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ENVIRONMENTAL NOISE ASSESSMENT

L & M GARDENS EAST STOUFFVILLE
(BLOCK 140)

SOUTHWEST OF BUSATO DRIVE AND TENTH LINE
PART OF LOT 32, CONCESSION 9
PLAN 65M-4688
TOWN OF WHITCHURCH-STOUFFVILLE

PREPARED FOR:

SORBARA/L&M GP INC.

September 2026
Y2611

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1.0 INTRODUCTION

PURPOSE

A residential development has been proposed by Sorbara/L&M GP Inc. in (Town of Whitchurch-Stouffville). This report is an analysis of future sound levels within the proposed residential development and describes the types and locations of noise mitigation measures which will be required based on the latest Site Plan and grading dated July 2026.

SITE DESCRIPTION AND LOCATION

The Block 140 development will consist of townhouses and local internal roads located west of Tenth Line and south of Busato Drive in the Town of Whitchurch-Stouffville.

The surrounding land uses are existing residential developments to the north and west, agricultural and vacant lands to the south and east.

KEY PLAN

The location of the proposed development is further indicated by the Key Plan below.



FIGURE 1

2.0 SOUND LEVEL CRITERIA

The sound level descriptors (L_{eq} in dBA) are for 16 hours (daytime) and 8 hours (night-time) based on MECP Guideline NPC-300:

Outdoor Activity Areas (7 a.m. – 11 p.m.) – 16 Hr. Leq. = 55 dBA

If daytime outdoor sound levels at the backyards (outdoor activity areas) exceed 60 dBA, physical noise attenuation measures such as acoustical fences, increased building setbacks or reorientation of the buildings must be employed to reduce the sound levels. In some cases, outdoor sound levels may be allowed to exceed the above criteria by a maximum of 5 dBA. If such excesses occur, purchasers must be informed of the existence of potentially annoying sound levels by means of warning clauses registered on title.

Living and Dining Area and Bedroom (7 a.m.–11 p.m.) = 45 dBA Roads, 40 dBA Railways
Living and Dining Area (11 p.m.–7 a.m.) = 45 dBA Roads, 40 dBA Railways
Bedrooms (11 p.m. – 7 a.m.) = 40 dBA Roads, 35 dBA Railways

Appropriate building components such as walls, doors and windows are chosen with reference to the following. If daytime sound levels at the external dwelling walls are 65 dBA or less (roadways), and 60 dBA or less (railways), then the indoor sound level criteria described above will be achieved using standard (Ontario Building Code) construction methods and building components. If night-time sound levels are 60 dBA or less (roadways) and 55 dBA or less (railways), standard construction methods and building components can be utilized. If the external sound levels exceed the above criteria, then components having extra sound insulation properties may be required.

Ventilation requirements are determined with reference to the following. If night-time sound levels at the bedroom window of a dwelling unit are in the range of 50 to 60 dBA, the ventilation system must be designed to allow the optional installation of central air conditioning at the owner's discretion. If night-time sound levels are greater than 60 dBA, central air conditioning must be installed. If daytime sound levels at the living room/dining room windows are in the range of 55 to 65 dBA, the ventilation system must be designed to allow optional installation of central air conditioning. For daytime sound levels greater than 65 dBA, central air conditioning must be installed.

STATIONARY SOURCES

As per the M.E.C.P. guidelines (Publication NPC-300), this development is considered to be a Class 2 area. The noise produced by a stationary source at the plane of window for noise sensitive spaces is the energy equivalent sound level (L_{EQ}), 50 dBA during daytime and evening time (0700-2300) or 45 dBA during night-time (2300-0700). For outdoor receptors, the energy equivalent sound level (L_{EQ}) is 50 dBA during daytime (0700-2300) or 45 dBA during night-time (1900-2300).

3.0 NOISE SOURCES

ROAD TRAFFIC

As indicated on the attached Figure 2, the proposed residential development will be located west of Tenth Line in the Town of Whitchurch-Stouffville. Noise generated by this road has the potential to affect future residents. All other roads within or near this site are considered acoustically insignificant.

Traffic information for Tenth Line was not available at the Region and Town. Therefore, the latest traffic data was provided by LEA Consulting Ltd. dated August 2026 based on the traffic volumes which was projected to the year 2036 at a growth rate of 2% per year. The truck traffic was assumed to be 10%. Tenth line traffic information is summarized in Table 1 below.

TABLE 1: TENTH LINE TRAFFIC DATA

Projected Annual Average Daily Traffic *	10,000
Percent Trucks	10%
Heavy and Medium trucks ratio	50:50
Speed (km/hr)	60
Day/Night Split	92/8
Number of Lanes	4

* Traffic data provided by LEA Consulting Ltd. project to the year 2036.

AIRCRAFT TRAFFIC

Due to the proximity of the future Pickering Airport, the proposed residential development has been verified and the proposed site is outside the NEF 25 Noise Contour Line. The noise contour line map for the future Pickering Airport is included in Appendix 1.

RAIL TRAFFIC

The proposed residential development is located at more than 1.5km from the CP railway to the north. Therefore, the railway noise is considered acoustically insignificant.

STATIONARY NOISE SOURCE

The noise impact from the existing farmland storage area is approximately 400m to the nearest proposed residential. Due to distance separation and the nature of the occasional activities, the noise impact is considered acoustically insignificant.

