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# Willow Court
# 3400 Woodroffe Avenue

## Noise Impact Assessment

# NOISE IMPACT ASSESSMENT
# WILLOW COURT
# 3400 WOODROFFE AVENUE

**Prepared by:**

**NOVATECH**
240 Michael Cowpland Drive, Suite 200
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November 5, 2025
Revised: April 14, 2026

Ref: R-2025-81
Novatech File No. 124147

NOVATECH
Engineers, Planners & Landscape Architects

April 14, 2026

Fotenn
420 O'Connor Street
Ottawa, ON K2P 1W4

**Attention:** **Tamara Nahal, Planner**

**Reference:** **Willow Court**
**3400 Woodroffe Avenue**
**Noise Impact Assessment**
**Our File No.: 124147**

Please find enclosed the 'Noise Impact Assessment' for the 3400 Woodroffe Avenue development.

Please contact the undersigned with any questions, or if you require additional information.

Sincerely,

**NOVATECH**

Lucas Wilson, P.Eng.
Project Engineer

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## 1.0 INTRODUCTION

This report is submitted on behalf of the developer, Phoenix Homes for the proposed development located at 3400 Woodroffe Avenue, herein called the 'Subject Site'. This report assesses the environmental impact of noise on the proposed development and outlines the mitigation measures that will be required.

The subject site is located within Barrhaven, 100 metres south of the Woodroffe Avenue and Paul Metivier Drive intersection. The site is approximately 2.36 hectares and is bounded by existing residential and the Longfields Community Church to the north, Woodroffe Avenue to the east, and existing residential lands to the south and west. A key plan of the area is presented below in **Figure 1-1**.

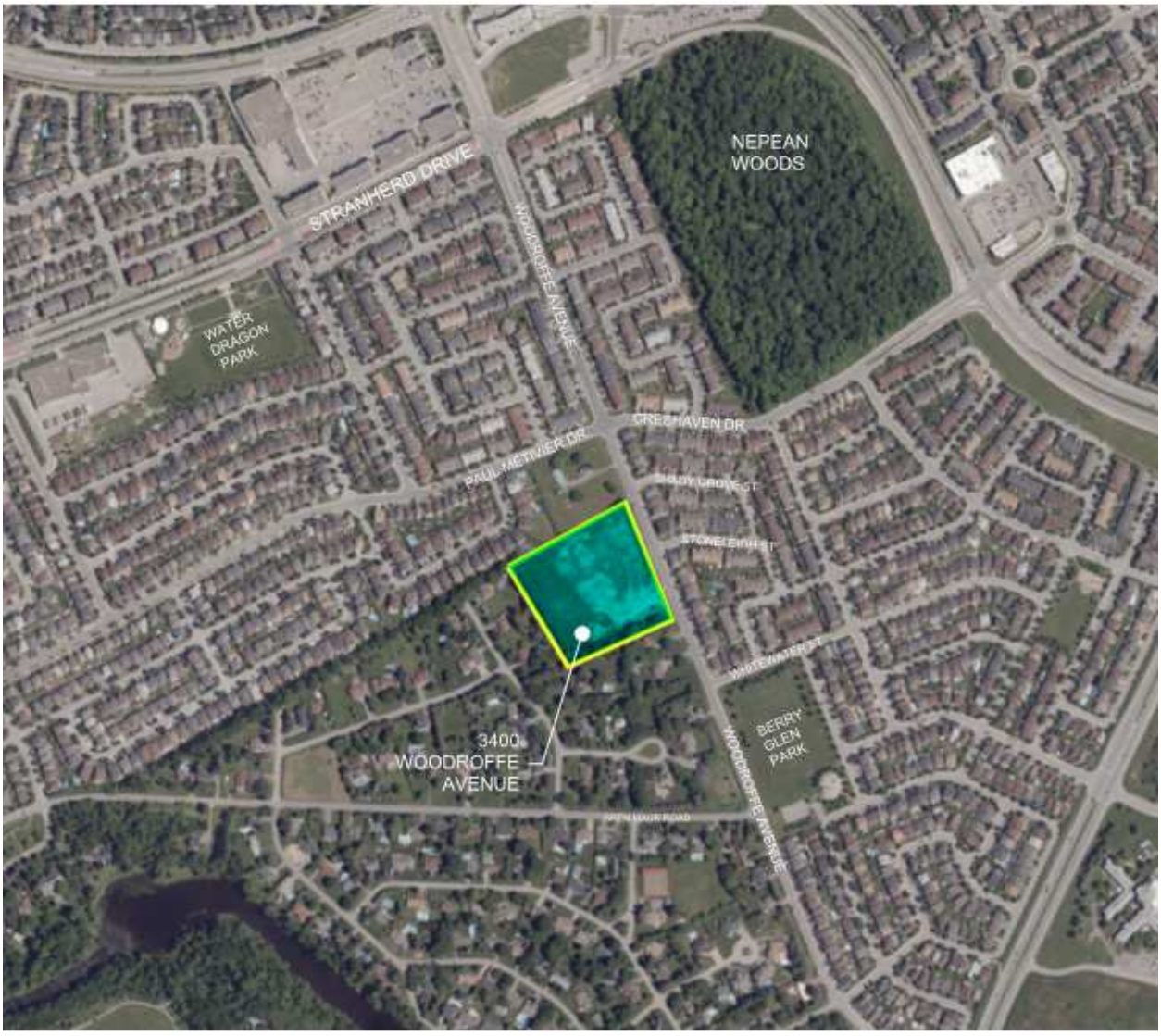



**Figure 1-1 Key Plan**

The site is vacant with an approximate 10m strip of wooded area running along the west and south property lines. The proposed development will consist of 160 units mixed between nine Terrace Flats blocks (108 units), three three-storey back-to-back Townhome blocks (32 units) and three townhome blocks (20 units). The proposed site plan is shown in **Figure 1-2**.

**Figure 1-2 Site Plan**

This report assesses the impacts of sound from vehicular traffic on the proposed development using the Ministry of the Environment (MOE) Stamson 5.0 software and outlines any necessary noise attenuation requirements for compliance with the City of Ottawa Environmental Noise Control Guidelines (ENCG) and the MOE Environmental Noise Guidelines (MOE Publication NPC-300).

# 2.0 CITY OF OTTAWA ENVIRONMENTAL NOISE CONTROL GUIDELINES

## 2.1 Sound Level Criteria

The City of Ottawa is concerned with noise from aircraft, roads, railways and transitways as expressed in the City of Ottawa Official Plan (May 2003). These policies are supported by the Environmental Noise Control Guidelines (ENCG) which is a technical document that outlines the specific sound level criteria. The City of Ottawa's *Environmental Noise Control Guidelines (ENCG)*, January, 2016 and the Ministry of Environment's *Environmental Noise Guidelines, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300* have been used for the purpose of this report. As per Section 2.2 of the City of Ottawa Noise Control Guidelines (2016), unless otherwise noted, developments should be consistent with NPC-300 (MOE publication, 2013).

The areas that must be assessed for acoustic protection include the Outdoor Living Area (OLA) and the Outdoor Plane of Window (POW).

These locations are defined as:

- **Outdoor Living Area (OLA):** The Outdoor Living Area is defined as that part of the outdoor amenity area provided for the quiet enjoyment of the outdoor environment during the daytime period. These amenity areas are typically backyards, gardens, terraces, patios and common outdoor living areas. The OLA noise target for traffic noise sources is 55 dBA. This criterion may be exceeded by an amount not greater than 5 dBA, subject to justification and the use of a Warning Clause. OLA noise levels are analysed at 3.0m from the building façade, 1.5m above grade.

- **Plane of Window (POW):** The plane of window is defined as the indoor living space where the sound levels will affect the living room area during daytime hours and bedrooms during night time hours. The residential Plane of Window noise target for traffic noise sources is 55 dBA during the day and 50 dBA at night. If this criterion is exceeded, the property may be subject to building component analysis and warning clauses. The sound criterion is broadly summarized in **Table 2-1.** POW noise levels are analysed 1.5m above grade for the first storey, 4.7m above grade for the second storey and 7.5m above grade for the third storey.

