

# **PRELIMINARY ENVIRONMENTAL NOISE ASSESSMENT**

**DRAFT PLAN OF SUBDIVISION  
FP MAYFIELD WEST (CALEDON) INC.  
12529 CHINGUACOUSY ROAD  
PART OF LOT 20, CONESSION 2,  
WEST OF HURONTARIO STREET  
TOWN OF CALEDON**

**PREPARED FOR:**

**FP MAYFIELD WEST (CALEDON) INC.**

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## 1.0 INTRODUCTION

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### PURPOSE

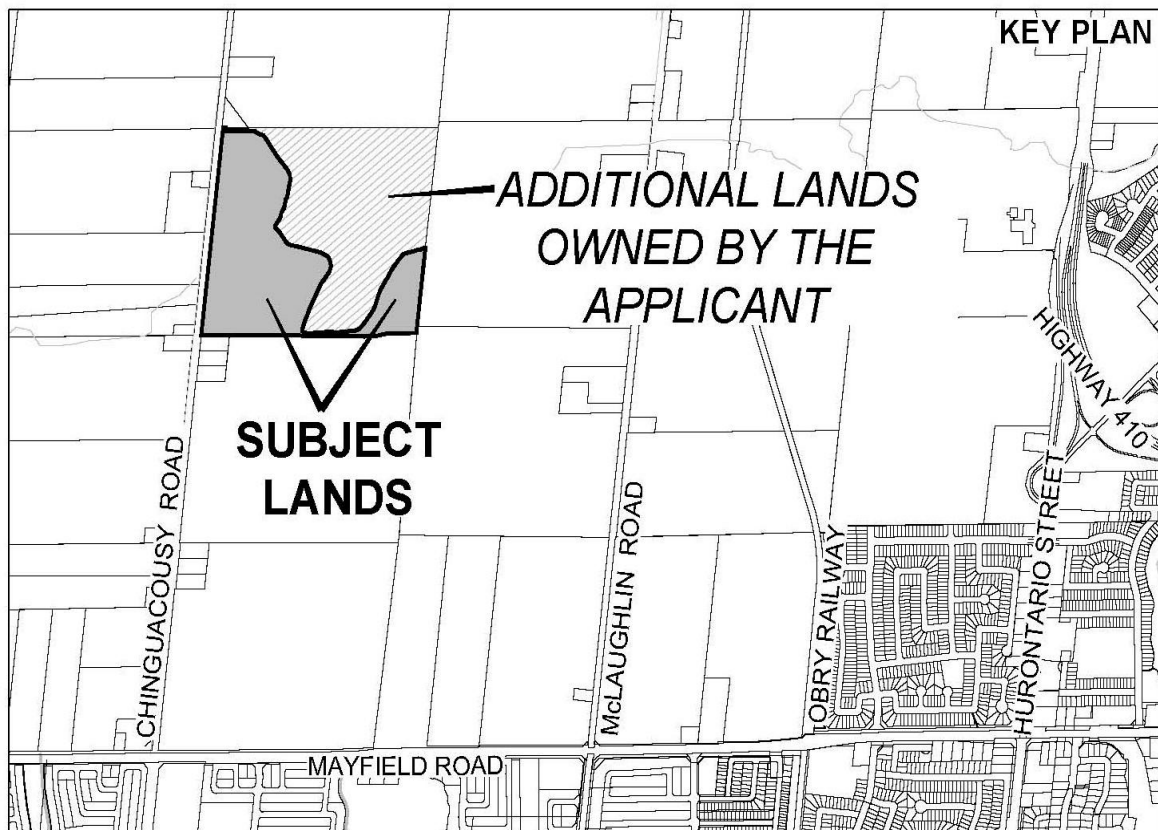
A residential subdivision has been proposed by FP Mayfield West (Caledon) Inc. in the Town of Caledon. The purpose of this report is to present the analysis of anticipated future sound levels within the development using the latest draft plan prepared by Glen Schnarr & Associates dated August 2020.

### SITE DESCRIPTION AND LOCATION

The proposed development will include 205 residential units, consisting of 78 detached dwelling units, 127 townhouse units, an open space, an Environmental Policy Area and local internal roads. This development is located east of Chinguacousy Road approximately 1.3km south of Old School Road and approximately 1.3km north of Mayfield Road in the Town of Caledon.

