75   0.00   0.00  -9.20  48.27
--------------------------------------------------------------------------------

Segment Leq : 48.27 dBA

Results segment # 4: Kent s4 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 41.15 + 0.00) = 41.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    38     90   0.00  68.48   0.00  -4.26  -5.39   0.00   0.00 -17.68  41.15
-------------------------------------------------------------------------------

Segment Leq : 41.15 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        9.66 !         9.66

ROAD (0.00 + 46.10 + 0.00) = 46.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -23   0.00  65.72   0.00  -6.37  -4.29   0.00   0.00  -8.95  46.10
-------------------------------------------------------------------------------

Segment Leq : 46.10 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !        3.37 !         3.37

ROAD (0.00 + 38.95 + 0.00) = 38.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -23     90   0.00  65.72   0.00  -6.37  -2.02   0.00   0.00 -18.37  38.95
-------------------------------------------------------------------------------

Segment Leq : 38.95 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 59.10 + 0.00) = 59.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  83.16   0.00 -14.89  -4.16   0.00   0.00  -5.00  59.10
-------------------------------------------------------------------------------

Segment Leq : 59.10 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.49 !        11.49

ROAD (0.00 + 55.16 + 0.00) = 55.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     52   0.00  83.16   0.00 -14.89  -3.92   0.00   0.00  -9.18  55.16
-------------------------------------------------------------------------------

Segment Leq : 55.16 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 56.51 + 0.00) = 56.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    52     90   0.00  83.16   0.00 -14.89  -6.75   0.00   0.00  -5.00  56.51
-------------------------------------------------------------------------------
```

```
Segment Leq : 56.51 dBA

Total Leq All Segments: 62.40 dBA

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 33.98 + 0.00) = 33.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -41   0.00  60.88   0.00  -4.26  -5.65   0.00   0.00 -17.00  33.98
-------------------------------------------------------------------------------

Segment Leq : 33.98 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 30.20 + 0.00) = 30.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41      0   0.00  60.88   0.00  -4.26  -6.42   0.00   0.00 -20.00  30.20
-------------------------------------------------------------------------------

Segment Leq : 30.20 dBA

Results segment # 3: Kent s3 (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 !       12.55 !       11.17 !        11.17

ROAD (0.00 + 40.67 + 0.00) = 40.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     38   0.00  60.88   0.00  -4.26  -6.75   0.00   0.00  -9.20  40.67
-------------------------------------------------------------------------------

Segment Leq : 40.67 dBA

Results segment # 4: Kent s4 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 33.55 + 0.00) = 33.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    38     90   0.00  60.88   0.00  -4.26  -5.39   0.00   0.00 -17.68  33.55
-------------------------------------------------------------------------------

Segment Leq : 33.55 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        9.66 !         9.66

ROAD (0.00 + 38.50 + 0.00) = 38.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -23   0.00  58.12   0.00  -6.37  -4.29   0.00   0.00  -8.95  38.50
-------------------------------------------------------------------------------

Segment Leq : 38.50 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !        3.37 !         3.37

ROAD (0.00 + 31.35 + 0.00) = 31.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -23     90   0.00  58.12   0.00  -6.37  -2.02   0.00   0.00 -18.37  31.35
-------------------------------------------------------------------------------

Segment Leq : 31.35 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 51.50 + 0.00) = 51.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  75.56   0.00 -14.89  -4.16   0.00   0.00  -5.00  51.50
-------------------------------------------------------------------------------

Segment Leq : 51.50 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.49 !        11.49

ROAD (0.00 + 47.56 + 0.00) = 47.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     52   0.00  75.56   0.00 -14.89  -3.92   0.00   0.00  -9.18  47.56
-------------------------------------------------------------------------------
```

```
Segment Leq : 47.56 dBA


Results segment # 9: Highway 417c (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 48.91 + 0.00) = 48.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    52     90   0.00  75.56   0.00 -14.89  -6.75   0.00   0.00  -5.00  48.91
-------------------------------------------------------------------------------
Segment Leq : 48.91 dBA

Total Leq All Segments: 54.80 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.40
                           (NIGHT): 54.80
```

```
STAMSON 5.0        NORMAL REPORT        Date: 14-06-2019 14:57:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7-c~1.te            Time Period: Day/Night 16/8 hours
Description: Parapet Height of 4.5 meters


Road data, segment # 1: Kent s1 (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: Kent s1 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   -41.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -41.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Kent s2 (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: Kent s2 (day/night)
-----------------------------------------
Angle1   Angle2           : -41.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -41.00 deg   Angle2 : 0.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Kent s3 (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: Kent s3 (day/night)
-----------------------------------------
Angle1   Angle2           :   0.00 deg   38.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 38.00 deg
Barrier height            :  15.55 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
```

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

Road data, segment # 4: Kent s4 (day/night)
-------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Kent s4 (day/night)
-----------------------------------------
Angle1   Angle2           :  38.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  38.00 deg   Angle2 : 90.00 deg
Barrier height            :  17.00 m
Barrier receiver distance :  31.00 / 31.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: Gladstone s5 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 5: Gladstone s5 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -23.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -23.00 deg
Barrier height            :  15.55 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: Gladstone s6 (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  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 6: Gladstone s6 (day/night)
-----------------------------------------------
Angle1   Angle2           : -23.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -23.00 deg   Angle2 : 90.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: Highway 417a (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417a (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  15.55 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 8: Highway 417b (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417b (day/night)
-----------------------------------------------
Angle1   Angle2           : -21.00 deg   52.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -21.00 deg   Angle2 : 52.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 9: Highway 417c (day/night)
-----------------------------------------------
Car traffic volume  : 89054/7744  veh/TimePeriod  *
Medium truck volume :  7084/616   veh/TimePeriod  *
Heavy truck volume  :  5060/440   veh/TimePeriod  *
Posted speed limit  :   100 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): 109998
    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: Highway 417c (day/night)
-----------------------------------------------
Angle1   Angle2           :  52.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 463.00 / 463.00 m
Receiver height           :  12.55 / 12.55  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  52.00 deg   Angle2 : 90.00 deg
Barrier height            :  15.55 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   2.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 41.57 + 0.00) = 41.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -41   0.00  68.48   0.00  -4.26  -5.65   0.00   0.00 -17.00  41.57
-------------------------------------------------------------------------------

Segment Leq : 41.57 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 37.80 + 0.00) = 37.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41      0   0.00  68.48   0.00  -4.26  -6.42   0.00   0.00 -20.00  37.80
-------------------------------------------------------------------------------

Segment Leq : 37.80 dBA

Results segment # 3: Kent s3 (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 !       12.55 !       11.17 !        11.17

ROAD (0.00 + 37.49 + 0.00) = 37.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     38   0.00  68.48   0.00  -4.26  -6.75   0.00   0.00 -19.98  37.49
```