**Table 2-1 City of Ottawa Outdoor Plane of Window Sound Level Criteria**

| TIME PERIOD | RECEIVER LOCATION | SOUND LEVEL CRITERIA |
|---|---|---|
| Daytime (07:00 - 23:00 hrs) | Plane of Living Room Window | 55 dBA |
| Night time (23:00 - 07:00 hrs) | Plane of Bedroom Window | 50 dBA |

Compliance with the outdoor sound level criteria generally ensures compliance with the indoor sound level criteria which is summarized below in **Table 2-2**.

**Table 2-2 Indoor Sound Level Criteria**

| TIME PERIOD | RECEIVER LOCATION | SOUND LEVEL CRITERIA |
|---|---|---|
| Daytime (07:00 - 23:00 hrs) | **Living/Dining Rooms of residential dwelling units**, hospitals, schools, nursing homes, day-care centres, theatres, places of worship, individual or semiprivate offices, conference rooms etc. | 45 dBA |
| Night Time (23:00 - 07:00 hrs) | **Sleeping quarters of residential units**, hospitals, nursing homes, senior citizen homes, etc. | 40 dBA |

## 2.2 Noise Attenuation Requirements

When sound levels are predicted to be less than the specified criteria for daytime and night time conditions, no attenuation measures are required on the part of the proponent. As the noise criteria are exceeded, a combination of attenuation measures is recommended by the City of Ottawa and the MOE to modify the development environment.

These attenuation measures may include any or all of the following:

- Distance setback with soft ground;
- Insertion of noise insensitive land uses between the source and sensitive receptor;
- Orientation of building to provide sheltered zone;
- Construction of a noise barrier wall and/or berm;
- Installation of a forced air ventilation system with provision for central air;
- Installation of central air;
- Acoustically selected building façade components

### 2.2.1 *Noise Barrier*

Noise barriers should only be used when other noise control measures have been considered, and there is no other alternative. For the purpose of this study, when noise levels exceed 60 dBA in the Outdoor Living Area, control measures (barriers) are required to reduce the Leq to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

The noise barriers are to be compliant with the City standard for noise barriers and have the following characteristics.

- Minimum height of 2.2m;
- Maximum height of 2.5m (unless approved by the City of Ottawa);
- Situated 0.30m inside the private property;
- A surface mass density not less than 20kg/sq.m; and
- No holes or gaps.

### 2.2.2 *Ventilation Requirements*

A forced air heating system with provision for a central air conditioning system is required if the daytime noise levels are between 55 dBA and 65 dBA and/or night time noise levels are between 50 dBA and 60 dBA.

The installation of a central air conditioning system is required when the daytime noise level exceeds 65 dBA and/or night time noise levels exceed 60 dBA.

### 2.2.3 *Building Component Assessment*

When noise levels exceed 65 dBA (daytime) or 60 dBA (night time) the exterior cladding system of the building envelope must be acoustically assessed to ensure the indoor sound criteria is achieved. This includes analysis of the exterior wall, door, and/or glazing system specifications as appropriate.

The NRC research *Acoustic Insulation Factor: A Rating for the Insulation of Buildings against Noise (*June 1980, JD Quirt) is used to assess the building components and the required acoustic insulation factor (AIF). This method is recognized by the City of Ottawa.

The required AIF is based on the Outside $L_{eq}$, Indoor $L_{eq}$ required, and the number of exterior façade components.

Minimum Required AIF = Outside $L_{eq}$ – Indoor $L_{eq}$ + $\log_{10}$ (Number of Components) + 2dB

Where, N = Number of components (walls, windows and roof);
L = Sound Level expressed on a common decibel scale.

### 2.2.4 *Warning Clauses*

When predicted noise levels exceed the specified criteria, the City of Ottawa and the MOE recommend warning clauses be registered as a notice on title and incorporated into the sales agreements to warn potential purchaser/buyers/tenants of the possible elevated noise levels.

The following typical warning clauses are extracted from Section C8.1 of the MOE NPC-300 document.

*Warning Clause Type A*
“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 City’s and the Ministry of the Environment’s noise criteria.”

*Warning Clause Type B*
“Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the City’s and the Ministry of the Environment’s noise criteria.”

*Warning Clause Type C*
“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 will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City’s and the Ministry of the Environment’s noise criteria.”

*Warning Clause Type D*
"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 City's and the Ministry of the Environment's noise criteria."

### 2.2.5 *Summary of Noise Attenuation Measure Requirements*

**Table 2-3** summarizes the noise attenuation measure requirements and warning clauses should sound criteria be exceeded.

**Table 2-3 Outdoor, Ventilation and Warning Clause Requirements (NPC-300)**

| Assessment Location | $L_{eq}$ (dBA) | Outdoor Control Measures | Indoor Control Measures | | Warning Clause |
|---|---|---|---|---|---|
| | | | Ventilation Requirements | Building Components | |
| **Outdoor Living Area (OLA)** | Less than 55 | None required | N/A | N/A | None required |
| | Between 55 and 60 | Control measures (barriers) may not be required but should be considered | N/A | N/A | Required if resultant $L_{eq}$ exceeds 55 dBA Type A |
| | More than 60 | Barriers required | N/A | N/A | Required if resultant $L_{eq}$ exceeds 55 dBA Type B |
| **Plane of Living Room Window (POW)** | Less than 55 | N/A | None Required | None Required | None Required |
| | Between55 and 65 | N/A | Forced air heating with provision for central air conditioning | None Required | Required Type C |
| | More Than 65 | N/A | Central Air Conditioning | Acoustical performance of the windows and walls should be specified | Required Type D |
| **Plane of Bedroom Window (POW)** | Less than 50 | N/A | None Required | None Required | None Required |
| | Between50 and 60 | N/A | Forced air heating with provision for central air conditioning | None Required | Required Type C |
| | More than 60 | N/A | Central Air Conditioning | Acoustical performance of the windows and walls should be specified | Required Type D |

# 3.0 NOISE SOURCES

The City of Ottawa Official Plan and Environmental Noise Control Guidelines (ENCG) stipulate that a noise impact assessment is required when a noise sensitive development is within proximity to a surface transportation (road or rail), stationary and aircraft noise sources.

Due to the site location, only roadway noise will be considered. The following distances to roadway noise sources are applicable to the subject site:

- Within 100m from the right-of-way of an existing/proposed arterial/collector

**Figure 3-1** shows the noise sources that have an impact on this development. Woodroffe Avenue and Paul Metivier Drive (Major Collector) and Whitewater Street (Collector) are located within 100m of the development.

## 3.1 Woodroffe Ave., Paul Métivier Dr. (Major Collector) and Whitewater St. (Collector)

Woodroffe Avenue and Paul Métivier Drive are classified as Urban Major Collectors (2-UMCU) and Whitewater Street is classified as an Urban Collector (2-UCU) Roadway in the 2013 Transportation Master Plan – Map 6. An Annual Average Daily Traffic (AADT) value of 12,000 is specified for a Major Collector (2-UMCU), while a value of 8,000 is specified for a Collector (2-UCU).

As per Table B1 of Appendix B of the ENCG, **Table 3-1** outlines the traffic parameters used to calculate the sound levels for the development.

**Table 3-1 Woodroffe Ave., Paul Métivier Dr. and Whitewater St. Noise Parameters**

| **Roadway Classification** | 2-Lane Urban Major Collector | 2-Lane Urban Collector |
|---|---|---|
| | Woodroffe Ave, Paul Metivier Dr. | Whitewater St. |
| **Annual Average Daily Traffic (AADT)** | 12,000 veh/day | 8,000 veh/day |
| **Day/Night Split (%)** | 92/8 | 92/8 |
| **Heavy Trucks (%)** | 5 | 5 |
| **Medium Trucks (%)** | 7 | 7 |
| **Posted Speed Limit** | 50 km/hr | 50 km/hr |
| **Road Gradient** | 1.0% | 1.0% |

**Figure 3-1 Noise Sources**

# 4.0 NOISE LEVEL PREDICTIONS

## 4.1 Modeling

Noise levels are calculated using the STAMSON computer program, version 5.03. Road data is input into the program as applicable, whereupon the program calculates an A-weighted 16 hour $L_{eq}$ noise level for the daytime and an 8 hour $L_{eq}$ noise level for the night time. The results of these computer calculations are presented in **Appendix A** and summarized in **Table 4-1** and **Table 4-2**.