The surrounding land uses are existing residential and agricultural lands to the north, proposed residential developments to the south and east, and existing agricultural lands west of Chinguacousy Road. The lands to the west are part of the Alloo community and will likely be home to future residential uses following the next urban boundary expansion.

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



**FIGURE 1**

## 2.0 SOUND LEVEL CRITERIA

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### TRANSPORTATION:

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

As per the Town of Caledon's policy the sound levels in excess of the following level are not accepted, unless design features exceed standard detail:

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

Indoor Areas such as Living/Dining rooms (7 a.m.–11 p.m.) = 45 dBA Roads

Indoor Areas such Bedrooms (11 p.m. – 7 a.m.) = 40 dBA Roads

The maximum barrier wall height is 2.4m as per the Town of Caledon's Policy, although greater heights can be obtained using a combination of berm and wall.

Appropriate building components such as walls, doors and windows are chosen with reference to the following: Building facade requirements apply for both day and night at the bedrooms and living/dining rooms.

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 60 dBA or greater, 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 MECP guidelines (Publication NPC-300), the subject site is considered to be a Class 2 area.

The sound level limits for a Class 2 area due to stationary sources for an Outdoor Point of Reception is sound level ( $L_{EQ}$ ), 50 dBA during daytime (0700-1900) and 45 dBA during evenings (1900-2300). The sound level limits for a Class 2 area due to stationary sources for Plane of Window of Noise Sensitive Spaces is sound level ( $L_{EQ}$ ), 50 dBA during daytime (0700-1900), 50 dBA during evenings (1900-2300) and 45 dBA during night-time (2300-0700). The  $L_{eq}$  descriptor for stationary noise sources used are for a One Hour Time period.

### 3.0 NOISE SOURCES

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#### ROAD TRAFFIC

As indicated on the Key Plan (Figure 1), the proposed development will be located east of Chinguacousy Road, approximately 1.3km south of Old School Road and approximately 1.3km north of Mayfield Road in the Town of Caledon.

The future Spine Road will be located at more than 250m to the south. Due to distance separation and shielding from the future residential development to the south, the noise impact from the Spine Road is expected to be insignificant. Noise generated by Chinguacousy Road, however, has the potential to affect future residents.

The traffic data for Chinguacousy Road was obtained by the 2018 TMP report prepared by Paradigm Transportation Solutions Ltd. Projected out to the year 2041. The future truck percentages were assumed to be 8% as the truck data was not included in the TMP report. Some of the data were increased to match similar type of roads in the area. The current posted speed on Chinguacousy Road is 80km/hr, however the speed is expected to be reduced in the future once the area is developed. The traffic data taken into account for noise analysis purposes is summarized in Table 1 below.

<b>TABLE 1: CHINGUACOUSY ROAD TRAFFIC DATA</b>	
Forecasted Annual Average Daily Traffic *	18,000
Percent Trucks	8%
Ratio of Heavy and Medium trucks	50:50
Speed (km/hr)	60 (70**)
Number of Lanes	4

\* See Appendix 1 for correspondence.

\*\* 10km/hr added to the posted speed as per the Town of Caledon's requirements.

#### AIRCRAFT TRAFFIC

The Brampton Flying Club Airport is located approximately 3.2km from the proposed development east of McLaughlin Road between Old School Road and King Street. Due to the proximity of the Brampton Flying Club Airport, the noise contour map has been verified and the future development is outside of the NEF 25 Noise Contour Line. The noise contour line map for the Brampton Flying Club Airport is included in Appendix 1.

#### STATIONARY NOISE SOURCES

**12402 Chinguacousy Road:** The existing agricultural use is located west of Chinguacousy Road. This property contains existing grain elevators which are located 120m from the nearest receptor location at the proposed residential development. The farm operational hours are daytimes. The potential noise sources of concern are the grain elevators operation and delivery trucks.

**12306 Chinguacousy Road:** The existing agricultural use is located west of Chinguacousy Road. This property contains an existing grain elevator which is in excess of 300m from the nearest receptor location at the proposed residential development. The farm operational hours are daytimes. The potential noise sources of concern are the grain elevators and delivery trucks.

## 4.0 NOISE ASSESSMENT

### 4.1 ROAD TRAFFIC NOISE ASSESSMENT

Figure 4 is based on the latest draft plan prepared by Glen Schnarr & Associates, dated August 2020, 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 and evaluated with the sound level criteria and warning clauses recommended by the Ministry of Environment. The noise criteria and warning clauses are listed in Appendix 3. Table 2 lists the unattenuated sound levels at various locations.

