Detailed Roadway Traffic Noise Assessment

Westgate Shopping Centre Redevelopment, Phase 1

Ottawa, Ontario

REPORT: GWE15-067 – Detailed Traffic Noise R1

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EXECUTIVE SUMMARY

This document describes a roadway traffic noise assessment in support of Site Plan Application (SPA) for Phase 1 of the proposed Westgate Shopping Centre redevelopment in Ottawa, Ontario. Phase 1 is a standalone 24-storey building with a four-storey podium to the westernmost section of the overall study site, rising approximately 80 metres (m) above grade. Ground floor contains commercial retail space and common indoor amenity areas, while the remaining floors contain residential dwellings. The major sources of noise in the area are roadway traffic along Highway 417, Carling Avenue and Merivale Road. 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) architectural drawings received from RLA Architecture, dated February 12, 2019.

The results of the current analysis indicate that noise levels will range between 71 and 73 dBA during the daytime period (07:00-23:00) and between 63 and 65 dBA during the nighttime period (23:00-07:00). Noise levels are generally uniform on all façades, as a consequence of the development being surrounded on all sides by roadway traffic noise sources. Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA, as indicated on Figure 3. As per city of Ottawa requirements, detailed shop drawings and window and wall details will need to be submitted to the city for building permit application.

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

Noise levels at the 5th Floor terrace (Receptor 13) are expected to approach 72 dBA during the daytime period. If this area is to be used as an outdoor living area, noise control measures are required to reduce the L_{eq} to 55 dBA or as close as technically and administrability feasible. Results of the investigation proved that noise levels can only be reduced to 65 dBA. A barrier height of 4.1 m is required to reduce noise levels to 60 dBA, which is beyond the City's preferred barrier height, and not architecturally feasible. As such, a

1.8 m tall noise barrier, consistent with the requirements for wind mitigation, is recommended. Table 4 summarizes the results of the barrier investigation. The barrier must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guardrail will conform to the requirements outlined in Part 5 of the ENCG. The following information will be required by the City for review prior to installation of the barrier:

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

The nearest noise sensitive properties to the development are south of Carling Avenue and the future phases of the Westgate Shopping Centre development, at approximately 75 m. The loudest expected piece of mechanical equipment on site would be cooling towers and emergency generators. These are often located favorably in the mechanical penthouse, reducing line of sight exposure to adjacent noise sensitive buildings. The site also benefits from high levels of background noise which will reduce any potential impacts from the proposed equipment. Therefore, the site is expected to be compatible with the surrounding existing land uses. A stationary noise study will be required to be competed prior to building permit to ensure the ENCG sound levels are maintained.

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1. INTRODUCTION

Gradient Wind Engineering Inc. (GWE) was retained by RioCan Holdings Inc. to undertake a detailed roadway traffic noise assessment for Phase 1 of the proposed Westgate Shopping Centre redevelopment in Ottawa, Ontario. GWE's scope of work involved assessing exterior noise levels generated by local roadway traffic sources. The assessment was performed on the basis of theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment, Conservation and Parks NPC-300[2] guidelines. Noise calculations were based on architectural drawings received from RLA Architecture, dated February 12, 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 roadway traffic noise assessment is Phase 1 of the proposed Westgate Shopping Centre redevelopment. The development is located at the northwest corner of the Carling Avenue & Merivale Road intersection.

The proposed redevelopment will incorporate a standalone 24-storey building with a four-storey podium to the westernmost section of the overall study site, rising approximately 80 metres (m) above grade. Ground floor contains commercial retail space and common indoor amenity areas, while the remaining floors contain residential dwellings. Outdoor amenity space is provided as private balconies; balconies less than 4 m in depth are not considered as outdoor living areas, as per the ENCG.

In the near-field, the site is surrounded by suburban low-rise developments from the east rotating clockwise to the west, and Highway 417 and open space beyond to the north. The major sources of noise in the area are roadway traffic along Highway 417, Carling Avenue and Merivale Road. Figure 1 illustrates a complete site plan with surrounding context.

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

3. OBJECTIVES

The main goals of this work are to: (i) calculate the future noise levels on the study building 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 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 vehicle traffic, the equivalent sound energy level, L_{eq}, provides a measure of the time varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of a 16-hour (L_{eq16}) daytime (07:00-23:00) / 8-hour (L_{eq8}) nighttime (23:00-07:00) split to assess its impact on residential buildings. The City of Ottawa's Environmental Noise Control Guidelines (ENCG) specifies that the recommended indoor noise limit range (that is relevant to this study) is 50, 45 and 40 dBA for retail as well as residence living rooms and sleeping quarters, respectively, as listed in Table 1. To account for deficiencies in building construction, theses levels should be targeted toward 47, 42 and 37 dBA.

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

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

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

4.2.1 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.

[3] Adapted from ENCG 2016 – Tables 2.2b and 2.2c
[4] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[5] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8
[6] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3
[7] City of Ottawa Transportation Master Plan, November 2013

TABLE 2: ROADWAY TRAFFIC DATA

Roadway Segment	Roadway Class	Speed Limit (km/h)	Official Plan AADT
Highway 417 EB	Freeway	100	**73,332**
Highway 417 WB			**73,332**
Carling Avenue EB	6-UAD	60	**25,000**
Carling Avenue WB		60	**25,000**
Merivale Road	2-UAU	50	**15,000**

4.2.2 Theoretical Transportation Noise Predictions

Noise predictions were performed with the aid of the MECP computerized noise assessment program, STAMSON 5.04, for road and rail analysis. Roadway traffic noise calculations were performed by treating each roadway segment as separate line sources of noise, and by using existing building locations as noise barriers. In addition to the traffic volumes summarized in Table 2, theoretical noise predictions were based on the following parameters:

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks, as per ENCG requirements for noise level predictions
- The day/night split was taken to be 92% / 8% respectively for all streets
- Reflective intermediate ground surfaces were selected based on specific source-receiver path ground characteristics which comprise primarily paved surfaces
- Topography was considered as flat or gently sloping.
- The 417 was considered elevated 3 and 4 m above the average grade at the site.
- Study building was considered as a potential noise barrier for some receptors. Future phase of the development were ignored.
- Receptor distances and exposure angles are illustrated in Appendix A, Figures A1-A7.

Noise receptors were strategically identified at 13 locations around the study area (see Figure 2).

4.3 Indoor Noise Calculations

The difference between outdoor and indoor noise levels is the noise attenuation provided by the building envelope. According to common industry practice, complete walls and individual wall elements are rated according to the Sound Transmission Class (STC). The STC ratings of common residential walls built in

conformance with the Ontario Building Code (2012) typically exceed STC 35, depending on exterior cladding, thickness and interior finish details. For example, concrete walls can achieve STC 55, where a steel stud exterior wall with a single layer of gypsums board on the inside will provide approximately STC 45. Standard good quality double-glazed non-operable windows and spandrel panels can have STC ratings ranging from 25 to 40 depending on the window manufacturer, pane thickness and inter-pane spacing. Windows are the known weak point in a partition.

As per Section 4.2, when daytime noise levels (from road sources) at the plane of the window exceed 65 dBA, calculations must be performed to evaluate the sound transmission quality of the building components to ensure acceptable indoor noise levels. The calculation procedure[8] considers:

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

Based on published research[9], exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. Due to the limited information available at the time of the study, which was prepared for SPA, detailed floor layouts and building elevations have not been finalized; therefore, detailed STC calculations could not be performed at this time. As a guideline, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels).

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

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, and illustrated in Figure 4 and 5.

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROADWAY TRAFFIC SOURCES

Receptor Number	Receptor Height (m)	Plane of Window Receptor Location	Noise Level (dBA)	
			Day	Night
1	13.4	4th Floor – North Façade	73	65
2	13.4	4th Floor – West Façade	72	64
3	16.4	5th Floor – East Façade	71	63
4	16.4	5th Floor – South Façade	72	65
5	37.4	12th Floor – North Façade	72	64
6	37.4	12th Floor – East Façade	71	64
7	37.4	12th Floor – South Façade	72	65
8	37.4	12th Floor – West Façade	71	64
9	67.4	22nd Floor – North Façade	72	64
10	67.4	22nd Floor – East Façade	71	64
11	67.4	22nd Floor – South Façade	72	65
12	67.4	22nd Floor – West Façade	72	64
13	17.9	5th Floor Terrace	72	65

The results of the current analysis indicate that noise levels will range between 71 and 73 dBA during the daytime period (07:00-23:00) and between 63 and 65 dBA during the nighttime period (23:00-07:00). Noise levels are generally uniform on all façades, as a consequence of the development being surrounded on all sides by roadway traffic noise sources.

5.2 Noise Control Measures

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. As discussed in Section 4.3, the anticipated STC requirements for windows have been

estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels). As per city of Ottawa requirements, detailed shop drawings and window and wall details will need to be submitted to the city for building permit application. The STC requirements for the windows are summarized below for various units within the development (see Figure 3):

- **Bedroom/Living Room Windows**

(i) Bedroom/living room windows facing north, east, south and west will require a minimum STC of 36

- **Retail Windows**

(i) Retail windows facing north, east, south and west will require a minimum STC of 26

- **Exterior Walls**

(i) Exterior wall components on all façades will require a minimum STC of 45 which can be achieved with 6 in metal studs and gypsum board sheathing or an acoustical equivalent according to NRC test data[10]

The STC requirements would apply to windows, doors, spandrel panels and curtainwall elements. Exterior wall components on these façades are recommended to have a minimum STC of 45, where a window/wall system is used. A review of window supplier literature indicates that the specified STC ratings can be achieved by a variety of window systems having a combination of glass thickness and inter-pane spacing. Although we have specified an example window configuration, several manufacturers and various combinations of window components, such as those proposed, will offer the necessary sound attenuation rating. It is the responsibility of the manufacturer to ensure that the specified window achieves the required STC. This can only be assured by using window configurations that have been certified by laboratory testing. The requirements for STC ratings assume that the remaining components of the building are constructed and installed according to the minimum standards of the Ontario Building Code. The specified STC requirements also apply to swinging and/or sliding patio doors.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. In addition

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

to ventilation requirements, Warning Clauses will also be required be placed on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

5.3 Noise Barrier Calculation

Noise levels at the 5th Floor terrace (Receptor 13) are expected to approach 72 dBA during the daytime period. If this area is to be used as an outdoor living area, noise control measures are required to reduce the L_{eq} to 55 dBA. Further analysis investigated the noise mitigating benefits of a 1.8 m tall noise barrier surrounding the terrace (see Figure 4). Results of the investigation proved that noise levels can only be reduced to 65 dBA. A barrier height of 4.1 m is required to reduce noise levels to 60 dBA, which is beyond the City's preferred barrier height, and not architecturally feasible. As such, a 1.8 m tall noise barrier, consistent with the requirements for wind mitigation, is recommended. Table 4 summarizes the results of the barrier investigation. The barrier must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guardrail will conform to the requirements outlined in Part 5 of the ENCG. The following information will be required by the City for review prior to installation of the barrier:

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

TABLE 4: RESULTS OF NOISE BARRIER INVESTIGATION

Location	Reference Receptor	Barrier Height (m)	Daytime Leq Noise Levels (dBA)
5th Floor Terrace	13	No Barrier	72
		1.8	65
		4.1	60

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 71 and 73 dBA during the daytime period (07:00-23:00) and between 63 and 65 dBA during the nighttime period (23:00-07:00). Noise levels are generally uniform on all façades, as a consequence of the development being surrounded on all sides by roadway traffic noise sources. Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA, as indicated on Figure 3. As per city of Ottawa requirements, detailed shop drawings and window and wall details will need to be submitted to the city for building permit application.

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

> *"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing roadway traffic may, on occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City and the Ministry of the Environment, Conservation and Parks. To help address the need for sound attenuation, this development includes:*
>
> - *STC rated multi-pane glazing elements and spandrel panels*
> - *North, east, south and west façade bedroom/living room/retail: STC 36/36/26*
> - *STC rated exterior walls*
> - *North, east, south and west façade: STC 45*
>
> *This dwelling unit has also been designed with air conditioning. Air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment, Conservation and Parks.*

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

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

Noise levels at the 5th Floor terrace (Receptor 13) are expected to approach 72 dBA during the daytime period. If this area is to be used as an outdoor living area, noise control measures are required to reduce the L_{eq} to 55 dBA. Results of the investigation proved that noise levels can only be reduced to 65 dBA. A barrier height of 4.1 m is required to reduce noise levels to 60 dBA, which is beyond the City's preferred barrier height, and not architecturally feasible. As such, a 1.8 m tall noise barrier, consistent with the requirements for wind mitigation, is recommended. Table 4 summarizes the results of the barrier investigation. The barrier must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guardrail will conform to the requirements outlined in Part 5 of the ENCG. The following information will be required by the City for review prior to installation of the barrier:

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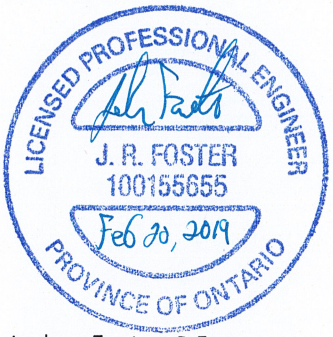
The nearest noise sensitive properties to the development are south of Carling Avenue and the future phases of the Westgate Shopping Centre development, at approximately 75 m. The loudest expected piece of mechanical equipment on site would be cooling towers and emergency generators. These are often located favorably in the mechanical penthouse, reducing line of sight exposure to adjacent noise sensitive buildings. The site also benefits from high levels of background noise which will reduce any potential impacts from the proposed equipment. Therefore, the site is expected to be compatible with the surrounding existing land uses. A stationary noise study will be required to be competed prior to building permit to ensure the ENCG sound levels are maintained.

This concludes our 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.

Yours truly,

Gradient Wind Engineering Inc.



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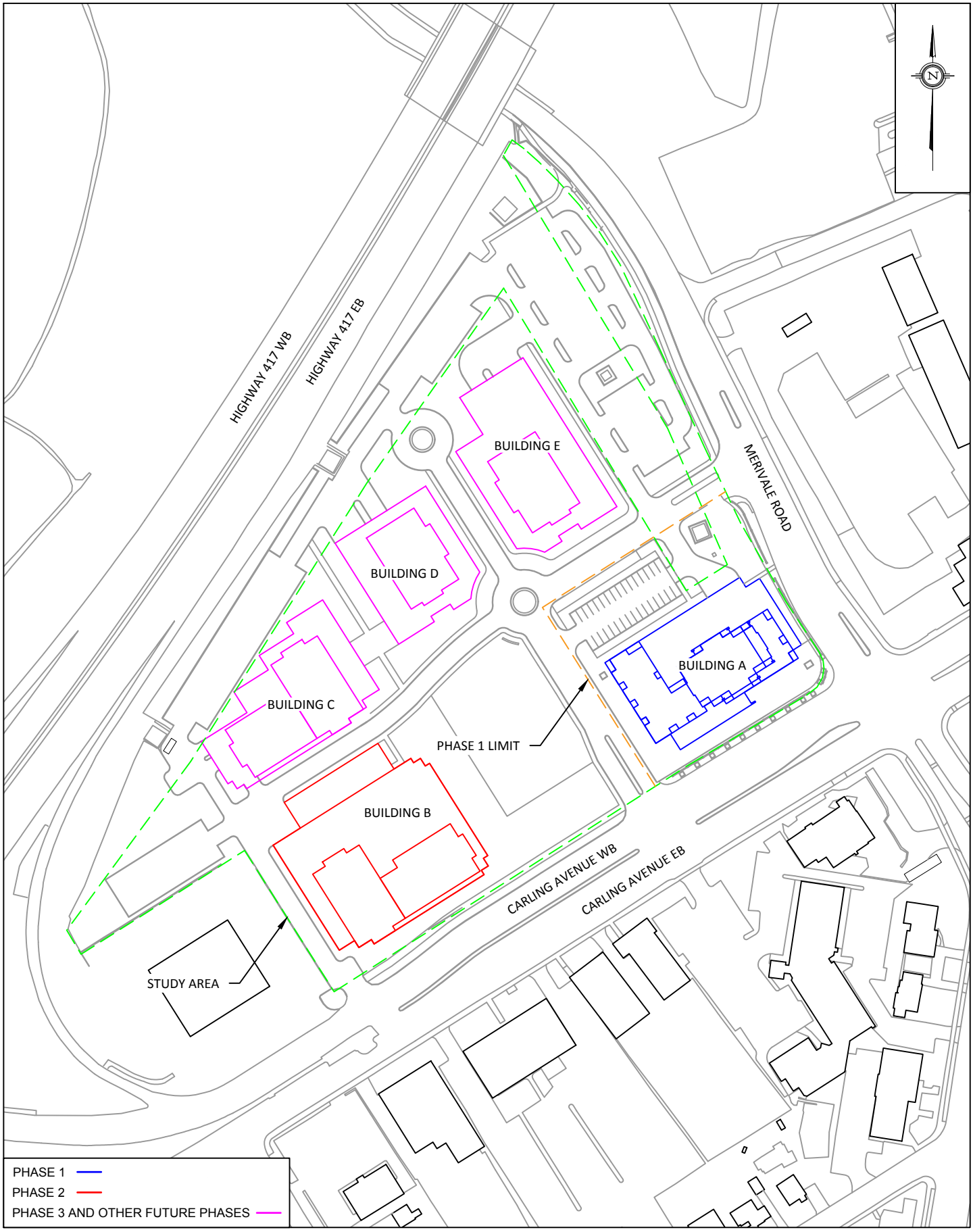