**Table 4-1 OLA Noise Level Summary**

| LOCATION | OUTDOOR LIVING AREA NOISE LEVEL – Leq - (dBA) |
|---|---|
| | Unattenuated |
| R4 (Amenity Area - Park) | 54.48 |
| R15 (Amenity Area) | 54.98 |

**Table 4-2 POW Noise Level Summary**

| LOCATION | PLANE OF WINDOW (POW) NOISE LEVEL – $L_{eq}$ - (dBA) | |
|---|---|---|
| | DAYTIME | NIGHT TIME |
| R1 (Ground Floor) | 65.77 | 58.17 |
| R2 (Ground Floor) | 60.49 | 52.89 |
| R3 (Ground Floor) | 58.19 | 50.59 |
| R5 (Ground Floor) | 59.75 | 52.15 |
| R6 (Ground Floor) | 56.85 | 49.25 |
| R7 (Ground Floor) | 56.87 | 50.08 |
| R8 (Ground Floor) | 65.80 | 58.20 |
| R9 (Ground Floor) | 55.25 | 47.65 |
| R10 (Ground Floor) | 57.66 | 50.06 |
| R11 (Ground Floor) | 56.15 | 48.55 |
| R12 (Ground Floor) | 52.63 | 45.03 |
| R13 (Ground Floor) | 54.97 | 47.37 |
| R14 (Ground Floor) | 56.85 | 49.25 |

## 4.2 Outdoor Control Measures

The shared amenity space (on-site park) is located in the interior of the site, surrounded by buildings and surface parking. The OLA noise level is below the minimum requirement of 55 dBA (54.48 dBA); therefore, no mitigation measures or warning clauses are required.

## 4.3 Indoor Control Measures

Warning clauses are required on title relating to the requirement of forced air heating with provision for central air conditioning and required central air conditioning.

Units 'C' and 'D' in Buildings 3 to 7 (all levels), Units 'A' and 'B' in Building 8 (all levels), Units 'A', 'B', C', and 'D' in Building 10 and Units 'A' and 'B' in Building 11 require forced air heating with provision for central air conditioning and associated warning clause Type C. These units are identified below in **Figure 5-1**.

Typical wording for Type C warning clause: "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 will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria."

Units 'A' and 'B' in Buildings 3 to 7 (all levels) require central air conditioning and associated warning clause Type D and are identified below in **Figure 5-1** and include all units facing Woodroffe Avenue.

Typical wording for Type D warning clause: "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 noise levels are within the City's and the Ministry of the Environment's noise criteria."

## 4.4 Building Component Assessment

### 4.4.1 *Units facing Woodroffe Avenue*

The worst-case sound level is located at R8 facing Woodroffe Avenue and is above the 65 dBA (daytime) allowances at 65.80 dBA. Night-time sound levels are under the 60 dBA allowance at 58.20 dBA. Therefore, an analysis of the cladding system is warranted due to daytime sound levels. To comply with the ENCG policies, the building envelope will require a minimum AIF rating to provide the indoor noise levels as shown above in **Table 2-2**. Compliance at the worst-case receiver points will demonstrate compliance for all locations.

The acoustical insulation factor for residential living rooms is calculated as follows:

Two Building Components: AIF = 65.80 dBA – 45 dBA + 10log(2) dBA + 2 dBA = 26

To comply with the ENCG policies, the buildings will require a minimum AIF rating of 26 to provide the appropriate indoor noise levels. Presented below are recommended building materials that provide the required AIF rating. These building materials are only suggestions and can be substituted with equivalent building materials that meet or exceed the AIF rating.

Walls with EW1 compositions (refer to **Appendix A** for applicable worksheets) have an AIF range of 29 to 39 depending on the exterior wall to interior floor area ratio; this exceeds the minimum requirement for 2 components. A standard residential window section employs 3mm glazing x 13mm air space x 3mm glazing, which has an AIF of 26 with a window to floor area ratio of 63%.

When the building floor plans and exterior facade have been finalized, the tables in **Appendix A** shall be referenced to ensure that the selected building components exceed the minimum AIF rating.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

To meet the requirements for compliance with the City of Ottawa Environmental Noise Control Guidelines and the MOE Environmental Noise Guideline the following measures are required.

### Outdoor Control Measures

The noise level in the shared amenity space is below 55 dBA, therefore no warning clause is required.

### Indoor Control Measures

All building faces fronting on Woodroffe Avenue will comply with the ENCG indoor noise policy employing EW1 wall components and standard residential window sections 3mm glazing x 13mm air space x 3mm glazing with a maximum window to floor area ratio of 63%.

Units 'C' and 'D' in Buildings 3 to 7 (all levels), Units 'A' and 'B' in Building 8 (all levels), Units 'A', 'B', C', and 'D' in Building 10 and Units 'A' and 'B' in Building 11 require forced air heating with provision for central air conditioning and associated warning clause Type C. These units are identified below in **Figure 5-1**.

Units 'A' and 'B' in Buildings 3 to 7 (all levels) require central air conditioning and associated warning clause Type D and are identified below in **Figure 5-1** and are limited to all units facing Woodroffe Avenue.

### Building Component Assessment

All building faces will comply with the ENCG indoor noise policy employing Ontario Building Code minimum building components.

### Warning Clauses

Warning clauses are to be placed on title and in the purchase and sale agreements as indicated above and in **Figure 5-1**. The following typical warning clauses are extracted from Section C8.1 of the MOE NPC-300 document.

Warning Clause Type 'C'
"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 will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria."

Warning Clause Type 'D'
"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 noise levels are within the City's and the Ministry of the Environment's noise criteria."

**Figure 5-1 Construction Requirements and Warning Clauses**

If you have any questions or comments with regards to this report, please do not hesitate to contact the undersigned.

Respectfully issued,

**NOVATECH**

Prepared By:

Lucas Wilson, P.Eng.
Project Engineer

Reviewed By:

Mark Bissett, P.Eng.
Senior Project Manager

# APPENDIX A

## Stamson Model Output
## AIF Component Assessment

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:32:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (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 : 22.40 / 22.40 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.80 m
Reference angle : 0.00

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

Source height = 1.50 m

ROAD (0.00 + 65.77 + 0.00) = 65.77 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 67.51 | 0.00 | -1.74 | 0.00 | 0.00 | 0.00 | 0.00 | 65.77 |

Segment Leq : 65.77 dBA

Total Leq All Segments: 65.77 dBA

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

Source height = 1.50 m

ROAD (0.00 + 58.17 + 0.00) = 58.17 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 59.91 | 0.00 | -1.74 | 0.00 | 0.00 | 0.00 | 0.00 | 58.17 |

Segment Leq : 58.17 dBA

Total Leq All Segments: 58.17 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.77
(NIGHT): 58.17

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:11:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (day/night)
---
Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 23.30 / 23.30 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.80 m
Reference angle : 0.00

