AIR QUALITY, NOISE AND VIBRATION IMPACT STUDY
City of Ottawa: Environmental Assessment
Kanata North Transitway
March Road: Campeau Drive to Old Carp Road
Ottawa, Ontario

REPORT: GmE 09-063 - Environmental Assessment

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EXECUTIVE SUMMARY

Gradient Microclimate Engineering Inc. (*GmE*) was retained by Delcan Corporation to provide engineering support for the environmental assessment (EA) phase of the City of Ottawa's Kanata Transitway North Section project on March Road between Campeau Drive and Old Carp Road in the areas of air quality, noise and ground vibrations.

The City of Ottawa is planning to widen March Road from Campeau Drive to Old Carp Road for the inclusion of a dedicated two lane Bus Rapid Transit (BRT) network, hereafter referred to the Transitway, running between northbound and southbound vehicle traffic lanes. The expansion is needed to accommodate the anticipated growth in the north Kanata neighbourhoods of Beaverbrook and Morgan's Grant, as well as the Kanata North Business Park. The proposed widening project comprises a 5.7 kilometre (km) segment of March Road, which passes in close proximity to varied land uses, ranging from clusters of single family and townhouse communities, which are noise sensitive, to commercial and open spaces, which are not noise sensitive.

Operational Impacts

Air Quality Impacts

Concentrations of all tailpipe emissions fall below the allowable limits for CO, HC, NO_X, PM_{10} and $PM_{2.5}$. As such, the results indicate that the widening of March Road and introduction of BRT will have minimal impact on air quality, as pollutant concentrations are not expected to surpass MOE AAQC criteria. Over most areas, air quality will improve despite increase in traffic volumes, due to the improvements in vehicle technology and more stringent government regulations. Some areas immediately adjacent to signalized intersection will experience steady or a slight increase in pollutant levels due to the increased wait time of vehicles at red lights because of higher traffic volumes. Optimization in signal timing to limit idling time of vehicles will improve localized air quality in the vicinity of intersections.

Noise Impacts

Noise levels throughout the March Road corridor are dominated by existing roadway traffic. The contribution of the new BRT Transitway was found to have an insignificant impact, with noise levels from BRT being 10 dBA below ambient levels created by the future vehicle traffic. Although existing and future noise levels at some receptors along the corridor exceed 60 dBA, mitigation is not required or not feasible either because the area is considered non-noise sensitive or existing mitigation is present and further mitigation is not feasible.

If existing noise barriers along March Road are required to be moved to allow the widening of March Road, a new barrier within the right of way will need to be erected to match the height of the original barrier.

Vibration Impacts

Based on research done by the United States Federal Transit Authority and *GmE*'s experience with ground vibration measurements performed along existing roadways within the Ottawa area, including measurements done for the north and south section of the Kanata Transitway (Terry Fox Drive to Fernbank Road), ground vibration levels existing over the corridor are expected to be below the perceptible range at most nearby residences, and falling well below the levels that could cause annoyance to people and damages to buildings and structures. Future ground vibration levels due to the presence of the BRT are not expected to increase substantially to cause annoyance or structural issues.

Construction Impacts

Varied construction activities along the BRT corridor are expected to create isolated and short-term noise, air quality and vibration impacts on the environment. The construction manager will be required to develop a strategy for mitigating the effects according to good practices intended to satisfy, as feasible, the fugitive dust limits specified in O.Reg. 419, the noise limits specified in MOE NPC-115[1] and City of Ottawa By-laws for Noise[2], and MOE NPC -119[3] for ground vibrations. A list of common mitigation strategies adapted to the current project includes, but is not limited to, the following:

[1] MOE, Model Municipal Noise Control By-Law, NPC-115 Construction Equipment, August 1978
[2] City of Ottawa, Noise By-law ByLAW NO. 2004-253
[3] MOE, Model Municipal Noise Control By-Law, NPC-119 Blasting, August 1978

For air emissions:

(i) Monitor wind conditions, and plan operations to take advantage of calm wind periods;

(ii) Minimize site storage of granular material in height and extent;

(iii) Locate storage piles in sheltered areas that can be covered;

(iv) Provide movable wind breaks;

(v) Use water spray and suppression techniques to control fugitive dust;

(vi) Cover haul trucks and keep access routes to the construction site clean of debris.

For noise and vibrations:

(i) Limit speeds of heavy vehicles within and approaching the site;

(ii) Provide compacted smooth surfaces, avoiding abrupt steps and ditches;

(iii) Install movable noise barriers or temporary enclosures, around blast sites for instance;

(iv) Keep equipment properly maintained and functioning as intended by the manufacturer;

(v) If required, implement a blast design program prepared by a blast design engineer.

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1. INTRODUCTION

Gradient Microclimate Engineering Inc. (*GmE*) was retained by Delcan Corporation to provide engineering support for the environmental assessment (EA) phase of the City of Ottawa's Kanata Transitway North Section project on March Road between Campeau Drive and Old Carp Road in the areas of air quality, noise and ground vibrations.

This report describes the assessment, methodology and results for future environmental air quality and noise impacts created by the project, compares them with existing conditions, and provides recommendations for mitigation where required.

Detailed assessments of the operational impacts are presented in Sections 4 and 5, and a qualitative assessment of the impacts of construction is presented in Section 6.

2. TERMS OF REFERENCE

The City of Ottawa is planning to widen March Road from Campeau Drive to Old Carp Road for the inclusion of a dedicated two lane Bus Rapid Transit (BRT) network, hereafter referred to as the Transitway, running between northbound and southbound vehicle traffic lanes. The expansion is needed to accommodate the anticipated growth in the north Kanata neighbourhoods of Beaverbrook and Morgan's Grant, as well as the Kanata North Business Park. The proposed widening project comprises a 5.7 kilometre (km) segment of March Road, which passes in close proximity to varied land uses, ranging from clusters of single family and townhouse communities, which are noise sensitive, to commercial and open spaces, which are not noise sensitive.

3. OBJECTIVES

The Kanata North Transitway project is intended to promote an efficient transit network for the communities and business developments in and around north Kanata. The underlying goal of the studies covered in this report is to identify and minimize any impacts of the undertaking, including operating and construction activities on the human and natural environments by judicious selection of design elements. As such, the necessary scope of work to achieve this goal comprises: assessing existing conditions for air quality and noise; predicting future

conditions resulting from the undertaking; and recommending appropriate mitigation measures where comparisons show significant deterioration according to the guidelines of the City of Ottawa, the Ministry of the Environment of Ontario (MOE) and other governing authorities. In a practical sense, our scope also included providing recommendations for the location and height of noise abatement walls, where required.

4. METHODOLOGY

The following sections describe the methodology for assessing baseline existing conditions and predicted future conditions due to BRT Transitway operations for each of the subject areas. Construction impacts are discussed qualitatively in Section 6.

4.1 Assessment of Air Quality

Vehicle traffic and BRT's on roadways are sources of gasoline and diesel emissions from passenger vehicles, trucks and buses, and include the contaminants of Carbon Monoxide (CO), Hydrocarbons (HC), Oxides of Nitrogen (NOx), and Particulate Matter (PM), in addition to other secondary compounds. As such, increased traffic along the corridor could have a negative effect on air quality at nearby points of impingement.

An assessment of air quality is based on determining the concentration of a pollutant at a particular location. Pollutant concentrations are measured in either parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Resulting concentrations are compared to clean air standards that have been set by the Ontario Ministry of the Environment's (MOE), Standards Development Branch. There are two sets of standards and guidelines. The *Ambient Air Quality Criteria* (AAQC)[4] are the Ministry's targets for clean air from all sources of pollutants, including transit, transportation and industrial facilities when considered with other sources. *Ontario Regulation 419: Air Pollution – Local Air Quality Standards* (O. Reg. 419)[5], are the legal limits for single or multiple sources falling within a single property, such as an industrial facility.

[4] Standards Development Branch, Ontario Ministry of the Environment, *Ontario's Ambient Air Quality Criteria (AAQC)*, February 2008.
[5] Standards Development Branch, Ontario Ministry of the Environment, *Summary of Standards and Guidelines to Support Ontario Regulation 419: Air Pollution – Local Air Quality,* February 2008

AAQC and O. Reg. 419 standards are effect-based concentration levels for individual pollutants in air, with variable averaging periods for each pollutant. Averaging periods vary from one hour to 24-hours, according to the relevant impacts of each pollutant on people and the environment. For example, CO has acute health effects (poisoning) and a corresponding short averaging period of one-half hour. PM, on the other hand, has an averaging period of 24-hours to account for the known long term respiratory effects. The AAQC and O. Reg. 419 standards for representative pollutants are listed in Table 1, with the averaging period for each pollutant indicated in parenthesis.

TABLE 1: AMBIENT AIR QUALITY CRITERIA AND O. REG. 419 STANDARDS

POLLUTANT	AAQC ($\mu g/m^3$)		O. Reg. 419 ($\mu g/m^3$)		LIMITING EFFECT
CO	36200 (1 HR)	15700 (8 HR)	6000 (1/2 HR)		Health
HC	2500 (24 HR)		2500 (24 HR)		Health
NO_x	400 (1 HR)	200 (24 HR)	400 (1 HR)	200 (24 HR)	Health
(PM_{44}, < 44μm)	120 (24 HR)		120 (24 HR)		Visibility
(PM_{10}, < 10μm)	50 (24 HR)		Not Available		Health
($PM_{2.5}$, < 2.5μm)	30 (24 HR)		Not Available		Health

To assess the impact of the road widening and introduction of a BRT corridor, air dispersion modelling was performed using the computer software CAL3QHCR. Developed by the United States Environmental Protection Agency (EPA), CAL3QHCR is an air dispersion model in widespread use to predict air quality influenced by roadway vehicle emissions. The main features of the atmosphere which influence pollution dispersion, which are reflected in the model, include wind, atmospheric stability, and mixing height. Stability of the atmosphere is controlled by thermal effects within the lowest 500 m of the atmosphere, which changes on a diurnal cycle (day-to-day), as well as by wind strength. Both of these influence mixing height. CAL3QHCR uses local meteorological data, along with roadway parameters, such as vehicle counts and characteristics of signalized intersections, to estimate actual pollutant concentrations at each receptor for the worst-case one-hour period for five-years of weather data.

Using peak hour traffic volumes to represent reasonable worst-case conditions, an assessment of air quality along the March Road corridor was performed for common vehicle pollutants, including CO, NO_X, HC and suspended PM, broken down into inhalable (PM<10μm) and respirable (PM<2.5μm) components. The analysis was based on current traffic information received from the City of Ottawa through Delcan Corporation. Projected future traffic volumes, for the horizon year of 2031, were also provided by Delcan. The vehicle emission factors, summarized in Table 2, were taken from a report; 'On Road Vehicle Emission Inventories'[6] prepared for Environment Canada corresponding to current and forecasted Canadian vehicle fleets according to the protocol established in MOBILE 6. The projected emission factors in the report were only available for the years up to 2021. Therefore, emission factors for the year 2021 were used for our assessment, under the assumption there would be a marginal improvement in emission factors between 2021 and 2031.

Major intersections and roadways with significant vehicle traffic within the influence zone of the corridor, such as Carling Avenue, Herzberg Road, Morgan's Grant Way, Solandt Road and Terry Fox Drive were included in the model. Thirteen (13) ambient air quality receptor locations, illustrated in Figures 2 through 6, were selected to quantify the worst-case concentrations during peak traffic hours of the morning periods. These receptors coincide with receptors used in the traffic noise analysis. Receptors 11 to 13 are not included in the existing conditions, as traffic data near these locations were not available. Wind profiles as a function of height above grade, appropriate for the exposures of the study site, were obtained from the MOE for five representative years of measured data (from 1996 to 2000[7]). CAL3QHCR simulations automatically produce a variety of intermediate data for a range of historical wind speeds and wind directions, on an hour-by-hour basis, to arrive at the worst-case normalized concentration for each pollutant at each specified receptor.

[6] Senes Consultants Limited; Air Improvement Resource Inc., Updated estimate of Canadian On-Road Vehicle Emissions for the Year 1995-2020, Environment Canada, October 2002

[7] http://www.ene.gov.on.ca/envision/air/regulations/metdata/Eastern.htm

TABLE 2: VEHICLE EMISSION DATA

POLLUTANT	ROADWAY		BUSES	
	DRIVING (g/veh-mi)	IDLING (g/veh-HR)	DRIVING (g/veh-mi)	IDLING (g/veh-HR)
2008				
CO	6.4	332	4.407	229
HC	0.63	19.5	0.411	12.7
NOx	1.03	8.74	6.813	57.8
PM_{10}	0.035	2.68	0.11	8.35
$PM_{2.5}$	0.031	2.358	0.096	7.348
2021				
CO	4.28	119.5	0.479	13
HC	0.42	6.83	0.124	2
NOx	0.297	2.19	1.045	8
PM_{10}	0.031	1.29	0.031	1
$PM_{2.5}$	0.027	1.135	0.027	1

Morning Peak traffic volumes for road segments used in the CAL3QHCR model are listed in Table 3. Existing traffic count data was supplied from the City of Ottawa and projected to year 2010. Future traffic count projections were supplied by Delcan.

Colour separations have been used in the tables to improve readability, and are not related to interpretation of conditions. For roadways, the vehicle mix is taken to comprise 88% light duty gasoline vehicles (LDGV), 7% light duty diesel trucks (LDDT), and 5% heavy duty diesel vehicles (HDDV). Buses travelling along the BRT were considered HDDV.

Ambient concentrations of the primary vehicle emissions were obtained from the MOE's permanent monitoring station located at the Experimental Farm on Carling Avenue[8], west of the downtown core. Values summarized in Table 4 represent conservative estimates of the 90th percentile of background levels existing along the corridor. As such, for 90% of the time, the measured background concentrations will fall below these levels at the measurement site. Background concentrations have not been accounted for in the CAL3QHCR results, due to the uncertainty of predicting future background levels. Results are intended to show the relative comparison between future impacts of air quality due to the BRT undertaking and existing conditions. All results based on one-hour concentrations have been converted to appropriate averaging periods where applicable.

[8] Ontario Ministry of the Environment, *Air Quality in Ontario – 2010*, 2011.

TABLE 3: ROAD TRAFFIC VOLUMES, EXISTING AND FUTURE

ROAD SEGMENT: (FROM - TO)	CURRENT VEHICLE TRAFFIC VOLUMES (2010)		FORECASTED 2031 TRAFFIC VOLUMES	
	AADT*	AM PEAK HOUR†	AADT*	AM PEAK HOUR
March Road NB: Campeau – Corkstown	12,311	1,133	35,750	3,575
March Road NB: Corkstown - Herzberg	16,106	3,369	35,000	3,500
March Road NB: Herzberg – Richardson	11,397	2,754	24,000	2,400
March Road NB: Richardson – Carling	16,351	1,880	25,000	2,500
March Road NB: Carling – Solandt	13,071	1,195	25,250	2,525
March Road NB: Solandt – Terry Fox	13,069	1,169	17,750	1,775
March Road NB: Terry Fox – Morgans Grant	12,382	577	20,250	2,025
March Road NB: Morgans Grant – Klondike	11,746	491	19,000	1,900
March Road NB: Klondike- Old Carp Road	N/A	N/A	18,000	1,800
March Road SB: Campeau – Corkstown	14,807	918	11,500	1,150
March Road SB: Corkstown - Herzberg	19,235	979	11,500	1,150
March Road SB: Herzberg – Richardson	13,355	939	11,000	1,100
March Road SB: Richardson – Carling	18,611	1,123	11,750	1,175
March Road SB: Carling – Solandt	19,033	1,491	16,000	1,600
March Road SB: Solandt – Terry Fox	13,133	1,469	18,500	1,850
March Road SB: Terry Fox – Morgans Grant	11,216	1,474	25,500	2,550
March Road SB: Morgans Grant – Klondike	9,479	1,213	21,500	2,150
March Road SB: Klondike- Old Carp Road	N/A	N/A	16,750	1,675
Campeau East of March Road (Hwy 417 Exit)	22,182††	1332	33,620††	2059
Campeau West of March Road		800		1253
Carling	3,480	565	7,750	775
Corkstown	739	93	1,750	175
Herzberg	4,580	1043	13,000	1300
Highway 417 EB	35612	2378	53,975	3750
Highway 417 WB	35612	1284	53,975	2025
Klondike East of March Road	N/A	N/A	3,500	350
Klondike West of March Road	N/A	N/A	9,250	925
Maxwell Bridge	N/A	N/A	5,500	550
Morgan's Grant	1,884	371	6,500	650
Old Carp Road	N/A	N/A	3,250	325
Richardson	2,163	444	6,000	600
Shirley's Brook	1,880	283	5,250	525
Solandt East of March Road	5,512††	512	6,750	675
Solandt West of March Road		923	9,250	925

TABLE 3 (CONTINUED): ROAD TRAFFIC VOLUMES, EXISTING AND FUTURE

ROAD SEGMENT: (FROM - TO)	CURRENT VEHICLE TRAFFIC VOLUMES (2010)		FORECASTED 2031 TRAFFIC VOLUMES	
	AADT*	AM PEAK HOUR†	AADT*	AM PEAK HOUR†
Station	243	80	8,250	825
Teron	5,335	747	8,750	875
Terry Fox East of March Road	4,606	1070	14,500	1450
Terry Fox West of March Road	3,898	788	23,000	2300
Transitway NB	N/A	N/A	200	20
Transitway SB	N/A	N/A	200	20

NOTE: * - AADT = Annual Average Daily Traffic (24 Hour Period) projected from AM Peak count year to year 2010

† - AM Peak count years may be prior to 2010. Value is sum of both directions

†† - AADT value is east and west combined

TABLE 4: AMBIENT CONCENTRATIONS AT MOE'S CARLING AVENUE MONITORING STATION

POLLUTANT	BACKGROUND ($\mu g/m^3$)	PERCENTAGE OF MOE CRITERIA
CO	493	1.3%
HC	Unavailable	N/A**
NO_x	32.4	8.1%
PM_{44}, < 44μm	Unavailable	N/A**
PM_{10}, < 10μm	Unavailable	N/A**
$PM_{2.5}$, < 2.5μm	10	33%

NOTE: ** - N/A = Not Applicable

4.1.1 Assessment of Air Quality of Transitway Stations

Future sources of air emissions related to the undertaking include the new BRT stations, where idling of buses occur, and possibly other sources of emissions related to the operations of each station. These sites could not be analyzed with any assurance of reasonable results during the EA phase of the project, due to the lack of design parameters. Detailed analysis of impacts and mitigation measures are performed during detailed design and project implementation through the MOE's Environmental Compliance Approval (ECA) process and Ontario Regulation (O.Reg.) 419.

4.2 Assessment of Airborne Noise from At-Grade Transportation Sources

Airborne noise is 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 source, the sound pressure depends on the location of the receiver and the path the noise takes to reach the receiver. Its measurement 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 represents the noise 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.

For vehicle traffic, the equivalent sound energy level, L_{EQ}, provides a weighted measure of the time varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time varying noise level over a selected period of time. For roadways, the L_{EQ} is commonly calculated based on a 16-hour daytime / 8-hour night time split to assess its impact on residential buildings.

The MOE provides guidelines for control of noise produced by human activities[9]. These guidelines have been adopted by various municipalities and are incorporated into local noise by-laws. The City of Ottawa commissioned a comprehensive technical document for the purpose of assessing and controlling noise impacts within its urban boundary[10]. In broad terms, noise sources are classified as either transportation or stationary. Transportation noise sources include road, rail and aircraft sources. Stationary sources occur within a specified property and can either be fixed, such as a ventilation shaft, or moving, such as maintenance vehicles at an industrial facility.

[9] Noise Assessment Criteria in Land Use Planning, Publication LU131, Ministry of The Environment, Oct. 1997.
[10] City of Ottawa Environmental Noise Control Guidelines, Planning and Growth Management Department, City of Ottawa, April 2006.

4.2.1 Noise Criteria

Many municipalities consider daytime L_{EQ} of 55 dBA to be acceptable for outdoor living areas (OLA's), with mitigating measures being required as the noise levels exceed 60 dBA. For capital works projects, such as roadway widening, the requirements for providing noise mitigation measures according to the City of Ottawa's Environmental Noise Control Guidelines (ENCG)[11] and best practice are:

- For future noise levels less than, or equal to, 55 dBA no mitigation is required.
- For future noise levels greater than 55 and less than, or equal to, 60 dBA accompanied by an increase greater than 5 dBA over existing conditions (start of project construction), noise mitigation shall be considered according to Table 5 taken from the ENCG.
- For future noise levels greater than 60 dBA, regardless of the amount of increase, noise mitigation shall be considered according to the requirements of Table 5 taken from the ENCG.

TABLE 5: SUMMARY OF NOISE IMPACT RATING AND MITIGATION[12]

Future Sound Level, L_{EQ} 16hr	Change Above Ambient, dBA	Impact Rating	Mitigation
Greater than 55 dBA and less than or equal to 60 dBA	0-3	Insignificant	None
	3-5	Noticeable	None
	5-10	Significant	Investigate noise control measures to achieve retrofit criteria (minimum attenuation 6 dBA)
	10+	Very Significant	
Greater than 60 dBA	0-3	Insignificant	Investigate noise control measures to achieve retrofit criteria (minimum attenuation 6 dBA)
	3-5	Noticeable	
	5-10	Significant	
	10+	Very Significant	

[11] ibid
[12] Adopted from Table 2.1, City of Ottawa Environmental Noise Control Guidelines, May 2006.

According to Section 2.0 of the ENCG, retrofit sound barriers will be installed and maintained within the City's right of way, except for flanking walls where an easement may be requested. Sound barriers within the right of way will only be installed where it is feasible to achieve the minimum retrofit criteria of 6 dBA. The guideline also states '*Off right-of-way noise control measures and nighttime (11:00 PM – 7:00 AM) assessment of the noise impact will not be considered as part of these guidelines*'[13].

The Ministry of Transportation, Ontario (MTO) and the Ontario Ministry of the Environment (MOE) have also established guidelines and criteria[14] for assessing noise from roadway and transportation sources. These guidelines are less stringent than the ENCG, and suggested mitigation should be investigated when future sound levels exceed 65 dBA, or when there is an increase of 5 dBA over the established ambient (future do-nothing) conditions. Since the project is being undertaken by the City of Ottawa, the more stringent ENCG guidelines were adopted as the standard for this project.

4.2.2 Noise Assessment Procedure

Existing and future noise levels at thirteen (13) receptors along March Road were based on current and predicted traffic information received from Delcan Corporation. Figures 1 to 6 illustrate receptor locations along the corridor. The major source of noise is assumed to be roadway traffic.

Roadway noise calculations have been based on the MOE road noise analysis program, STAMSON 5.04. This program calculates noise levels based on: (i) Annual Average Daily Traffic (AADT) volumes, posted speed limits, and vehicle mix data for roadways, representing the source; and (ii) source-receiver distance, exposure angles and intermediate ground surface characteristics, and source-receiver ground elevation, as characterizing the path of noise. The use of this program satisfies MOE[15] and City of Ottawa requirements. AADT volumes on surrounding streets were considered to be split 92% daytime, and 8% night time, for each roadway segment, as well as a vehicle mix of 7% and 5% for medium (LDDT) and heavy vehicles (HDDV), respectively. A complete set of the noise modelling input and output data for

[13] City of Ottawa Environmental Noise Control Guidelines, Planning and Growth Management Department, City of Ottawa, April 2006.
[14] Ministry of Transportation, Environmental Guide for Noise, October 2006
[15] Noise Assessment Criteria in Land Use Planning, Publication LU131, Ministry of The Environment, Oct. 1997.

STAMSON 5.04 for both existing and future conditions are presented in Appendices A and B, respectively. Speed limits used in the calculations are presented in Table 6. Road grading for March Road is assumed flat for existing and future conditions.

TABLE 6: SPEED LIMITS OF VARIOUS ROAD SEGMENTS

ROAD SEGMENT	SPEED (km/h)
March Road	80
Transitway	80
Teron Road	50
Richardson Side Road	50
Carling Avenue	50
Campeau Drive	60
Station Road	50
Solandt road	50
Terry Fox Drive	50
Morgan's Grant Way	40
Shirley's Brook Drive	40
Highway 417	100
Klondike Road	50

4.3 Assessment of Ground Vibrations and Ground-Borne Noise

BRT transit systems can produce perceptible levels of ground vibrations, especially when they are in close proximity to residential neighbourhoods. Similar to sound waves in air, vibrations in solids are generated at a source, propagated through the medium, and intercepted by a receiver. In the case of ground vibrations, the medium can be uniform, or more often, a complex layering of soils and rock strata. Also, similar to sound waves in air, ground vibrations produce perceptible motions and regenerated noise known as 'ground-borne noise' when the vibrations encounter a hollow structure such as a building. Ground-borne noise and vibrations are generated when there is excitation of the ground, from a train for instance. Repetitive motion of the wheels on the track, or rubber tires passing over an uneven surface, causes vibrations to propagate through the soil until they encounter a building. The vibrations pass along the structure of the building beginning at the foundation and propagating to all floors. Air

inside the building excited by the vibrating walls and floors represents regenerated airborne noise. Characteristics of the soil and the building are imparted to the noise, thereby creating a unique noise signature.

Human response to ground vibrations is dependent on the magnitude of the vibrations, which is measured by the root mean square (RMS) of the movement of a particle on a surface. Typical units of ground vibration measures are millimeters per second (mm/s), or inch per second (in/s). Since vibrations can vary over a wide range it is also convenient to represent them in decibel units, of dBV. In North America, it is common practice to use the reference value of one micro-inch per second (μin/s) to represent vibration levels for this purpose. The threshold level of human perception to vibrations is about 0.10 mm/s RMS or about 72 dBV. Although somewhat variable, the threshold of annoyance for continuous vibrations is (1.0 mm/s RMS or 92 dBV), ten times higher than the perception threshold, whereas the threshold for cosmetic structural damage is (10 mm/s RMS or 112 dBV) at least one hundred times higher than the annoyance threshold level.

4.3.1 Vibration Criteria

In the United States, the Federal Transportation Authority (FTA) has set vibration criteria for sensitive land use next to transit corridors[16]. Similar standards have been developed by a partnership of MOE and TTC[17], which were adopted as the appropriate standard for most buildings along the Kanata Transitway corridor. Therefore, the appropriate criteria for residential buildings are 0.1 mm/s RMS (72 dBV) for vibrations.