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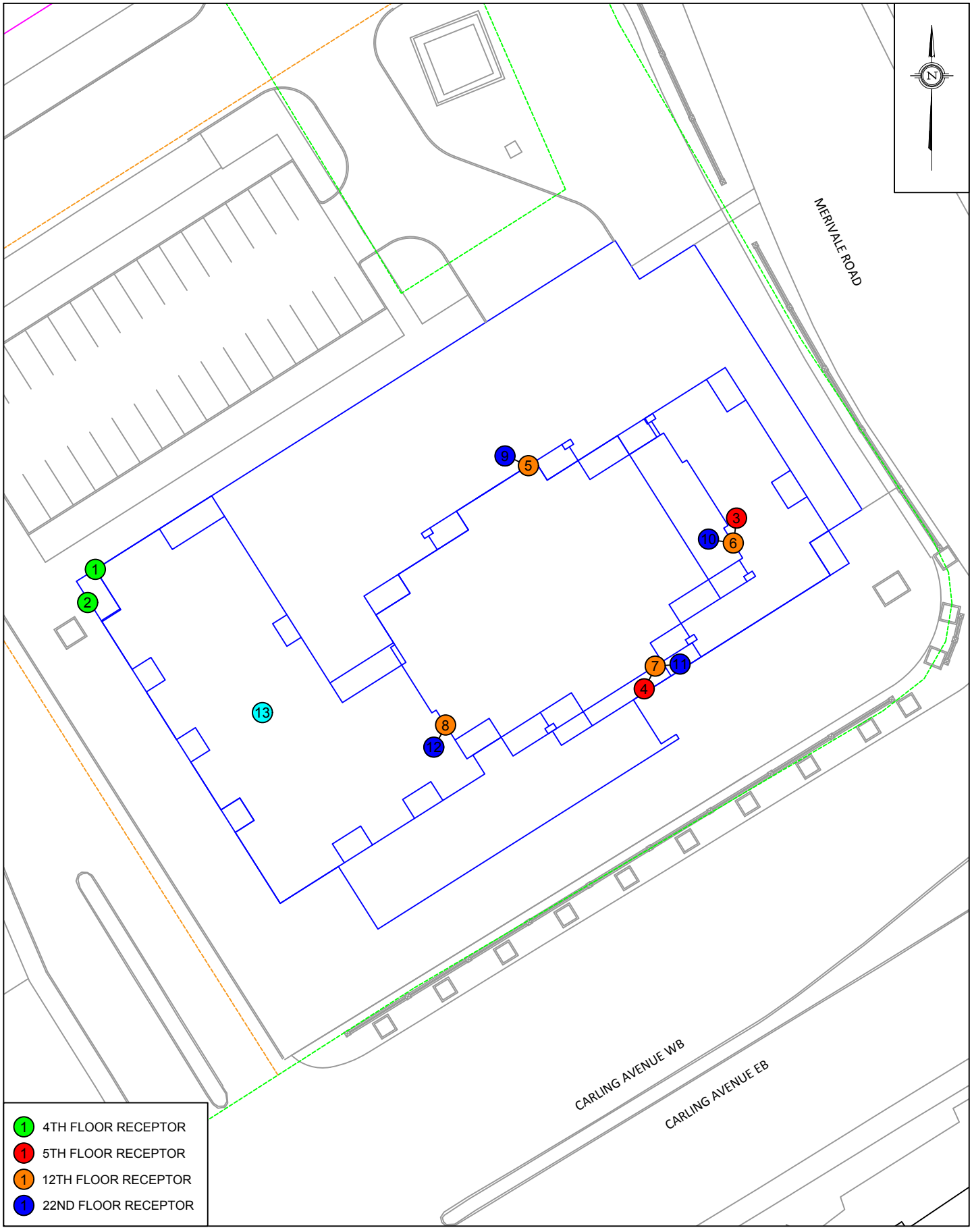
GRADIENT WIND ENGINEERING INC

PROJECT	WESTGATE SHOPPING CENTRE REDEVELOPMENT - ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO.	GWE15-067-1
DATE	FEBRUARY 15, 2019	DRAWN BY	M.L

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT



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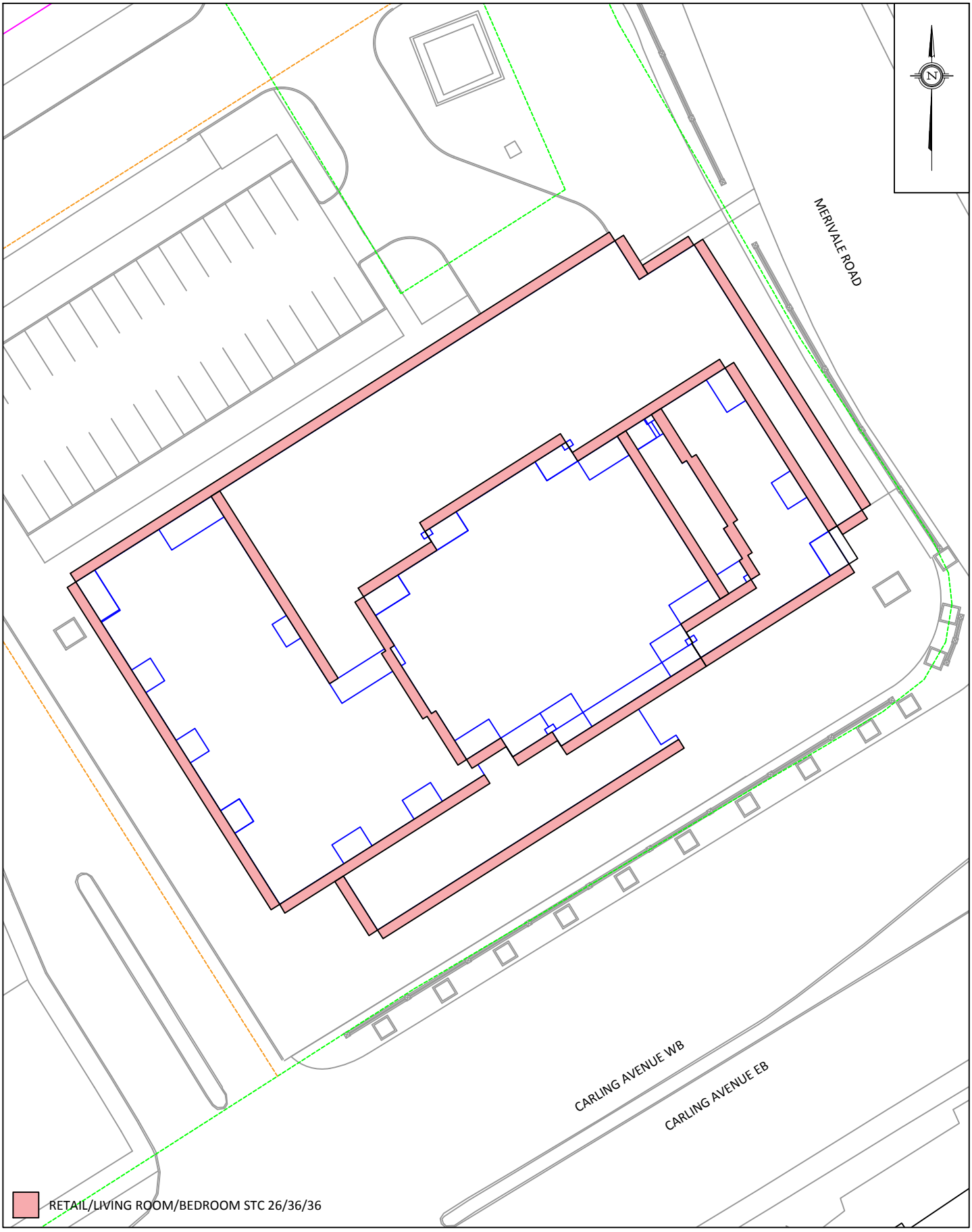
GRADIENT WIND ENGINEERING INC

PROJECT	WESTGATE SHOPPING CENTRE REDEVELOPMENT - ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:500 (APPROX.)	DRAWING NO.	GWE15-067-2
DATE	FEBRUARY 15, 2019	DRAWN BY	M.L

FIGURE 2:
RECEPTOR LOCATIONS



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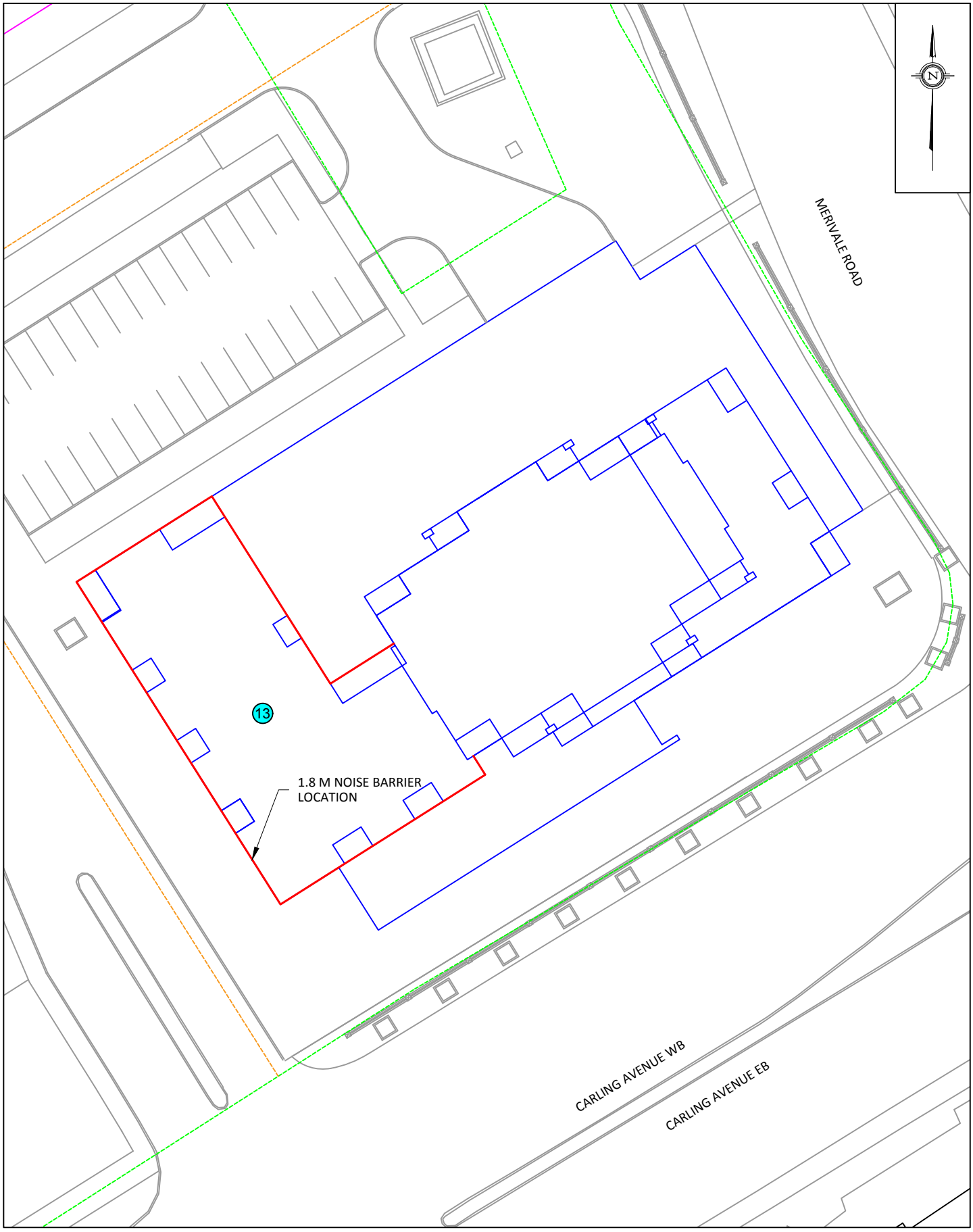
GRADIENT WIND ENGINEERING INC

PROJECT	WESTGATE SHOPPING CENTRE REDEVELOPMENT - ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:500 (APPROX.)	DRAWING NO.	GWE15-067-3
DATE	FEBRUARY 15, 2019	DRAWN BY	M.L

FIGURE 3:
WINDOW STC REQUIREMENTS



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PROJECT	WESTGATE SHOPPING CENTRE REDEVELOPMENT - ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:500 (APPROX.)	DRAWING NO.	GWE15-067-4
DATE	FEBRUARY 15, 2019	DRAWN BY	M.L

