Thornton Tomasetti

# Noise Impact Study

## 1225 Dundas Street East, Mississauga, Ontario

SW22159.00


**Prepared For**
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June 28, 2022

## Table of Contents

## List of Tables



## List of Figures

# 1.0 Introduction

At the request of Dundix Realty Holdings c/o SmartCentres REIT (Client), Thornton Tomasetti (TT) presents this Noise Impact Study (NIS) regarding the planned development located at 1225 Dundas Street East, Mississauga Ontario (the Project).

The purpose of this study is to assess the noise impact on the Project from surrounding noise sources and the noise impact of the Project on surrounding noise sensitive areas. This report is intended to support the Zoning By-Law Amendment (ZBA) and Site Plan Approval (SPA) application for the Project as a feasibility study.

Where applicable, this report will provide noise control recommendations to meet the requirements of the applicable Land Use Planning Authority (LUPA), and noise criteria developed by the Ontario Ministry of the Environment, Conservation and Parks (MECP).

Where predicted sound impacts are lower than applicable action thresholds identified, the project should be designed to meet the Ontario Building Code (OBC) as a minimum standard.

# 2.0 Site and Surrounding Area

## 2.1 Project Location

The Project is located on the north corner of the intersection of Dundas Street East and Arena Road, approximately 400m southwest of Dixie Road.

The Project is bordered on the north and west by residential land uses. The Project is bordered on the east and south by commercial land uses. The broader neighborhood includes residential land uses northwest of Dundas Street East, and commercial land uses southeast of Dundas Street East.

An illustration of the project location and surrounding area is provided in Figure 1.

## 2.2 Zoning & Official Plan

The Project site is zoned as C3 "General Commercial" under the City of Mississauga Zoning By-Law No. 0225-2007, and designated as "Mixed Use" under the City of Mississauga's Official Plan. Surrounding areas are zoned for residential, commercial and employment uses.

A zoning map is presented in Figure 2.

## 2.3 Planned Development

The Project will consist of a 12 storey residential building plus 34 townhomes. The Project is expected to include two standby power generators and centralized heating, ventilation and air conditioning (HVAC) equipment. The Project will have a maximum height of approximately 41m.

The proposed new site plan is provided in Figure 3.

### 2.4 Site Inspection

TT personnel attended the Project site on June 21, 2022 in order to inspect the acoustical environment in the area of the Project. The ambient sound environment was observed to be dominated by traffic noise from the adjacent Dundas Street East.

Transportation noise from adjacent roadways is discussed in Section 5.0 of this report.

No individual stationary noise sources were distinguishable from the Project site, but an inspection of publicly accessible areas of the surrounding neighborhood did identify potentially significant stationary noise sources (roof top HVAC units). Stationary noise sources are discussed in Section 6.0 of this report.

### 2.1 Topography

Based on the observed and/or reported conditions on and around the Project site, the local topography is expected to be approximately flat.

## 3.0 Ministry of the Environment Conservation and Parks

The MECP's *Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning* (NPC-300) provides province wide assessment standards and criteria for evaluating noise impacts from transportation sources such as roads, railways and aircraft, as well as stationary sources such as mechanical equipment, and industrial facilities. In preparing this NIS report, TT has referred to *Part A Background and Part C Land Use Planning* of NPC-300.

This NIS report has been prepared to support land use planning decisions, and is not intended to support an application for an Environmental Compliance Approval (ECA) in accordance with *Part B Stationary Sources* of NPC-300, and Section 9 of the Environmental Protection Act.

## 4.0 Land Use Planning Authority

In addition to the MECP's standards and criteria, some LUPAs impose additional requirements on applications for development approval. The LUPAs for this Project are the Region of Peel and the City of Mississauga.

### 4.1 Region of Peel

Peel Region defers to the MECP and municipalities in regard to noise by-laws and regulations.

### 4.2 City of Mississauga

The City of Mississauga's Noise Study Terms of Reference generally align with the requirements of NPC-300, with the following exceptions:

- The impact of noise from the proposed development on itself should also be considered.
- Road traffic data must be obtained from the City when analyzing transportation noise from City roads.

# 5.0 Transportation Noise Assessment

## 5.1 Critical Transportation Noise Receptors

NPC-300 defines a point of reception for the assessment of transportation noise sources as either the Plane of Window (POW) of a noise sensitive indoor space or an Outdoor Living Area (OLA) representing an area of a noise sensitive land use intended for quiet enjoyment of the outdoor environment.

The POW receptor(s) most likely to be affected by transportation noise are those representing the residential suites of the Project that have maximum exposure to Dundas Street East. Specifically, POW receptors were assessed for the northeast, southeast and southwest facades of the planned structures, at the highest elevation with windows.

Based on provided site plans of the Project, TT has assessed a total of 3 potential OLAs, including the Level 10 Roof Terrace, and ground level gardens located on the northeast and southwest corners of the townhomes. Individual suites will have balconies, and there will be other terraces, however because these are less than 4m in depth they have not been considered as OLAs.

The elevation of each level of the Project is illustrated in Figure 3 and summarized in Table 1.

Table 1: Construction Elevations – Transportation Receptors

| Floor Level | Elevation (m) | Floor-to-Floor Height (m) | Midpoint Height (m) |
|---|---|---|---|
| Street Level (Dundas) | 120.0 | - | - |
| Townhouse 3rd Floor | 127.9 | 3.25 | 9.5 |
| Tower 10th Floor | 151.2 | 3.25 | - |
| Tower 12th Floor | 157.4 | 4.10 | 39.5 |

The locations of the critical receptors for transportation noise are summarized in Table 2 and shown in Figure 4. POW elevations were taken to be the midpoint height of the highest floor with windows, and OLA elevations were taken to be 1.5m above the applicable floor level.

Table 2: Points of Reception – Transportation Noise

| Receptor ID | Receptor Description | Receptor Location |
|---|---|---|
| POW1 | Tower, northeast façade | North tower centre, 39.5m above ground |
| POW2 | Tower, southeast façade | South tower centre, 39.5m above ground |
| POW3 | Tower, southwest façade | South tower centre, 39.5m above ground |
| POW4 | Townhome, northeast corner | Corner, 9.5m above ground |
| POW5 | Townhome, southwest corner | Corner, 9.5m above ground |
| OLA1 | Tower, 10th floor terrace | Terrace centre, 32.7m above ground |
| OLA2 | Townhome, northeast garden | 3m from façade, 1.5m above ground |
| OLA3 | Townhome, southwest garden | 3m from façade, 1.5m above ground |

## 5.2 Transportation Noise Sources

### 5.2.1 Road Noise Sources

Dundas Street East (adjacent to the southeast), and Arena Road (adjacent to the southwest) represent the most significant road noise sources for the Project. Traffic data was obtained from a draft Transportation Impact Study prepared for the Project by CGH Transportation, dated June 2022. This data is presented in Appendix B.

The highest hourly volumes of cars, trucks and busses recorded in the TMC data were identified and converted to AADT values by adding the AM and PM peak hour volumes together and multiplying by 5. AADT estimates are summarized in Table 3.

Table 3: Traffic Data Summary

| Street | Section | Time Period | Cars | | Trucks & Buses | | Total |
|---|---|---|---|---|---|---|---|
| | | | Year | Volume | Year | Volume | |
| Dundas Street East | East of Arena Road | AM Peak | 2022 | 1,903 | 2022 | 105 | |
| | | PM Peak | 2022 | 2,838 | 2022 | 76 | |
| | | Daily | 2022 | 23,705 | 2022 | 905 | 24,610 |
| Arena Road | North of Dundas Street East | AM Peak | 2022 | 77 | 2022 | 3 | |
| | | PM Peak | 2022 | 110 | 2022 | 1 | |
| | | Daily | 2022 | 935 | 2022 | 20 | 955 |

The total Annual Average Daily Traffic (AADT) was projected forward to 2035 (10 years after expected completion) using a growth rate of 2% per year from the noted year of measurement.

Medium and heavy truck percentages were estimated based on the volume of trucks and buses as a % of total traffic, assuming that 25% of the combined truck & bus volume would be considered "heavy trucks", and 75% of the combined volume would be considered "medium trucks".

Posted speed limits on Dundas Street East and Arena Road are 60 and 40 km/hr respectively. Road grades were assumed to be 0% in the area under review. The day/night split was assumed to be 90%/10% on Dundas Street East and 70%/30% on Arena Road.

Because Dundas Street East is six lanes, it was considered to be two separate roads, each of which was assigned half of the AADT.

The traffic data used in the sound level calculations is summarized in Table 4.

Table 4: Traffic Data Summary

| Parameter | Dundas Street East (Westbound) | Dundas Street East (Eastbound) | Arena Road |
|---|---|---|---|
| AADT | 12,305 (2022) | 12,305 (2022) | 955 (2022) |
| % Annual Growth | 2% | 2% | 2% |
| Years of Annual Growth | 13 | 13 | 13 |
| % Medium Trucks | 3% | 3% | 2% |
| % Heavy Trucks | 1% | 1% | 1% |

| Parameter | Dundas Street East (Westbound) | Dundas Street East (Eastbound) | Arena Road |
|---|---|---|---|
| % Day (16h) / Night (8h) | 90% / 10% | 90% / 10% | 70% / 30% |
| Speed Limit | 60 km/hr | 60 km/hr | 40 km/hr |
| Gradient | 0% | 0% | 0% |

### 5.2.2 Rail Noise Sources

No rail noise sources located within 400m of the Project have been identified.

### 5.2.3 Aircraft Noise Sources

No airports located in the vicinity of the project have been identified.

## 5.3 Transportation Sound Level Limits

### 5.3.1 Outdoor Living Areas

Impacts to OLAs from combined road and rail traffic are assessed against a 16-hour daytime (07:00 – 23:00) equivalent sound pressure level ($L_{eq}$) reported in dBA. The MECP outdoor sound level limits and the sliding scale of required noise reduction measures for road and rail noise at OLAs are listed in Table 5. Note that whistle noise is not included in the assessment of rail noise at an OLA.

Table 5: MECP Outdoor Sound Level Limit & Mitigation for OLAs – Combined Road & Rail Traffic

| Category | Sound Level $L_{eq,16hr}$ (dBA) | Mitigation Measures | NPC-300 Warning Clause Required |
|---|---|---|---|
| Outdoor Limit | 55 | None | None |
| OLA Mitigation Threshold | 56 - 60 | Optional | Type A unless sound level brought below 55 dBA |
| OLA Mitigation Threshold | >60 | Required to achieve sound level below 60 dBA | Type B unless sound level brought below 55 dBA |

### 5.3.2 Indoor Living Areas

Impacts to POWs from combined road and rail (if applicable) traffic are assessed against a 16-hour daytime (07:00 – 23:00) and 8-hour nighttime (23:00 – 07:00) equivalent sound pressure level ($L_{eq}$) reported in dBA. The combined impact is used to determine the requirement for ventilation and warning clauses. The MECP POW sound level limits and the sliding scale of required noise reduction measures for combined road and rail noise at POWs are listed in Table 6. Note that whistle noise is not included in the assessment of rail noise for this purpose.

Table 6: MECP POW Sound Level Limit: Ventilation & Warning Clauses – Combined Road & Rail Traffic

| Category | Daytime $L_{eq,16hr}$ (dBA) | Nighttime $L_{eq,8hr}$ (dBA) | Mitigation Measures | NPC-300 Warning Clause Required |
|---|---|---|---|---|
| POW Limit | 55 | 50 | None | None |
| POW Mitigation Threshold Living & Bedrooms | 56 - 65 | 51 – 60 | Include forced air heating and provision for central air conditioning | Type C |

| Category | Daytime $L_{eq,16hr}$ (dBA) | Nighttime $L_{eq,8hr}$ (dBA) | Mitigation Measures | NPC-300 Warning Clause Required |
|---|---|---|---|---|
| POW Mitigation Threshold Living & Bedrooms | >65 | >60 | Include central air conditioning | Type D |

Impacts to indoor noise levels from road and rail (if applicable) traffic are assessed against a 16-hour daytime (07:00 – 23:00) and 8-hour nighttime (23:00 – 07:00) equivalent sound pressure level ($L_{eq}$) reported in dBA at the POW receptor. The requirements for building construction to address transportation noise impacts to indoor sound levels are determined independently for road and rail noise, with the resulting requirements then being combined logarithmically. The MECP indoor sound level limits and the required noise reduction measures for road and rail noise at POWs are listed in Table 7. Note that whistle noise is included in the assessment of rail noise for this purpose.

Table 7: MECP Indoor Sound Level Limit & Construction Requirements – Road & Rail Traffic

| Category | Daytime $L_{eq,16hr}$ (dBA) | Nighttime $L_{eq,8hr}$ (dBA) | Total $L_{eq,24hr}$ (dBA) | Mitigation Measures |
|---|---|---|---|---|
| Road Indoor Limit Living Rooms / Bedrooms | 45 / 45 | 45 / 40 | - | Not Applicable |
| Road POW Mitigation Threshold Living & Bedrooms | >65 | >60 | - | Design building components to achieve indoor sound level limit |
| Rail Indoor Limit Living Rooms / Bedrooms | 40 / 40 | 40 / 35 | - | Not Applicable |
| Rail POW Mitigation Threshold Living & Bedrooms | >60 | >55 | - | Design building components to achieve indoor sound level limit |
| Rail POW Mitigation Threshold Bedrooms | - | - | >60 | Minimum of brick veneer or masonry equivalent construction from foundation to rafters in first row of dwellings if within 100m of tracks |

## 5.4 Transportation Sound Level Predictions

### 5.4.1 Road Traffic

Calculations of road traffic sound levels were performed using STAMSON 5.04, the software implementation of the MECP ORNAMENT model, which was developed and published by the MECP for transportation noise prediction. Only daytime sound levels are considered for outdoor amenity areas. The calculated sound levels at the receptors are presented in Table 8.

Table 8: Calculated Sound Levels due to Road Sources

| POR ID | Predicted Transportation Sound Levels (dBA) | |
|---|---|---|
| | Daytime (07:00–23:00) $L_{eq,16hr}$ | Nighttime (23:00–07:00) $L_{eq,8hr}$ |
| POW1 | 61 | 54 |
| POW2 | 67 | 61 |
| POW3 | 61 | 55 |
| POW4 | 54 | 47 |
| POW5 | 59 | 54 |
| OLA1 | 51 | - |
| OLA2 | 54 | - |
| OLA3 | 59 | - |

The STAMSON calculation outputs for the traffic noise predictions are attached in Appendix C.

## 5.5 Transportation Noise Control Recommendations

Noise control recommendations for the identified critical receptors and the corresponding noise sensitive land uses that they represent in the proposed redevelopment are summarized in Table 9 and discussed in the subsequent sections.

Table 9: Transportation Noise Control Measures Summary

| POR ID | Noise Barrier | Ventilation | Building Components | Warning Clause |
|---|---|---|---|---|
| POW1 | N/A | Forced-Air Heating | Meet OBC Requirements | Type C |
| POW2 | N/A | Central Air Conditioning | Designed to achieve indoor sound level criteria | Type D |
| POW3 | N/A | Forced-Air Heating | Meet OBC Requirements | Type C |
| POW4 | N/A | None | Meet OBC Requirements | Type C |
| POW5 | N/A | Forced-Air Heating | Meet OBC Requirements | Type C |
| OLA1 | No | N/A | N/A | None |
| OLA2 | No | N/A | N/A | None |
| OLA3 | Optional | N/A | N/A | Type A* |

*Unless mitigation (barrier) is installed to reduce the sound level to 55 dBA or lower.

### 5.5.1 Outdoor Living Areas – Barriers

Sound levels at the OLA associated with the 10th floor terrace and north townhouses are expected to be equal to or lower than 55 dBA, and no additional noise mitigation is required for these OLAs.

Sound levels at the OLAs associated with the rear yard of the south townhouses are expected to be greater than 55 dBA and equal to or lower than 60 dBA, and therefore it may be desirable to implement a noise barrier in order to reduce the sound level to 55 dBA or less at this OLA. NPC-300 requires either the implementation of such a barrier, or the inclusion of a Type A warning clause in applicable land title and/or development agreement documents. If noise mitigation for the OLAs is implemented such that the sound levels in the OLAs is expected to be 55 dBA or lower, no warning clause is required.

Proposed noise barrier heights for OLAs are summarized in Table 10 and illustrated in Figure 6.

Table 10: OLA Barrier Specifications

| Receptor ID | Mitigation Level | Predicted Sound Level $L_{eq\ (16h,\ day)}$ dBA |
|---|---|---|
| OLA3 | Unmitigated | 59 |
| | Barrier Option 1: South of Townhouses 1.5m height above ground | 55 |

Noise barriers, if constructed, should have a minimum surface density (face weight) of 20 kg/m$^2$. Barriers should be structurally sound, appropriately designed to withstand wind and snow load, and constructed without cracks or surface gaps. Any gaps under the barrier that are necessary for drainage purposes should be minimized and localized, so that the acoustical performance of the barrier is maintained. To improve the visual characteristics of the barrier, transparent elements may be included, if they meet the above conditions.

### 5.5.2 Indoor Living Areas - Ventilation

Sensitive receptors along the southeast façades of the main tower are expected to face POW sound levels above 65 dBA during the 16-hour day (07:00 – 23:00) and/or 60 dBA during the 8-hour night (23:00 – 07:00) due to road noise, therefore central air conditioning will be required for these units.

Sensitive receptors along the northeast and southwest façades of the main tower and the southeast and southwest façades of the townhouses are expected to face POW sound levels between 55 dBA and 65 dBA during the 16-hour day (07:00 – 23:00) and/or 50 dBA and 60 dBA during the 8-hour night (23:00 – 07:00) due to road, therefore forced air heating with the provision for central air conditioning is the minimum requirement for these units.