<b>TABLE 2: UNATTENUATED SOUND LEVELS - UNMITIGATED</b>					
<b>LOTS/ BLOCKS</b>		<b>SOURCE DISTANCE* (m)</b>	<b>SOUND LEVELS (dBA)</b>		
			<b>OUTDOOR LIVING AREA (16 hr) Leq</b>	<b>DAYTIME (16 hr) Leq</b>	<b>NIGHT-TIME (8 hr) Leq</b>
Lot 1	Side Wall	24.0 <sup>1</sup>	-	66.54	60.01
	Rear Yard	26.0 <sup>1</sup>	65.10	-	-
Lot 2	Rear Wall	33.0 <sup>1</sup>	-	61.36	54.83
	Rear Yard	35.0 <sup>1</sup>	60.48	-	-
Lot 28	Side Wall	25.0 <sup>1</sup>	-	66.26	59.73
	Rear Yard	27.0 <sup>1</sup>	64.83	-	-
Lot 29	Rear Wall	26.0 <sup>1</sup>	-	66.00	59.46
	Rear Yard	27.0 <sup>1</sup>	65.16	-	-
Lot 32	Rear Wall	45.0 <sup>1</sup>	-	61.94	55.40
	Rear Yard	43.0 <sup>1</sup>	61.74	-	-
Lot 40	Rear Wall	105.0 <sup>1</sup>	-	56.15	49.62
	Rear Yard	103.0 <sup>1</sup>	55.07	-	-
Block 87 (West Unit)	Side Wall	23.0 <sup>1</sup>	-	67.17	60.63
	Rear Yard	25.0 <sup>1</sup>	65.10	-	-
Block 90 (West Unit)	Side Wall	24.0 <sup>1</sup>	-	66.89	60.36
	Rear Yard	26.0 <sup>1</sup>	65.10	-	-
Block 90 (East Unit)	Rear Wall	51.0 <sup>1</sup>	-	58.38	51.85
	Rear Yard	53.0 <sup>1</sup>	57.82	-	-
Block 96 (North Unit)	Rear Wall	53.0 <sup>1</sup>	-	58.41	51.88
	Rear Yard	50.0 <sup>1</sup>	54.92	-	-
Block 97 (North Unit)	Front Wall	22.0 <sup>1</sup>	-	67.45	60.92
	Rear Yard	40.0 <sup>1</sup>	55.38	-	-

1 Chinguacousy Road

Note: The receiver locations at the outdoor living areas/rear yards are taken to be 1.5m off ground, located 3m from the rear wall of the dwelling units.

## 4.2 STATIONARY NOISE SOURCES ASSESSMENT

The noise sources of concern are the surrounding existing agricultural developments located west of Chinguacousy Road.

The lands to the west are part of the Alloo community and will likely be future residential uses following the next urban boundary expansion.

### **Existing Farm (12402 Chinguacousy Road):**

Located west of Chinguacousy Road with grain elevators at 120m (as shown on Figure 2) from the proposed residential development and the truck deliveries and tractors movements during the harvest seasons.

Based on a site visit conducted in September 2020, there were two additional buildings located between the grain elevators and the existing house on the property which is not shown on Figure 2, The aerial photo Figure 3 shows the two additional buildings. There were no activities on site at the time of the visit since there are only activities during harvest times, which generally occur 3 times per year for a duration of 2 weeks total, operating during daytime hours only. In the case of this farm, generally, most of the crop is hauled off-site immediately after harvest and not processed on-site. The following conditions have been applied to anticipate the worst case acoustic scenario:

- Although the grain dryer operates for a short time only (as half of the crop is generally shipped immediately off-site and is not stored for a long period of time), it has been assumed that the grain dryers operates continuously;
- There are 2 grain dryers located at ground level between the silos. The Sound Power Levels for the grain dryers were taken to be 110dBA;
- The total truck deliveries expected per day are 10 trucks (maximum), as this farm is considered to be small scale;
- The truck movement Sound Power Level is 110dBA and the trucks are expected to be idling for 30 minutes per visit;
- The tractors have been assumed to operate throughout the day;
- The grain loading/unloading to and from the silos and the conveyor belt sound levels were taken to be 85dBA and 90dBA.