FIGURE 4:
NOISE BARRIER INVESTIGATION LOCATION

APPENDIX A

STAMSON 5.04 - INPUT AND OUTPUT DATA (ROADWAY TRAFFIC NOISE)

```
STAMSON 5.0        NORMAL REPORT        Date: 13-09-2018 12:49:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: 417EBL (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EBL (day/night)
----------------------------------------
Angle1   Angle2           : -71.00 deg   64.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 164.00 / 164.00 m
Receiver height           :  13.40 / 13.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  60.00 deg   Angle2 : 64.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 144.00 / 144.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417EBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417EBR (day/night)
----------------------------------------
Angle1   Angle2           :  70.00 deg   75.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 127.00 / 127.00 m
Receiver height           :  13.40 / 13.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  70.00 deg   Angle2 : 74.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 117.00 / 117.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WBL (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WBL (day/night)
----------------------------------------
Angle1   Angle2           : -69.00 deg   62.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 182.00 / 182.00 m
Receiver height           :  13.40 / 13.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  60.00 deg   Angle2 : 62.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 144.00 / 144.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417WBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417WBR (day/night)
----------------------------------------
Angle1   Angle2           :  68.00 deg   73.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 146.00 / 146.00 m
Receiver height           :  13.40 / 13.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  68.00 deg   Angle2 : 73.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 117.00 / 117.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Merivale (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 # 5: Merivale (day/night)
------------------------------------------
Angle1   Angle2           : -72.00 deg   -3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  84.00 / 84.00  m
Receiver height           :  13.40 / 13.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: 417EBL (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.40 !        6.46 !         6.46

ROAD (69.63 + 48.00 + 0.00) = 69.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -71     60   0.00  81.40   0.00 -10.39  -1.38   0.00   0.00   0.00
69.63
-------------------------------------------------------------------------------
--
    60     64   0.00  81.40   0.00 -10.39 -16.53   0.00   0.00  -6.47
48.00
-------------------------------------------------------------------------------
--

Segment Leq : 69.66 dBA
```

```
Results segment # 2: 417EBR (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.40 !        5.20 !         5.20

ROAD (0.00 + 46.12 + 49.57) = 51.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    70     74   0.00  81.40   0.00  -9.28 -16.53   0.00   0.00  -9.47
46.12
-------------------------------------------------------------------------------
--
    74     75   0.00  81.40   0.00  -9.28 -22.55   0.00   0.00   0.00
49.57
-------------------------------------------------------------------------------
--

Segment Leq : 51.19 dBA
```

```
Results segment # 3: 417WBL (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.40 !        7.15 !         7.15

ROAD (69.11 + 45.71 + 0.00) = 69.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -69     60   0.00  81.40   0.00 -10.84  -1.45   0.00   0.00   0.00
69.11
-------------------------------------------------------------------------------
--
    60     62   0.00  81.40   0.00 -10.84 -19.54   0.00   0.00  -5.30
45.71
-------------------------------------------------------------------------------
--

Segment Leq : 69.13 dBA
```

```
Results segment # 4: 417WBR (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.40 !        6.26 !         6.26

ROAD (0.00 + 49.91 + 0.00) = 49.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    68     73   0.00  81.40   0.00  -9.88 -15.56   0.00   0.00  -6.04
49.91
-------------------------------------------------------------------------------
--

Segment Leq : 49.91 dBA
```

```
Results segment # 5: Merivale (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.83 + 0.00) = 56.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -72     -3   0.00  68.48   0.00  -7.48  -4.16   0.00   0.00   0.00
56.83
-------------------------------------------------------------------------
--

Segment Leq : 56.83 dBA

Total Leq All Segments: 72.59 dBA
```

```
Results segment # 1: 417EBL (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       13.40 !        6.46 !         6.46

ROAD (62.03 + 40.40 + 0.00) = 62.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -71     60   0.00  73.80   0.00 -10.39  -1.38   0.00   0.00   0.00
62.03
-------------------------------------------------------------------------------
--
    60     64   0.00  73.80   0.00 -10.39 -16.53   0.00   0.00  -6.48
40.40
-------------------------------------------------------------------------------
--

Segment Leq : 62.06 dBA
```

```
Results segment # 2: 417EBR (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       13.40 !        5.20 !         5.20

ROAD (0.00 + 38.52 + 41.97) = 43.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    70     74   0.00  73.80   0.00  -9.28 -16.53   0.00   0.00  -9.47
38.52
-------------------------------------------------------------------------
--
    74     75   0.00  73.80   0.00  -9.28 -22.55   0.00   0.00   0.00
41.97
-------------------------------------------------------------------------
--

Segment Leq : 43.59 dBA
```

```
Results segment # 3: 417WBL (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       13.40 !        7.15 !         7.15

ROAD (61.51 + 38.11 + 0.00) = 61.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -69     60   0.00  73.80   0.00 -10.84  -1.45   0.00   0.00   0.00
61.51
-------------------------------------------------------------------------
--
    60     62   0.00  73.80   0.00 -10.84 -19.54   0.00   0.00  -5.30
38.11
-------------------------------------------------------------------------
--

Segment Leq : 61.53 dBA
```

```
Results segment # 4: 417WBR (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       13.40 !        6.26 !         6.26

ROAD (0.00 + 42.31 + 0.00) = 42.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    68     73   0.00  73.80   0.00  -9.88 -15.56   0.00   0.00  -6.04
42.31
-------------------------------------------------------------------------------
--

Segment Leq : 42.31 dBA
```

```
Results segment # 5: Merivale (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 49.24 + 0.00) = 49.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -72     -3   0.00  60.88   0.00  -7.48  -4.16   0.00   0.00   0.00
49.24
-------------------------------------------------------------------------
--

Segment Leq : 49.24 dBA

Total Leq All Segments: 64.99 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 72.59
                           (NIGHT): 64.99
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-09-2018 12:50:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: 417EB (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EB (day/night)
---------------------------------------
Angle1   Angle2           : -71.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 165.00 / 165.00 m
Receiver height           :  13.40 / 13.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -71.00 deg   Angle2 : 26.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417WB (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WB (day/night)
---------------------------------------
Angle1   Angle2           : -68.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 183.00 / 183.00 m
Receiver height           :  13.40 / 13.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : 26.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: CarlingWB (day/night)
-----------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   76.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  13.40 / 13.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: CarlingEB (day/night)
-------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   76.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  77.00 / 77.00  m
Receiver height           :  13.40 / 13.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: 417EB (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.40 !       12.68 !        12.68

ROAD (0.00 + 68.30 + 0.00) = 68.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -71     26   0.00  81.40   0.00 -10.41  -2.69   0.00   0.00   0.00
68.30*
   -71     26   0.00  81.40   0.00 -10.41  -2.69   0.00   0.00   0.00
68.30
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.30 dBA
```

```
Results segment # 2: 417WB (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.40 !       12.75 !        12.75

ROAD (0.00 + 67.71 + 0.00) = 67.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     26   0.00  81.40   0.00 -10.86  -2.82   0.00   0.00   0.00
67.71*
   -68     26   0.00  81.40   0.00 -10.86  -2.82   0.00   0.00   0.00
67.71
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 67.71 dBA
```

```
Results segment # 3: CarlingWB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 62.24 + 0.00) = 62.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     76   0.00  72.21   0.00  -6.23  -3.74   0.00   0.00   0.00
62.24
-------------------------------------------------------------------------
--

Segment Leq : 62.24 dBA


Results segment # 4: CarlingEB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 61.37 + 0.00) = 61.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     76   0.00  72.21   0.00  -7.10  -3.74   0.00   0.00   0.00
61.37
-------------------------------------------------------------------------
--

Segment Leq : 61.37 dBA

Total Leq All Segments: 71.96 dBA
```

```
Results segment # 1: 417EB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       13.40 !       12.68 !        12.68

ROAD (0.00 + 60.70 + 0.00) = 60.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -71     26   0.00  73.80   0.00 -10.41  -2.69   0.00   0.00   0.00
60.70*
   -71     26   0.00  73.80   0.00 -10.41  -2.69   0.00   0.00   0.00
60.70
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.70 dBA
```

```
Results segment # 2: 417WB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       13.40 !       12.75 !        12.75

ROAD (0.00 + 60.11 + 0.00) = 60.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     26   0.00  73.80   0.00 -10.86  -2.82   0.00   0.00   0.00
60.11*
   -68     26   0.00  73.80   0.00 -10.86  -2.82   0.00   0.00   0.00
60.11
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.11 dBA
```

```
Results segment # 3: CarlingWB (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.64 + 0.00) = 54.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     76   0.00  64.62   0.00  -6.23  -3.74   0.00   0.00   0.00
54.64
-------------------------------------------------------------------------
--

Segment Leq : 54.64 dBA


Results segment # 4: CarlingEB (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.77 + 0.00) = 53.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     76   0.00  64.62   0.00  -7.10  -3.74   0.00   0.00   0.00
53.77
-------------------------------------------------------------------------
--

Segment Leq : 53.77 dBA

Total Leq All Segments: 64.36 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 71.96
                           (NIGHT): 64.36
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-09-2018 12:50:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: 417EBL (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EBL (day/night)
----------------------------------------
Angle1   Angle2           :  26.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 223.00 / 223.00 m
Receiver height           :  16.40 / 16.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  46.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 203.00 / 203.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417EBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417EBR (day/night)
----------------------------------------
Angle1   Angle2           :  60.00 deg   68.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 190.00 / 190.00 m
Receiver height           :  16.40 / 16.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  60.00 deg   Angle2 : 61.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 179.00 / 179.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WBL (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WBL (day/night)
----------------------------------------
Angle1   Angle2           :  26.00 deg   51.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 242.00 / 242.00 m
Receiver height           :  16.40 / 16.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  46.00 deg   Angle2 : 51.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 203.00 / 203.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417WBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417WBR (day/night)
----------------------------------------
Angle1   Angle2           :  57.00 deg   65.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 208.00 / 208.00 m
Receiver height           :  16.40 / 16.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  57.00 deg   Angle2 : 61.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 179.00 / 179.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Merivale (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 # 5: Merivale (day/night)
------------------------------------------
Angle1   Angle2           : -75.00 deg   75.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :  16.40 / 16.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 6: CarlingWB (day/night)
-----------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB (day/night)
-------------------------------------------
Angle1   Angle2           : -74.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :  16.40 / 16.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 7: CarlingEB (day/night)
---------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB (day/night)
-------------------------------------------
Angle1   Angle2           : -66.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :  16.40 / 16.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: 417EBL (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 !       16.40 !        6.47 !         6.47

ROAD (60.13 + 49.30 + 0.00) = 60.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  81.40   0.00 -11.72  -9.54   0.00   0.00   0.00
60.13
-------------------------------------------------------------------------
--
    46     54   0.00  81.40   0.00 -11.72 -13.52   0.00   0.00  -6.85
49.30
-------------------------------------------------------------------------
--

Segment Leq : 60.48 dBA
```

```
Results segment # 2: 417EBR (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 !       16.40 !        5.18 !         5.18

ROAD (0.00 + 37.14 + 56.27) = 56.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    60     61   0.00  81.40   0.00 -11.03 -22.55   0.00   0.00 -10.68
37.14
-------------------------------------------------------------------------
--
    61     68   0.00  81.40   0.00 -11.03 -14.10   0.00   0.00   0.00
56.27
-------------------------------------------------------------------------
--

Segment Leq : 56.32 dBA
```

```
Results segment # 3: 417WBL (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 !       16.40 !        7.25 !         7.25

ROAD (59.78 + 48.46 + 0.00) = 60.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  81.40   0.00 -12.08  -9.54   0.00   0.00   0.00
59.78
-------------------------------------------------------------------------
--
    46     51   0.00  81.40   0.00 -12.08 -15.56   0.00   0.00  -5.29
48.46
-------------------------------------------------------------------------
--

Segment Leq : 60.09 dBA
```

```
Results segment # 4: 417WBR (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 !       16.40 !        6.16 !         6.16

ROAD (0.00 + 46.83 + 53.44) = 54.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    57     61   0.00  81.40   0.00 -11.42 -16.53   0.00   0.00  -6.61
46.83
-------------------------------------------------------------------------
--
    61     65   0.00  81.40   0.00 -11.42 -16.53   0.00   0.00   0.00
53.44
-------------------------------------------------------------------------
--

Segment Leq : 54.30 dBA
```

```
Results segment # 5: Merivale (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.47 + 0.00) = 65.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -75     75   0.00  68.48   0.00  -2.22  -0.79   0.00   0.00   0.00
65.47
-------------------------------------------------------------------------
--

Segment Leq : 65.47 dBA


Results segment # 6: CarlingWB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.80 + 0.00) = 65.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -74      0   0.00  72.21   0.00  -2.55  -3.86   0.00   0.00   0.00
65.80
-------------------------------------------------------------------------
--

Segment Leq : 65.80 dBA
```

```
Results segment # 7: CarlingEB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.49 + 0.00) = 63.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -66      0   0.00  72.21   0.00  -4.37  -4.36   0.00   0.00   0.00
63.49
-------------------------------------------------------------------------
--

Segment Leq : 63.49 dBA

Total Leq All Segments: 70.93 dBA


Results segment # 1: 417EBL (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       16.40 !        6.47 !         6.47

ROAD (52.53 + 41.71 + 0.00) = 52.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  73.80   0.00 -11.72  -9.54   0.00   0.00   0.00
52.53
-------------------------------------------------------------------------
--
    46     54   0.00  73.80   0.00 -11.72 -13.52   0.00   0.00  -6.85
41.71
-------------------------------------------------------------------------
--

Segment Leq : 52.88 dBA
```

```
Results segment # 2: 417EBR (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       16.40 !        5.18 !         5.18

ROAD (0.00 + 29.54 + 48.67) = 48.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    60     61   0.00  73.80   0.00 -11.03 -22.55   0.00   0.00 -10.68
29.54
-------------------------------------------------------------------------------
--
    61     68   0.00  73.80   0.00 -11.03 -14.10   0.00   0.00   0.00
48.67
-------------------------------------------------------------------------------
--

Segment Leq : 48.72 dBA
```

```
Results segment # 3: 417WBL (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       16.40 !        7.25 !         7.25

ROAD (52.18 + 40.87 + 0.00) = 52.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  73.80   0.00 -12.08  -9.54   0.00   0.00   0.00
52.18
-------------------------------------------------------------------------
--
    46     51   0.00  73.80   0.00 -12.08 -15.56   0.00   0.00  -5.29
40.87
-------------------------------------------------------------------------
--

Segment Leq : 52.49 dBA
```

```
Results segment # 4: 417WBR (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       16.40 !        6.15 !         6.15

ROAD (0.00 + 39.23 + 45.85) = 46.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    57     61   0.00  73.80   0.00 -11.42 -16.53   0.00   0.00  -6.61
39.23
-------------------------------------------------------------------------------
--
    61     65   0.00  73.80   0.00 -11.42 -16.53   0.00   0.00   0.00
45.85
-------------------------------------------------------------------------------
--

Segment Leq : 46.70 dBA
```

```
Results segment # 5: Merivale (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.87 + 0.00) = 57.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -75     75   0.00  60.88   0.00  -2.22  -0.79   0.00   0.00   0.00
57.87
-------------------------------------------------------------------------
--

Segment Leq : 57.87 dBA


Results segment # 6: CarlingWB (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.20 + 0.00) = 58.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -74      0   0.00  64.62   0.00  -2.55  -3.86   0.00   0.00   0.00
58.20
-------------------------------------------------------------------------
--

Segment Leq : 58.20 dBA
```

```
Results segment # 7: CarlingEB (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.89 + 0.00) = 55.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -66      0   0.00  64.62   0.00  -4.37  -4.36   0.00   0.00   0.00
55.89
-------------------------------------------------------------------------
--

Segment Leq : 55.89 dBA

Total Leq All Segments: 63.33 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 70.93
                           (NIGHT): 63.33
```

```
STAMSON 5.0         NORMAL REPORT         Date: 13-09-2018 12:50:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Merivale (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: Merivale (day/night)
-------------------------------------------
Angle1   Angle2           :  -3.00 deg   69.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :  16.40 / 16.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: CarlingWB (day/night)
-----------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB (day/night)
-------------------------------------------
Angle1   Angle2           : -77.00 deg   77.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  22.00 / 22.00  m
Receiver height           :  16.40 / 16.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: CarlingEB (day/night)
-------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB (day/night)
-------------------------------------------
Angle1   Angle2           : -69.00 deg   69.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :  16.40 / 16.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Merivale (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.70 + 0.00) = 60.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -3     69   0.00  68.48   0.00  -3.80  -3.98   0.00   0.00   0.00
60.70
-------------------------------------------------------------------------
--

Segment Leq : 60.70 dBA


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

Source height = 1.50 m

ROAD (0.00 + 69.87 + 0.00) = 69.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -77     77   0.00  72.21   0.00  -1.66  -0.68   0.00   0.00   0.00
69.87
-------------------------------------------------------------------------
--

Segment Leq : 69.87 dBA
```

```
Results segment # 3: CarlingEB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 67.26 + 0.00) = 67.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -69     69   0.00  72.21   0.00  -3.80  -1.15   0.00   0.00   0.00
67.26
-------------------------------------------------------------------------
--

Segment Leq : 67.26 dBA

Total Leq All Segments: 72.10 dBA


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

Source height = 1.50 m

ROAD (0.00 + 53.10 + 0.00) = 53.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -3     69   0.00  60.88   0.00  -3.80  -3.98   0.00   0.00   0.00
53.10
-------------------------------------------------------------------------
--

Segment Leq : 53.10 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 62.28 + 0.00) = 62.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -77     77   0.00  64.62   0.00  -1.66  -0.68   0.00   0.00   0.00
62.28
-------------------------------------------------------------------------
--

Segment Leq : 62.28 dBA


Results segment # 3: CarlingEB (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.66 + 0.00) = 59.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -69     69   0.00  64.62   0.00  -3.80  -1.15   0.00   0.00   0.00
59.66
-------------------------------------------------------------------------
--

Segment Leq : 59.66 dBA

Total Leq All Segments: 64.50 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 72.10
                           (NIGHT): 64.50
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-09-2018 12:50:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: 417EBL (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EBL (day/night)
----------------------------------------
Angle1   Angle2           : -64.00 deg   58.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 189.00 / 189.00 m
Receiver height           :  37.40 / 37.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  51.00 deg   Angle2 : 58.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 169.00 / 169.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417EBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417EBR (day/night)
----------------------------------------
Angle1   Angle2           :  64.00 deg   72.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 156.00 / 156.00 m
Receiver height           :  37.40 / 37.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  64.00 deg   Angle2 : 66.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 146.00 / 146.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WBL (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WBL (day/night)
----------------------------------------
Angle1   Angle2           : -64.00 deg   55.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 208.00 / 208.00 m
Receiver height           :  37.40 / 37.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  51.00 deg   Angle2 : 55.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 169.00 / 169.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417WBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417WBR (day/night)
----------------------------------------
Angle1   Angle2           :  61.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 175.00 / 175.00 m
Receiver height           :  37.40 / 37.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  66.00 deg   Angle2 : 70.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 146.00 / 146.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Merivale (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 # 5: Merivale (day/night)
------------------------------------------
Angle1   Angle2           : -68.00 deg   -3.00 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           :  37.40 / 37.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: 417EBL (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 !       37.40 !        8.87 !         8.87

ROAD (68.45 + 56.29 + 0.00) = 68.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -64     51   0.00  81.40   0.00 -11.00  -1.95   0.00   0.00   0.00
68.45
-------------------------------------------------------------------------------
--
    51     58   0.00  81.40   0.00 -11.00 -14.10   0.00   0.00  -4.34
51.96*
    51     58   0.00  81.40   0.00 -11.00 -14.10   0.00   0.00   0.00
56.29
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.70 dBA
```

```
Results segment # 2: 417EBR (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 !       37.40 !        6.60 !         6.60

ROAD (0.00 + 44.87 + 56.46) = 56.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    64     66   0.00  81.40   0.00 -10.17 -19.54   0.00   0.00  -6.82
44.87
-------------------------------------------------------------------------
--
    66     72   0.00  81.40   0.00 -10.17 -14.77   0.00   0.00   0.00
56.46
-------------------------------------------------------------------------
--

Segment Leq : 56.75 dBA
```

```
Results segment # 3: 417WBL (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 !       37.40 !       11.48 !        11.48

ROAD (68.03 + 53.44 + 0.00) = 68.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -64     51   0.00  81.40   0.00 -11.42  -1.95   0.00   0.00   0.00
68.03
-------------------------------------------------------------------------
--
    51     55   0.00  81.40   0.00 -11.42 -16.53   0.00   0.00   0.00
53.44*
    51     55   0.00  81.40   0.00 -11.42 -16.53   0.00   0.00   0.00
53.44
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.18 dBA
```

```
Results segment # 4: 417WBR (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 !       37.40 !        9.95 !         9.95

ROAD (55.16 + 54.20 + 0.00) = 57.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    61     66   0.00  81.40   0.00 -10.67 -15.56   0.00   0.00   0.00
55.16
-------------------------------------------------------------------------
--
    66     70   0.00  81.40   0.00 -10.67 -16.53   0.00   0.00  -3.30
50.90*
    66     70   0.00  81.40   0.00 -10.67 -16.53   0.00   0.00   0.00
54.20
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 57.72 dBA
```

```
Results segment # 5: Merivale (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.02 + 0.00) = 60.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     -3   0.00  68.48   0.00  -4.04  -4.42   0.00   0.00   0.00
60.02
-------------------------------------------------------------------------
--

Segment Leq : 60.02 dBA

Total Leq All Segments: 72.06 dBA


Results segment # 1: 417EBL (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       37.40 !        8.87 !         8.87

ROAD (60.85 + 48.69 + 0.00) = 61.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -64     51   0.00  73.80   0.00 -11.00  -1.95   0.00   0.00   0.00
60.85
-------------------------------------------------------------------------
--
    51     58   0.00  73.80   0.00 -11.00 -14.10   0.00   0.00  -4.34
44.36*
    51     58   0.00  73.80   0.00 -11.00 -14.10   0.00   0.00   0.00
48.69
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 61.11 dBA
```

```
Results segment # 2: 417EBR (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       37.40 !        6.60 !         6.60

ROAD (0.00 + 37.27 + 48.86) = 49.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    64     66   0.00  73.80   0.00 -10.17 -19.54   0.00   0.00  -6.82
37.27
-------------------------------------------------------------------------------
--
    66     72   0.00  73.80   0.00 -10.17 -14.77   0.00   0.00   0.00
48.86
-------------------------------------------------------------------------------
--

Segment Leq : 49.15 dBA
```

```
Results segment # 3: 417WBL (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       37.40 !       11.48 !        11.48

ROAD (60.43 + 45.85 + 0.00) = 60.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -64     51   0.00  73.80   0.00 -11.42  -1.95   0.00   0.00   0.00
60.43
-------------------------------------------------------------------------------
--
    51     55   0.00  73.80   0.00 -11.42 -16.53   0.00   0.00   0.00
45.85*
    51     55   0.00  73.80   0.00 -11.42 -16.53   0.00   0.00   0.00
45.85
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.58 dBA
```

```
Results segment # 4: 417WBR (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       37.40 !        9.95 !         9.95

ROAD (47.57 + 46.60 + 0.00) = 50.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    61     66   0.00  73.80   0.00 -10.67 -15.56   0.00   0.00   0.00
47.57
-------------------------------------------------------------------------------
--
    66     70   0.00  73.80   0.00 -10.67 -16.53   0.00   0.00  -3.30
43.30*
    66     70   0.00  73.80   0.00 -10.67 -16.53   0.00   0.00   0.00
46.60
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.12 dBA
```

```
Results segment # 5: Merivale (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 52.42 + 0.00) = 52.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     -3   0.00  60.88   0.00  -4.04  -4.42   0.00   0.00   0.00
52.42
-------------------------------------------------------------------------
--

Segment Leq : 52.42 dBA

Total Leq All Segments: 64.46 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 72.06
                           (NIGHT): 64.46
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-09-2018 12:51:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: 417EBL (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EBL (day/night)
----------------------------------------
Angle1   Angle2           :  26.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 223.00 / 223.00 m
Receiver height           :  37.40 / 37.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  46.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 203.00 / 203.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417EBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417EBR (day/night)
----------------------------------------
Angle1   Angle2           :  60.00 deg   68.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 190.00 / 190.00 m
Receiver height           :  37.40 / 37.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  60.00 deg   Angle2 : 61.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 179.00 / 179.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WBL (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WBL (day/night)
----------------------------------------
Angle1   Angle2           :  26.00 deg   51.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 242.00 / 242.00 m
Receiver height           :  37.40 / 37.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  46.00 deg   Angle2 : 51.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 203.00 / 203.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417WBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417WBR (day/night)
----------------------------------------
Angle1   Angle2           :  57.00 deg   65.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 208.00 / 208.00 m
Receiver height           :  37.40 / 37.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  57.00 deg   Angle2 : 61.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 179.00 / 179.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Merivale (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 # 5: Merivale (day/night)
------------------------------------------
Angle1   Angle2           : -75.00 deg   75.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :  37.40 / 37.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 6: CarlingWB (day/night)
---------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB (day/night)
-------------------------------------------
Angle1   Angle2           : -74.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :  37.40 / 37.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 7: CarlingEB (day/night)
---------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB (day/night)
-------------------------------------------
Angle1   Angle2           : -66.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :  37.40 / 37.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: 417EBL (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 !       37.40 !        8.36 !         8.36

ROAD (60.13 + 56.15 + 0.00) = 61.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  81.40   0.00 -11.72  -9.54   0.00   0.00   0.00
60.13
-------------------------------------------------------------------------
--
    46     54   0.00  81.40   0.00 -11.72 -13.52   0.00   0.00  -4.88
51.27*
    46     54   0.00  81.40   0.00 -11.72 -13.52   0.00   0.00   0.00
56.15
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 61.59 dBA
```

```
Results segment # 2: 417EBR (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 !       37.40 !        6.40 !         6.40

ROAD (0.00 + 40.38 + 56.27) = 56.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    60     61   0.00  81.40   0.00 -11.03 -22.55   0.00   0.00  -7.44
40.38
-------------------------------------------------------------------------
--
    61     68   0.00  81.40   0.00 -11.03 -14.10   0.00   0.00   0.00
56.27
-------------------------------------------------------------------------
--

Segment Leq : 56.38 dBA
```

```
Results segment # 3: 417WBL (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 !       37.40 !       10.64 !        10.64

ROAD (59.78 + 53.76 + 0.00) = 60.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  81.40   0.00 -12.08  -9.54   0.00   0.00   0.00
59.78
-------------------------------------------------------------------------
--
    46     51   0.00  81.40   0.00 -12.08 -15.56   0.00   0.00  -0.00
53.76*
    46     51   0.00  81.40   0.00 -12.08 -15.56   0.00   0.00   0.00
53.76
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.75 dBA
```

```
Results segment # 4: 417WBR (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 !       37.40 !        9.08 !         9.08

ROAD (0.00 + 53.44 + 53.44) = 56.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    57     61   0.00  81.40   0.00 -11.42 -16.53   0.00   0.00  -4.35
49.10*
    57     61   0.00  81.40   0.00 -11.42 -16.53   0.00   0.00   0.00
53.44
-------------------------------------------------------------------------
--
    61     65   0.00  81.40   0.00 -11.42 -16.53   0.00   0.00   0.00
53.44
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 56.46 dBA
```

```
Results segment # 5: Merivale (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.47 + 0.00) = 65.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -75     75   0.00  68.48   0.00  -2.22  -0.79   0.00   0.00   0.00
65.47
-------------------------------------------------------------------------
--

Segment Leq : 65.47 dBA


Results segment # 6: CarlingWB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.80 + 0.00) = 65.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -74      0   0.00  72.21   0.00  -2.55  -3.86   0.00   0.00   0.00
65.80
-------------------------------------------------------------------------
--

Segment Leq : 65.80 dBA
```

```
Results segment # 7: CarlingEB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.49 + 0.00) = 63.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -66      0   0.00  72.21   0.00  -4.37  -4.36   0.00   0.00   0.00
63.49
-------------------------------------------------------------------------
--

Segment Leq : 63.49 dBA

Total Leq All Segments: 71.16 dBA


Results segment # 1: 417EBL (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       37.40 !        8.36 !         8.36

ROAD (52.53 + 48.56 + 0.00) = 54.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  73.80   0.00 -11.72  -9.54   0.00   0.00   0.00
52.53
-------------------------------------------------------------------------
--
    46     54   0.00  73.80   0.00 -11.72 -13.52   0.00   0.00  -4.88
43.67*
    46     54   0.00  73.80   0.00 -11.72 -13.52   0.00   0.00   0.00
48.56
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 54.00 dBA
```

```
Results segment # 2: 417EBR (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       37.40 !        6.40 !         6.40

ROAD (0.00 + 32.78 + 48.67) = 48.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    60     61   0.00  73.80   0.00 -11.03 -22.55   0.00   0.00  -7.44
32.78
-------------------------------------------------------------------------------
--
    61     68   0.00  73.80   0.00 -11.03 -14.10   0.00   0.00   0.00
48.67
-------------------------------------------------------------------------------
--

Segment Leq : 48.78 dBA
```

```
Results segment # 3: 417WBL (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       37.40 !       10.64 !        10.64

ROAD (52.18 + 46.16 + 0.00) = 53.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  73.80   0.00 -12.08  -9.54   0.00   0.00   0.00
52.18
-------------------------------------------------------------------------
--
    46     51   0.00  73.80   0.00 -12.08 -15.56   0.00   0.00  -0.00
46.16*
    46     51   0.00  73.80   0.00 -12.08 -15.56   0.00   0.00   0.00
46.16
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 53.15 dBA
```

```
Results segment # 4: 417WBR (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       37.40 !        9.08 !         9.08

ROAD (0.00 + 45.85 + 45.85) = 48.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    57     61   0.00  73.80   0.00 -11.42 -16.53   0.00   0.00  -4.35
41.50*
    57     61   0.00  73.80   0.00 -11.42 -16.53   0.00   0.00   0.00
45.85
-------------------------------------------------------------------------
--
    61     65   0.00  73.80   0.00 -11.42 -16.53   0.00   0.00   0.00
45.85
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 48.86 dBA
```

```
Results segment # 5: Merivale (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.87 + 0.00) = 57.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -75     75   0.00  60.88   0.00  -2.22  -0.79   0.00   0.00   0.00
57.87
-------------------------------------------------------------------------
--

Segment Leq : 57.87 dBA


Results segment # 6: CarlingWB (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.20 + 0.00) = 58.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -74      0   0.00  64.62   0.00  -2.55  -3.86   0.00   0.00   0.00
58.20
-------------------------------------------------------------------------
--

Segment Leq : 58.20 dBA
```

```
Results segment # 7: CarlingEB (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.89 + 0.00) = 55.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -66      0   0.00  64.62   0.00  -4.37  -4.36   0.00   0.00   0.00
55.89
-------------------------------------------------------------------------
--

Segment Leq : 55.89 dBA

Total Leq All Segments: 63.56 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 71.16
                           (NIGHT): 63.56
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-09-2018 12:51:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Merivale (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: Merivale (day/night)
-------------------------------------------
Angle1   Angle2           :  -3.00 deg   69.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :  37.40 / 37.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: CarlingWB (day/night)
-----------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB (day/night)
-------------------------------------------
Angle1   Angle2           : -77.00 deg   77.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  22.00 / 22.00  m
Receiver height           :  37.40 / 37.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: CarlingEB (day/night)
---------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB (day/night)
-------------------------------------------
Angle1   Angle2           : -69.00 deg   69.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :  37.40 / 37.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Merivale (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.70 + 0.00) = 60.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -3     69   0.00  68.48   0.00  -3.80  -3.98   0.00   0.00   0.00
60.70
-------------------------------------------------------------------------
--

Segment Leq : 60.70 dBA


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

Source height = 1.50 m

ROAD (0.00 + 69.87 + 0.00) = 69.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -77     77   0.00  72.21   0.00  -1.66  -0.68   0.00   0.00   0.00
69.87
-------------------------------------------------------------------------
--

Segment Leq : 69.87 dBA
```

```
Results segment # 3: CarlingEB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 67.26 + 0.00) = 67.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -69     69   0.00  72.21   0.00  -3.80  -1.15   0.00   0.00   0.00
67.26
-------------------------------------------------------------------------
--

Segment Leq : 67.26 dBA

Total Leq All Segments: 72.10 dBA


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

Source height = 1.50 m

ROAD (0.00 + 53.10 + 0.00) = 53.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -3     69   0.00  60.88   0.00  -3.80  -3.98   0.00   0.00   0.00
53.10
-------------------------------------------------------------------------
--

Segment Leq : 53.10 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 62.28 + 0.00) = 62.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -77     77   0.00  64.62   0.00  -1.66  -0.68   0.00   0.00   0.00
62.28
-------------------------------------------------------------------------
--

Segment Leq : 62.28 dBA


Results segment # 3: CarlingEB (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.66 + 0.00) = 59.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -69     69   0.00  64.62   0.00  -3.80  -1.15   0.00   0.00   0.00
59.66
-------------------------------------------------------------------------
--

Segment Leq : 59.66 dBA

Total Leq All Segments: 64.50 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 72.10
                           (NIGHT): 64.50
```

```
STAMSON 5.0        NORMAL REPORT        Date: 15-02-2019 14:08:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: 417EB (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EB (day/night)
---------------------------------------
Angle1   Angle2           : -65.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 199.00 / 199.00 m
Receiver height           :  37.40 / 37.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -65.00 deg   Angle2 : -56.00 deg
Barrier height            :  21.00 m
Barrier receiver distance : 124.00 / 124.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417WB (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WB (day/night)
---------------------------------------
Angle1   Angle2           : -62.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 218.00 / 218.00 m
Receiver height           :  37.40 / 37.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -62.00 deg   Angle2 : -56.00 deg
Barrier height            :  21.00 m
Barrier receiver distance : 124.00 / 124.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: CarlingWB (day/night)
-----------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   74.00 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           :  37.40 / 37.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: CarlingEB (day/night)
-----------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   66.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  49.00 / 49.00  m
Receiver height           :  37.40 / 37.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: 417EB (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 !       37.40 !       17.52 !        17.52

ROAD (0.00 + 49.57 + 66.75) = 66.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -65    -56   0.00  81.40   0.00 -11.23 -13.01   0.00   0.00  -7.59
49.57
-------------------------------------------------------------------------------
--
   -56     26   0.00  81.40   0.00 -11.23  -3.41   0.00   0.00   0.00
66.75
-------------------------------------------------------------------------------
--

Segment Leq : 66.84 dBA
```

```
Results segment # 2: 417WB (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 !       37.40 !       19.25 !        19.25

ROAD (0.00 + 49.29 + 66.36) = 66.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -62    -56   0.00  81.40   0.00 -11.62 -14.77   0.00   0.00  -5.71
49.29
-------------------------------------------------------------------------
--
   -56     26   0.00  81.40   0.00 -11.62  -3.41   0.00   0.00   0.00
66.36
-------------------------------------------------------------------------
--

Segment Leq : 66.44 dBA
```

```
Results segment # 3: CarlingWB (day)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 64.67 + 0.00) = 64.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     74   0.00  72.21   0.00  -3.68  -3.86   0.00   0.00   0.00
64.67
-------------------------------------------------------------------------
--

Segment Leq : 64.67 dBA


Results segment # 4: CarlingEB (day)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 62.72 + 0.00) = 62.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     66   0.00  72.21   0.00  -5.14  -4.36   0.00   0.00   0.00
62.72
-------------------------------------------------------------------------
--

Segment Leq : 62.72 dBA

Total Leq All Segments: 71.47 dBA
```

```
Results segment # 1: 417EB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       37.40 !       17.52 !        17.52

ROAD (0.00 + 41.97 + 59.16) = 59.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -65    -56   0.00  73.80   0.00 -11.23 -13.01   0.00   0.00  -7.59
41.97
-------------------------------------------------------------------------------
--
   -56     26   0.00  73.80   0.00 -11.23  -3.41   0.00   0.00   0.00
59.16
-------------------------------------------------------------------------------
--

Segment Leq : 59.24 dBA
```

```
Results segment # 2: 417WB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       37.40 !       19.25 !        19.25

ROAD (0.00 + 41.69 + 58.76) = 58.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -62    -56   0.00  73.80   0.00 -11.62 -14.77   0.00   0.00  -5.71
41.69
-------------------------------------------------------------------------
--
   -56     26   0.00  73.80   0.00 -11.62  -3.41   0.00   0.00   0.00
58.76
-------------------------------------------------------------------------
--

Segment Leq : 58.85 dBA
```

```
Results segment # 3: CarlingWB (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.08 + 0.00) = 57.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     74   0.00  64.62   0.00  -3.68  -3.86   0.00   0.00   0.00
57.08
-------------------------------------------------------------------------
--

Segment Leq : 57.08 dBA


Results segment # 4: CarlingEB (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.12 + 0.00) = 55.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     66   0.00  64.62   0.00  -5.14  -4.36   0.00   0.00   0.00
55.12
-------------------------------------------------------------------------
--

Segment Leq : 55.12 dBA

Total Leq All Segments: 63.88 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 71.47
                           (NIGHT): 63.88
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-09-2018 12:51:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: 417EBL (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EBL (day/night)
----------------------------------------
Angle1   Angle2           : -64.00 deg   58.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 189.00 / 189.00 m
Receiver height           :  67.40 / 67.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  51.00 deg   Angle2 : 58.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 169.00 / 169.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417EBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417EBR (day/night)
----------------------------------------
Angle1   Angle2           :  64.00 deg   72.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 156.00 / 156.00 m
Receiver height           :  67.40 / 67.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  64.00 deg   Angle2 : 66.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 146.00 / 146.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WBL (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WBL (day/night)
----------------------------------------
Angle1   Angle2           : -64.00 deg   55.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 208.00 / 208.00 m
Receiver height           :  67.40 / 67.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  51.00 deg   Angle2 : 55.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 169.00 / 169.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417WBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417WBR (day/night)
----------------------------------------
Angle1   Angle2           :  61.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 175.00 / 175.00 m
Receiver height           :  67.40 / 67.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  66.00 deg   Angle2 : 70.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 146.00 / 146.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Merivale (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 # 5: Merivale (day/night)