Road data, segment # 2: Paul M. (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Paul M. (day/night)

```
----------------------------------------
Angle1   Angle2           : -47.00 deg   39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 109.20 / 109.20 m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   1.80 m
Reference angle           :   0.00


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

Source height = 1.50 m

ROAD (0.00 + 60.06 + 0.00) = 60.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.61  67.51   0.00  -3.07  -4.38   0.00   0.00   0.00  60.06
-------------------------------------------------------------------------------

Segment Leq : 60.06 dBA


Results segment # 2: Paul M. (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 50.19 + 0.00) = 50.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -47     39   0.61  67.51   0.00 -13.85  -3.47   0.00   0.00   0.00  50.19
-------------------------------------------------------------------------------

Segment Leq : 50.19 dBA

Total Leq All Segments: 60.49 dBA

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

Source height = 1.50 m

ROAD (0.00 + 52.46 + 0.00) = 52.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.61  59.91   0.00  -3.07  -4.38   0.00   0.00   0.00  52.46
-------------------------------------------------------------------------------

Segment Leq : 52.46 dBA

Results segment # 2: Paul M. (night)
------------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 42.59 + 0.00) = 42.59 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -47 | 39 | 0.61 | 59.91 | 0.00 | -13.85 | -3.47 | 0.00 | 0.00 | 0.00 | 42.59 |

Segment Leq : 42.59 dBA

Total Leq All Segments: 52.89 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.49
(NIGHT): 52.89

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:11:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (day/night)
---
Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 34.00 / 34.00 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.80 m
Reference angle : 0.00

Road data, segment # 2: Paul M. (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Paul M. (day/night)
---

| | | |
|---|---|---|
| Angle1 Angle2 | : -45.00 deg | 42.00 deg |
| Wood depth | : 0 | (No woods.) |
| No of house rows | : 0 / 0 | |
| Surface | : 1 | (Absorptive ground surface) |
| Receiver source distance | : 109.40 / 109.40 m | |
| Receiver height | : 1.50 / 1.50 m | |
| Topography | : 3 | (Elevated; no barrier) |
| Elevation | : 1.80 m | |
| Reference angle | : 0.00 | |

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

Source height = 1.50 m

ROAD (0.00 + 57.43 + 0.00) = 57.43 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.61 | 67.51 | 0.00 | -5.71 | -4.38 | 0.00 | 0.00 | 0.00 | 57.43 |

Segment Leq : 57.43 dBA

Results segment # 2: Paul M. (day)
---

Source height = 1.50 m

ROAD (0.00 + 50.23 + 0.00) = 50.23 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -45 | 42 | 0.61 | 67.51 | 0.00 | -13.86 | -3.42 | 0.00 | 0.00 | 0.00 | 50.23 |

Segment Leq : 50.23 dBA

Total Leq All Segments: 58.19 dBA

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

Source height = 1.50 m

ROAD (0.00 + 49.83 + 0.00) = 49.83 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.61 | 59.91 | 0.00 | -5.71 | -4.38 | 0.00 | 0.00 | 0.00 | 49.83 |

Segment Leq : 49.83 dBA

Results segment # 2: Paul M. (night)
---

Source height = 1.50 m

ROAD (0.00 + 42.63 + 0.00) = 42.63 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -45 | 42 | 0.61 | 59.91 | 0.00 | -13.86 | -3.42 | 0.00 | 0.00 | 0.00 | 42.63 |

Segment Leq : 42.63 dBA

Total Leq All Segments: 50.59 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.19
(NIGHT): 50.59

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 09:29:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (day/night)
---
Angle1 Angle2 : -47.00 deg 78.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 70 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 73.40 / 73.40 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.80 m
Reference angle : 0.00

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

Source height = 1.50 m

ROAD (0.00 + 54.48 + 0.00) = 54.48 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -47 | 78 | 0.00 | 67.51 | 0.00 | -6.90 | -1.58 | 0.00 | -4.56 | 0.00 | 54.48 |

Segment Leq : 54.48 dBA

Total Leq All Segments: 54.48 dBA

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

Source height = 1.50 m

ROAD (0.00 + 46.88 + 0.00) = 46.88 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -47 | 78 | 0.00 | 59.91 | 0.00 | -6.90 | -1.58 | 0.00 | -4.56 | 0.00 | 46.88 |

Segment Leq : 46.88 dBA

Total Leq All Segments: 46.88 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.48
(NIGHT): 46.88

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:13:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (day/night)
---
Angle1 Angle2 : 0.00 deg 86.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 24.25 / 24.25 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.80 m
Reference angle : 0.00

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

Source height = 1.50 m

ROAD (0.00 + 59.75 + 0.00) = 59.75 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 86 | 0.61 | 67.51 | 0.00 | -3.35 | -4.41 | 0.00 | 0.00 | 0.00 | 59.75 |

Segment Leq : 59.75 dBA

Total Leq All Segments: 59.75 dBA

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

Source height = 1.50 m

ROAD (0.00 + 52.15 + 0.00) = 52.15 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 86 | 0.61 | 59.91 | 0.00 | -3.35 | -4.41 | 0.00 | 0.00 | 0.00 | 52.15 |

Segment Leq : 52.15 dBA

Total Leq All Segments: 52.15 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.75
(NIGHT): 52.15

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:17:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (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 : 66.20 / 66.20 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -66.00 deg Angle2 : -15.00 deg
Barrier height : 10.00 m
Elevation : 1.80 m
Barrier receiver distance : 24.70 / 24.70 m
Source elevation : 102.00 m
Receiver elevation : 104.00 m
Barrier elevation : 104.00 m
Reference angle : 0.00

Road data, segment # 2: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00

```
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Woodroffe (day/night)
------------------------------------------
Angle1   Angle2           :   0.00 deg   84.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  66.20 / 66.20  m
Receiver height           :   1.50 / 1.50   m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            :  18.00 deg   Angle2 : 74.00 deg
Barrier height            :  10.00 m
Elevation                 :   1.80 m
Barrier receiver distance :  24.70 / 24.70  m
Source elevation          : 102.00 m
Receiver elevation        : 104.00 m
Barrier elevation         : 104.00 m
Reference angle           :   0.00

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        0.75 !       104.75

ROAD (52.31 + 35.89 + 50.27) = 54.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -66   0.00  67.51   0.00  -6.45  -8.75   0.00   0.00   0.00  52.31
-------------------------------------------------------------------------------
   -66    -15   0.00  67.51   0.00  -6.45  -5.48   0.00   0.00 -19.70  35.89
-------------------------------------------------------------------------------
   -15      0   0.00  67.51   0.00  -6.45 -10.79   0.00   0.00   0.00  50.27
-------------------------------------------------------------------------------

Segment Leq : 54.48 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.75 | 104.75 |

ROAD (51.06 + 36.76 + 48.51) = 53.08 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 18 | 0.00 | 67.51 | 0.00 | -6.45 | -10.00 | 0.00 | 0.00 | 0.00 | 51.06 |
| 18 | 74 | 0.00 | 67.51 | 0.00 | -6.45 | -5.07 | 0.00 | 0.00 | -19.23 | 36.76 |
| 74 | 84 | 0.00 | 67.51 | 0.00 | -6.45 | -12.55 | 0.00 | 0.00 | 0.00 | 48.51 |

Segment Leq : 53.08 dBA

Total Leq All Segments: 56.85 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.75 | 104.75 |

ROAD (44.71 + 28.29 + 42.67) = 46.88 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -66 | 0.00 | 59.91 | 0.00 | -6.45 | -8.75 | 0.00 | 0.00 | 0.00 | 44.71 |
| -66 | -15 | 0.00 | 59.91 | 0.00 | -6.45 | -5.48 | 0.00 | 0.00 | -19.70 | 28.29 |
| -15 | 0 | 0.00 | 59.91 | 0.00 | -6.45 | -10.79 | 0.00 | 0.00 | 0.00 | 42.67 |

Segment Leq : 46.88 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.75 | 104.75 |

ROAD (43.46 + 29.16 + 40.91) = 45.49 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 18 | 0.00 | 59.91 | 0.00 | -6.45 | -10.00 | 0.00 | 0.00 | 0.00 | 43.46 |
| 18 | 74 | 0.00 | 59.91 | 0.00 | -6.45 | -5.07 | 0.00 | 0.00 | -19.23 | 29.16 |
| 74 | 84 | 0.00 | 59.91 | 0.00 | -6.45 | -12.55 | 0.00 | 0.00 | 0.00 | 40.91 |

Segment Leq : 45.49 dBA

Total Leq All Segments: 49.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.85
(NIGHT): 49.25

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:18:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (day/night)
---
Angle1 Angle2 : 0.00 deg 66.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 33.70 / 33.70 m
Receiver height : 1.50 / 7.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.80 m
Reference angle : 0.00

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

Source height = 1.50 m

ROAD (0.00 + 56.87 + 0.00) = 56.87 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 66 | 0.61 | 67.51 | 0.00 | -5.65 | -5.00 | 0.00 | 0.00 | 0.00 | 56.87 |

Segment Leq : 56.87 dBA

Total Leq All Segments: 56.87 dBA

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

Source height = 1.50 m

ROAD (0.00 + 50.08 + 0.00) = 50.08 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 66 | 0.43 | 59.91 | 0.00 | -5.01 | -4.82 | 0.00 | 0.00 | 0.00 | 50.08 |

Segment Leq : 50.08 dBA

Total Leq All Segments: 50.08 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.87
(NIGHT): 50.08