4.3.2 Vibration Assessment Procedure

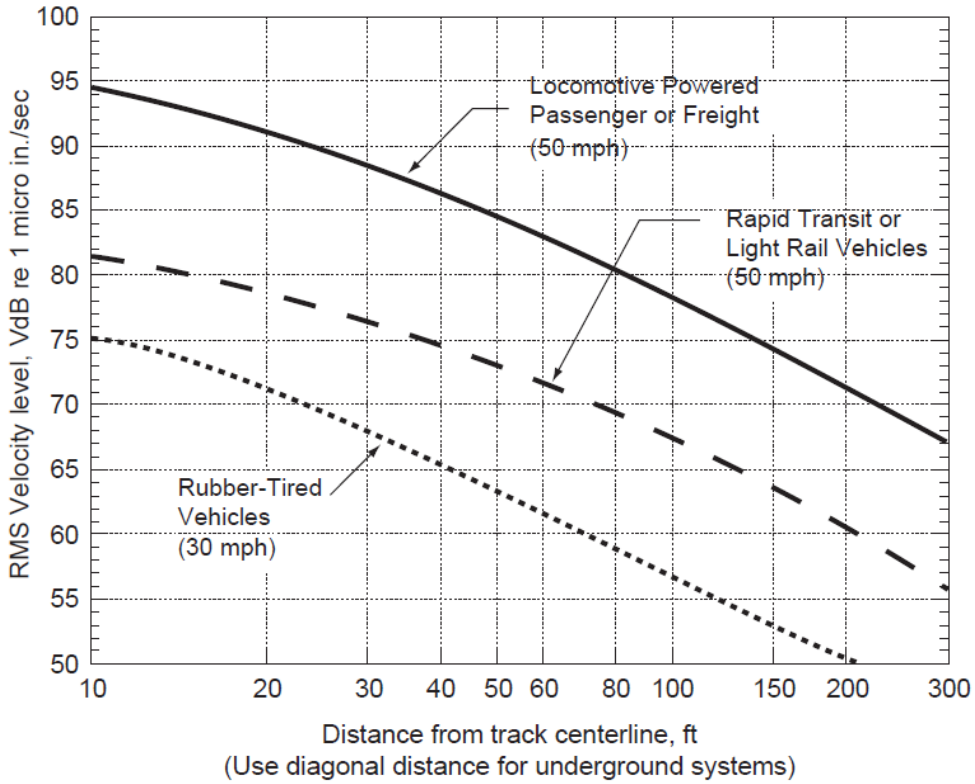
Potential vibration impacts of the existing roadway and proposed BRT were predicted using the FTA's 'Transit Noise and Vibration Impact Assessment'[18] protocol. The FTA general vibration assessment is based on an upper bound generic set of curves that show vibration level attenuation with distance. These curves, illustrated in the figure on the next page, are based on

[16] C. E. Hanson; D. A. Towers; and L. D. Meister, Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006.
[17] MOEE/TTC Protocol for Noise and Vibration Assessment for the Proposed Yonge-Spadina Subway Loop, June 16, 1993
[18] C. E. Hanson; D. A. Towers; and L. D. Meister, Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006.

ground vibration measurements at various transit systems throughout North America. Vibration levels at points of reception are adjusted by various factors to incorporate known characteristics of the system being analyzed; such as operating speed of vehicle, conditions of the road surface or rail track, construction of the track and/or tunnel; depth and geology; as well as the structural type of the impacted building structures. An appropriate offset distance to ensure compliance to the above stated criteria was selected using the set of curves for Rubber Tired Vehicles at 30 miles per hour (mph) (50 km/h) and applying an adjustment factor of 4.4 dBV to account for the operational speed of traffic at 50 mph (80 km/h). Based on this information ground vibrations will decay below the level of human perception within 30 feet or 10 m from the edge of the road.

The FTA method is constant with *GmE* 's own experience with ground vibrations monitored using seismographs next to similar roadways through the City of Ottawa, in particular the Kanata Transitway south section between Terry Fox Drive and Fernbank Road[19]. Monitoring of ground vibrations along the north section of the Kanata Transitway were conducted using an Instantel seismographs (Minimate Plus) located in the southeast quadrant of the intersection of Shirley's Brook Drive and March Road. The seismograph was placed approximately 10 m from the edge of the road and set to a minimum peak particle velocity trigger level of 0.15 millimetres per second (mm/s). Monitoring was conducted on May 13, 2010.

[19] GME, West Transiway Expansion Project Terry Fox Drive to Ferbank Road, Ottawa Ontario, Environmental Noise, Air Quality, and Ground Vibrations, Future Conditions Report, September 22, 2011



FTA GENERALIZED CURVES OF VIBRATION LEVELS VERSUS DISTANCE
(ADOPTED FROM FIGURE 10-1, FTA TRANSIT NOISE AND VIBRATION IMPACT ASSESSMENT)

5. RESULTS

This section describes the baseline existing conditions and predicted future impacts after implementing the Kanata North Transitway project relating to air quality and noise. Impacts during the construction process are discussed qualitatively in Section 6.

5.1 Air Quality Impacts

Predictions of existing and future maximum pollutant concentrations, due to bus and passenger vehicle emissions, based on CAL3QHCR simulations, are presented in Table 7[20] and referenced to receptor locations illustrated in Figures 1 to 6. The values presented are worst–case maximum concentrations expected to be reached only once in any five-year period. These results incorporate the effects of local wind statistics among other relevant parameters, but do not include current ambient concentrations from the MOE Carling Avenue monitoring station, which are tabulated separately in Table 4 in Section 4.1.

Concentrations of all tailpipe emissions fall below the allowable limits for CO, HC, NO_X, PM_{10} and $PM_{2.5}$. As such, the results indicate that the widening of March Road and introduction of BRT will have a marginal impact on air quality as pollutant concentrations are not expected to surpass MOE AAQC criteria. In general, air quality will improve despite increase in traffic volumes, due to the improvements in vehicle technology and more stringent government regulations. Some areas immediately adjacent to signalized intersections will experience steady or slight increase in pollutant levels due to the increased wait time of vehicles at red lights due to higher traffic volumes. Optimization in signal timing to limit idling time of vehicles will improve localized air quality in the vicinity of intersections.

[20] Colour separations in all tables have been used to improve the readability of the tables and are not related to the interpretation of conditions.

TABLE 7: PREDICTED POLLUTANT CONCENTRATIONS FOR EXISTING VERSUS FUTURE CONDITIONS

RECEPTOR	CONCENTRATION (µg/m^3)													
	CO (1 HR)		CO (8 HR)		HC (24 HR)		NO_X (1 HR)		NO_X (24 HR)		PM_{10} (24 HR)		$PM_{2.5}$ (24 HR)	
	existing	future	existing	future	existing	future	existing	future	existing	future	existing	future	existing	future
1	1590.6	779.1	888.6	435.2	41.6	20.2	94.6	36.2	37.8	14.5	4.9	2.8	4.2	2.4
2	557.2	927.0	311.3	517.9	17.0	24.1	67.1	26.9	26.8	10.8	1.5	3.4	1.3	3.0
3	911.6	997.9	509.3	557.5	32.2	27.5	122.7	33.9	49.1	13.6	2.6	3.9	2.2	3.5
4	851.1	1414.2	475.5	790.0	24.4	37.5	63.7	42.5	25.5	17.0	2.4	5.4	2.1	4.9
5	478.2	479.0	267.1	267.6	12.8	12.5	26.4	14.0	10.6	5.6	1.4	1.8	1.2	1.6
6	459.1	430.0	256.5	240.2	13.0	11.9	32.0	14.8	12.8	5.9	1.3	1.6	1.0	1.4
7	1041.0	1327.2	581.5	741.4	30.6	34.1	79.2	36.5	31.7	14.6	3.1	5.3	2.6	4.7
8	1431.8	4814.9	799.9	2689.8	39.1	122.2	87.1	127.7	34.8	51.1	4.4	19.6	3.8	17.4
9	1842.1	3502.0	1029.1	1956.4	47.0	87.2	80.5	87.9	32.2	35.2	5.8	14.4	5.0	12.8
10	576.9	2451.3	322.3	1369.4	17.6	60.6	51.5	60.5	20.6	24.2	1.3	9.8	1.1	8.7
11	N/A	2131.6	N/A	1190.8	N/A	53.3	N/A	53.9	N/A	21.6	N/A	8.4	N/A	7.5
12	N/A	654.7	N/A	365.7	N/A	16.2	N/A	17.1	N/A	6.8	N/A	2.5	N/A	2.2
13	N/A	2234.9	N/A	1248.5	N/A	56.1	N/A	57.5	N/A	23.0	N/A	9.2	N/A	8.1
MAX	1842.1	4814.9	1029.1	2689.8	47.0	122.2	122.7	127.7	49.1	51.1	5.8	19.6	5.0	17.4
MIN	459.1	430.0	256.5	240.2	12.8	11.9	26.4	14.0	10.6	5.6	1.3	1.6	1.0	1.4
MEAN	974.0	1703.4	544.1	951.6	27.5	43.3	70.5	46.9	28.2	18.8	2.9	6.8	2.4	6.0
STAD'D DEV'N	495.4	1302.0	276.8	727.3	12.4	32.5	29.1	32.1	11.6	12.8	1.6	5.4	1.4	4.8
MOE AAQC	36200		15700		2500		400		200		50		30	
MAX % of AAQC	5%	13%	7%	17%	2%	5%	31%	32%	25%	26%	12%	39%	17%	58%

5.1.1 Air Quality Impact of BRT Stations

The BRT Stations are expected to generate emissions from idling buses. The impacts on air pollution levels would be evaluated, and controlled if necessary, through the MOE Environmental Compliance Approval (ECA) process during the detailed design and project implementation phase of the project. The impacts are not expected to be significant.

5.2 Transportation Noise Impacts

Existing and future noise levels due to vehicle traffic along March Road are summarized in Table 8 for daytime (7:00 AM to 11:00 PM) and Table 9[21] for nighttime (11:00 PM to 7:00 AM) periods with reference to receptors illustrated in Figures 1 to 6. Although nighttime noise levels are tabulated below, only daytime noise levels are considered in noise barrier calculations, as stated in the ENCG. Various columns in Tables 8 and 9 show the change in overall noise levels. Appendix A provides the detailed input parameters and calculation results from STAMSON for existing conditions and Appendix B for future conditions.

According to the City of Ottawa ENCG, mitigation should be investigated and implemented where feasible when future daytime noise levels exceed 60 dBA, or when there is a change of more than 5 dBA and future noise levels exceed 55 dBA as per Table 5. Although existing and future noise levels at some receptors along the corridor exceed 60 dBA, mitigation is not required or feasible, either because the area is considered non-noise sensitive, or there is existing noise mitigation and further mitigation would not be feasible. Listed below is a discussion of areas where noise levels exceed 60 dBA, but mitigation would not be feasible or required.

- Campeau Drive at March Road (Receptor 1) – Orthodox Church does not have an associated outdoor living area (Refer to Photograph 1), therefore mitigation not required.
- March Road – Campeau Drive to Teron Road (Receptors 2 to 6) – Earth berm already provides mitigation for the residential neighbourhood (Refer to Photograph 2).

[21] Colour separations in the tables have been used to improve the readability, and are not related to the interpretation of the conditions.

- March Road – Teron Road to Terry Fox Drive (Receptor 7) – Commercial district, non-noise sensitive.
- March Road at Terry Fox Drive (Receptor 8) – Residences protected by an existing Noise wall. (Refer to Photograph 3)
- March Road at Shirley's Brook Drive (Receptor 9) – Residences protected by an existing Noise wall. (Refer to Photograph 4)

TABLE 8: MARCH ROAD NOISE LEVELS
EXISTING VERSUS FUTURE (DAYTIME)

RECEPTOR	EXISTING CONDITIONS	FUTURE CONDITIONS		DIFFERENCE	IMPACT
	TOTAL NOISE LEVEL (Leq)	TOTAL NOISE LEVEL (Leq)	TRANSITWAY NOISE LEVEL (Leq)	TOTAL NOISE LEVEL (Leq)	
1	63	65	40	2	INSIGNIFICANT
2	56	56	37	0	INSIGNIFICANT
3	62	62	44	0	INSIGNIFICANT
4	56	56	39	0	INSIGNIFICANT
5	45	45	29	0	INSIGNIFICANT
6	50	51	34	1	INSIGNIFICANT
7	62	64	46	2	INSIGNIFICANT
8	57	61	42	4	NOTICEABLE
9	60	64	54	4	NOTICEABLE
10	46	50	40	4	NOTICEABLE
11	53	57	39	3	INSIGNIFICANT
12	48	52	31	4	NOTICEABLE
13	57	60	41	2	INSIGNIFICANT

+ = increase, - = decrease
Insignificant = 1 – 3 dBA increase in noise levels
Noticeable = 3 – 5 dBA increase in noise levels
Significant = 5 – 10 dBA increase in noise levels
NR: Not Required

TABLE 9: MARCH ROAD NOISE LEVELS
EXISTING VERSUS FUTURE (NIGHTTIME)

RECEPTOR	EXISTING CONDITIONS	FUTURE CONDITIONS		DIFFERENCE	IMPACT
	TOTAL NOISE LEVEL (Leq)	TOTAL NOISE LEVEL (Leq)	TRANSITWAY NOISE LEVEL (Leq)	TOTAL NOISE LEVEL (Leq)	
1	57	58	34	2	INSIGNIFICANT
2	50	54	32	4	NOTICEABLE
3	62	60	43	-2	INSIGNIFICANT
4	51	51	34	0	INSIGNIFICANT
5	47	47	23	0	INSIGNIFICANT
6	46	46	28	1	INSIGNIFICANT
7	55	57	39	2	INSIGNIFICANT
8	58	61	41	3	INSIGNIFICANT
9	62	66	47	3	INSIGNIFICANT
10	42	46	34	3	INSIGNIFICANT
11	47	50	33	3	INSIGNIFICANT
12	41	45	25	4	NOTICEABLE
13	51	53	35	2	INSIGNIFICANT

+ = increase, - = decrease
Insignificant = 1 – 3 dBA increase in noise levels
Noticeable = 3 – 5 dBA increase in noise levels
Significant = 5 – 10 dBA increase in noise levels

5.3 Ground Vibrations

Vibration levels caused by heavy trucks and buses passing over uneven road surface at speeds of 80 km/h are moderately perceptible at a distance of up to 10 m from the edge of the roadway, based on FTA research and *GmE's* own measurement experience. During the monitoring period conducted on May 13, 2010 near the intersection of March Road and Shirley's Brook, no events were triggered. This would indicate vibrations levels of less than 0.15 mm/s peak particle velocity. Since the majority of existing buildings' foundations are beyond 10 m from the proposed roadway alignment, it is anticipated that ground vibration levels will not increase substantially to cause annoyance or structural issues after the implementation of the BRT Transitway.

6. IMPACTS OF CONSTRUCTION

Construction will involve surface works for replacing or upgrading the roadbed. Grade separated sections will also require shallow excavation and possibly shoring by sheet piling. Some sites may require controlled blasting.

As such, many areas along the corridor are expected to experience some degree of air quality, noise, and vibration impacts during construction. In most cases however, the impacts will be controlled, minor and intermittent over short cycles of activity.

The expected impacts from construction of the roadway widening will be limited to isolated and local surface construction projects generating occasional minor ground vibrations, fumes and dust, as well as intermittent noise. Common mitigation measures should make use of moveable noise barriers around the perimeter of the work areas, extensive water spraying to control dust, and implementing daytime hours of operation to avoid night time impacts when background noise is lowest. In all cases, air quality, noise and ground vibrations, are not expected to be disruptive to commonly occurring regular activities.

Suggested methods to control air emissions include, but are not limited to:

(i) Monitor wind conditions and plan operations to take advantage of calm wind periods;
(ii) Minimize site storage of granular material in height and extent;
(iii) Locate storage piles in sheltered areas that can be covered;
(iv) Provide movable wind breaks;
(v) Use water spray and suppression techniques to control fugitive dust;
(vi) Cover haul trucks and keep access routes to the construction site clean of debris.

For noise and vibrations, common control methods include but are not limited to:

(i) Limit speeds of heavy vehicles within and approaching the site;

(ii) Provide compacted smooth surfaces, avoiding abrupt steps and ditches;

(iii) Install movable barriers or temporary enclosures, around blast sites for instance;

(iv) Keep equipment properly maintained and functioning as intended by the manufacturer;

(v) If required, implement a blast design program prepared by a blast design engineer.

The construction manager will be responsible for preparing and implementing a mitigation strategy with the intent of satisfying the requirements of Ontario Regulations 419 for dust emissions, MOE NPC-115[22] and City of Ottawa By-laws for noise[23], and MOE NPC-119[24] for ground vibrations. Proper planning will also require that pre-construction surveys be undertaken for selected buildings along the corridor.

[22] MOE, Model Municipal Noise Control By-Law, NPC-115 Construction Equipment, August 1978
[23] City of Ottawa, Noise By-law ByLAW NO. 2004-253
[24] MOE, Model Municipal Noise Control By-Law, NPC-119 Blasting, August 1978

7. SUMMARY AND CONCLUSIONS

The work summarized in this report compares existing and projected future conditions for air quality, noise and ground vibrations, in support of the *Kanata North Transitway – Environmental Assessment*. The project involves the widening of March Road from Campeau Drive to Old Carp Road.

7.1 Operational Impacts

7.1.1 Air Quality Impacts

Concentrations of all tailpipe emissions fall below the allowable limits for CO, HC, NO_X, PM_{10} and $PM_{2.5}$. As such, the results indicate that the widening of March Road and introduction of BRT will have a marginal impact on air quality as pollutant concentrations are not expected to surpass MOE AAQC criteria. In general, air quality will improve despite increase in traffic volumes, due to the improvements in vehicle technology and more stringent government regulations. Some areas immediately adjacent to signalized intersections will experience steady or slight increase in pollutant levels due to the increased wait time of vehicles at red lights due to higher traffic volumes. Optimization in signal timing to limit idling time of vehicles will improve localized air quality in the vicinity of intersections.

7.1.2 Noise Impacts

Noise levels throughout the March Road corridor are dominated by existing roadway traffic. The contribution of the new BRT Transitway was found to have an insignificant impact, with noise levels from BRT being a minimum of 10 dBA below ambient levels created by the future vehicle traffic. Although existing and future noise levels at some receptors along the corridor exceed 60 dBA, mitigation is not required as either the receptor is located in a non-noise sensitive area, noise mitigation currently exists and further mitigation is not feasible. Listed below are some examples of where it is not feasible to implement a noise barrier despite excessive noise levels experiences represented by the area:

- Campeau Drive at March Road (Receptor 1) – Orthodox Church does have an associated outdoor living area (Refer to Photograph 1), therefore mitigation not required.

- March Road –Campeau Drive to Teron Road (Receptors 2 to 6) – Earth berm already provides mitigation for the residential neighbourhood (Refer to Photograph 2).
- March Road – Teron Road to Terry Fox Drive (Receptor 7) – Commercial district, non-noise sensitive.
- March Road at Terry Fox Drive (Receptor 8) – Residences protected by an existing Noise wall (Refer to Photograph 3).
- March Road at Shirley's Brook Drive (Receptor 9) – Residences protected by an existing Noise wall (Refer to Photograph 4).

If the noise barriers along March Road are required to be moved to allow the widening of March Road, a new barrier within the right of way will need to be erected to match the height of the original barrier.

7.1.3 Vibration Impacts

Ground vibration levels existing over the corridor were found to be below the perceptible range at most nearby residences, and falling well below the levels that could cause annoyance to people and damages to buildings and structures. Future ground vibration levels are not expected to increase substantially to cause annoyance or structural issues.

7.2 Construction Impacts

Varied construction activities along the BRT corridor are expected to create isolated and short-term noise, air quality and vibration impacts on the environment. The construction manager will be required to develop a strategy for mitigating the effects according to good practices intended to satisfy, as feasible, the fugitive dust limits specified in O.Reg. 419, the noise limits specified in MOE NPC-115[25] and City of Ottawa By-laws for Noise[26], and MOE NPC -119[27] for ground vibrations. A list of common mitigation strategies adapted to the current project includes, but is not limited to, the following:

[25] MOE, Model Municipal Noise Control By-Law, NPC-115 Construction Equipment, August 1978
[26] City of Ottawa, Noise By-law ByLAW NO. 2004-253
[27] MOE, Model Municipal Noise Control By-Law, NPC-119 Blasting, August 1978

For air emissions:

(i) Monitor wind conditions, and plan operations to take advantage of calm wind periods;

(ii) Minimize site storage of granular material in height and extent;

(iii) Locate storage piles in sheltered areas that can be covered;

(iv) Provide movable wind breaks;

(v) Use water spray and suppression techniques to control fugitive dust;

(vi) Cover haul trucks and keep access routes to the construction site clean of debris.

For noise and vibrations:

(vi) Limit speeds of heavy vehicles within and approaching the site;

(vii) Provide compacted smooth surfaces, avoiding abrupt steps and ditches;

(viii) Install movable noise barriers or temporary enclosures, around blast sites for instance;

(ix) Keep equipment properly maintained and functioning as intended by the manufacturer;

(x) If required, implement a blast design program prepared by a blast design engineer.

This concludes our assessment of existing and future environmental conditions in the area of noise, air quality and ground vibrations.

Yours truly,

Gradient Microclimate Engineering Inc.

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Principal

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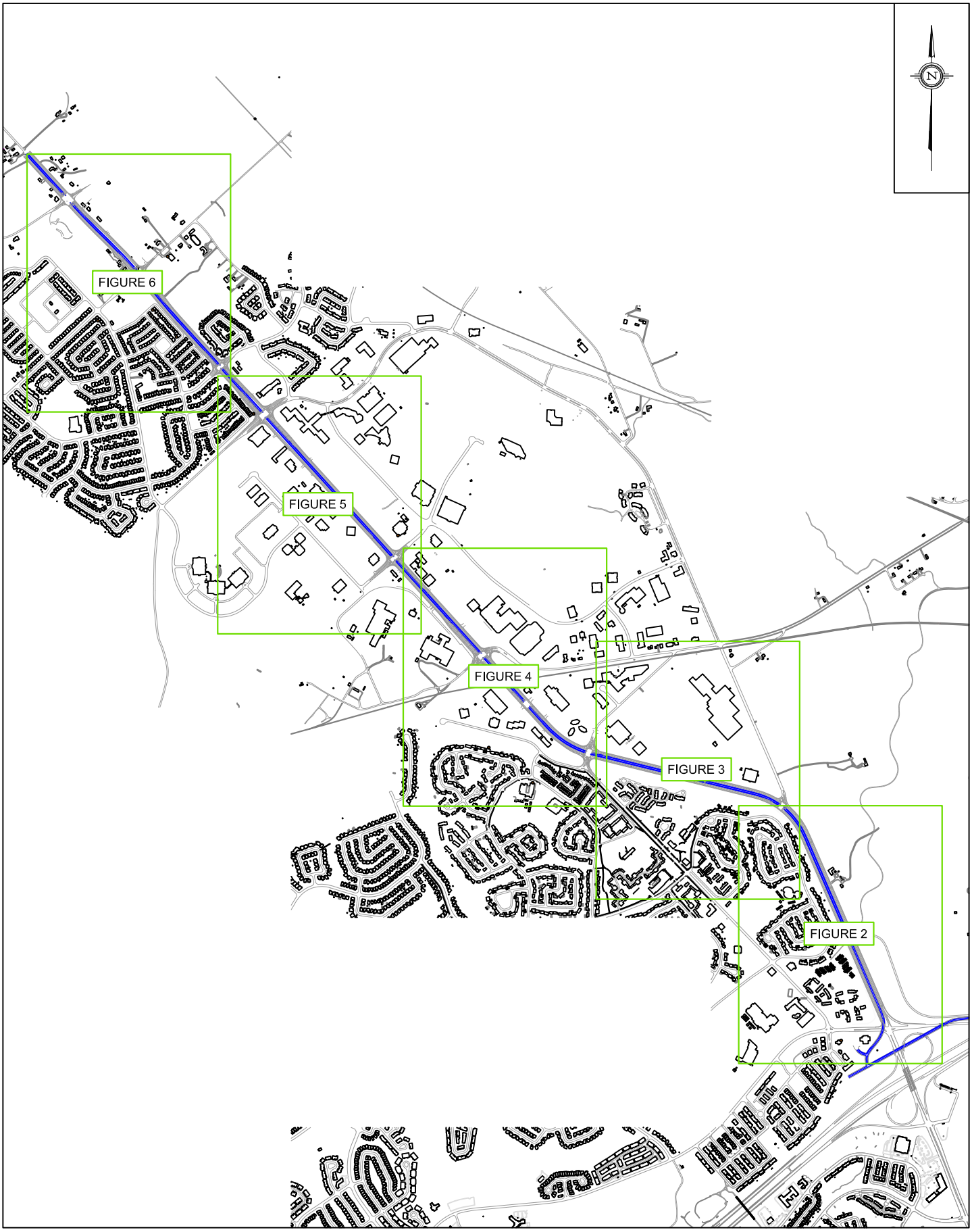
Project Analyst
GmE 09-063-Environmental Assessment DRAFT



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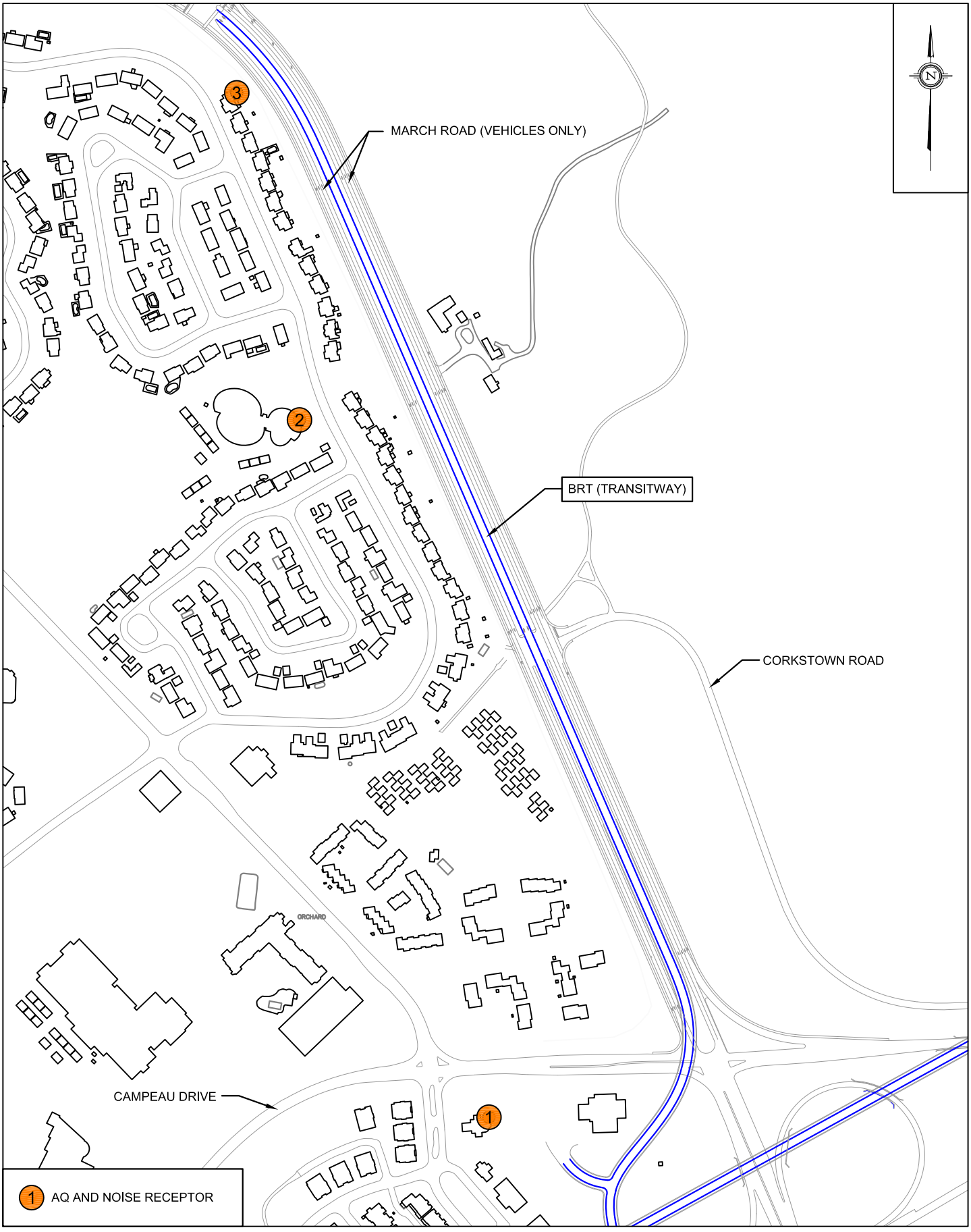
PROJECT	KANATA NORTH TRANSITWAY - ENVIRONMENTAL ASSESSMENT
SCALE	1:24,000 (APPROX.)
DRAWING NO.	GME09-063-1
DATE	SEPTEMBER 27, 2012
DRAWN BY	T.C

