PRELIMINARY NOISE REPORT

PROPOSED RESIDENTIAL SUBDIVISION

12,909 KENNEDY ROAD

PART OF LOT 22, CONCESSION 2

TOWN OF CALEDON

TOWN FILE NO. PRE 2023-0305

PREPARED FOR

TRENDS DEVELOPMENT INC.

SEPTEMBER 20TH 2024

CANDEVCON GROUP INC.
CONSULTING ENGINEERS & PLANNERS
TEL (905) 794-0600 FAX (905) 794-0611

PROJECT NO. W22068

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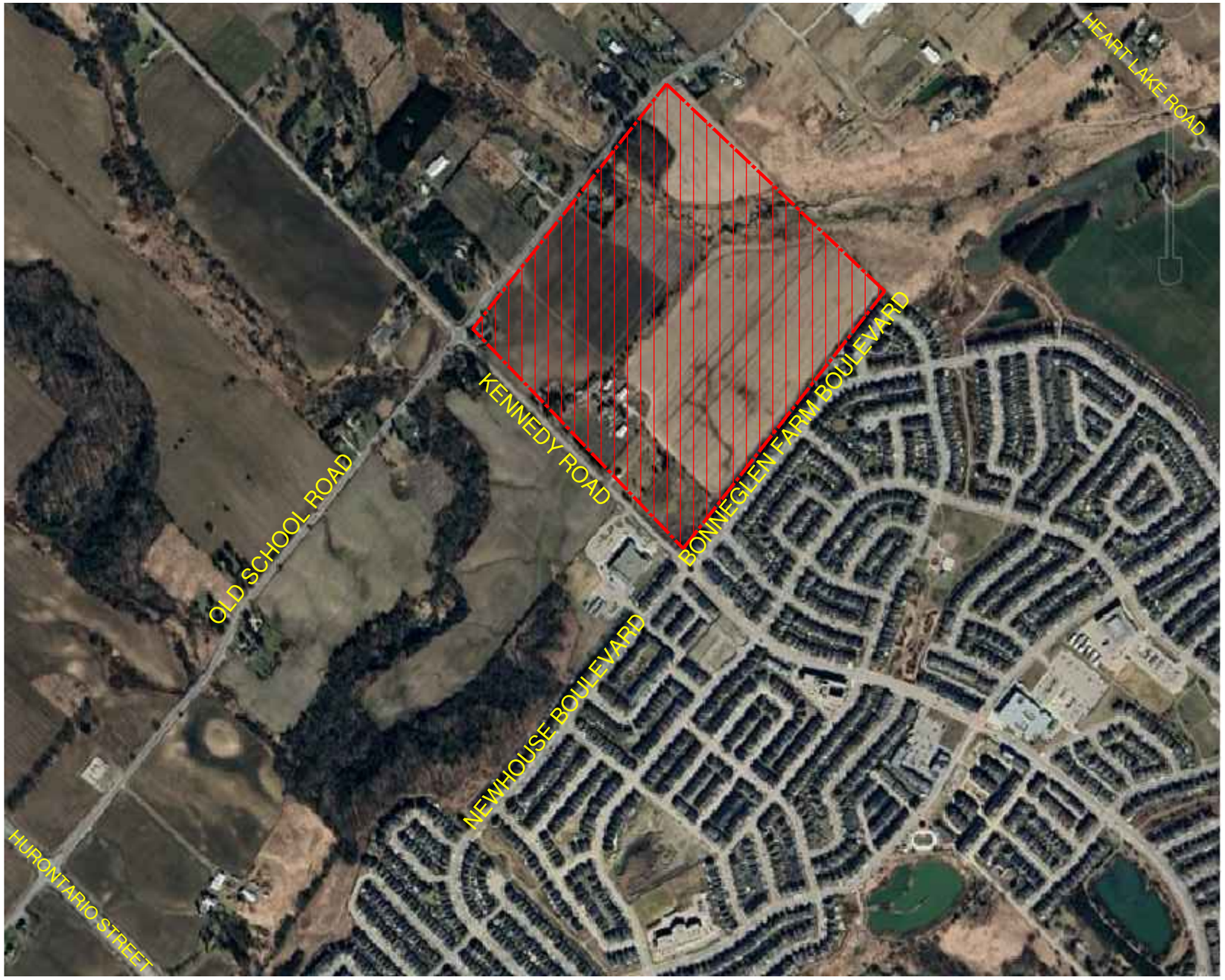
1. INTRODUCTION

This Preliminary Noise Report for the proposed Residential Subdivision was prepared by CANDEVCON GROUP INC. on behalf of Trends Development Inc. The purpose of this Study is to investigate the potential noise impacts on the proposed Residential Subdivision and to provide recommendations with respect to noise control measures to the satisfaction of the Ministry of the Environment, Conservation and Parks (MECP), the Region of Peel and the Town of Caledon.

The proposed Residential Subdivision is located immediately east of Kennedy Road North and south of Old School Road, in the Town of Caledon. **Figure 1** illustrates the location of the proposed Residential Subdivision. The proposed Residential Subdivision comprises 230 single detached homes, 56 semi-detached homes and 99 street townhouse units, along with three (3) medium density (condominium) blocks and a block with a mixed use/mid-rise portion and a residential (special) portion. Noise impacts to these blocks will be analyzed when plans become available pursuant to Site Plan Application. As illustrated in the Preliminary Road Plan (see **Figure 2**) that is based on the proposed Draft Plan of Subdivision, the proposed Residential Subdivision will also provide a network of local roads and collector roads (Streets 'A' and 'B').

The surrounding land uses within the vicinity of the proposed Residential Subdivision are: Old School Road with agricultural lands beyond to the north; agricultural lands and a tributary to the Humber River to the east; Bonnieglen Farm Boulevard and existing residential to the south; and Kennedy Road and a cemetery with proposed residential lands (POPA 2021-0009) beyond to the west.

This Study defines the projected sound levels from the nearby roads, specifically Old School Road, Kennedy Road and the proposed Collector Roads (Streets 'A' and 'B'), and recommends noise mitigation measures to satisfy the requirements of the MECP, the Region of Peel and the Town of Caledon.