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:18:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (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 : 22.30 / 22.30 m
Receiver height : 1.50 / 7.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.80 m
Reference angle : 0.00

Road data, segment # 2: Whitewater (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Whitewater (day/night)
---
Angle1 Angle2 : -46.00 deg -15.00 deg
Wood depth : 0 (No woods.)
No of house rows : 3 / 3
House density : 90 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 103.90 / 103.90 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.80 m
Reference angle : 0.00

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

Source height = 1.50 m

ROAD (0.00 + 65.79 + 0.00) = 65.79 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 67.51 | 0.00 | -1.72 | 0.00 | 0.00 | 0.00 | 0.00 | 65.79 |

Segment Leq : 65.79 dBA

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

Source height = 1.50 m

ROAD (0.00 + 39.17 + 0.00) = 39.17 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -46 | -15 | 0.00 | 65.75 | 0.00 | -8.41 | -7.64 | 0.00 | -10.53 | 0.00 | 39.17 |

Segment Leq : 39.17 dBA

Total Leq All Segments: 65.80 dBA

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

Source height = 1.50 m

ROAD (0.00 + 58.19 + 0.00) = 58.19 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 59.91 | 0.00 | -1.72 | 0.00 | 0.00 | 0.00 | 0.00 | 58.19 |

Segment Leq : 58.19 dBA

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

Source height = 1.50 m

ROAD (0.00 + 31.58 + 0.00) = 31.58 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -46 | -15 | 0.00 | 58.16 | 0.00 | -8.41 | -7.64 | 0.00 | -10.53 | 0.00 | 31.58 |

Segment Leq : 31.58 dBA

Total Leq All Segments: 58.20 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.80
(NIGHT): 58.20

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:19:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (day/night)
---
Angle1 Angle2 : 0.00 deg 24.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 33.70 / 33.70 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.80 m
Reference angle : 0.00

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

Source height = 1.50 m

ROAD (0.00 + 55.25 + 0.00) = 55.25 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 24 | 0.00 | 67.51 | 0.00 | -3.52 | -8.75 | 0.00 | 0.00 | 0.00 | 55.25 |

Segment Leq : 55.25 dBA

Total Leq All Segments: 55.25 dBA

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

Source height = 1.50 m

ROAD (0.00 + 47.65 + 0.00) = 47.65 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 24 | 0.00 | 59.91 | 0.00 | -3.52 | -8.75 | 0.00 | 0.00 | 0.00 | 47.65 |

Segment Leq : 47.65 dBA

Total Leq All Segments: 47.65 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.25
(NIGHT): 47.65

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 09:37:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (day/night)
---
Angle1 Angle2 : -7.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 61.80 / 61.80 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -7.00 deg Angle2 : 14.00 deg
Barrier height : 10.00 m
Elevation : 1.80 m
Barrier receiver distance : 21.00 / 21.00 m
Source elevation : 102.00 m
Receiver elevation : 104.00 m
Barrier elevation : 104.00 m
Reference angle : 0.00

Road data, segment # 2: Whitewater (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00

```
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Whitewater (day/night)
--------------------------------------------
Angle1   Angle2           : -53.00 deg   -32.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3 / 3
House density             :     95 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 107.90 / 107.90 m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   1.80 m
Reference angle           :   0.00

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+---------------
       1.50 !        1.50 !        0.82 !       104.82

ROAD (0.00 + 32.03 + 57.62) = 57.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -7     14   0.00  67.51   0.00  -6.15  -9.33   0.00   0.00 -20.00  32.03
-------------------------------------------------------------------------------
    14     90   0.00  67.51   0.00  -6.15  -3.74   0.00   0.00   0.00  57.62
-------------------------------------------------------------------------------

Segment Leq : 57.63 dBA

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

Source height = 1.50 m

ROAD (0.00 + 36.09 + 0.00) = 36.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -53    -32   0.00  65.75   0.00  -8.57  -9.33   0.00 -11.76   0.00  36.09
-------------------------------------------------------------------------------

Segment Leq : 36.09 dBA

Total Leq All Segments: 57.66 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.82 | 104.82 |

ROAD (0.00 + 24.43 + 50.02) = 50.03 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -7 | 14 | 0.00 | 59.91 | 0.00 | -6.15 | -9.33 | 0.00 | 0.00 | -20.00 | 24.43 |
| 14 | 90 | 0.00 | 59.91 | 0.00 | -6.15 | -3.74 | 0.00 | 0.00 | 0.00 | 50.02 |

Segment Leq : 50.03 dBA

Results segment # 2: Whitewater (night)

Source height = 1.50 m

ROAD (0.00 + 28.50 + 0.00) = 28.50 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -53 | -32 | 0.00 | 58.16 | 0.00 | -8.57 | -9.33 | 0.00 | -11.76 | 0.00 | 28.50 |

Segment Leq : 28.50 dBA

Total Leq All Segments: 50.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.66
(NIGHT): 50.06

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:20:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe1 (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe1 (day/night)
---
Angle1 Angle2 : -90.00 deg -9.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 64.20 / 64.20 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -74.00 deg Angle2 : -35.00 deg
Barrier height : 10.00 m
Elevation : 1.80 m
Barrier receiver distance : 22.80 / 22.80 m
Source elevation : 102.00 m
Receiver elevation : 104.00 m
Barrier elevation : 104.00 m
Reference angle : 0.00

Road data, segment # 2: Woodroffe2 (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00

```
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Woodroffe2 (day/night)
-------------------------------------------
Angle1   Angle2           :  -9.00 deg   83.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  64.20 / 64.20  m
Receiver height           :   1.50 / 1.50   m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            :  -9.00 deg   Angle2 : 70.00 deg
Barrier height            :  10.00 m
Elevation                 :   1.80 m
Barrier receiver distance :  22.80 / 22.80  m
Source elevation          : 102.00 m
Receiver elevation        : 104.00 m
Barrier elevation         : 104.00 m
Reference angle           :   0.00

Results segment # 1: Woodroffe1 (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        0.79 !       104.79

ROAD (50.69 + 35.50 + 52.79) = 54.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -74   0.00  67.51   0.00  -6.31 -10.51   0.00   0.00   0.00  50.69
-------------------------------------------------------------------------------
   -74    -35   0.00  67.51   0.00  -6.31  -6.64   0.00   0.00 -19.05  35.50
-------------------------------------------------------------------------------
   -35     -9   0.00  67.51   0.00  -6.31  -8.40   0.00   0.00   0.00  52.79
-------------------------------------------------------------------------------