4.0 NOISE ASSESSMENT

4.1 ROAD TRAFFIC NOISE ASSESSMENT

Figure 2 is based on the latest Site Plan dated July 2026 showing various noise analysis locations and noise mitigation measures within the proposed residential development.

Sound levels were calculated using the Ministry of Environment's Stamson 5.04 computer based noise prediction model. The noise criteria and warning clauses are listed in Appendix 3.

Table 2 lists the unattenuated sound levels at various locations.

TABLE 2: UNATTENUATED SOUND LEVELS

LOCATIONS		DISTANCE TO CENTRELINE OF ROAD (m)	DAYTIME 16 Hr. Leq dBA		NIGHT-TIME 8 Hr. Leq dBA
			REAR YARD	DWELLING WALL	SECOND STOREY
BLOCK 140					
Block 8 (Unit 8)	Front Wall	87.0[1]	-	56.80	49.20
	Balcony above garage	85.0[1]	56.26	-	-
Block 10 (Unit 8)	Front Wall	47.0[1]	-	60.88	53.29
	Balcony above garage	45.0[1]	58.10	-	-
Block 11 (Unit 14)	Front Wall	47.0[1]	-	59.98	52.39
	Balcony above garage	45.0[1]	57.87	-	-
Block 12 (Unit 6)	Side Wall	36.0[1]	-	64.78	57.19
	Balcony above garage	38.0[1]	61.75	-	-
Block 13 (Unit 6)	Front Wall	15.0[1]	-	68.59	60.99
	Balcony above garage	26.0[1]	61.50	-	-
Block 15 (Unit 1)	Front Wall	15.0[1]	-	68.59	60.99
	Balcony above garage	26.0[1]	61.49	-	-

[1] Tenth Line

5.0 RECOMMENDED NOISE MITIGATION MEASURES

5.1 OUTDOOR MEASURES

The designated outdoor amenity areas for Blocks 1 to 3 (All Units) are the rear yards. The designated outdoor amenity areas for Blocks 4, 5, 8 to 11 are the balconies on top of the garages located at the front of the buildings and the designated outdoor amenity areas for Blocks 6, 7, 12 to 15 (All Units), are the balconies on top of the garages located at the rear of the buildings mostly shielded by the buildings themselves.

Table 2 indicates that daytime sound levels at the outdoor amenity areas for Block 12 (Unit 6), Block 13 (Unit 6) and Block 15 (Unit 1) are slightly above 60dBA in absence of mitigative measures.

Therefore, noise mitigation measures are required for the following locations:

- Block 12 (Unit 6), Block 13 (Unit 6) and Block 15 (Unit 1)

NOISE BARRIERS

In accordance with M.O.E.C.P. policy, mitigative measures are required for Block 12 (Unit 6), Block 13 (Unit 6) and Block 15 (Unit 1) to reduce the sound levels to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

For Block 12 (Unit 6), Block 13 (Unit 6) and Block 15 (Unit 1), a 1.5m high noise barrier is required along the Balconies on top of the garages to achieve a sound level of less than 56dBA at the designated outdoor amenity areas as shown on the attached Drawing Figure 2.

The recommended barriers should be constructed of a material, which provides a minimum surface density of 20 kg per square meter.

The following warning clauses should therefore be incorporated into the Development Agreement, which will be registered on title and should be included in all offers of purchase and sale or lease of the dwelling units listed below.

- Block 12 (Unit 6), Block 13 (Unit 6) and Block 15 (Unit 1)

  Warning Clause Type B

  "Purchasers are advised that despite the inclusion of noise abatement features within the development area, sound levels from road traffic may be of concern, occasionally interfering with some activities of the dwelling occupants as the noise level will exceed the Ministry of Environment's noise criteria."

5.2 VENTILATION REQUIREMENTS

Ventilation requirements were determined using the sound levels at the building facades listed in Table 2.

MANDATORY CENTRAL AIR CONDITIONERS

Based on the information in Table 2, the following residential dwelling units are expected to be above 65dBA during the daytime and/or above 60dBA during the nighttime. Therefore, mandatory central air conditioning is required for the following locations:

- Blocks 13, 14, 15 (All Units), Block 12 (Unit 6)

The following warning clause Type D must be incorporated into the Development Agreement, which will be registered on title and should be included in all offers of purchase, sale and lease of dwelling units at the above locations:

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 Municipality's and the Ministry of the Environment's noise criteria. "(Note: care should be taken to ensure that the condenser unit is located in an area that is not sensitive to noise. The sound rating of central air conditioning units must not exceed the 7.6 bels sound rating for 3.5 tons or less)"

PROVISION FOR CENTRAL AIR CONDITIONERS

The following dwelling units must be constructed with a forced air heating system with ducting sized to accommodate a central air conditioning unit, in order to allow the homeowner the option of installing central air conditioning should he or she wish to do so in the future:

- Blocks 7, 10, 11 (All Units), Block 12 (Units 1 to 5)
- Block 8 (Units 8 to 14) and Block 9 (Units 10 to 18)

In addition, the following warning clauses must be incorporated into the Development Agreement, which will be registered on title and should be included in all offers of purchase, sale and lease of the above locations:

Warning Clause Type C:

"This dwelling unit was fitted with ducting sized to accommodate a central air conditioning unit. The installation of central air conditioning by the homeowner will allow windows and exterior doors to be kept closed, thereby achieving indoor sound levels within the limits recommended by the Ministry of Environment. (Note: care should be taken to ensure that the condenser unit is located in an area that is not sensitive to noise. The sound rating of central air conditioning units must not exceed the 7.6 bels sound rating for 3.5 tons or less)"

5.3 BUILDING COMPONENTS

Building components within the proposed development were analyzed using the STC (Sound Transmission Class) method recommended by the M.E.C.P. Detailed floor plans of the proposed dwelling units are required in order to best determine the required building components.