Sensitive receptors along the other façades of the Project are expected to face POW sound levels below 55 dBA during the 16-hour day (07:00 – 23:00) and/or 50 dBA during the 8-hour night (23:00 – 07:00) due to road noise, therefore no specific ventilation requirements apply for the purposes of addressing transportation noise.

TT understands that the Project plan includes forced air heating and central air conditioning for the entirety of the Project, therefore the above noted requirements are expected to be met.

### 5.5.3 Indoor Living Areas - Building Components

Sensitive receptors along the southeast façades of the Project are expected to face POW sound levels above 65 dBA during the 16-hour day (07:00 – 23:00) and/or 60 dBA during the 8-hour night (23:00 – 07:00) due to road noise, therefore building components on these façades must be designed to achieve the indoor sound level limit.

Sensitive receptors along the other façades of the Project are not expected to face POW sound levels above 65 dBA during the 16-hour day (07:00 – 23:00) and/or 60 dBA during the 8-hour night (23:00 – 07:00) due to road noise, therefore building components on these façades need only be designed to meet the requirements of OBC.

As the building design is at an early stage, the construction of the building envelope is not yet confirmed.

Table 11 shows TT's estimation of the maximum exterior wall, fixed window, and operable window component areas as a percentage of the floor area of a typical room and the minimum recommended STC requirement of each component If a component with a higher STC rating than the noted requirement is used, then the maximum allowable area of that component may increase.

Table 11: Building Envelope Requirements

| Component | Maximum Component Area as Percentage of Floor Area | STC Required |
|---|---|---|
| Sensitive Spaces Along the Southeast Facades of the Project | | |
| Solid Exterior | 100% | 36 |
| Fixed Glazing | 50% | 32 |
| Operable Glazing | 50% | 32 |

Note that these building components are required only for exterior walls of sensitive spaces, such as bedrooms and living rooms. The remaining façades of the Project must meet minimum OBC requirements for the glazing and exterior wall constructions.

### 5.5.4 Example Constructions

Unless otherwise specified, all building components must meet the minimum STC requirements set out in OBC. Examples of building components that meet the identified STC requirements above are as follows.

<u>Exterior wall</u>
For exterior walls, the following construction(s) are recommended in order to meet the identified STC requirements:

- Southeast façade, solid exterior (STC 36):
  - 12.7mm gypsum board
  - vapour barrier
  - 38 x 89 mm studs
  - 50 mm (or thicker) mineral wool or glass fibre batts
  - sheathing
  - wood siding or metal siding and fibre backer board

<u>Glazing</u>
For operable windows, the following glazing constructions are recommended in order to meet the identified STC requirements:

- Southeast façade, operable window (STC 32): 3mm glass, 20mm airspace, 3mm glass

For fixed windows, the following glazing constructions are recommended in order to meet the identified STC requirements:

- Southeast façade, inoperable window (STC 32): 3mm glass, 6mm airspace, 3mm glass

These provided glazing constructions are noted for reference only – STC of installed components should be verified with the glazing manufacturer. Any glazing constructions with equivalent or greater STC values will be acceptable.

### 5.5.5 Warning Clauses

The **Type A** warning clause is required to be included in the development agreements for the Project if one or more representative OLA receptors is predicted to be exposed to transportation sound pressure levels greater than 55 dBA and less than or equal to 60 dBA, and mitigations to reduce the sound level to 55 dBA or less are not provided. The Type A warning clause is as follows:

> *"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."*

The **Type C** warning clause is required to be included in the development agreements for specific dwelling units if one or more representative POW receptors is predicted to be exposed to transportation sound pressure levels greater than 55 dBA and less than or equal to 65 dBA during the 16-hour day (07:00 – 23:00) or greater than 50 dBA and less than or equal to 60 dBA during the 8-hour night (23:00 – 07:00), and the Project includes forced air heating with the provision for installation of central air conditioning in the future. The Type C warning clause is as follows:

> *"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."*

The **Type D** warning clause is required to be included in the development agreements for specific dwelling units if one or more representative POW receptors is predicted to be exposed to transportation sound pressure levels greater than 65 dBA during the 16-hour day (07:00 – 23:00) or 60 dBA during the 8-hour night (23:00 – 07:00), and the Project includes central air conditioning. The Type D warning clause is as follows:

> *"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."*

# 6.0 Stationary Noise Assessment

## 6.1 Critical Stationary Noise Receptors

NPC-300 defines a point of reception for the assessment of stationary noise sources as any location on a noise sensitive land use where noise from a stationary source is received. This typically includes both

points of reception on building façades, representing the plane-of-window of noise sensitive spaces (POR) and outdoor points of reception representing areas such as balconies, gardens, patios, and terraces (OPOR). These locations may be the same or different from the POW and OLA receptors identified as part of a transportation noise assessment.

### 6.1.1 Project Receptors

The project point of reception (PPOR) and project outdoor point of reception (POPOR) receptor(s) on the Project most likely to be affected by stationary noise sources are those representing the residential suites that have maximum exposure to stationary noise sources associated with the surrounding properties in each direction, and the project itself.

Based on provided site plans of the Project, TT understands that the 10th floor terrace will represent the most impacted POPOR at the Project. Individual suites and lower floors will have balconies and terraces, however because these are less than 4m in depth they have not been considered as POPORs.

The locations of the critical receptors on the Project for stationary noise are summarized in Table 12 and shown in Figure 5. PPORs were assessed using a grid of receptors across the full facade, and POPORs were assessed at the most impacted point within 30m of a building façade, 1.5m above ground/floor level.

Table 12: Project Points of Reception – Stationary Noise

| Receptor ID | Receptor Description | Receptor Location |
|---|---|---|
| PPOR1 | North tower | Building evaluation of full façades |
| PPOR2 | Central & lower towers | Building evaluation of full façades |
| PPOR3 | South tower | Building evaluation of full façades |
| PPOR4 | Northeast townhouses | Building evaluation of full façades |
| PPOR5 | Southwest townhouses | Building evaluation of full façades |
| POPOR1 | 10th floor terrace | SE area, 32.7m above ground |

### 6.1.2 Surrounding Receptors

The surrounding point of reception (SPOR) and surrounding outdoor point of reception (SOPOR) receptor(s) most likely to be affected by stationary noise from the Project include those associated with residential areas to the north and west of the Project. Areas south and east of the project are commercial properties and therefore not considered to be noise sensitive.

The locations of the critical receptors in the surrounding area for stationary noise from the Project are summarized in Table 13, and shown in Figure 5. SPORs and SOPORs were assessed at the most impacted points associated with each cardinal direction.

Table 13: Surrounding Points of Reception – Stationary Noise

| Receptor ID | Receptor Description | Receptor Location |
|---|---|---|
| SPOR1 | Townhouses southwest of Project | 3rd floor (7.5m), northeast façade centre, 1168 Arena Road |

| Receptor ID | Receptor Description | Receptor Location |
|---|---|---|
| SPOR2 | Townhouses northwest of Project | 3rd floor (7.5m), southeast façade centre, 3070 Queen Frederica Drive |
| SPOR3 | Residential tower northeast of Project | 6th floor (16m), southwest façade centre, 3020 Queen Frederica Drive |
| SOPOR1 | Townhouses southwest of Project | Rear yard of 1168 Arena Road, 1.5m above ground |
| SOPOR2 | Townhouses northwest of Project | Rear yard of 3070 Queen Frederica Drive, 1.5m above ground |
| SOPOR3 | Residential tower northeast of Project | Rear yard of 3020 Queen Frederica Drive, 1.5m above ground |

## 6.2 Stationary Noise Sources

NPC-300 defines a stationary source of noise as one or more sources of sound that are normally operated within a given property. Stationary sources typically include mechanical equipment such as Heating, Ventilation and Air Conditioning (HVAC) equipment, standby power generators with routine testing, and heavy vehicle traffic (truck idling, driving, and loading).

Certain sources of noise, such as residential air conditioners, passenger automobile traffic in parking lots, or temporary noise such as that related to construction are not considered to be stationary sources in NPC-300 and are not assessed in this report.

### 6.2.1 Project Sources

Due to the early stage of planning for the Project, detailed information regarding stationary noise sources at the project is not currently available. Source sound power levels identified in this report are estimated and provided for preliminary planning purposes only, this information will need to be confirmed in a future revision to this report and may rise or fall. Table 14 and Figure 5 provide a summary of the assumed Project stationary source data.

Table 14: Project Stationary Nose Sources

| Source ID | Source Description | Source Location | Source Sound Power dBA | Source Type | Notes & Assumptions |
|---|---|---|---|---|---|
| PHVAC1 | Roof Top HVAC | North Tower Roof | 90* | Steady | 60 min/hr (07:00 – 23:00) 30 min/hr (23:00 – 07:00) |
| PHVAC2 | Roof Top HVAC | South Tower Roof | 90* | Steady | 60 min/hr (07:00 – 23:00) 30 min/hr (23:00 – 07:00) |
| PGEN1 | Standby generator | North Tower Roof | 102* | Emergency | Daytime only |

*Sound power level assumed.

### 6.2.2 Surrounding Sources

Based on a review of satellite imagery, and field inspection, exterior HVAC equipment has been identified in the area surrounding the project. Table 15 and Figure 5 provide a summary of the assumed surrounding stationary source data. Because TT was unable to inspect equipment installed on surrounding properties, the following assumptions have been made:

- Equipment with no visible fans was assumed to be heating only, and/or located in an acoustical enclosure, therefore noise impacts from this equipment are assumed to be negligible;
- "Small" HVAC equipment (1-2 visible fans) was assumed to have a sound power level of approximately 78-82 dBA (based on Carrier model 48HCA05 and 48HCD08)

Table 15: Surrounding Stationary Nose Sources

| Source ID | Source Description | Source Location | Source Sound Power dBA | Source Type | Notes & Assumptions |
|---|---|---|---|---|---|
| SHVAC01 – SHVAC38 | "Small" HVAC units | Surrounding roof tops | 78 - 82 | Steady | 60 min/hr (07:00 – 23:00) 30 min/hr (23:00 – 07:00) |

## 6.3 Project Area Classification

NPC-300 defines the applicable sound pressure level limit at a given receptor as the higher of a set exclusionary sound level limit based on the area classification of that receptor, or the actual background sound level at the location of the receptor, whichever is higher. For the purposes of this report, the defined exclusionary limits were used for the purposes of assessing compliance.

The Project is considered to located in a Class 1 area as defined in NPC-300, based on the surrounding area features and its distance from major roads.

### 6.3.1 Class 1 Area Exclusionary Sound Level Limits

NPC-300 defines a Class 1 area as having an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as "urban hum" during both day and night.

Table 16 provides a summary of the applicable exclusionary sound level limits for steady noise sources impacting receptors in a Class 1 area. Steady stationary noise sources are assessed against a 1 hour equivalent sound pressure level ($L_{eq}$) expressed in A-weighted decibels (dBA). Routine testing of emergency equipment, if applicable, is assessed separately from other stationary noise sources, and is compared to sound level limits that are 5 dBA higher than would otherwise apply.

Table 16: Class 1 Exclusionary Sound Level Limits – Steady Noise

| Time Period | Normal Operations Steady Noise ($L_{eq,1hr}$, dBA) | | Emergency Equipment Testing Steady Noise ($L_{eq,1hr}$, dBA) | |
|---|---|---|---|---|
| | POR | OPOR | POR | OPOR |
| Daytime (07:00 – 19:00) | 50 | 50 | 55 | 55 |
| Evening (19:00 – 23:00) | 50 | 50 | 55 | 55 |
| Nighttime (23:00 – 07:00) | 45 | - | 50 | - |

## 6.4 Stationary Sound Level Predictions

Sound levels at the PORs due to the nearby stationary sources were calculated using the software CadnaA in accordance with the methods described in ISO 9613-2. The CadnaA calculation outputs are presented in Appendix D.

### 6.4.1 Stationary Noise Impacts on the Project

In modelling the impact of stationary noise sources to receptors located on the Project, TT has considered only the identified stationary sources associated with the surrounding area. The impact of stationary noise sources located on the project itself was not considered, as NPC-300 does not consider properties to be sensitive to their own noise sources.

Table 17 provides a summary of the modelling results for stationary noise impacts to the Project, and Appendix D contains the full modelling output and illustrations.

Table 17: Predicted Stationary Noise Source Impacts to the Project

| POR ID | Time Period | Steady Sound Level $L_{eq,1hr}$ (dBA) | Steady Sound Level Limit $L_{eq,1hr}$ (dBA) | Compliance |
|---|---|---|---|---|
| PPOR1 | Daytime | 44 | 50 | Yes |
| | Evening | 44 | 50 | Yes |
| | Nighttime | 41 | 45 | Yes |
| PPOR2 | Daytime | 48 | 50 | Yes |
| | Evening | 48 | 50 | Yes |
| | Nighttime | 45 | 45 | Yes |
| PPOR3 | Daytime | 47 | 50 | Yes |
| | Evening | 47 | 50 | Yes |
| | Nighttime | 44 | 45 | Yes |
| POPOR1 | Daytime | 43 | 50 | Yes |
| | Evening | 43 | 50 | Yes |

Noise due to stationary noise sources is predicted to meet the applicable sound level limits at all modeled receptors on the Project.

### 6.4.2 Project Stationary Noise Impacts on the Surrounding Area

In modelling the impact of stationary noise sources from the Project onto the surrounding area, TT has considered only the identified stationary sources associated with the project. The noise impact of existing stationary noise sources located in the surrounding area was not considered.

Table 18 provides a summary of the modelling results for stationary noise impacts to the surrounding area, and Appendix D contains the full modelling output and illustrations.

Table 18: Predicted Stationary Noise Source Impacts To The Surrounding Area

| POR ID | Time Period | Steady Sound Level $L_{eq,1hr}$ (dBA) | Steady Sound Level Limit $L_{eq,1hr}$ (dBA) | Compliance |
|---|---|---|---|---|
| SPOR1 | Daytime | 43 | 50 | Yes |
| | Evening | 43 | 50 | Yes |
| | Nighttime | 40 | 45 | Yes |
| SPOR2 | Daytime | 36 | 50 | Yes |
| | Evening | 36 | 50 | Yes |
| | Nighttime | 33 | 45 | Yes |
| SPOR3 | Daytime | 44 | 50 | Yes |
| | Evening | 44 | 50 | Yes |
| | Nighttime | 41 | 45 | Yes |
| SOPOR1 | Daytime | 42 | 50 | Yes |
| | Evening | 42 | 50 | Yes |
| SOPOR2 | Daytime | 34 | 50 | Yes |
| | Evening | 34 | 50 | Yes |
| SOPOR3 | Daytime | 36 | 50 | Yes |
| | Evening | 36 | 50 | Yes |

Noise due to stationary noise sources is predicted to meet the applicable sound level limits at all modeled receptors in the surrounding area.

## 6.5 Stationary Noise Mitigation Recommendations

### 6.5.1 Mitigation for Project Receptors

No predicted exceedances of the applicable stationary sound level limits at the Project receptors have been identified; therefore, no specific mitigation is recommended at this time. Constructing the Project to meet OBC and the identified requirements for mitigation of transportation noise is expected to be sufficient to address potential impacts from minor stationary noise sources in the vicinity of the Project.

### 6.5.2 Mitigation for Surrounding Receptors

No predicted exceedances of the applicable stationary sound level limits at the surrounding receptors have been identified; therefore, no specific mitigation is recommended at this time.

## 7.0 Concluding Comments

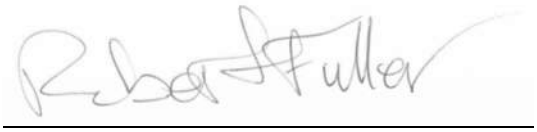
Noise impacts associated with the proposed development at 1225 Dundas Street East, Mississauga are expected to be able to meet all applicable MECP noise limits with the inclusion of noise control measures and warning clauses as presented in Section 5.5 of this report for transportation noise sources and Section 6.5 of this report for stationary noise sources. The proposed development should therefore be approved.

As the design of the redevelopment proceeds, and mechanical equipment is selected, acoustical modelling of the impacts of this equipment should be confirmed in order to evaluate compliance with applicable MECP limits at surrounding sensitive receptors, and confirm that impacts to the Project itself will be acceptable.

Please do not hesitate to contact us if there are any questions.