Segment Leq : 54.93 dBA

Results segment # 2: Woodroffe2 (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        0.79 !       104.79
```

ROAD (0.00 + 37.91 + 49.78) = 50.06 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -9 | 70 | 0.00 | 67.51 | 0.00 | -6.31 | -3.58 | 0.00 | 0.00 | -19.71 | 37.91 |
| 70 | 83 | 0.00 | 67.51 | 0.00 | -6.31 | -11.41 | 0.00 | 0.00 | 0.00 | 49.78 |

Segment Leq : 50.06 dBA

Total Leq All Segments: 56.15 dBA

Results segment # 1: Woodroffe1 (night)

Source height = 1.50 m

Barrier height for grazing incidence

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.79 | 104.79 |

ROAD (43.09 + 27.90 + 45.19) = 47.33 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -74 | 0.00 | 59.91 | 0.00 | -6.31 | -10.51 | 0.00 | 0.00 | 0.00 | 43.09 |
| -74 | -35 | 0.00 | 59.91 | 0.00 | -6.31 | -6.64 | 0.00 | 0.00 | -19.05 | 27.90 |
| -35 | -9 | 0.00 | 59.91 | 0.00 | -6.31 | -8.40 | 0.00 | 0.00 | 0.00 | 45.19 |

Segment Leq : 47.33 dBA

Results segment # 2: Woodroffe2 (night)

Source height = 1.50 m

Barrier height for grazing incidence

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.79 | 104.79 |

ROAD (0.00 + 30.31 + 42.18) = 42.46 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -9 | 70 | 0.00 | 59.91 | 0.00 | -6.31 | -3.58 | 0.00 | 0.00 | -19.71 | 30.31 |
| 70 | 83 | 0.00 | 59.91 | 0.00 | -6.31 | -11.41 | 0.00 | 0.00 | 0.00 | 42.18 |

Segment Leq : 42.46 dBA

Total Leq All Segments: 48.55 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.15
(NIGHT): 48.55

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:20:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (day/night)
---
Angle1 Angle2 : -90.00 deg -7.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 80.20 / 80.20 m
Receiver height : 7.50 / 7.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.80 m
Reference angle : 0.00

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

Source height = 1.50 m

ROAD (0.00 + 52.63 + 0.00) = 52.63 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -7 | 0.43 | 67.51 | 0.00 | -10.38 | -4.49 | 0.00 | 0.00 | 0.00 | 52.63 |

Segment Leq : 52.63 dBA

Total Leq All Segments: 52.63 dBA

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

Source height = 1.50 m

ROAD (0.00 + 45.03 + 0.00) = 45.03 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -7 | 0.43 | 59.91 | 0.00 | -10.38 | -4.49 | 0.00 | 0.00 | 0.00 | 45.03 |

Segment Leq : 45.03 dBA

Total Leq All Segments: 45.03 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.63
(NIGHT): 45.03

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:20:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Woodroffe1 (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe1 (day/night)
---
Angle1 Angle2 : -90.00 deg -30.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 63.20 / 63.20 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -76.00 deg Angle2 : -43.00 deg
Barrier height : 10.00 m
Elevation : 1.80 m
Barrier receiver distance : 44.00 / 44.00 m
Source elevation : 102.00 m
Receiver elevation : 104.00 m
Barrier elevation : 104.00 m
Reference angle : 0.00

Road data, segment # 2: Woodroffe2 (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

| | |
|---|---|
| 24 hr Traffic Volume (AADT or SADT) | 12000 |
| Percentage of Annual Growth | 0.00 |
| Number of Years of Growth | 0.00 |
| Medium Truck % of Total Volume | 7.00 |
| Heavy Truck % of Total Volume | 5.00 |
| Day (16 hrs) % of Total Volume | 92.00 |

Data for Segment # 2: Woodroffe2 (day/night)

| | |
|---|---|
| Angle1 Angle2 | -30.00 deg 83.00 deg |
| Wood depth | 0 (No woods.) |
| No of house rows | 0 / 0 |
| Surface | 2 (Reflective ground surface) |
| Receiver source distance | 64.20 / 64.20 m |
| Receiver height | 1.50 / 1.50 m |
| Topography | 4 (Elevated; with barrier) |
| Barrier angle1 | -30.00 deg Angle2 : 69.00 deg |
| Barrier height | 10.00 m |
| Elevation | 1.80 m |
| Barrier receiver distance | 22.00 / 22.00 m |
| Source elevation | 102.00 m |
| Receiver elevation | 104.00 m |
| Barrier elevation | 104.00 m |
| Reference angle | 0.00 |

Results segment # 1: Woodroffe1 (day)

Source height = 1.50 m

Barrier height for grazing incidence

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.10 | 104.10 |

ROAD (50.17 + 34.65 + 49.85) = 53.09 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -76 | 0.00 | 67.51 | 0.00 | -6.25 | -11.09 | 0.00 | 0.00 | 0.00 | 50.17 |
| -76 | -43 | 0.00 | 67.51 | 0.00 | -6.25 | -7.37 | 0.00 | 0.00 | -19.25 | 34.65 |
| -43 | -30 | 0.00 | 67.51 | 0.00 | -6.25 | -11.41 | 0.00 | 0.00 | 0.00 | 49.85 |

Segment Leq : 53.09 dBA

Results segment # 2: Woodroffe2 (day)
---

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.81 | 104.81 |

ROAD (0.00 + 38.80 + 50.11) = 50.42 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -30 | 69 | 0.00 | 67.51 | 0.00 | -6.31 | -2.60 | 0.00 | 0.00 | -19.80 | 38.80 |
| 69 | 83 | 0.00 | 67.51 | 0.00 | -6.31 | -11.09 | 0.00 | 0.00 | 0.00 | 50.11 |

Segment Leq : 50.42 dBA

Total Leq All Segments: 54.97 dBA

Results segment # 1: Woodroffe1 (night)
---

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.10 | 104.10 |

ROAD (42.57 + 27.05 + 42.25) = 45.49 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -76 | 0.00 | 59.91 | 0.00 | -6.25 | -11.09 | 0.00 | 0.00 | 0.00 | 42.57 |
| -76 | -43 | 0.00 | 59.91 | 0.00 | -6.25 | -7.37 | 0.00 | 0.00 | -19.25 | 27.05 |
| -43 | -30 | 0.00 | 59.91 | 0.00 | -6.25 | -11.41 | 0.00 | 0.00 | 0.00 | 42.25 |

Segment Leq : 45.49 dBA

Results segment # 2: Woodroffe2 (night)
---

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.81 | 104.81 |

ROAD (0.00 + 31.20 + 42.51) = 42.82 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -30 | 69 | 0.00 | 59.91 | 0.00 | -6.31 | -2.60 | 0.00 | 0.00 | -19.80 | 31.20 |
| 69 | 83 | 0.00 | 59.91 | 0.00 | -6.31 | -11.09 | 0.00 | 0.00 | 0.00 | 42.51 |

Segment Leq : 42.82 dBA

Total Leq All Segments: 47.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.97
(NIGHT): 47.37

STAMSON 5.0 NORMAL REPORT Date: 11-09-2025 08:28:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r14.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Woodroffe (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 : 66.20 / 66.20 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -66.00 deg Angle2 : -15.00 deg
Barrier height : 10.00 m
Elevation : 1.80 m
Barrier receiver distance : 24.70 / 24.70 m
Source elevation : 102.00 m
Receiver elevation : 104.00 m
Barrier elevation : 104.00 m
Reference angle : 0.00

Road data, segment # 2: Woodroffe (day/night)
---
Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

```
    24 hr Traffic Volume (AADT or SADT):  12000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
```

Data for Segment # 2: Woodroffe (day/night)