Although this information is not yet available for the proposed development, the result is based on the assumption that a living, dining or recreation room is located at the side of the house closest to the roadway and contains three components (two exterior walls and a set of windows). The windows are assumed to be 25% of the floor area.

DAYTIME SOUND LEVELS

For the worst-case location during daytime from road noise sources, (Block 15), the daytime dwelling wall sound level of 69 dBA was calculated at the first storey living/dining room. To ensure acceptable daytime indoor sound levels of 45dBA, the overall building components must provide an STC rating of 32 for windows and STC 39 for exterior wall construction.

NIGHT-TIME SOUND LEVELS

For the worst-case location during night-time from road noise sources, (Block 15), the night-time dwelling wall sound level of 61 dBA was calculated at the second storey bedroom. To ensure acceptable night-time indoor sound levels of 40dBA, the overall building components must provide an STC rating of 27 for windows and STC 34 for exterior wall construction.

BUILDING COMPONENT REQUIREMENTS

The minimum standard window and exterior wall construction of the Ontario Building Code meets STC 30 and STC 38, respectively.

Therefore, upgraded windows and exterior wall constructions are required for Blocks 13, 14, 15 (All Units) to ensure the indoor sound levels are met.

Sample window and exterior wall configurations are included in Appendix 4.

5.4 WARNING CLAUSES

The following warning clause Type A must be incorporated into the Development Agreement, which will be registered on title and included in all offers of purchase and sale or lease of the locations listed below.

- Blocks 7, 10 to 15 (All Units)
- Block 8 (Units 8 to 14) and Block 9 (Units 10 to 18)

Warning Clause Type A

"Occupants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the occupants as the sound level will exceed the Ministry of Environment's noise criteria."

6.0 SUMMARY OF NOISE MITIGATION MEASURES

The summary of noise abatement measures are listed in the following Table 3 identifying sound barriers, provision for central air conditioners, building components and warning clauses.

TABLE 3: SUMMARY OF NOISE MITIGATION MEASURES

LOCATIONS	VENTILATION REQUIREMENTS	BUILDING COMPONENTS	SOUND BARRIERS	WARNING CLAUSES
BLOCK 140				
Blocks 7, 10, 11 (All Units) Block 8 (Units 8 to 14) Block 9 (Units 10 to18)	Provision for air conditioning	Windows: OBC* Walls: OBC	No	Type A, C
Block 12 (Unit 6)	Mandatory air conditioning	Windows: OBC* Walls: OBC	1.5m**	Type A, B, D
Block 12 (Units 1 to 5)	Provision for air conditioning	Windows: OBC* Walls: OBC	No	Type A, B, C
Block 13 (Unit 6)	Mandatory air conditioning	Windows: STC 32 Walls: STC 39	1.5m**	Type A, B, D
Block 13 (Units 1 to 5)	Mandatory air conditioning	Windows: STC 32 Walls: STC 39	No	Type A, D
Block 14 (All Units)	Mandatory air conditioning	Windows: STC 32 Walls: STC 39	No	Type A, D
Block 15 (Unit 1)	Mandatory air conditioning	Windows: STC 32 Walls: STC 39	1.5m**	Type A, B, D
Block 15 (Units 2 to 6)	Mandatory air conditioning	Windows: STC 32 Walls: STC 39	No	Type A, D
All remaining Blocks/Units	No Requirements			

* OBC: Ontario Building Code Standard.

** Noise barrier height along the Balconies on top of the garages as shown on the attached Figure 2.

7.0 RECOMMENDATIONS AND CONCLUSION

RECOMMENDATIONS

1. Mandatory air conditioning is required for Block 12 (Unit 6) and Blocks 13, 14, 15 (All Units).

2. Provision for adding air conditioning in the future is required for Blocks 7, 10, 11 (All Units), Block 8 (Units 8 to 14) , Block 9 (Units 10 to 18) and Block 12 (Units 1 to 5).

3. For Block 12 (Unit 6), Block 13 (Unit 6) and Block 15 (Unit 1), a 1.5m high noise barrier is required along the Balconies on top of the garages to achieve a sound level of less than 56dBA at the designated outdoor amenity areas as shown on the attached Figure 2.

4. Upgraded windows and exterior wall constructions are required for Blocks 13, 14, 15 (All Units). For all other residential units, standard window and exterior wall constructions are acceptable as they meet the indoor sound levels.

5. All applicable warning clauses shall be listed in the Town of Whitchurch-Stouffville Development Agreement and also be inserted in the Agreements of Purchase and Sale or Lease and registered on title.

6. We recommend that prior to the issuance of a building permit for any dwelling unit for which, ventilation or building component requirements have been specified in the Noise Study and after construction, it is recommend that a qualified engineer should submit a letter to the Town indicating that the recommended measures or acceptable alternatives have been incorporated in the dwelling which satisfy the M.E.C.P. criteria.

CONCLUSION

This report has determined that sound levels acceptable to the Ministry of Environment, and the Town of Whitchurch-Stouffville are expected to be achieved using the abatement measures in this report and as shown on the attached Figure 2.