Yours Truly,

Thornton Tomasetti



Robert Fuller, P.Eng.
Project Engineer

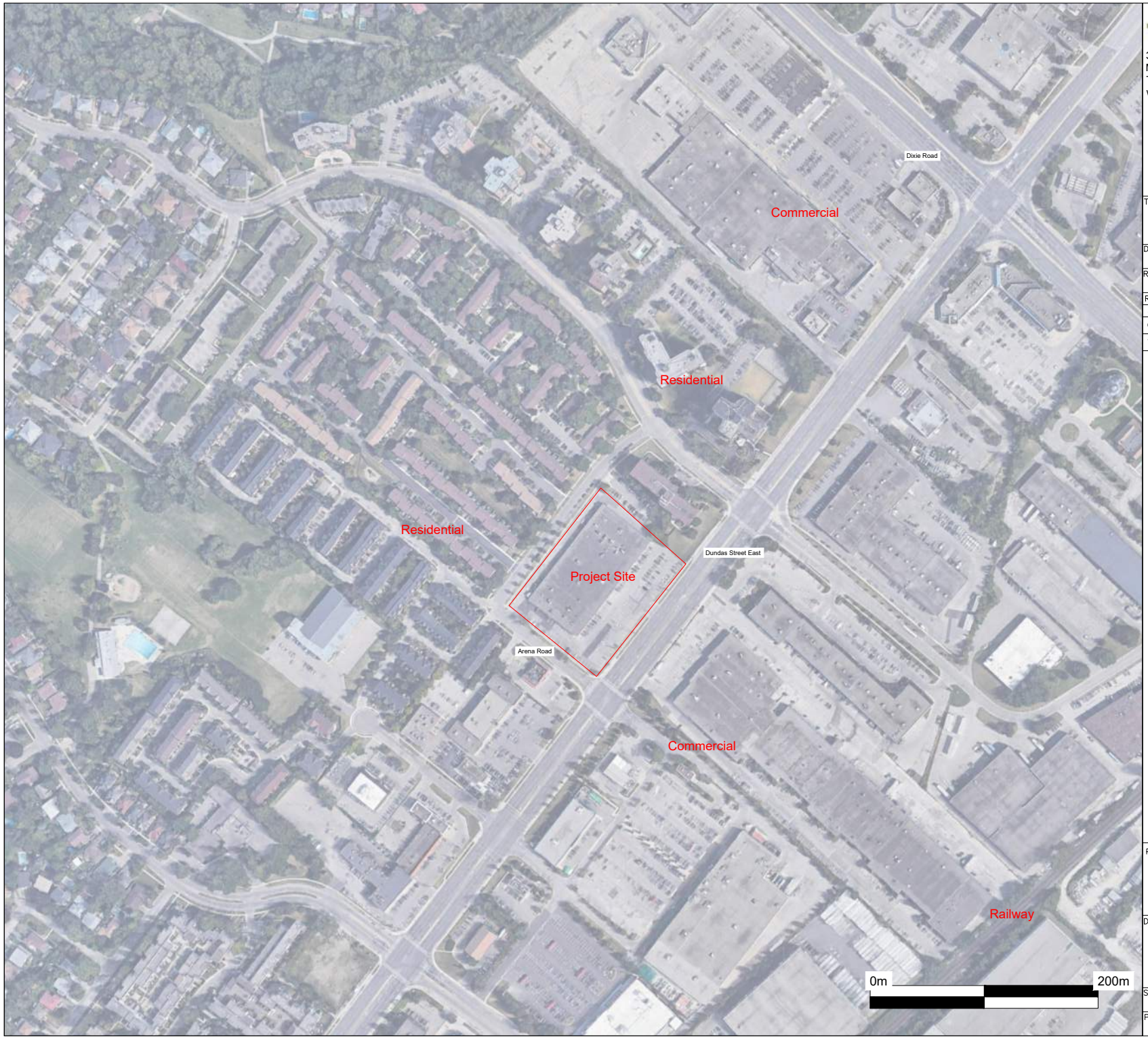
Reviewed by:

Stephen McCann, P.Eng.
Associate

## Disclaimer

Achieving the required noise control requirements relies on correct incorporation of noise control recommendations into Architectural and Mechanical drawings and specifications, as well as correct installation during construction. On Request, TT will conduct drawing reviews and onsite reviews of noise control measures and provide observations as appropriate; however, notwithstanding the foregoing, it is expressly understood and agreed that TT shall not have control or charge of, and shall not be responsible for the acts or omissions, including but not limited to means, methods, techniques, sequences and procedures, of the Design Professionals and/or Contractors performing design and/or construction on the Project. Accordingly, TT shall not be held responsible for the failure of any party to properly incorporate the noise control measures stated in this report.

## Appendix A: Figures

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www.thorntontomasetti.com

True North

TT PROJECT CODE
SW22159

DRAWN BY: RF

REVIEWED BY:

REVISION

| # | DATE | DESCRIPTION |
|---|---|---|
| 0 | 2021/12/02 | FOR INFORMATION ONLY, NOT FOR CONSTRUCTION |
| 1 | 202Y/MM/DD | FOR INFORMATION ONLY, NOT FOR CONSTRUCTION |

PROJECT NAME
1225 DUNDAS STREET EAST MISSISSAUGA

DRAWING NAME
FIGURE 1: SITE LOCATION & SURROUNDINGS

SCALE: ON DRAWING
DATE: 2022/06/20
Project SK. No
SHEET: 1 OF 1

MISSISSAUGA

# Figure 2: Zoning Map




1: 9,028


## Legend

- Road Names
- Zoning Labels
- Zoning Shapes
  - A Agricultural (By-law 5500)
  - AP Lester B. Pearson International
  - B Buffer, Berm, Fence
  - C1 Convenience Commercial
  - C2 Neighbourhood Commercial
  - C3 General Commercial
  - C4 Mainstreet Commercial
  - C5 Motor Vehicle Commercial
  - CC1 Core Commercial
  - CC2, CC4 Mixed Use
  - CC3 Mixed Use - Transition Area
  - CCO Office
  - CCOS Open Space
  - D Existing Use
  - E1 Employment in Nodes
  - E2 Employment
  - E3 Industrial
  - G1 Natural Hazards
  - G2 Natural Features
  - I Hospital and University / College
  - O Office
  - OS1 Community Park
  - OS2 City Park

## Notes

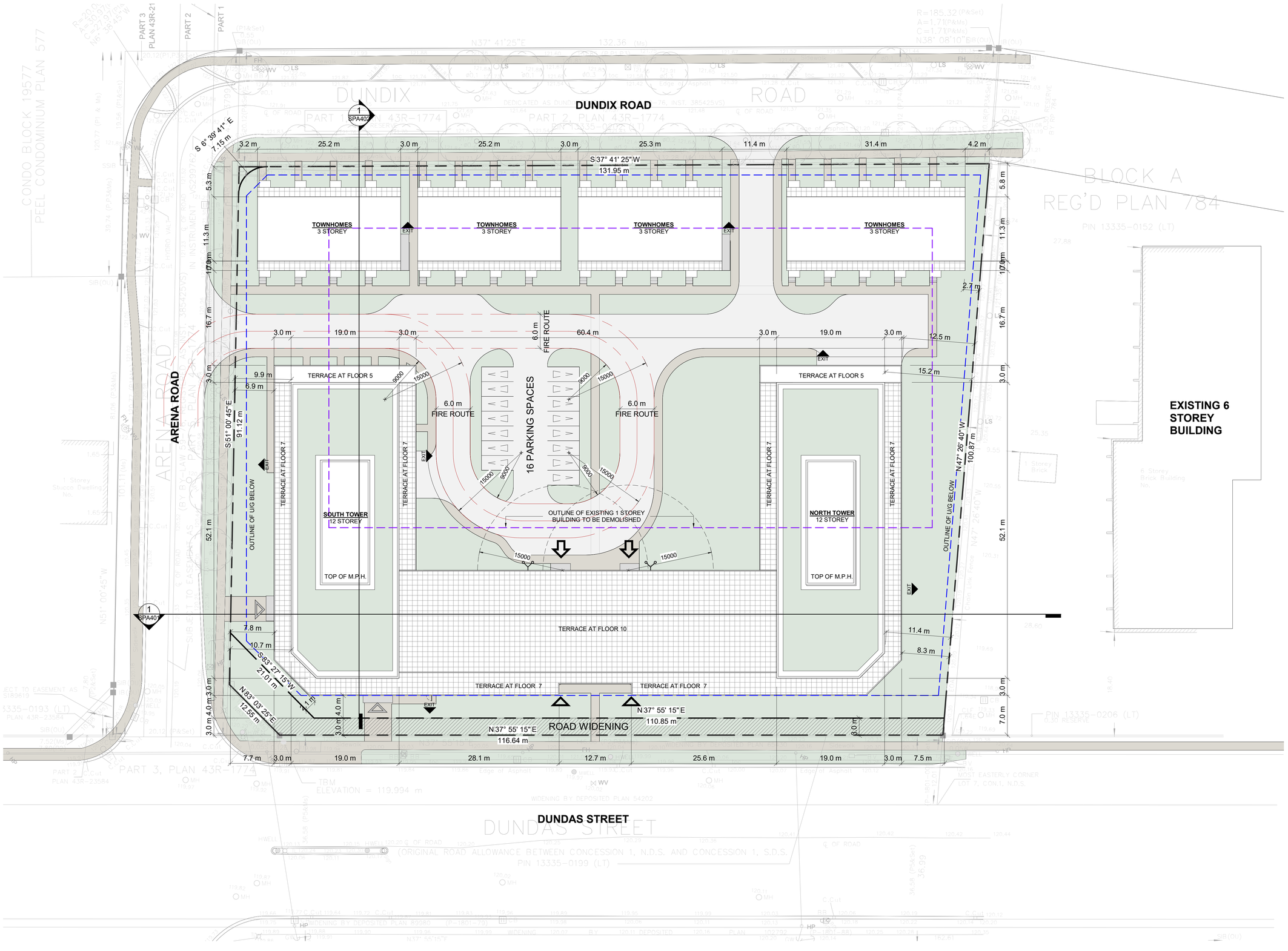
458.6 0 229.31 458.6 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere



This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS IS NOT A PLAN OF SURVEY




# TURNER FLEISCHER


**Turner Fleischer Architects Inc.**

67 Lesmill Road
Toronto, ON, M3B 2T8
T 416 425 2222
turnerfleischer.com





## LEGEND

- PRIMARY RESIDENTIAL ENTRANCE
- SECONDARY RESIDENTIAL ENTRANCE
- RETAIL ENTRANCE
- EXIT
- FIRE HYDRANT
- SIAMESE CONNECTION
- CONVEX MIRROR
- TRANSFORMER WITH CLEARANCES
- FIRE ROUTE SIGN
- 000.00 SPOT ELEVATION
- GAS/HYDRO METER

| # | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | Date 1 | Draft Concept Plan | |

Changing Logo
Select Titleblock
Edit Type
Select Logo/Banner

PROJECT

**PROPOSED RESIDENTIAL MIX-USE DEVELOPMENT**

1225 Dundas Street E, Mississauga, ON

DRAWING

**SITE PLAN / ROOF PLAN**

PROJECT NO.
22.117P01

PROJECT DATE

DRAWN BY
Author

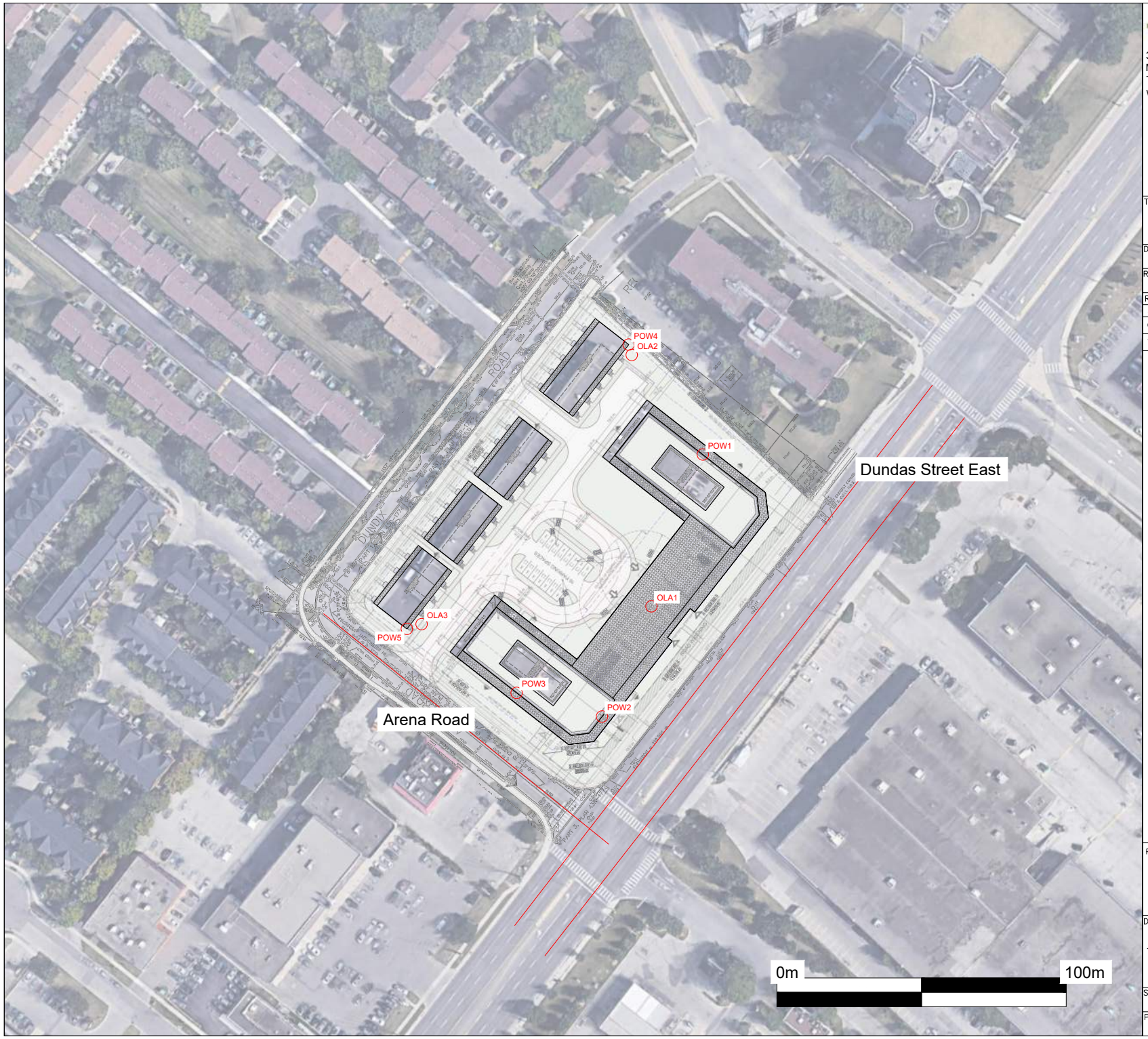
CHECKED BY
Checker

SCALE
As indicated

DRAWING NO. SPA006

REV. 1

2022-06-16 11:15:16 AM

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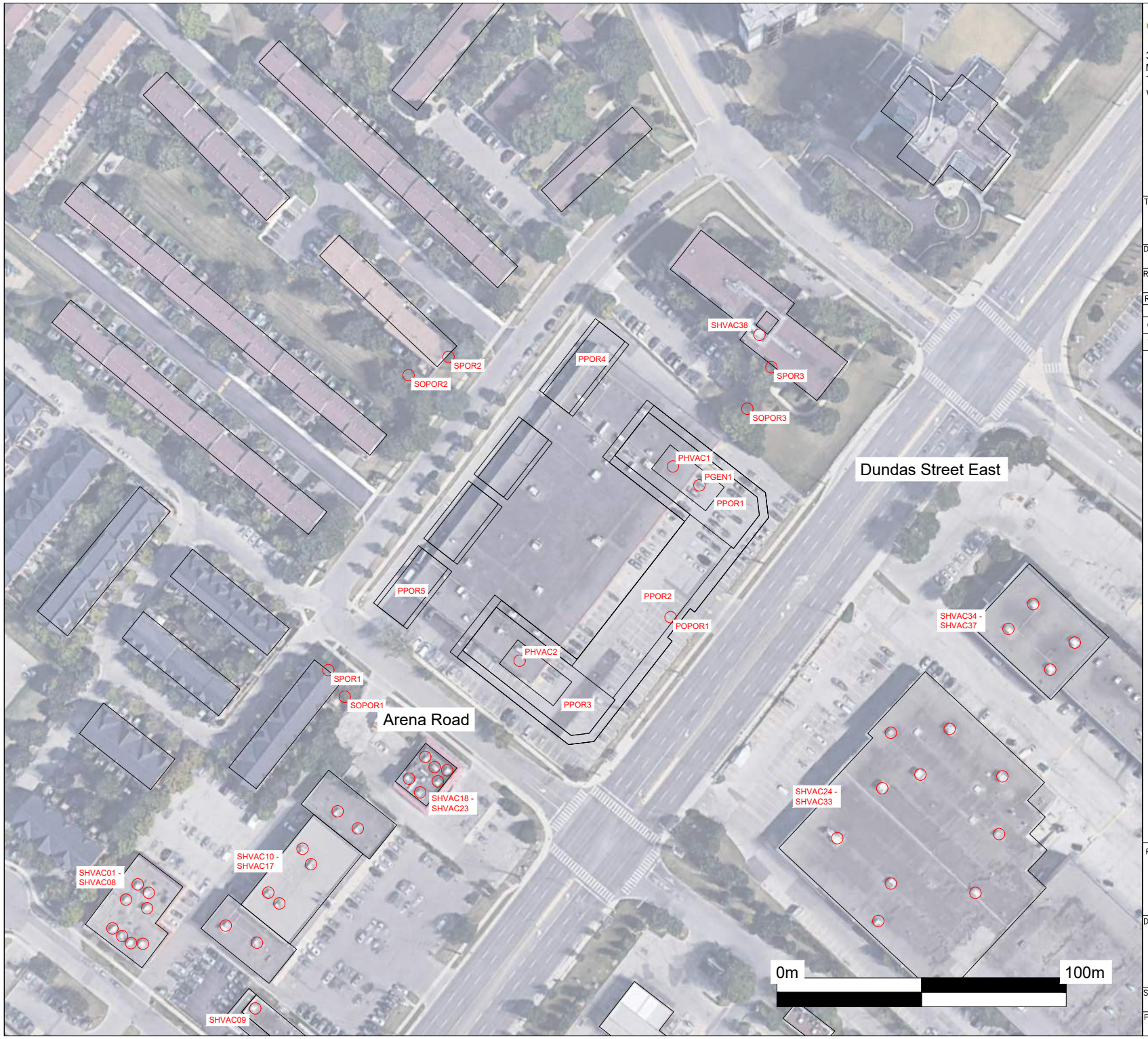
PROJECT NAME
1225 DUNDAS STREET EAST MISSISSAUGA

DRAWING NAME
FIGURE 4: TRANSPORTATION NOISE PORs & SOURCES

SCALE: ON DRAWING
DATE: 2022/06/20
Project SK. No
SHEET: 1 OF 1





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REVISION

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|---|---|---|
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| 1 | 202Y/MM/DD | FOR INFORMATION ONLY, NOT FOR CONSTRUCTION |