### **Existing Farm (12306 Chinguacousy Road):**

Located west of Chinguacousy Road, further south than the farm noted above, with grain elevators operating at more than 300m (as shown on Figure 2) from the proposed residential development, with truck deliveries and tractors movements during the harvest seasons.

Similar assumptions have been made for this farm as noted above with additional truck deliveries and silos.

### PROPOSED RECEPTORS

The nearest receptors of concern are the proposed residential houses and blocks/lots flanking onto Chinguacousy Road. The proposed houses are taken to be 3 storey houses.

The sound levels were calculated using the CadnaA Version 2020 computer program using the International Standard ISO 9613-2. Analysis is included in Appendix 3.

<b>TABLE 3 - STATIONARY SOURCES SOUND LEVELS (UMITIGATED)</b>			
<b>RECEPTOR</b>	<b>SOUND LEVEL RESULTS (dBA)</b>		<b>EXCEEDANCE (dBA)</b>
	<b>DAYTIME/EVENING (0700 -2300)</b>	<b>NIGHTTIME (2300 -0700)</b>	
R1 (Block 90) - West Unit	46	43	No
R2 (Block 88) - West Unit	46	42	No
R3 (Block 87) -West Unit	46	44	No
R4 (Lot 29)	44	42	No
R5 (Block 90) - East Unit	45	43	No

The total sound level results at all locations within the proposed residential development are expected to be below the sound level limits during the daytime/evenings and night-times.

Therefore, noise mitigation measures are not required due to the existing stationary noise sources.



## 5.0 RECOMMENDED NOISE MITIGATION MEASURES

### 5.1 OUTDOOR MEASURES

The receiver locations at the outdoor living areas/rear yards are taken to be 1.5m off ground, located 3m from the rear wall of the dwelling units.

Table 5 indicates that daytime rear yard sound levels at the following locations will exceed 55 dBA in the absence of mitigative measures:

- Lots 1, 2, 27, 28, 29 to 39
- Blocks 87, 88 (West Unit) and Block 90 (All Units)

#### NOISE BARRIERS

In accordance with MECP and the Town of Caledon policy, mitigative measures are required for Lots 1, 2, 27, 28, 29 to 39, Blocks 87, 88 (West Unit) and Block 90 (All Units) to reduce the sound levels to 55 dBA or less. The noise barrier analysis is based on the preliminary grading information provided by Urbantech dated September 2020.

The following Table 4 lists the sound barrier heights required for sound levels of 55 dBA or less:

<b>TABLE 4: ATTENUATED OUTDOOR SOUND LEVELS (55dBA OR LESS)</b>	
<b>LOTS</b>	<b>ACOUSTIC BARRIER HEIGHTS REQUIRED (m)</b>
Lots 1, 28, 29, Blocks 87, 88, 90 (West Unit)	3.0*
Lots 2, 27, 30, 31, Block 90 (Remaining Units)	2.4
Lots 32 to 39	2.0

\* 2.4m high acoustic fence and 0.6m high berm.

A 3.0m high acoustic barrier (2.4m high acoustic fence and 0.6m high berm) is recommended along the side property of Lots 1, 28, 29 and Blocks 87, 88, 90 (West Unit) and returned to the side wall of the houses as shown on the attached Figure 4 to achieve a sound level of 55 dBA.

A 2.4m high acoustic fence is recommended along the rear property of Lots 2, 27, 30, 31 and Block 90 (Remaining Units) as shown on the attached Figure 4 to achieve a sound level of 55 dBA.

A 2.0m high acoustic fence is recommended along the rear property of Lots 32 to 39 as shown on the attached Figure 4 to achieve a sound level of 55 dBA.

Following installation of the recommended acoustic barrier, future outdoor sound levels may exceed 55 dBA at the following locations due to road traffic:

- Lots 1, 2, 27, 28, 29 to 39
- Blocks 87, 88 (West Unit) and Block 90 (All Units)

A warning clause should therefore be incorporated into the Subdivision Agreement, which will be registered on title and should be included in all offers of purchase and sale or lease of the dwelling units at the above locations. The clause should state:

Warning Clause No. B

*"Purchasers are advised that despite the inclusion of noise control features, the sound levels due to increasing road and aircraft traffic may continue to be of concern, occasionally interfering with the activities of the dwelling occupants as the noise levels may exceed the noise criteria of the Municipality's and the Ministry of the Environment's noise criteria."*

*"That the acoustical barrier as installed shall be maintained, repaired or replaced by the owner. Any maintenance, repair or replacement shall be with the same material to the same standards and having the same colour and appearance of the original"*

The recommended barriers should be constructed of a material, which provides a minimum surface density of 20 kg per square meter. If desired, the height of the required fencing can be reduced by locating it on an earthen berm, provided that the total fence height remains as described above. In accordance with M.O.E. policy, minimized and localized gaps (25mm maximum) at fence bottoms may be used to accommodate surface drainage, if necessary.