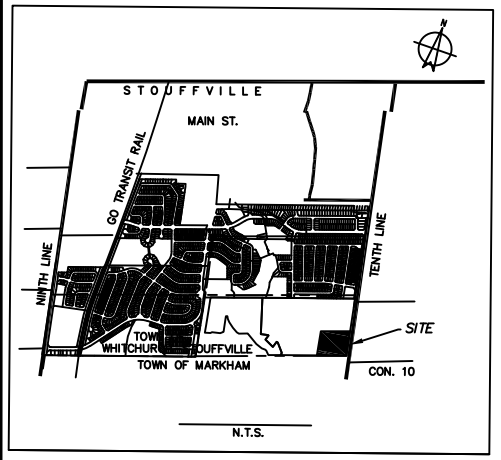
Respectfully submitted,

YCA ENGINEERING Limited



Hava Jouharchi, P.Eng.
Senior Project Engineer





LEGEND:

- MANDATORY AIR CONDITIONING. AND WARNING CLAUSE D
- OPTIONAL AIR CONDITIONING. AND WARNING CLAUSE C
- WARNING CLAUSE A
- PROPOSED ACOUSTIC BARRIER AND WARNING CLAUSE B

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SITE PLAN NOISE MITIGATION MEASURES

L & M GARDENS 2

PROPOSED TOWNHOUSE DEVELOPMENT
(BLOCK 140)

TOWN OF WHITCHURCH-STOUFFVILLE

FIGURE 2

Scale: NTS

DATE: SEPT. 2026

APPENDIX 1

TRAFFIC DATA

EXISTING TRAFFIC

Tenth Line

	(8)	(194)	(39)	↰	28	(30)	
	3	310	12	←	1	(5)	
Busato Dr	↵	↓	↳	⌜	144	(79)	McKean Dr
	(7)	5	↱	↰	↑	↱	
	(7)	2	→	14	77	22	
	(34)	87	↴	(59)	(266)	(116)	

Tenth Line

HEAVY VEHICLE PECENTAGES



*Not to Scale

Tenth Line

		3%				
Busato Dr		↓		⌜	1%	1%	McKean Dr
	14%		↱	↰	↑	
				7%		
					2%	

Tenth Line

10-YEAR VOLUME GROWTH (2% per annum)

Tenth Line

	(2)	(42)	(9)	↰	6	(7)	
	1	68	3	←		(1)	
Busato Dr	↵	↓	↳	⌜	32	(17)	McKean Dr
	(2)	1	↱	↰	↑	↱	
	(2)		→	3	17	5	
	(7)	19	↴	(13)	(58)	(25)	

Tenth Line

FUTURE VOLUME

Tenth Line

	(10)	(236)	(48)	↰	34	(37)	
	4	378	15	←	1	(6)	
Busato Dr	↵	↓	↳	⌜	176	(96)	McKean Dr
	(9)	6	↱	↰	↑	↱	
	(9)	2	→	17	94	27	
	(41)	106	↴	(72)	(324)	(141)	