PROJECT NAME
1225 DUNDAS STREET EAST MISSISSAUGA

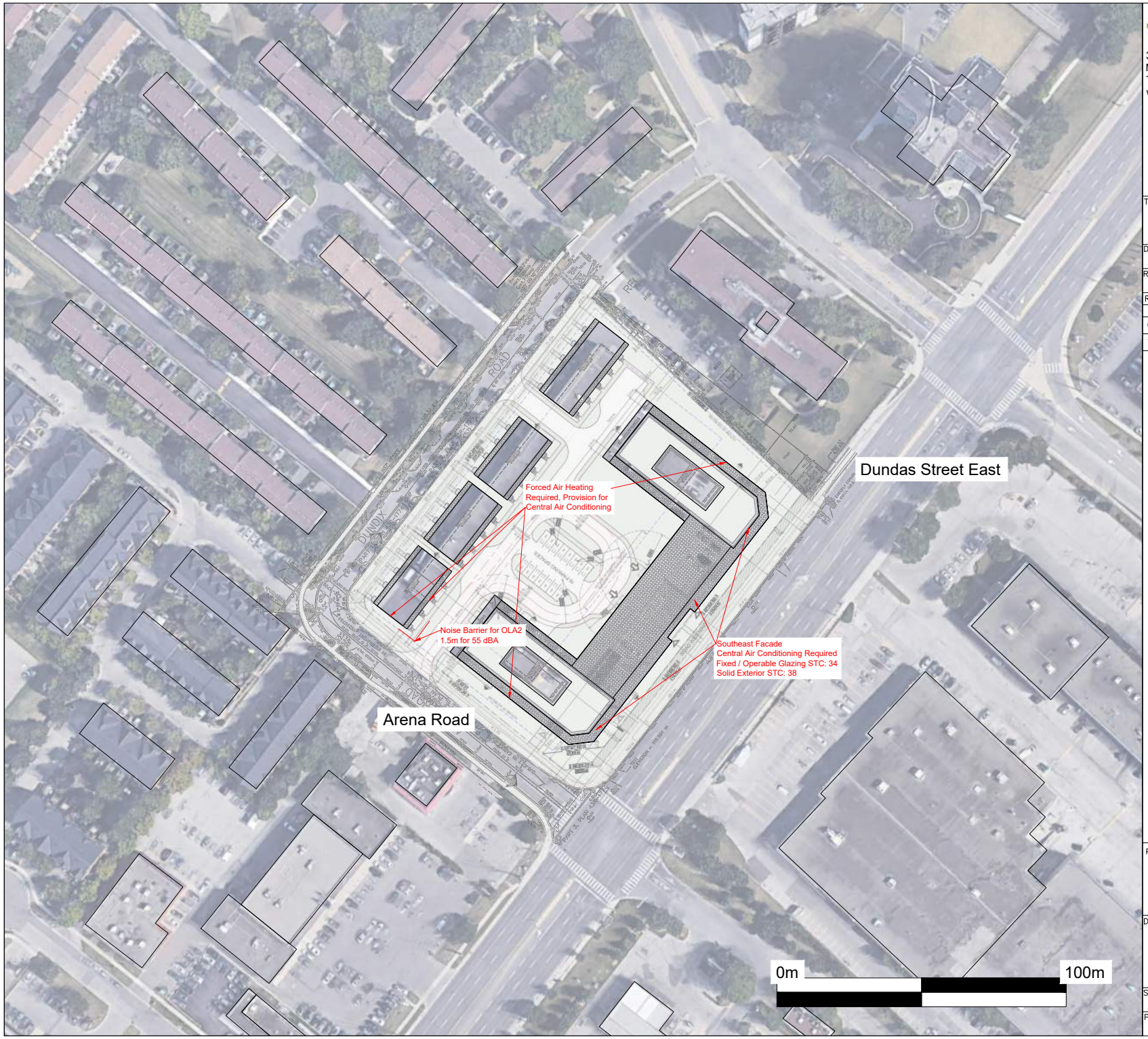
DRAWING NAME
FIGURE 5: STATIONARY NOISE PORs & SOURCES

SCALE ON DRAWING

DATE 2022/06/20

Project SK. No

SHEET 1 OF 1

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REVISION

| # | DATE | DESCRIPTION |
|---|---|---|
| 0 | 2021/12/02 | FOR INFORMATION ONLY, NOT FOR CONSTRUCTION |
| 1 | 202Y/MM/DD | FOR INFORMATION ONLY, NOT FOR CONSTRUCTION |

PROJECT NAME
1225 DUNDAS STREET EAST MISSISSAUGA

DRAWING NAME
FIGURE 6: RECOMMENDED MITIGATION MEASURES

SCALE: ON DRAWING
DATE: 2022/06/20
Project SK. No
SHEET: 1 OF 1

# Appendix B: Traffic Data

# Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

| Specified Period | | One Hour Peak | |
|---|---|---|---|
| From: | 07:00:00 | From: | 08:00:00 |
| To: | 09:00:00 | To: | 09:00:00 |

**Intersection:** Dundas St E & Arena Rd - Commercial Access
**Site Code:** 2219300003
**Count Date:** Jun 07, 2022

**Weather conditions:** Clear

**** Signalized Intersection **** **Major Road:** Dundas St E runs E/W

## North Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 51 | 26 | 77 |
| Trucks | 0 | 0 | 0 |
| Buses | 1 | 2 | 3 |
| Bicycles | 0 | 0 | 0 |
| | **52** | **28** | **80** |

## Arena Rd

| | | | | |
|---|---|---|---|---|
| Bicycles | 0 | 0 | 0 | 0 |
| Buses | 0 | 0 | 1 | 0 |
| Trucks | 0 | 0 | 0 | 0 |
| Cars | 36 | 3 | 12 | 0 |
| **Totals** | **36** | **3** | **13** | **0** |

## East Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 725 | 1178 | 1903 |
| Trucks | 39 | 43 | 82 |
| Buses | 13 | 10 | 23 |
| Bicycles | 0 | 0 | 0 |
| | **777** | **1231** | **2008** |

## Dundas St E

| Bicycles | Buses | Trucks | Cars | Totals |
|---|---|---|---|---|
| 0 | 0 | 0 | 0 | **0** |
| 0 | 2 | 0 | 17 | **19** |
| 0 | 9 | 39 | 1116 | **1164** |
| 0 | 0 | 0 | 17 | **17** |

Peds: 9

Peds: 4


Peds: 6

## Dundas St E

| Totals | Cars | Trucks | Buses | Bicycles |
|---|---|---|---|---|
| **0** | 0 | 0 | 0 | 0 |
| **8** | 8 | 0 | 0 | 0 |
| **725** | 675 | 37 | 13 | 0 |
| **44** | 42 | 2 | 0 | 0 |

Peds: 9

## West Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 1150 | 718 | 1868 |
| Trucks | 39 | 37 | 76 |
| Buses | 11 | 13 | 24 |
| Bicycles | 0 | 0 | 0 |
| | **1200** | **768** | **1968** |

| | | | | |
|---|---|---|---|---|
| **Totals** | **7** | **1** | **54** | **0** |
| Cars | 7 | 1 | 50 | 0 |
| Trucks | 0 | 0 | 4 | 0 |
| Buses | 0 | 0 | 0 | 0 |
| Bicycles | 0 | 0 | 0 | 0 |

Commercial Access

## South Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 58 | 62 | 120 |
| Trucks | 4 | 2 | 6 |
| Buses | 0 | 0 | 0 |
| Bicycles | 0 | 0 | 0 |
| | **62** | **64** | **126** |

Cars - Trucks - Buses - Bicycles

**Comments**

# Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

| Specified Period | | One Hour Peak | |
|---|---|---|---|
| From: | 16:00:00 | From: | 16:30:00 |
| To: | 18:00:00 | To: | 17:30:00 |

**Intersection:** Dundas St E & Arena Rd - Commercial Access
**Site Code:** 2219300003
**Count Date:** Jun 07, 2022

**Weather conditions:** Clear

**** Signalized Intersection **** **Major Road:** Dundas St E runs E/W

## North Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 43 | 67 | 110 |
| Trucks | 0 | 1 | 1 |
| Buses | 0 | 0 | 0 |
| Bicycles | 0 | 0 | 0 |
| | **43** | **68** | **111** |

## Arena Rd

| | | | | |
|---|---|---|---|---|
| Bicycles | 0 | 0 | 0 | 0 |
| Buses | 0 | 0 | 0 | 0 |
| Trucks | 0 | 0 | 0 | 0 |
| Cars | 26 | 2 | 15 | 0 |
| **Totals** | **26** | **2** | **15** | **0** |

## East Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 1593 | 1245 | 2838 |
| Trucks | 27 | 24 | 51 |
| Buses | 13 | 12 | 25 |
| Bicycles | 0 | 0 | 0 |
| | **1633** | **1281** | **2914** |

## Dundas St E

| Bicycles | Buses | Trucks | Cars | Totals |
|---|---|---|---|---|
| 0 | 0 | 0 | 0 | **0** |
| 0 | 0 | 1 | 36 | **37** |
| 0 | 12 | 24 | 1120 | **1156** |
| 0 | 0 | 1 | 18 | **19** |

Peds: 15

Peds: 11


Peds: 11

Peds: 24

## Dundas St E

| Totals | Cars | Trucks | Buses | Bicycles |
|---|---|---|---|---|
| **0** | 0 | 0 | 0 | 0 |
| **20** | 20 | 0 | 0 | 0 |
| **1525** | 1486 | 26 | 13 | 0 |
| **88** | 87 | 1 | 0 | 0 |

## West Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 1174 | 1532 | 2706 |
| Trucks | 26 | 27 | 53 |
| Buses | 12 | 13 | 25 |
| Bicycles | 0 | 0 | 0 |
| | **1212** | **1572** | **2784** |

| | | | | |
|---|---|---|---|---|
| **Totals** | **21** | **11** | **110** | **0** |
| Cars | 20 | 11 | 110 | 0 |
| Trucks | 1 | 0 | 0 | 0 |
| Buses | 0 | 0 | 0 | 0 |
| Bicycles | 0 | 0 | 0 | 0 |

Commercial Access

## South Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 141 | 107 | 248 |
| Trucks | 1 | 2 | 3 |
| Buses | 0 | 0 | 0 |
| Bicycles | 0 | 0 | 0 |
| | **142** | **109** | **251** |

Cars - Trucks - Buses - Bicycles

**Comments**

## Appendix C: Transportation Noise Predictions

```
STAMSON 5.0        NORMAL REPORT        Date: 27-06-2022 16:07:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola1.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: DSEE (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: DSEE (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  45.00 / 45.00  m
Receiver height           :  32.70 / 32.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  31.20 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: DSEW (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: DSEW (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :  32.70 / 32.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  31.20 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: AR (day/night)
--------------------------------------
Car traffic volume  :   839/359   veh/TimePeriod  *
Medium truck volume :    17/7     veh/TimePeriod  *
Heavy truck volume  :     9/4     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):    955
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  70.00

Data for Segment # 3: AR (day/night)
--------------------------------------
Angle1   Angle2           : -29.00 deg   51.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  73.00 / 73.00  m
Receiver height           :  32.70 / 32.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -18.00 deg   Angle2 : 51.00 deg
```

```
Barrier height            :  41.50 m
Barrier receiver distance :  33.00 / 33.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !       32.70 !       26.36 !        26.36

ROAD (0.00 + 47.95 + 0.00) = 47.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     90   0.00  66.53   0.00  -4.77   0.00   0.00   0.00 -13.82
47.95
--------------------------------------------------------------------------
--

Segment Leq : 47.95 dBA

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !       32.70 !       23.19 !        23.19

ROAD (0.00 + 47.36 + 0.00) = 47.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     90   0.00  66.53   0.00  -3.01   0.00   0.00   0.00 -16.16
47.36
--------------------------------------------------------------------------
--

Segment Leq : 47.36 dBA
```

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

Source height = 1.01 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.01 !       32.70 !       18.37 !        18.37

ROAD (31.05 + 19.03 + 0.00) = 31.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -29    -18   0.00  50.07   0.00  -6.87 -12.14   0.00   0.00   0.00
31.05
--------------------------------------------------------------------------
--
   -18     51   0.00  50.07   0.00  -6.87  -4.16   0.00   0.00 -20.00
19.03
--------------------------------------------------------------------------
--

Segment Leq : 31.32 dBA

Total Leq All Segments: 50.73 dBA

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !       32.70 !       26.36 !        26.36

ROAD (0.00 + 41.43 + 0.00) = 41.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     90   0.00  60.01   0.00  -4.77   0.00   0.00   0.00 -13.81
41.43
--------------------------------------------------------------------------
--

Segment Leq : 41.43 dBA
```

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !       32.70 !       23.19 !        23.19

ROAD (0.00 + 40.84 + 0.00) = 40.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------------
--
   -90     90   0.00  60.01   0.00  -3.01   0.00   0.00   0.00 -16.16
40.84
-----------------------------------------------------------------------------
--

Segment Leq : 40.84 dBA

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

Source height = 1.02 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.02 !       32.70 !       18.38 !        18.38

ROAD (30.42 + 18.40 + 0.00) = 30.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------------
--
   -29    -18   0.00  49.43   0.00  -6.87 -12.14   0.00   0.00   0.00
30.42
-----------------------------------------------------------------------------
--
   -18     51   0.00  49.43   0.00  -6.87  -4.16   0.00   0.00 -20.00
18.40
-----------------------------------------------------------------------------
--

Segment Leq : 30.69 dBA

Total Leq All Segments: 44.35 dBA
```

```
TOTAL Leq FROM ALL SOURCES (DAY): 50.73
                         (NIGHT): 44.35
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-06-2022 16:08:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: Ola2.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: DSEE1 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: DSEE1 (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -24.00 deg
Barrier height            :  17.80 m
Barrier receiver distance :  60.00 / 60.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: DSEE2 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
```

```
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: DSEE2 (day/night)
----------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   8.00 deg   Angle2 : 90.00 deg
Barrier height            :  22.05 m
Barrier receiver distance :  72.00 / 72.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: DSEW1 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: DSEW1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 / 89.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -24.00 deg
Barrier height            :  17.80 m
Barrier receiver distance :  60.00 / 60.00  m
Source elevation          :   0.00 m
```

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

Road data, segment # 4: DSEW2 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 4: DSEW2 (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 / 89.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   8.00 deg   Angle2 : 90.00 deg
Barrier height            :  22.05 m
Barrier receiver distance :  72.00 / 72.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: AR1 (day/night)
---------------------------------------
Car traffic volume  :   839/359   veh/TimePeriod  *
Medium truck volume :    17/7     veh/TimePeriod  *
Heavy truck volume  :     9/4     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):    955
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   2.00
```

```
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  70.00

Data for Segment # 5: AR1 (day/night)
-------------------------------------
Angle1   Angle2           : -36.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 136.00 / 136.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -36.00 deg   Angle2 : -9.00 deg
Barrier height            :  22.05 m
Barrier receiver distance : 122.00 / 122.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: AR2 (day/night)
---------------------------------------
Car traffic volume  :   839/359   veh/TimePeriod  *
Medium truck volume :    17/7     veh/TimePeriod  *
Heavy truck volume  :     9/4     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):    955
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  70.00

Data for Segment # 6: AR2 (day/night)
-------------------------------------
Angle1   Angle2           :   0.00 deg   11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 136.00 / 136.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 11.00 deg
Barrier height            :  11.15 m
Barrier receiver distance : 122.00 / 122.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: DSEE1 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.21 !         1.21

ROAD (0.00 + 36.36 + 49.37) = 49.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90    -24   0.00  66.53   0.00  -8.41  -4.36   0.00   0.00 -17.40
36.36
--------------------------------------------------------------------------
--
   -24      0   0.00  66.53   0.00  -8.41  -8.75   0.00   0.00   0.00
49.37
--------------------------------------------------------------------------
--

Segment Leq : 49.59 dBA

Results segment # 2: DSEE2 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.15 !         1.15

ROAD (44.60 + 36.10 + 0.00) = 45.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0      8   0.00  66.53   0.00  -8.41 -13.52   0.00   0.00   0.00
44.60
--------------------------------------------------------------------------
--
     8     90   0.00  66.53   0.00  -8.41  -3.41   0.00   0.00 -18.61
36.10
--------------------------------------------------------------------------
--
```

```
Segment Leq : 45.18 dBA

Results segment # 3: DSEW1 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.16 !         1.16

ROAD (0.00 + 36.60 + 50.05) = 50.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90    -24   0.00  66.53   0.00  -7.73  -4.36   0.00   0.00 -17.84
36.60
--------------------------------------------------------------------------
--
   -24      0   0.00  66.53   0.00  -7.73  -8.75   0.00   0.00   0.00
50.05
--------------------------------------------------------------------------
--

Segment Leq : 50.24 dBA

Results segment # 4: DSEW2 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.10 !         1.10