```
Angle1   Angle2           :   0.00 deg   84.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  66.20 / 66.20  m
Receiver height           :   1.50 / 1.50   m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            :  18.00 deg   Angle2 : 74.00 deg
Barrier height            :  10.00 m
Elevation                 :   1.80 m
Barrier receiver distance :  24.70 / 24.70  m
Source elevation          : 102.00 m
Receiver elevation        : 104.00 m
Barrier elevation         : 104.00 m
Reference angle           :   0.00
```

Results segment # 1: Woodroffe (day)

Source height = 1.50 m

Barrier height for grazing incidence

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.75 | 104.75 |

ROAD (52.31 + 35.89 + 50.27) = 54.48 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -66 | 0.00 | 67.51 | 0.00 | -6.45 | -8.75 | 0.00 | 0.00 | 0.00 | 52.31 |
| -66 | -15 | 0.00 | 67.51 | 0.00 | -6.45 | -5.48 | 0.00 | 0.00 | -19.70 | 35.89 |
| -15 | 0 | 0.00 | 67.51 | 0.00 | -6.45 | -10.79 | 0.00 | 0.00 | 0.00 | 50.27 |

Segment Leq : 54.48 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.75 | 104.75 |

ROAD (51.06 + 36.76 + 48.51) = 53.08 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 18 | 0.00 | 67.51 | 0.00 | -6.45 | -10.00 | 0.00 | 0.00 | 0.00 | 51.06 |
| 18 | 74 | 0.00 | 67.51 | 0.00 | -6.45 | -5.07 | 0.00 | 0.00 | -19.23 | 36.76 |
| 74 | 84 | 0.00 | 67.51 | 0.00 | -6.45 | -12.55 | 0.00 | 0.00 | 0.00 | 48.51 |

Segment Leq : 53.08 dBA

Total Leq All Segments: 56.85 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.75 | 104.75 |

ROAD (44.71 + 28.29 + 42.67) = 46.88 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -66 | 0.00 | 59.91 | 0.00 | -6.45 | -8.75 | 0.00 | 0.00 | 0.00 | 44.71 |
| -66 | -15 | 0.00 | 59.91 | 0.00 | -6.45 | -5.48 | 0.00 | 0.00 | -19.70 | 28.29 |
| -15 | 0 | 0.00 | 59.91 | 0.00 | -6.45 | -10.79 | 0.00 | 0.00 | 0.00 | 42.67 |

Segment Leq : 46.88 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.75 | 104.75 |

ROAD (43.46 + 29.16 + 40.91) = 45.49 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 18 | 0.00 | 59.91 | 0.00 | -6.45 | -10.00 | 0.00 | 0.00 | 0.00 | 43.46 |
| 18 | 74 | 0.00 | 59.91 | 0.00 | -6.45 | -5.07 | 0.00 | 0.00 | -19.23 | 29.16 |
| 74 | 84 | 0.00 | 59.91 | 0.00 | -6.45 | -12.55 | 0.00 | 0.00 | 0.00 | 40.91 |

Segment Leq : 45.49 dBA

Total Leq All Segments: 49.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.85
(NIGHT): 49.25

STAMSON 5.0 NORMAL REPORT Date: 08-04-2026 11:46:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r15.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Woodroffe (day/night)
---

| | | |
|---|---|---|
| Car traffic volume | : 9715/845 | veh/TimePeriod * |
| Medium truck volume | : 773/67 | veh/TimePeriod * |
| Heavy truck volume | : 552/48 | veh/TimePeriod * |
| Posted speed limit | : 50 | km/h |
| Road gradient | : 1 | % |
| Road pavement | : 1 | (Typical asphalt or concrete) |

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

| | | |
|---|---|---|
| 24 hr Traffic Volume (AADT or SADT) | : | 12000 |
| Percentage of Annual Growth | : | 0.00 |
| Number of Years of Growth | : | 0.00 |
| Medium Truck % of Total Volume | : | 7.00 |
| Heavy Truck % of Total Volume | : | 5.00 |
| Day (16 hrs) % of Total Volume | : | 92.00 |

Data for Segment # 1: Woodroffe (day/night)
---

| | | |
|---|---|---|
| Angle1 Angle2 | : -5.00 deg | 75.00 deg |
| Wood depth | : 0 | (No woods.) |
| No of house rows | : 0 / 0 | |
| Surface | : 1 | (Absorptive ground surface) |
| Receiver source distance | : 51.40 / 51.40 | m |
| Receiver height | : 1.50 / 1.50 | m |
| Topography | : 3 | (Elevated; no barrier) |
| Elevation | : 3.76 m | |
| Reference angle | : 0.00 | |

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

Source height = 1.50 m

ROAD (0.00 + 54.98 + 0.00) = 54.98 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -5 | 75 | 0.55 | 67.51 | 0.00 | -8.28 | -4.25 | 0.00 | 0.00 | 0.00 | 54.98 |

Segment Leq : 54.98 dBA

Total Leq All Segments: 54.98 dBA
TOTAL Leq FROM ALL SOURCES (DAY): 54.98

# TABLE 5: Acoustic Insulation Factor for Various Types of Windows

| Window area as a percentage of total floor area of room[1] | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5 | 6 | 8 | 10 | 13 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 |
| Acoustic Insulation Factor (AIF)[2] | | | | | | | | | | | | | |
| 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 |
| 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 |
| 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 |
| 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 |
| 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 |
| 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 |
| 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 |
| 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 |
| 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 |
| 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 |
| 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 |
| 46 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 |
| 47 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 |
| 48 | 47 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 |
| 49 | 48 | 47 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 |
| 50 | 49 | 48 | 47 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 |

| Single glazing | Double glazing of indicated glass thickness | | | | | Triple Glazing | |
|---|---|---|---|---|---|---|---|
| | 2mm and 2mm glass | 3mm and 3mm glass | 4mm and 4mm glass | 3mm and 6mm glass | 6mm and 6mm glass | 3mm, 3mm and 3mm glass | 3mm, 3mm and 6mm glass |
| Thickness | Interpane spacing in mm[3] | | | | | Interpane spacings in mm[5] | |
| 3mm | 6 | | | | | | |
| | 13 | | | | | | |
| 3mm | 19 | 6 | | | | | |
| 4mm, 6mm | 18 | 13 | 6 | | | | |
| | 22 | 16 | 13 | 6 | 6 | 6,6 | |
| 9mm[4] | 28 | 20 | 16 | 13 | 13 | 6,10 | 6,6 |
| | 35 | 25 | 20 | 16 | 16 | 6,15 | 6,10 |
| 12mm[4] | 42 | 32 | 25 | 20 | 20 | 6,20 | 6,15 |
| | 50 | 40 | 32 | 25 | 24 | 6,30 | 6,20 |
| | 63 | 50 | 40 | 32 | 30 | 6,40 | 6,30 |
| | 80 | 63 | 50 | 40 | 37 | 6,50 | 6,40 |
| | 100 | 80 | 63 | 55 | 50 | 6,65 | 6,50 |
| | 125 | 100 | 80 | 75 | 70 | 6,80 | 6,65 |
| | 130 | 125 | 100 | 95 | 90 | 6,100 | 6,80 |
| | | 150 | 125 | 110 | 100 | | 6,100 |
| | | | 150 | 135 | 125 | | |

Source: National Research Council, Division of Building Research, June 1980.

Explanatory Notes:

1) Where the calculated percentage window area is not presented as a column heading, the nearest percentage column in the table values should be used.
2) AIF data listed in the table are for well-fitted weatherstripped units that can be opened. The AIF values apply only when the windows are closed. For windows fixed and sealed to the frame, add three (3) to the AIF given in the table.
3) If the interpane spacing or glass thickness for a specific double glazed window is not listed in the table, the nearest listed values should be used.
4) The AIF ratings for 9mm and 12mm glass are for laminated glass only; for solid glass subtract two (2) from the AIF values listed in the table.
5) If the interpane spacings for a specific triple-glazed window are not listed in the table, use the listed case whose combined spacings are nearest the actual combined spacing.