Tenth Line

LEGEND

X Weekday A.M. Peak Hour Volumes

(X) Weekday P.M. Peak Hour Volumes

APPENDIX 2

STAMSON 5.04
SOUND LEVEL CALCULATIONS

```
STAMSON 5.0        SUMMARY REPORT        Date: 30-08-2026 19:58:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk8u8.te             Time Period: Day/Night 16/8 hours
Description: Block 8, Unit 8 (Front Wall)

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 2
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  87.00 / 87.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Result summary (day)
--------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line        !     1.50 !    56.80 !    56.80
--------------------+---------+---------+---------
                       Total                  56.80 dBA

Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line        !     1.50 !    49.20 !    49.20
--------------------+---------+---------+---------
                       Total                  49.20 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 56.80
                           (NIGHT): 49.20
```

```
STAMSON 5.0        SUMMARY REPORT        Date: 30-08-2026 20:05:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk8ola.te            Time Period: Day/Night 16/8 hours
Description: Block 8, OLA

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  85.00 / 85.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -10.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          : 258.00 m
Receiver elevation        : 260.80 m
Barrier elevation         : 260.80 m
Road data, segment # 2: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 2: Tenth Line (day/night)
--------------------------------------------
Angle1   Angle2           : -10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  85.00 / 85.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      0       (Define your own alpha.)
Barrier angle1            : -10.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          : 257.00 m
Receiver elevation        : 260.80 m
Barrier elevation         : 260.80 m
Alpha                     :   0.33
Result summary (day)
--------------------
                   !  source  !   Road   !  Total
                   !  height  !   Leq    !   Leq
                   !   (m)    !  (dBA)   !  (dBA)
-------------------+---------+---------+---------
 1.Tenth Line      !     1.50 !    49.34 !    49.34
 2.Tenth Line      !     1.50 !    55.27 !    55.27
-------------------+---------+---------+---------
                     Total                  56.26 dBA
```

```
STAMSON 5.0        SUMMARY REPORT        Date: 30-08-2026 19:58:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk10u8.te            Time Period: Day/Night 16/8 hours
Description: Block 10, Unit 8 (Front Wall)

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  47.00 / 47.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Result summary (day)
--------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line        !     1.50 !    60.88 !    60.88
--------------------+---------+---------+---------
                       Total                 60.88 dBA

Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line        !     1.50 !    53.29 !    53.29
--------------------+---------+---------+---------
                       Total                 53.29 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 60.88
                           (NIGHT): 53.29
```

```
STAMSON 5.0        SUMMARY REPORT        Date: 30-08-2026 20:03:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk10ola.te           Time Period: Day/Night 16/8 hours
Description: Block 10, OLA

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   20.00 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           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 20.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          : 258.00 m
Receiver elevation        : 260.80 m
Barrier elevation         : 260.80 m
Road data, segment # 2: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 2: Tenth Line (day/night)
--------------------------------------------
Angle1   Angle2           :  20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  45.00 / 45.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      0       (Define your own alpha.)
Barrier angle1            :  20.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          : 258.00 m
Receiver elevation        : 260.80 m
Barrier elevation         : 260.80 m
Alpha                     :   0.33
Result summary (day)
--------------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line       !     1.50 !    51.44 !    51.44
 2.Tenth Line       !     1.50 !    57.04 !    57.04
--------------------+---------+---------+---------
                      Total                  58.10 dBA
```

```
STAMSON 5.0         SUMMARY REPORT         Date: 30-08-2026 19:59:12
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk11u14.te            Time Period: Day/Night 16/8 hours
Description: Block 11, Unit 14 (Front Wall)

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     60 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  47.00 / 47.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Result summary (day)
--------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line        !     1.50 !    59.98 !    59.98
--------------------+---------+---------+---------
                       Total                  59.98 dBA

Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line        !     1.50 !    52.39 !    52.39
--------------------+---------+---------+---------
                       Total                  52.39 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 59.98
                           (NIGHT): 52.39
```

```
STAMSON 5.0         SUMMARY REPORT         Date: 30-08-2026 20:07:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk11ola.te            Time Period: Day/Night 16/8 hours
Description: Block 11, OLA

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   -70.00 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           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -70.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          : 258.70 m
Receiver elevation        : 261.45 m
Barrier elevation         : 261.45 m
Data for Segment # 2: Tenth Line (day/night)
----------------------------------------------
Angle1   Angle2           : -70.00 deg   -40.00 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           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : -40.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          : 258.70 m
Receiver elevation        : 261.45 m
Barrier elevation         : 261.45 m
Data for Segment # 3: Tenth Line (day/night)
----------------------------------------------
Angle1   Angle2           : -40.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  45.00 / 45.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -40.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          : 258.70 m
Receiver elevation        : 261.45 m
Barrier elevation         : 261.45 m
Result summary (day)
--------------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line       !     1.50 !    47.30 !    47.30
 2.Tenth Line       !     1.50 !    56.03 !    56.03 *
 3.Tenth Line       !     1.50 !    51.99 !    51.99
--------------------+---------+---------+---------
                      Total                  57.87 dBA
```

```
STAMSON 5.0        SUMMARY REPORT        Date: 30-08-2026 20:00:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk12u6.te            Time Period: Day/Night 16/8 hours
Description: Block 12, Unit 6 (Side Wall)

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (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  :  36.00 / 36.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)

Result summary (day)
--------------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line       !     1.50 !    64.78 !    64.78
--------------------+---------+---------+---------
                      Total                  64.78 dBA

Result summary (night)
----------------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line       !     1.50 !    57.19 !    57.19
--------------------+---------+---------+---------
                      Total                  57.19 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 64.78
                           (NIGHT): 57.19
```

```
STAMSON 5.0        SUMMARY REPORT        Date: 30-08-2026 20:09:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk12ola.te           Time Period: Day/Night 16/8 hours
Description: Block 12, OLA

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  9522/828   veh/TimePeriod  *
Medium truck volume :   529/46    veh/TimePeriod  *
Heavy truck volume  :   529/46    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  11500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   -55.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  38.00 / 38.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -55.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          : 258.80 m
Receiver elevation        : 264.45 m
Barrier elevation         : 264.45 m
Data for Segment # 2: Tenth Line (day/night)
--------------------------------------------
Angle1   Angle2           : -55.00 deg   30.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  38.00 / 38.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -55.00 deg   Angle2 : 30.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          : 258.80 m
Receiver elevation        : 264.45 m
Barrier elevation         : 264.45 m
Data for Segment # 3: Tenth Line (day/night)
--------------------------------------------
Angle1   Angle2           :  30.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  38.00 / 38.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  30.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          : 258.80 m
Receiver elevation        : 264.45 m
Barrier elevation         : 264.45 m
Result summary (day)
--------------------
                   !  source  !   Road   !  Total
                   !  height  !   Leq    !   Leq
                   !   (m)    !  (dBA)   !  (dBA)
-------------------+----------+----------+----------
 1.Tenth Line      !     1.50 !    48.25 !    48.25
 2.Tenth Line      !     1.50 !    61.29 !    61.29 *
 3.Tenth Line      !     1.50 !    49.20 !    49.20
-------------------+----------+----------+----------
                     Total                   61.75 dBA

Barrier table for segment # 2: Tenth Line (day)
-----------------------------------------------
Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
   1.50 !  265.95 !   55.30 !   55.30 !
```

```
STAMSON 5.0        SUMMARY REPORT        Date: 30-08-2026 19:59:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk13u6.te            Time Period: Day/Night 16/8 hours
Description: Block 13, Unit 6 (Front Wall)

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Result summary (day)
--------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line        !     1.50 !    68.59 !    68.59
--------------------+---------+---------+---------
                       Total                  68.59 dBA

Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line        !     1.50 !    60.99 !    60.99
--------------------+---------+---------+---------
                       Total                  60.99 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 68.59
                           (NIGHT): 60.99
```

```
STAMSON 5.0        SUMMARY REPORT        Date: 30-08-2026 20:12:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk13ola.te           Time Period: Day/Night 16/8 hours
Description: Block 13, OLA

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   -35.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -35.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          : 258.00 m
Receiver elevation        : 260.50 m
Barrier elevation         : 260.50 m
Data for Segment # 2: Tenth Line (day/night)
----------------------------------------------
Angle1   Angle2           : -35.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -35.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          : 258.00 m
Receiver elevation        : 260.50 m
Barrier elevation         : 260.50 m
Result summary (day)
--------------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+----------+----------+----------
 1.Tenth Line       !     1.50 !    61.05 !    61.05 *
 2.Tenth Line       !     1.50 !    51.43 !    51.43
--------------------+----------+----------+----------
                      Total                   61.50 dBA

Barrier table for segment # 1: Tenth Line (day)
-----------------------------------------------
Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
   1.50 !  262.00 !   55.82 !   55.82 !
```

```
STAMSON 5.0         SUMMARY REPORT         Date: 30-08-2026 20:00:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk15u1.te             Time Period: Day/Night 16/8 hours
Description: Block 15, Unit 1 (Front Wall)

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Result summary (day)
--------------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line       !     1.50 !    68.59 !    68.59
--------------------+---------+---------+---------
                      Total                  68.59 dBA
Result summary (night)
----------------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Tenth Line       !     1.50 !    60.99 !    60.99
--------------------+---------+---------+---------
                      Total                  60.99 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 68.59
                           (NIGHT): 60.99
```

```
STAMSON 5.0        SUMMARY REPORT        Date: 30-08-2026 20:14:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: bk15ola.te           Time Period: Day/Night 16/8 hours
Description: Block 15, OLA

Road data, segment # 1: Tenth Line (day/night)
----------------------------------------------
Car traffic volume  :  8280/720   veh/TimePeriod  *
Medium truck volume :   460/40    veh/TimePeriod  *
Heavy truck volume  :   460/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
    24 hr Traffic Volume (AADT or SADT):  10000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00
Data for Segment # 1: Tenth Line (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   35.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 35.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          : 258.70 m
Receiver elevation        : 261.50 m
Barrier elevation         : 261.50 m
Data for Segment # 2: Tenth Line (day/night)
---------------------------------------------
Angle1   Angle2           :  35.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :   1.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  35.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          : 258.70 m
Receiver elevation        : 261.50 m
Barrier elevation         : 261.50 m
Result summary (day)
--------------------
                   !  source  !   Road   !  Total
                   !  height  !   Leq    !   Leq
                   !   (m)    !  (dBA)   !  (dBA)
--------------------+----------+----------+----------
 1.Tenth Line      !     1.50 !    51.33 !    51.33
 2.Tenth Line      !     1.50 !    61.05 !    61.05 *
--------------------+----------+----------+----------
                     Total                   61.49 dBA
  * Bright Zone  !

Barrier table for segment # 2: Tenth Line (day)
-----------------------------------------------
Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
   1.50 !  263.00 !   55.77 !   55.77 !
```