------------------------------------------
Angle1   Angle2           : -68.00 deg   -3.00 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           :  67.40 / 67.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: 417EBL (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 !       67.40 !       12.05 !        12.05

ROAD (68.45 + 56.29 + 0.00) = 68.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -64     51   0.00  81.40   0.00 -11.00  -1.95   0.00   0.00   0.00
68.45
-------------------------------------------------------------------------
--
    51     58   0.00  81.40   0.00 -11.00 -14.10   0.00   0.00   0.00
56.29*
    51     58   0.00  81.40   0.00 -11.00 -14.10   0.00   0.00   0.00
56.29
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.70 dBA
```

```
Results segment # 2: 417EBR (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 !       67.40 !        8.53 !         8.53

ROAD (0.00 + 51.68 + 56.46) = 57.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    64     66   0.00  81.40   0.00 -10.17 -19.54   0.00   0.00  -4.72
46.96*
    64     66   0.00  81.40   0.00 -10.17 -19.54   0.00   0.00   0.00
51.68
-------------------------------------------------------------------------
--
    66     72   0.00  81.40   0.00 -10.17 -14.77   0.00   0.00   0.00
56.46
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 57.70 dBA
```

```
Results segment # 3: 417WBL (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 !       67.40 !       17.10 !        17.10

ROAD (68.03 + 53.44 + 0.00) = 68.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -64     51   0.00  81.40   0.00 -11.42  -1.95   0.00   0.00   0.00
68.03
-------------------------------------------------------------------------------
--
    51     55   0.00  81.40   0.00 -11.42 -16.53   0.00   0.00   0.00
53.44*
    51     55   0.00  81.40   0.00 -11.42 -16.53   0.00   0.00   0.00
53.44
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.18 dBA
```

```
Results segment # 4: 417WBR (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 !       67.40 !       14.92 !        14.92

ROAD (55.16 + 54.20 + 0.00) = 57.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    61     66   0.00  81.40   0.00 -10.67 -15.56   0.00   0.00   0.00
55.16
-------------------------------------------------------------------------
--
    66     70   0.00  81.40   0.00 -10.67 -16.53   0.00   0.00   0.00
54.20*
    66     70   0.00  81.40   0.00 -10.67 -16.53   0.00   0.00   0.00
54.20
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 57.72 dBA
```

```
Results segment # 5: Merivale (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.02 + 0.00) = 60.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     -3   0.00  68.48   0.00  -4.04  -4.42   0.00   0.00   0.00
60.02
-------------------------------------------------------------------------
--

Segment Leq : 60.02 dBA

Total Leq All Segments: 72.09 dBA


Results segment # 1: 417EBL (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       67.40 !       12.05 !        12.05

ROAD (60.85 + 48.69 + 0.00) = 61.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -64     51   0.00  73.80   0.00 -11.00  -1.95   0.00   0.00   0.00
60.85
-------------------------------------------------------------------------
--
    51     58   0.00  73.80   0.00 -11.00 -14.10   0.00   0.00   0.00
48.69*
    51     58   0.00  73.80   0.00 -11.00 -14.10   0.00   0.00   0.00
48.69
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 61.11 dBA
```

```
Results segment # 2: 417EBR (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       67.40 !        8.53 !         8.53

ROAD (0.00 + 44.09 + 48.86) = 50.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    64     66   0.00  73.80   0.00 -10.17 -19.54   0.00   0.00  -4.72
39.36*
    64     66   0.00  73.80   0.00 -10.17 -19.54   0.00   0.00   0.00
44.09
-------------------------------------------------------------------------------
--
    66     72   0.00  73.80   0.00 -10.17 -14.77   0.00   0.00   0.00
48.86
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.11 dBA
```

```
Results segment # 3: 417WBL (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       67.40 !       17.10 !        17.10

ROAD (60.43 + 45.85 + 0.00) = 60.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -64     51   0.00  73.80   0.00 -11.42  -1.95   0.00   0.00   0.00
60.43
-------------------------------------------------------------------------------
--
    51     55   0.00  73.80   0.00 -11.42 -16.53   0.00   0.00   0.00
45.85*
    51     55   0.00  73.80   0.00 -11.42 -16.53   0.00   0.00   0.00
45.85
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.58 dBA
```

```
Results segment # 4: 417WBR (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       67.40 !       14.92 !        14.92

ROAD (47.57 + 46.60 + 0.00) = 50.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    61     66   0.00  73.80   0.00 -10.67 -15.56   0.00   0.00   0.00
47.57
-------------------------------------------------------------------------------
--
    66     70   0.00  73.80   0.00 -10.67 -16.53   0.00   0.00   0.00
46.60*
    66     70   0.00  73.80   0.00 -10.67 -16.53   0.00   0.00   0.00
46.60
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.12 dBA
```

```
Results segment # 5: Merivale (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 52.42 + 0.00) = 52.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     -3   0.00  60.88   0.00  -4.04  -4.42   0.00   0.00   0.00
52.42
-------------------------------------------------------------------------
--

Segment Leq : 52.42 dBA

Total Leq All Segments: 64.49 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 72.09
                           (NIGHT): 64.49
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-09-2018 12:49:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: 417EBL (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EBL (day/night)
----------------------------------------
Angle1   Angle2           :  26.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 223.00 / 223.00 m
Receiver height           :  67.40 / 67.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  46.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 203.00 / 203.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417EBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417EBR (day/night)
----------------------------------------
Angle1   Angle2           :  60.00 deg   68.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 190.00 / 190.00 m
Receiver height           :  67.40 / 67.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  60.00 deg   Angle2 : 61.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 179.00 / 179.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WBL (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WBL (day/night)
----------------------------------------
Angle1   Angle2           :  26.00 deg   51.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 242.00 / 242.00 m
Receiver height           :  67.40 / 67.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  46.00 deg   Angle2 : 51.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 203.00 / 203.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417WBR (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    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: 417WBR (day/night)
----------------------------------------
Angle1   Angle2           :  57.00 deg   65.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 208.00 / 208.00 m
Receiver height           :  67.40 / 67.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  57.00 deg   Angle2 : 61.00 deg
Barrier height            :   8.00 m
Barrier receiver distance : 179.00 / 179.00 m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Merivale (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 # 5: Merivale (day/night)
------------------------------------------
Angle1   Angle2           : -75.00 deg   75.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :  67.40 / 67.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 6: CarlingWB (day/night)
-----------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB (day/night)
-------------------------------------------
Angle1   Angle2           : -74.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :  67.40 / 67.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 7: CarlingEB (day/night)
-----------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB (day/night)
-------------------------------------------
Angle1   Angle2           : -66.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :  67.40 / 67.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: 417EBL (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 !       67.40 !       11.05 !        11.05

ROAD (60.13 + 56.15 + 0.00) = 61.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  81.40   0.00 -11.72  -9.54   0.00   0.00   0.00
60.13
-------------------------------------------------------------------------
--
    46     54   0.00  81.40   0.00 -11.72 -13.52   0.00   0.00   0.00
56.15*
    46     54   0.00  81.40   0.00 -11.72 -13.52   0.00   0.00   0.00
56.15
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 61.59 dBA
```

```
Results segment # 2: 417EBR (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 !       67.40 !        8.14 !         8.14

ROAD (0.00 + 47.82 + 56.27) = 56.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    60     61   0.00  81.40   0.00 -11.03 -22.55   0.00   0.00  -4.98
42.84*
    60     61   0.00  81.40   0.00 -11.03 -22.55   0.00   0.00   0.00
47.82
-------------------------------------------------------------------------
--
    61     68   0.00  81.40   0.00 -11.03 -14.10   0.00   0.00   0.00
56.27
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 56.85 dBA
```

```
Results segment # 3: 417WBL (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 !       67.40 !       15.47 !        15.47

ROAD (59.78 + 53.76 + 0.00) = 60.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    26     46   0.00  81.40   0.00 -12.08  -9.54   0.00   0.00   0.00
59.78
-------------------------------------------------------------------------------
--
    46     51   0.00  81.40   0.00 -12.08 -15.56   0.00   0.00   0.00
53.76*
    46     51   0.00  81.40   0.00 -12.08 -15.56   0.00   0.00   0.00
53.76
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.75 dBA
```

```
Results segment # 4: 417WBR (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 !       67.40 !       13.27 !        13.27

ROAD (0.00 + 53.44 + 53.44) = 56.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    57     61    0.00  81.40   0.00 -11.42 -16.53   0.00   0.00   0.00
53.44*
    57     61    0.00  81.40   0.00 -11.42 -16.53   0.00   0.00   0.00
53.44
-------------------------------------------------------------------------
--
    61     65    0.00  81.40   0.00 -11.42 -16.53   0.00   0.00   0.00
53.44
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 56.46 dBA
```

```
Results segment # 5: Merivale (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.47 + 0.00) = 65.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -75     75   0.00  68.48   0.00  -2.22  -0.79   0.00   0.00   0.00
65.47
-------------------------------------------------------------------------
--

Segment Leq : 65.47 dBA


Results segment # 6: CarlingWB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.80 + 0.00) = 65.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -74      0   0.00  72.21   0.00  -2.55  -3.86   0.00   0.00   0.00
65.80
-------------------------------------------------------------------------
--

Segment Leq : 65.80 dBA
```

```
Results segment # 7: CarlingEB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.49 + 0.00) = 63.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -66      0   0.00  72.21   0.00  -4.37  -4.36   0.00   0.00   0.00
63.49
-------------------------------------------------------------------------
--

Segment Leq : 63.49 dBA

Total Leq All Segments: 71.18 dBA


Results segment # 1: 417EBL (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       67.40 !       11.05 !        11.05

ROAD (52.53 + 48.56 + 0.00) = 54.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  73.80   0.00 -11.72  -9.54   0.00   0.00   0.00
52.53
-------------------------------------------------------------------------
--
    46     54   0.00  73.80   0.00 -11.72 -13.52   0.00   0.00   0.00
48.56*
    46     54   0.00  73.80   0.00 -11.72 -13.52   0.00   0.00   0.00
48.56
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 54.00 dBA
```

```
Results segment # 2: 417EBR (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       67.40 !        8.14 !         8.14

ROAD (0.00 + 40.22 + 48.67) = 49.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    60     61   0.00  73.80   0.00 -11.03 -22.55   0.00   0.00  -4.98
35.24*
    60     61   0.00  73.80   0.00 -11.03 -22.55   0.00   0.00   0.00
40.22
-------------------------------------------------------------------------------
--
    61     68   0.00  73.80   0.00 -11.03 -14.10   0.00   0.00   0.00
48.67
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 49.25 dBA
```

```
Results segment # 3: 417WBL (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       67.40 !       15.47 !        15.47

ROAD (52.18 + 46.16 + 0.00) = 53.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    26     46   0.00  73.80   0.00 -12.08  -9.54   0.00   0.00   0.00
52.18
-------------------------------------------------------------------------
--
    46     51   0.00  73.80   0.00 -12.08 -15.56   0.00   0.00   0.00
46.16*
    46     51   0.00  73.80   0.00 -12.08 -15.56   0.00   0.00   0.00
46.16
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 53.15 dBA
```

```
Results segment # 4: 417WBR (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       67.40 !       13.27 !        13.27

ROAD (0.00 + 45.85 + 45.85) = 48.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    57     61    0.00  73.80   0.00 -11.42 -16.53   0.00   0.00   0.00
45.85*
    57     61    0.00  73.80   0.00 -11.42 -16.53   0.00   0.00   0.00
45.85
-------------------------------------------------------------------------
--
    61     65    0.00  73.80   0.00 -11.42 -16.53   0.00   0.00   0.00
45.85
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 48.86 dBA
```

```
Results segment # 5: Merivale (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.87 + 0.00) = 57.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -75     75   0.00  60.88   0.00  -2.22  -0.79   0.00   0.00   0.00
57.87
-------------------------------------------------------------------------
--

Segment Leq : 57.87 dBA


Results segment # 6: CarlingWB (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.20 + 0.00) = 58.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -74      0   0.00  64.62   0.00  -2.55  -3.86   0.00   0.00   0.00
58.20
-------------------------------------------------------------------------
--

Segment Leq : 58.20 dBA
```

```
Results segment # 7: CarlingEB (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.89 + 0.00) = 55.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -66      0   0.00  64.62   0.00  -4.37  -4.36   0.00   0.00   0.00
55.89
-------------------------------------------------------------------------
--

Segment Leq : 55.89 dBA

Total Leq All Segments: 63.58 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 71.18
                           (NIGHT): 63.58
```

```
STAMSON 5.0         NORMAL REPORT         Date: 13-09-2018 12:49:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Merivale (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: Merivale (day/night)
-------------------------------------------
Angle1   Angle2           :  -3.00 deg   69.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :  67.40 / 67.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: CarlingWB (day/night)
-----------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB (day/night)
-------------------------------------------
Angle1   Angle2           : -77.00 deg   77.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  22.00 / 22.00  m
Receiver height           :  67.40 / 67.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: CarlingEB (day/night)
-------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB (day/night)
-------------------------------------------
Angle1   Angle2           : -69.00 deg   69.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :  67.40 / 67.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Merivale (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.70 + 0.00) = 60.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -3     69   0.00  68.48   0.00  -3.80  -3.98   0.00   0.00   0.00
60.70
-------------------------------------------------------------------------
--

Segment Leq : 60.70 dBA


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

Source height = 1.50 m

ROAD (0.00 + 69.87 + 0.00) = 69.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -77     77   0.00  72.21   0.00  -1.66  -0.68   0.00   0.00   0.00
69.87
-------------------------------------------------------------------------
--

Segment Leq : 69.87 dBA
```

```
Results segment # 3: CarlingEB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 67.26 + 0.00) = 67.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -69     69   0.00  72.21   0.00  -3.80  -1.15   0.00   0.00   0.00
67.26
-------------------------------------------------------------------------
--

Segment Leq : 67.26 dBA

Total Leq All Segments: 72.10 dBA


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

Source height = 1.50 m

ROAD (0.00 + 53.10 + 0.00) = 53.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -3     69   0.00  60.88   0.00  -3.80  -3.98   0.00   0.00   0.00
53.10
-------------------------------------------------------------------------
--

Segment Leq : 53.10 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 62.28 + 0.00) = 62.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -77     77   0.00  64.62   0.00  -1.66  -0.68   0.00   0.00   0.00
62.28
-------------------------------------------------------------------------
--

Segment Leq : 62.28 dBA


Results segment # 3: CarlingEB (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.66 + 0.00) = 59.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -69     69   0.00  64.62   0.00  -3.80  -1.15   0.00   0.00   0.00
59.66
-------------------------------------------------------------------------
--

Segment Leq : 59.66 dBA

Total Leq All Segments: 64.50 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 72.10
                           (NIGHT): 64.50
```

```
STAMSON 5.0        NORMAL REPORT        Date: 15-02-2019 14:31:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: 417EB (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EB (day/night)
---------------------------------------
Angle1   Angle2           : -65.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 199.00 / 199.00 m
Receiver height           :  67.40 / 67.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -65.00 deg   Angle2 : -56.00 deg
Barrier height            :  21.00 m
Barrier receiver distance : 124.00 / 124.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417WB (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WB (day/night)
---------------------------------------
Angle1   Angle2           : -62.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 218.00 / 218.00 m
Receiver height           :  67.40 / 67.40  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -62.00 deg   Angle2 : -56.00 deg
Barrier height            :  21.00 m
Barrier receiver distance : 124.00 / 124.00 m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: CarlingWB (day/night)
-----------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   74.00 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           :  67.40 / 67.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: CarlingEB (day/night)
-------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   66.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  49.00 / 49.00  m
Receiver height           :  67.40 / 67.40  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: 417EB (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 !       67.40 !       28.83 !        28.83

ROAD (0.00 + 57.16 + 66.75) = 67.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -65    -56   0.00  81.40   0.00 -11.23 -13.01   0.00   0.00   0.00
57.16*
   -65    -56   0.00  81.40   0.00 -11.23 -13.01   0.00   0.00   0.00
57.16
-------------------------------------------------------------------------
--
   -56     26   0.00  81.40   0.00 -11.23  -3.41   0.00   0.00   0.00
66.75
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 67.21 dBA
```

```
Results segment # 2: 417WB (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 !       67.40 !       32.19 !        32.19

ROAD (0.00 + 55.00 + 66.36) = 66.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -62    -56   0.00  81.40   0.00 -11.62 -14.77   0.00   0.00   0.00
55.00*
   -62    -56   0.00  81.40   0.00 -11.62 -14.77   0.00   0.00   0.00
55.00
-------------------------------------------------------------------------
--
   -56     26   0.00  81.40   0.00 -11.62  -3.41   0.00   0.00   0.00
66.36
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 66.67 dBA
```

```
Results segment # 3: CarlingWB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 64.67 + 0.00) = 64.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     74   0.00  72.21   0.00  -3.68  -3.86   0.00   0.00   0.00
64.67
-------------------------------------------------------------------------
--

Segment Leq : 64.67 dBA
```

```
Results segment # 4: CarlingEB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 62.72 + 0.00) = 62.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     66   0.00  72.21   0.00  -5.14  -4.36   0.00   0.00   0.00
62.72
-------------------------------------------------------------------------
--

Segment Leq : 62.72 dBA

Total Leq All Segments: 71.68 dBA
```

```
Results segment # 1: 417EB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       67.40 !       28.83 !        28.83

ROAD (0.00 + 49.56 + 59.16) = 59.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -65    -56   0.00  73.80   0.00 -11.23 -13.01   0.00   0.00   0.00
49.56*
   -65    -56   0.00  73.80   0.00 -11.23 -13.01   0.00   0.00   0.00
49.56
-------------------------------------------------------------------------
--
   -56     26   0.00  73.80   0.00 -11.23  -3.41   0.00   0.00   0.00
59.16
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.61 dBA
```

```
Results segment # 2: 417WB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       67.40 !       32.19 !        32.19

ROAD (0.00 + 47.40 + 58.76) = 59.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -62    -56   0.00  73.80   0.00 -11.62 -14.77   0.00   0.00   0.00
47.40*
   -62    -56   0.00  73.80   0.00 -11.62 -14.77   0.00   0.00   0.00
47.40
-------------------------------------------------------------------------
--
   -56     26   0.00  73.80   0.00 -11.62  -3.41   0.00   0.00   0.00
58.76
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.07 dBA
```

```
Results segment # 3: CarlingWB (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.08 + 0.00) = 57.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     74   0.00  64.62   0.00  -3.68  -3.86   0.00   0.00   0.00
57.08
-------------------------------------------------------------------------
--

Segment Leq : 57.08 dBA
```

```
Results segment # 4: CarlingEB (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.12 + 0.00) = 55.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     66   0.00  64.62   0.00  -5.14  -4.36   0.00   0.00   0.00
55.12
-------------------------------------------------------------------------
--

Segment Leq : 55.12 dBA

Total Leq All Segments: 64.08 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 71.68
                           (NIGHT): 64.08
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-02-2019 11:21:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r13b2.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: 417EB (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EB (day/night)
---------------------------------------
Angle1   Angle2           : -68.00 deg   67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 183.00 / 183.00 m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : 67.00 deg
Barrier height            :   4.10 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417WB (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WB (day/night)
---------------------------------------
Angle1   Angle2           : -68.00 deg   67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 202.00 / 202.00 m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : 67.00 deg
Barrier height            :   4.10 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Merivale1 (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       :     2 %
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: Merivale1 (day/night)
-------------------------------------------
Angle1   Angle2           : -65.00 deg   -17.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -65.00 deg   Angle2 : -17.00 deg
Barrier height            :   4.10 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Merivale2 (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: Merivale2 (day/night)
-------------------------------------------
Angle1   Angle2           : -17.00 deg   37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -17.00 deg   Angle2 : 37.00 deg
Barrier height            :  79.90 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Merivale3 (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       :     2 %
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 # 5: Merivale3 (day/night)
-------------------------------------------
Angle1   Angle2           :  37.00 deg   60.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  37.00 deg   Angle2 : 60.00 deg
Barrier height            :   4.10 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 6: CarlingEB1 (day/night)
----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB1 (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   -50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  45.00 / 45.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -50.00 deg
Barrier height            :  79.90 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 # 7: CarlingEB2 (day/night)
-----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB2 (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  :  45.00 / 45.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 90.00 deg
Barrier height            :   4.10 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 8: CarlingWB1 (day/night)
-----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB1 (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  59.00 / 59.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -50.00 deg
Barrier height            :  79.90 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 # 9: CarlingWB2 (day/night)
-----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB2 (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  :  59.00 / 59.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 90.00 deg
Barrier height            :   4.10 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Results segment # 1: 417EB (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 !       17.00 !        0.24 !        15.74

ROAD (0.00 + 56.63 + 0.00) = 56.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     67   0.00  81.40   0.00 -10.86  -1.25   0.00   0.00 -12.65
56.63
-------------------------------------------------------------------------
--

Segment Leq : 56.63 dBA


Results segment # 2: 417WB (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 !       17.00 !        0.36 !        15.86

ROAD (0.00 + 56.49 + 0.00) = 56.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     67   0.00  81.40   0.00 -11.29  -1.25   0.00   0.00 -12.37
56.49
-------------------------------------------------------------------------
--

Segment Leq : 56.49 dBA
```

```
Results segment # 3: Merivale1 (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 !       17.00 !        0.14 !        15.64

ROAD (0.00 + 38.65 + 0.00) = 38.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -65    -17   0.00  68.48   0.00  -7.27  -5.74   0.00   0.00 -16.82
38.65
-------------------------------------------------------------------------
--

Segment Leq : 38.65 dBA


Results segment # 4: Merivale2 (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 !       17.00 !       14.09 !        14.09

ROAD (0.00 + 35.98 + 0.00) = 35.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -17     37   0.00  68.48   0.00  -7.27  -5.23   0.00   0.00 -20.00
35.98
-------------------------------------------------------------------------
--

Segment Leq : 35.98 dBA
```

```
Results segment # 5: Merivale3 (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 !       17.00 !       -1.41 !        14.09

ROAD (0.00 + 35.71 + 0.00) = 35.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    37     60   0.00  68.48   0.00  -7.27  -8.94   0.00   0.00 -16.57
35.71
-------------------------------------------------------------------------------
--

Segment Leq : 35.71 dBA


Results segment # 6: CarlingEB1 (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 !       17.00 !       11.14 !        11.14

ROAD (0.00 + 41.21 + 0.00) = 41.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -50   0.00  72.21   0.00  -4.77  -6.53   0.00   0.00 -19.70
41.21
-------------------------------------------------------------------------------
--

Segment Leq : 41.21 dBA
```

```
Results segment # 7: CarlingEB2 (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 !       17.00 !       -4.36 !        11.14

ROAD (0.00 + 48.64 + 0.00) = 48.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     90   0.00  72.21   0.00  -4.77  -1.09   0.00   0.00 -17.71
48.64
-------------------------------------------------------------------------------
--

Segment Leq : 48.64 dBA


Results segment # 8: CarlingWB1 (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 !       17.00 !       12.53 !        12.53

ROAD (0.00 + 40.05 + 0.00) = 40.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -50   0.00  72.21   0.00  -5.95  -6.53   0.00   0.00 -19.68
40.05
-------------------------------------------------------------------------------
--

Segment Leq : 40.05 dBA
```

```
Results segment # 9: CarlingWB2 (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 !       17.00 !       -2.97 !        12.53

ROAD (0.00 + 48.41 + 0.00) = 48.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     90   0.00  72.21   0.00  -5.95  -1.09   0.00   0.00 -16.77
48.41
-------------------------------------------------------------------------------
--

Segment Leq : 48.41 dBA

Total Leq All Segments: 60.36 dBA


Results segment # 1: 417EB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       17.00 !        0.24 !        15.74

ROAD (0.00 + 49.03 + 0.00) = 49.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -68     67   0.00  73.80   0.00 -10.86  -1.25   0.00   0.00 -12.65
49.03
-------------------------------------------------------------------------------
--

Segment Leq : 49.03 dBA
```

```
Results segment # 2: 417WB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       17.00 !        0.36 !        15.86

ROAD (0.00 + 48.89 + 0.00) = 48.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     67   0.00  73.80   0.00 -11.29  -1.25   0.00   0.00 -12.37
48.89
-------------------------------------------------------------------------
--

Segment Leq : 48.89 dBA


Results segment # 3: Merivale1 (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 !       17.00 !        0.14 !        15.64

ROAD (0.00 + 31.06 + 0.00) = 31.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -65    -17   0.00  60.88   0.00  -7.27  -5.74   0.00   0.00 -16.82
31.06
-------------------------------------------------------------------------
--

Segment Leq : 31.06 dBA
```

```
Results segment # 4: Merivale2 (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 !       17.00 !       14.09 !        14.09

ROAD (0.00 + 28.38 + 0.00) = 28.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -17     37   0.00  60.88   0.00  -7.27  -5.23   0.00   0.00 -20.00
28.38
-------------------------------------------------------------------------
--

Segment Leq : 28.38 dBA


Results segment # 5: Merivale3 (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 !       17.00 !       -1.41 !        14.09

ROAD (0.00 + 28.11 + 0.00) = 28.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    37     60   0.00  60.88   0.00  -7.27  -8.94   0.00   0.00 -16.57
28.11
-------------------------------------------------------------------------
--

Segment Leq : 28.11 dBA
```

```
Results segment # 6: CarlingEB1 (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 !       17.00 !       11.14 !        11.14

ROAD (0.00 + 33.61 + 0.00) = 33.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -50   0.00  64.62   0.00  -4.77  -6.53   0.00   0.00 -19.70
33.61
-------------------------------------------------------------------------------
--

Segment Leq : 33.61 dBA


Results segment # 7: CarlingEB2 (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 !       17.00 !       -4.36 !        11.14

ROAD (0.00 + 41.05 + 0.00) = 41.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     90   0.00  64.62   0.00  -4.77  -1.09   0.00   0.00 -17.71
41.05
-------------------------------------------------------------------------------
--

Segment Leq : 41.05 dBA
```

```
Results segment # 8: CarlingWB1 (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 !       17.00 !       12.53 !        12.53

ROAD (0.00 + 32.46 + 0.00) = 32.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -50   0.00  64.62   0.00  -5.95  -6.53   0.00   0.00 -19.68
32.46
-------------------------------------------------------------------------
--

Segment Leq : 32.46 dBA


Results segment # 9: CarlingWB2 (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 !       17.00 !       -2.97 !        12.53

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
-------------------------------------------------------------------------
--
   -50     90   0.00  64.62   0.00  -5.95  -1.09   0.00   0.00 -16.77
40.81
-------------------------------------------------------------------------
--

Segment Leq : 40.81 dBA

Total Leq All Segments: 52.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.36
                           (NIGHT): 52.76
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-02-2019 11:21:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r13b.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: 417EB (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EB (day/night)
---------------------------------------
Angle1   Angle2           : -68.00 deg   67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 183.00 / 183.00 m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : 67.00 deg
Barrier height            :   1.80 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417WB (day/night)
------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WB (day/night)
---------------------------------------
Angle1   Angle2           : -68.00 deg   67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 202.00 / 202.00 m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : 67.00 deg
Barrier height            :   1.80 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Merivale1 (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       :     2 %
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: Merivale1 (day/night)
-------------------------------------------
Angle1   Angle2           : -65.00 deg   -17.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -65.00 deg   Angle2 : -17.00 deg
Barrier height            :   1.80 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Merivale2 (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: Merivale2 (day/night)
-------------------------------------------
Angle1   Angle2           : -17.00 deg   37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -17.00 deg   Angle2 : 37.00 deg
Barrier height            :  79.90 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Merivale3 (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       :     2 %
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 # 5: Merivale3 (day/night)
-------------------------------------------
Angle1   Angle2           :  37.00 deg   60.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  37.00 deg   Angle2 : 60.00 deg
Barrier height            :   1.80 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 6: CarlingEB1 (day/night)
-----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB1 (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  45.00 / 45.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -50.00 deg
Barrier height            :  79.90 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 # 7: CarlingEB2 (day/night)
-----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB2 (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  :  45.00 / 45.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.80 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 8: CarlingWB1 (day/night)
-----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB1 (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  59.00 / 59.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -50.00 deg
Barrier height            :  79.90 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 # 9: CarlingWB2 (day/night)
----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB2 (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  :  59.00 / 59.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.80 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Results segment # 1: 417EB (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 !       17.00 !        0.24 !        15.74

ROAD (0.00 + 62.01 + 0.00) = 62.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -68     67   0.00  81.40   0.00 -10.86  -1.25   0.00   0.00  -7.27
62.01
-------------------------------------------------------------------------------
--

Segment Leq : 62.01 dBA


Results segment # 2: 417WB (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 !       17.00 !        0.36 !        15.86

ROAD (0.00 + 61.88 + 0.00) = 61.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -68     67   0.00  81.40   0.00 -11.29  -1.25   0.00   0.00  -6.98
61.88
-------------------------------------------------------------------------------
--

Segment Leq : 61.88 dBA
```

```
Results segment # 3: Merivale1 (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 !       17.00 !        0.14 !        15.64

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
-------------------------------------------------------------------------------
--
   -65    -17   0.00  68.48   0.00  -7.27  -5.74   0.00   0.00  -9.98
45.49
-------------------------------------------------------------------------------
--

Segment Leq : 45.49 dBA


Results segment # 4: Merivale2 (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 !       17.00 !       14.09 !        14.09

ROAD (0.00 + 35.98 + 0.00) = 35.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -17     37   0.00  68.48   0.00  -7.27  -5.23   0.00   0.00 -20.00
35.98
-------------------------------------------------------------------------------
--

Segment Leq : 35.98 dBA
```

```
Results segment # 5: Merivale3 (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 !       17.00 !       -1.41 !        14.09

ROAD (0.00 + 40.21 + 0.00) = 40.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    37     60   0.00  68.48   0.00  -7.27  -8.94   0.00   0.00 -12.07
40.21
-------------------------------------------------------------------------
--

Segment Leq : 40.21 dBA


Results segment # 6: CarlingEB1 (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 !       17.00 !       11.14 !        11.14

ROAD (0.00 + 41.21 + 0.00) = 41.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -50   0.00  72.21   0.00  -4.77  -6.53   0.00   0.00 -19.70
41.21
-------------------------------------------------------------------------
--

Segment Leq : 41.21 dBA
```

```
Results segment # 7: CarlingEB2 (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 !       17.00 !       -4.36 !        11.14

ROAD (0.00 + 50.25 + 0.00) = 50.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     90   0.00  72.21   0.00  -4.77  -1.09   0.00   0.00 -16.10
50.25
-------------------------------------------------------------------------------
--

Segment Leq : 50.25 dBA


Results segment # 8: CarlingWB1 (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 !       17.00 !       12.53 !        12.53

ROAD (0.00 + 40.05 + 0.00) = 40.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -50   0.00  72.21   0.00  -5.95  -6.53   0.00   0.00 -19.68
40.05
-------------------------------------------------------------------------------
--

Segment Leq : 40.05 dBA
```

```
Results segment # 9: CarlingWB2 (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 !       17.00 !       -2.97 !        12.53

ROAD (0.00 + 51.13 + 0.00) = 51.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     90   0.00  72.21   0.00  -5.95  -1.09   0.00   0.00 -14.04
51.13
-------------------------------------------------------------------------------
--

Segment Leq : 51.13 dBA

Total Leq All Segments: 65.36 dBA


Results segment # 1: 417EB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       17.00 !        0.24 !        15.74

ROAD (0.00 + 54.41 + 0.00) = 54.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -68     67   0.00  73.80   0.00 -10.86  -1.25   0.00   0.00  -7.27
54.41
-------------------------------------------------------------------------------
--

Segment Leq : 54.41 dBA
```

```
Results segment # 2: 417WB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       17.00 !        0.36 !        15.86

ROAD (0.00 + 54.28 + 0.00) = 54.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -68     67   0.00  73.80   0.00 -11.29  -1.25   0.00   0.00  -6.98
54.28
-------------------------------------------------------------------------------
--

Segment Leq : 54.28 dBA


Results segment # 3: Merivale1 (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 !       17.00 !        0.14 !        15.64

ROAD (0.00 + 37.90 + 0.00) = 37.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -65    -17   0.00  60.88   0.00  -7.27  -5.74   0.00   0.00  -9.98
37.90
-------------------------------------------------------------------------------
--

Segment Leq : 37.90 dBA
```

```
Results segment # 4: Merivale2 (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 !       17.00 !       14.09 !        14.09

ROAD (0.00 + 28.38 + 0.00) = 28.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -17     37   0.00  60.88   0.00  -7.27  -5.23   0.00   0.00 -20.00
28.38
-------------------------------------------------------------------------------
--

Segment Leq : 28.38 dBA


Results segment # 5: Merivale3 (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 !       17.00 !       -1.41 !        14.09

ROAD (0.00 + 32.61 + 0.00) = 32.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    37     60   0.00  60.88   0.00  -7.27  -8.94   0.00   0.00 -12.07
32.61
-------------------------------------------------------------------------------
--

Segment Leq : 32.61 dBA
```

```
Results segment # 6: CarlingEB1 (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 !       17.00 !       11.14 !        11.14

ROAD (0.00 + 33.61 + 0.00) = 33.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -50   0.00  64.62   0.00  -4.77  -6.53   0.00   0.00 -19.70
33.61
-------------------------------------------------------------------------------
--

Segment Leq : 33.61 dBA


Results segment # 7: CarlingEB2 (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 !       17.00 !       -4.36 !        11.14

ROAD (0.00 + 42.65 + 0.00) = 42.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     90   0.00  64.62   0.00  -4.77  -1.09   0.00   0.00 -16.10
42.65
-------------------------------------------------------------------------------
--

Segment Leq : 42.65 dBA
```

```
Results segment # 8: CarlingWB1 (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 !       17.00 !       12.53 !        12.53

ROAD (0.00 + 32.46 + 0.00) = 32.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -50   0.00  64.62   0.00  -5.95  -6.53   0.00   0.00 -19.68
32.46
-------------------------------------------------------------------------------
--

Segment Leq : 32.46 dBA


Results segment # 9: CarlingWB2 (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 !       17.00 !       -2.97 !        12.53

ROAD (0.00 + 43.54 + 0.00) = 43.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     90   0.00  64.62   0.00  -5.95  -1.09   0.00   0.00 -14.04
43.54
-------------------------------------------------------------------------------
--

Segment Leq : 43.54 dBA

Total Leq All Segments: 57.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.36
                           (NIGHT): 57.76
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-02-2019 11:21:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: 417EB (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417EB (day/night)
---------------------------------------
Angle1   Angle2           : -68.00 deg   67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 183.00 / 183.00 m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : 67.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 417WB (day/night)
-----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: 417WB (day/night)
---------------------------------------
Angle1   Angle2           : -68.00 deg   67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 202.00 / 202.00 m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : 67.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :   4.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Merivale1 (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       :     2 %
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: Merivale1 (day/night)
-------------------------------------------
Angle1   Angle2           : -65.00 deg   -17.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -65.00 deg   Angle2 : -17.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Merivale2 (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: Merivale2 (day/night)
-------------------------------------------
Angle1   Angle2           : -17.00 deg   37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -17.00 deg   Angle2 : 37.00 deg
Barrier height            :  79.90 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Merivale3 (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       :     2 %
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 # 5: Merivale3 (day/night)
-------------------------------------------
Angle1   Angle2           :  37.00 deg   60.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  37.00 deg   Angle2 : 60.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 6: CarlingEB1 (day/night)
-----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB1 (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  45.00 / 45.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -50.00 deg
Barrier height            :  79.90 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 # 7: CarlingEB2 (day/night)
-----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingEB2 (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  :  45.00 / 45.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Road data, segment # 8: CarlingWB1 (day/night)
-----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB1 (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  59.00 / 59.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -50.00 deg
Barrier height            :  79.90 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 # 9: CarlingWB2 (day/night)
-----------------------------------------------
Car traffic volume  : 20240/1760  veh/TimePeriod  *
Medium truck volume :  1610/140   veh/TimePeriod  *
Heavy truck volume  :  1150/100   veh/TimePeriod  *
Posted speed limit  :    60 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):  25000
    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: CarlingWB2 (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  :  59.00 / 59.00  m
Receiver height           :  17.00 / 17.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  15.50 m
Reference angle           :   0.00
```

```
Results segment # 1: 417EB (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 !       17.00 !        0.24 !        15.74

ROAD (0.00 + 69.28 + 0.00) = 69.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     67   0.00  81.40   0.00 -10.86  -1.25   0.00   0.00  -4.93
64.35*
   -68     67   0.00  81.40   0.00 -10.86  -1.25   0.00   0.00   0.00
69.28
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 69.28 dBA
```

```
Results segment # 2: 417WB (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 !       17.00 !        0.36 !        15.86

ROAD (0.00 + 68.85 + 0.00) = 68.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     67   0.00  81.40   0.00 -11.29  -1.25   0.00   0.00  -4.85
64.01*
   -68     67   0.00  81.40   0.00 -11.29  -1.25   0.00   0.00   0.00
68.85
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.85 dBA
```

```
Results segment # 3: Merivale1 (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 !       17.00 !        0.14 !        15.64

ROAD (0.00 + 55.47 + 0.00) = 55.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -65    -17   0.00  68.48   0.00  -7.27  -5.74   0.00   0.00  -4.94
50.53*
   -65    -17   0.00  68.48   0.00  -7.27  -5.74   0.00   0.00   0.00
55.47
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 55.47 dBA


Results segment # 4: Merivale2 (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 !       17.00 !       14.09 !        14.09

ROAD (0.00 + 35.98 + 0.00) = 35.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -17     37   0.00  68.48   0.00  -7.27  -5.23   0.00   0.00 -20.00
35.98
-------------------------------------------------------------------------
--

Segment Leq : 35.98 dBA
```

```
Results segment # 5: Merivale3 (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 !       17.00 !       -1.41 !        14.09

ROAD (0.00 + 45.04 + 0.00) = 45.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    37     60   0.00  68.48   0.00  -7.27  -8.94   0.00   0.00  -7.23
45.04
-------------------------------------------------------------------------
--

Segment Leq : 45.04 dBA


Results segment # 6: CarlingEB1 (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 !       17.00 !       11.14 !        11.14

ROAD (0.00 + 41.21 + 0.00) = 41.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -50   0.00  72.21   0.00  -4.77  -6.53   0.00   0.00 -19.70
41.21
-------------------------------------------------------------------------
--

Segment Leq : 41.21 dBA
```

```
Results segment # 7: CarlingEB2 (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 !       17.00 !       -4.36 !        11.14

ROAD (0.00 + 52.72 + 0.00) = 52.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     90   0.00  72.21   0.00  -4.77  -1.09   0.00   0.00 -13.64
52.72
-------------------------------------------------------------------------------
--

Segment Leq : 52.72 dBA


Results segment # 8: CarlingWB1 (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 !       17.00 !       12.53 !        12.53

ROAD (0.00 + 40.05 + 0.00) = 40.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -50   0.00  72.21   0.00  -5.95  -6.53   0.00   0.00 -19.68
40.05
-------------------------------------------------------------------------------
--

Segment Leq : 40.05 dBA
```