ROAD (45.28 + 36.42 + 0.00) = 45.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0      8   0.00  66.53   0.00  -7.73 -13.52   0.00   0.00   0.00
45.28
--------------------------------------------------------------------------
--
     8     90   0.00  66.53   0.00  -7.73  -3.41   0.00   0.00 -18.97
36.42
```

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

Segment Leq : 45.81 dBA

Results segment # 5: AR1 (day)
------------------------------

Source height = 1.01 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.01 !        1.50 !        1.06 !         1.06

ROAD (0.00 + 12.25 + 27.48) = 27.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -36     -9   0.00  50.07   0.00  -9.57  -8.24   0.00   0.00 -20.00
12.25
------------------------------------------------------------------------
--
    -9      0   0.00  50.07   0.00  -9.57 -13.01   0.00   0.00   0.00
27.48
------------------------------------------------------------------------
--

Segment Leq : 27.61 dBA

Results segment # 6: AR2 (day)
------------------------------

Source height = 1.01 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.01 !        1.50 !        1.06 !         1.06

ROAD (0.00 + 8.35 + 0.00) = 8.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
     0     11   0.00  50.07   0.00  -9.57 -12.14   0.00   0.00 -20.00
8.35
------------------------------------------------------------------------
--
```

```
Segment Leq : 8.35 dBA

Total Leq All Segments: 54.29 dBA

Results segment # 1: DSEE1 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.21 !         1.21

ROAD (0.00 + 29.84 + 42.85) = 43.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90    -24   0.00  60.01   0.00  -8.41  -4.36   0.00   0.00 -17.40
29.84
--------------------------------------------------------------------------
--
   -24      0   0.00  60.01   0.00  -8.41  -8.75   0.00   0.00   0.00
42.85
--------------------------------------------------------------------------
--

Segment Leq : 43.07 dBA

Results segment # 2: DSEE2 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.15 !         1.15

ROAD (38.08 + 29.58 + 0.00) = 38.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0      8   0.00  60.01   0.00  -8.41 -13.52   0.00   0.00   0.00
38.08
--------------------------------------------------------------------------
--
```

```
     8      90   0.00  60.01   0.00  -8.41  -3.41   0.00   0.00 -18.61
29.58
-------------------------------------------------------------------------
--

Segment Leq : 38.66 dBA

Results segment # 3: DSEW1 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.16 !         1.16

ROAD (0.00 + 30.08 + 43.53) = 43.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -24   0.00  60.01   0.00  -7.73  -4.36   0.00   0.00 -17.84
30.08
-------------------------------------------------------------------------
--
   -24      0   0.00  60.01   0.00  -7.73  -8.75   0.00   0.00   0.00
43.53
-------------------------------------------------------------------------
--

Segment Leq : 43.72 dBA

Results segment # 4: DSEW2 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.10 !         1.10

ROAD (38.76 + 29.90 + 0.00) = 39.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0      8   0.00  60.01   0.00  -7.73 -13.52   0.00   0.00   0.00
38.76
```

```
-----------------------------------------------------------------------------
--
     8     90   0.00  60.01   0.00  -7.73  -3.41   0.00   0.00 -18.97
29.90
-----------------------------------------------------------------------------
--

Segment Leq : 39.29 dBA

Results segment # 5: AR1 (night)
--------------------------------

Source height = 1.02 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.02 !        1.50 !        1.07 !         1.07

ROAD (0.00 + 11.62 + 26.85) = 26.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------------
--
   -36     -9   0.00  49.43   0.00  -9.57  -8.24   0.00   0.00 -20.00
11.62
-----------------------------------------------------------------------------
--
    -9      0   0.00  49.43   0.00  -9.57 -13.01   0.00   0.00   0.00
26.85
-----------------------------------------------------------------------------
--

Segment Leq : 26.98 dBA

Results segment # 6: AR2 (night)
--------------------------------

Source height = 1.02 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.02 !        1.50 !        1.07 !         1.07

ROAD (0.00 + 7.72 + 0.00) = 7.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------------
--
```

```
     0     11   0.00  49.43   0.00  -9.57 -12.14   0.00   0.00 -20.00
7.72
-----------------------------------------------------------------------
--

Segment Leq : 7.72 dBA

Total Leq All Segments: 47.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.29
                         (NIGHT): 47.79
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-06-2022 16:09:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola3.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: DSEE (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: DSEE (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :  22.05 m
Barrier receiver distance :  72.00 / 72.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: DSEW (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
```

```
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: DSEW (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 / 89.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :  22.05 m
Barrier receiver distance :  72.00 / 72.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: AR (day/night)
--------------------------------------
Car traffic volume  :   839/359   veh/TimePeriod  *
Medium truck volume :    17/7     veh/TimePeriod  *
Heavy truck volume  :     9/4     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):    955
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  70.00

Data for Segment # 3: AR (day/night)
------------------------------------
Angle1   Angle2           : -79.00 deg   57.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  33.00 deg   Angle2 : 57.00 deg
Barrier height            :  11.15 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
```

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

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.15 !         1.15

ROAD (0.00 + 36.40 + 55.11) = 55.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  66.53   0.00  -8.41  -3.01   0.00   0.00 -18.72
36.40
--------------------------------------------------------------------------
--
     0     90   0.00  66.53   0.00  -8.41  -3.01   0.00   0.00   0.00
55.11
--------------------------------------------------------------------------
--

Segment Leq : 55.17 dBA

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.10 !         1.10

ROAD (0.00 + 36.74 + 55.79) = 55.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  66.53   0.00  -7.73  -3.01   0.00   0.00 -19.05
36.74
--------------------------------------------------------------------------
--
```

```
     0      90   0.00  66.53   0.00  -7.73  -3.01   0.00   0.00   0.00
55.79
-------------------------------------------------------------------------
--

Segment Leq : 55.84 dBA

Results segment # 3: AR (day)
-----------------------------

Source height = 1.01 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.01 !        1.50 !        1.37 !         1.37

ROAD (46.98 + 20.29 + 0.00) = 46.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -79      33   0.00  50.07   0.00  -1.03  -2.06   0.00   0.00   0.00
46.98
-------------------------------------------------------------------------
--
    33      57   0.00  50.07   0.00  -1.03  -8.75   0.00   0.00 -20.00
20.29
-------------------------------------------------------------------------
--

Segment Leq : 46.99 dBA

Total Leq All Segments: 58.82 dBA

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.15 !         1.15

ROAD (0.00 + 29.88 + 48.59) = 48.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
```

```
   -90      0   0.00  60.01   0.00  -8.41  -3.01   0.00   0.00 -18.72
29.88
------------------------------------------------------------------------
--
     0     90   0.00  60.01   0.00  -8.41  -3.01   0.00   0.00   0.00
48.59
------------------------------------------------------------------------
--

Segment Leq : 48.65 dBA

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.10 !         1.10

ROAD (0.00 + 30.22 + 49.27) = 49.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -90      0   0.00  60.01   0.00  -7.73  -3.01   0.00   0.00 -19.05
30.22
------------------------------------------------------------------------
--
     0     90   0.00  60.01   0.00  -7.73  -3.01   0.00   0.00   0.00
49.27
------------------------------------------------------------------------
--

Segment Leq : 49.32 dBA

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

Source height = 1.02 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.02 !        1.50 !        1.37 !         1.37

ROAD (46.35 + 19.66 + 0.00) = 46.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
```

```
-----------------------------------------------------------------------------
--
   -79     33   0.00  49.43   0.00  -1.03  -2.06   0.00   0.00   0.00
46.35
-----------------------------------------------------------------------------
--
    33     57   0.00  49.43   0.00  -1.03  -8.75   0.00   0.00 -20.00
19.66
-----------------------------------------------------------------------------
--

Segment Leq : 46.36 dBA

Total Leq All Segments: 53.05 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 58.82
                          (NIGHT): 53.05
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-06-2022 16:11:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola3b1.te            Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: DSEE1 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: DSEE1 (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :  22.05 m
Barrier receiver distance :  72.00 / 72.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: DSEW1 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
```

```
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: DSEW1 (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 / 89.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :  22.05 m
Barrier receiver distance :  72.00 / 72.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: AR (day/night)
--------------------------------------
Car traffic volume  :   839/359   veh/TimePeriod  *
Medium truck volume :    17/7     veh/TimePeriod  *
Heavy truck volume  :     9/4     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):    955
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  70.00

Data for Segment # 3: AR (day/night)
------------------------------------
Angle1   Angle2           : -79.00 deg   57.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  33.00 deg   Angle2 : 57.00 deg
Barrier height            :  11.15 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
```

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

Road data, segment # 4: DSEE2 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 4: DSEE2 (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   6.00 / 6.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: DSEW2 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
```

```
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 5: DSEW2 (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 / 89.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   6.00 / 6.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: DSEE1 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.15 !         1.15

ROAD (0.00 + 36.40 + 0.00) = 36.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  66.53   0.00  -8.41  -3.01   0.00   0.00 -18.72
36.40
-------------------------------------------------------------------------
--

Segment Leq : 36.40 dBA

Results segment # 2: DSEW1 (day)
--------------------------------

Source height = 1.00 m

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

```
       1.00 !        1.50 !        1.10 !         1.10

ROAD (0.00 + 36.74 + 0.00) = 36.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  66.53   0.00  -7.73  -3.01   0.00   0.00 -19.05
36.74
--------------------------------------------------------------------------
--

Segment Leq : 36.74 dBA

Results segment # 3: AR (day)
-----------------------------

Source height = 1.01 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.01 !        1.50 !        1.37 !         1.37

ROAD (46.98 + 20.29 + 0.00) = 46.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -79     33   0.00  50.07   0.00  -1.03  -2.06   0.00   0.00   0.00
46.98
--------------------------------------------------------------------------
--
    33     57   0.00  50.07   0.00  -1.03  -8.75   0.00   0.00 -20.00
20.29
--------------------------------------------------------------------------
--

Segment Leq : 46.99 dBA

Results segment # 4: DSEE2 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.47 !         1.47
```

```
ROAD (0.00 + 50.11 + 0.00) = 50.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0     90   0.00  66.53   0.00  -8.41  -3.01   0.00   0.00  -5.00
50.11
--------------------------------------------------------------------------
--

Segment Leq : 50.11 dBA

Results segment # 5: DSEW2 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.47 !         1.47

ROAD (0.00 + 50.79 + 0.00) = 50.79 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0     90   0.00  66.53   0.00  -7.73  -3.01   0.00   0.00  -5.00
50.79
--------------------------------------------------------------------------
--

Segment Leq : 50.79 dBA

Total Leq All Segments: 54.50 dBA

Results segment # 1: DSEE1 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.15 !         1.15

ROAD (0.00 + 29.88 + 0.00) = 29.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
```

```
-----------------------------------------------------------------------------
--
   -90      0   0.00  60.01   0.00  -8.41  -3.01   0.00   0.00 -18.72
29.88
-----------------------------------------------------------------------------
--

Segment Leq : 29.88 dBA

Results segment # 2: DSEW1 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        1.50 !        1.10 !         1.10

ROAD (0.00 + 30.22 + 0.00) = 30.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------------
--
   -90      0   0.00  60.01   0.00  -7.73  -3.01   0.00   0.00 -19.05
30.22
-----------------------------------------------------------------------------
--

Segment Leq : 30.22 dBA

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

Source height = 1.02 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.02 !        1.50 !        1.37 !         1.37

ROAD (46.35 + 19.66 + 0.00) = 46.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------------
--
   -79     33   0.00  49.43   0.00  -1.03  -2.06   0.00   0.00   0.00
46.35
-----------------------------------------------------------------------------
--
```

```
    33     57   0.00  49.43   0.00  -1.03  -8.75   0.00   0.00 -20.00
19.66
-----------------------------------------------------------------------
--

Segment Leq : 46.36 dBA

Results segment # 4: DSEE2 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        4.50 !        4.30 !         4.30

ROAD (0.00 + 48.59 + 0.00) = 48.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
     0     90   0.00  60.01   0.00  -8.41  -3.01   0.00   0.00  -0.13
48.47*
     0     90   0.00  60.01   0.00  -8.41  -3.01   0.00   0.00   0.00
48.59
-----------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 48.59 dBA

Results segment # 5: DSEW2 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        4.50 !        4.26 !         4.26

ROAD (0.00 + 49.27 + 0.00) = 49.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
     0     90   0.00  60.01   0.00  -7.73  -3.01   0.00   0.00  -0.13
49.14*
```

```
     0      90   0.00  60.01   0.00  -7.73  -3.01   0.00   0.00   0.00
49.27
-----------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 49.27 dBA

Total Leq All Segments: 53.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.50
                         (NIGHT): 53.06
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-06-2022 15:58:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow1.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: DSEE (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: DSEE (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  39.50 / 39.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: DSEW (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: DSEW (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :  39.50 / 39.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.00 m

ROAD (0.00 + 57.29 + 0.00) = 57.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  66.53   0.00  -6.23  -3.01   0.00   0.00   0.00
57.29
--------------------------------------------------------------------------
--

Segment Leq : 57.29 dBA

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

Source height = 1.00 m

ROAD (0.00 + 58.47 + 0.00) = 58.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  66.53   0.00  -5.05  -3.01   0.00   0.00   0.00
58.47
--------------------------------------------------------------------------
--

Segment Leq : 58.47 dBA

Total Leq All Segments: 60.93 dBA

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

Source height = 1.00 m

ROAD (0.00 + 50.77 + 0.00) = 50.77 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  60.01   0.00  -6.23  -3.01   0.00   0.00   0.00
50.77
--------------------------------------------------------------------------
--

Segment Leq : 50.77 dBA

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

Source height = 1.00 m

ROAD (0.00 + 51.95 + 0.00) = 51.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  60.01   0.00  -5.05  -3.01   0.00   0.00   0.00
51.95
--------------------------------------------------------------------------
--

Segment Leq : 51.95 dBA

Total Leq All Segments: 54.41 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.93
                          (NIGHT): 54.41
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-06-2022 16:02:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow2.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: DSEE (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: DSEE (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :  39.50 / 39.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: DSEW (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: DSEW (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 / 20.00  m
Receiver height           :  39.50 / 39.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: AR (day/night)
--------------------------------------
Car traffic volume  :   839/359   veh/TimePeriod  *
Medium truck volume :    17/7     veh/TimePeriod  *
Heavy truck volume  :     9/4     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):    955
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  70.00

Data for Segment # 3: AR (day/night)
------------------------------------
Angle1   Angle2           : -42.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  33.00 / 33.00  m
Receiver height           :  39.50 / 39.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.00 m

ROAD (0.00 + 62.85 + 0.00) = 62.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     90   0.00  66.53   0.00  -3.68   0.00   0.00   0.00   0.00
62.85
--------------------------------------------------------------------------
--
```

```
Segment Leq : 62.85 dBA

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

Source height = 1.00 m

ROAD (0.00 + 65.28 + 0.00) = 65.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     90   0.00  66.53   0.00  -1.25   0.00   0.00   0.00   0.00
65.28
--------------------------------------------------------------------------
--

Segment Leq : 65.28 dBA

Results segment # 3: AR (day)
-----------------------------

Source height = 1.01 m

ROAD (0.00 + 40.32 + 0.00) = 40.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -42      0   0.00  50.07   0.00  -3.42  -6.32   0.00   0.00   0.00
40.32
--------------------------------------------------------------------------
--

Segment Leq : 40.32 dBA

Total Leq All Segments: 67.25 dBA

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

Source height = 1.00 m

ROAD (0.00 + 56.33 + 0.00) = 56.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     90   0.00  60.01   0.00  -3.68   0.00   0.00   0.00   0.00
56.33
--------------------------------------------------------------------------
--
```

```
Segment Leq : 56.33 dBA

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

Source height = 1.00 m

ROAD (0.00 + 58.76 + 0.00) = 58.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     90   0.00  60.01   0.00  -1.25   0.00   0.00   0.00   0.00
58.76
--------------------------------------------------------------------------
--

Segment Leq : 58.76 dBA


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

Source height = 1.02 m

ROAD (0.00 + 39.69 + 0.00) = 39.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -42      0   0.00  49.43   0.00  -3.42  -6.32   0.00   0.00   0.00
39.69
--------------------------------------------------------------------------
--

Segment Leq : 39.69 dBA

Total Leq All Segments: 60.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.25
                         (NIGHT): 60.76
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-06-2022 16:03:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow3.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: DSEE (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: DSEE (day/night)
--------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  64.00 / 64.00  m
Receiver height           :  39.50 / 39.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: DSEW (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: DSEW (day/night)
--------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  49.00 / 49.00  m
Receiver height           :  39.50 / 39.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: AR (day/night)
--------------------------------------
Car traffic volume  :   839/359   veh/TimePeriod  *
Medium truck volume :    17/7     veh/TimePeriod  *
Heavy truck volume  :     9/4     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):    955
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  70.00

Data for Segment # 3: AR (day/night)
------------------------------------
Angle1   Angle2           : -70.00 deg   73.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  21.00 / 21.00  m
Receiver height           :  39.50 / 39.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.00 m

ROAD (0.00 + 57.22 + 0.00) = 57.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0     90   0.00  66.53   0.00  -6.30  -3.01   0.00   0.00   0.00
57.22
--------------------------------------------------------------------------
--
```

```
Segment Leq : 57.22 dBA

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

Source height = 1.00 m

ROAD (0.00 + 58.38 + 0.00) = 58.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0     90   0.00  66.53   0.00  -5.14  -3.01   0.00   0.00   0.00
58.38
--------------------------------------------------------------------------
--

Segment Leq : 58.38 dBA

Results segment # 3: AR (day)
-----------------------------

Source height = 1.01 m

ROAD (0.00 + 47.60 + 0.00) = 47.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -70     73   0.00  50.07   0.00  -1.46  -1.00   0.00   0.00   0.00
47.60
--------------------------------------------------------------------------
--

Segment Leq : 47.60 dBA

Total Leq All Segments: 61.05 dBA

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

Source height = 1.00 m

ROAD (0.00 + 50.70 + 0.00) = 50.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0     90   0.00  60.01   0.00  -6.30  -3.01   0.00   0.00   0.00
50.70
--------------------------------------------------------------------------
--
```

```
Segment Leq : 50.70 dBA

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

Source height = 1.00 m

ROAD (0.00 + 51.86 + 0.00) = 51.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0     90   0.00  60.01   0.00  -5.14  -3.01   0.00   0.00   0.00
51.86
--------------------------------------------------------------------------
--

Segment Leq : 51.86 dBA

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

Source height = 1.02 m

ROAD (0.00 + 46.97 + 0.00) = 46.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -70     73   0.00  49.43   0.00  -1.46  -1.00   0.00   0.00   0.00
46.97
--------------------------------------------------------------------------
--

Segment Leq : 46.97 dBA

Total Leq All Segments: 55.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.05
                          (NIGHT): 55.06
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-06-2022 16:05:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow4.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: DSEE1 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: DSEE1 (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 107.00 / 107.00 m
Receiver height           :   9.50 / 9.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  17.80 m
Barrier receiver distance :  62.00 / 62.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: DSEE2 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
```