APPENDIX 3

SOUND LEVEL CRITERIA

MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS

ENVIRONMENTAL NOISE GUIDELINE
Stationary and Transportation Sources - Approval and Planning
Publication NPC-300

August 2013

Day-time Outdoor Sound Level Limit

Table C-1 gives the equivalent sound level (L_{eq}) limit for designated Outdoor Living Areas. The limit applies to the entire day-time period from 07:00 to 23:00.

TABLE C-1
Sound Level Limit for Outdoor Living Areas
Road and Rail

Time Period	*L_{eq}(16) (dBA)*
16 hr, 07:00 - 23:00	*55*

Indoor Sound Level Limit

Table C-2 gives the equivalent sound level (L_{eq}) limits and the applicable time periods for the indicated types of indoor space. The specified sound level criteria are minimum requirements and apply to the indicated indoor spaces with the windows and doors closed.

TABLE C- 2
Indoor Sound Level Limits (Road and Rail)

Type of Space	*Time Period*	*L_{eq} (Time Period) (dBA)*	
		Road	*Rail*
Living/dining, den areas of residences, nursing/retirement homes, hospitals, schools, day-care centers, etc.	*07:00-23:00*	*45*	*40*
Living/dining areas of residences, nursing/retirement homes, hospitals, etc. (except schools or daycare centres)	*23:00 - 07:00*	*45*	*40*
Sleeping quarters	*07:00-23:00*	*45*	*40*
Sleeping quarters	*23:00 - 07:00*	*40*	*35*

SUPPLEMENTARY NOISE LIMITS

Indoor limits for transportation sources applicable to noise sensitive land uses are specified in Table C-2 and Table C-9.