## 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 locations are expected to be above 65dBA during the daytime and/or above 60dBA during the nighttime due to road traffic. Therefore, mandatory air conditioning is required for:

- Lots 1, 28, 29;
- Blocks 87, 88, 90 (West Unit);
- Blocks 97, 98, 99 (All Units)

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

Warning Clause Type D:

*"This dwelling unit was fitted with a central air conditioning system in order to permit closing of windows for noise control. (Note: locate air cooled condenser unit in a noise insensitive area and ensure that unit has a maximum ARI rating of 7.6 Bels for 3.5 tons or less.)"*

#### PROVISION FOR CENTRAL AIR CONDITIONERS

The following 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 as per Table 5 sound level results:

- Lots 2 to 8, 21 to 27, 30 to 40;
- Blocks 87, 88, 90 (Remaining Units);
- Blocks 85, 86, 89, 91, 94, 95, 96 (All Units)

The following warning clause Type C must be incorporated into the Subdivision Agreement which will be registered on title and should be included in all Offers of Purchase, Sale or Lease of the above residential units:

Warning Clause Type C:

*"This dwelling unit was fitted with a forced air heating system and the ducting, etc. sized to accommodate central air conditioning unit. Air conditioning can be installed at the owners' option and cost. (Note: locate air cooled condenser unit in a noise insensitive area and ensure that unit has a maximum ARI rating of 7.6 Bels 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.O.E. 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 30% of the floor area and the same side exterior walls are assumed to be 70% of the floor area.

#### DAYTIME SOUND LEVELS

For the worst-case location during daytime (Block 97), a dwelling wall sound level of 67 dBA was calculated. To ensure acceptable daytime indoor sound levels of 45dBA from road noise sources, the overall building components must provide an STC rating of 30 for windows and STC 37 for exterior wall construction.

## NIGHT-TIME SOUND LEVELS

For the worst-case location during night-time (Block 97), a dwelling wall sound level of 61 dBA was calculated. To ensure acceptable night-time indoor sound levels of 40dBA from road noise sources, 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, for all residential units, standard Ontario Building Construction will be acoustically acceptable for the exterior wall and window constructions.

### WINDOWS

The following are some window configurations meeting an STC rating of 30, assuming the ratio of window area to room floor area is 30%:

- double glazing 4mm x 4mm thickness with 6mm air space; or
- double glazing 3mm x 3mm thickness with 13mm air space; or
- any other window type yielding a similar or greater STC rating.

Sample window configurations are included in Appendix 4 for additional options.

### EXTERIOR WALLS

The following exterior wall constructions EW1 meet the STC 38 rating, assuming a ratio of wall area to room floor area of 70%:

EW1	12.7mm gypsum board, vapour barrier and 38 x 89mm studs with 50mm (or thicker) mineral wool or fibreglass batts in interstud cavities, plus sheathing, wood or metal siding and fibre backer board; or
-----	--

Sample exterior wall configurations are included in Appendix 4 for additional options.

Please note that the final building components should be determined once building floor plans become available and once dwelling locations and orientations are finalized.

## 5.4 WARNING CLAUSES

A warning clause must be incorporated into the Subdivision Agreement which will be registered on title and included in all offers of purchase and sale or lease of the following dwelling units. The clause should state:

- Lots 1 to 8, 21 to 40
- Blocks 85 to 91, 94 to 99 (All Units)

### Warning Clause Type A

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

In addition, the following warning clause should be provided for lots/blocks listed below in the proximity of the existing agricultural uses:

- Lots 1, 2, 27, 28, 29 to 40;
- Blocks 87, 88, 90, 91, 97 to 99 (All Units)

### Warning Clause Type E

"Purchasers/tenants are advised that due to the proximity of existing agricultural lands, noise from these facilities may at times be audible"

## 6.0 SUMMARY OF NOISE MITIGATION MEASURES

The summary of noise abatement measures are listed in Table 5 identifying acoustic fence, mandatory central air conditioners, provision for central air conditioners, building components and warning clauses.