LEGEND:

SITE

TRENDS DEVELOPMENT INC.
PROPOSED RESIDENTIAL SUBDIVISION

LOCATION PLAN

12909 KENNEDY ROAD
PART OF LOT 22, CONCESSION 2
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

CANDEVCON GROUP INC.
CONSULTING ENGINEERS AND PLANNERS
9358 GOREWAY DRIVE BRAMPTON, ONTARIO L6P 0M7
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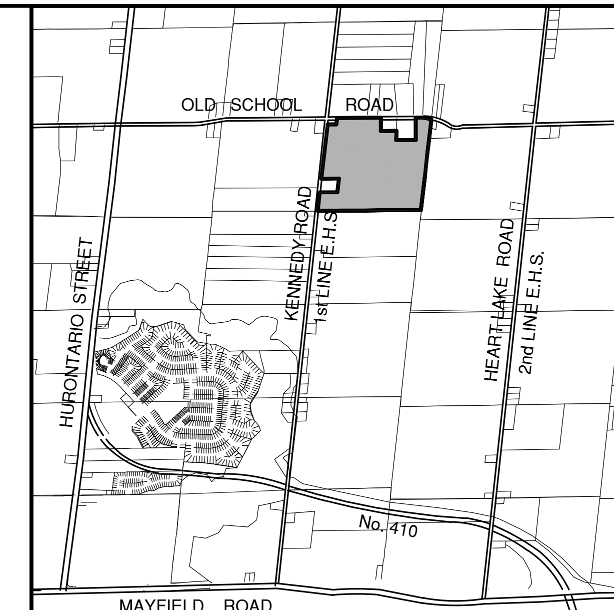
DATE	APRIL. 16th 2024	PROJECT No	W22068
DRAWN	S.N.	FIGURE No.	1
SCALE	N.T.S		



KEY PLAN
N.T.S

TRENDS DEVELOPMENT INC.
PROPOSED RESIDENTIAL SUBDIVISION

PRELIMINARY ROAD PLAN

12909 KENNEDY ROAD
PART OF LOT 22, CONCESSION 2
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

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DATE	SEPT. 10th 2024	PROJECT No	W22068
DRAWN	S.N.	FIGURE No.	2
SCALE	1:1250		

2. NOISE ASSESSMENT

2.1 Roadway Traffic Noise Sources

The principal roadway noise sources that will impact the Subject Subdivision are the vehicular traffic on Old School Road to the north, Kennedy Road to the west and Streets 'A' and 'B" that are within the proposed Residential Subdivision. Traffic volume projections for Old School Road and Kennedy Road were determined by using historical AADT volumes and the traffic growth rates that were provided by the Town of Caledon. The traffic volume information received from the Town of Caledon is provided in **Appendix A**. The annual growth rate for background traffic is 2%. However, to account for the traffic generated by the anticipated developments within the vicinity of the area including the Subject Subdivision, this Study will apply an annual growth rate of 8% conservatively. The AADT volumes were projected to the 10-year post development horizon (2038). For Streets 'A' and 'B", a daily volume of 8,500 vehicles was assumed, which is a typical assumption for a collector road. To satisfy the requirements set forth by the Town of Caledon, the sound level analysis is to assume a traffic speed that is 10 km/h over the speed limit[1].

Old School Road is an east-west arterial road that is under the jurisdiction of the Town of Caledon. Within the vicinity of the Study Area, Old School Road is currently a two (2) lane roadway with an urban cross-section and a posted speed limit of 70 km/h. Old School Road will be widened to four (4) lanes in the future. For the purposes of this Study, the total percentage of trucks is assumed to be 5 percent with a ratio of medium to heavy trucks of 1.5 (60/40 percent split).

[1] Development Standards Manual Version 5.0, Town of Caledon, 2019.

2. NOISE ASSESSMENT (CONT'D)

2.1 Roadway Traffic Noise Sources (Cont'd)

Kennedy Road is a north-south arterial road that is under the jurisdiction of the Town of Caledon. Within the vicinity of the Study Area, Kennedy Road North is currently a two (2) lane roadway that will be widened to four (4) lanes in the future. From Bonnieglen Farm Boulevard/Newhouse Boulevard to approximately 350 metres north of Bonnieglen Farm Boulevard/Newhouse Boulevard, Kennedy Road has a posted speed limit of 40 km/h. From approximately 350 metres north of Bonnieglen Farm Boulevard/Newhouse Boulevard to Old School Road, Kennedy Road has a posted speed limit of 60 km/h. For the purposes of this Study, the total percentage of trucks is assumed to be 5 percent with a ratio of medium to heavy trucks of 1.5 (60/40 percent split).

Streets 'A' and 'B' are collector roads being proposed by the Subject Subdivision. The proposed Collector Roads will have an assumed speed limit of 50 km/h. For the purpose of this Study, the predicted total percentage of trucks is 2 percent with a ratio of medium to heavy trucks of 19 (95/5 percent split).

The percentages of daily traffic to be attributed to the daytime (7:00 a.m. to 11:00 p.m.) and the night-time (11:00 p.m. to 7:00 a.m.) periods were based on the recommended day-night traffic volume split of 90 percent - 10 percent from the Region of Peel.

Table 1 summarizes the projected traffic volumes used in the analysis.

2. NOISE ASSESSMENT (CONT'D)

2.1 Roadway Traffic Noise Sources (Cont'd)

TABLE 1
PROJECTED (ULTIMATE) ROADWAY TRAFFIC VOLUMES

Road Characteristic	Old School Road	Kennedy Road	Streets 'A' and 'B'
Jurisdiction	Town of Caledon	Town of Caledon	Town of Caledon
Ultimate No. Lanes	4	4	2
Ultimate AADT	14,600	18,000	8,500[1]
Traffic Speed	80 km/h (See Note 2)	70 km/h	60 km/h (See Note 2)
% Trucks			
Medium	3.00%	3.00%	1.90%
Heavy	2.00%	2.00%	0.10%
Day/Night Volume Ratio	90%/10%	90%/10%	90%/10%

Note 1: A typical assumption for a collector road.
Note 2: The traffic speed is assumed to be 10 km/h over the speed limit.