TABLE C-9

Indoor Sound Level Limits (Road and Rail)

Type of Space	*Time Period*	*L_{eq} (Time Period) (dBA)*	
		Road	*Rail*
General offices, reception areas, retail stores, etc.	*16 hours between 07:00-23:00*	*50*	*45*
Living/dining areas of residences, hospitals, schools, nursing/retirement, homes day-care centers, theatres, place of worship, libraries, individual or semi-private offices, conference rooms, reading rooms etc.	*16 hours between 07:00-23:00*	*45*	*40*
Sleeping quarters of hotels/motels	*8 hours between 23:00 - 07:00*	*45*	*40*
Sleeping quarters of residences, hospitals, nursing/retirement homes etc	*8 hours between 23:00 - 07:00*	*40*	*35*

SUMMARY OF MINIMUM NOISE CONTROL AND VENTILATION REQUIREMENTS FOR ROAD AND RAIL NOISE

TABLE 1

COMBINATION OF ROAD AND RAIL NOISE, DAY-TIME (0700 - 2300)

OUTDOOR, VENTILATION AND WARNING CLAUSE REQUIREMENTS

ASSESSMENT LOCATION	*L_{eq} (16 hr) (dBA)*	*VENTILATION REQUIREMENTS*	*OUTDOOR CONTROL MEASURES*	*WARNING CLAUSE*
OUTDOOR LIVING AREA (OLA)	*Less than or equal to 55 dBA*	*N/A*	*None required*	*Not required*
	Greater than 55 dBA to less than or equal to 60 dBA	*N/A*	*Control measures (barriers) not required but should be considered*	*Required if resultant L_{eq} exceeds 55 dBA Type A*
	Greater than 60 dBA	*N/A*	*Control measures (barriers) required to reduce the L_{eq} below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible*	*Required if resultant L_{eq} exceeds 55 dBA Type B*
PLANE OF LIVING ROOM WINDOW	*Greater than 50 dBA to less than or equal to 55 dBA*	*None required*	*N/A*	*Not required*
	Greater than 55 dBA to less than or equal to 65 dBA	*Forced air heating with provision for central air conditioning*	*N/A*	*Required Type C*
	Greater than 65 dBA	*Central air conditioning*	*N/A*	*Required Type D*

TABLE 2

COMBINATION OF ROAD AND RAIL NOISE, NIGHT-TIME (2300 - 0700)

VENTILATION AND WARNING CLAUSE REQUIREMENTS

ASSESSMENT LOCATION	*L_{eq}(8hr) (dBA)*	*VENTILATION REQUIREMENTS*	*WARNING CLAUSE*
PLANE OF BEDROOM WINDOW	*Greater than 50 dBA to less or equal to 60 dBA*	*Forced air heating with provision for central air conditioning*	*Required Type C*
	Greater than 60 dBA	*Central air conditioning*	*Required Type D*

TABLE 3
ROAD AND RAIL NOISE, DAY-TIME (0700 - 2300)
BUILDING COMPONENT REQUIREMENTS

ASSESSMENT LOCATION		*L_{eq} (16 hr)*	*BUILDING COMPONENT REQUIREMENTS*
PLANE OF LIVING ROOM WINDOW	*ROAD*	*Less than or equal to 65 dBA*	*Building compliant with the Ontario Building Code*
		Greater than 65 dBA	*Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria*
	RAIL	*Less than or equal to 60 dBA*	*Building compliant with the Ontario Building Code*
		Greater than 60 dBA	*Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria*

TABLE 4
ROAD AND RAIL NOISE, NIGHT-TIME (2300-0700)
BUILDING COMPONENT REQUIREMENTS

ASSESSMENT LOCATION		*L_{eq} (8 hr)*	*BUILDING COMPONENT REQUIREMENTS*
PLANE OF BEDROOM WINDOW	*ROAD*	*Less than or equal to 60 dBA*	*Building compliant with the Ontario Building Code*
		Greater than 65 dBA	*Building components (walls, windows, etc.) must bed designed to achieve indoor sound level criteria*
	RAIL	*Less than or equal to 60 dBA*	*Building compliant with the Ontario Building Code*
		Greater than 60 dBA	*Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria*

TABLE 5
FACADE REQUIREMENT FOR RAIL NOISE ONLY - 24 HOURS

ASSESSMENT LOCATION	*DISTANCE TO RAILWAY (m)*	*L_{eq} (24 hr) (dBA)*	*NOISE CONTROL REQUIREMENT*
PLANE OF BEDROOM WINDOW	*Less than 100 m*	*Less than or equal to 60 dBA*	*No additional requirement*
		Greater than 60 dBA	*Brick veneer or acoustically equivalent*
	Greater than 100 m	*Less than or equal to 60 dBA*	*No additional requirement*
		Greater than 60 dBA	*No additional requirement*

TABLE B- 1
Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq dBA)
Outdoor Points of Reception

Time of Day	*Class 1 Area*	*Class 2 Area*	*Class 3 Area*	*Class 4 Area*
07:00-19:00	*50*	*50*	*45*	*55*
19:00 -23:00	*50*	*45*	*40*	*55*

TABLE B- 2
Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq dBA)
Plane of Window of Noise Sensitive Spaces

Time of Day	*Class 1 Area*	*Class 2 Area*	*Class 3 Area*	*Class 4 Area*
07:00-19:00	*50*	*50*	*45*	*60*
19:00 -23:00	*50*	*50*	*40*	*60*
23:00-07:00	*45*	*45*	*40*	*55*

WARNING CLAUSES

The following warning clauses may be used individually or in combination:

TYPE A:

“Purchasers are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound level will exceed the Ministry of Environment’s noise criteria.”

TYPE B:

“Purchasers are advised that despite the inclusion of noise abatement features within the development area, sound levels from future road traffic may be of concern, occasionally interfering with some activities of the dwelling occupants as the sound level will exceed the Ministry of Environment’s noise criteria.”