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

Segment Leq : 37.49 dBA

Results segment # 4: Kent s4 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 41.15 + 0.00) = 41.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
    38     90   0.00  68.48   0.00  -4.26  -5.39   0.00   0.00 -17.68  41.15
--------------------------------------------------------------------------------

Segment Leq : 41.15 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        9.66 !         9.66

ROAD (0.00 + 41.37 + 0.00) = 41.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90    -23   0.00  65.72   0.00  -6.37  -4.29   0.00   0.00 -13.69  41.37
--------------------------------------------------------------------------------

Segment Leq : 41.37 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !        3.37 !         3.37

ROAD (0.00 + 38.95 + 0.00) = 38.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -23     90   0.00  65.72   0.00  -6.37  -2.02   0.00   0.00 -18.37  38.95
-------------------------------------------------------------------------------

Segment Leq : 38.95 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 54.43 + 0.00) = 54.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  83.16   0.00 -14.89  -4.16   0.00   0.00  -9.67  54.43
-------------------------------------------------------------------------------

Segment Leq : 54.43 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.49 !        11.49

ROAD (0.00 + 55.16 + 0.00) = 55.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     52   0.00  83.16   0.00 -14.89  -3.92   0.00   0.00  -9.18  55.16
-------------------------------------------------------------------------------

Segment Leq : 55.16 dBA

Results segment # 9: Highway 417c (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 53.13 + 0.00) = 53.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    52     90   0.00  83.16   0.00 -14.89  -6.75   0.00   0.00  -8.38  53.13
-------------------------------------------------------------------------------

Segment Leq : 53.13 dBA

Total Leq All Segments: 59.40 dBA

Results segment # 1: Kent s1 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 33.98 + 0.00) = 33.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -41   0.00  60.88   0.00  -4.26  -5.65   0.00   0.00 -17.00  33.98
-------------------------------------------------------------------------------

Segment Leq : 33.98 dBA

Results segment # 2: Kent s2 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 30.20 + 0.00) = 30.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41      0   0.00  60.88   0.00  -4.26  -6.42   0.00   0.00 -20.00  30.20
```

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

Segment Leq : 30.20 dBA

Results segment # 3: Kent s3 (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 !       12.55 !       11.17 !        11.17

ROAD (0.00 + 29.89 + 0.00) = 29.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     38   0.00  60.88   0.00  -4.26  -6.75   0.00   0.00 -19.98  29.89
-------------------------------------------------------------------------------

Segment Leq : 29.89 dBA

Results segment # 4: Kent s4 (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 !       12.55 !        3.98 !         3.98

ROAD (0.00 + 33.55 + 0.00) = 33.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    38     90   0.00  60.88   0.00  -4.26  -5.39   0.00   0.00 -17.68  33.55
-------------------------------------------------------------------------------

Segment Leq : 33.55 dBA

Results segment # 5: Gladstone s5 (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 !       12.55 !        9.66 !         9.66

ROAD (0.00 + 33.77 + 0.00) = 33.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -23   0.00  58.12   0.00  -6.37  -4.29   0.00   0.00 -13.69  33.77
-------------------------------------------------------------------------------

Segment Leq : 33.77 dBA

Results segment # 6: Gladstone s6 (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 !       12.55 !        3.37 !         3.37

ROAD (0.00 + 31.35 + 0.00) = 31.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -23     90   0.00  58.12   0.00  -6.37  -2.02   0.00   0.00 -18.37  31.35
-------------------------------------------------------------------------------

Segment Leq : 31.35 dBA

Results segment # 7: Highway 417a (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 46.83 + 0.00) = 46.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  75.56   0.00 -14.89  -4.16   0.00   0.00  -9.67  46.83
-------------------------------------------------------------------------------

Segment Leq : 46.83 dBA

Results segment # 8: Highway 417b (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 !       12.55 !       11.49 !        11.49

ROAD (0.00 + 47.56 + 0.00) = 47.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     52   0.00  75.56   0.00 -14.89  -3.92   0.00   0.00  -9.18  47.56
-------------------------------------------------------------------------------

Segment Leq : 47.56 dBA


Results segment # 9: Highway 417c (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 !       12.55 !       12.22 !        12.22

ROAD (0.00 + 45.53 + 0.00) = 45.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    52     90   0.00  75.56   0.00 -14.89  -6.75   0.00   0.00  -8.38  45.53
-------------------------------------------------------------------------------
Segment Leq : 45.53 dBA

Total Leq All Segments: 51.80 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.40
                           (NIGHT): 51.80
```