2. NOISE ASSESSMENT (CONT'D)

2.2 Other Noise Sources

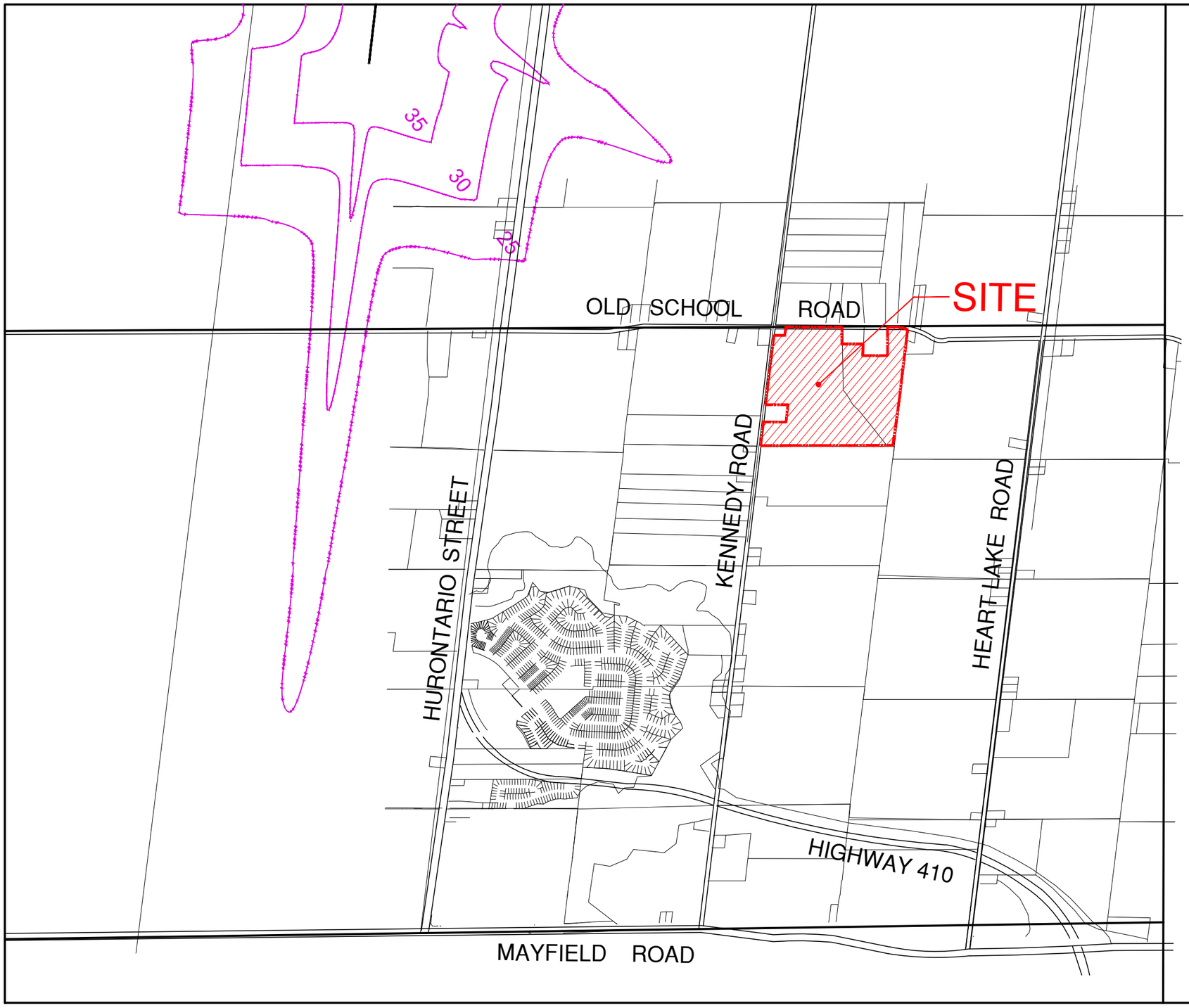
The Subject Subdivision is not located near any railways or major industrial facilities and is therefore not affected by rail or industrial noise sources.

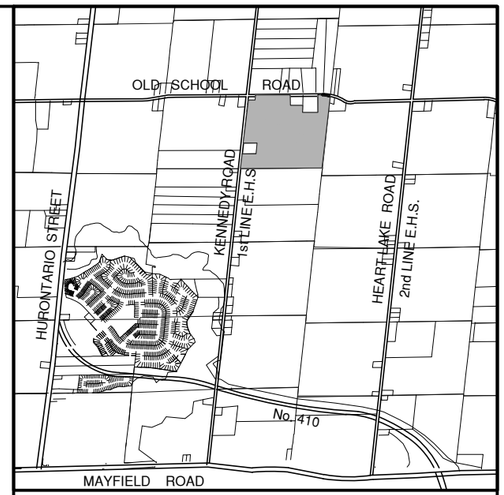
Commercial land uses are anticipated for Block 3 of the proposed Residential Subdivision. Although it is recognized that there is a potential for stationary noise sources, plans were not available at the time this Report was prepared. Individual acoustic studies may be required for this block when development plans become available pursuant to Site Plan Application.

2.3 Aircraft Noise

A figure illustrating the location of the 2023 Noise Exposure Forecast and the 2028 Noise Exposure Projection contours for the Brampton Flight Centre in relation to Mayfield West Phase 2 was taken from the 2nd Response to Region of Peel Comments to the Addendum to Environmental Noise Vibration Impact Assessment for Mayfield West Phase 2 Stage 2 – Secondary Plan Part B Evaluation of Land-Use Options; which was prepared by Jade Acoustics and dated July 26, 2018[2]. The 2023 NEF/2028 NEP contours have been reviewed by the Brampton Flight Centre and by Transport Canada. **Figure 3** demonstrates that the proposed Residential Subdivision is well outside the NEP/NEF 25 contour (the lowest threshold of Noise Exposure Projections); therefore, there are no specific noise concerns or requirements in relation to the attenuation of aircraft noise for the proposed Residential Subdivision.

[2] 2nd Response to Region of Peel Comments – Addendum to Environmental Noise Vibration Impact Assessment, Mayfield West Phase 2 Stage 2 – Secondary Plan Part B Evaluation of Land-Use Options, Jade Acoustics, July 26, 2018.