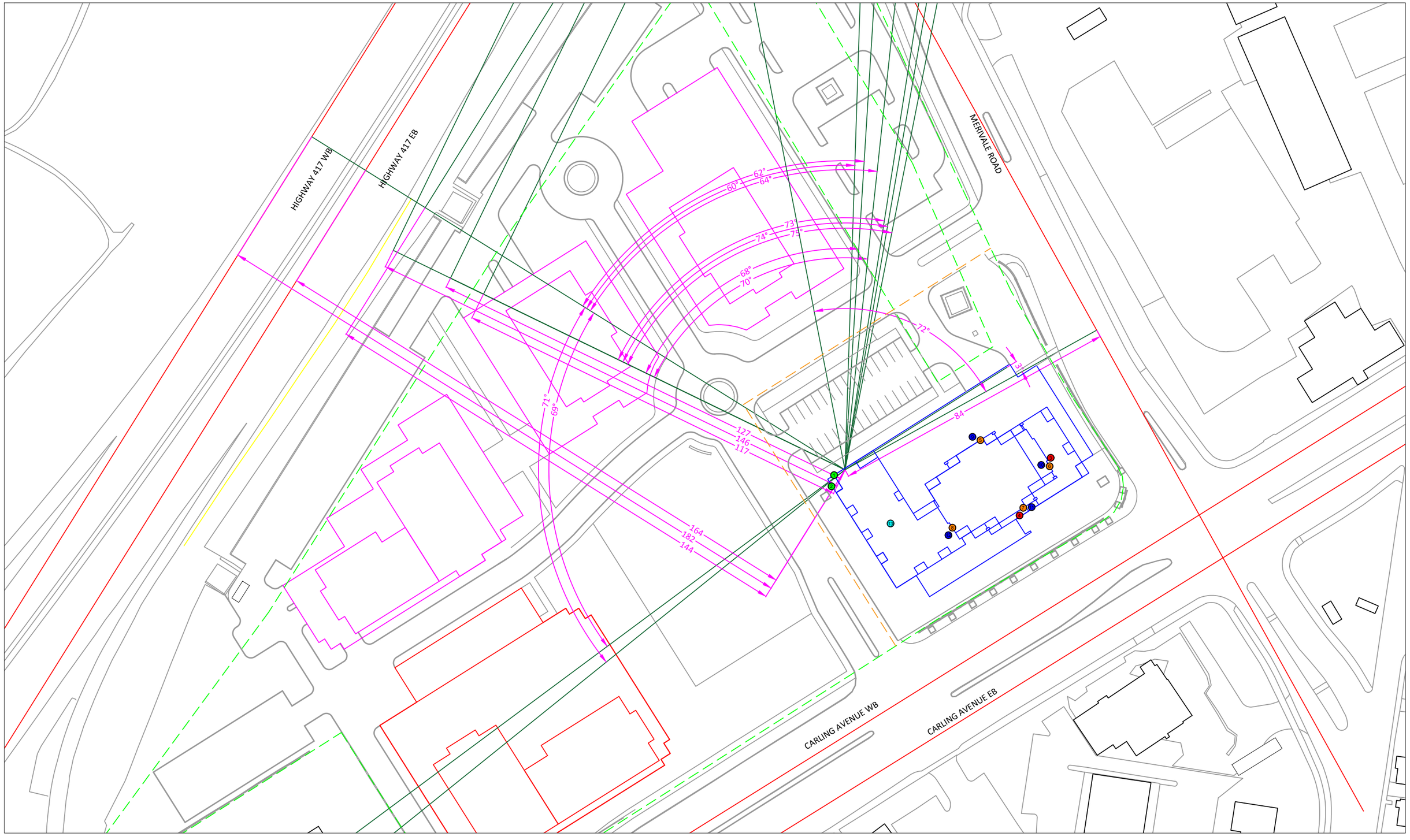
```
Results segment # 9: CarlingWB2 (day)
-----------------------------------

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 !       17.00 !       -2.97 !        12.53

ROAD (0.00 + 54.28 + 0.00) = 54.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -50     90   0.00  72.21   0.00  -5.95  -1.09   0.00   0.00 -10.90
54.28
-------------------------------------------------------------------------
--

Segment Leq : 54.28 dBA

Total Leq All Segments: 72.31 dBA

Results segment # 1: 417EB (night)
---------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       17.00 !        0.24 !        15.74

ROAD (0.00 + 61.69 + 0.00) = 61.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     67   0.00  73.80   0.00 -10.86  -1.25   0.00   0.00  -4.93
56.76*
   -68     67   0.00  73.80   0.00 -10.86  -1.25   0.00   0.00   0.00
61.69
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 61.69 dBA
```

```
Results segment # 2: 417WB (night)
----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       17.00 !        0.36 !        15.86

ROAD (0.00 + 61.26 + 0.00) = 61.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -68     67   0.00  73.80   0.00 -11.29  -1.25   0.00   0.00  -4.85
56.41*
   -68     67   0.00  73.80   0.00 -11.29  -1.25   0.00   0.00   0.00
61.26
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 61.26 dBA

Results segment # 3: Merivale1 (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 !       17.00 !        0.14 !        15.64

ROAD (0.00 + 47.87 + 0.00) = 47.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -65    -17   0.00  60.88   0.00  -7.27  -5.74   0.00   0.00  -4.94
42.93*
   -65    -17   0.00  60.88   0.00  -7.27  -5.74   0.00   0.00   0.00
47.87
-------------------------------------------------------------------------
--

 * Bright Zone !
Segment Leq : 47.87 dBA
```

```
Results segment # 4: Merivale2 (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 !       17.00 !       14.09 !        14.09

ROAD (0.00 + 28.38 + 0.00) = 28.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -17     37   0.00  60.88   0.00  -7.27  -5.23   0.00   0.00 -20.00
28.38
-------------------------------------------------------------------------
--

Segment Leq : 28.38 dBA


Results segment # 5: Merivale3 (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 !       17.00 !       -1.41 !        14.09

ROAD (0.00 + 37.45 + 0.00) = 37.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    37     60   0.00  60.88   0.00  -7.27  -8.94   0.00   0.00  -7.23
37.45
-------------------------------------------------------------------------
--

Segment Leq : 37.45 dBA
```

```
Results segment # 6: CarlingEB1 (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 !       17.00 !       11.14 !        11.14

ROAD (0.00 + 33.61 + 0.00) = 33.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -50   0.00  64.62   0.00  -4.77  -6.53   0.00   0.00 -19.70
33.61
-------------------------------------------------------------------------------
--

Segment Leq : 33.61 dBA


Results segment # 7: CarlingEB2 (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 !       17.00 !       -4.36 !        11.14

ROAD (0.00 + 45.12 + 0.00) = 45.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     90   0.00  64.62   0.00  -4.77  -1.09   0.00   0.00 -13.64
45.12
-------------------------------------------------------------------------------
--

Segment Leq : 45.12 dBA
```

```
Results segment # 8: CarlingWB1 (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 !       17.00 !       12.53 !        12.53

ROAD (0.00 + 32.46 + 0.00) = 32.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -50   0.00  64.62   0.00  -5.95  -6.53   0.00   0.00 -19.68
32.46
-------------------------------------------------------------------------
--

Segment Leq : 32.46 dBA


Results segment # 9: CarlingWB2 (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 !       17.00 !       -2.97 !        12.53

ROAD (0.00 + 46.68 + 0.00) = 46.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -50     90   0.00  64.62   0.00  -5.95  -1.09   0.00   0.00 -10.90
46.68
-------------------------------------------------------------------------
--

Segment Leq : 46.68 dBA

Total Leq All Segments: 64.72 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 72.31
                           (NIGHT): 64.72
```