DESCRIPTION

FIGURE 1:
PROJECT OVERVIEW AND KEY PLAN



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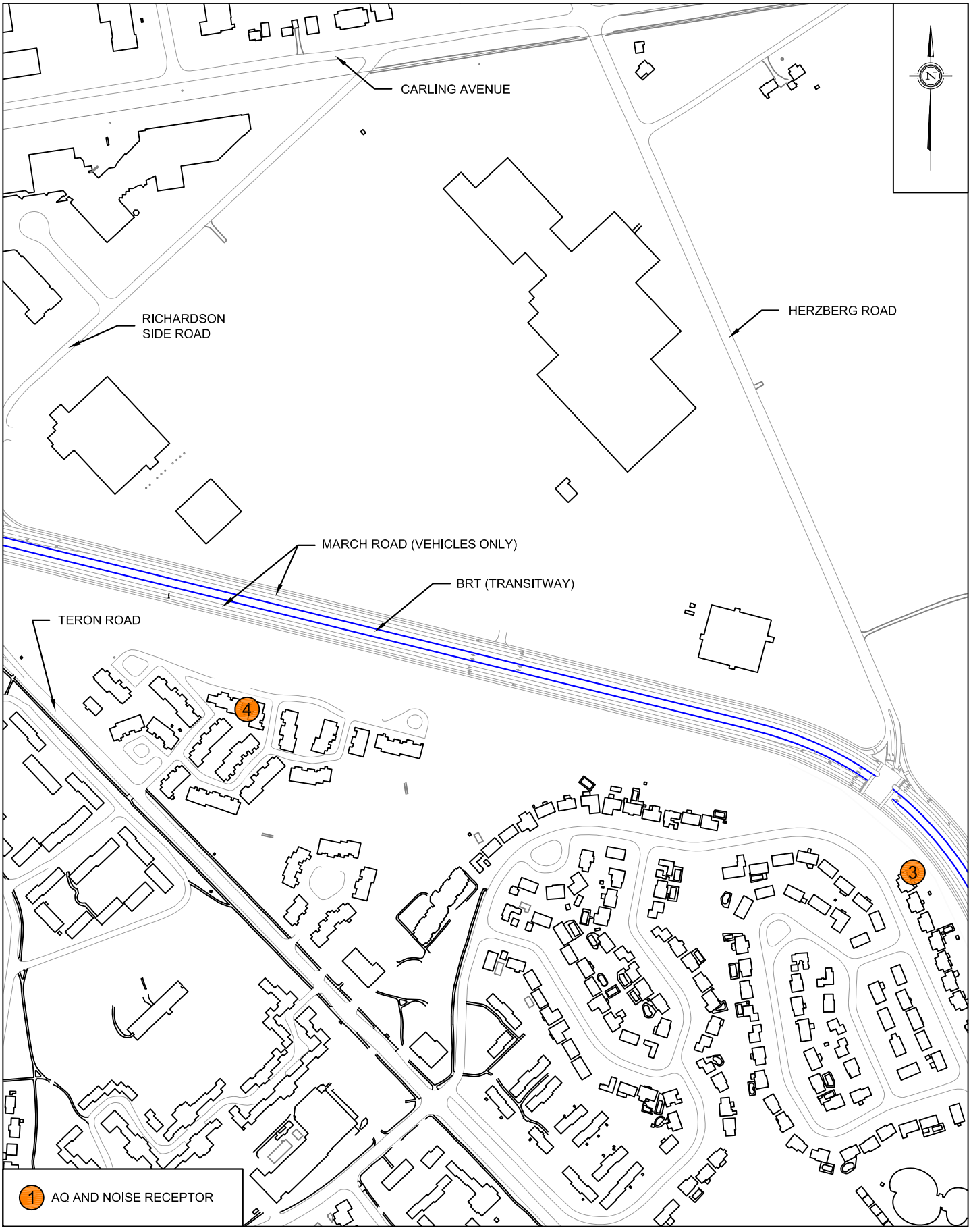
DRAWING NO.	GME09-063-2
DATE	SEPTEMBER 27, 2012
DRAWN BY	T.C

DESCRIPTION

FIGURE 2:
RECEPTOR LOCATIONS



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DRAWING NO.	GME09-063-3
DATE	SEPTEMBER 27, 2012
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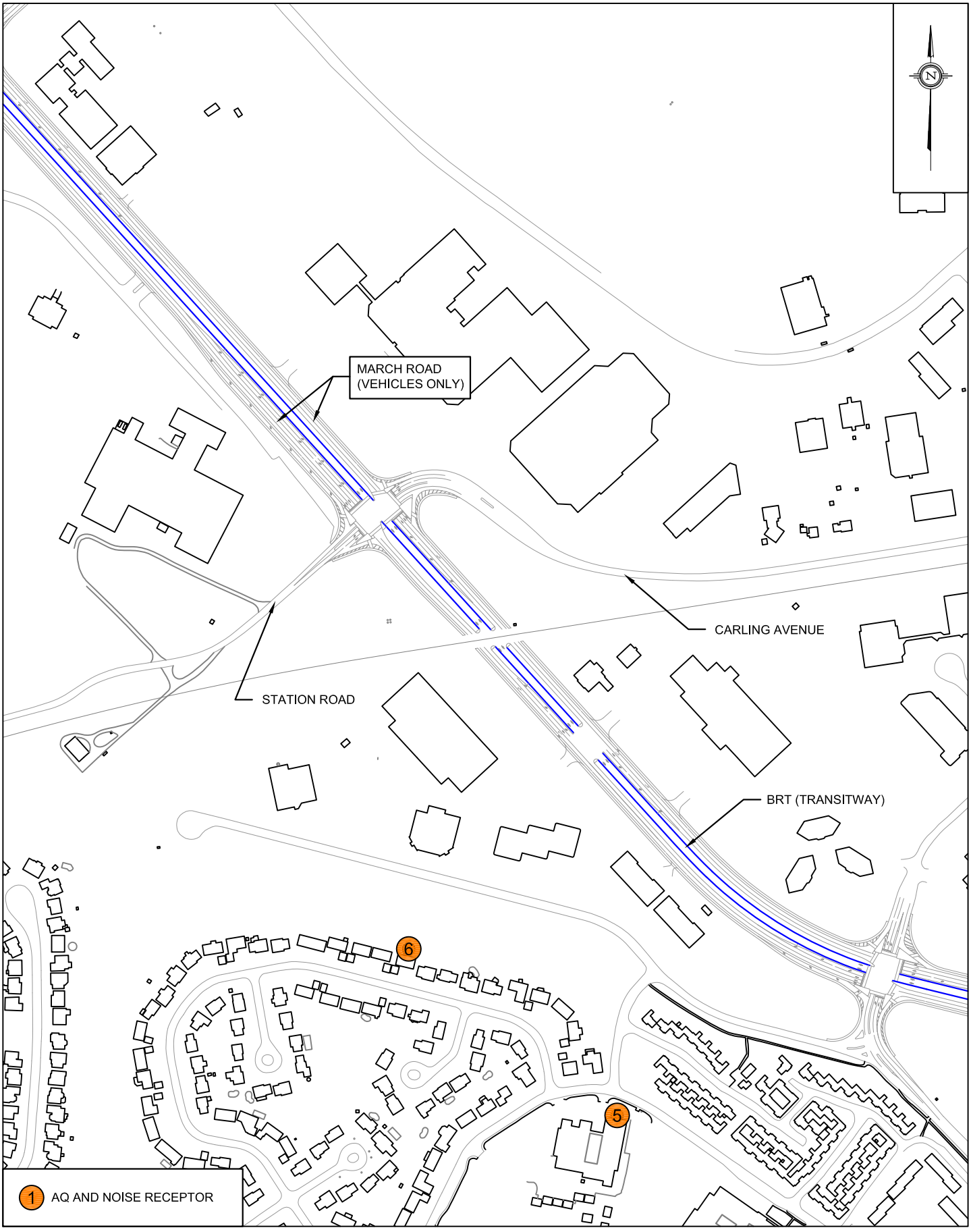
DESCRIPTION

FIGURE 3:
RECEPTOR LOCATIONS



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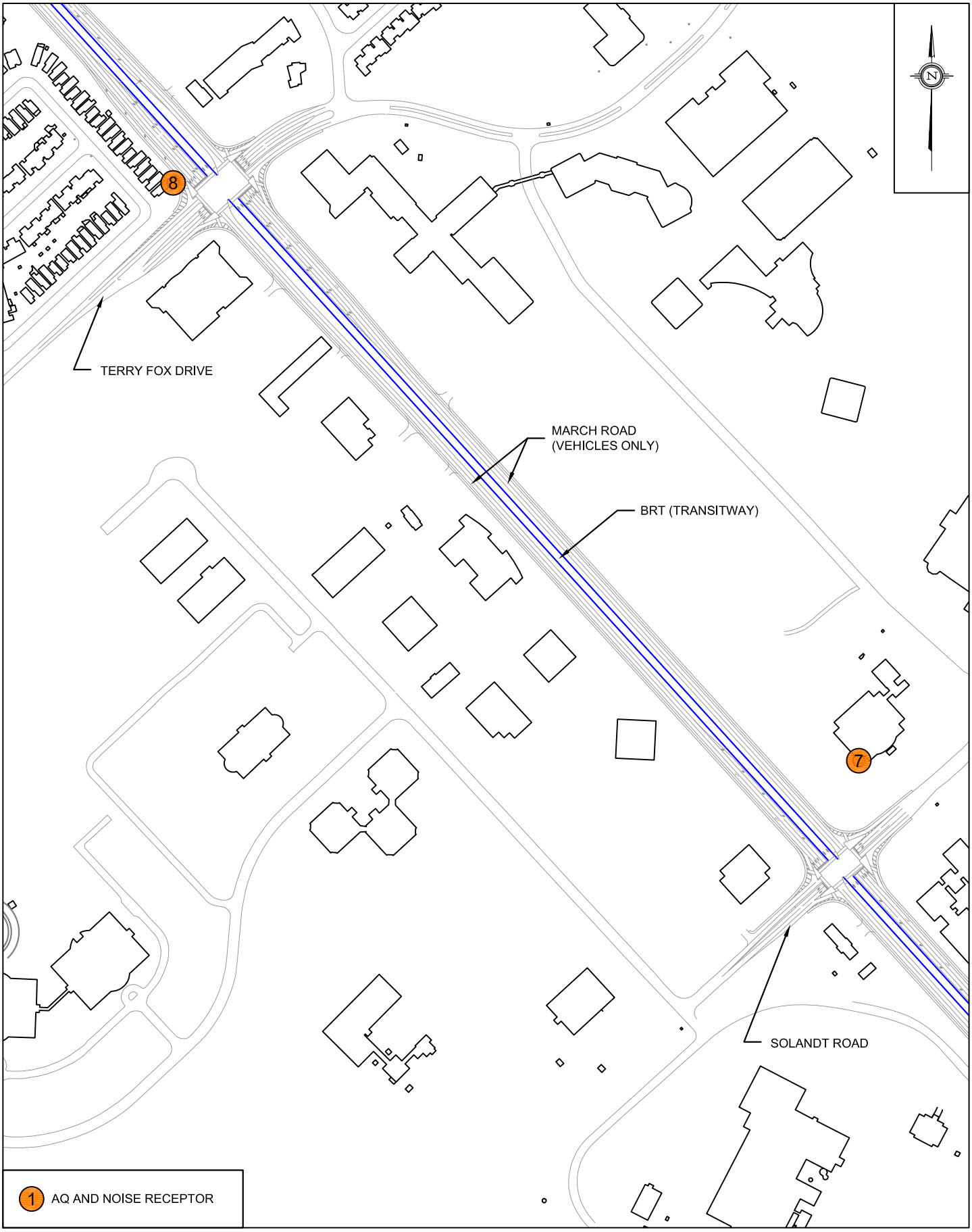
PROJECT: KANATA NORTH TRANSITWAY - ENVIRONMENTAL ASSESSMENT		DESCRIPTION: FIGURE 4: RECEPTOR LOCATIONS
SCALE: 1:5100 (APPROX.)	DRAWING NO.: GME09-063-4	
DATE: SEPTEMBER 27, 2012	DRAWN BY: T.C	



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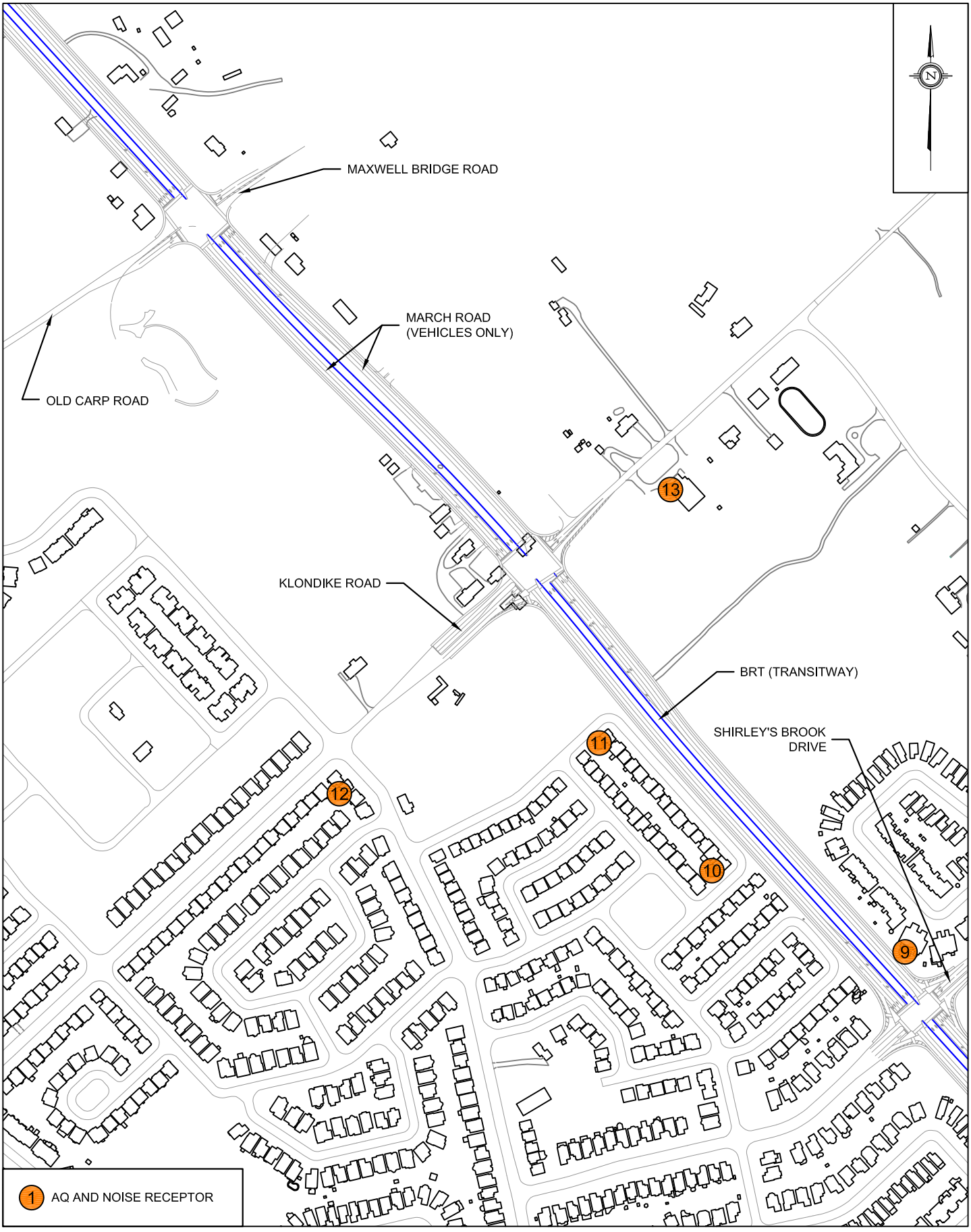
PROJECT	KANATA NORTH TRANSITWAY - ENVIRONMENTAL ASSESSMENT
SCALE	1:5100 (APPROX.)
DRAWING NO.	GME09-063-5
DATE	SEPTEMBER 27, 2012
DRAWN BY	T.C

DESCRIPTION

FIGURE 5:
RECEPTOR LOCATIONS



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PROJECT	KANATA NORTH TRANSITWAY - ENVIRONMENTAL ASSESSMENT
SCALE	1:5100 (APPROX.)
DRAWING NO.	GME09-063-6
DATE	SEPTEMBER 27, 2012
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DESCRIPTION

FIGURE 6:
RECEPTOR LOCATIONS

PHOTOGRAPH 1: EXISTING CONDITIONS – CAMPEAU AT TERON (RECEPTOR 1)

PHOTOGRAPH 2: EXISTING EARTH BERM ALONG MARCH ROAD

PHOTOGRAPH 3: EXISTING CONDITIONS – TERRY FOX AT MARCH (RECEPTOR 8)

PICTURE 4: EXISTING CONDITIONS – SHIRLEY'S BROOK AT MARCH (RECEPTOR 9)

APPENDICES A & B
FOUND ON ATTACHED CD

APPENDIX A: **NOISE MODELLING OF EXISTING CONDITIONS INPUT AND OUTPUT DATA STAMSON**

APPENDIX B: **NOISE MODELLING OF FUTURE CONDITIONS INPUT AND OUTPUT DATA STAMSON**

APPENDIX A

NOISE MODELLING OF EXISITING CONDITIONS
INPUT AND OUTPUT DATA
STAMSON 5.04

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 09:58:02
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por1.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  :  9967/867   veh/TimePeriod  *
Medium truck volume :   793/69    veh/TimePeriod  *
Heavy truck volume  :   566/49    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12311
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 230.50 / 230.50 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 11988/1042  veh/TimePeriod  *
Medium truck volume :   954/83    veh/TimePeriod  *
Heavy truck volume  :   681/59    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  14807
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 219.80 / 219.80 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: HW417-WB (day/night)
-------------------------------------------
Car traffic volume  : 28831/2507  veh/TimePeriod  *
Medium truck volume :  2293/199   veh/TimePeriod  *
Heavy truck volume  :  1638/142   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):  35612
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: HW417-WB (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 326.80 / 326.80 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  18.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  94.00 m
Receiver elevation        :  94.00 m
Barrier elevation         :  94.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: HW417-EB (day/night)
-------------------------------------------
Car traffic volume  : 28831/2507  veh/TimePeriod  *
Medium truck volume :  2293/199   veh/TimePeriod  *
Heavy truck volume  :  1638/142   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):  35612
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: HW417-EB (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 369.70 / 369.70 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  18.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  94.00 m
Receiver elevation        :  94.00 m
Barrier elevation         :  94.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Campeau 1 (day/night)
-----------------------------------------------
Car traffic volume  : 17959/1562  veh/TimePeriod  *
Medium truck volume :  1429/124   veh/TimePeriod  *
Heavy truck volume  :  1020/89    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):  22182
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Campeau 1 (day/night)
-------------------------------------------
Angle1   Angle2           : -77.00 deg   84.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  46.30 / 46.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 6: Campeau 2 (day/night)
----------------------------------------------
Car traffic volume  : 17959/1562  veh/TimePeriod  *
Medium truck volume :  1429/124   veh/TimePeriod  *
Heavy truck volume  :  1020/89    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):  22182
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Campeau 2 (day/night)
-------------------------------------------
Angle1   Angle2           : -69.50 deg   -31.40 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 178.00 / 178.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : -31.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  94.50 m
Receiver elevation        :  94.00 m
Barrier elevation         :  94.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: Teron (day/night)
-----------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Teron (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   -82.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  16.50 / 16.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Results segment # 1: March NB (day)

Source height = 1.50 m

ROAD (0.00 + 48.17 + 0.00) = 48.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	71.63	0.00	-19.70	-1.46	0.00	-2.31	0.00	48.17

Segment Leq : 48.17 dBA

Results segment # 2: March SB (day)

Source height = 1.50 m

ROAD (0.00 + 49.30 + 0.00) = 49.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.43	0.00	-19.35	-1.46	0.00	-2.32	0.00	49.30

Segment Leq : 49.30 dBA

```
Results segment # 3: HW417-WB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        95.50

ROAD (52.64 + 42.62 + 0.00) = 53.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     18   0.66  78.26   0.00 -22.21  -3.41   0.00   0.00   0.00  52.64
-------------------------------------------------------------------------------
    18     90   0.00  78.26   0.00 -13.38  -3.98   0.00   0.00 -18.27  42.62
-------------------------------------------------------------------------------

Segment Leq : 53.05 dBA
```

```
Results segment # 4: HW417-EB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        95.50

ROAD (51.75 + 42.09 + 0.00) = 52.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     18   0.66  78.26   0.00 -23.10  -3.41   0.00   0.00   0.00  51.75
-------------------------------------------------------------------------------
    18     90   0.00  78.26   0.00 -13.92  -3.98   0.00   0.00 -18.27  42.09
-------------------------------------------------------------------------------

Segment Leq : 52.20 dBA
```

```
Results segment # 5: Campeau 1 (day)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 61.98 + 0.00) = 61.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -77     84   0.66  71.69   0.00  -8.13  -1.59   0.00   0.00   0.00  61.98
-------------------------------------------------------------------------------

Segment Leq : 61.98 dBA


Results segment # 6: Campeau 2 (day)
------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.51 !        95.51

ROAD (0.00 + 34.31 + 0.00) = 34.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -70    -31   0.00  71.69   0.00 -10.74  -6.64   0.00   0.00 -20.00  34.31
-------------------------------------------------------------------------------

Segment Leq : 34.31 dBA
```

Results segment # 7: Teron (day)

Source height = 1.49 m

ROAD (0.00 + 40.22 + 0.00) = 40.22 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-82	0.66	62.74	0.00	-0.69	-21.83	0.00	0.00	0.00	40.22

Segment Leq : 40.22 dBA

Total Leq All Segments: 63.24 dBA

Results segment # 1: March NB (night)

Source height = 1.49 m

ROAD (0.00 + 44.09 + 0.00) = 44.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.02	0.00	-18.63	-1.30	0.00	0.00	0.00	44.09

Segment Leq : 44.09 dBA

Results segment # 2: March SB (night)

Source height = 1.49 m

ROAD (0.00 + 45.22 + 0.00) = 45.22 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.83	0.00	-18.31	-1.30	0.00	0.00	0.00	45.22

Segment Leq : 45.22 dBA

```
Results segment # 3: HW417-WB (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 !        4.50 !        4.47 !        98.47

ROAD (46.36 + 35.74 + 0.00) = 46.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     18   0.57  70.65   0.00 -21.01  -3.28   0.00   0.00   0.00  46.36
-------------------------------------------------------------------------------
    18     90   0.00  70.65   0.00 -13.38  -3.98   0.00   0.00 -17.56  35.74
-------------------------------------------------------------------------------

Segment Leq : 46.72 dBA


Results segment # 4: HW417-EB (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 !        4.50 !        4.48 !        98.48

ROAD (45.52 + 35.21 + 0.00) = 45.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     18   0.57  70.65   0.00 -21.85  -3.28   0.00   0.00   0.00  45.52
-------------------------------------------------------------------------------
    18     90   0.00  70.65   0.00 -13.92  -3.98   0.00   0.00 -17.55  35.21
-------------------------------------------------------------------------------

Segment Leq : 45.90 dBA
```

```
Results segment # 5: Campeau 1 (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.96 + 0.00) = 54.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -77     84   0.57  64.10   0.00  -7.69  -1.46   0.00   0.00   0.00  54.96
-------------------------------------------------------------------------------

Segment Leq : 54.96 dBA


Results segment # 6: Campeau 2 (night)
--------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        4.50 !        4.46 !        98.46

ROAD (0.00 + 26.72 + 0.00) = 26.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -70    -31   0.00  64.10   0.00 -10.74  -6.64   0.00   0.00 -20.00  26.72
-------------------------------------------------------------------------------

Segment Leq : 26.72 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 33.68 + 0.00) = 33.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -82   0.57  55.13   0.00  -0.65 -20.80   0.00   0.00   0.00  33.68
-------------------------------------------------------------------------------

Segment Leq : 33.68 dBA

Total Leq All Segments: 56.64 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 63.24
                           (NIGHT): 56.64
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 09:58:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por2.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 13039/1134  veh/TimePeriod  *
Medium truck volume :  1037/90    veh/TimePeriod  *
Heavy truck volume  :   741/64    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  16106
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 105.70 / 108.70 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance : 100.70 / 103.70 m
Source elevation          :  90.00 m
Receiver elevation        :  89.00 m
Barrier elevation         :  90.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 13912/1210  veh/TimePeriod  *
Medium truck volume :  1107/96    veh/TimePeriod  *
Heavy truck volume  :   790/69    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  17184
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  88.80 / 91.80  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  80.00 / 83.00  m
Source elevation          :  90.00 m
Receiver elevation        :  89.00 m
Barrier elevation         :  90.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Teron (day/night)
-----------------------------------------
Car traffic volume  :  3441/299   veh/TimePeriod  *
Medium truck volume :   274/24    veh/TimePeriod  *
Heavy truck volume  :   196/17    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):   4250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Teron (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 324.00 / 327.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   4.50 m
Barrier receiver distance :   3.00 / 6.00   m
Source elevation          :  92.00 m
Receiver elevation        :  89.00 m
Barrier elevation         :  89.00 m
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.45 !        91.45

ROAD (0.00 + 52.54 + 0.00) = 52.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  72.80   0.00 -14.08  -1.46   0.00  -4.45   0.00  52.82
   -90     90   0.54  72.80   0.00 -13.06  -1.25   0.00   0.00  -5.95  52.54
-------------------------------------------------------------------------------

Segment Leq : 52.54 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.40 !        91.40

ROAD (0.00 + 54.23 + 0.00) = 54.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  73.08   0.00 -12.82  -1.46   0.00  -4.50   0.00  54.30
   -90     90   0.54  73.08   0.00 -11.89  -1.25   0.00   0.00  -5.71  54.23
-------------------------------------------------------------------------------

Segment Leq : 54.23 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.53 !        90.53

ROAD (0.00 + 29.21 + 0.00) = 29.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.39  63.01   0.00 -18.55  -0.96   0.00   0.00 -14.29  29.21
-------------------------------------------------------------------------------

Segment Leq : 29.21 dBA

Total Leq All Segments: 56.49 dBA


Results segment # 1: March NB (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 !        4.50 !        1.59 !        91.59

ROAD (0.00 + 46.07 + 0.00) = 46.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.45  65.18   0.00 -12.47  -1.08   0.00   0.00  -5.56  46.07
-------------------------------------------------------------------------------

Segment Leq : 46.07 dBA
```

Results segment # 2: March SB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	1.69	91.69

ROAD (0.00 + 47.80 + 0.00) = 47.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.45	65.49	0.00	-11.41	-1.08	0.00	0.00	-5.20	47.80

Segment Leq : 47.80 dBA

Results segment # 3: Teron (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.50	93.50

ROAD (0.00 + 32.24 + 0.00) = 32.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.30	55.41	0.00	-17.40	-0.77	0.00	0.00	-5.00	32.24

Segment Leq : 32.24 dBA

Total Leq All Segments: 50.10 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.49
(NIGHT): 50.10