KEY PLAN
N.T.S

2023 NEF AND 2028 NEP CONTOURS FOR THE BRAMPTON FLIGHT CENTRE

PRELIMINARY NOISE REPORT

12909 KENNEDY ROAD
PART OF LOT 22, CONCESSION 2
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

CANDEVCON GROUP INC.
CONSULTING ENGINEERS AND PLANNERS
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TEL. (905) 794-0600 FAX (905) 794-0611

DATE JUNE. 18th 2024	PROJECT No W22068
DRAWN S.N.	FIGURE No. 3
SCALE N.T.S	

2. NOISE ASSESSMENT (CONT'D)

2.4 Noise Criteria

Noise impacts from the road traffic were assessed using the principles and procedures in the MECP's Environmental Noise Guideline[3], the Region of Peel's General Guidelines for the Preparation of Acoustical Reports[4] and the Town of Caledon's Development Standards Manual. The sound level limits contained in the "Environmental Noise Guideline" document, have been used as the criteria for acceptability. The criteria is summarized in **Table 2**.

TABLE 2
REGION OF PEEL NOISE CRITERIA (ROAD TRAFFIC)

Location	Outdoor	Indoor
Outdoor Living Area	55 dBA (7 am - 11 pm) L_{eq} (16 hour)	N/A
Bedroom Window	50 dBA (11 pm - 7 am) L_{eq} (8 hour)	40 dBA (11 pm - 7 am) L_{eq} (8 hour)
Living Room Window	55 dBA (7 am - 11 pm) L_{eq} (16 hour)	45 dBA (7 am - 11 pm) L_{eq} (16 hour)

An outdoor living area (OLA) in a residential development generally refers to a rear yard, a rooftop, an outdoor amenity area and a patio or a balcony having a minimum depth of 4 metres. An outdoor living area is provided for all of the dwelling units in the form of a rear yard.

[3] Environmental Noise Guideline, Stationary and Transportation Sources-Approval and Planning, Publication NPC-300: Ministry of the Environment, Conservation and Parks August 2013.

[4] General Guidelines for the Preparation of Acoustical Reports in the Region of Peel, Updated August 2020.

2. NOISE ASSESSMENT (CONT'D)

2.4 Noise Criteria (Cont'd)

As per the requirements set forth by the Town of Caledon, where the sound levels exceed the 55 dBA L_{eq} sound level limit, noise mitigation measures such as barriers are required to attenuate the sound levels to the 55 dBA L_{eq} sound level limit (Town approval is required where sound levels exceed the limit by no more than 5 dBA). If the Town approves an outdoor living area with a projected daytime sound level that exceeds the noise criteria by no more than 5 dBA, a warning clause in all Offers of Purchase and Sale is required. The wording of such warning clauses is provided in **Appendix B**.

In addition, based on the Town of Caledon requirements, where the noise attenuating barrier is adjacent to public property, a warning clause in all Offers of Purchase and Sale is required to inform the purchasers/tenants that the noise attenuating barrier (including the berm, if applicable) is within their property and that they are responsible for any repairs or replacements. For the Region of Peel, the requirements for a warning clause in all Offers of Purchase and Sale apply to all the specific lots/units to where a noise attenuating barrier is provided, regardless of whether the noise attenuating barrier is adjacent to public property.

For residential buildings, the MECP have ventilation requirements which are based on the sound levels at the exterior building facade. Where the daytime (7:00-23:00) sound level in the plane of a bedroom or living/dining room window is greater than 65 dBA L_{eq} and/or where the night-time (23:00-7:00) sound level in the plane of a bedroom or living/dining room window is greater than 60 dBA L_{eq}, central air conditioning for the specific lots/units is required. Further to this requirement, where central air conditioning is required, the Region of Peel requires that the central air conditioning unit be located at a noise insensitive area or that proper noise attenuation for the stationary noise source be applied and that this requirement is to be stated in the Subdivision Agreement/Site Plan Agreement.

2. NOISE ASSESSMENT (CONT'D)

2.4 Noise Criteria (Cont'd)

Where the daytime (7:00-23:00) sound level in the plane of a bedroom or living/dining room window is greater than 55 dBA L_{eq} and less than or equal to 65 dBA L_{eq} and/or where the night-time (23:00-7:00) sound level in the plane of a bedroom or living/dining room window is greater than 50 dBA L_{eq} and less than or equal to 60 dBA L_{eq}, forced air heating with provision for central air conditioning for the specific lots/units is required. Residences with ventilation requirements must provide a warning clause in all Offers of Purchase and Sale.

In addition, where the daytime (7:00-23:00) sound levels outside the bedroom or living/dining room window exceed 65 dBA L_{eq} and/or the night-time (23:00-7:00) sound levels outside the bedroom or living/dining room window exceed 60 dBA L_{eq}, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limit criteria specified in **Table 2**.

2.5 Projected Sound Levels

L_{eq} sound levels caused by the vehicular traffic on Old School Road, Kennedy Road and the proposed Collector Roads were projected for specific lots/units at the outdoor living area and at the building façade. All of the sound level projections were calculated using the computerized model[5] of the MECP's ORNAMENT procedure[6].

For a rear yard, daytime sound levels were projected at a point located 3 m from the rear wall of the building facade and 1.5 m above the ground.

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5 STAMSON 5.04 computer model, Ministry of the Environment, Conservation and Parks, 2000.

6 ORNAMENT, Ontario Road Noise Analysis Method for Environment and Transportation, Technical Document, Ministry of the Environment, Conservation and Parks, 1989.

2. NOISE ASSESSMENT (CONT'D)

2.5 Projected Sound Levels (Cont'd)

Daytime sound levels were projected for the first storey building facade at a height of 1.5 m above the ground and night-time sound levels were projected for the second storey building facade at a height of 4.5 m above the ground.

Conservatively, the analysis will assume that the three (3) medium density (condominium) blocks and the block with a mixed use/mid-rise portion and a residential (special) portion are vacant.

The results from the Stamson 5.04 model for the daytime and night-time periods are summarized in **Table 3**, assuming no acoustical barriers. Typical computer reports are included in **Appendix C**.