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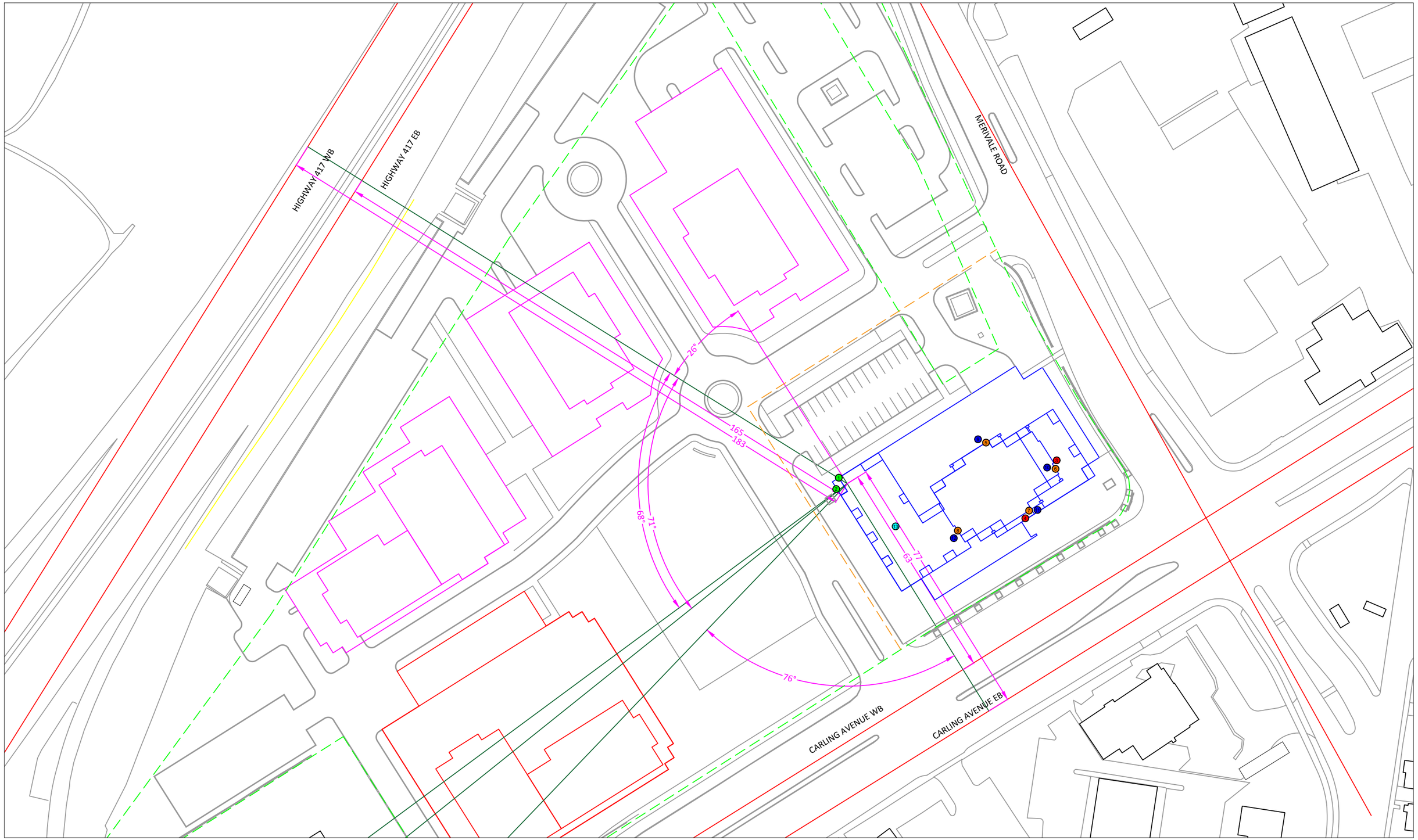
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE15-067-A1
DATE	FEBRUARY 14, 2019
DRAWN BY	M.L.