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 09:59:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR3.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB1 (day/night)
----------------------------------------------
Car traffic volume  :  9227/802   veh/TimePeriod  *
Medium truck volume :   734/64    veh/TimePeriod  *
Heavy truck volume  :   524/46    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11397
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB1 (day/night)
-------------------------------------------
Angle1   Angle2           : -77.50 deg   -3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -78.00 deg   Angle2 : -3.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  86.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March NB2 (day/night)
-----------------------------------------
Car traffic volume  : 10812/940   veh/TimePeriod  *
Medium truck volume :   860/75    veh/TimePeriod  *
Heavy truck volume  :   614/53    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  13355
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March NB2 (day/night)
-------------------------------------------
Angle1   Angle2           : -56.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  62.10 / 62.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -56.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  89.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  88.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: March SB1 (day/night)
-----------------------------------------
Car traffic volume  :  9227/802   veh/TimePeriod  *
Medium truck volume :   734/64    veh/TimePeriod  *
Heavy truck volume  :   524/46    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11397
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: March SB1 (day/night)
-------------------------------------------
Angle1   Angle2           : -78.50 deg   -3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  99.20 / 99.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -78.00 deg   Angle2 : -3.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  61.00 / 61.00  m
Source elevation          :  86.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: March SB2 (day/night)
-----------------------------------------------
Car traffic volume  : 10812/940   veh/TimePeriod  *
Medium truck volume :   860/75    veh/TimePeriod  *
Heavy truck volume  :   614/53    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  13355
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: March SB2 (day/night)
-------------------------------------------
Angle1   Angle2           : -66.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  40.90 / 40.90  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -66.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  89.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  88.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Herzberg (day/night)
-------------------------------------------
Car traffic volume  :  3708/322   veh/TimePeriod  *
Medium truck volume :   295/26    veh/TimePeriod  *
Heavy truck volume  :   211/18    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):   4580
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Herzberg (day/night)
------------------------------------------
Angle1   Angle2           : -85.00 deg   -67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  39.10 / 39.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -85.00 deg   Angle2 : -67.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  86.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  88.00 m
Reference angle           :   0.00
```

```
Results segment # 1: March NB1 (day)
------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        2.16 !        88.16

ROAD (0.00 + 58.90 + 0.00) = 58.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -78     -3   0.48  71.29   0.00   0.00  -4.60   0.00   0.00  -7.79  58.90
-------------------------------------------------------------------------------

Segment Leq : 58.90 dBA


Results segment # 2: March NB2 (day)
------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.71 !        89.71

ROAD (0.00 + 53.78 + 0.00) = 53.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -56     90   0.48  71.98   0.00  -9.13  -1.73   0.00   0.00  -7.34  53.78
-------------------------------------------------------------------------------

Segment Leq : 53.78 dBA
```

```
Results segment # 3: March SB1 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        2.27 !        88.27

ROAD (27.55 + 49.14 + 0.00) = 49.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -78    -78   0.66  71.29   0.00 -13.62 -30.12   0.00   0.00   0.00  27.55
-------------------------------------------------------------------------------
   -78     -3   0.48  71.29   0.00 -12.14  -4.60   0.00   0.00  -5.41  49.14
-------------------------------------------------------------------------------

Segment Leq : 49.17 dBA


Results segment # 4: March SB2 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.82 !        89.82

ROAD (0.00 + 56.79 + 0.00) = 56.79 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -66     90   0.48  71.98   0.00  -6.45  -1.48   0.00   0.00  -7.25  56.79
-------------------------------------------------------------------------------

Segment Leq : 56.79 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        0.83 !        88.83

ROAD (0.00 + 36.54 + 0.00) = 36.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -85    -67   0.48  63.33   0.00  -6.16 -13.05   0.00   0.00  -7.59  36.54
-------------------------------------------------------------------------------

Segment Leq : 36.54 dBA

Total Leq All Segments: 61.99 dBA


Results segment # 1: March NB1 (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 !        4.50 !        3.17 !        89.17

ROAD (0.00 + 58.99 + 0.00) = 58.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -78     -3   0.39  63.72   0.00   0.00  -4.46   0.00   0.00  -4.87
54.39*
   -78     -3   0.57  63.72   0.00   0.00  -4.73   0.00   0.00   0.00  58.99
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.99 dBA
```

```
Results segment # 2: March NB2 (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 !        4.50 !        4.08 !        92.08

ROAD (0.00 + 52.83 + 0.00) = 52.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -56     90   0.39  64.37   0.00  -8.58  -1.60   0.00   0.00  -2.13
52.06*
   -56     90   0.57  64.37   0.00  -9.69  -1.85   0.00   0.00   0.00  52.83
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 52.83 dBA
```

```
Results segment # 3: March SB1 (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 !        4.50 !        3.42 !        89.42

ROAD (21.33 + 46.11 + 0.00) = 46.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -78    -78   0.57  63.72   0.00 -12.88 -29.50   0.00   0.00   0.00  21.33
-------------------------------------------------------------------------------
   -78     -3   0.39  63.72   0.00 -11.40  -4.46   0.00   0.00  -4.85
43.00*
   -78     -3   0.57  63.72   0.00 -12.88  -4.73   0.00   0.00   0.00  46.11
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.12 dBA


Results segment # 4: March SB2 (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 !        4.50 !        3.86 !        91.86

ROAD (0.00 + 55.92 + 0.00) = 55.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -66     90   0.39  64.37   0.00  -6.06  -1.35   0.00   0.00  -3.11
53.86*
   -66     90   0.57  64.37   0.00  -6.84  -1.62   0.00   0.00   0.00  55.92
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.92 dBA
```

```
Results segment # 5: Herzberg (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 !        4.50 !        2.83 !        90.83

ROAD (0.00 + 32.40 + 0.00) = 32.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -85    -67   0.39  55.69   0.00  -5.78 -12.49   0.00   0.00  -5.02  32.40
-------------------------------------------------------------------------------

Segment Leq : 32.40 dBA

Total Leq All Segments: 61.52 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.99
                           (NIGHT): 61.52
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 09:59:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR4.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 13238/1151  veh/TimePeriod  *
Medium truck volume :  1053/92    veh/TimePeriod  *
Heavy truck volume  :   752/65    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  16351
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -73.00 deg   76.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 113.60 / 113.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -46.00 deg   Angle2 : 76.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  83.90 / 83.90  m
Source elevation          :  90.00 m
Receiver elevation        :  90.00 m
Barrier elevation         :  90.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 15067/1310  veh/TimePeriod  *
Medium truck volume :  1199/104   veh/TimePeriod  *
Heavy truck volume  :   856/74    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  18611
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -74.00 deg   78.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  98.40 / 98.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -46.00 deg   Angle2 : 78.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  83.90 / 83.90  m
Source elevation          :  90.00 m
Receiver elevation        :  90.00 m
Barrier elevation         :  90.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Teron (day/night)
------------------------------------------
Car traffic volume  :  3441/299   veh/TimePeriod
Medium truck volume :   274/24    veh/TimePeriod
Heavy truck volume  :   196/17    veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Teron (day/night)
---------------------------------------
Angle1   Angle2           : -73.60 deg   66.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 136.40 / 136.40 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        91.50

ROAD (48.03 + 50.81 + 0.00) = 52.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -73    -46   0.66  72.86   0.00 -14.60 -10.24   0.00   0.00   0.00  48.03
-------------------------------------------------------------------------------
   -46     76   0.48  72.86   0.00 -13.01  -2.22   0.00   0.00  -6.82  50.81
-------------------------------------------------------------------------------

Segment Leq : 52.65 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        91.50

ROAD (49.74 + 51.31 + 0.00) = 53.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -74    -46   0.66  73.42   0.00 -13.56 -10.13   0.00   0.00   0.00  49.74
-------------------------------------------------------------------------------
   -46     78   0.48  73.42   0.00 -12.09  -2.18   0.00   0.00  -7.84  51.31
-------------------------------------------------------------------------------

Segment Leq : 53.60 dBA
```

Results segment # 3: Teron (day)

Source height = 1.50 m

ROAD (0.00 + 36.65 + 0.00) = 36.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-74	66	0.66	63.01	0.00	-15.91	-1.89	0.00	-8.56	0.00	36.65

Segment Leq : 36.65 dBA

Total Leq All Segments: 56.21 dBA

Results segment # 1: March NB (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	4.50	2.28	92.28

ROAD (41.48 + 45.43 + 0.00) = 46.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-73	-46	0.57	65.26	0.00	-13.81	-9.97	0.00	0.00	0.00	41.48
-46	76	0.39	65.26	0.00	-12.22	-2.13	0.00	0.00	-5.48	45.43

Segment Leq : 46.90 dBA

Results segment # 2: March SB (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	4.50	1.94	91.94

ROAD (43.13 + 45.76 + 0.00) = 47.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-74	-46	0.57	65.81	0.00	-12.83	-9.86	0.00	0.00	0.00	43.13
-46	78	0.39	65.81	0.00	-11.36	-2.08	0.00	0.00	-6.61	45.76

Segment Leq : 47.65 dBA

Results segment # 3: Teron (night)

Source height = 1.50 m

ROAD (0.00 + 38.57 + 0.00) = 38.57 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-74	66	0.57	55.41	0.00	-15.05	-1.79	0.00	0.00	0.00	38.57

Segment Leq : 38.57 dBA

Total Leq All Segments: 50.58 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.21
(NIGHT): 50.58

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 09:59:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR5.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB1 (day/night)
----------------------------------------------
Car traffic volume  : 13238/1151  veh/TimePeriod  *
Medium truck volume :  1053/92    veh/TimePeriod  *
Heavy truck volume  :   752/65    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  16351
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB1 (day/night)
-------------------------------------------
Angle1   Angle2           : -60.50 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 244.00 / 244.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB1 (day/night)
-----------------------------------------
Car traffic volume  : 15067/1310  veh/TimePeriod  *
Medium truck volume :  1199/104   veh/TimePeriod  *
Heavy truck volume  :   856/74    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  18611
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB1 (day/night)
-------------------------------------------
Angle1   Angle2           : -61.00 deg   0.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 241.00 / 241.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: March NB2 (day/night)
-----------------------------------------------
Car traffic volume  : 13238/1151  veh/TimePeriod  *
Medium truck volume :  1053/92    veh/TimePeriod  *
Heavy truck volume  :   752/65    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  16351
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: March NB2 (day/night)
-------------------------------------------
Angle1   Angle2           :  22.50 deg   65.60 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 210.50 / 210.50 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: March SB2 (day/night)
-----------------------------------------
Car traffic volume  : 15067/1310  veh/TimePeriod  *
Medium truck volume :  1199/104   veh/TimePeriod  *
Heavy truck volume  :   856/74    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  18611
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: March SB2 (day/night)
-------------------------------------------
Angle1   Angle2           :  32.40 deg   67.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 189.00 / 189.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 5: Richardson (day/night)
-----------------------------------------------
Car traffic volume  :  4319/376   veh/TimePeriod  *
Medium truck volume :   344/30    veh/TimePeriod  *
Heavy truck volume  :   245/21    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):   5335
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Richardson (day/night)
---------------------------------------------
Angle1   Angle2           : -59.00 deg   -43.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 207.00 / 207.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 6: Teron (day/night)
-----------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Teron (day/night)
---------------------------------------
Angle1   Angle2           :  22.40 deg   60.40 deg
Wood depth                :      0       (No woods.)
No of house rows          :      5 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 245.00 / 245.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: March NB1 (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 38.25 + 0.00) = 38.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -60    -10   0.66  72.86   0.00 -20.11  -6.21   0.00  -8.29   0.00  38.25
-------------------------------------------------------------------------------

Segment Leq : 38.25 dBA


Results segment # 2: March SB1 (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 39.87 + 0.00) = 39.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -61      0   0.66  73.42   0.00 -20.02  -5.24   0.00  -8.30   0.00  39.87
-------------------------------------------------------------------------------

Segment Leq : 39.87 dBA


Results segment # 3: March NB2 (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 38.20 + 0.00) = 38.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    22     66   0.66  72.86   0.00 -19.04  -7.25   0.00  -8.37   0.00  38.20
-------------------------------------------------------------------------------

Segment Leq : 38.20 dBA
```

Results segment # 4: March SB2 (day)

Source height = 1.50 m

ROAD (0.00 + 38.30 + 0.00) = 38.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
32	68	0.66	73.42	0.00	-18.27	-8.43	0.00	-8.43	0.00	38.30

Segment Leq : 38.30 dBA

Results segment # 5: Richardson (day)

Source height = 1.49 m

ROAD (0.00 + 24.83 + 0.00) = 24.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-59	-43	0.66	63.99	0.00	-18.92	-11.85	0.00	-8.38	0.00	24.83

Segment Leq : 24.83 dBA

Results segment # 6: Teron (day)

Source height = 1.49 m

ROAD (0.00 + 23.67 + 0.00) = 23.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
22	60	0.66	62.74	0.00	-20.14	-7.65	0.00	-11.29	0.00	23.67

Segment Leq : 23.67 dBA

Total Leq All Segments: 44.81 dBA

```
Results segment # 1: March NB1 (night)
---------------------------------------

Source height = 1.49 m

ROAD (0.00 + 40.12 + 0.00) = 40.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -60    -10   0.57  65.26   0.00 -19.02  -6.12   0.00   0.00   0.00  40.12
-------------------------------------------------------------------------------

Segment Leq : 40.12 dBA


Results segment # 2: March SB1 (night)
---------------------------------------

Source height = 1.49 m

ROAD (0.00 + 41.71 + 0.00) = 41.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -61      0   0.57  65.81   0.00 -18.94  -5.17   0.00   0.00   0.00  41.71
-------------------------------------------------------------------------------

Segment Leq : 41.71 dBA


Results segment # 3: March NB2 (night)
---------------------------------------

Source height = 1.49 m

ROAD (0.00 + 40.13 + 0.00) = 40.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    22     66   0.57  65.26   0.00 -18.01  -7.11   0.00   0.00   0.00  40.13
-------------------------------------------------------------------------------

Segment Leq : 40.13 dBA
```

Results segment # 4: March SB2 (night)

Source height = 1.49 m

ROAD (0.00 + 40.28 + 0.00) = 40.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
32	68	0.57	65.81	0.00	-17.28	-8.26	0.00	0.00	0.00	40.28

Segment Leq : 40.28 dBA

Results segment # 5: Richardson (night)

Source height = 1.49 m

ROAD (0.00 + 26.78 + 0.00) = 26.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-59	-43	0.57	56.36	0.00	-17.90	-11.67	0.00	0.00	0.00	26.78

Segment Leq : 26.78 dBA

Results segment # 6: Teron (night)

Source height = 1.50 m

ROAD (0.00 + 28.55 + 0.00) = 28.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
22	60	0.57	55.13	0.00	-19.05	-7.53	0.00	0.00	0.00	28.55

Segment Leq : 28.55 dBA

Total Leq All Segments: 46.75 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 44.81
(NIGHT): 46.75

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 09:59:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR6.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 10582/920   veh/TimePeriod  *
Medium truck volume :   842/73    veh/TimePeriod  *
Heavy truck volume  :   601/52    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  13071
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -55.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 286.00 / 286.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 15409/1340  veh/TimePeriod  *
Medium truck volume :  1226/107   veh/TimePeriod  *
Heavy truck volume  :   876/76    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  19033
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -57.00 deg   47.60 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 271.00 / 271.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Station (day/night)
-------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Station (day/night)
-----------------------------------------
Angle1   Angle2           : -36.00 deg   23.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 389.01 / 389.01 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: Carling (day/night)
------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Carling (day/night)
-----------------------------------------
Angle1   Angle2           : -15.00 deg   27.60 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 441.80 / 441.80 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Results segment # 1: March NB (day)

Source height = 1.50 m

ROAD (0.00 + 45.81 + 0.00) = 45.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	45	0.66	71.89	0.00	-21.25	-2.95	0.00	-1.88	0.00	45.81

Segment Leq : 45.81 dBA

Results segment # 2: March SB (day)

Source height = 1.50 m

ROAD (0.00 + 47.98 + 0.00) = 47.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-57	48	0.66	73.52	0.00	-20.86	-2.79	0.00	-1.89	0.00	47.98

Segment Leq : 47.98 dBA

Results segment # 3: Station (day)

Source height = 1.49 m

ROAD (0.00 + 33.52 + 0.00) = 33.52 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-36	24	0.66	62.74	0.00	-23.47	-4.96	0.00	-0.80	0.00	33.52

Segment Leq : 33.52 dBA

Results segment # 4: Carling (day)

Source height = 1.49 m

ROAD (0.00 + 30.20 + 0.00) = 30.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-15	28	0.66	62.74	0.00	-24.39	-6.34	0.00	-1.82	0.00	30.20

Segment Leq : 30.20 dBA

Total Leq All Segments: 50.18 dBA

Results segment # 1: March NB (night)

Source height = 1.49 m

ROAD (0.00 + 41.28 + 0.00) = 41.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	45	0.57	64.28	0.00	-20.10	-2.89	0.00	0.00	0.00	41.28

Segment Leq : 41.28 dBA

Results segment # 2: March SB (night)

Source height = 1.49 m

ROAD (0.00 + 43.46 + 0.00) = 43.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-57	48	0.57	65.92	0.00	-19.74	-2.73	0.00	0.00	0.00	43.46

Segment Leq : 43.46 dBA

Results segment # 3: Station (night)

Source height = 1.50 m

ROAD (0.00 + 27.99 + 0.00) = 27.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-36	24	0.57	55.13	0.00	-22.20	-4.94	0.00	0.00	0.00	27.99

Segment Leq : 27.99 dBA

Results segment # 4: Carling (night)

Source height = 1.50 m

ROAD (0.00 + 25.73 + 0.00) = 25.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-15	28	0.57	55.13	0.00	-23.07	-6.33	0.00	0.00	0.00	25.73

Segment Leq : 25.73 dBA

Total Leq All Segments: 45.64 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.18
(NIGHT): 45.64

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:00:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR7.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 10581/920   veh/TimePeriod  *
Medium truck volume :   842/73    veh/TimePeriod  *
Heavy truck volume  :   601/52    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  13069
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -80.50 deg   81.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  79.00 / 79.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 10632/925   veh/TimePeriod  *
Medium truck volume :   846/74    veh/TimePeriod  *
Heavy truck volume  :   604/53    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  13133
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -79.00 deg   79.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  93.00 / 93.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Solandt 1 (day/night)
-----------------------------------------
Car traffic volume  :  4463/388   veh/TimePeriod  *
Medium truck volume :   355/31    veh/TimePeriod  *
Heavy truck volume  :   254/22    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):   5512
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Solandt 1 (day/night)
-------------------------------------------
Angle1   Angle2           :  50.40 deg   76.40 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  69.60 / 69.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: Solandt 2 (day/night)
-----------------------------------------
Car traffic volume  :  4463/388   veh/TimePeriod  *
Medium truck volume :   355/31    veh/TimePeriod  *
Heavy truck volume  :   254/22    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):   5512
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Solandt 2 (day/night)
-------------------------------------------
Angle1   Angle2           : -84.50 deg   66.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  44.00 / 44.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -84.00 deg   Angle2 : -31.00 deg
Barrier height            :   7.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

Results segment # 1: March NB (day)

Source height = 1.50 m

ROAD (0.00 + 58.34 + 0.00) = 58.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-80	81	0.66	71.89	0.00	-11.98	-1.57	0.00	0.00	0.00	58.34

Segment Leq : 58.34 dBA

Results segment # 2: March SB (day)

Source height = 1.50 m

ROAD (0.00 + 57.15 + 0.00) = 57.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-79	79	0.66	71.91	0.00	-13.15	-1.61	0.00	0.00	0.00	57.15

Segment Leq : 57.15 dBA

Results segment # 3: Solandt 1 (day)

Source height = 1.50 m

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
50	76	0.66	64.14	0.00	-11.06	-10.77	0.00	0.00	0.00	42.31

Segment Leq : 42.31 dBA

Results segment # 4: Solandt 2 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.36	81.36

ROAD (24.22 + 33.45 + 53.19) = 53.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-84	-84	0.66	64.14	0.00	-7.76	-32.16	0.00	0.00	0.00	24.22
-84	-31	0.21	64.14	0.00	-5.66	-5.99	0.00	0.00	-19.04	33.45
-31	66	0.66	64.14	0.00	-7.76	-3.19	0.00	0.00	0.00	53.19

Segment Leq : 53.24 dBA

Total Leq All Segments: 61.55 dBA

Results segment # 1: March NB (night)

Source height = 1.49 m

ROAD (0.00 + 51.51 + 0.00) = 51.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-80	81	0.57	64.28	0.00	-11.33	-1.44	0.00	0.00	0.00	51.51

Segment Leq : 51.51 dBA

Results segment # 2: March SB (night)

Source height = 1.50 m

ROAD (0.00 + 50.41 + 0.00) = 50.41 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-79	79	0.57	64.34	0.00	-12.44	-1.48	0.00	0.00	0.00	50.41

Segment Leq : 50.41 dBA

Results segment # 3: Solandt 1 (night)

Source height = 1.49 m

ROAD (0.00 + 35.62 + 0.00) = 35.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
50	76	0.57	56.53	0.00	-10.47	-10.45	0.00	0.00	0.00	35.62

Segment Leq : 35.62 dBA

Results segment # 4: Solandt 2 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	4.50	4.16	84.16

ROAD (17.93 + 29.59 + 46.07) = 46.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-84	-84	0.57	56.53	0.00	-7.34	-31.26	0.00	0.00	0.00	17.93
-84	-31	0.12	56.53	0.00	-5.24	-5.71	0.00	0.00	-16.00	29.59
-31	66	0.57	56.53	0.00	-7.34	-3.13	0.00	0.00	0.00	46.07

Segment Leq : 46.17 dBA

Total Leq All Segments: 54.72 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.55
(NIGHT): 54.72

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:00:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR8.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  :  9510/827   veh/TimePeriod  *
Medium truck volume :   756/66    veh/TimePeriod  *
Heavy truck volume  :   540/47    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11746
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -85.50 deg   76.40 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  40.50 / 40.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -86.00 deg   Angle2 : 76.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :   9.80 / 9.80   m
Source elevation          :  81.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  :  7674/667   veh/TimePeriod  *
Medium truck volume :   610/53    veh/TimePeriod  *
Heavy truck volume  :   436/38    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   9479
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -87.30 deg   82.40 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  22.70 / 22.70  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -87.00 deg   Angle2 : 82.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :   9.80 / 9.80   m
Source elevation          :  81.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Morgans WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans WB (day/night)
---------------------------------------------
Angle1   Angle2           : -48.00 deg   -8.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      5 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 277.40 / 277.40 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: Morgans EB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans EB (day/night)
---------------------------------------------
Angle1   Angle2           : -58.00 deg   -9.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      5 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 263.70 / 263.70 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 5: Shirleys WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys WB (day/night)
---------------------------------------------
Angle1   Angle2           :   2.30 deg   55.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 279.60 / 279.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   3.00 deg   Angle2 : 56.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :  67.00 / 67.00  m
Source elevation          :  80.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Road data, segment # 6: Shirleys EB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys EB (day/night)
---------------------------------------------
Angle1   Angle2           :   1.30 deg   57.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 267.70 / 267.70 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   1.00 deg   Angle2 : 58.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :  67.00 / 67.00  m
Source elevation          :  80.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: Terry WB (day/night)
-------------------------------------------
Car traffic volume  :  3729/324   veh/TimePeriod  *
Medium truck volume :   297/26    veh/TimePeriod  *
Heavy truck volume  :   212/18    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):   4606
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Terry WB (day/night)
------------------------------------------
Angle1   Angle2           : -72.50 deg   88.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  26.70 / 26.70  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -72.00 deg   Angle2 : 88.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :  10.80 / 10.80  m
Source elevation          :  83.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Road data, segment # 8: Terry EB (day/night)
-------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Terry EB (day/night)
------------------------------------------
Angle1   Angle2           : -71.00 deg   80.30 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  46.80 / 46.80  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -71.00 deg   Angle2 : 80.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :  10.80 / 10.80  m
Source elevation          :  83.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.01 !        84.01

ROAD (0.00 + 52.85 + 33.62) = 52.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -86     76   0.47  71.42   0.00  -6.32  -1.29   0.00   0.00 -10.96  52.85
-------------------------------------------------------------------------------
    76     76   0.66  71.42   0.00  -7.16 -30.64   0.00   0.00   0.00  33.62
-------------------------------------------------------------------------------

Segment Leq : 52.90 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        0.63 !        83.63

ROAD (31.12 + 53.92 + 35.25) = 54.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -87    -87   0.66  70.49   0.00  -2.99 -36.38   0.00   0.00   0.00  31.12
-------------------------------------------------------------------------------
   -87     82   0.47  70.49   0.00  -2.64  -1.20   0.00   0.00 -12.74  53.92
-------------------------------------------------------------------------------
    82     82   0.66  70.49   0.00  -2.99 -32.26   0.00   0.00   0.00  35.25
-------------------------------------------------------------------------------

Segment Leq : 54.00 dBA
```

```
Results segment # 3: Morgans WB (day)
-------------------------------------

Source height = 1.49 m

ROAD (0.00 + 21.05 + 0.00) = 21.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48     -8   0.66  60.95   0.00 -21.03  -6.95   0.00 -11.91   0.00  21.05
-------------------------------------------------------------------------------

Segment Leq : 21.05 dBA


Results segment # 4: Morgans EB (day)
-------------------------------------

Source height = 1.49 m

ROAD (0.00 + 22.07 + 0.00) = 22.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -58     -9   0.66  60.95   0.00 -20.67  -6.27   0.00 -11.94   0.00  22.07
-------------------------------------------------------------------------------

Segment Leq : 22.07 dBA


Results segment # 5: Shirleys WB (day)
--------------------------------------

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 !        1.50 !        0.78 !        83.78

ROAD (15.75 + 29.46 + 0.00) = 29.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2      3   0.66  60.95   0.00 -21.09 -24.10   0.00   0.00   0.00  15.75
-------------------------------------------------------------------------------
     3     56   0.47  60.95   0.00 -18.61  -5.68   0.00   0.00  -7.19  29.46
-------------------------------------------------------------------------------

Segment Leq : 29.65 dBA
```

Results segment # 6: Shirleys EB (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	0.75	83.75

ROAD (0.00 + 29.98 + 0.00) = 29.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
1	58	0.47	60.95	0.00	-18.34	-5.38	0.00	0.00	-7.25	29.98

Segment Leq : 29.98 dBA

Results segment # 7: Terry WB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	84.50

ROAD (30.23 + 48.48 + 23.63) = 48.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-72	-72	0.66	63.36	0.00	-4.16	-28.97	0.00	0.00	0.00	30.23
-72	88	0.47	63.36	0.00	-3.67	-1.35	0.00	0.00	-9.86	48.48
88	88	0.66	63.36	0.00	-4.16	-35.57	0.00	0.00	0.00	23.63

Segment Leq : 48.56 dBA

Results segment # 8: Terry EB (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	1.50	84.50

ROAD (0.00 + 44.63 + 21.70) = 44.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-71	80	0.47	62.74	0.00	-7.24	-1.46	0.00	0.00	-9.41	44.63
80	80	0.66	62.74	0.00	-8.20	-32.84	0.00	0.00	0.00	21.70

Segment Leq : 44.65 dBA

Total Leq All Segments: 57.40 dBA

Results segment # 1: March NB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	3.29	86.29

ROAD (0.00 + 55.61 + 26.98) = 55.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-86	76	0.38	63.83	0.00	-5.93	-1.15	0.00	0.00	-5.00	51.76*
-86	76	0.57	63.83	0.00	-6.77	-1.45	0.00	0.00	0.00	55.61
76	76	0.57	63.83	0.00	-6.77	-30.08	0.00	0.00	0.00	26.98

* Bright Zone !

Segment Leq : 55.61 dBA

Results segment # 2: March SB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	2.34	85.34

ROAD (24.86 + 52.42 + 28.60) = 52.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	-87	0.57	62.90	0.00	-2.83	-35.21	0.00	0.00	0.00	24.86
-87	82	0.38	62.90	0.00	-2.47	-1.04	0.00	0.00	-6.97	52.42
82	82	0.57	62.90	0.00	-2.83	-31.48	0.00	0.00	0.00	28.60

Segment Leq : 52.45 dBA

Results segment # 3: Morgans WB (night)

Source height = 1.50 m

ROAD (0.00 + 26.54 + 0.00) = 26.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	-8	0.57	53.34	0.00	-19.89	-6.90	0.00	0.00	0.00	26.54

Segment Leq : 26.54 dBA