TABLE 3
PROJECTED L_{eq} SOUND LEVELS - WITHOUT ACOUSTICAL BARRIER

Location	Daytime L_{eq} Rear Yard	Night-time L_{eq} 2nd Storey Facade	Daytime L_{eq} Facade
Lot 1L	54 dBA	55 dBA	61 dBA
Lot 9R	55 dBA	50 dBA	56 dBA
Lot 57	55 dBA	51 dBA	57 dBA
Townhouse 1	53 dBA	51 dBA	57 dBA
Townhouse 32	55 dBA	50 dBA	56 dBA
Townhouse 46	54 dBA	55 dBA	61 dBA
Townhouse 59	59 dBA	54 dBA	61 dBA
Townhouse 60	56 dBA	50 dBA	56 dBA

3. NOISE ATTENUATION MEASURES

3.1 Outdoor Recreation Areas

The sound level analysis presented in **Table 3** indicates that the daytime rear yard sound levels will exceed the 55 dBA L_{eq} limit for Townhouse Units 59 and 60 due to their degree of exposure to Street 'A'; a collector road.

Therefore, based on the Town of Caledon requirements, noise mitigation measures such as barriers are required to attenuate the sound levels to within 55 dBA L_{eq}. (unless Town approval is provided)

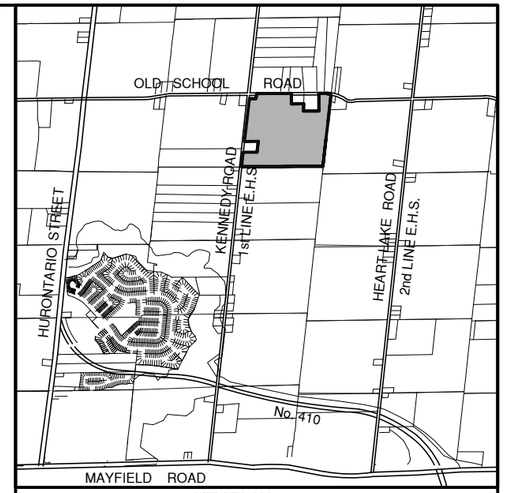
3.2 Minimum Barrier Requirements

The daytime rear yard sound levels will exceed the 55 dBA L_{eq} limit for Townhouse Units 59 and 60.

Based on the Town of Caledon requirements, noise mitigation measures such as barriers are required to attenuate the sound levels to within 55 dBA L_{eq}. (unless Town approval is provided)

As a result, for Townhouse Units 59 and 60, a 1.8m high acoustic fence is recommended. The acoustic barrier will run along the north and west property lines before returning to the side of the building.

The location and length of the acoustic barrier is illustrated in **Figure 4** of this Report.



KEY PLAN
N.T.S

LEGEND:

- WARNING CLAUSES "C" AND "F".
- PROVISION FOR AIR CONDITIONING.
- THIS NOISE BARRIER IS THE SOLE RESPONSIBILITY OF THE OWNER. IT IS THE OWNER'S RESPONSIBILITY TO REPAIR OR REPLACE HIS/HER SECTION OF THE WALL.

- WARNING CLAUSE "C".
- PROVISION FOR AIR CONDITIONING.

- PROPOSED 1.8m HIGH ACOUSTIC BARRIER.

TRENDS DEVELOPMENT INC.
PROPOSED RESIDENTIAL SUBDIVISION

NOISE MITIGATION PLAN

12909 KENNEDY ROAD
PART OF LOT 22, CONCESSION 2
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

CANDEVCON GROUP INC.
CONSULTING ENGINEERS AND PLANNERS
9358 GOREWAY DRIVE, BRAMPTON, ONTARIO L6P 0M7
TEL. (905) 794-0600 FAX (905) 794-0611

DATE	SEPT. 20th 2024	PROJECT No	W22068
DRAWN	B.W.	FIGURE No.	4
SCALE	1:1250		

3. NOISE ATTENUATION MEASURES (CONT'D)

3.2 Minimum Barrier Requirements (Cont'd)

Based on the Region of Peel requirements, where the noise attenuating barrier is within private property, a warning clause in all Offers of Purchase and Sale is required to inform the purchasers/tenants that the noise attenuating barrier (including the berm, if applicable) is within their property and that they are responsible for any repairs or replacements. The wording of the warning clauses is provided in **Appendix B**.

Table 4 summarizes the projected sound level at the concerned lots/units with the recommended barrier height in place.

TABLE 4
PROJECTED L_{eq} SOUND LEVELS - WITH ACOUSTICAL BARRIERS

Location	Recommended Barrier Height	Daytime L_{eq} Rear Yard (Recommended Height)
Townhouse 59	1.8m	53 dBA

With the measures that are recommended, the daytime rear yard sound levels will be within the 55 dBA L_{eq} limit.

The MECP's guidelines require that acoustical fencing be solid, with no gaps or holes and have a minimum surface density of 20 kg/m^2 (4 lb/ft^2). Appropriate treatment of attenuation barriers at discontinuities and points of termination involves extending the barrier to approximately the midpoint of the house; returning to the side wall of the house or extending the sound barrier for a minimum of 3 times the distance between the side wall and barrier, past the rear wall of the house.

3. NOISE ATTENUATION MEASURES (CONT'D)

3.3 Ventilation and Warning Clause Requirements

For residential buildings, the MECP have ventilation requirements which are based on the sound levels at the exterior building facade.

For the dwelling units that are immediately adjacent to Street 'A' and/or 'B', for Townhouse Unit 60 and for the dwelling units that are fully exposed to Old School Road (Townhouse Units 1, 32, 33 and 58 and Lot 57), since the night-time sound levels in the plane of the bedroom or living/dining room window are greater than 50 dBA L_{eq} and less than or equal to 60 dBA L_{eq} and/or the daytime sound levels in the plane of the bedroom or living/dining room window are greater than 55 dBA L_{eq} and less than or equal to 65 dBA L_{eq}, forced air heating with provision for central air conditioning and a warning clause are required.

The sound levels at the remaining units will be within the noise criteria of 50 dBA L_{eq} (night-time) and 55 dBA L_{eq} (daytime); Therefore, no noise mitigation measures are required.

3.4 Facade Components

To comply with the MECP's interior sound level criterion of 40 dBA L_{eq} (night-time) for bedrooms and 45 dBA L_{eq} (daytime) for living rooms, STC rating requirements were examined for building facade components, namely windows, walls and doors.