DESCRIPTION

FIGURE A1:
STAMSON INPUT PARAMETERS - RECEPTOR 1



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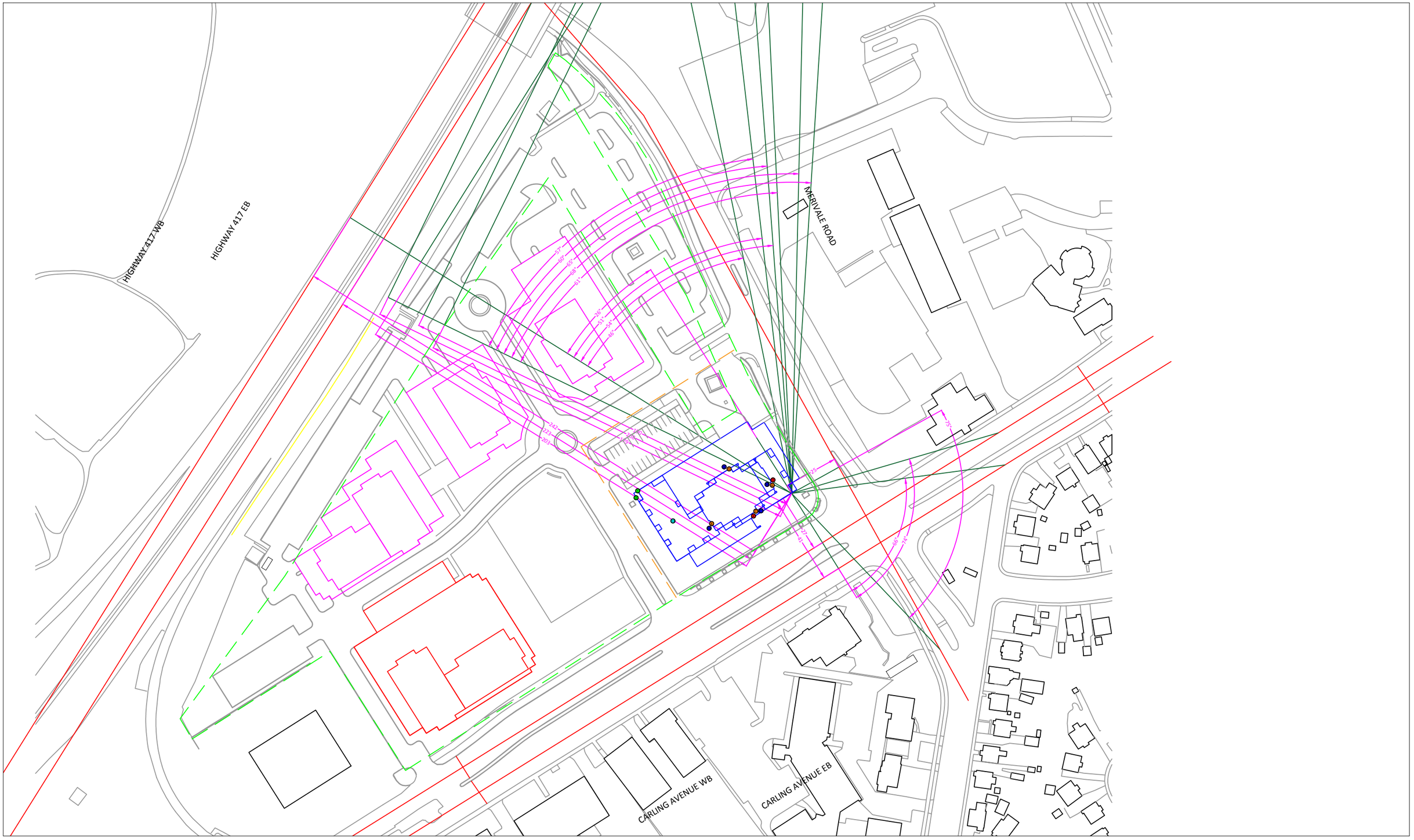
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE15-067-A2
DATE	FEBRUARY 14, 2019
DRAWN BY	M.L.