```
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: DSEE2 (day/night)
----------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 107.00 / 107.00 m
Receiver height           :   9.50 / 9.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   9.00 deg   Angle2 : 90.00 deg
Barrier height            :  22.05 m
Barrier receiver distance :  75.00 / 75.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: DSEW1 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: DSEW1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  92.00 / 92.00  m
Receiver height           :   9.50 / 9.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  17.80 m
Barrier receiver distance :  62.00 / 62.00  m
Source elevation          :   0.00 m
```

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

Road data, segment # 4: DSEW2 (day/night)
-----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 4: DSEW2 (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  92.00 / 92.00  m
Receiver height           :   9.50 / 9.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   9.00 deg   Angle2 : 90.00 deg
Barrier height            :  22.05 m
Barrier receiver distance :  75.00 / 75.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 5: AR1 (day/night)
---------------------------------------
Car traffic volume  :   839/359   veh/TimePeriod  *
Medium truck volume :    17/7     veh/TimePeriod  *
Heavy truck volume  :     9/4     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):    955
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   2.00
```

```
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  70.00

Data for Segment # 5: AR1 (day/night)
-------------------------------------
Angle1   Angle2           : -37.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 139.00 / 139.00 m
Receiver height           :   9.50 / 9.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -37.00 deg   Angle2 : -10.00 deg
Barrier height            :  22.05 m
Barrier receiver distance : 125.00 / 125.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 6: AR2 (day/night)
---------------------------------------
Car traffic volume  :   839/359   veh/TimePeriod  *
Medium truck volume :    17/7     veh/TimePeriod  *
Heavy truck volume  :     9/4     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):    955
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  70.00

Data for Segment # 6: AR2 (day/night)
-------------------------------------
Angle1   Angle2           :   0.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 139.00 / 139.00 m
Receiver height           :   9.50 / 9.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 10.00 deg
Barrier height            :  11.15 m
Barrier receiver distance : 125.00 / 125.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: DSEE1 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        4.57 !         4.57

ROAD (0.00 + 37.41 + 48.67) = 48.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90    -21   0.00  66.53   0.00  -8.53  -4.16   0.00   0.00 -16.43
37.41
--------------------------------------------------------------------------
--
   -21      0   0.00  66.53   0.00  -8.53  -9.33   0.00   0.00   0.00
48.67
--------------------------------------------------------------------------
--

Segment Leq : 48.98 dBA

Results segment # 2: DSEE2 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        3.54 !         3.54

ROAD (44.99 + 36.30 + 0.00) = 45.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0      9   0.00  66.53   0.00  -8.53 -13.01   0.00   0.00   0.00
44.99
--------------------------------------------------------------------------
--
     9     90   0.00  66.53   0.00  -8.53  -3.47   0.00   0.00 -18.24
36.30
--------------------------------------------------------------------------
--
```

```
Segment Leq : 45.54 dBA

Results segment # 3: DSEW1 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        3.77 !         3.77

ROAD (0.00 + 37.30 + 49.33) = 49.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90    -21   0.00  66.53   0.00  -7.88  -4.16   0.00   0.00 -17.19
37.30
--------------------------------------------------------------------------
--
   -21      0   0.00  66.53   0.00  -7.88  -9.33   0.00   0.00   0.00
49.33
--------------------------------------------------------------------------
--

Segment Leq : 49.59 dBA

Results segment # 4: DSEW2 (day)
--------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        2.57 !         2.57

ROAD (45.65 + 36.42 + 0.00) = 46.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0      9   0.00  66.53   0.00  -7.88 -13.01   0.00   0.00   0.00
45.65
--------------------------------------------------------------------------
--
     9     90   0.00  66.53   0.00  -7.88  -3.47   0.00   0.00 -18.77
36.42
```

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

Segment Leq : 46.14 dBA

Results segment # 5: AR1 (day)
------------------------------

Source height = 1.01 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.01 !        9.50 !        1.87 !         1.87

ROAD (0.00 + 12.16 + 27.84) = 27.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------------
--
   -37    -10   0.00  50.07   0.00  -9.67  -8.24   0.00   0.00 -20.00
12.16
-----------------------------------------------------------------------------
--
   -10      0   0.00  50.07   0.00  -9.67 -12.55   0.00   0.00   0.00
27.84
-----------------------------------------------------------------------------
--

Segment Leq : 27.96 dBA

Results segment # 6: AR2 (day)
------------------------------

Source height = 1.01 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.01 !        9.50 !        1.87 !         1.87

ROAD (0.00 + 7.84 + 0.00) = 7.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------------
--
     0     10   0.00  50.07   0.00  -9.67 -12.55   0.00   0.00 -20.00
7.84
-----------------------------------------------------------------------------
--
```

```
Segment Leq : 7.84 dBA

Total Leq All Segments: 53.94 dBA

Results segment # 1: DSEE1 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        4.58 !         4.58

ROAD (0.00 + 30.89 + 42.15) = 42.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90    -21   0.00  60.01   0.00  -8.53  -4.16   0.00   0.00 -16.43
30.89
--------------------------------------------------------------------------
--
   -21      0   0.00  60.01   0.00  -8.53  -9.33   0.00   0.00   0.00
42.15
--------------------------------------------------------------------------
--

Segment Leq : 42.46 dBA

Results segment # 2: DSEE2 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        3.54 !         3.54

ROAD (38.47 + 29.78 + 0.00) = 39.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     0      9   0.00  60.01   0.00  -8.53 -13.01   0.00   0.00   0.00
38.47
--------------------------------------------------------------------------
--
```

```
     9     90   0.00  60.01   0.00  -8.53  -3.47   0.00   0.00 -18.24
29.78
------------------------------------------------------------------------
--

Segment Leq : 39.02 dBA

Results segment # 3: DSEW1 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        3.77 !         3.77

ROAD (0.00 + 30.78 + 42.81) = 43.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -90    -21   0.00  60.01   0.00  -7.88  -4.16   0.00   0.00 -17.19
30.78
------------------------------------------------------------------------
--
   -21      0   0.00  60.01   0.00  -7.88  -9.33   0.00   0.00   0.00
42.81
------------------------------------------------------------------------
--

Segment Leq : 43.07 dBA


Results segment # 4: DSEW2 (night)
----------------------------------

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        2.57 !         2.57

ROAD (39.13 + 29.90 + 0.00) = 39.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
```

```
     0      9   0.00  60.01   0.00  -7.88 -13.01   0.00   0.00   0.00
39.13
-------------------------------------------------------------------------
--
     9     90   0.00  60.01   0.00  -7.88  -3.47   0.00   0.00 -18.77
29.90
-------------------------------------------------------------------------
--

Segment Leq : 39.62 dBA

Results segment # 5: AR1 (night)
--------------------------------

Source height = 1.02 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.02 !        9.50 !        1.87 !         1.87

ROAD (0.00 + 11.52 + 27.21) = 27.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -37    -10   0.00  49.43   0.00  -9.67  -8.24   0.00   0.00 -20.00
11.52
-------------------------------------------------------------------------
--
   -10      0   0.00  49.43   0.00  -9.67 -12.55   0.00   0.00   0.00
27.21
-------------------------------------------------------------------------
--

Segment Leq : 27.33 dBA

Results segment # 6: AR2 (night)
--------------------------------

Source height = 1.02 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.02 !        9.50 !        1.87 !         1.87

ROAD (0.00 + 7.21 + 0.00) = 7.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
```

```
-----------------------------------------------------------------------------
--
     0     10   0.00  49.43   0.00  -9.67 -12.55   0.00   0.00 -20.00
7.21
-----------------------------------------------------------------------------
--

Segment Leq : 7.21 dBA

Total Leq All Segments: 47.45 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.94
                         (NIGHT): 47.45
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-06-2022 16:06:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: pow5.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: DSEE (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: DSEE (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 107.00 / 107.00 m
Receiver height           :   9.50 / 9.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :  22.05 m
Barrier receiver distance :  75.00 / 75.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: DSEW (day/night)
----------------------------------------
Car traffic volume  : 13753/1528  veh/TimePeriod  *
Medium truck volume :   430/48    veh/TimePeriod  *
Heavy truck volume  :   143/16    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):  12305
```

```
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: DSEW (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  92.00 / 92.00  m
Receiver height           :   9.50 / 9.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :  22.05 m
Barrier receiver distance :  75.00 / 75.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: AR (day/night)
--------------------------------------
Car traffic volume  :   839/359   veh/TimePeriod  *
Medium truck volume :    17/7     veh/TimePeriod  *
Heavy truck volume  :     9/4     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):    955
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  70.00

Data for Segment # 3: AR (day/night)
------------------------------------
Angle1   Angle2           : -82.00 deg   61.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   9.50 / 9.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

```
Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        3.54 !         3.54

ROAD (0.00 + 36.61 + 54.99) = 55.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  66.53   0.00  -8.53  -3.01   0.00   0.00 -18.38
36.61
--------------------------------------------------------------------------
--
     0     90   0.00  66.53   0.00  -8.53  -3.01   0.00   0.00   0.00
54.99
--------------------------------------------------------------------------
--

Segment Leq : 55.05 dBA

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        2.57 !         2.57

ROAD (0.00 + 36.77 + 55.65) = 55.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  66.53   0.00  -7.88  -3.01   0.00   0.00 -18.88
36.77
--------------------------------------------------------------------------
--
     0     90   0.00  66.53   0.00  -7.88  -3.01   0.00   0.00   0.00
55.65
--------------------------------------------------------------------------
--

Segment Leq : 55.70 dBA
```

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

Source height = 1.01 m

ROAD (0.00 + 49.07 + 0.00) = 49.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -82     61   0.00  50.07   0.00   0.00  -1.00   0.00   0.00   0.00
49.07
--------------------------------------------------------------------------
--

Segment Leq : 49.07 dBA

Total Leq All Segments: 58.88 dBA

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        3.54 !         3.54

ROAD (0.00 + 30.09 + 48.47) = 48.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  60.01   0.00  -8.53  -3.01   0.00   0.00 -18.38
30.09
--------------------------------------------------------------------------
--
     0     90   0.00  60.01   0.00  -8.53  -3.01   0.00   0.00   0.00
48.47
--------------------------------------------------------------------------
--

Segment Leq : 48.53 dBA

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

Source height = 1.00 m

Barrier height for grazing incidence
------------------------------------
```

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.00 !        9.50 !        2.57 !         2.57

ROAD (0.00 + 30.25 + 49.13) = 49.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  60.01   0.00  -7.88  -3.01   0.00   0.00 -18.88
30.25
--------------------------------------------------------------------------
--
     0     90   0.00  60.01   0.00  -7.88  -3.01   0.00   0.00   0.00
49.13
--------------------------------------------------------------------------
--

Segment Leq : 49.18 dBA

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

Source height = 1.02 m

ROAD (0.00 + 48.43 + 0.00) = 48.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -82     61   0.00  49.43   0.00   0.00  -1.00   0.00   0.00   0.00
48.43
--------------------------------------------------------------------------
--

Segment Leq : 48.43 dBA

Total Leq All Segments: 53.50 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.88
                         (NIGHT): 53.50
```

# Appendix D: Manufacturer Specifications

# Product Data

# WeatherMaster®
# Gas Heat/Electric Cooling Packaged Rooftop Units

3 to 12.5 Nominal Tons


48HC Sizes 04 to 14
Packaged Rooftop Units with Gas Heat and Optional EnergyX® Energy Recovery Ventilator

# Capacity ratings (cont)

Typical one-fan RTU

**SOUND RATINGS TABLE**

| 48HC UNIT | COOLING STAGES | OUTDOOR SOUND (dB) AT 60 HZ | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | A-WEIGHTED | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| **A04** | 1 | 76 | 78.2 | 78.0 | 74.2 | 73.3 | 70.6 | 66.0 | 62.4 | 56.9 |
| **A05** | 1 | 78 | 84.7 | 83.6 | 77.1 | 74.6 | 72.3 | 68.3 | 64.7 | 60.9 |
| **A06** | 1 | 77 | 87.5 | 82.5 | 76.1 | 73.6 | 71.3 | 67.1 | 64.1 | 60.0 |
| **A07** | 1 | 82 | 90.1 | 82.6 | 81.0 | 79.4 | 77.0 | 73.0 | 70.4 | 66.7 |
| **D07** | 2 | 82 | 90.1 | 82.6 | 81.0 | 79.4 | 77.0 | 73.0 | 70.4 | 66.7 |
| **D08** | 2 | 82 | 90.6 | 84.3 | 80.2 | 79.3 | 77.1 | 72.2 | 67.4 | 63.7 |
| **D09** | 2 | 82 | 88.6 | 85.0 | 81.6 | 79.5 | 77.4 | 74.1 | 71.0 | 66.3 |
| **D11** | 2 | 87 | 85.9 | 87.9 | 85.6 | 84.4 | 82.8 | 78.5 | 74.9 | 72.5 |
| **D12** | 2 | 87 | 85.9 | 87.9 | 85.6 | 84.4 | 82.8 | 78.5 | 74.9 | 72.5 |
| **D14** | 2 | 83 | 89.3 | 86.0 | 82.9 | 80.7 | 78.5 | 73.6 | 69.6 | 64.5 |

Typical two-fan RTU

LEGEND

**dB** — Decibel

NOTES:

1. Outdoor sound data is measured in accordance with AHRI.
2. Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environmental factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.
3. A-weighted sound ratings filter out very high and very low frequencies, to better approximate the response of “average” human ear. A-weighted measurements for Carrier units are taken in accordance with AHRI.

# Appendix E: CadnaA Calculation Output

CadnaA Results - Project Receptos Day | Night - Contours @ 1.5m Height

CadnaA Results - Surrounding Receptos - Contours @ 1.5m Height

# Report (1225 Dundas St E.cna)

## Calculation Configuration

| Configuration | |
|---|---|
| Parameter | Value |
| General | |
| Country | (user defined) |
| Max. Error (dB) | 0.00 |
| Max. Search Radius (#(Unit,LEN)) | 2000.00 |
| Min. Dist Src to Rcvr | 0.00 |
| Partition | |
| Raster Factor | 0.50 |
| Max. Length of Section (#(Unit,LEN)) | 1000.00 |
| Min. Length of Section (#(Unit,LEN)) | 1.00 |
| Min. Length of Section (%) | 0.00 |
| Proj. Line Sources | On |
| Proj. Area Sources | On |
| Ref. Time | |
| Reference Time Day (min) | 960.00 |
| Reference Time Night (min) | 480.00 |
| Daytime Penalty (dB) | 0.00 |
| Recr. Time Penalty (dB) | 0.00 |
| Night-time Penalty (dB) | 0.00 |
| DTM | |
| Standard Height (m) | 0.00 |
| Model of Terrain | Triangulation |
| Reflection | |
| max. Order of Reflection | 2 |
| Search Radius Src | 100.00 |
| Search Radius Rcvr | 100.00 |
| Max. Distance Source - Rcvr | 1000.00 1000.00 |
| Min. Distance Rvcr - Reflector | 1.00 1.00 |
| Min. Distance Source - Reflector | 0.10 |
| Industrial (ISO 9613) | |
| Lateral Diffraction | some Obj |
| Obst. within Area Src do not shield | On |
| Screening | Excl. Ground Att. over Barrier |
| | Dz with limit (20/25) |
| Barrier Coefficients C1,2,3 | 3.0 20.0 0.0 |
| Temperature (#(Unit,TEMP)) | 10 |
| rel. Humidity (%) | 70 |
| Ground Absorption G | 0.20 |
| Wind Speed for Dir. (#(Unit,SPEED)) | 3.0 |
| Roads (RLS-90) | |
| Strictly acc. to RLS-90 | |
| Railways (Schall 03 (1990)) | |
| Strictly acc. to Schall 03 / Schall-Transrapid | |
| Aircraft (???) | |
| Strictly acc. to AzB | |

## Result Table

| Receiver | | Land Use | Limiting Value | | rel. Axis | | | Lr w/o Noise Control | | dL req. | | Lr w/ Noise Control | | Exceeding | | passive NC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | ID | | Day | Night | Station | Distance | Height | Day | Night | Day | Night | Day | Night | Day | Night | |
| | | | dB(A) | dB(A) | m | m | m | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) |
| POPOR1 | POPOR1 | | 0 | 0 | | | | 42.7 | 39.6 | 42.7 | 39.6 | 0.0 | 0.0 | - | - | - |

## Group Day and Night

| Name | Expression | Partial Sum Level | | |
|---|---|---|---|---|
| | | POPOR1 | | |
| | | Day | Evening | Night |
| Root | !* | | | |