```
Results segment # 4: Morgans EB (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 27.59 + 0.00) = 27.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -58     -9   0.57  53.34   0.00 -19.55  -6.19   0.00   0.00   0.00  27.59
-------------------------------------------------------------------------------

Segment Leq : 27.59 dBA


Results segment # 5: Shirleys WB (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 !        4.50 !        3.06 !        86.06

ROAD (9.28 + 25.24 + 0.00) = 25.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2      3   0.57  53.34   0.00 -19.95 -24.10   0.00   0.00   0.00   9.28
-------------------------------------------------------------------------------
     3     56   0.38  53.34   0.00 -17.47  -5.61   0.00   0.00  -5.01  25.24
-------------------------------------------------------------------------------

Segment Leq : 25.35 dBA
```

```
Results segment # 6: Shirleys EB (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 !        4.50 !        3.00 !        86.00

ROAD (0.00 + 25.79 + 0.00) = 25.79 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     1     58   0.38  53.34   0.00 -17.21  -5.30   0.00   0.00  -5.03  25.79
-------------------------------------------------------------------------------

Segment Leq : 25.79 dBA


Results segment # 7: Terry WB (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 !        4.50 !        3.28 !        86.28

ROAD (23.26 + 50.26 + 17.56) = 50.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -72    -72   0.57  55.70   0.00  -3.93 -28.51   0.00   0.00   0.00  23.26
-------------------------------------------------------------------------------
   -72     88   0.38  55.70   0.00  -3.44  -1.21   0.00   0.00  -5.00
46.05*
   -72     88   0.57  55.70   0.00  -3.93  -1.51   0.00   0.00   0.00  50.26
-------------------------------------------------------------------------------
    88     88   0.57  55.70   0.00  -3.93 -34.21   0.00   0.00   0.00  17.56
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 50.27 dBA
```

```
Results segment # 8: Terry EB (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 !        4.50 !        3.81 !        86.81

ROAD (0.00 + 45.77 + 15.22) = 45.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -71     80   0.38  55.13   0.00  -6.80  -1.33   0.00   0.00  -4.22
42.77*
   -71     80   0.57  55.13   0.00  -7.76  -1.60   0.00   0.00   0.00  45.77
-------------------------------------------------------------------------------
    80     80   0.57  55.13   0.00  -7.76 -32.15   0.00   0.00   0.00  15.22
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 45.77 dBA

Total Leq All Segments: 58.36 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 57.40
                           (NIGHT): 58.36
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:00:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR9.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  :  9510/827   veh/TimePeriod  *
Medium truck volume :   756/66    veh/TimePeriod  *
Heavy truck volume  :   540/47    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11746
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
------------------------------------------
Angle1   Angle2           : -88.00 deg   84.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  18.70 / 18.70  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -88.00 deg   Angle2 : 84.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  :  7674/667   veh/TimePeriod  *
Medium truck volume :   610/53    veh/TimePeriod  *
Heavy truck volume  :   436/38    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   9479
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -86.00 deg   85.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  35.08 / 35.08  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -86.00 deg   Angle2 : 85.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Morgans WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans WB (day/night)
---------------------------------------------
Angle1   Angle2           :  20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  53.40 / 53.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  20.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :  82.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Morgans EB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans EB (day/night)
---------------------------------------------
Angle1   Angle2           :  17.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  65.70 / 65.70  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  17.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :  82.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Shirleys WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys WB (day/night)
---------------------------------------------
Angle1   Angle2           : -82.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  53.40 / 53.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 20.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 6: Shirleys EB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys EB (day/night)
---------------------------------------------
Angle1   Angle2           : -81.00 deg   17.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  65.70 / 65.70  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 17.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: Terry WB (day/night)
-------------------------------------------
Car traffic volume  :  3729/324   veh/TimePeriod  *
Medium truck volume :   297/26    veh/TimePeriod  *
Heavy truck volume  :   212/18    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):   4606
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Terry WB (day/night)
------------------------------------------
Angle1   Angle2           : -20.00 deg   41.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      4 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 384.50 / 384.50 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 41.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  27.70 / 27.70  m
Source elevation          :  83.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 8: Terry EB (day/night)
-------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Terry EB (day/night)
------------------------------------------
Angle1   Angle2           : -20.00 deg   40.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      4 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 384.50 / 384.50 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 40.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  27.70 / 27.70  m
Source elevation          :  83.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        81.50

ROAD (0.00 + 58.81 + 0.00) = 58.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -88     84   0.51  71.42   0.00  -1.45  -1.24   0.00   0.00  -9.93  58.81
-------------------------------------------------------------------------------

Segment Leq : 58.81 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        81.50

ROAD (0.00 + 53.86 + 0.00) = 53.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -86     85   0.51  70.49   0.00  -5.57  -1.25   0.00   0.00  -9.81  53.86
-------------------------------------------------------------------------------

Segment Leq : 53.86 dBA
```

Results segment # 3: Morgans WB (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	2.14	82.14

ROAD (0.00 + 41.77 + 0.00) = 41.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
20	90	0.51	60.95	0.00	-8.33	-5.69	0.00	0.00	-5.16	41.77

Segment Leq : 41.77 dBA

Results segment # 4: Morgans EB (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	2.02	82.02

ROAD (0.00 + 40.56 + 0.00) = 40.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
17	90	0.51	60.95	0.00	-9.69	-5.44	0.00	0.00	-5.26	40.56

Segment Leq : 40.56 dBA

Results segment # 5: Shirleys WB (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	1.50	81.50

ROAD (40.80 + 41.74 + 0.00) = 44.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-82	-54	0.66	60.95	0.00	-9.15	-10.99	0.00	0.00	0.00	40.80
-54	20	0.51	60.95	0.00	-8.33	-4.13	0.00	0.00	-6.75	41.74

Segment Leq : 44.31 dBA

Results segment # 6: Shirleys EB (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	1.50	81.50

ROAD (39.22 + 40.32 + 0.00) = 42.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-81	-54	0.66	60.95	0.00	-10.65	-11.08	0.00	0.00	0.00	39.22
-54	17	0.51	60.95	0.00	-9.69	-4.31	0.00	0.00	-6.63	40.32

Segment Leq : 42.82 dBA

Results segment # 7: Terry WB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.72	81.72

ROAD (0.00 + 29.78 + 0.00) = 29.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	41	0.66	63.36	0.00	-23.39	-4.89	0.00	-5.30	0.00	29.78
-20	41	0.51	63.36	0.00	-21.27	-4.85	0.00	0.00	-5.57	31.67

Segment Leq : 29.78 dBA

Results segment # 8: Terry EB (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	1.72	81.72

ROAD (0.00 + 29.11 + 0.00) = 29.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	40	0.66	62.74	0.00	-23.39	-4.95	0.00	-5.30	0.00	29.11
-20	40	0.51	62.74	0.00	-21.28	-4.91	0.00	0.00	-5.57	30.99

Segment Leq : 29.11 dBA

Total Leq All Segments: 60.33 dBA

```
Results segment # 1: March NB (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 !        4.50 !        4.18 !        84.18

ROAD (0.00 + 60.99 + 0.00) = 60.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -88     84   0.42  63.83   0.00  -1.36  -1.08   0.00   0.00  -0.04
61.35*
   -88     84   0.57  63.83   0.00  -1.50  -1.34   0.00   0.00   0.00  60.99
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 60.99 dBA


Results segment # 2: March SB (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 !        4.50 !        4.33 !        84.33

ROAD (0.00 + 55.76 + 0.00) = 55.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -86     85   0.42  62.90   0.00  -5.24  -1.09   0.00   0.00  -0.01
56.56*
   -86     85   0.57  62.90   0.00  -5.79  -1.35   0.00   0.00   0.00  55.76
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.76 dBA
```

Results segment # 3: Morgans WB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.18	84.18

ROAD (0.00 + 38.84 + 0.00) = 38.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
20	90	0.42	53.34	0.00	-7.83	-5.45	0.00	0.00	-1.00	39.06*
20	90	0.57	53.34	0.00	-8.66	-5.84	0.00	0.00	0.00	38.84

* Bright Zone !

Segment Leq : 38.84 dBA

Results segment # 4: Morgans EB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.24	84.24

ROAD (0.00 + 37.68 + 0.00) = 37.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
17	90	0.42	53.34	0.00	-9.11	-5.21	0.00	0.00	-0.97	38.05*
17	90	0.57	53.34	0.00	-10.07	-5.58	0.00	0.00	0.00	37.68

* Bright Zone !

Segment Leq : 37.68 dBA

```
Results segment # 5: Shirleys WB (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 !        4.50 !        3.54 !        83.54

ROAD (34.07 + 40.52 + 0.00) = 41.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -82    -54   0.57  53.34   0.00  -8.66 -10.61   0.00   0.00   0.00  34.07
-------------------------------------------------------------------------------
   -54     20   0.42  53.34   0.00  -7.83  -4.08   0.00   0.00  -2.26
39.16*
   -54     20   0.57  53.34   0.00  -8.66  -4.16   0.00   0.00   0.00  40.52
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.41 dBA


Results segment # 6: Shirleys EB (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 !        4.50 !        3.72 !        83.72

ROAD (32.56 + 38.92 + 0.00) = 39.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -81    -54   0.57  53.34   0.00 -10.07 -10.70   0.00   0.00   0.00  32.56
-------------------------------------------------------------------------------
   -54     17   0.42  53.34   0.00  -9.11  -4.27   0.00   0.00  -1.29
38.67*
   -54     17   0.57  53.34   0.00 -10.07  -4.34   0.00   0.00   0.00  38.92
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.82 dBA
```

Results segment # 7: Terry WB (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	4.50	4.50	84.50

ROAD (0.00 + 28.71 + 0.00) = 28.71 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	41	0.42	55.70	0.00	-20.01	-4.82	0.00	0.00	-0.05	30.82*
-20	41	0.57	55.70	0.00	-22.12	-4.86	0.00	0.00	0.00	28.71

* Bright Zone !

Segment Leq : 28.71 dBA

```
Results segment # 8: Terry EB (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 !        4.50 !        4.50 !        84.50

ROAD (0.00 + 28.08 + 0.00) = 28.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     40   0.42  55.13   0.00 -20.01  -4.89   0.00   0.00  -0.04
30.19*
   -20     40   0.57  55.13   0.00 -22.12  -4.93   0.00   0.00   0.00  28.08
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 28.08 dBA

Total Leq All Segments: 62.23 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 60.33
                           (NIGHT): 62.23
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:01:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR10.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  :  9510/827   veh/TimePeriod  *
Medium truck volume :   756/66    veh/TimePeriod  *
Heavy truck volume  :   540/47    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11746
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -83.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  67.00 / 67.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -83.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  :  7674/667   veh/TimePeriod  *
Medium truck volume :   610/53    veh/TimePeriod  *
Heavy truck volume  :   436/38    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   9479
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -83.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  54.00 / 54.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -83.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Klondike (day/night)
-------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Klondike (day/night)
------------------------------------------
Angle1   Angle2           : -46.00 deg   46.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 347.00 / 347.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -46.00 deg   Angle2 : 46.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Morgans WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans WB (day/night)
---------------------------------------------
Angle1   Angle2           : -13.00 deg   74.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 241.00 / 241.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 5: Morgans EB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans EB (day/night)
---------------------------------------------
Angle1   Angle2           : -12.00 deg   73.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 252.00 / 252.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 6: Shirleys WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys WB (day/night)
---------------------------------------------
Angle1   Angle2           : -52.00 deg   -13.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 241.00 / 241.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 7: Shirleys EB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys EB (day/night)
---------------------------------------------
Angle1   Angle2           : -52.00 deg   -12.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 252.00 / 252.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        81.50

ROAD (0.00 + 42.78 + 0.00) = 42.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83     54   0.15  71.42   0.00  -7.48  -1.41   0.00   0.00 -19.76  42.78
-------------------------------------------------------------------------------

Segment Leq : 42.78 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        81.50

ROAD (0.00 + 43.86 + 0.00) = 43.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83     54   0.15  70.49   0.00  -6.40  -1.41   0.00   0.00 -18.82  43.86
-------------------------------------------------------------------------------

Segment Leq : 43.86 dBA
```

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

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 !        1.50 !        1.50 !        81.50

ROAD (0.00 + 24.39 + 0.00) = 24.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -46     46   0.15  62.74   0.00 -15.69  -2.99   0.00   0.00 -19.67  24.39
-------------------------------------------------------------------------------

Segment Leq : 24.39 dBA


Results segment # 4: Morgans WB (day)
-------------------------------------

Source height = 1.49 m

ROAD (0.00 + 22.72 + 0.00) = 22.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -13     74   0.66  60.95   0.00 -20.02  -3.91   0.00 -14.30   0.00  22.72
-------------------------------------------------------------------------------

Segment Leq : 22.72 dBA


Results segment # 5: Morgans EB (day)
-------------------------------------

Source height = 1.49 m

ROAD (0.00 + 22.35 + 0.00) = 22.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -12     73   0.66  60.95   0.00 -20.34  -4.00   0.00 -14.27   0.00  22.35
-------------------------------------------------------------------------------

Segment Leq : 22.35 dBA
```

```
Results segment # 6: Shirleys WB (day)
--------------------------------------

Source height = 1.49 m

ROAD (0.00 + 19.44 + 0.00) = 19.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52    -13   0.66  60.95   0.00 -20.02  -7.19   0.00 -14.30   0.00  19.44
-------------------------------------------------------------------------------

Segment Leq : 19.44 dBA


Results segment # 7: Shirleys EB (day)
--------------------------------------

Source height = 1.49 m

ROAD (0.00 + 19.27 + 0.00) = 19.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52    -12   0.66  60.95   0.00 -20.34  -7.07   0.00 -14.27   0.00  19.27
-------------------------------------------------------------------------------

Segment Leq : 19.27 dBA

Total Leq All Segments: 46.44 dBA


Results segment # 1: March NB (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 !        4.50 !        4.37 !        84.37

ROAD (0.00 + 36.89 + 0.00) = 36.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83     54   0.06  63.83   0.00  -6.89  -1.28   0.00   0.00 -18.78  36.89
-------------------------------------------------------------------------------

Segment Leq : 36.89 dBA
```

Results segment # 2: March SB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	3.78	83.78

ROAD (0.00 + 39.68 + 0.00) = 39.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-83	54	0.06	62.90	0.00	-5.90	-1.28	0.00	0.00	-16.04	39.68

Segment Leq : 39.68 dBA

Results segment # 3: Klondike (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.39	84.39

ROAD (0.00 + 22.38 + 0.00) = 22.38 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	46	0.06	55.13	0.00	-14.46	-2.94	0.00	0.00	-15.34	22.38

Segment Leq : 22.38 dBA

Results segment # 4: Morgans WB (night)

Source height = 1.50 m

ROAD (0.00 + 30.58 + 0.00) = 30.58 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	74	0.57	53.34	0.00	-18.93	-3.82	0.00	0.00	0.00	30.58

Segment Leq : 30.58 dBA

Results segment # 5: Morgans EB (night)

Source height = 1.50 m

ROAD (0.00 + 30.19 + 0.00) = 30.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-12	73	0.57	53.34	0.00	-19.24	-3.91	0.00	0.00	0.00	30.19

Segment Leq : 30.19 dBA

Results segment # 6: Shirleys WB (night)

Source height = 1.50 m

ROAD (0.00 + 27.28 + 0.00) = 27.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-52	-13	0.57	53.34	0.00	-18.93	-7.12	0.00	0.00	0.00	27.28

Segment Leq : 27.28 dBA

```
Results segment # 7: Shirleys EB (night)
-----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 27.10 + 0.00) = 27.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52    -12   0.57  53.34   0.00 -19.24  -7.00   0.00   0.00   0.00  27.10
-------------------------------------------------------------------------------

Segment Leq : 27.10 dBA

Total Leq All Segments: 42.45 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 46.44
                           (NIGHT): 42.45
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:01:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR11.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  :  9510/827   veh/TimePeriod  *
Medium truck volume :   756/66    veh/TimePeriod  *
Heavy truck volume  :   540/47    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11746
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -83.00 deg   82.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  64.00 / 64.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -59.00 deg   Angle2 : 82.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  :  7674/667   veh/TimePeriod  *
Medium truck volume :   610/53    veh/TimePeriod  *
Heavy truck volume  :   436/38    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   9479
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -84.00 deg   83.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  54.00 / 54.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -59.00 deg   Angle2 : 83.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Klondike (day/night)
------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Klondike (day/night)
------------------------------------------
Angle1   Angle2           : -69.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 176.00 / 176.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.41 !        81.41

ROAD (48.91 + 43.06 + 0.00) = 49.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83    -59   0.66  71.42   0.00 -10.46 -12.05   0.00   0.00   0.00  48.91
-------------------------------------------------------------------------------
   -59     82   0.15  71.42   0.00  -7.25  -1.29   0.00   0.00 -19.84  43.06
-------------------------------------------------------------------------------

Segment Leq : 49.91 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.39 !        81.39

ROAD (49.30 + 43.03 + 0.00) = 50.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -84    -59   0.66  70.49   0.00  -9.23 -11.96   0.00   0.00   0.00  49.30
-------------------------------------------------------------------------------
   -59     83   0.15  70.49   0.00  -6.40  -1.26   0.00   0.00 -19.80  43.03
-------------------------------------------------------------------------------

Segment Leq : 50.22 dBA
```

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

Source height = 1.49 m

ROAD (0.00 + 43.09 + 0.00) = 43.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -69     70   0.66  62.74   0.00 -17.75  -1.90   0.00   0.00   0.00  43.09
-------------------------------------------------------------------------------

Segment Leq : 43.09 dBA

Total Leq All Segments: 53.49 dBA


Results segment # 1: March NB (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 !        4.50 !        4.27 !        84.27

ROAD (42.32 + 36.99 + 0.00) = 43.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83    -59   0.57  63.83   0.00  -9.89 -11.62   0.00   0.00   0.00  42.32
-------------------------------------------------------------------------------
   -59     82   0.06  63.83   0.00  -6.68  -1.15   0.00   0.00 -19.01  36.99
-------------------------------------------------------------------------------

Segment Leq : 43.44 dBA
```

Results segment # 2: March SB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.22	84.22

ROAD (42.65 + 36.89 + 0.00) = 43.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-84	-59	0.57	62.90	0.00	-8.73	-11.52	0.00	0.00	0.00	42.65
-59	83	0.06	62.90	0.00	-5.90	-1.12	0.00	0.00	-18.99	36.89

Segment Leq : 43.67 dBA

Results segment # 3: Klondike (night)

Source height = 1.50 m

ROAD (0.00 + 36.53 + 0.00) = 36.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-69	70	0.57	55.13	0.00	-16.79	-1.80	0.00	0.00	0.00	36.53

Segment Leq : 36.53 dBA

Total Leq All Segments: 46.98 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.49
(NIGHT): 46.98

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:01:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR12.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  :  9510/827   veh/TimePeriod  *
Medium truck volume :   756/66    veh/TimePeriod  *
Heavy truck volume  :   540/47    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11746
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -54.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 391.00 / 391.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  86.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  :  7674/667   veh/TimePeriod  *
Medium truck volume :   610/53    veh/TimePeriod  *
Heavy truck volume  :   436/38    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   9479
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -55.00 deg   56.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 284.00 / 284.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -55.00 deg   Angle2 : 56.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  86.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Klondike1 (day/night)
-----------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Klondike1 (day/night)
-------------------------------------------
Angle1   Angle2           : -87.00 deg   -24.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -87.00 deg   Angle2 : -24.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   6.00 / 6.00   m
Source elevation          :  86.00 m
Receiver elevation        :  86.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Klondike2 (day/night)
---------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Klondike2 (day/night)
-------------------------------------------
Angle1   Angle2           : -24.00 deg   87.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 87.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  86.00 m
Receiver elevation        :  86.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

Results segment # 1: March NB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.44	87.44

ROAD (0.00 + 32.81 + 0.00) = 32.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-54	54	0.15	71.42	0.00	-16.29	-2.32	0.00	0.00	-20.00	32.81

Segment Leq : 32.81 dBA

Results segment # 2: March SB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.42	87.42

ROAD (0.00 + 33.59 + 0.00) = 33.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	56	0.15	70.49	0.00	-14.69	-2.21	0.00	0.00	-20.00	33.59

Segment Leq : 33.59 dBA

Results segment # 3: Klondike1 (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	1.50	87.50

ROAD (0.00 + 34.87 + 0.00) = 34.87 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	-24	0.15	62.74	0.00	-4.51	-5.05	0.00	0.00	-18.31	34.87

Segment Leq : 34.87 dBA

Results segment # 4: Klondike2 (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	1.50	87.50

ROAD (47.40 + 35.54 + 0.00) = 47.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-24	0	0.66	62.74	0.00	-6.51	-8.84	0.00	0.00	0.00	47.40
0	87	0.15	62.74	0.00	-4.51	-3.52	0.00	0.00	-19.18	35.54

Segment Leq : 47.67 dBA

Total Leq All Segments: 48.18 dBA

```
Results segment # 1: March NB (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 !        4.50 !        4.42 !        90.42

ROAD (0.00 + 26.78 + 0.00) = 26.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     54   0.06  63.83   0.00 -15.01  -2.26   0.00   0.00 -19.78  26.78
-------------------------------------------------------------------------------

Segment Leq : 26.78 dBA


Results segment # 2: March SB (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 !        4.50 !        4.38 !        90.38

ROAD (0.00 + 27.44 + 0.00) = 27.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -55     56   0.06  62.90   0.00 -13.54  -2.14   0.00   0.00 -19.78  27.44
-------------------------------------------------------------------------------

Segment Leq : 27.44 dBA
```

Results segment # 3: Klondike1 (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.01	90.01

ROAD (0.00 + 30.31 + 0.00) = 30.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	-24	0.06	55.13	0.00	-4.16	-4.76	0.00	0.00	-15.90	30.31

Segment Leq : 30.31 dBA

Results segment # 4: Klondike2 (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.26	90.26

ROAD (40.15 + 29.95 + 0.00) = 40.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-24	0	0.57	55.13	0.00	-6.16	-8.82	0.00	0.00	0.00	40.15
0	87	0.06	55.13	0.00	-4.16	-3.31	0.00	0.00	-17.71	29.95

Segment Leq : 40.54 dBA

Total Leq All Segments: 41.28 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 48.18
(NIGHT): 41.28

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:01:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR13.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  :  9510/827   veh/TimePeriod  *
Medium truck volume :   756/66    veh/TimePeriod  *
Heavy truck volume  :   540/47    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11746
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -71.00 deg   71.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 166.00 / 166.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  :  7674/667   veh/TimePeriod  *
Medium truck volume :   610/53    veh/TimePeriod  *
Heavy truck volume  :   436/38    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   9479
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -69.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 167.10 / 167.10 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Klondike (day/night)
-------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Klondike (day/night)
------------------------------------------
Angle1   Angle2           : -85.00 deg   85.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  38.10 / 38.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  57.00 deg   Angle2 : 85.00 deg
Barrier height            :   4.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  76.00 m
Receiver elevation        :  76.00 m
Barrier elevation         :  76.00 m
Reference angle           :   0.00
```

Results segment # 1: March NB (day)

Source height = 1.50 m

ROAD (0.00 + 52.25 + 0.00) = 52.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-71	71	0.66	71.42	0.00	-17.33	-1.84	0.00	0.00	0.00	52.25

Segment Leq : 52.25 dBA

Results segment # 2: March SB (day)

Source height = 1.50 m

ROAD (0.00 + 51.22 + 0.00) = 51.22 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-69	70	0.66	70.49	0.00	-17.38	-1.90	0.00	0.00	0.00	51.22

Segment Leq : 51.22 dBA

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

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 !        1.50 !        1.50 !        77.50

ROAD (54.06 + 33.70 + 0.00) = 54.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -85     57   0.66  62.74   0.00  -6.72  -1.96   0.00   0.00   0.00  54.06
-------------------------------------------------------------------------------
    57     85   0.39  62.74   0.00  -5.63 -10.10   0.00   0.00 -13.31  33.70
-------------------------------------------------------------------------------

Segment Leq : 54.10 dBA

Total Leq All Segments: 57.46 dBA


Results segment # 1: March NB (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 45.70 + 0.00) = 45.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -71     71   0.57  63.83   0.00 -16.39  -1.74   0.00   0.00   0.00  45.70
-------------------------------------------------------------------------------

Segment Leq : 45.70 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 44.66 + 0.00) = 44.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -69     70   0.57  62.90   0.00 -16.44  -1.80   0.00   0.00   0.00  44.66
-------------------------------------------------------------------------------

Segment Leq : 44.66 dBA


Results segment # 3: Klondike (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 !        4.50 !        4.26 !        80.26

ROAD (46.92 + 35.05 + 0.00) = 47.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -85     57   0.57  55.13   0.00  -6.36  -1.86   0.00   0.00   0.00  46.92
-------------------------------------------------------------------------------
    57     85   0.30  55.13   0.00  -5.26  -9.65   0.00   0.00  -5.17  35.05
-------------------------------------------------------------------------------

Segment Leq : 47.19 dBA

Total Leq All Segments: 50.75 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 57.46
                           (NIGHT): 50.75
```

APPENDIX B

NOISE MODELLING OF FUTURE CONDITIONS
INPUT AND OUTPUT DATA
STAMSON 5.04

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:03:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por1.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 28943/2517  veh/TimePeriod  *
Medium truck volume :  2302/200   veh/TimePeriod  *
Heavy truck volume  :  1645/143   veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35750
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 245.00 / 245.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  :  9310/810   veh/TimePeriod  *
Medium truck volume :   741/64    veh/TimePeriod  *
Heavy truck volume  :   529/46    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 216.00 / 216.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: HW417-WB (day/night)
-------------------------------------------
Car traffic volume  : 43698/3800  veh/TimePeriod  *
Medium truck volume :  3476/302   veh/TimePeriod  *
Heavy truck volume  :  2483/216   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):  53975
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: HW417-WB (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 326.80 / 326.80 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  18.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  94.00 m
Receiver elevation        :  94.00 m
Barrier elevation         :  94.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: HW417-EB (day/night)
-------------------------------------------
Car traffic volume  : 43698/3800  veh/TimePeriod  *
Medium truck volume :  3476/302   veh/TimePeriod  *
Heavy truck volume  :  2483/216   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):  53975
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: HW417-EB (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 369.70 / 369.70 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  18.00 deg   Angle2 : 90.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  94.00 m
Receiver elevation        :  94.00 m
Barrier elevation         :  94.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Campeau 1 (day/night)
-----------------------------------------------
Car traffic volume  : 27219/2367  veh/TimePeriod  *
Medium truck volume :  2165/188   veh/TimePeriod  *
Heavy truck volume  :  1547/134   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):  33620
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Campeau 1 (day/night)
-------------------------------------------
Angle1   Angle2           : -77.00 deg   84.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  46.30 / 46.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 6: Campeau 2 (day/night)
----------------------------------------------
Car traffic volume  : 27219/2367  veh/TimePeriod  *
Medium truck volume :  2165/188   veh/TimePeriod  *
Heavy truck volume  :  1547/134   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):  33620
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Campeau 2 (day/night)
-------------------------------------------
Angle1   Angle2           : -69.50 deg   -31.40 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 178.00 / 178.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : -31.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  94.50 m
Receiver elevation        :  94.00 m
Barrier elevation         :  94.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: Teron (day/night)
-----------------------------------------
Car traffic volume  :  7084/616   veh/TimePeriod  *
Medium truck volume :   564/49    veh/TimePeriod  *
Heavy truck volume  :   403/35    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):   8750
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Teron (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   -82.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  16.50 / 16.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Results segment # 1: March NB (day)

Source height = 1.50 m

ROAD (0.00 + 52.37 + 0.00) = 52.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	76.26	0.00	-20.14	-1.46	0.00	-2.30	0.00	52.37

Segment Leq : 52.37 dBA

Results segment # 2: March SB (day)

Source height = 1.50 m

ROAD (0.00 + 48.33 + 0.00) = 48.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	71.33	0.00	-19.23	-1.46	0.00	-2.32	0.00	48.33

Segment Leq : 48.33 dBA

Results segment # 3: HW417-WB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	95.50

ROAD (54.45 + 44.43 + 0.00) = 54.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	18	0.66	80.07	0.00	-22.21	-3.41	0.00	0.00	0.00	54.45
18	90	0.00	80.07	0.00	-13.38	-3.98	0.00	0.00	-18.27	44.43

Segment Leq : 54.86 dBA