<b>TABLE 5: SUMMARY OF NOISE MITIGATIVE MEASURES</b>				
<b>LOTS</b>	<b>VENTILATION REQUIREMENTS</b>	<b>BUILDING COMPONENTS</b>	<b>BARRIERS</b>	<b>WARNING CLAUSES</b>
Lots 1, 28, 29 Blocks 87, 88, 90 (West Unit)	Mandatory air conditioning	Windows: OBC* Walls: OBC	3.0m**	Type A, B, D and E
Lots 2, 27, 30, 31 Block 90 (Remaining Units)	Optional air conditioning	Windows: OBC Walls: OBC	2.4m	Type A, B, C and E
Lots 3 to 8, 21 to 26, Blocks 85, 86, 89 (All units)	Optional air conditioning	OBC*	No	Type A and C
Lot 40 Blocks 87, 88 (Remaining Units) Block 91 (All Units)	Optional air conditioning	OBC*	No	Type A, C and E
Lots 32 to 39	Optional air conditioning	Windows: OBC Walls: OBC	2.0m	Type A, B, C and E
Blocks 97, 98, 99 (All Units)	Mandatory air conditioning	Windows: OBC Walls: OBC	No	Type A, D and E
All other lots/blocks within this development	No Requirements			

\* OBC: Ontario Building Code Standard.

\*\* Acoustic barrier (2.4m high acoustic fence and 0.6m high berm) as shown on Figure 4.

## 7.0 RECOMMENDATIONS AND CONCLUSION

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### RECOMMENDATIONS

1. Mandatory air conditioning is required for Lots 1, 28, 29 and Blocks 87, 88, 90 (West Unit), Block 97, 98, 99 (All Units).
2. Provision for adding central air conditioning in the future is required for Lots 2 to 8, 21 to 27, 30 to 40, Blocks 85, 86, 89, 91, 94 to 96 (All Units) and Blocks 87, 88, 90 (Remaining Units).
3. A 3.0m high acoustic barrier (2.4m high acoustic fence and 0.6m high berm) is recommended along the side property of Lots 1, 28, 29 and Blocks 87, 88, 90 (West Unit) and returned to the side wall of the houses as shown on the attached Figure 4 to achieve a sound level of 55 dBA.  
  
A 2.4m high acoustic fence is recommended along the rear property of Lots 2, 27, 30, 31 and Block 90 (Remaining Units) as shown on the attached Figure 4 to achieve a sound level of 55 dBA.  
  
A 2.0m high acoustic fence is recommended along the rear property of Lots 32 to 39 as shown on the attached Figure 4 to achieve a sound level of 55 dBA.
4. For all residential units, standard Ontario Building Construction will be acoustically acceptable for the exterior wall and window constructions.
5. All applicable warning clauses shall be listed in the Town of Caledon's Subdivision Agreement and also be included in all Agreements of Purchase, Sale or Lease and registered on title.
6. We recommend a Detailed Environmental Noise Assessment to be conducted once the final grading plans and building plans are available to determine the final noise barrier heights and to review the building requirements.
7. Prior to the issuance of occupancy permits, the Town's building inspector or a Professional Engineer qualified to perform acoustical engineering services in Ontario shall certify that the noise control measures have been properly installed and constructed as per the noise study recommendations.

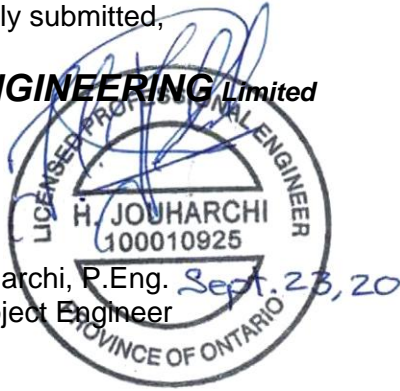
## CONCLUSION

This report has determined that sound levels acceptable to the Town of Caledon and the Ministry of Environment, Conservation and Parks will be achieved using commonly practiced abatement measures. These are described in the preceding sections of this report and are summarized on Figure 4.