Partial Day/Night

| Source | | | Partial Level | | |
|---|---|---|---|---|---|
| Name | M. | ID | POPOR1 | | |
| | | | Day | Evening | Night |
| SHVAC01 | | SHVAC01 | 3.6 | 0.6 | 0.6 |
| SHVAC02 | | SHVAC02 | 3.7 | 0.7 | 0.7 |
| SHVAC03 | | SHVAC03 | 3.9 | 0.9 | 0.9 |
| SHVAC04 | | SHVAC04 | 4.1 | 1.1 | 1.1 |
| SHVAC05 | | SHVAC05 | 3.8 | 0.8 | 0.8 |
| SHVAC06 | | SHVAC06 | 3.9 | 0.9 | 0.9 |
| SHVAC07 | | SHVAC07 | 4.1 | 1.1 | 1.1 |
| SHVAC08 | | SHVAC08 | 4.1 | 1.0 | 1.0 |
| SHVAC09 | | SHVAC09 | 7.8 | 4.7 | 4.7 |
| SHVAC10 | | SHVAC10 | 3.9 | 0.9 | 0.9 |
| SHVAC11 | | SHVAC11 | 5.0 | 2.0 | 2.0 |
| SHVAC12 | | SHVAC12 | 6.2 | 3.2 | 3.2 |
| SHVAC13 | | SHVAC13 | 6.9 | 3.8 | 3.8 |
| SHVAC14 | | SHVAC14 | 6.5 | 3.5 | 3.5 |
| SHVAC15 | | SHVAC15 | 6.9 | 3.9 | 3.9 |
| SHVAC16 | | SHVAC16 | 6.8 | 3.8 | 3.8 |
| SHVAC17 | | SHVAC17 | 7.4 | 4.4 | 4.4 |
| SHVAC18 | | SHVAC18 | 4.2 | 1.1 | 1.1 |
| SHVAC19 | | SHVAC19 | 4.7 | 1.7 | 1.7 |
| SHVAC20 | | SHVAC20 | 5.1 | 2.1 | 2.1 |
| SHVAC21 | | SHVAC21 | 4.4 | 1.4 | 1.4 |
| SHVAC22 | | SHVAC22 | 4.8 | 1.8 | 1.8 |
| SHVAC23 | | SHVAC23 | 5.2 | 2.2 | 2.2 |
| SHVAC24 | | SHVAC24 | 30.2 | 27.2 | 27.2 |
| SHVAC25 | | SHVAC25 | 32.7 | 29.7 | 29.7 |
| SHVAC26 | | SHVAC26 | 30.7 | 27.7 | 27.7 |
| SHVAC27 | | SHVAC27 | 32.8 | 29.8 | 29.8 |
| SHVAC28 | | SHVAC28 | 29.2 | 26.2 | 26.2 |
| SHVAC29 | | SHVAC29 | 33.6 | 30.6 | 30.6 |
| SHVAC30 | | SHVAC30 | 32.1 | 29.1 | 29.1 |
| SHVAC31 | | SHVAC31 | 29.6 | 26.6 | 26.6 |
| SHVAC32 | | SHVAC32 | 32.0 | 28.9 | 28.9 |
| SHVAC33 | | SHVAC33 | 30.2 | 27.2 | 27.2 |
| SHVAC34 | | SHVAC34 | 30.9 | 27.9 | 27.9 |
| SHVAC35 | | SHVAC35 | 29.8 | 26.8 | 26.8 |
| SHVAC36 | | SHVAC36 | 30.3 | 27.3 | 27.3 |
| SHVAC37 | | SHVAC37 | 29.3 | 26.3 | 26.3 |
| SHVAC38 | | SHVAC38 | 9.4 | 6.4 | 6.4 |

## Sound Sources

Point Sources

| Name | M. | ID | Result. PWL | | | Lw / Li | | | Correction | | | Sound Reduction | | Attenuation | Operating Time | | | K0 | Freq. | Direct. | Height | | Coordinates | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Type | Value | norm. | Day | Evening | Night | R | Area | | Day | Special | Night | | | | | | X | Y | Z |
| | | | (dBA) | (dBA) | (dBA) | | | dB(A) | dB(A) | dB(A) | dB(A) | | (m²) | | (min) | (min) | (min) | (dB) | (Hz) | | (m) | | (m) | (m) | (m) |
| SHVAC01 | | SHVAC01 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613764.76 | 4828987.82 | 9.10 |
| SHVAC02 | | SHVAC02 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613768.13 | 4828985.18 | 9.10 |
| SHVAC03 | | SHVAC03 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613771.22 | 4828982.72 | 9.10 |
| SHVAC04 | | SHVAC04 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613775.35 | 4828982.46 | 9.10 |
| SHVAC05 | | SHVAC05 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613769.49 | 4828997.74 | 9.10 |
| SHVAC06 | | SHVAC06 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613773.50 | 4829003.02 | 9.10 |
| SHVAC07 | | SHVAC07 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613777.33 | 4829000.11 | 9.10 |
| SHVAC08 | | SHVAC08 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613776.78 | 4828994.74 | 9.10 |
| SHVAC09 | | SHVAC09 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613814.15 | 4828960.16 | 5.80 |
| SHVAC10 | | SHVAC10 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613803.98 | 4828988.80 | 5.80 |
| SHVAC11 | | SHVAC11 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613814.76 | 4828982.87 | 5.80 |
| SHVAC12 | | SHVAC12 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613818.68 | 4829000.19 | 8.70 |
| SHVAC13 | | SHVAC13 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613822.44 | 4828996.44 | 8.70 |
| SHVAC14 | | SHVAC14 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613830.49 | 4829015.28 | 8.70 |
| SHVAC15 | | SHVAC15 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613833.42 | 4829009.98 | 8.70 |
| SHVAC16 | | SHVAC16 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613842.66 | 4829028.27 | 5.70 |
| SHVAC17 | | SHVAC17 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613849.62 | 4829022.32 | 5.70 |
| SHVAC18 | | SHVAC18 | 77.6 | 77.6 | 77.6 | Lw | One_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613867.31 | 4829039.52 | 5.80 |
| SHVAC19 | | SHVAC19 | 77.6 | 77.6 | 77.6 | Lw | One_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613871.13 | 4829034.74 | 5.80 |

| Name | M. | ID | Result. PWL | | | Lw / Li | | | Correction | | | Sound Reduction | | Attenuation | Operating Time | | | K0 | Freq. | Direct. | Height | | Coordinates | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Type | Value | norm. | Day | Evening | Night | R | Area | | Day | Special | Night | | | | | | X | Y | Z |
| | | | (dBA) | (dBA) | (dBA) | | | dB(A) | dB(A) | dB(A) | dB(A) | | (m²) | | (min) | (min) | (min) | (dB) | (Hz) | | (m) | | (m) | (m) | (m) |
| SHVAC20 | | SHVAC20 | 77.6 | 77.6 | 77.6 | Lw | One_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613877.26 | 4829038.60 | 5.80 |
| SHVAC21 | | SHVAC21 | 77.6 | 77.6 | 77.6 | Lw | One_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613872.92 | 4829047.04 | 5.80 |
| SHVAC22 | | SHVAC22 | 77.6 | 77.6 | 77.6 | Lw | One_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613876.16 | 4829043.51 | 5.80 |
| SHVAC23 | | SHVAC23 | 77.6 | 77.6 | 77.6 | Lw | One_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613880.45 | 4829042.41 | 5.80 |
| SHVAC24 | | SHVAC24 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614029.47 | 4828990.32 | 8.00 |
| SHVAC25 | | SHVAC25 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614015.25 | 4829018.93 | 8.00 |
| SHVAC26 | | SHVAC26 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614033.80 | 4829003.27 | 8.00 |
| SHVAC27 | | SHVAC27 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614030.78 | 4829036.17 | 8.00 |
| SHVAC28 | | SHVAC28 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614063.00 | 4829000.10 | 8.00 |
| SHVAC29 | | SHVAC29 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614033.80 | 4829055.42 | 8.00 |
| SHVAC30 | | SHVAC30 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614044.00 | 4829040.91 | 8.00 |
| SHVAC31 | | SHVAC31 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614071.17 | 4829020.37 | 8.00 |
| SHVAC32 | | SHVAC32 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614054.07 | 4829056.72 | 8.00 |
| SHVAC33 | | SHVAC33 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614072.32 | 4829040.34 | 8.00 |
| SHVAC34 | | SHVAC34 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614074.42 | 4829091.31 | 7.70 |
| SHVAC35 | | SHVAC35 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614088.84 | 4829077.19 | 7.70 |
| SHVAC36 | | SHVAC36 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614082.93 | 4829099.81 | 7.70 |
| SHVAC37 | | SHVAC37 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17614097.35 | 4829086.55 | 7.70 |
| SHVAC38 | | SHVAC38 | 81.7 | 81.7 | 81.7 | Lw | Two_Fan_HVAC | | 0.0 | 0.0 | 0.0 | | | | 60.00 | 30.00 | 30.00 | 0.0 | | (none) | 1.00 | g | 17613988.37 | 4829192.93 | 18.80 |

## Line Sources

| Name | M. | ID | Result. PWL | | | Result. PWL' | | | Lw / Li | | | Correction | | | Sound Reduction | | Attenuation | Operating Time | | | K0 | Freq. | Direct. | Moving Pt. Src | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Value | norm. | Day | Evening | Night | R | Area | | Day | Special | Night | | | | Number | | | Speed |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | dB(A) | dB(A) | dB(A) | dB(A) | | (m²) | | (min) | (min) | (min) | (dB) | (Hz) | | Day | Evening | Night | (km/h) |

## Geometry Line Sources

| Name | Height | | Coordinates | | | |
|---|---|---|---|---|---|---|
| | Begin | End | x | y | z | Ground |
| | (m) | (m) | (m) | (m) | (m) | (m) |

## Area Sources

| Name | M. | ID | Result. PWL | | | Result. PWL" | | | Lw / Li | | | Correction | | | Sound Reduction | | Attenuation | Operating Time | | | K0 | Freq. | Direct. | Moving Pt. Src | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Value | norm. | Day | Evening | Night | R | Area | | Day | Special | Night | | | | Number | | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | dB(A) | dB(A) | dB(A) | dB(A) | | (m²) | | (min) | (min) | (min) | (dB) | (Hz) | | Day | Evening | Night |

## Geometry Area Sources

| Name | Height | | Coordinates | | | |
|---|---|---|---|---|---|---|
| | Begin | End | x | y | z | Ground |
| | (m) | (m) | (m) | (m) | (m) | (m) |

## Vertical Area Sources

| Name | M. | ID | Result. PWL | | | Result. PWL" | | | Lw / Li | | | Correction | | | Sound Reduction | | Attenuation | Operating Time | | | K0 | Freq. | Direct. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Value | norm. | Day | Evening | Night | R | Area | | Day | Special | Night | | | |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | dB(A) | dB(A) | dB(A) | dB(A) | | (m²) | | (min) | (min) | (min) | (dB) | (Hz) | |

## Geometry Vertical Area Sources

| Name | Height | | Coordinates | | | |
|---|---|---|---|---|---|---|
| | Begin | End | x | y | z | Ground |
| | (m) | (m) | (m) | (m) | (m) | (m) |

## Road

| Name | M. | ID | Lme | | | Count Data | | exact Count Data | | | | | | Speed Limit | | SCS | Surface | | Gradient | Mult. Reflection | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | DTV | Str.class. | M | | | p (%) | | | Auto | Truck | Dist. | Dstro | Type | | Drefl | Hbuild | Dist. |
| | | | (dBA) | (dBA) | (dBA) | | | Day | Evening | Night | Day | Evening | Night | (km/h) | (km/h) | | (dB) | | (%) | (dB) | (m) | (m) |

## Geometry Road

| Name | Height | | Coordinates | | | | Dist | LSlope |
|---|---|---|---|---|---|---|---|---|
| | Begin | End | x | y | z | Ground | (m) | (%) |
| | (m) | (m) | (m) | (m) | (m) | (m) | | |

**Receptors**

| Name | M. | ID | Level Lr | | | Limit. Value | | | Land Use | | | Height | | Coordinates | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Day | Evening | Night | Type | Auto | Noise Type | | | X | Y | Z |
| | | | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | (dBA) | | | | (m) | | (m) | (m) | (m) |
| POPOR1 | | POPOR1 | 42.7 | 39.6 | 39.6 | 0.0 | 0.0 | 0.0 | | x | Total | 1.50 | g | 17613957.63 | 4829095.33 | 32.70 |

## Obstacles

### Barriers

| Name | M. | ID | Absorption | | Z-Ext. | Cantilever | | Height | |
|---|---|---|---|---|---|---|---|---|---|
| | | | left | right | | horz. | vert. | Begin | End |
| | | | | | (m) | (m) | (m) | (m) | (m) |

### Geometry Barriers

| Name | M. | ID | Absorption | | Z-Ext. | Cantilever | | Height | | Coordinates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | left | right | | horz. | vert. | Begin | End | x | y | z | Ground |
| | | | | | (m) | (m) | (m) | (m) | (m) | (m) | (m) | (m) | (m) |

### Building

| Name | M. | ID | RB | Residents | Absorption | Height | |
|---|---|---|---|---|---|---|---|
| | | | | | | Begin | |
| | | | | | | (m) | |
| | | Notes_Surrounding_Buildings | x | 0 | | 5.50 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 5.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 7.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 6.70 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 8.10 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.80 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 7.70 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.70 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.80 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.80 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 17.80 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 22.20 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 44.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 11.50 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 11.50 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 12.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 12.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 12.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 9.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 9.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 9.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 9.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 9.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.00 | a |
| | | Notes_Surrounding_Buildings | x | 0 | | 7.00 | a |
| | | Notes_Project_Buildings | x | 0 | | 7.90 | a |
| | | Notes_Project_Buildings | x | 0 | | 16.15 | a |
| | | Notes_Project_Buildings | x | 0 | | 22.05 | a |
| | | Notes_Project_Buildings | x | 0 | | 31.20 | a |
| | | Notes_Project_Buildings | x | 0 | | 41.50 | a |
| | | Notes_Project_Buildings | x | 0 | | 41.50 | a |
| | | Notes_Project_Buildings | x | 0 | | 47.50 | a |
| | | Notes_Project_Buildings | x | 0 | | 47.50 | a |
| | | Notes_Project_Buildings | x | 0 | | 11.15 | a |
| | | Notes_Project_Buildings | x | 0 | | 7.90 | a |
| | | Notes_Project_Buildings | x | 0 | | 11.15 | a |
| | | Notes_Project_Buildings | x | 0 | | 7.90 | a |
| | | Notes_Project_Buildings | x | 0 | | 11.15 | a |
| | | Notes_Project_Buildings | x | 0 | | 7.90 | a |
| | | Notes_Project_Buildings | x | 0 | | 11.15 | a |

### Geometry Building

| Name | M. | ID | RB | Residents | Absorption | Height | | Coordinates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Begin | | x | y | z | Ground |
| | | | | | | (m) | | (m) | (m) | (m) | (m) |
| | | Notes_Surrounding_Buildings | x | 0 | | 5.50 | a | 17613932.98 | 4828953.82 | 5.50 | 0.00 |
| | | | | | | | | 17613950.30 | 4828940.42 | 5.50 | 0.00 |
| | | | | | | | | 17613957.46 | 4828949.67 | 5.50 | 0.00 |
| | | | | | | | | 17613953.71 | 4828952.57 | 5.50 | 0.00 |
| | | | | | | | | 17613958.71 | 4828959.04 | 5.50 | 0.00 |
| | | | | | | | | 17613945.15 | 4828969.54 | 5.50 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.00 | a | 17613957.11 | 4828949.22 | 4.00 | 0.00 |
| | | | | | | | | 17613962.58 | 4828944.98 | 4.00 | 0.00 |
| | | | | | | | | 17613956.19 | 4828936.72 | 4.00 | 0.00 |
| | | | | | | | | 17613950.72 | 4828940.96 | 4.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 5.00 | a | 17613996.49 | 4828956.66 | 5.00 | 0.00 |
| | | | | | | | | 17614009.59 | 4828946.45 | 5.00 | 0.00 |
| | | | | | | | | 17614014.35 | 4828952.31 | 5.00 | 0.00 |
| | | | | | | | | 17614001.25 | 4828962.52 | 5.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 7.00 | a | 17613995.07 | 4829015.61 | 7.00 | 0.00 |
| | | | | | | | | 17614051.26 | 4828963.15 | 7.00 | 0.00 |
| | | | | | | | | 17614087.43 | 4829001.89 | 7.00 | 0.00 |
| | | | | | | | | 17614081.14 | 4829007.77 | 7.00 | 0.00 |
| | | | | | | | | 17614087.73 | 4829014.82 | 7.00 | 0.00 |
| | | | | | | | | 17614081.69 | 4829020.45 | 7.00 | 0.00 |
| | | | | | | | | 17614087.15 | 4829026.29 | 7.00 | 0.00 |
| | | | | | | | | 17614081.03 | 4829032.01 | 7.00 | 0.00 |
| | | | | | | | | 17614086.82 | 4829038.21 | 7.00 | 0.00 |
| | | | | | | | | 17614045.72 | 4829076.58 | 7.00 | 0.00 |
| | | | | | | | | 17614025.79 | 4829055.23 | 7.00 | 0.00 |
| | | | | | | | | 17614027.49 | 4829053.64 | 7.00 | 0.00 |
| | | | | | | | | 17614009.51 | 4829034.39 | 7.00 | 0.00 |
| | | | | | | | | 17614011.16 | 4829032.85 | 7.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 6.70 | a | 17614061.57 | 4829092.33 | 6.70 | 0.00 |
| | | | | | | | | 17614089.00 | 4829066.84 | 6.70 | 0.00 |
| | | | | | | | | 17614109.01 | 4829088.37 | 6.70 | 0.00 |
| | | | | | | | | 17614081.59 | 4829113.86 | 6.70 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 8.10 | a | 17613755.37 | 4828989.19 | 8.10 | 0.00 |
| | | | | | | | | 17613774.02 | 4829013.68 | 8.10 | 0.00 |
| | | | | | | | | 17613789.15 | 4829002.16 | 8.10 | 0.00 |
| | | | | | | | | 17613779.57 | 4828989.58 | 8.10 | 0.00 |
| | | | | | | | | 17613784.04 | 4828986.17 | 8.10 | 0.00 |
| | | | | | | | | 17613774.97 | 4828974.26 | 8.10 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.80 | a | 17613809.44 | 4828958.92 | 4.80 | 0.00 |
| | | | | | | | | 17613826.40 | 4828944.69 | 4.80 | 0.00 |
| | | | | | | | | 17613831.43 | 4828950.67 | 4.80 | 0.00 |
| | | | | | | | | 17613814.47 | 4828964.91 | 4.80 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.00 | a | 17613814.47 | 4828964.91 | 4.00 | 0.00 |
| | | | | | | | | 17613811.88 | 4828967.08 | 4.00 | 0.00 |
| | | | | | | | | 17613803.97 | 4828957.66 | 4.00 | 0.00 |
| | | | | | | | | 17613821.09 | 4828943.29 | 4.00 | 0.00 |
| | | | | | | | | 17613823.97 | 4828946.73 | 4.00 | 0.00 |
| | | | | | | | | 17613809.44 | 4828958.92 | 4.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 7.70 | a | 17613809.19 | 4828996.08 | 7.70 | 0.00 |
| | | | | | | | | 17613834.34 | 4829027.25 | 7.70 | 0.00 |
| | | | | | | | | 17613851.25 | 4829013.60 | 7.70 | 0.00 |
| | | | | | | | | 17613826.10 | 4828982.43 | 7.70 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.70 | a | 17613830.00 | 4829030.76 | 4.70 | 0.00 |
| | | | | | | | | 17613853.55 | 4829011.75 | 4.70 | 0.00 |
| | | | | | | | | 17613863.04 | 4829023.51 | 4.70 | 0.00 |
| | | | | | | | | 17613839.49 | 4829042.52 | 4.70 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.80 | a | 17613795.35 | 4828987.83 | 4.80 | 0.00 |
| | | | | | | | | 17613818.90 | 4828968.82 | 4.80 | 0.00 |
| | | | | | | | | 17613828.39 | 4828980.58 | 4.80 | 0.00 |
| | | | | | | | | 17613804.84 | 4828999.59 | 4.80 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.80 | a | 17613862.47 | 4829038.59 | 4.80 | 0.00 |
| | | | | | | | | 17613873.26 | 4829030.03 | 4.80 | 0.00 |
| | | | | | | | | 17613883.77 | 4829043.26 | 4.80 | 0.00 |
| | | | | | | | | 17613872.98 | 4829051.83 | 4.80 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 17.80 | a | 17613981.60 | 4829191.15 | 17.80 | 0.00 |
| | | | | | | | | 17614008.25 | 4829170.21 | 17.80 | 0.00 |
| | | | | | | | | 17614018.77 | 4829183.61 | 17.80 | 0.00 |