Since the night-time sound levels in the plane of the bedroom/living room window are within 60 dBA L_{eq} and the daytime sound levels in the plane of the bedroom/living room window are within 65 dBA L_{eq}, special building components are not required. Window and wall construction which satisfies the structural and safety requirements of the Ontario Building Code will provide sufficient noise attenuation.

4. SUMMARY

The daytime rear yard sound levels will exceed the 55 dBA L_{eq} limit for Townhouse Units 59 and 60. Based on the Town of Caledon requirements, noise mitigation measures such as barriers are required to attenuate the sound levels to within 55 dBA L_{eq}. (unless Town approval is provided)

As a result, for Townhouse Units 59 and 60, a 1.8m high acoustic fence is recommended. The acoustic barrier will run along the north and west property lines before returning to the side of the building. Based on the Region of Peel requirements, where the noise attenuating barrier is within private property, a warning clause in the Development Agreement and in all Offers of Purchase and Sale is required to inform the purchasers/tenants that the noise attenuating barrier (including the berm, if applicable) is within their property and that they are responsible for any repairs or replacements. The wording of the warning clauses is provided in **Appendix B**. With the measures that are recommended, the daytime rear yard sound levels will be within the 55 dBA L_{eq} limit.

For the dwelling units that are immediately adjacent to Street 'A' and/or 'B', for Townhouse Unit 60 and for the dwelling units that are fully exposed to Old School Road (Townhouse Units 1, 32, 33 and 58 and Lot 57), since the night-time sound levels in the plane of the bedroom or living/dining room window are greater than 50 dBA L_{eq} and less than or equal to 60 dBA L_{eq} and/or the daytime sound levels in the plane of the bedroom or living/dining room window are greater than 55 dBA L_{eq} and less than or equal to 65 dBA L_{eq}, forced air heating with provision for central air conditioning and a warning clause are required.

The sound levels at the remaining units will be within the noise criteria of 50 dBA L_{eq} (night-time) and 55 dBA L_{eq} (daytime); Therefore, no noise mitigation measures are required.

The Noise Mitigation Plan is provided in **Figure 4**.

4. SUMMARY (CONT'D)

Based on the above analysis, with the mitigation measures that are recommended, the proposed Residential Subdivision will satisfy the requirements of the Ministry of the Environment, Conservation and Parks, The Region of Peel and the Town of Caledon.

This Report was prepared by:

CANDEVCON GROUP INC.

Brian Wong, P. Eng.
Intermediate Transportation Engineer

David Lee, P. Eng.
Project Manager

APPENDIX A

Roadway Traffic Volume Data

1 result(s) added to Results'

☆ **Road Name: KENNEDY RD**

Mid-Block information from TES

Year	Volume
2023	5652
2022	4286
2020	4127

☆ **Road Name: OLD SCHOOL RD**

Mid-Block information from TES

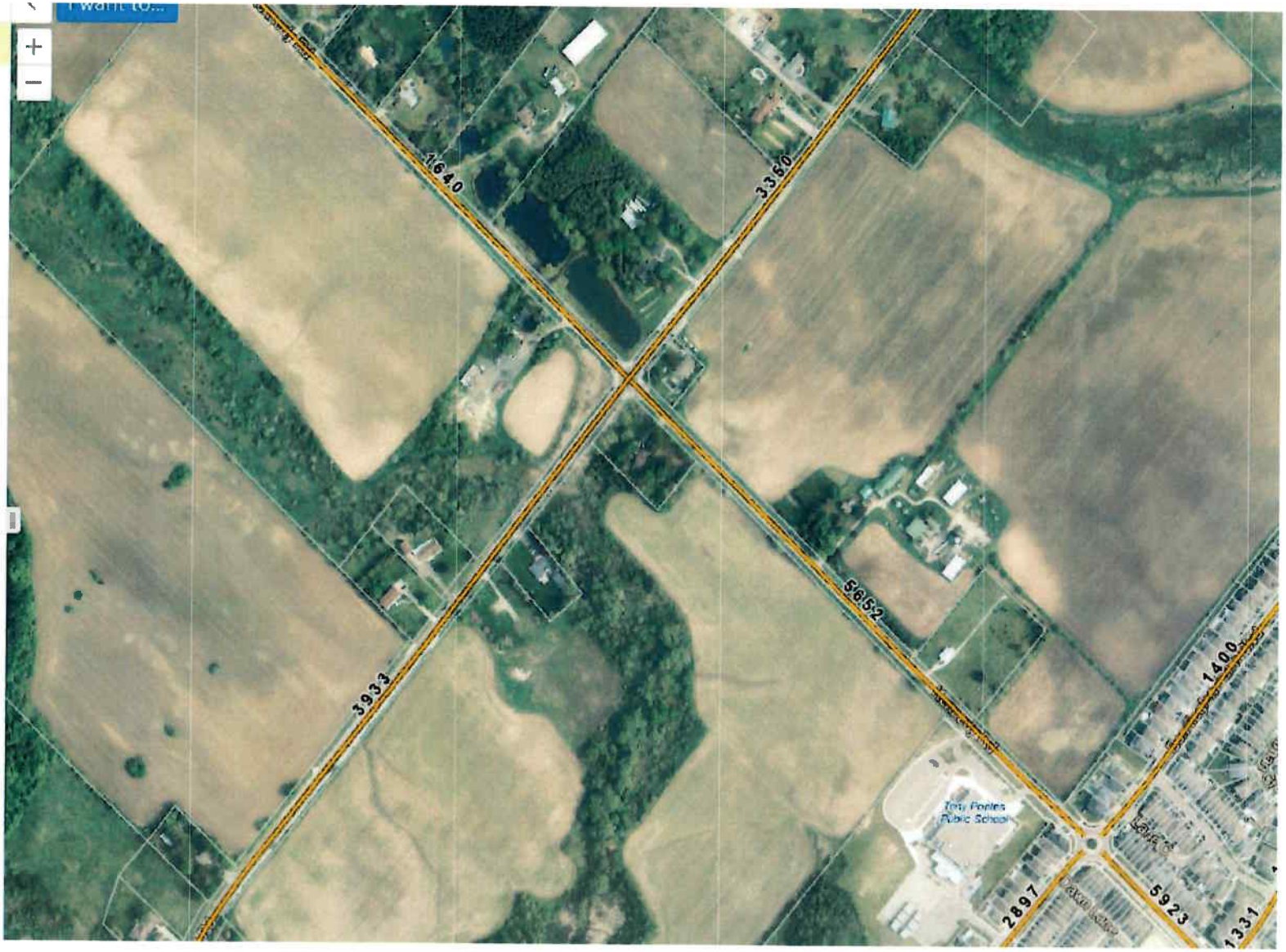
Year	Volume
2021	3933
2017	2481
2016	1272