```
Results segment # 4: HW417-EB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        95.50

ROAD (53.56 + 43.90 + 0.00) = 54.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     18   0.66  80.07   0.00 -23.10  -3.41   0.00   0.00   0.00  53.56
-------------------------------------------------------------------------------
    18     90   0.00  80.07   0.00 -13.92  -3.98   0.00   0.00 -18.27  43.90
-------------------------------------------------------------------------------

Segment Leq : 54.00 dBA


Results segment # 5: Campeau 1 (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.79 + 0.00) = 63.79 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -77     84   0.66  73.50   0.00  -8.13  -1.59   0.00   0.00   0.00  63.79
-------------------------------------------------------------------------------

Segment Leq : 63.79 dBA
```

Results segment # 6: Campeau 2 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.51	95.51

ROAD (0.00 + 36.12 + 0.00) = 36.12 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	-31	0.00	73.50	0.00	-10.74	-6.64	0.00	0.00	-20.00	36.12

Segment Leq : 36.12 dBA

Results segment # 7: Teron (day)

Source height = 1.50 m

ROAD (0.00 + 43.62 + 0.00) = 43.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-82	0.66	66.14	0.00	-0.69	-21.83	0.00	0.00	0.00	43.62

Segment Leq : 43.62 dBA

Total Leq All Segments: 65.08 dBA

Results segment # 1: March NB (night)

Source height = 1.50 m

ROAD (0.00 + 48.31 + 0.00) = 48.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	68.66	0.00	-19.05	-1.30	0.00	0.00	0.00	48.31

Segment Leq : 48.31 dBA

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

Source height = 1.50 m

ROAD (0.00 + 44.24 + 0.00) = 44.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  63.73   0.00 -18.19  -1.30   0.00   0.00   0.00  44.24
-------------------------------------------------------------------------------

Segment Leq : 44.24 dBA


Results segment # 3: HW417-WB (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 !        4.50 !        4.47 !        98.47

ROAD (48.17 + 37.55 + 0.00) = 48.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     18   0.57  72.47   0.00 -21.01  -3.28   0.00   0.00   0.00  48.17
-------------------------------------------------------------------------------
    18     90   0.00  72.47   0.00 -13.38  -3.98   0.00   0.00 -17.56  37.55
-------------------------------------------------------------------------------

Segment Leq : 48.53 dBA
```

```
Results segment # 4: HW417-EB (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 !        4.50 !        4.48 !        98.48

ROAD (47.33 + 37.02 + 0.00) = 47.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     18   0.57  72.47   0.00 -21.85  -3.28   0.00   0.00   0.00  47.33
-------------------------------------------------------------------------------
    18     90   0.00  72.47   0.00 -13.92  -3.98   0.00   0.00 -17.55  37.02
-------------------------------------------------------------------------------

Segment Leq : 47.72 dBA


Results segment # 5: Campeau 1 (night)
--------------------------------------

Source height = 1.49 m

ROAD (0.00 + 56.75 + 0.00) = 56.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -77     84   0.57  65.89   0.00  -7.69  -1.46   0.00   0.00   0.00  56.75
-------------------------------------------------------------------------------

Segment Leq : 56.75 dBA
```

Results segment # 6: Campeau 2 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	4.50	4.46	98.46

ROAD (0.00 + 28.51 + 0.00) = 28.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	-31	0.00	65.89	0.00	-10.74	-6.64	0.00	0.00	-20.00	28.51

Segment Leq : 28.51 dBA

Results segment # 7: Teron (night)

Source height = 1.50 m

ROAD (0.00 + 37.09 + 0.00) = 37.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-82	0.57	58.54	0.00	-0.65	-20.80	0.00	0.00	0.00	37.09

Segment Leq : 37.09 dBA

Total Leq All Segments: 58.47 dBA

```
RT/Custom data, segment # 1: Transitway 1 (day/night)
-----------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway 1 (day/night)
----------------------------------------------
Angle1   Angle2           : -53.00 deg   34.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 146.00 / 146.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


RT/Custom data, segment # 2: Transitway 2 (day/night)
-----------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 2: Transitway 2 (day/night)
----------------------------------------------
Angle1   Angle2           : -61.00 deg   -20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 2
House density             :     20 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 229.00 / 229.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -61.00 deg   Angle2 : -20.00 deg
Barrier height            :   2.00 m
Barrier receiver distance : 187.90 / 187.90 m
Source elevation          :  92.00 m
Receiver elevation        :  94.00 m
Barrier elevation         :  92.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

RT/Custom (0.00 + 39.72 + 0.00) = 39.72 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -53     34   0.66  59.61 -16.41  -3.49   0.00   0.00   0.00  39.72
-------------------------------------------------------------------------

Segment Leq : 39.72 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        1.04 !        93.04

RT/Custom (0.00 + 28.34 + 0.00) = 28.34 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -61    -20   0.66  59.61 -19.65  -7.29   0.00  -2.31   0.00  30.37
   -61    -20   0.57  59.61 -18.58  -7.17   0.00   0.00  -5.52  28.34
-------------------------------------------------------------------------

Segment Leq : 28.34 dBA

Total Leq All Segments: 40.03 dBA
```

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

Source height = 0.50 m

RT/Custom (0.00 + 33.36 + 0.00) = 33.36 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -53     34   0.60  52.62 -15.81  -3.46   0.00   0.00   0.00  33.36
-------------------------------------------------------------------------

Segment Leq : 33.36 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        4.50 !        1.58 !        93.58

RT/Custom (0.00 + 22.94 + 0.00) = 22.94 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -61    -20   0.60  52.62 -18.94  -7.21   0.00  -2.31   0.00  24.16
   -61    -20   0.48  52.62 -17.52  -7.06   0.00   0.00  -5.10  22.94
-------------------------------------------------------------------------

Segment Leq : 22.94 dBA

Total Leq All Segments: 33.74 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 65.09
                           (NIGHT): 58.49
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:03:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR2.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 28943/2517  veh/TimePeriod  *
Medium truck volume :  2302/200   veh/TimePeriod  *
Heavy truck volume  :  1645/143   veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35750
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 140.00 / 140.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance : 100.70 / 100.70 m
Source elevation          :  90.00 m
Receiver elevation        :  89.00 m
Barrier elevation         :  90.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  :  9310/810   veh/TimePeriod  *
Medium truck volume :   741/64    veh/TimePeriod  *
Heavy truck volume  :   529/46    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 112.00 / 112.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance : 100.70 / 80.00  m
Source elevation          :  90.00 m
Receiver elevation        :  89.00 m
Barrier elevation         :  90.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Teron (day/night)
-----------------------------------------
Car traffic volume  :  7084/616   veh/TimePeriod  *
Medium truck volume :   564/49    veh/TimePeriod  *
Heavy truck volume  :   403/35    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):   8750
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Teron (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 324.00 / 327.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   4.50 m
Barrier receiver distance :   3.00 / 6.00   m
Source elevation          :  92.00 m
Receiver elevation        :  89.00 m
Barrier elevation         :  89.00 m
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.22 !        91.22

ROAD (0.00 + 54.35 + 0.00) = 54.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  76.26   0.00 -16.10  -1.46   0.00  -4.35   0.00  54.35
   -90     90   0.54  76.26   0.00 -14.94  -1.25   0.00   0.00  -5.35  54.72
-------------------------------------------------------------------------------

Segment Leq : 54.35 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.39 !        91.39

ROAD (0.00 + 50.96 + 0.00) = 50.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.33   0.00 -14.49  -1.46   0.00  -4.43   0.00  50.96
   -90     90   0.54  71.33   0.00 -13.45  -1.25   0.00   0.00  -5.57  51.07
-------------------------------------------------------------------------------

Segment Leq : 50.96 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.53 !        90.53

ROAD (0.00 + 32.34 + 0.00) = 32.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.39  66.14   0.00 -18.55  -0.96   0.00   0.00 -14.29  32.34
-------------------------------------------------------------------------------

Segment Leq : 32.34 dBA

Total Leq All Segments: 56.01 dBA


Results segment # 1: March NB (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 !        4.50 !        2.06 !        92.06

ROAD (0.00 + 52.13 + 0.00) = 52.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.45  68.66   0.00 -14.07  -1.08   0.00   0.00  -5.00
48.52*
   -90     90   0.57  68.66   0.00 -15.23  -1.30   0.00   0.00   0.00  52.13
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 52.13 dBA
```

Results segment # 2: March SB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	2.07	92.07

ROAD (0.00 + 48.72 + 0.00) = 48.72 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.45	63.73	0.00	-12.66	-1.08	0.00	0.00	-5.00	44.99*
-90	90	0.57	63.73	0.00	-13.71	-1.30	0.00	0.00	0.00	48.72

* Bright Zone !

Segment Leq : 48.72 dBA

Results segment # 3: Teron (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.50	93.50

ROAD (0.00 + 35.37 + 0.00) = 35.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.30	58.54	0.00	-17.40	-0.77	0.00	0.00	-5.00	35.37

Segment Leq : 35.37 dBA

Total Leq All Segments: 53.82 dBA

```
RT/Custom data, segment # 1: Transitway (day/night)
-------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     70 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 125.00 / 125.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance : 100.70 / 100.70 m
Source elevation          :  90.00 m
Receiver elevation        :  89.00 m
Barrier elevation         :  90.00 m
Reference angle           :   0.00


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        0.50 !        90.50

RT/Custom (0.00 + 37.28 + 0.00) = 37.28 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.66  59.61 -15.29  -1.46   0.00  -4.39   0.00  38.48
   -90     90   0.57  59.61 -14.46  -1.30   0.00   0.00  -6.57  37.28
-------------------------------------------------------------------------

Segment Leq : 37.28 dBA

Total Leq All Segments: 37.28 dBA
```

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

Source height = 0.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        4.50 !        1.08 !        91.08

RT/Custom (0.00 + 32.15 + 0.00) = 32.15 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.60  52.62 -14.73  -1.35   0.00  -4.39   0.00  32.15
   -90     90   0.48  52.62 -13.63  -1.14   0.00   0.00  -5.66  32.19
-------------------------------------------------------------------------

Segment Leq : 32.15 dBA

Total Leq All Segments: 32.15 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 56.06
                           (NIGHT): 53.85
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:03:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR3.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB1 (day/night)
----------------------------------------------
Car traffic volume  : 19430/1690  veh/TimePeriod  *
Medium truck volume :  1546/134   veh/TimePeriod  *
Heavy truck volume  :  1104/96    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  24000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB1 (day/night)
-------------------------------------------
Angle1   Angle2           : -77.50 deg   -3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 117.00 / 117.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -77.00 deg   Angle2 : -3.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  86.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March NB2 (day/night)
-----------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March NB2 (day/night)
-------------------------------------------
Angle1   Angle2           : -56.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  66.00 / 66.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -56.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  89.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  88.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: March SB1 (day/night)
-----------------------------------------
Car traffic volume  :  8906/774   veh/TimePeriod  *
Medium truck volume :   708/62    veh/TimePeriod  *
Heavy truck volume  :   506/44    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: March SB1 (day/night)
-------------------------------------------
Angle1   Angle2           : -78.50 deg   -3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  90.00 / 90.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -78.00 deg   Angle2 : -3.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  61.00 / 61.00  m
Source elevation          :  86.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: March SB2 (day/night)
-----------------------------------------------
Car traffic volume  :  9310/810   veh/TimePeriod  *
Medium truck volume :   741/64    veh/TimePeriod  *
Heavy truck volume  :   529/46    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: March SB2 (day/night)
-------------------------------------------
Angle1   Angle2           : -66.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  39.00 / 39.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -66.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  89.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  88.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Herzberg (day/night)
-------------------------------------------
Car traffic volume  : 10525/915   veh/TimePeriod  *
Medium truck volume :   837/73    veh/TimePeriod  *
Heavy truck volume  :   598/52    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):  13000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Herzberg (day/night)
-----------------------------------------
Angle1   Angle2           : -85.00 deg   -67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  39.10 / 39.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -85.00 deg   Angle2 : -67.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  86.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  88.00 m
Reference angle           :   0.00
```

```
Results segment # 1: March NB1 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        3.33 !        89.33

ROAD (29.83 + 54.83 + 0.00) = 54.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -78    -77   0.66  74.53   0.00 -14.81 -29.89   0.00   0.00   0.00  29.83
-------------------------------------------------------------------------------
   -77     -3   0.48  74.53   0.00 -13.20  -4.63   0.00   0.00  -4.77
51.92*
   -77     -3   0.66  74.53   0.00 -14.81  -4.89   0.00   0.00   0.00  54.83
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 54.85 dBA


Results segment # 2: March NB2 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.70 !        89.70

ROAD (0.00 + 57.57 + 0.00) = 57.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -56     90   0.48  76.17   0.00  -9.52  -1.73   0.00   0.00  -7.35  57.57
-------------------------------------------------------------------------------

Segment Leq : 57.57 dBA
```

```
Results segment # 3: March SB1 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        2.14 !        88.14

ROAD (28.10 + 49.37 + 0.00) = 49.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -78    -78   0.66  71.14   0.00 -12.92 -30.12   0.00   0.00   0.00  28.10
-------------------------------------------------------------------------------
   -78     -3   0.48  71.14   0.00 -11.52  -4.60   0.00   0.00  -5.66  49.37
-------------------------------------------------------------------------------

Segment Leq : 49.40 dBA


Results segment # 4: March SB2 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.83 !        89.83

ROAD (0.00 + 56.46 + 0.00) = 56.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -66     90   0.48  71.33   0.00  -6.14  -1.48   0.00   0.00  -7.25  56.46
-------------------------------------------------------------------------------

Segment Leq : 56.46 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        0.83 !        88.83

ROAD (0.00 + 41.06 + 0.00) = 41.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -85    -67   0.48  67.86   0.00  -6.16 -13.05   0.00   0.00  -7.59  41.06
-------------------------------------------------------------------------------

Segment Leq : 41.06 dBA

Total Leq All Segments: 61.52 dBA


Results segment # 1: March NB1 (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 !        4.50 !        6.07 !        92.07

ROAD (23.62 + 48.16 + 0.00) = 48.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -78    -77   0.57  66.93   0.00 -14.01 -29.30   0.00   0.00   0.00  23.62
-------------------------------------------------------------------------------
   -77     -3   0.39  66.93   0.00 -12.40  -4.50   0.00   0.00   0.00
50.03*
   -77     -3   0.57  66.93   0.00 -14.01  -4.76   0.00   0.00   0.00  48.16
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.17 dBA
```

```
Results segment # 2: March NB2 (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 !        4.50 !        4.11 !        92.11

ROAD (0.00 + 56.61 + 0.00) = 56.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -56     90   0.39  68.57   0.00  -8.94  -1.60   0.00   0.00  -2.00
56.02*
   -56     90   0.57  68.57   0.00 -10.10  -1.85   0.00   0.00   0.00  56.61
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.61 dBA


Results segment # 3: March SB1 (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 !        4.50 !        3.11 !        89.11

ROAD (21.83 + 46.60 + 0.00) = 46.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -78    -78   0.57  63.55   0.00 -12.22 -29.50   0.00   0.00   0.00  21.83
-------------------------------------------------------------------------------
   -78     -3   0.39  63.55   0.00 -10.82  -4.46   0.00   0.00  -4.99
43.28*
   -78     -3   0.57  63.55   0.00 -12.22  -4.73   0.00   0.00   0.00  46.60
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.61 dBA
```

```
Results segment # 4: March SB2 (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 !        4.50 !        3.83 !        91.83

ROAD (0.00 + 55.60 + 0.00) = 55.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -66     90   0.39  63.73   0.00  -5.77  -1.35   0.00   0.00  -3.22
53.40*
   -66     90   0.57  63.73   0.00  -6.52  -1.61   0.00   0.00   0.00  55.60
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.60 dBA


Results segment # 5: Herzberg (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 !        4.50 !        2.84 !        90.84

ROAD (0.00 + 36.97 + 0.00) = 36.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -85    -67   0.39  60.26   0.00  -5.78 -12.49   0.00   0.00  -5.02  36.97
-------------------------------------------------------------------------------

Segment Leq : 36.97 dBA

Total Leq All Segments: 59.72 dBA
```

```
RT/Custom data, segment # 1: Transitway 1 (day/night)
-----------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway 1 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -8.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 105.00 / 105.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -77.00 deg   Angle2 : -8.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  86.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00


RT/Custom data, segment # 2: Transitway 2 (day/night)
-----------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 2: Transitway 2 (day/night)
-----------------------------------------------
Angle1   Angle2           : -60.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  52.00 / 52.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -56.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  89.00 m
Receiver elevation        :  88.00 m
Barrier elevation         :  88.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        3.21 !        89.21

RT/Custom (27.71 + 40.31 + 0.00) = 40.54 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -77   0.66  59.61 -14.03 -17.88   0.00   0.00   0.00  27.71
-------------------------------------------------------------------------
   -77     -8   0.51  59.61 -12.76  -5.04   0.00   0.00  -4.91  36.90*
   -77     -8   0.66  59.61 -14.03  -5.27   0.00   0.00   0.00  40.31
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.54 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        1.50 !        89.50

RT/Custom (32.30 + 41.65 + 0.00) = 42.12 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -60    -56   0.66  59.61  -8.96 -18.35   0.00   0.00   0.00  32.30
-------------------------------------------------------------------------
   -56     90   0.51  59.61  -8.15  -1.77   0.00   0.00  -8.04  41.65
-------------------------------------------------------------------------

Segment Leq : 42.12 dBA

Total Leq All Segments: 44.41 dBA
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        4.50 !        5.93 !        91.93

RT/Custom (21.77 + 33.92 + 0.00) = 34.18 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -77   0.60  52.62 -13.52 -17.33   0.00   0.00   0.00  21.77
-------------------------------------------------------------------------
   -77     -8   0.42  52.62 -12.00  -4.90   0.00   0.00   0.00  35.72*
   -77     -8   0.60  52.62 -13.52  -5.18   0.00   0.00   0.00  33.92
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 34.18 dBA
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        4.50 !        3.75 !        91.75

RT/Custom (25.80 + 42.09 + 0.00) = 42.20 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -60    -56   0.60  52.62  -8.64 -18.19   0.00   0.00   0.00  25.80
-------------------------------------------------------------------------
   -56     90   0.42  52.62  -7.67  -1.65   0.00   0.00  -3.76  39.55*
   -56     90   0.60  52.62  -8.64  -1.89   0.00   0.00   0.00  42.09
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.20 dBA

Total Leq All Segments: 42.84 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 61.60
                           (NIGHT): 59.81
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:04:03
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR4.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 19430/1690  veh/TimePeriod  *
Medium truck volume :  1546/134   veh/TimePeriod  *
Heavy truck volume  :  1104/96    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  24000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -73.00 deg   76.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 118.00 / 118.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -46.00 deg   Angle2 : 76.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  83.90 / 83.90  m
Source elevation          :  90.00 m
Receiver elevation        :  90.00 m
Barrier elevation         :  90.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  :  8906/774   veh/TimePeriod  *
Medium truck volume :   708/62    veh/TimePeriod  *
Heavy truck volume  :   506/44    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -74.00 deg   78.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  92.00 / 92.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -46.00 deg   Angle2 : 78.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  83.90 / 83.90  m
Source elevation          :  90.00 m
Receiver elevation        :  90.00 m
Barrier elevation         :  90.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Teron (day/night)
------------------------------------------
Car traffic volume  :  7084/616   veh/TimePeriod  *
Medium truck volume :   564/49    veh/TimePeriod  *
Heavy truck volume  :   403/35    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):   8750
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Teron (day/night)
---------------------------------------
Angle1   Angle2           : -73.60 deg   66.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 136.40 / 136.40 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        91.50

ROAD (49.42 + 52.38 + 0.00) = 54.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -73    -46   0.66  74.53   0.00 -14.87 -10.24   0.00   0.00   0.00  49.42
-------------------------------------------------------------------------------
   -46     76   0.48  74.53   0.00 -13.26  -2.22   0.00   0.00  -6.67  52.38
-------------------------------------------------------------------------------

Segment Leq : 54.16 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        91.50

ROAD (47.94 + 48.19 + 0.00) = 51.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -74    -46   0.66  71.14   0.00 -13.08 -10.13   0.00   0.00   0.00  47.94
-------------------------------------------------------------------------------
   -46     78   0.48  71.14   0.00 -11.66  -2.18   0.00   0.00  -9.12  48.19
-------------------------------------------------------------------------------

Segment Leq : 51.07 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 39.78 + 0.00) = 39.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -74     66   0.66  66.14   0.00 -15.91  -1.89   0.00  -8.56   0.00  39.78
-------------------------------------------------------------------------------

Segment Leq : 39.78 dBA

Total Leq All Segments: 56.00 dBA


Results segment # 1: March NB (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 !        4.50 !        2.36 !        92.36

ROAD (42.89 + 47.01 + 0.00) = 48.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -73    -46   0.57  66.93   0.00 -14.07  -9.97   0.00   0.00   0.00  42.89
-------------------------------------------------------------------------------
   -46     76   0.39  66.93   0.00 -12.45  -2.13   0.00   0.00  -5.34  47.01
-------------------------------------------------------------------------------

Segment Leq : 48.43 dBA
```

Results segment # 2: March SB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	1.76	91.76

ROAD (41.33 + 42.40 + 0.00) = 44.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-74	-46	0.57	63.55	0.00	-12.37	-9.86	0.00	0.00	0.00	41.33
-46	78	0.39	63.55	0.00	-10.95	-2.08	0.00	0.00	-8.11	42.40

Segment Leq : 44.91 dBA

Results segment # 3: Teron (night)

Source height = 1.50 m

ROAD (0.00 + 41.70 + 0.00) = 41.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-74	66	0.57	58.54	0.00	-15.05	-1.79	0.00	0.00	0.00	41.70

Segment Leq : 41.70 dBA

Total Leq All Segments: 50.62 dBA

```
RT/Custom data, segment # 1: Transitway (day/night)
-------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 105.00 / 105.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -46.00 deg   Angle2 : 76.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  83.90 / 83.90  m
Source elevation          :  90.00 m
Receiver elevation        :  90.00 m
Barrier elevation         :  90.00 m
Reference angle           :   0.00


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        0.70 !        90.70

RT/Custom (36.38 + 35.35 + 28.24) = 39.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -46   0.66  59.61 -14.03  -9.20   0.00   0.00   0.00  36.38
-------------------------------------------------------------------------
   -46     76   0.51  59.61 -12.76  -2.25   0.00   0.00  -9.25  35.35
-------------------------------------------------------------------------
    76     90   0.66  59.61 -14.03 -17.34   0.00   0.00   0.00  28.24
-------------------------------------------------------------------------

Segment Leq : 39.27 dBA

Total Leq All Segments: 39.27 dBA
```

Results segment # 1: Transitway (night)

Source height = 0.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.50	4.50	1.30	91.30

RT/Custom (30.14 + 30.74 + 22.29) = 33.78 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-46	0.60	52.62	-13.52	-8.96	0.00	0.00	0.00	30.14
-46	76	0.42	52.62	-12.00	-2.16	0.00	0.00	-7.72	30.74
76	90	0.60	52.62	-13.52	-16.82	0.00	0.00	0.00	22.29

Segment Leq : 33.78 dBA

Total Leq All Segments: 33.78 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.09
(NIGHT): 50.71

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:04:11
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR5.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB1 (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  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 1: March NB1 (day/night)
--------------------------------------------
Angle1   Angle2           : -60.50 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 242.00 / 242.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB1 (day/night)
-------------------------------------------
Car traffic volume  :  9513/827   veh/TimePeriod  *
Medium truck volume :   757/66    veh/TimePeriod  *
Heavy truck volume  :   541/47    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11750
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB1 (day/night)
-----------------------------------------
Angle1   Angle2           : -61.00 deg   0.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 217.00 / 217.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: March NB2 (day/night)
-----------------------------------------------
Car traffic volume  : 19430/1690  veh/TimePeriod  *
Medium truck volume :  1546/134   veh/TimePeriod  *
Heavy truck volume  :  1104/96    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  24000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: March NB2 (day/night)
-------------------------------------------
Angle1   Angle2           :  22.50 deg   65.60 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 214.00 / 214.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: March SB2 (day/night)
-----------------------------------------
Car traffic volume  :  8906/774   veh/TimePeriod  *
Medium truck volume :   708/62    veh/TimePeriod  *
Heavy truck volume  :   506/44    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: March SB2 (day/night)
-------------------------------------------
Angle1   Angle2           :  32.40 deg   67.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 189.00 / 189.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 5: Richardson (day/night)
-----------------------------------------------
Car traffic volume  :  4858/422   veh/TimePeriod  *
Medium truck volume :   386/34    veh/TimePeriod  *
Heavy truck volume  :   276/24    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):   6000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Richardson (day/night)
---------------------------------------------
Angle1   Angle2           : -59.00 deg   -43.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 207.00 / 207.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 6: Teron (day/night)
------------------------------------------
Car traffic volume  :  7084/616   veh/TimePeriod  *
Medium truck volume :   564/49    veh/TimePeriod  *
Heavy truck volume  :   403/35    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):   8750
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Teron (day/night)
---------------------------------------
Angle1   Angle2           :  22.40 deg   60.40 deg
Wood depth                :      0       (No woods.)
No of house rows          :      5 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 245.00 / 245.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: March NB1 (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 40.15 + 0.00) = 40.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -60    -10   0.66  74.71   0.00 -20.05  -6.21   0.00  -8.30   0.00  40.15
-------------------------------------------------------------------------------

Segment Leq : 40.15 dBA


Results segment # 2: March SB1 (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 38.57 + 0.00) = 38.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -61      0   0.66  71.43   0.00 -19.26  -5.24   0.00  -8.36   0.00  38.57
-------------------------------------------------------------------------------

Segment Leq : 38.57 dBA


Results segment # 3: March NB2 (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 39.76 + 0.00) = 39.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    22     66   0.66  74.53   0.00 -19.16  -7.25   0.00  -8.36   0.00  39.76
-------------------------------------------------------------------------------