DESCRIPTION

FIGURE A2:
STAMSON INPUT PARAMETERS - RECEPTOR 2



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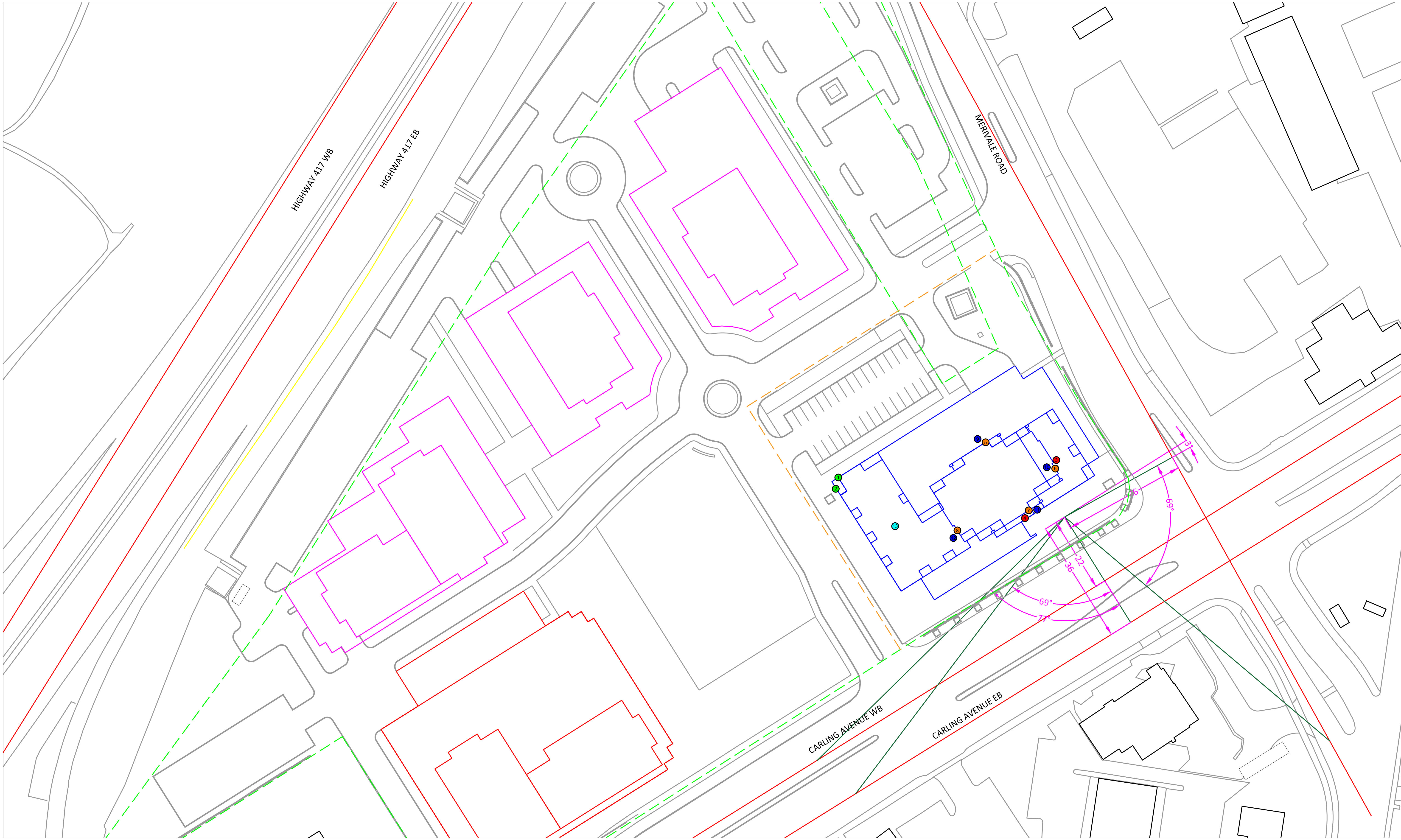
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE15-067-A3
DATE	FEBRUARY 14, 2019
DRAWN BY	M.L.

DESCRIPTION

FIGURE A3:
STAMSON INPUT PARAMETERS - RECEPTOR 3,6,10

N



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SCALE: 1:1000 (APPROX.)

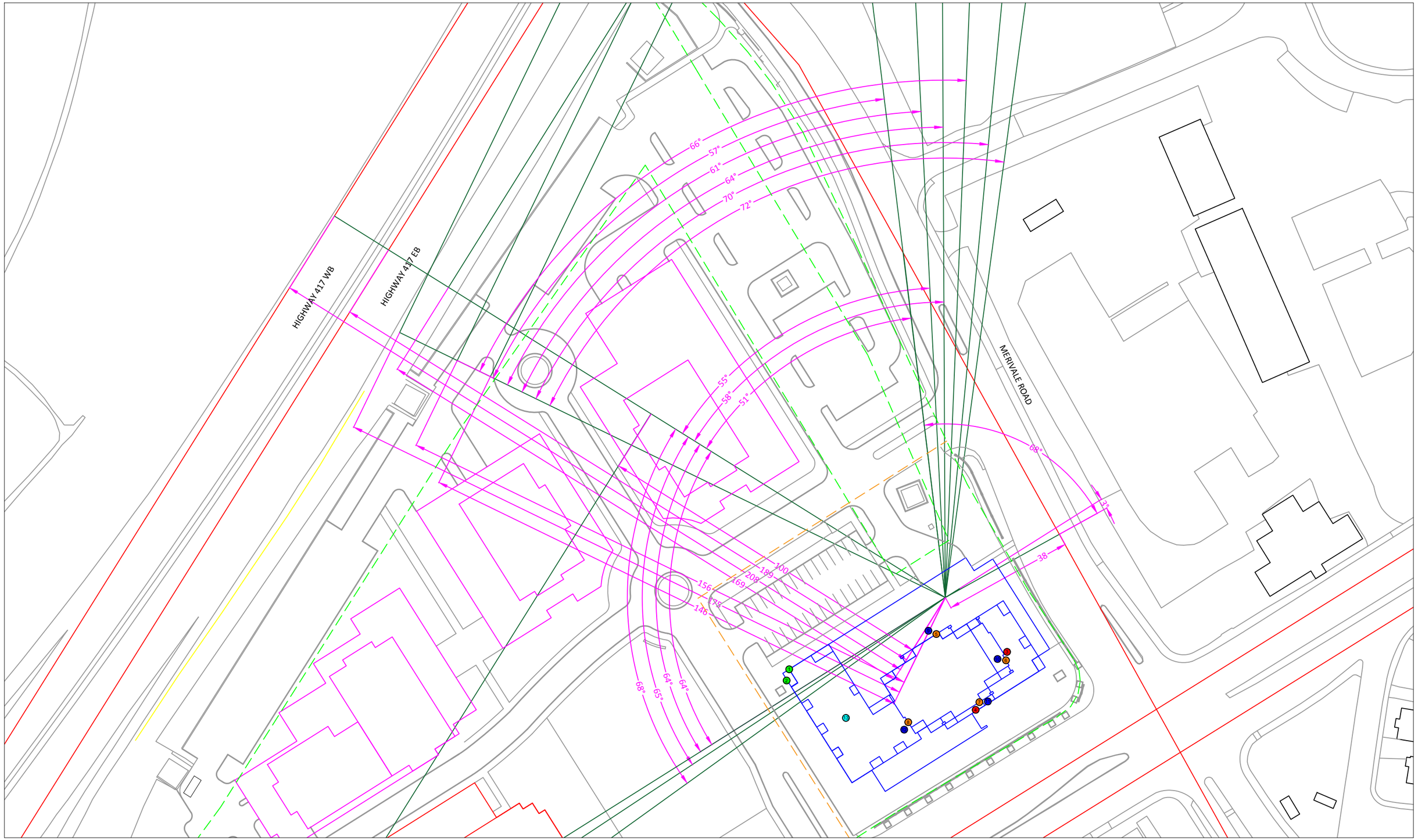
DRAWING NO.: GWE15-067-A4

DATE: FEBRUARY 14, 2019

DRAWN BY: M.L.

DESCRIPTION:

FIGURE A4:
STAMSON INPUT PARAMETERS - RECEPTOR 4,7,11



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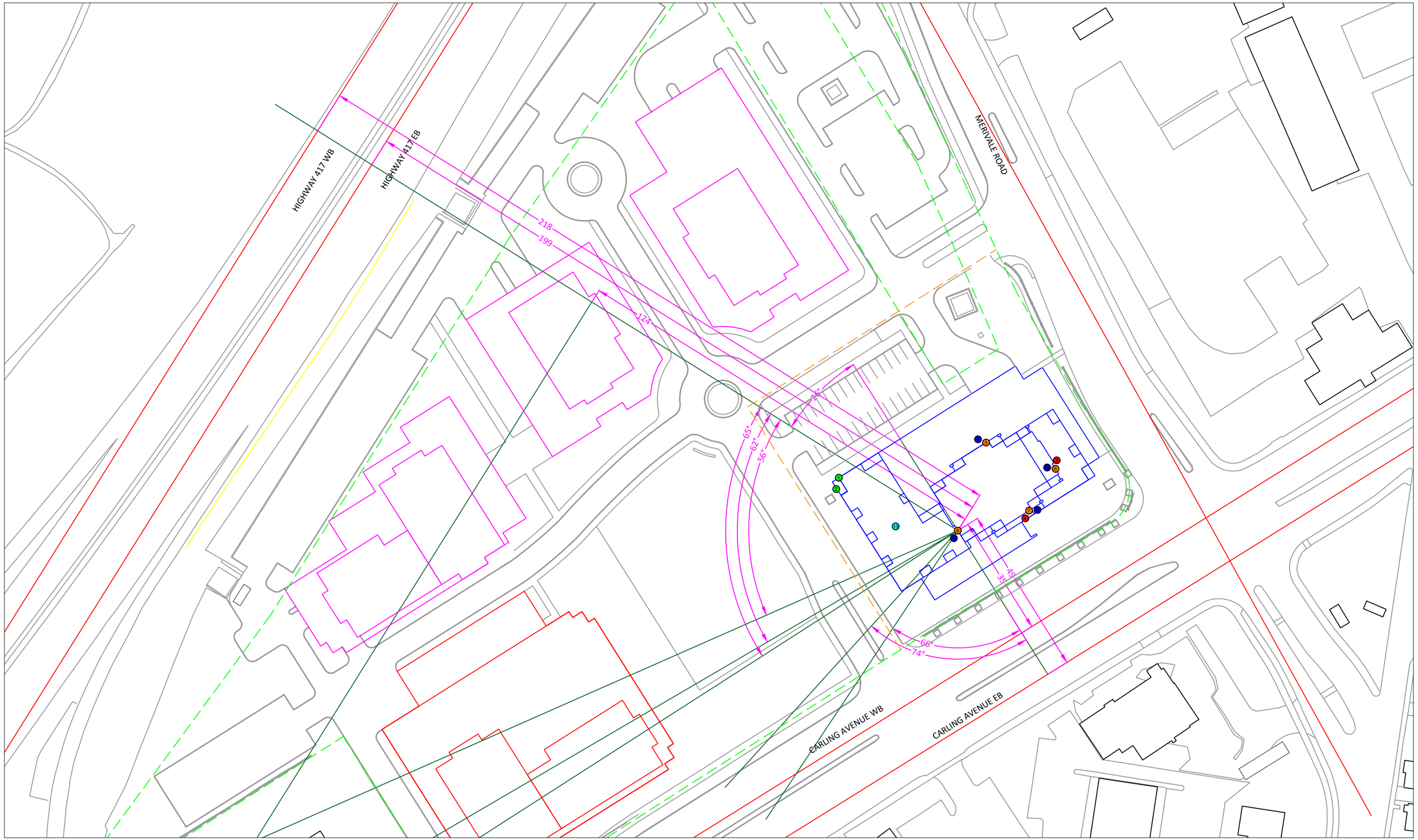
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE15-067-A5
DATE	FEBRUARY 14, 2019
DRAWN BY	M.L.

DESCRIPTION

FIGURE A5:
STAMSON INPUT PARAMETERS - RECEPTOR 5,9

N



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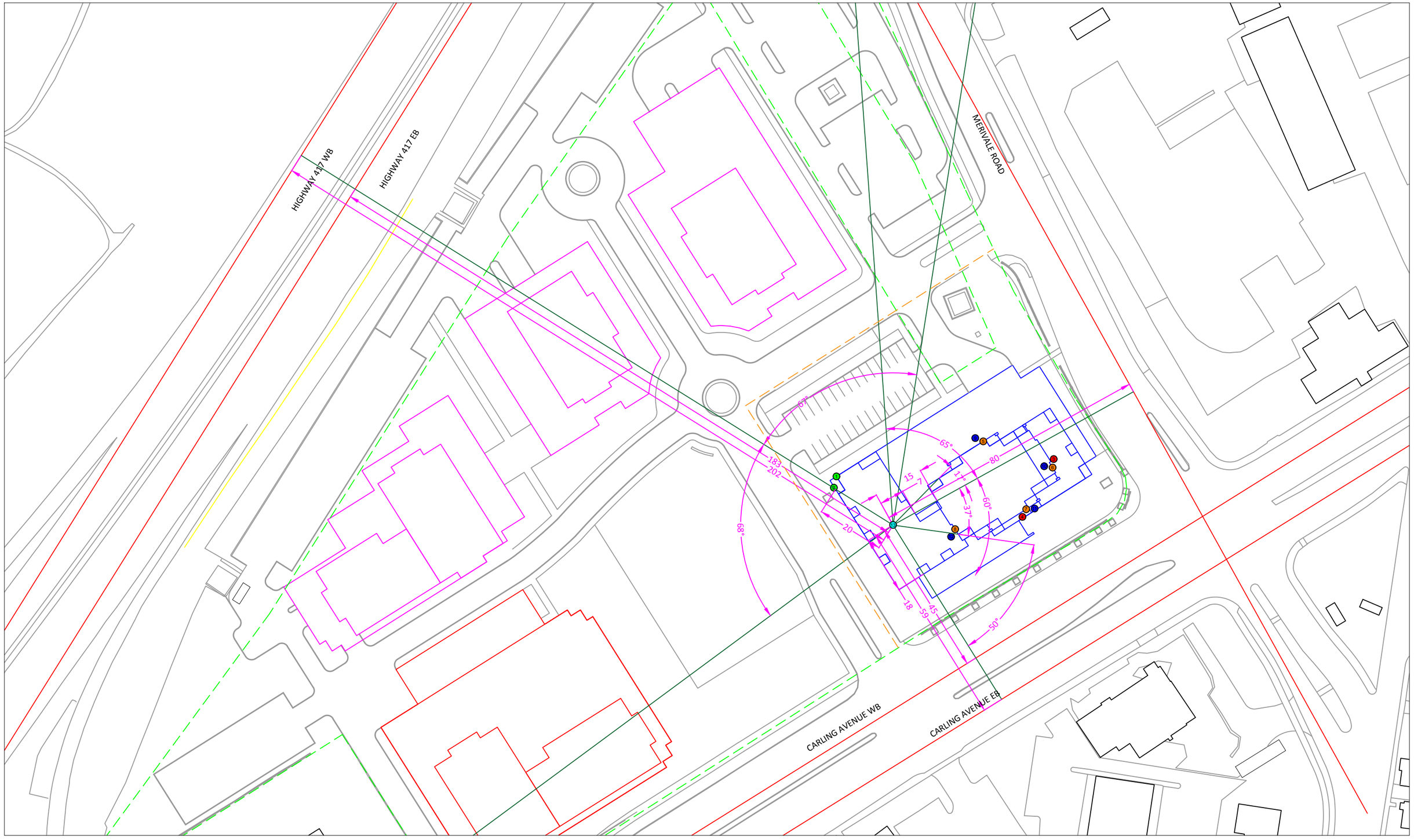
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE15-067-A6
DATE	FEBRUARY 14, 2019
DRAWN BY	M.L.

DESCRIPTION

FIGURE A6:
STAMSON INPUT PARAMETERS - RECEPTOR 8,12

N



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PROJECT	WESTGATE SHOPPING CENTRE REDEVELOPMENT - ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE15-067-A7
DATE	FEBRUARY 14, 2019
DRAWN BY	M.L.

DESCRIPTION

FIGURE A7:
STAMSON INPUT PARAMETERS - RECEPTOR 13

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