☆ **Road Name: OLD SCHOOL RD**

Mid-Block information from TES

Year	Volume
2021	3350
2017	1513
2016	1639

Displaying 1 - 3 (Total: 3)



APPENDIX B

Warning Clauses

APPENDIX B

Warning Clauses

Warning Clause "C"

"This dwelling unit was fitted with a forced air heating system and the ducting, etc sized to accommodate a central air conditioning unit. Air conditioning may be installed at the owner's option and cost."

Warning Clause "F"

"Purchasers/tenants are advised that a noise barrier wall is located at the rear/side of this property. The owner of this property also owns his/her section of the noise barrier wall. The noise barrier wall is not in public ownership. Monitoring, maintenance, inspection, repair and replacement of this noise barrier wall, including any associated costs, are the sole responsibility of the property owner. The Town of Caledon is in no way responsible for this noise barrier wall. Should this noise barrier wall fail, it is the property owner's responsibility to repair or replace his/her section of the wall, at his/her cost. If the property owner fails to maintain the noise barrier wall, the Town of Caledon will notify the requirement to repair in writing. If the property owner does not comply with the Town's request, the Town will correct the deficiency and bill the property owner accordingly."

APPENDIX C

Stamson 5.04 Sound Level Calculations

STAMSON REPORT – TOWNHOUSE UNIT 59
[DAYTIME, REAR YARD, NO ACOUSTIC BARRIER]

```
STAMSON 5.0        NORMAL REPORT        Date: 10-09-2024 09:18:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: TH59D.te             Time Period: 16 hours
Description:


Road data, segment # 1: KENNEDY
-------------------------------
Car traffic volume  : 15390 veh/TimePeriod  *
Medium truck volume :   486 veh/TimePeriod  *
Heavy truck volume  :   324 veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: KENNEDY
-------------------------------
Angle1   Angle2           : -90.00 deg   21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      7
House density             :     95 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 200.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: KENNEDY
-------------------------------
Car traffic volume  : 15390 veh/TimePeriod  *
Medium truck volume :   486 veh/TimePeriod  *
Heavy truck volume  :   324 veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: KENNEDY
-------------------------------
Angle1   Angle2           :  21.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1
House density             :     20 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 200.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: STREET A
--------------------------------
Car traffic volume  :  7497 veh/TimePeriod  *
Medium truck volume :   145 veh/TimePeriod  *
Heavy truck volume  :     8 veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: STREET A
------------------------------
Angle1   Angle2           : -90.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  17.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 4: STREET A
--------------------------------
Car traffic volume  :  7497 veh/TimePeriod  *
Medium truck volume :   145 veh/TimePeriod  *
Heavy truck volume  :     8 veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: STREET A
------------------------------
Angle1   Angle2           :  45.00 deg   65.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1
House density             :     95 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  17.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: KENNEDY
-----------------------------

Source height = 1.19 m

ROAD (0.00 + 30.54 + 0.00) = 30.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     21   0.66  69.54   0.00 -18.67  -3.26   0.00 -17.07   0.00
30.54
-------------------------------------------------------------------------
---

Segment Leq : 30.54 dBA

Results segment # 2: KENNEDY
-----------------------------

Source height = 1.19 m

ROAD (0.00 + 43.88 + 0.00) = 43.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
    21     90   0.66  69.54   0.00 -18.67  -6.15   0.00  -0.83   0.00
43.88
-------------------------------------------------------------------------
---

Segment Leq : 43.88 dBA

Results segment # 3: STREET A
-----------------------------

Source height = 0.57 m

ROAD (0.00 + 59.03 + 0.00) = 59.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     45   0.66  62.22   0.00  -0.90  -2.29   0.00   0.00   0.00
59.03
-------------------------------------------------------------------------
---

Segment Leq : 59.03 dBA
```

```
Results segment # 4: STREET A
-----------------------------

Source height = 0.57 m

ROAD (0.00 + 40.06 + 0.00) = 40.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
    45     65   0.66  62.22   0.00  -0.90 -11.16   0.00 -10.10   0.00
40.06
-------------------------------------------------------------------------
---

Segment Leq : 40.06 dBA

Total Leq All Segments: 59.22 dBA

TOTAL Leq FROM ALL SOURCES:       59.22
```

STAMSON REPORT – TOWNHOUSE UNIT 59
[NIGHT-TIME, FACADE, NO ACOUSTIC BARRIER]

```
STAMSON 5.0        NORMAL REPORT        Date: 10-09-2024 09:27:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: TH59N.te             Time Period: 8 hours
Description:


Road data, segment # 1: KENNEDY
-------------------------------
Car traffic volume  :  1710 veh/TimePeriod  *
Medium truck volume :    54 veh/TimePeriod  *
Heavy truck volume  :    36 veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: KENNEDY
-------------------------------
Angle1   Angle2           : -90.00 deg   23.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      7
House density             :     95 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 203.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: KENNEDY
-------------------------------
Car traffic volume  :  1710 veh/TimePeriod  *
Medium truck volume :    54 veh/TimePeriod  *
Heavy truck volume  :    36 veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: KENNEDY
-------------------------------
Angle1   Angle2           :  23.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1
House density             :     20 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 203.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: STREET A
--------------------------------
Car traffic volume  :   833 veh/TimePeriod  *
Medium truck volume :    16 veh/TimePeriod  *
Heavy truck volume  :     1 veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: STREET A
------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  15.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: KENNEDY
----------------------------

Source height = 1.19 m

ROAD (0.00 + 25.04 + 0.00) = 25.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     23   0.58  63.01   0.00 -17.87  -3.06   0.00 -17.05   0.00
25.04
-------------------------------------------------------------------------
---

Segment Leq : 25.04 dBA

Results segment # 2: KENNEDY
----------------------------

Source height = 1.19 m

ROAD (0.00 + 38.17 + 0.00) = 38.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
    23     90   0.58  63.01   0.00 -17.87  -6.14   0.00  -0.83   0.00
38.17
-------------------------------------------------------------------------
---

Segment Leq : 38.17 dBA
```

```
Results segment # 3: STREET A
-----------------------------

Source height = 0.59 m

ROAD (0.00 + 54.36 + 0.00) = 54.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.60  55.71   0.00   0.00  -1.35   0.00   0.00   0.00
54.36
-------------------------------------------------------------------------
---

Segment Leq : 54.36 dBA

Total Leq All Segments: 54.47 dBA

TOTAL Leq FROM ALL SOURCES:       54.47
```