Segment Leq : 39.76 dBA
```

Results segment # 4: March SB2 (day)

Source height = 1.50 m

ROAD (0.00 + 36.01 + 0.00) = 36.01 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
32	68	0.66	71.14	0.00	-18.27	-8.43	0.00	-8.43	0.00	36.01

Segment Leq : 36.01 dBA

Results segment # 5: Richardson (day)

Source height = 1.50 m

ROAD (0.00 + 25.34 + 0.00) = 25.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-59	-43	0.66	64.50	0.00	-18.92	-11.85	0.00	-8.38	0.00	25.34

Segment Leq : 25.34 dBA

Results segment # 6: Teron (day)

Source height = 1.50 m

ROAD (0.00 + 27.07 + 0.00) = 27.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
22	60	0.66	66.14	0.00	-20.14	-7.65	0.00	-11.29	0.00	27.07

Segment Leq : 27.07 dBA

Total Leq All Segments: 45.03 dBA

```
Results segment # 1: March NB1 (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 42.02 + 0.00) = 42.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -60    -10   0.57  67.11   0.00 -18.96  -6.12   0.00   0.00   0.00  42.02
-------------------------------------------------------------------------------

Segment Leq : 42.02 dBA


Results segment # 2: March SB1 (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 40.45 + 0.00) = 40.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -61      0   0.57  63.83   0.00 -18.22  -5.17   0.00   0.00   0.00  40.45
-------------------------------------------------------------------------------

Segment Leq : 40.45 dBA


Results segment # 3: March NB2 (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 41.69 + 0.00) = 41.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    22     66   0.57  66.93   0.00 -18.12  -7.11   0.00   0.00   0.00  41.69
-------------------------------------------------------------------------------

Segment Leq : 41.69 dBA
```

Results segment # 4: March SB2 (night)

Source height = 1.50 m

ROAD (0.00 + 38.02 + 0.00) = 38.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
32	68	0.57	63.55	0.00	-17.28	-8.26	0.00	0.00	0.00	38.02

Segment Leq : 38.02 dBA

Results segment # 5: Richardson (night)

Source height = 1.50 m

ROAD (0.00 + 27.34 + 0.00) = 27.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-59	-43	0.57	56.91	0.00	-17.90	-11.67	0.00	0.00	0.00	27.34

Segment Leq : 27.34 dBA

Results segment # 6: Teron (night)

Source height = 1.50 m

ROAD (0.00 + 31.97 + 0.00) = 31.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
22	60	0.57	58.54	0.00	-19.05	-7.53	0.00	0.00	0.00	31.97

Segment Leq : 31.97 dBA

Total Leq All Segments: 47.01 dBA

```
RT/Custom data, segment # 1: Transitway 1 (day/night)
-----------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway 1 (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   -5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 3
House density             :     80 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 228.00 / 228.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


RT/Custom data, segment # 2: Transitway 2 (day/night)
-----------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 2: Transitway 2 (day/night)
----------------------------------------------
Angle1   Angle2           :  29.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 3
House density             :     80 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 189.00 / 189.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Results segment # 1: Transitway 1 (day)

Source height = 0.50 m

RT/Custom (0.00 + 26.85 + 0.00) = 26.85 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-5	0.66	59.61	-19.62	-4.82	0.00	-8.33	0.00	26.85

Segment Leq : 26.85 dBA

Results segment # 2: Transitway 2 (day)

Source height = 0.50 m

RT/Custom (0.00 + 25.95 + 0.00) = 25.95 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
29	90	0.66	59.61	-18.27	-6.97	0.00	-8.43	0.00	25.95

Segment Leq : 25.95 dBA

Total Leq All Segments: 29.43 dBA

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

Source height = 0.50 m

RT/Custom (0.00 + 20.68 + 0.00) = 20.68 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     -5   0.60  52.62 -18.91  -4.71   0.00  -8.33   0.00  20.68
-------------------------------------------------------------------------

Segment Leq : 20.68 dBA


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

Source height = 0.50 m

RT/Custom (0.00 + 19.79 + 0.00) = 19.79 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    29     90   0.60  52.62 -17.61  -6.80   0.00  -8.43   0.00  19.79
-------------------------------------------------------------------------

Segment Leq : 19.79 dBA

Total Leq All Segments: 23.27 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 45.15
                           (NIGHT): 47.03
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:04:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR6.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (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  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  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 # 1: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -55.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 285.00 / 285.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  :  9513/827   veh/TimePeriod  *
Medium truck volume :   757/66    veh/TimePeriod  *
Heavy truck volume  :   541/47    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  11750
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -57.00 deg   47.60 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 260.00 / 260.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Station (day/night)
-------------------------------------------
Car traffic volume  :  6679/581   veh/TimePeriod  *
Medium truck volume :   531/46    veh/TimePeriod  *
Heavy truck volume  :   380/33    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):   8250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Station (day/night)
-----------------------------------------
Angle1   Angle2           : -36.00 deg   23.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 389.01 / 389.01 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: Carling (day/night)
------------------------------------------
Car traffic volume  :  6274/546   veh/TimePeriod  *
Medium truck volume :   499/43    veh/TimePeriod  *
Heavy truck volume  :   357/31    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):   7750
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Carling (day/night)
-----------------------------------------
Angle1   Angle2           : -15.00 deg   27.60 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 441.80 / 441.80 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Results segment # 1: March NB (day)

Source height = 1.50 m

ROAD (0.00 + 48.65 + 0.00) = 48.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	45	0.66	74.71	0.00	-21.23	-2.95	0.00	-1.88	0.00	48.65

Segment Leq : 48.65 dBA

Results segment # 2: March SB (day)

Source height = 1.50 m

ROAD (0.00 + 46.18 + 0.00) = 46.18 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-57	48	0.66	71.43	0.00	-20.57	-2.79	0.00	-1.89	0.00	46.18

Segment Leq : 46.18 dBA

Results segment # 3: Station (day)

Source height = 1.50 m

ROAD (0.00 + 36.66 + 0.00) = 36.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-36	24	0.66	65.89	0.00	-23.47	-4.96	0.00	-0.80	0.00	36.66

Segment Leq : 36.66 dBA

Results segment # 4: Carling (day)

Source height = 1.50 m

ROAD (0.00 + 33.07 + 0.00) = 33.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-15	28	0.66	65.62	0.00	-24.39	-6.34	0.00	-1.82	0.00	33.07

Segment Leq : 33.07 dBA

Total Leq All Segments: 50.84 dBA

Results segment # 1: March NB (night)

Source height = 1.50 m

ROAD (0.00 + 44.14 + 0.00) = 44.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	45	0.57	67.11	0.00	-20.08	-2.89	0.00	0.00	0.00	44.14

Segment Leq : 44.14 dBA

Results segment # 2: March SB (night)

Source height = 1.50 m

ROAD (0.00 + 41.65 + 0.00) = 41.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-57	48	0.57	63.83	0.00	-19.45	-2.73	0.00	0.00	0.00	41.65

Segment Leq : 41.65 dBA

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

Source height = 1.50 m

ROAD (0.00 + 31.15 + 0.00) = 31.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36     24   0.57  58.28   0.00 -22.20  -4.94   0.00   0.00   0.00  31.15
-------------------------------------------------------------------------------

Segment Leq : 31.15 dBA


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

Source height = 1.50 m

ROAD (0.00 + 28.61 + 0.00) = 28.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -15     28   0.57  58.01   0.00 -23.07  -6.33   0.00   0.00   0.00  28.61
-------------------------------------------------------------------------------

Segment Leq : 28.61 dBA

Total Leq All Segments: 46.29 dBA


RT/Custom data, segment # 1: Transitway (day/night)
---------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     40 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 271.00 / 271.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 0.50 m

RT/Custom (0.00 + 34.47 + 0.00) = 34.47 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     42   0.66  59.61 -20.86  -2.39   0.00  -1.89   0.00  34.47
-------------------------------------------------------------------------

Segment Leq : 34.47 dBA

Total Leq All Segments: 34.47 dBA


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

Source height = 0.50 m

RT/Custom (0.00 + 28.31 + 0.00) = 28.31 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     42   0.60  52.62 -20.11  -2.32   0.00  -1.89   0.00  28.31
-------------------------------------------------------------------------

Segment Leq : 28.31 dBA

Total Leq All Segments: 28.31 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 50.94
                           (NIGHT): 46.36
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:04:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR7.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 20442/1778  veh/TimePeriod  *
Medium truck volume :  1626/141   veh/TimePeriod  *
Heavy truck volume  :  1162/101   veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  25250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -80.50 deg   81.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  73.00 / 73.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 14978/1302  veh/TimePeriod  *
Medium truck volume :  1191/104   veh/TimePeriod  *
Heavy truck volume  :   851/74    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  18500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -79.00 deg   79.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  97.00 / 97.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Solandt 1 (day/night)
-----------------------------------------
Car traffic volume  :  7489/651   veh/TimePeriod  *
Medium truck volume :   596/52    veh/TimePeriod  *
Heavy truck volume  :   426/37    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):   9250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Solandt 1 (day/night)
-------------------------------------------
Angle1   Angle2           :  50.40 deg   76.40 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  69.60 / 69.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: Solandt 2 (day/night)
-----------------------------------------
Car traffic volume  :  5465/475   veh/TimePeriod  *
Medium truck volume :   435/38    veh/TimePeriod  *
Heavy truck volume  :   311/27    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):   6750
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Solandt 2 (day/night)
-------------------------------------------
Angle1   Angle2           : -84.50 deg   66.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  44.00 / 44.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -84.00 deg   Angle2 : -31.00 deg
Barrier height            :   7.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

Results segment # 1: March NB (day)

Source height = 1.50 m

ROAD (0.00 + 61.77 + 0.00) = 61.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-80	81	0.66	74.75	0.00	-11.41	-1.57	0.00	0.00	0.00	61.77

Segment Leq : 61.77 dBA

Results segment # 2: March SB (day)

Source height = 1.50 m

ROAD (0.00 + 58.33 + 0.00) = 58.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-79	79	0.66	73.40	0.00	-13.46	-1.61	0.00	0.00	0.00	58.33

Segment Leq : 58.33 dBA

Results segment # 3: Solandt 1 (day)

Source height = 1.50 m

ROAD (0.00 + 44.55 + 0.00) = 44.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
50	76	0.66	66.38	0.00	-11.06	-10.77	0.00	0.00	0.00	44.55

Segment Leq : 44.55 dBA

```
Results segment # 4: Solandt 2 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.36 !        81.36

ROAD (25.10 + 34.33 + 54.07) = 54.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -84    -84   0.66  65.02   0.00  -7.76 -32.16   0.00   0.00   0.00  25.10
-------------------------------------------------------------------------------
   -84    -31   0.21  65.02   0.00  -5.66  -5.99   0.00   0.00 -19.04  34.33
-------------------------------------------------------------------------------
   -31     66   0.66  65.02   0.00  -7.76  -3.19   0.00   0.00   0.00  54.07
-------------------------------------------------------------------------------

Segment Leq : 54.12 dBA

Total Leq All Segments: 63.93 dBA


Results segment # 1: March NB (night)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.92 + 0.00) = 54.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -80     81   0.57  67.15   0.00 -10.79  -1.44   0.00   0.00   0.00  54.92
-------------------------------------------------------------------------------

Segment Leq : 54.92 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 51.59 + 0.00) = 51.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -79     79   0.57  65.80   0.00 -12.73  -1.48   0.00   0.00   0.00  51.59
-------------------------------------------------------------------------------

Segment Leq : 51.59 dBA


Results segment # 3: Solandt 1 (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 37.87 + 0.00) = 37.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    50     76   0.57  58.79   0.00 -10.47 -10.45   0.00   0.00   0.00  37.87
-------------------------------------------------------------------------------

Segment Leq : 37.87 dBA


Results segment # 4: Solandt 2 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        4.50 !        4.16 !        84.16

ROAD (18.82 + 30.48 + 46.95) = 47.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -84    -84   0.57  57.42   0.00  -7.34 -31.26   0.00   0.00   0.00  18.82
-------------------------------------------------------------------------------
   -84    -31   0.12  57.42   0.00  -5.24  -5.71   0.00   0.00 -16.00  30.48
-------------------------------------------------------------------------------
   -31     66   0.57  57.42   0.00  -7.34  -3.13   0.00   0.00   0.00  46.95
-------------------------------------------------------------------------------

Segment Leq : 47.06 dBA
```

```
Total Leq All Segments: 57.09 dBA
RT/Custom data, segment # 1: Transitway (day/night)
-------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  85.00 / 85.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


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

Source height = 0.50 m

RT/Custom (0.00 + 45.65 + 0.00) = 45.65 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.66  59.61 -12.51  -1.46   0.00   0.00   0.00  45.65
-------------------------------------------------------------------------

Segment Leq : 45.65 dBA

Total Leq All Segments: 45.65 dBA
```

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

Source height = 0.50 m

RT/Custom (0.00 + 39.22 + 0.00) = 39.22 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.60  52.62 -12.05  -1.35   0.00   0.00   0.00  39.22
-------------------------------------------------------------------------

Segment Leq : 39.22 dBA

Total Leq All Segments: 39.22 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 63.99
                           (NIGHT): 57.16
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:04:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR8.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 16394/1426  veh/TimePeriod  *
Medium truck volume :  1304/113   veh/TimePeriod  *
Heavy truck volume  :   932/81    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  20250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -85.50 deg   76.40 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  47.00 / 47.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -85.00 deg   Angle2 : 76.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :   9.80 / 9.80   m
Source elevation          :  81.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 20645/1795  veh/TimePeriod  *
Medium truck volume :  1642/143   veh/TimePeriod  *
Heavy truck volume  :  1173/102   veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  25500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -87.30 deg   82.40 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  22.00 / 22.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -87.00 deg   Angle2 : 82.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :   9.80 / 9.80   m
Source elevation          :  81.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Morgans WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans WB (day/night)
---------------------------------------------
Angle1   Angle2           : -48.00 deg   -8.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      5 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 277.40 / 277.40 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 4: Morgans EB (day/night)
-----------------------------------------------
Car traffic volume  :  3441/299   veh/TimePeriod  *
Medium truck volume :   274/24    veh/TimePeriod  *
Heavy truck volume  :   196/17    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans EB (day/night)
---------------------------------------------
Angle1   Angle2           : -58.00 deg   -9.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      5 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 263.70 / 263.70 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 5: Shirleys WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys WB (day/night)
---------------------------------------------
Angle1   Angle2           :   2.30 deg   55.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 279.60 / 279.60 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   3.00 deg   Angle2 : 56.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :  67.00 / 67.00  m
Source elevation          :  80.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Road data, segment # 6: Shirleys EB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys EB (day/night)
---------------------------------------------
Angle1   Angle2           :   1.30 deg   57.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 267.70 / 267.70 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   1.00 deg   Angle2 : 58.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :  67.00 / 67.00  m
Source elevation          :  80.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: Terry WB (day/night)
-------------------------------------------
Car traffic volume  :  7286/634   veh/TimePeriod  *
Medium truck volume :   580/50    veh/TimePeriod  *
Heavy truck volume  :   414/36    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):   9000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Terry WB (day/night)
------------------------------------------
Angle1   Angle2           : -72.50 deg   88.50 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  26.70 / 26.70  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -72.00 deg   Angle2 : 88.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :  10.80 / 10.80  m
Source elevation          :  83.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

```
Road data, segment # 8: Terry EB (day/night)
-------------------------------------------
Car traffic volume  : 11334/986   veh/TimePeriod  *
Medium truck volume :   902/78    veh/TimePeriod  *
Heavy truck volume  :   644/56    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):  14000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Terry EB (day/night)
------------------------------------------
Angle1   Angle2           : -71.00 deg   80.30 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  46.80 / 46.80  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -71.00 deg   Angle2 : 80.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :  10.80 / 10.80  m
Source elevation          :  83.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

Results segment # 1: March NB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.08	84.08

ROAD (32.85 + 54.55 + 34.92) = 54.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-86	-85	0.66	73.79	0.00	-8.23	-32.70	0.00	0.00	0.00	32.85
-85	76	0.47	73.79	0.00	-7.27	-1.30	0.00	0.00	-10.67	54.55
76	76	0.66	73.79	0.00	-8.23	-30.64	0.00	0.00	0.00	34.92

Segment Leq : 54.63 dBA

Results segment # 2: March SB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	0.61	83.61

ROAD (35.65 + 58.26 + 39.77) = 58.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	-87	0.66	74.79	0.00	-2.76	-36.38	0.00	0.00	0.00	35.65
-87	82	0.47	74.79	0.00	-2.44	-1.20	0.00	0.00	-12.89	58.26
82	82	0.66	74.79	0.00	-2.76	-32.26	0.00	0.00	0.00	39.77

Segment Leq : 58.35 dBA

```
Results segment # 3: Morgans WB (day)
-------------------------------------

Source height = 1.49 m

ROAD (0.00 + 21.05 + 0.00) = 21.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48     -8   0.66  60.95   0.00 -21.03  -6.95   0.00 -11.91   0.00  21.05
-------------------------------------------------------------------------------

Segment Leq : 21.05 dBA


Results segment # 4: Morgans EB (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 22.34 + 0.00) = 22.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -58     -9   0.66  61.22   0.00 -20.67  -6.27   0.00 -11.94   0.00  22.34
-------------------------------------------------------------------------------

Segment Leq : 22.34 dBA


Results segment # 5: Shirleys WB (day)
--------------------------------------

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 !        1.50 !        0.78 !        83.78

ROAD (15.75 + 29.46 + 0.00) = 29.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2      3   0.66  60.95   0.00 -21.09 -24.10   0.00   0.00   0.00  15.75
-------------------------------------------------------------------------------
     3     56   0.47  60.95   0.00 -18.61  -5.68   0.00   0.00  -7.19  29.46
-------------------------------------------------------------------------------

Segment Leq : 29.65 dBA
```

Results segment # 6: Shirleys EB (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	0.75	83.75

ROAD (0.00 + 29.98 + 0.00) = 29.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
1	58	0.47	60.95	0.00	-18.34	-5.38	0.00	0.00	-7.25	29.98

Segment Leq : 29.98 dBA

Results segment # 7: Terry WB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	84.50

ROAD (33.14 + 51.38 + 26.54) = 51.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-72	-72	0.66	66.26	0.00	-4.16	-28.97	0.00	0.00	0.00	33.14
-72	88	0.47	66.26	0.00	-3.67	-1.35	0.00	0.00	-9.86	51.38
88	88	0.66	66.26	0.00	-4.16	-35.57	0.00	0.00	0.00	26.54

Segment Leq : 51.46 dBA

Results segment # 8: Terry EB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	84.50

ROAD (0.00 + 50.07 + 27.14) = 50.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-71	80	0.47	68.18	0.00	-7.24	-1.46	0.00	0.00	-9.41	50.07
80	80	0.66	68.18	0.00	-8.20	-32.84	0.00	0.00	0.00	27.14

Segment Leq : 50.09 dBA

Total Leq All Segments: 60.86 dBA

```
Results segment # 1: March NB (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 !        4.50 !        3.46 !        86.46

ROAD (26.67 + 56.94 + 28.32) = 56.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -86    -85   0.57  66.19   0.00  -7.79 -31.73   0.00   0.00   0.00  26.67
-------------------------------------------------------------------------------
   -85     76   0.38  66.19   0.00  -6.82  -1.16   0.00   0.00  -4.90
53.31*
   -85     76   0.57  66.19   0.00  -7.79  -1.46   0.00   0.00   0.00  56.94
-------------------------------------------------------------------------------
    76     76   0.57  66.19   0.00  -7.79 -30.08   0.00   0.00   0.00  28.32
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.95 dBA
```

Results segment # 2: March SB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	2.27	85.27

ROAD (29.37 + 56.63 + 33.11) = 56.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	-87	0.57	67.20	0.00	-2.61	-35.21	0.00	0.00	0.00	29.37
-87	82	0.38	67.20	0.00	-2.29	-1.04	0.00	0.00	-7.24	56.63
82	82	0.57	67.20	0.00	-2.61	-31.48	0.00	0.00	0.00	33.11

Segment Leq : 56.66 dBA

Results segment # 3: Morgans WB (night)

Source height = 1.50 m

ROAD (0.00 + 26.54 + 0.00) = 26.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	-8	0.57	53.34	0.00	-19.89	-6.90	0.00	0.00	0.00	26.54

Segment Leq : 26.54 dBA

Results segment # 4: Morgans EB (night)

Source height = 1.50 m

ROAD (0.00 + 27.88 + 0.00) = 27.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-58	-9	0.57	53.62	0.00	-19.55	-6.19	0.00	0.00	0.00	27.88

Segment Leq : 27.88 dBA

```
Results segment # 5: Shirleys WB (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 !        4.50 !        3.06 !        86.06

ROAD (9.28 + 25.24 + 0.00) = 25.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2      3   0.57  53.34   0.00 -19.95 -24.10   0.00   0.00   0.00   9.28
-------------------------------------------------------------------------------
     3     56   0.38  53.34   0.00 -17.47  -5.61   0.00   0.00  -5.01  25.24
-------------------------------------------------------------------------------

Segment Leq : 25.35 dBA


Results segment # 6: Shirleys EB (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 !        4.50 !        3.00 !        86.00

ROAD (0.00 + 25.79 + 0.00) = 25.79 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     1     58   0.38  53.34   0.00 -17.21  -5.30   0.00   0.00  -5.03  25.79
-------------------------------------------------------------------------------

Segment Leq : 25.79 dBA
```

Results segment # 7: Terry WB (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	3.28	86.28

ROAD (26.22 + 53.22 + 20.52) = 53.23 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-72	-72	0.57	58.66	0.00	-3.93	-28.50	0.00	0.00	0.00	26.22
-72	88	0.38	58.66	0.00	-3.44	-1.20	0.00	0.00	-5.00	49.01*
-72	88	0.57	58.66	0.00	-3.93	-1.51	0.00	0.00	0.00	53.22
88	88	0.57	58.66	0.00	-3.93	-34.21	0.00	0.00	0.00	20.52

 * Bright Zone !

Segment Leq : 53.23 dBA

```
Results segment # 8: Terry EB (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 !        4.50 !        3.81 !        86.81

ROAD (0.00 + 51.22 + 20.67) = 51.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -71     80   0.38  60.58   0.00  -6.80  -1.33   0.00   0.00  -4.22
48.22*
   -71     80   0.57  60.58   0.00  -7.76  -1.60   0.00   0.00   0.00  51.22
-------------------------------------------------------------------------------
    80     80   0.57  60.58   0.00  -7.76 -32.15   0.00   0.00   0.00  20.67
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 51.23 dBA

Total Leq All Segments: 61.15 dBA
```

```
RT/Custom data, segment # 1: Transitway (day/night)
-------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -85.00 deg   Angle2 : 76.00 deg
Barrier height            :   3.25 m
Barrier receiver distance :   9.80 / 9.80   m
Source elevation          :  81.00 m
Receiver elevation        :  83.00 m
Barrier elevation         :  83.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        0.66 !        83.66

RT/Custom (28.75 + 40.56 + 36.16) = 42.11 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -85   0.66  59.61  -6.11 -24.76   0.00   0.00   0.00  28.75
-------------------------------------------------------------------------
   -85     76   0.50  59.61  -5.50  -1.35   0.00   0.00 -12.20  40.56
-------------------------------------------------------------------------
    76     90   0.66  59.61  -6.11 -17.34   0.00   0.00   0.00  36.16
-------------------------------------------------------------------------

Segment Leq : 42.11 dBA

Total Leq All Segments: 42.11 dBA
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        4.50 !        2.82 !        85.82

RT/Custom (22.78 + 40.80 + 29.92) = 41.20 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -85   0.60  52.62  -5.89 -23.96   0.00   0.00   0.00  22.78
-------------------------------------------------------------------------
   -85     76   0.41  52.62  -5.17  -1.21   0.00   0.00  -5.45  40.80
-------------------------------------------------------------------------
    76     90   0.60  52.62  -5.89 -16.82   0.00   0.00   0.00  29.92
-------------------------------------------------------------------------

Segment Leq : 41.20 dBA

Total Leq All Segments: 41.20 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 60.92
                           (NIGHT): 61.20
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:04:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR9.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 16394/1426  veh/TimePeriod  *
Medium truck volume :  1304/113   veh/TimePeriod  *
Heavy truck volume  :   932/81    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  20250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -88.00 deg   84.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  16.00 / 16.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -88.00 deg   Angle2 : 84.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 20645/1795  veh/TimePeriod  *
Medium truck volume :  1642/143   veh/TimePeriod  *
Heavy truck volume  :  1173/102   veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  25500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -86.00 deg   85.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -86.00 deg   Angle2 : 85.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Morgans WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans WB (day/night)
---------------------------------------------
Angle1   Angle2           :  20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  53.40 / 53.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  20.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :  82.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Morgans EB (day/night)
-----------------------------------------------
Car traffic volume  :  3441/299   veh/TimePeriod  *
Medium truck volume :   274/24    veh/TimePeriod  *
Heavy truck volume  :   196/17    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans EB (day/night)
---------------------------------------------
Angle1   Angle2           :  17.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  65.70 / 65.70  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  17.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :  82.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Shirleys WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys WB (day/night)
---------------------------------------------
Angle1   Angle2           : -82.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  53.40 / 53.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 20.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 6: Shirleys EB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys EB (day/night)
---------------------------------------------
Angle1   Angle2           : -81.00 deg   17.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  65.70 / 65.70  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 17.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: Terry WB (day/night)
-------------------------------------------
Car traffic volume  :  7286/634   veh/TimePeriod  *
Medium truck volume :   580/50    veh/TimePeriod  *
Heavy truck volume  :   414/36    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):   9000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Terry WB (day/night)
------------------------------------------
Angle1   Angle2           : -20.00 deg   41.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      4 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 384.50 / 384.50 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 41.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  27.70 / 27.70  m
Source elevation          :  83.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 8: Terry EB (day/night)
-------------------------------------------
Car traffic volume  : 11334/986   veh/TimePeriod  *
Medium truck volume :   902/78    veh/TimePeriod  *
Heavy truck volume  :   644/56    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):  14000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Terry EB (day/night)
-----------------------------------------
Angle1   Angle2           : -20.00 deg   40.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      4 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 384.50 / 384.50 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 40.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  27.70 / 27.70  m
Source elevation          :  83.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        81.50

ROAD (0.00 + 62.14 + 0.00) = 62.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -88     84   0.51  73.79   0.00  -0.42  -1.24   0.00   0.00  -9.99  62.14
-------------------------------------------------------------------------------

Segment Leq : 62.14 dBA
```

Results segment # 2: March SB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	81.50

ROAD (0.00 + 57.17 + 0.00) = 57.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-86	85	0.51	74.79	0.00	-6.59	-1.25	0.00	0.00	-9.78	57.17

Segment Leq : 57.17 dBA

Results segment # 3: Morgans WB (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	2.14	82.14

ROAD (0.00 + 41.77 + 0.00) = 41.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
20	90	0.51	60.95	0.00	-8.33	-5.69	0.00	0.00	-5.16	41.77

Segment Leq : 41.77 dBA

```
Results segment # 4: Morgans EB (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        2.02 !        82.02

ROAD (0.00 + 40.83 + 0.00) = 40.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    17     90   0.51  61.22   0.00  -9.69  -5.44   0.00   0.00  -5.26  40.83
-------------------------------------------------------------------------------

Segment Leq : 40.83 dBA


Results segment # 5: Shirleys WB (day)
--------------------------------------

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 !        1.50 !        1.50 !        81.50