| Name | M. | ID | RB | Residents | Absorption | Height | | Coordinates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Begin | | x | y | z | Ground |
| | | | | | | (m) | | (m) | (m) | (m) | (m) |
| | | | | | | | | 17613997.66 | 4829200.20 | 17.80 | 0.00 |
| | | | | | | | | 17614000.46 | 4829203.76 | 17.80 | 0.00 |
| | | | | | | | | 17613968.16 | 4829229.13 | 17.80 | 0.00 |
| | | | | | | | | 17613957.48 | 4829215.53 | 17.80 | 0.00 |
| | | | | | | | | 17613984.24 | 4829194.52 | 17.80 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 22.20 | a | 17613990.84 | 4829201.09 | 22.20 | 0.00 |
| | | | | | | | | 17613987.08 | 4829196.30 | 22.20 | 0.00 |
| | | | | | | | | 17613991.14 | 4829193.11 | 22.20 | 0.00 |
| | | | | | | | | 17613994.90 | 4829197.90 | 22.20 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 44.00 | a | 17614030.38 | 4829270.18 | 44.00 | 0.00 |
| | | | | | | | | 17614041.40 | 4829261.50 | 44.00 | 0.00 |
| | | | | | | | | 17614035.83 | 4829254.43 | 44.00 | 0.00 |
| | | | | | | | | 17614048.42 | 4829244.52 | 44.00 | 0.00 |
| | | | | | | | | 17614053.99 | 4829251.58 | 44.00 | 0.00 |
| | | | | | | | | 17614065.40 | 4829242.59 | 44.00 | 0.00 |
| | | | | | | | | 17614075.15 | 4829254.96 | 44.00 | 0.00 |
| | | | | | | | | 17614063.73 | 4829263.95 | 44.00 | 0.00 |
| | | | | | | | | 17614070.83 | 4829272.97 | 44.00 | 0.00 |
| | | | | | | | | 17614058.25 | 4829282.89 | 44.00 | 0.00 |
| | | | | | | | | 17614051.14 | 4829273.87 | 44.00 | 0.00 |
| | | | | | | | | 17614040.12 | 4829282.55 | 44.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 11.50 | a | 17613753.35 | 4829055.15 | 11.50 | 0.00 |
| | | | | | | | | 17613777.97 | 4829035.73 | 11.50 | 0.00 |
| | | | | | | | | 17613786.34 | 4829046.34 | 11.50 | 0.00 |
| | | | | | | | | 17613761.71 | 4829065.76 | 11.50 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 11.50 | a | 17613814.43 | 4829036.04 | 11.50 | 0.00 |
| | | | | | | | | 17613843.95 | 4829073.17 | 11.50 | 0.00 |
| | | | | | | | | 17613834.57 | 4829080.63 | 11.50 | 0.00 |
| | | | | | | | | 17613805.05 | 4829043.50 | 11.50 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 12.00 | a | 17613768.15 | 4829088.14 | 12.00 | 0.00 |
| | | | | | | | | 17613801.51 | 4829061.32 | 12.00 | 0.00 |
| | | | | | | | | 17613808.84 | 4829070.42 | 12.00 | 0.00 |
| | | | | | | | | 17613775.47 | 4829097.25 | 12.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 12.00 | a | 17613784.75 | 4829109.51 | 12.00 | 0.00 |
| | | | | | | | | 17613818.24 | 4829082.15 | 12.00 | 0.00 |
| | | | | | | | | 17613825.90 | 4829091.52 | 12.00 | 0.00 |
| | | | | | | | | 17613792.41 | 4829118.89 | 12.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 12.00 | a | 17613738.82 | 4829097.50 | 12.00 | 0.00 |
| | | | | | | | | 17613774.26 | 4829140.54 | 12.00 | 0.00 |
| | | | | | | | | 17613784.73 | 4829131.92 | 12.00 | 0.00 |
| | | | | | | | | 17613749.29 | 4829088.88 | 12.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 9.00 | a | 17613743.86 | 4829197.16 | 9.00 | 0.00 |
| | | | | | | | | 17613832.47 | 4829123.93 | 9.00 | 0.00 |
| | | | | | | | | 17613838.90 | 4829131.72 | 9.00 | 0.00 |
| | | | | | | | | 17613750.29 | 4829204.94 | 9.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 9.00 | a | 17613748.25 | 4829238.69 | 9.00 | 0.00 |
| | | | | | | | | 17613853.75 | 4829151.28 | 9.00 | 0.00 |
| | | | | | | | | 17613859.60 | 4829158.34 | 9.00 | 0.00 |
| | | | | | | | | 17613754.10 | 4829245.75 | 9.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 9.00 | a | 17613836.32 | 4829220.19 | 9.00 | 0.00 |
| | | | | | | | | 17613876.94 | 4829181.89 | 9.00 | 0.00 |
| | | | | | | | | 17613883.74 | 4829189.11 | 9.00 | 0.00 |
| | | | | | | | | 17613843.12 | 4829227.41 | 9.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 9.00 | a | 17613775.43 | 4829275.81 | 9.00 | 0.00 |
| | | | | | | | | 17613818.01 | 4829232.41 | 9.00 | 0.00 |
| | | | | | | | | 17613826.06 | 4829240.32 | 9.00 | 0.00 |
| | | | | | | | | 17613783.49 | 4829283.71 | 9.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 9.00 | a | 17613815.40 | 4829287.17 | 9.00 | 0.00 |
| | | | | | | | | 17613897.86 | 4829209.19 | 9.00 | 0.00 |
| | | | | | | | | 17613904.86 | 4829216.60 | 9.00 | 0.00 |
| | | | | | | | | 17613822.40 | 4829294.57 | 9.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 4.00 | a | 17613912.98 | 4829242.97 | 4.00 | 0.00 |
| | | | | | | | | 17613944.39 | 4829271.60 | 4.00 | 0.00 |
| | | | | | | | | 17613951.27 | 4829264.05 | 4.00 | 0.00 |
| | | | | | | | | 17613919.86 | 4829235.42 | 4.00 | 0.00 |
| | | Notes_Surrounding_Buildings | x | 0 | | 7.00 | a | 17613861.39 | 4829277.52 | 7.00 | 0.00 |
| | | | | | | | | 17613892.29 | 4829315.49 | 7.00 | 0.00 |

| Name | M. | ID | RB | Residents | Absorption | Height | | Coordinates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Begin | | x | y | z | Ground |
| | | | | | | (m) | | (m) | (m) | (m) | (m) |
| | | | | | | | | 17613900.93 | 4829308.45 | 7.00 | 0.00 |
| | | | | | | | | 17613870.03 | 4829270.49 | 7.00 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 7.90 | a | 17613854.96 | 4829100.30 | 7.90 | 0.00 |
| | | | | | | | | 17613870.48 | 4829120.17 | 7.90 | 0.00 |
| | | | | | | | | 17613882.01 | 4829111.16 | 7.90 | 0.00 |
| | | | | | | | | 17613866.50 | 4829091.29 | 7.90 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 16.15 | a | 17613990.41 | 4829138.44 | 16.15 | 0.00 |
| | | | | | | | | 17613949.50 | 4829170.40 | 16.15 | 0.00 |
| | | | | | | | | 17613934.10 | 4829150.68 | 16.15 | 0.00 |
| | | | | | | | | 17613962.54 | 4829128.46 | 16.15 | 0.00 |
| | | | | | | | | 17613925.32 | 4829080.82 | 16.15 | 0.00 |
| | | | | | | | | 17613896.88 | 4829103.04 | 16.15 | 0.00 |
| | | | | | | | | 17613881.47 | 4829083.32 | 16.15 | 0.00 |
| | | | | | | | | 17613922.39 | 4829051.36 | 16.15 | 0.00 |
| | | | | | | | | 17613931.10 | 4829052.42 | 16.15 | 0.00 |
| | | | | | | | | 17613958.18 | 4829087.09 | 16.15 | 0.00 |
| | | | | | | | | 17613956.59 | 4829088.33 | 16.15 | 0.00 |
| | | | | | | | | 17613964.41 | 4829098.34 | 16.15 | 0.00 |
| | | | | | | | | 17613966.00 | 4829097.10 | 16.15 | 0.00 |
| | | | | | | | | 17613991.48 | 4829129.72 | 16.15 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 22.05 | a | 17613990.41 | 4829138.44 | 22.05 | 0.00 |
| | | | | | | | | 17613951.87 | 4829168.55 | 22.05 | 0.00 |
| | | | | | | | | 17613936.46 | 4829148.83 | 22.05 | 0.00 |
| | | | | | | | | 17613962.54 | 4829128.46 | 22.05 | 0.00 |
| | | | | | | | | 17613925.32 | 4829080.82 | 22.05 | 0.00 |
| | | | | | | | | 17613899.24 | 4829101.20 | 22.05 | 0.00 |
| | | | | | | | | 17613883.83 | 4829081.48 | 22.05 | 0.00 |
| | | | | | | | | 17613922.39 | 4829051.36 | 22.05 | 0.00 |
| | | | | | | | | 17613931.10 | 4829052.42 | 22.05 | 0.00 |
| | | | | | | | | 17613958.18 | 4829087.09 | 22.05 | 0.00 |
| | | | | | | | | 17613956.59 | 4829088.33 | 22.05 | 0.00 |
| | | | | | | | | 17613964.41 | 4829098.34 | 22.05 | 0.00 |
| | | | | | | | | 17613966.00 | 4829097.10 | 22.05 | 0.00 |
| | | | | | | | | 17613991.48 | 4829129.72 | 22.05 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 31.20 | a | 17613987.58 | 4829136.84 | 31.20 | 0.00 |
| | | | | | | | | 17613950.02 | 4829166.19 | 31.20 | 0.00 |
| | | | | | | | | 17613938.31 | 4829151.21 | 31.20 | 0.00 |
| | | | | | | | | 17613964.39 | 4829130.83 | 31.20 | 0.00 |
| | | | | | | | | 17613923.47 | 4829078.46 | 31.20 | 0.00 |
| | | | | | | | | 17613897.39 | 4829098.83 | 31.20 | 0.00 |
| | | | | | | | | 17613885.69 | 4829083.85 | 31.20 | 0.00 |
| | | | | | | | | 17613923.25 | 4829054.50 | 31.20 | 0.00 |
| | | | | | | | | 17613929.49 | 4829055.27 | 31.20 | 0.00 |
| | | | | | | | | 17613938.46 | 4829066.75 | 31.20 | 0.00 |
| | | | | | | | | 17613937.68 | 4829067.36 | 31.20 | 0.00 |
| | | | | | | | | 17613978.59 | 4829119.73 | 31.20 | 0.00 |
| | | | | | | | | 17613979.38 | 4829119.12 | 31.20 | 0.00 |
| | | | | | | | | 17613988.34 | 4829130.59 | 31.20 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 41.50 | a | 17613938.31 | 4829151.21 | 41.50 | 0.00 |
| | | | | | | | | 17613979.38 | 4829119.12 | 41.50 | 0.00 |
| | | | | | | | | 17613988.34 | 4829130.59 | 41.50 | 0.00 |
| | | | | | | | | 17613987.58 | 4829136.84 | 41.50 | 0.00 |
| | | | | | | | | 17613950.02 | 4829166.19 | 41.50 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 41.50 | a | 17613897.39 | 4829098.83 | 41.50 | 0.00 |
| | | | | | | | | 17613938.46 | 4829066.75 | 41.50 | 0.00 |
| | | | | | | | | 17613929.49 | 4829055.27 | 41.50 | 0.00 |
| | | | | | | | | 17613923.25 | 4829054.50 | 41.50 | 0.00 |
| | | | | | | | | 17613885.69 | 4829083.85 | 41.50 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 47.50 | a | 17613904.86 | 4829087.54 | 47.50 | 0.00 |
| | | | | | | | | 17613923.51 | 4829072.97 | 47.50 | 0.00 |
| | | | | | | | | 17613917.10 | 4829064.76 | 47.50 | 0.00 |
| | | | | | | | | 17613898.44 | 4829079.33 | 47.50 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 47.50 | a | 17613957.49 | 4829154.90 | 47.50 | 0.00 |
| | | | | | | | | 17613976.15 | 4829140.33 | 47.50 | 0.00 |
| | | | | | | | | 17613969.73 | 4829132.12 | 47.50 | 0.00 |
| | | | | | | | | 17613951.08 | 4829146.69 | 47.50 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 11.15 | a | 17613856.28 | 4829099.27 | 11.15 | 0.00 |

| Name | M. | ID | RB | Residents | Absorption | Height | | Coordinates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Begin | | x | y | z | Ground |
| | | | | | | (m) | | (m) | (m) | (m) | (m) |
| | | | | | | | | 17613871.79 | 4829119.14 | 11.15 | 0.00 |
| | | | | | | | | 17613880.70 | 4829112.19 | 11.15 | 0.00 |
| | | | | | | | | 17613865.18 | 4829092.32 | 11.15 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 7.90 | a | 17613872.37 | 4829122.59 | 7.90 | 0.00 |
| | | | | | | | | 17613887.88 | 4829142.47 | 7.90 | 0.00 |
| | | | | | | | | 17613899.42 | 4829133.46 | 7.90 | 0.00 |
| | | | | | | | | 17613883.90 | 4829113.59 | 7.90 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 11.15 | a | 17613873.68 | 4829121.57 | 11.15 | 0.00 |
| | | | | | | | | 17613889.20 | 4829141.44 | 11.15 | 0.00 |
| | | | | | | | | 17613898.10 | 4829134.49 | 11.15 | 0.00 |
| | | | | | | | | 17613882.59 | 4829114.61 | 11.15 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 7.90 | a | 17613889.70 | 4829144.79 | 7.90 | 0.00 |
| | | | | | | | | 17613905.22 | 4829164.67 | 7.90 | 0.00 |
| | | | | | | | | 17613916.75 | 4829155.66 | 7.90 | 0.00 |
| | | | | | | | | 17613901.24 | 4829135.79 | 7.90 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 11.15 | a | 17613891.02 | 4829143.77 | 11.15 | 0.00 |
| | | | | | | | | 17613906.53 | 4829163.64 | 11.15 | 0.00 |
| | | | | | | | | 17613915.44 | 4829156.69 | 11.15 | 0.00 |
| | | | | | | | | 17613899.92 | 4829136.81 | 11.15 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 7.90 | a | 17613912.29 | 4829173.73 | 7.90 | 0.00 |
| | | | | | | | | 17613931.65 | 4829198.52 | 7.90 | 0.00 |
| | | | | | | | | 17613943.19 | 4829189.52 | 7.90 | 0.00 |
| | | | | | | | | 17613923.82 | 4829164.72 | 7.90 | 0.00 |
| | | Notes_Project_Buildings | x | 0 | | 11.15 | a | 17613913.60 | 4829172.70 | 11.15 | 0.00 |
| | | | | | | | | 17613932.96 | 4829197.50 | 11.15 | 0.00 |
| | | | | | | | | 17613941.87 | 4829190.55 | 11.15 | 0.00 |
| | | | | | | | | 17613922.51 | 4829165.75 | 11.15 | 0.00 |

## 3D Reflector

| Name | M. | ID | Type | Attenuation | B | m | Height |
|---|---|---|---|---|---|---|---|
| | | | | dB/100m | % | 1/m | (m) |

## Geometry Absorption

| Name | M. | ID | Type | Attenuation | B | m | Height | Coordinates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | dB/100m | % | 1/m | (m) | x | y | z | Ground |
| | | | | | | | | (m) | (m) | (m) | (m) |

## Ground Absorption

| Name | M. | ID | G |
|---|---|---|---|

## Geometry Absorption

| Name | M. | ID | G | Coordinates | |
|---|---|---|---|---|---|
| | | | | x | y |
| | | | | (m) | (m) |

## Contour Lines

## Geometry Contour Line

| Name | M. | ID | OnlyPts | Height | | Coordinates | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Begin | End | x | y | z |
| | | | | (m) | (m) | (m) | (m) | (m) |