6) The AIF data listed in the table are for typical windows, but details of glass mounting, window seals, etc. may result in slightly different performance for some manufacturers' products. If laboratory sound transmission loss data (conforming to ASTM test method E-90) are available, these should be used to calculate the AIF.

Table 6.3 - Acoustic Insulation Factor for Various Types of Exterior Wall

| Percentage of exterior wall area to total floor area of room | | | | | | | | | | | Type of Exterior Wall |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | |
| Acoustic Insulation Factor | | | | | | | | | | | |
| 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | EW1 |
| 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | EW2 |
| 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | EW3 |
| 47 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | EW4 |
| 48 | 47 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | EW1R |
| 49 | 48 | 47 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | EW2R |
| 50 | 49 | 48 | 47 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | EW3R |
| 55 | 54 | 53 | 52 | 51 | 50 | 49 | 48 | 47 | 46 | 45 | EW5 |
| 56 | 55 | 54 | 53 | 52 | 51 | 50 | 49 | 48 | 47 | 46 | EW4R |
| 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 49 | 48 | EW6 |
| 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 | 50 | 49 | EW7 or EW5R |
| 63 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | EW8 |

Source : National Research Council, Division of Building Research, December 1980.

Explanatory Notes :

1) Where the calculated percentage wall area is not presented as a column heading, the nearest percentage column in the table should be used.
2) The common structure of walls EW1 to EW5 is composed of 12.7 mm gypsum board, vapour barrier, and 38 x 89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in inter-stud cavities
3) EW1 denotes exterior wall as in Note 2), plus sheathing, plus wood siding or metal siding and fibre backer board.
EW2 denotes exterior wall as in Note 2), plus rigid insulation (25-30 mm), and wood siding or metal siding and fibre backer board.
EW3 denotes simulated mansard with structure as in Note 2), plus sheathing, 28 x 89 mm framing, sheathing, and asphalt roofing material.
EW4 denotes exterior wall as in Note 2), plus sheathing and 20 mm stucco.
EW5 denotes exterior wall as in Note 2), plus sheathing, 25 mm air space, 100 mm brick veneer.
EW6 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 100 mm back-up block, 100 mm face brick.
EW7 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 140 mm back-up block, 100 mm face brick.
EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 200 mm concrete.
4) R signifies the mounting of the interior gypsum board on resilient clips.
5) An exterior wall conforming to rainscreen design principles and composed of 12.7 mm gypsum board, 100 mm concrete block, rigid insulation (25-50 mm), 25 mm air space, and 100 mm brick veneer has the same AIF as EW6.
6) An exterior wall described in EW1 with the addition of rigid insulation (25-50 mm) between the sheathing and the external finish has the same AIF as EW2.

**APPENDIX B**

**124147-GR (Grading Plan)**
**Site Plan**

NORTH

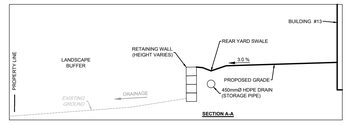
KEY PLAN
N.T.S.

## LEGEND

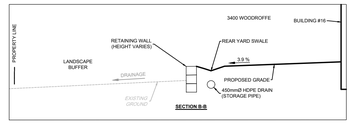
- PROPOSED GRADE AND DIRECTION OF FLOW
- 76.90 PROPOSED ELEVATION
- 105.33 / 104.58 PROPOSED ELEVATION / EXISTING ELEVATION
- 77.50 EXISTING ELEVATION
- TERRACING (3:1 MAX)
- PROPOSED RETAINING WALL
- MAJOR OVERLAND FLOW DIRECTION
- EMERGENCY FLOW DIRECTION
- EXISTING CONTOUR AND ELEVATION
- PROPOSED SANITARY MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED CATCHBASIN
- RY1 TG= PROPOSED REAR YARD CATCHBASIN WITH TOP OF GRATE ELEVATION
- VB PROPOSED VALVE & VALVE BOX LOCATION
- HYD TF= PROPOSED HYDRANT WITH TOP OF FLANGE ELEVATION
- FF1 FINISHED FLOOR ELEVATION - 1st FLOOR
- TF TOP OF FOUNDATION
- FF0 FINISHED FLOOR ELEVATION - BASEMENT
- USF UNDERSIDE OF FOOTING ELEVATION
- TW TOP OF WALL ELEVATION
- BW BOTTOM OF WALL ELEVATION
- MAX STATIC PONDING LIMITS
- 100-YR PONDING LIMITS
- 100-YR +20% PONDING LIMITS

## PAVEMENT STRUCTURE:

| | |
|---|---|
| 40mm | ASPHALT SP12.5 |
| 50mm | ASPHALT SP19.0 |
| 150mm | GRAN "A" |
| 450mm | GRAN "B" TYPE II |
| 690mm | TOTAL DEPTH |

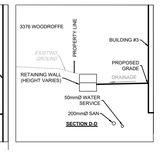


SECTION A-A



SECTION B-B

SECTION C-C




## PONDING

| STRUCTURE | 100 YEAR PONDING ELEVATION | 100 YEAR PONDING DEPTH (m) | 100 YEAR +20% PONDING ELEVATION | 100 YEAR +20% PONDING DEPTH (m) | MAX STATIC PONDING ELEVATION | MAX STATIC PONDING DEPTH (m) |
|---|---|---|---|---|---|---|
| CB01 | 103.79 | 0.28 | 103.84 | 0.33 | 103.83 | 0.32 |
| CB02 | 103.80 | 0.24 | 103.86 | 0.30 | 103.86 | 0.30 |
| CB03 | 103.83 | 0.20 | 103.87 | 0.24 | 103.93 | 0.30 |
| CB04 | 103.73 | 0.18 | 103.87 | 0.32 | 103.88 | 0.33 |
| CB05 | 103.76 | 0.21 | 103.81 | 0.26 | 103.85 | 0.30 |
| CB06 | 103.69 | 0.17 | 103.77 | 0.25 | 103.82 | 0.30 |
| CBMH01 | 103.70 | 0.15 | 103.74 | 0.19 | 103.85 | 0.30 |
| CBMH02 | 103.92 | 0.29 | 103.94 | 0.31 | 103.93 | 0.30 |
| CBMH03 | 103.94 | 0.21 | 103.95 | 0.22 | 103.93 | 0.20 |
| CBMH04 | 103.95 | 0.21 | 103.96 | 0.22 | 103.94 | 0.20 |
| CBMH05 | 103.87 | 0.22 | 103.91 | 0.26 | 103.90 | 0.25 |
| CBMH06 | 103.91 | 0.26 | 103.93 | 0.28 | 103.91 | 0.26 |
| CBMH07 | 103.77 | 0.17 | 103.86 | 0.26 | 103.90 | 0.30 |
| CBMH08 | 103.76 | 0.19 | 103.85 | 0.28 | 103.87 | 0.30 |
| CBMH09 | 103.22 | 0.00 | 103.60 | 0.00 | 103.73 | 0.08 |
| CBMH10 | 103.23 | 0.00 | 103.61 | 0.11 | 103.58 | 0.08 |
| CBMH11 | 103.60 | 0.00 | 103.88 | 0.00 | 103.99 | 0.04 |
| CBMH12 | 103.60 | 0.00 | 103.88 | 0.10 | 103.83 | 0.05 |
| LCB01 | 103.92 | 0.06 | 103.95 | 0.09 | 103.94 | 0.08 |
| LCB02 | 103.80 | 0.00 | 103.86 | 0.00 | 104.05 | 0.07 |
| RY01 | 101.73 | 0.21 | 101.81 | 0.29 | 101.79 | 0.27 |
| RY02 | 101.73 | 0.21 | 101.81 | 0.29 | 101.77 | 0.25 |
| RY03 | 101.73 | 0.29 | 101.77 | 0.33 | 101.75 | 0.31 |
| RY04 | 101.73 | 0.23 | 101.77 | 0.27 | 101.72 | 0.22 |
| RY05 | 103.92 | 0.06 | 103.95 | 0.09 | 103.95 | 0.09 |
| RY06 | 103.80 | 0.08 | 103.86 | 0.14 | 103.96 | 0.24 |
| RY07 | 103.92 | 0.10 | 103.95 | 0.13 | 103.95 | 0.13 |
| RY08 | 103.82 | 0.03 | 103.87 | 0.08 | 103.94 | 0.15 |
| RY09 | 103.22 | 0.00 | 103.61 | 0.00 | 104.00 | 0.05 |
| RY10 | 103.22 | 0.00 | 103.61 | 0.00 | 103.97 | 0.05 |
| RY11 | 103.60 | 0.00 | 103.88 | 0.00 | 103.99 | 0.05 |
| RY12 | 103.60 | 0.00 | 103.88 | 0.00 | 104.01 | 0.05 |
| RY13 | 103.60 | 0.00 | 103.88 | 0.00 | 103.97 | 0.05 |
| RY14 | 103.60 | 0.00 | 103.88 | 0.00 | 103.97 | 0.05 |

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.


PHOENIX HOMES
SINCE 1988
18A BENTLEY AVE
OTTAWA, ON, K2E 6TB


| No. | REVISION | DATE | BY |
|---|---|---|---|
| 2. | ADDRESS CITY COMMENTS | APR 14/26 | MAB |
| 1. | SITE PLAN APPLICATION | NOV 5/25 | MAB |

SCALE
1:300
1:300
0 3 6 9 12

DESIGN LRW
CHECKED MAB
DRAWN LPA
CHECKED MAB
APPROVED MAB

**FOR REVIEW ONLY**

LICENSED PROFESSIONAL ENGINEER
L. R. WILSON
100160065
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
M.A. BISSETT
2026.04.14
PROVINCE OF ONTARIO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CITY OF OTTAWA
3400 WOODROFFE AVENUE

GRADING PLAN

PROJECT No. 124147
REV REV # 2
DRAWING No. 124147-GR

PLAN #19422 D07-12-25-0158 & D02-02-25-0090

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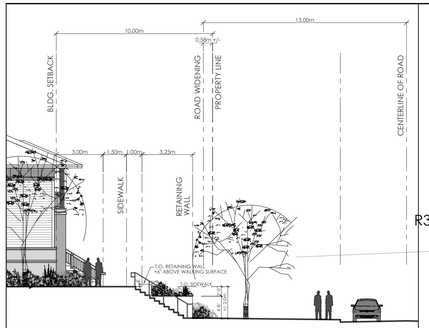
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3.25m
SIDEWALK
RETAINING WALL
1.8m
0.6m
1.2m
1.2m
1.2