ROAD (40.80 + 41.74 + 0.00) = 44.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -82    -54   0.66  60.95   0.00  -9.15 -10.99   0.00   0.00   0.00  40.80
-------------------------------------------------------------------------------
   -54     20   0.51  60.95   0.00  -8.33  -4.13   0.00   0.00  -6.75  41.74
-------------------------------------------------------------------------------

Segment Leq : 44.31 dBA
```

```
Results segment # 6: Shirleys EB (day)
--------------------------------------

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 !        1.50 !        1.50 !        81.50

ROAD (39.22 + 40.32 + 0.00) = 42.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -81    -54   0.66  60.95   0.00 -10.65 -11.08   0.00   0.00   0.00  39.22
-------------------------------------------------------------------------------
   -54     17   0.51  60.95   0.00  -9.69  -4.31   0.00   0.00  -6.63  40.32
-------------------------------------------------------------------------------

Segment Leq : 42.82 dBA


Results segment # 7: Terry WB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.72 !        81.72

ROAD (0.00 + 32.69 + 0.00) = 32.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     41   0.66  66.26   0.00 -23.39  -4.89   0.00  -5.30   0.00  32.69
   -20     41   0.51  66.26   0.00 -21.27  -4.85   0.00   0.00  -5.57  34.57
-------------------------------------------------------------------------------

Segment Leq : 32.69 dBA
```

```
Results segment # 8: Terry EB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.72 !        81.72

ROAD (0.00 + 34.54 + 0.00) = 34.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     40   0.66  68.18   0.00 -23.39  -4.95   0.00  -5.30   0.00  34.54
   -20     40   0.51  68.18   0.00 -21.27  -4.91   0.00   0.00  -5.57  36.43
-------------------------------------------------------------------------------

Segment Leq : 34.54 dBA

Total Leq All Segments: 63.49 dBA


Results segment # 1: March NB (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 !        4.50 !        4.12 !        84.12

ROAD (0.00 + 64.41 + 0.00) = 64.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -88     84   0.42  66.19   0.00  -0.40  -1.08   0.00   0.00  -0.04
64.67*
   -88     84   0.57  66.19   0.00  -0.44  -1.34   0.00   0.00   0.00  64.41
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 64.41 dBA
```

```
Results segment # 2: March SB (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 !        4.50 !        4.35 !        84.35

ROAD (0.00 + 58.99 + 0.00) = 58.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -86     85   0.42  67.20   0.00  -6.20  -1.09   0.00   0.00  -0.00
59.90*
   -86     85   0.57  67.20   0.00  -6.86  -1.35   0.00   0.00   0.00  58.99
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.99 dBA


Results segment # 3: Morgans WB (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 !        4.50 !        4.18 !        84.18

ROAD (0.00 + 38.84 + 0.00) = 38.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    20     90   0.42  53.34   0.00  -7.83  -5.45   0.00   0.00  -1.00
39.06*
    20     90   0.57  53.34   0.00  -8.66  -5.84   0.00   0.00   0.00  38.84
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.84 dBA
```

```
Results segment # 4: Morgans EB (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 !        4.50 !        4.24 !        84.24

ROAD (0.00 + 37.97 + 0.00) = 37.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    17     90   0.42  53.62   0.00  -9.11  -5.21   0.00   0.00  -0.97
38.33*
    17     90   0.57  53.62   0.00 -10.07  -5.58   0.00   0.00   0.00  37.97
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 37.97 dBA


Results segment # 5: Shirleys WB (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 !        4.50 !        3.54 !        83.54

ROAD (34.07 + 40.52 + 0.00) = 41.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -82    -54   0.57  53.34   0.00  -8.66 -10.61   0.00   0.00   0.00  34.07
-------------------------------------------------------------------------------
   -54     20   0.42  53.34   0.00  -7.83  -4.08   0.00   0.00  -2.26
39.16*
   -54     20   0.57  53.34   0.00  -8.66  -4.16   0.00   0.00   0.00  40.52
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.41 dBA
```

```
Results segment # 6: Shirleys EB (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 !        4.50 !        3.72 !        83.72

ROAD (32.56 + 38.92 + 0.00) = 39.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -81    -54   0.57  53.34   0.00 -10.07 -10.70   0.00   0.00   0.00  32.56
-------------------------------------------------------------------------------
   -54     17   0.42  53.34   0.00  -9.11  -4.27   0.00   0.00  -1.29
38.67*
   -54     17   0.57  53.34   0.00 -10.07  -4.34   0.00   0.00   0.00  38.92
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.82 dBA


Results segment # 7: Terry WB (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 !        4.50 !        4.50 !        84.50

ROAD (0.00 + 31.68 + 0.00) = 31.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     41   0.42  58.66   0.00 -20.01  -4.82   0.00   0.00  -0.05
33.78*
   -20     41   0.57  58.66   0.00 -22.12  -4.86   0.00   0.00   0.00  31.68
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 31.68 dBA
```

```
Results segment # 8: Terry EB (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 !        4.50 !        4.50 !        84.50

ROAD (0.00 + 33.53 + 0.00) = 33.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     40   0.42  60.58   0.00 -20.01  -4.89   0.00   0.00  -0.04
35.65*
   -20     40   0.57  60.58   0.00 -22.12  -4.93   0.00   0.00   0.00  33.53
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 33.53 dBA

Total Leq All Segments: 65.56 dBA


RT/Custom data, segment # 1: Transitway (day/night)
---------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -88.00 deg   Angle2 : -84.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

Results segment # 1: Transitway (day)

Source height = 0.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.50	1.50	1.43	81.43

RT/Custom (24.02 + 26.86 + 53.89) = 53.91 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-88	0.66	59.61	-4.24	-31.36	0.00	0.00	0.00	24.02
-88	-84	0.54	59.61	-3.93	-22.82	0.00	0.00	-6.00	26.86
-84	90	0.66	59.61	-4.24	-1.48	0.00	0.00	0.00	53.89

Segment Leq : 53.91 dBA

Total Leq All Segments: 53.91 dBA

Results segment # 1: Transitway (night)

Source height = 0.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.50	4.50	4.20	84.20

RT/Custom (18.21 + 25.02 + 47.15) = 47.18 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-88	0.60	52.62	-4.08	-30.33	0.00	0.00	0.00	18.21
-88	-84	0.45	52.62	-3.70	-21.78	0.00	0.00	-2.00	25.14*
-88	-84	0.60	52.62	-4.08	-23.52	0.00	0.00	0.00	25.02
-84	90	0.60	52.62	-4.08	-1.39	0.00	0.00	0.00	47.15

* Bright Zone !

Segment Leq : 47.18 dBA

Total Leq All Segments: 47.18 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.95
(NIGHT): 65.62

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:05:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR10.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 15585/1355  veh/TimePeriod  *
Medium truck volume :  1240/108   veh/TimePeriod  *
Heavy truck volume  :   886/77    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  19250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -83.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  72.00 / 72.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -83.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 17406/1514  veh/TimePeriod  *
Medium truck volume :  1385/120   veh/TimePeriod  *
Heavy truck volume  :   989/86    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  21500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -83.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -83.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Klondike (day/night)
-------------------------------------------
Car traffic volume  :  7489/651   veh/TimePeriod  *
Medium truck volume :   596/52    veh/TimePeriod  *
Heavy truck volume  :   426/37    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):   9250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Klondike (day/night)
------------------------------------------
Angle1   Angle2           : -46.00 deg   46.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 347.00 / 347.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -46.00 deg   Angle2 : 46.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Morgans WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans WB (day/night)
---------------------------------------------
Angle1   Angle2           : -13.00 deg   74.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 241.00 / 241.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 5: Morgans EB (day/night)
-----------------------------------------------
Car traffic volume  :  3441/299   veh/TimePeriod  *
Medium truck volume :   274/24    veh/TimePeriod  *
Heavy truck volume  :   196/17    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Morgans EB (day/night)
---------------------------------------------
Angle1   Angle2           : -12.00 deg   73.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 252.00 / 252.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 6: Shirleys WB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys WB (day/night)
---------------------------------------------
Angle1   Angle2           : -52.00 deg   -13.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 241.00 / 241.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 7: Shirleys EB (day/night)
-----------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Shirleys EB (day/night)
---------------------------------------------
Angle1   Angle2           : -52.00 deg   -12.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      6 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 252.00 / 252.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        81.50

ROAD (0.00 + 44.57 + 0.00) = 44.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83     54   0.15  73.57   0.00  -7.84  -1.41   0.00   0.00 -19.75  44.57
-------------------------------------------------------------------------------

Segment Leq : 44.57 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        81.50

ROAD (0.00 + 47.92 + 0.00) = 47.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83     54   0.15  74.05   0.00  -5.81  -1.41   0.00   0.00 -18.91  47.92
-------------------------------------------------------------------------------

Segment Leq : 47.92 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        81.50

ROAD (0.00 + 28.03 + 0.00) = 28.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -46     46   0.15  66.38   0.00 -15.69  -2.99   0.00   0.00 -19.67  28.03
-------------------------------------------------------------------------------

Segment Leq : 28.03 dBA


Results segment # 4: Morgans WB (day)
-----------------------------------

Source height = 1.49 m

ROAD (0.00 + 22.72 + 0.00) = 22.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -13     74   0.66  60.95   0.00 -20.02  -3.91   0.00 -14.30   0.00  22.72
-------------------------------------------------------------------------------

Segment Leq : 22.72 dBA
```

```
Results segment # 5: Morgans EB (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 22.62 + 0.00) = 22.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -12     73   0.66  61.22   0.00 -20.34  -4.00   0.00 -14.27   0.00  22.62
-------------------------------------------------------------------------------

Segment Leq : 22.62 dBA


Results segment # 6: Shirleys WB (day)
-------------------------------------

Source height = 1.49 m

ROAD (0.00 + 19.44 + 0.00) = 19.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52    -13   0.66  60.95   0.00 -20.02  -7.19   0.00 -14.30   0.00  19.44
-------------------------------------------------------------------------------

Segment Leq : 19.44 dBA


Results segment # 7: Shirleys EB (day)
-------------------------------------

Source height = 1.49 m

ROAD (0.00 + 19.27 + 0.00) = 19.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52    -12   0.66  60.95   0.00 -20.34  -7.07   0.00 -14.27   0.00  19.27
-------------------------------------------------------------------------------

Segment Leq : 19.27 dBA

Total Leq All Segments: 49.63 dBA
```

```
Results segment # 1: March NB (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 !        4.50 !        4.37 !        84.37

ROAD (0.00 + 38.72 + 0.00) = 38.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83     54   0.06  65.98   0.00  -7.22  -1.28   0.00   0.00 -18.75  38.72
-------------------------------------------------------------------------------

Segment Leq : 38.72 dBA


Results segment # 2: March SB (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 !        4.50 !        3.69 !        83.69

ROAD (0.00 + 43.45 + 0.00) = 43.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83     54   0.06  66.45   0.00  -5.36  -1.28   0.00   0.00 -16.36  43.45
-------------------------------------------------------------------------------

Segment Leq : 43.45 dBA
```

```
Results segment # 3: Klondike (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 !        4.50 !        4.39 !        84.39

ROAD (0.00 + 26.04 + 0.00) = 26.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -46     46   0.06  58.79   0.00 -14.46  -2.94   0.00   0.00 -15.34  26.04
-------------------------------------------------------------------------------

Segment Leq : 26.04 dBA


Results segment # 4: Morgans WB (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 30.58 + 0.00) = 30.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -13     74   0.57  53.34   0.00 -18.93  -3.82   0.00   0.00   0.00  30.58
-------------------------------------------------------------------------------

Segment Leq : 30.58 dBA


Results segment # 5: Morgans EB (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 30.47 + 0.00) = 30.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -12     73   0.57  53.62   0.00 -19.24  -3.91   0.00   0.00   0.00  30.47
-------------------------------------------------------------------------------

Segment Leq : 30.47 dBA
```

```
Results segment # 6: Shirleys WB (night)
----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 27.28 + 0.00) = 27.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52    -13   0.57  53.34   0.00 -18.93  -7.12   0.00   0.00   0.00  27.28
-------------------------------------------------------------------------------

Segment Leq : 27.28 dBA


Results segment # 7: Shirleys EB (night)
----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 27.10 + 0.00) = 27.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52    -12   0.57  53.34   0.00 -19.24  -7.00   0.00   0.00   0.00  27.10
-------------------------------------------------------------------------------

Segment Leq : 27.10 dBA

Total Leq All Segments: 45.22 dBA


RT/Custom data, segment # 1: Transitway (day/night)
---------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -83.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  80.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        1.45 !        81.45

RT/Custom (27.17 + 31.20 + 38.89) = 39.82 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -83   0.66  59.61 -10.11 -22.33   0.00   0.00   0.00  27.17
-------------------------------------------------------------------------
   -83     54   0.18  59.61  -7.19  -1.45   0.00   0.00 -19.77  31.20
-------------------------------------------------------------------------
    54     90   0.66  59.61 -10.11 -10.61   0.00   0.00   0.00  38.89
-------------------------------------------------------------------------

Segment Leq : 39.82 dBA

Total Leq All Segments: 39.82 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        4.50 !        4.30 !        84.30

RT/Custom (21.25 + 25.79 + 32.56) = 33.65 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -83   0.60  52.62  -9.75 -21.62   0.00   0.00   0.00  21.25
-------------------------------------------------------------------------
   -83     54   0.09  52.62  -6.64  -1.32   0.00   0.00 -18.87  25.79
-------------------------------------------------------------------------
    54     90   0.60  52.62  -9.75 -10.32   0.00   0.00   0.00  32.56
-------------------------------------------------------------------------

Segment Leq : 33.65 dBA

Total Leq All Segments: 33.65 dBA
```

```
TOTAL Leq FROM ALL SOURCES (DAY): 50.06
                           (NIGHT): 45.51
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:05:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR11.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 15787/1373  veh/TimePeriod  *
Medium truck volume :  1256/109   veh/TimePeriod  *
Heavy truck volume  :   897/78    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  19500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -83.00 deg   82.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  73.00 / 73.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -59.00 deg   Angle2 : 82.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 17204/1496  veh/TimePeriod  *
Medium truck volume :  1369/119   veh/TimePeriod  *
Heavy truck volume  :   978/85    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  21250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -84.00 deg   83.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -59.00 deg   Angle2 : 83.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Klondike (day/night)
-------------------------------------------
Car traffic volume  :  7489/651   veh/TimePeriod  *
Medium truck volume :   596/52    veh/TimePeriod  *
Heavy truck volume  :   426/37    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):   9250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Klondike (day/night)
------------------------------------------
Angle1   Angle2           : -69.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 176.00 / 176.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.42 !        81.42

ROAD (50.16 + 44.61 + 0.00) = 51.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83    -59   0.66  73.63   0.00 -11.41 -12.05   0.00   0.00   0.00  50.16
-------------------------------------------------------------------------------
   -59     82   0.15  73.63   0.00  -7.90  -1.29   0.00   0.00 -19.83  44.61
-------------------------------------------------------------------------------

Segment Leq : 51.23 dBA
```

Results segment # 2: March SB (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.37	81.37

ROAD (53.65 + 47.12 + 0.00) = 54.52 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-84	-59	0.66	74.00	0.00	-8.39	-11.96	0.00	0.00	0.00	53.65
-59	83	0.15	74.00	0.00	-5.81	-1.26	0.00	0.00	-19.81	47.12

Segment Leq : 54.52 dBA

Results segment # 3: Klondike (day)

Source height = 1.50 m

ROAD (0.00 + 46.73 + 0.00) = 46.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-69	70	0.66	66.38	0.00	-17.75	-1.90	0.00	0.00	0.00	46.73

Segment Leq : 46.73 dBA

Total Leq All Segments: 56.66 dBA

```
Results segment # 1: March NB (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 !        4.50 !        4.29 !        84.29

ROAD (43.62 + 38.63 + 0.00) = 44.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83    -59   0.57  66.03   0.00 -10.79 -11.62   0.00   0.00   0.00  43.62
-------------------------------------------------------------------------------
   -59     82   0.06  66.03   0.00  -7.29  -1.15   0.00   0.00 -18.96  38.63
-------------------------------------------------------------------------------

Segment Leq : 44.81 dBA


Results segment # 2: March SB (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 !        4.50 !        4.19 !        84.19

ROAD (46.95 + 40.88 + 0.00) = 47.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -84    -59   0.57  66.40   0.00  -7.93 -11.52   0.00   0.00   0.00  46.95
-------------------------------------------------------------------------------
   -59     83   0.06  66.40   0.00  -5.36  -1.12   0.00   0.00 -19.05  40.88
-------------------------------------------------------------------------------

Segment Leq : 47.91 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 40.19 + 0.00) = 40.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -69     70   0.57  58.79   0.00 -16.79  -1.80   0.00   0.00   0.00  40.19
-------------------------------------------------------------------------------

Segment Leq : 40.19 dBA

Total Leq All Segments: 50.11 dBA


RT/Custom data, segment # 1: Transitway (day/night)
---------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  60.00 / 60.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -59.00 deg   Angle2 : 82.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  80.00 m
Barrier elevation         :  80.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        1.35 !        81.35

RT/Custom (37.96 + 31.33 + 28.25) = 39.18 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------
   -90    -59   0.66  59.61  -9.99 -11.66   0.00   0.00   0.00  37.96
-----------------------------------------------------------------------
   -59     82   0.18  59.61  -7.10  -1.33   0.00   0.00 -19.85  31.33
-----------------------------------------------------------------------
    82     90   0.66  59.61  -9.99 -21.37   0.00   0.00   0.00  28.25
-----------------------------------------------------------------------

Segment Leq : 39.18 dBA

Total Leq All Segments: 39.18 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        4.50 !        4.20 !        84.20

RT/Custom (31.65 + 25.77 + 22.29) = 33.03 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------
   -90    -59   0.60  52.62  -9.63 -11.34   0.00   0.00   0.00  31.65
-----------------------------------------------------------------------
   -59     82   0.09  52.62  -6.56  -1.20   0.00   0.00 -19.09  25.77
-----------------------------------------------------------------------
    82     90   0.60  52.62  -9.63 -20.70   0.00   0.00   0.00  22.29
-----------------------------------------------------------------------

Segment Leq : 33.03 dBA

Total Leq All Segments: 33.03 dBA
```

```
TOTAL Leq FROM ALL SOURCES (DAY): 56.73
                           (NIGHT): 50.19
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:05:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR12.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 15787/1373  veh/TimePeriod  *
Medium truck volume :  1256/109   veh/TimePeriod  *
Heavy truck volume  :   897/78    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  19500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
----------------------------------------
Angle1   Angle2           : -54.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 307.00 / 307.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  86.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 17204/1496  veh/TimePeriod  *
Medium truck volume :  1369/119   veh/TimePeriod  *
Heavy truck volume  :   978/85    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  21250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -55.00 deg   56.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 280.00 / 280.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -55.00 deg   Angle2 : 56.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  86.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Klondike1 (day/night)
-------------------------------------------
Car traffic volume  :  7489/651   veh/TimePeriod  *
Medium truck volume :   596/52    veh/TimePeriod  *
Heavy truck volume  :   426/37    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):   9250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Klondike1 (day/night)
-----------------------------------------
Angle1   Angle2           : -87.00 deg   -24.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -87.00 deg   Angle2 : -24.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   6.00 / 6.00   m
Source elevation          :  86.00 m
Receiver elevation        :  86.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Klondike2 (day/night)
-----------------------------------------
Car traffic volume  :  7489/651   veh/TimePeriod  *
Medium truck volume :   596/52    veh/TimePeriod  *
Heavy truck volume  :   426/37    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):   9250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Klondike2 (day/night)
-------------------------------------------
Angle1   Angle2           : -24.00 deg   87.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 87.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  86.00 m
Receiver elevation        :  86.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00
```

```
Results segment # 1: March NB (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.42 !        87.42

ROAD (0.00 + 36.22 + 0.00) = 36.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     54   0.15  73.63   0.00 -15.08  -2.32   0.00   0.00 -20.00  36.22
-------------------------------------------------------------------------------

Segment Leq : 36.22 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.41 !        87.41

ROAD (0.00 + 37.17 + 0.00) = 37.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -55     56   0.15  74.00   0.00 -14.62  -2.21   0.00   0.00 -20.00  37.17
-------------------------------------------------------------------------------

Segment Leq : 37.17 dBA
```

Results segment # 3: Klondike1 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	87.50

ROAD (0.00 + 38.51 + 0.00) = 38.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	-24	0.15	66.38	0.00	-4.51	-5.05	0.00	0.00	-18.31	38.51

Segment Leq : 38.51 dBA

Results segment # 4: Klondike2 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	87.50

ROAD (51.04 + 39.18 + 0.00) = 51.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-24	0	0.66	66.38	0.00	-6.51	-8.84	0.00	0.00	0.00	51.04
0	87	0.15	66.38	0.00	-4.51	-3.52	0.00	0.00	-19.18	39.18

Segment Leq : 51.31 dBA

Total Leq All Segments: 51.81 dBA

```
Results segment # 1: March NB (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 !        4.50 !        4.39 !        90.39

ROAD (0.00 + 30.06 + 0.00) = 30.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     54   0.06  66.03   0.00 -13.90  -2.26   0.00   0.00 -19.80  30.06
-------------------------------------------------------------------------------

Segment Leq : 30.06 dBA


Results segment # 2: March SB (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 !        4.50 !        4.38 !        90.38

ROAD (0.00 + 31.00 + 0.00) = 31.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -55     56   0.06  66.40   0.00 -13.48  -2.14   0.00   0.00 -19.78  31.00
-------------------------------------------------------------------------------

Segment Leq : 31.00 dBA
```

Results segment # 3: Klondike1 (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.01	90.01

ROAD (0.00 + 33.97 + 0.00) = 33.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	-24	0.06	58.79	0.00	-4.16	-4.76	0.00	0.00	-15.90	33.97

Segment Leq : 33.97 dBA

Results segment # 4: Klondike2 (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	4.26	90.26

ROAD (43.81 + 33.61 + 0.00) = 44.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-24	0	0.57	58.79	0.00	-6.16	-8.82	0.00	0.00	0.00	43.81
0	87	0.06	58.79	0.00	-4.16	-3.31	0.00	0.00	-17.71	33.61

Segment Leq : 44.20 dBA

Total Leq All Segments: 44.92 dBA

```
RT/Custom data, segment # 1: Transitway (day/night)
-------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 293.00 / 293.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 54.00 deg
Barrier height            :   8.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  78.00 m
Receiver elevation        :  86.00 m
Barrier elevation         :  86.00 m
Reference angle           :   0.00


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        1.50 !        1.41 !        87.41

RT/Custom (27.58 + 22.04 + 27.58) = 31.16 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------
   -90    -54   0.66  59.61 -21.43 -10.61   0.00   0.00   0.00  27.58
-----------------------------------------------------------------------
   -54     54   0.18  59.61 -15.23  -2.35   0.00   0.00 -20.00  22.04
-----------------------------------------------------------------------
    54     90   0.66  59.61 -21.43 -10.61   0.00   0.00   0.00  27.58
-----------------------------------------------------------------------

Segment Leq : 31.16 dBA

Total Leq All Segments: 31.16 dBA
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        4.50 !        4.38 !        90.38

RT/Custom (21.65 + 16.45 + 21.65) = 25.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -54   0.60  52.62 -20.65 -10.32   0.00   0.00   0.00  21.65
-------------------------------------------------------------------------
   -54     54   0.09  52.62 -14.07  -2.28   0.00   0.00 -19.82  16.45
-------------------------------------------------------------------------
    54     90   0.60  52.62 -20.65 -10.32   0.00   0.00   0.00  21.65
-------------------------------------------------------------------------

Segment Leq : 25.27 dBA

Total Leq All Segments: 25.27 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 51.85
                           (NIGHT): 44.97
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-09-2012 10:05:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR13.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: March NB (day/night)
----------------------------------------------
Car traffic volume  : 15585/1355  veh/TimePeriod  *
Medium truck volume :  1240/108   veh/TimePeriod  *
Heavy truck volume  :   886/77    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  19250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: March NB (day/night)
------------------------------------------
Angle1   Angle2           : -71.00 deg   71.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 143.00 / 143.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: March SB (day/night)
-------------------------------------------
Car traffic volume  : 17204/1496  veh/TimePeriod  *
Medium truck volume :  1369/119   veh/TimePeriod  *
Heavy truck volume  :   978/85    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  21250
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: March SB (day/night)
-----------------------------------------
Angle1   Angle2           : -69.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 170.00 / 170.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Klondike (day/night)
-------------------------------------------
Car traffic volume  :  3242/282   veh/TimePeriod  *
Medium truck volume :   258/22    veh/TimePeriod  *
Heavy truck volume  :   184/16    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):   4005
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium 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: Klondike (day/night)
------------------------------------------
Angle1   Angle2           : -85.00 deg   85.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  38.10 / 38.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  57.00 deg   Angle2 : 85.00 deg
Barrier height            :   4.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  76.00 m
Receiver elevation        :  76.00 m
Barrier elevation         :  76.00 m
Reference angle           :   0.00
```

Results segment # 1: March NB (day)

Source height = 1.50 m

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
-71	71	0.66	73.57	0.00	-16.26	-1.84	0.00	0.00	0.00	55.47

Segment Leq : 55.47 dBA

Results segment # 2: March SB (day)

Source height = 1.50 m

ROAD (0.00 + 54.60 + 0.00) = 54.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-69	70	0.66	74.00	0.00	-17.50	-1.90	0.00	0.00	0.00	54.60

Segment Leq : 54.60 dBA

Results segment # 3: Klondike (day)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.50	1.50	77.50

ROAD (54.06 + 33.70 + 0.00) = 54.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-85	57	0.66	62.74	0.00	-6.72	-1.96	0.00	0.00	0.00	54.06
57	85	0.39	62.74	0.00	-5.63	-10.10	0.00	0.00	-13.31	33.70

Segment Leq : 54.10 dBA

Total Leq All Segments: 59.53 dBA

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

Source height = 1.50 m

ROAD (0.00 + 48.86 + 0.00) = 48.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -71     71   0.57  65.98   0.00 -15.38  -1.74   0.00   0.00   0.00  48.86
-------------------------------------------------------------------------------

Segment Leq : 48.86 dBA


Results segment # 2: March SB (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 48.05 + 0.00) = 48.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -69     70   0.57  66.40   0.00 -16.55  -1.80   0.00   0.00   0.00  48.05
-------------------------------------------------------------------------------

Segment Leq : 48.05 dBA


Results segment # 3: Klondike (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 !        4.50 !        4.26 !        80.26

ROAD (46.92 + 35.05 + 0.00) = 47.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -85     57   0.57  55.13   0.00  -6.36  -1.86   0.00   0.00   0.00  46.92
-------------------------------------------------------------------------------
    57     85   0.30  55.13   0.00  -5.26  -9.65   0.00   0.00  -5.17  35.05
-------------------------------------------------------------------------------

Segment Leq : 47.19 dBA

Total Leq All Segments: 52.86 dBA
```

```
RT/Custom data, segment # 1: Transitway (day/night)
-------------------------------------------------
1 - Bus:
Traffic volume    :   200/20    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: Transitway (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 157.00 / 157.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 0.50 m

RT/Custom (0.00 + 41.23 + 0.00) = 41.23 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.66  59.61 -16.93  -1.46   0.00   0.00   0.00  41.23
-------------------------------------------------------------------------

Segment Leq : 41.23 dBA

Total Leq All Segments: 41.23 dBA


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

Source height = 0.50 m

RT/Custom (0.00 + 34.95 + 0.00) = 34.95 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.60  52.62 -16.32  -1.35   0.00   0.00   0.00  34.95
-------------------------------------------------------------------------

Segment Leq : 34.95 dBA

Total Leq All Segments: 34.95 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 59.60
                           (NIGHT): 52.93
```