STAMSON REPORT – TOWNHOUSE UNIT 59
[DAYTIME, FACADE, NO ACOUSTIC BARRIER]

```
STAMSON 5.0        NORMAL REPORT        Date: 10-09-2024 09:25:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: TH59DF.te            Time Period: 16 hours
Description:


Road data, segment # 1: KENNEDY
-------------------------------
Car traffic volume  : 15390 veh/TimePeriod  *
Medium truck volume :   486 veh/TimePeriod  *
Heavy truck volume  :   324 veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: KENNEDY
-----------------------------
Angle1   Angle2           : -90.00 deg   23.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      7
House density             :     95 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 203.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: KENNEDY
-------------------------------
Car traffic volume  : 15390 veh/TimePeriod  *
Medium truck volume :   486 veh/TimePeriod  *
Heavy truck volume  :   324 veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: KENNEDY
-----------------------------
Angle1   Angle2           :  23.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1
House density             :     20 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 203.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: STREET A
--------------------------------
Car traffic volume  :  7497 veh/TimePeriod  *
Medium truck volume :   145 veh/TimePeriod  *
Heavy truck volume  :     8 veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: STREET A
------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  15.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: KENNEDY
----------------------------

Source height = 1.19 m

ROAD (0.00 + 30.55 + 0.00) = 30.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     23   0.66  69.54   0.00 -18.78  -3.16   0.00 -17.05   0.00
30.55
-------------------------------------------------------------------------
---

Segment Leq : 30.55 dBA

Results segment # 2: KENNEDY
----------------------------

Source height = 1.19 m

ROAD (0.00 + 43.58 + 0.00) = 43.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
    23     90   0.66  69.54   0.00 -18.78  -6.35   0.00  -0.83   0.00
43.58
-------------------------------------------------------------------------
---

Segment Leq : 43.58 dBA
```

Results segment # 3: STREET A

Source height = 0.57 m

ROAD (0.00 + 60.77 + 0.00) = 60.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	62.22	0.00	0.00	-1.46	0.00	0.00	0.00	60.77

Segment Leq : 60.77 dBA

Total Leq All Segments: 60.86 dBA

TOTAL Leq FROM ALL SOURCES: 60.86

STAMSON REPORT – TOWNHOUSE UNIT 59
[DAYTIME, REAR YARD, 1.8m HIGH ACOUSTIC BARRIER]

```
STAMSON 5.0        NORMAL REPORT        Date: 10-09-2024 10:28:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: th59db.te            Time Period: 16 hours
Description:


Road data, segment # 1: KENNEDY
-------------------------------
Car traffic volume  : 15390 veh/TimePeriod  *
Medium truck volume :   486 veh/TimePeriod  *
Heavy truck volume  :   324 veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: KENNEDY
-----------------------------
Angle1   Angle2           : -90.00 deg   21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      7
House density             :     95 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 200.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: KENNEDY
------------------------------
Car traffic volume  : 15390 veh/TimePeriod  *
Medium truck volume :   486 veh/TimePeriod  *
Heavy truck volume  :   324 veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: KENNEDY
------------------------------
Angle1   Angle2           :  21.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1
House density             :     20 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 200.00 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  21.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.80 m
Barrier receiver distance :   2.90 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: STREET A
--------------------------------
Car traffic volume  :  7497 veh/TimePeriod  *
Medium truck volume :   145 veh/TimePeriod  *
Heavy truck volume  :     8 veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: STREET A
------------------------------
Angle1   Angle2           : -90.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  17.00 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : 45.00 deg
Barrier height            :   1.80 m
Barrier receiver distance :   5.90 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: STREET A
--------------------------------
Car traffic volume  :  7497 veh/TimePeriod  *
Medium truck volume :   145 veh/TimePeriod  *
Heavy truck volume  :     8 veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: STREET A
------------------------------
Angle1   Angle2           :  45.00 deg   65.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1
House density             :     95 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  17.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: KENNEDY
----------------------------

Source height = 1.19 m

ROAD (0.00 + 30.54 + 0.00) = 30.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     21   0.66  69.54   0.00 -18.67  -3.26   0.00 -17.07   0.00
30.54
-------------------------------------------------------------------------
---

Segment Leq : 30.54 dBA
```

```
Results segment # 2: KENNEDY
----------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 40.64 + 0.00) = 40.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
    21     90   0.66  69.54   0.00 -18.67  -6.15   0.00  -0.83   0.00
43.88
    21     90   0.56  69.54   0.00 -17.56  -5.91   0.00   0.00  -5.43
40.64
-------------------------------------------------------------------------
---

Segment Leq : 40.64 dBA

Results segment # 3: STREET A
-----------------------------

Source height = 0.57 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.57 !        1.50 !        1.18 !         1.18

ROAD (0.00 + 52.57 + 0.00) = 52.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     45   0.58  62.22   0.00  -0.86  -2.19   0.00   0.00  -6.60
52.57
-------------------------------------------------------------------------
---

Segment Leq : 52.57 dBA
```

```
Results segment # 4: STREET A
-----------------------------

Source height = 0.57 m

ROAD (0.00 + 40.06 + 0.00) = 40.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
    45     65   0.66  62.22   0.00  -0.90 -11.16   0.00 -10.10   0.00
40.06
-------------------------------------------------------------------------
---

Segment Leq : 40.06 dBA

Total Leq All Segments: 53.09 dBA

TOTAL Leq FROM ALL SOURCES:       53.09
```