TYPE C:

"This dwelling unit has been fitted with a forced air heating system and the ducting, etc. was sized to accommodate central air conditioning. 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 Municipality's and the Ministry of the Environment’s noise criteria. "(Note: care should be taken to ensure that the condenser unit is located in an area that is not sensitive to noise. The sound rating of central air conditioning units must not exceed the 7.6 bels sound rating for 3.5 tons or less)"

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 Municipality's and the Ministry of the Environment's noise criteria. "(Note: care should be taken to ensure that the condenser unit is located in an area that is not sensitive to noise. The sound rating of central air conditioning units must not exceed the 7.6 bels sound rating for 3.5 tons or less)"

APPENDIX 4

SAMPLE WINDOW AND EXTERIOR WALL CONFIGURATIONS

WINDOW STC RATINGS

STC	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**
	Interpane Spacing (mm)					Interpane Spacing (mm)	
27	6						
28	13						
29	15	6					
30	18	13	6				
31	22	16	13	6	6	6,6	
32	28	20	16	13	13	6,10	6,6
33	35	25	20	16	16	6,15	6,10
34	42	32	25	20	20	6,20	6,15
35	50	40	32	25	24	6,30	6,20
36	63	50	40	32	30	6,40	6,30
37	80	63	50	40	37	6,50	6,40
38	100	80	63	55	50	6,65	6,50
39	125	100	80	75	70	6,80	6,65
40	150	125	100	95	90	6,100	6,80
41		150	125	110	100		6,100
42			150	135	125		

Source: National Research Council, Division of Building Research

EXPLANATORY NOTES:

1. STC data listed in the table are for the well-fitted weather-stripped units that can be opened. The STC values apply only when the windows are closed. For windows fixed and sealed to the frame, add three to the STC given in the table.

2. 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.

3. If the interpane spacing for a specific triple-glazed window are not listed in the table, use the listed case whose combined spacing are nearest the actual combined spacing.

4. The STC 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 manufacturer's products. If the laboratory sound transmission loss data (conforming to ASTM test method E-90) are available, these should be used.

EXTERIOR WALL STC RATINGS

Wall Configuration	EW1	EW2	EW3	EW4	EW1R	EW2R	EW3R	EW5	EW4R	EW6	EW7 EW5R	EW8
STC Rating	**38**	**40**	**43**	**46**	**47**	**48**	**49**	**54**	**55**	**57**	**58**	**62**

Source: National Research Council, Division of Building Research

NOTES:

1 The common structure of walls EW1 to EW5 is composed of 12.7mm gypsum board, vapour barrier and 38x89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in inter-stud cavities.

- EW1 denotes the common structure, plus sheathing, plus wood siding or metal siding and fibre backer board
- EW2 denotes the common structure, plus rigid insulation (25 to 30 mm), and wood siding or metal siding and fibre backer board.
- EW3 denotes simulated mansard with the common structure, plus sheathing, 28 X89 mm framing, sheathing and asphalt roofing material
- EW4 denotes the common structure, plus sheathing and 20 mm stucco.
- EW5 denotes the common structure, plus sheathing, 25 mm air space, 100mm brick veneer.
- EW6 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25 to 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 to 50 mm), 140mm back-up block, 100 mm face brick.
- EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25 to 50 mm), 200 mm concrete.

2 R signifies the mounting of the interior gypsum board on resilient clips.

3 An exterior wall conforming to rainscreen design principles and composed of 12.7 mm gypsum board, 100 mm concrete block, rigid insulation (25 to 50 mm), 25 mm air space, and 100 mm brick veneer has the same STC as EW6.

4 An exterior wall described in EW1 with the addition of rigid insulation (25 to 50 mm) between the sheathing and the external finish has the same STC as EW2.

PROJECT NO.: Y1611
PROJECT NAME: L&M Gardens Stouffville (Block 140)
NOISE SOURCE: Tenth Line
LOCATION: Block 15 (Unit 1)

Number of components:	**DAY-TIME (7:00-23: 00)**	**NIGHT-TIME (23:00-7:00)**
Predicted Sound Level	69 dBA	61 dBA
Correction for reflection	3 dBA	3 dBA
Outdoor Sound Level	72 dBA	64 dBA
Indoor Sound Level Limit	45 dBA	40 dBA
Required Noise Reduction (NR)	27 dBA	24 dBA
Angle from __0_ to __90__ degree (C_1 Correction from table 7.7)	0 dBA	0 dBA
SUM	27 dBA	24 dBA

WALL COMPONENT:	**DAY-TIME (7:00-23:00)**	**NIGHT-TIME (23:00-7:00)**
SUM	27 dBA	24 dBA
Transmits ____33__ % of sound energy (C2 from table7.8)	5 dBA	5 dBA
Wall area _____ m2 __80__ % of floor area Room floor area m2		
Room absorption category (C3 from table 7.9)	0 dBA	-2 dBA
Noise spectrum type (from figure 7.5)	7 dBA	7 dBA
Component category (from table 7.10)		
REQUIRED STC	39 dBA	34 dBA

WINDOW COMPONENT:	**DAY-TIME (7:00-23:00)**	**NIGHT-TIME (23:00-7:00)**
SUM	27 dBA	24 dBA
Transmits __33__ % of sound energy (C2 from table7.8)	5 dBA	5 dBA
Window area _____ m2 ___25__ % of floor area Room floor area m2		
Room absorption category (C3 from table 7.9)	-4 dBA	-6 dBA
Noise spectrum type (from figure 7.5)	4 dBA	4 dBA
Component category (from table 7.10)		
REQUIRED STC	32 dBA	27 dBA