Respectfully submitted,

**YCA ENGINEERING Limited**

Hava Jouharchi, P.Eng.  
Senior Project Engineer







**FIGURE 2**

**DISTANCES FROM THE STATIONARY NOISE SOURCES**





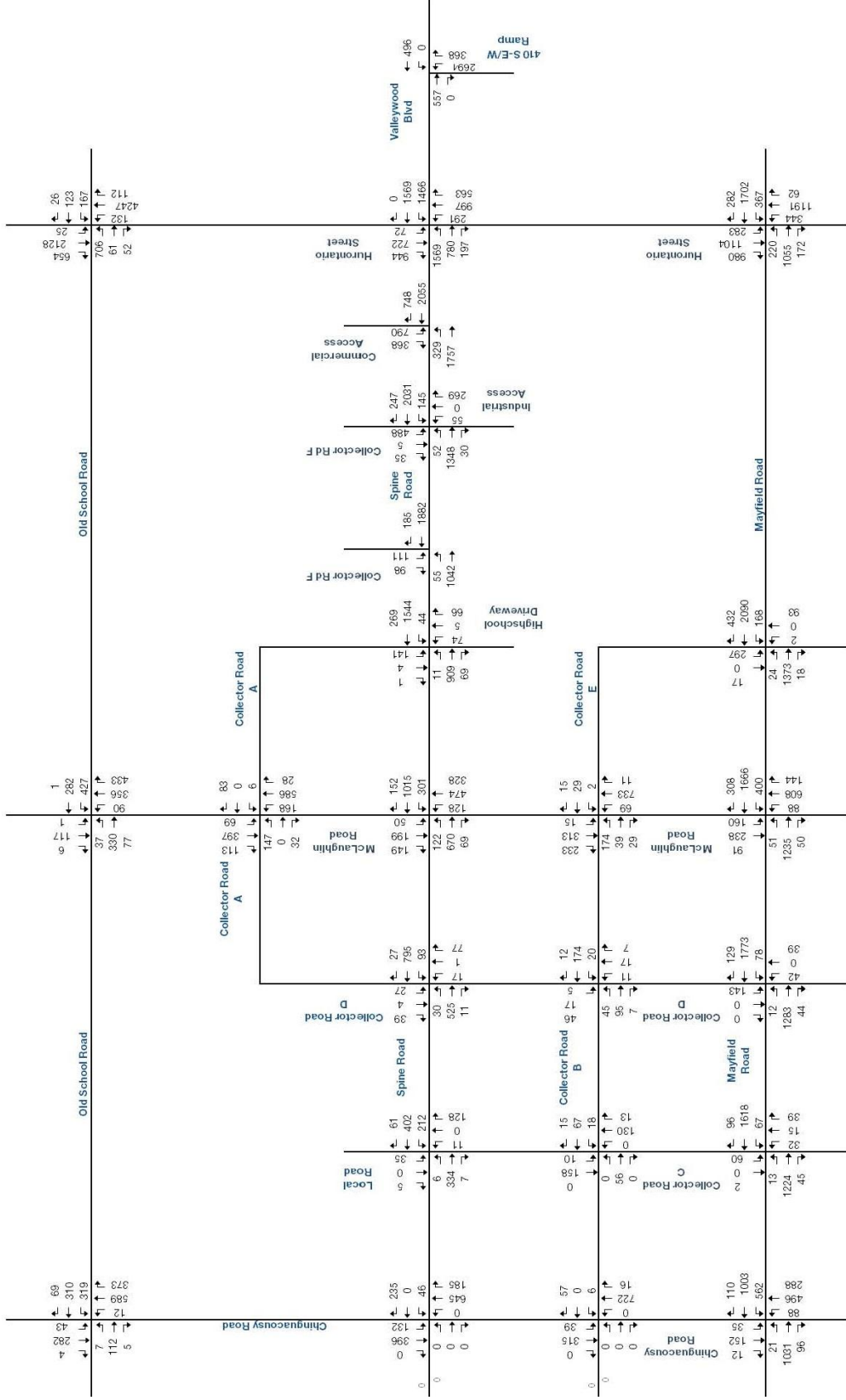
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**FIGURE 3**  
**AERIAL PHOTO SHOWING NEW BUILDINGS**  
**12402 Chinguacousy Road**



# **APPENDIX 1**

## **TRAFFIC DATA**

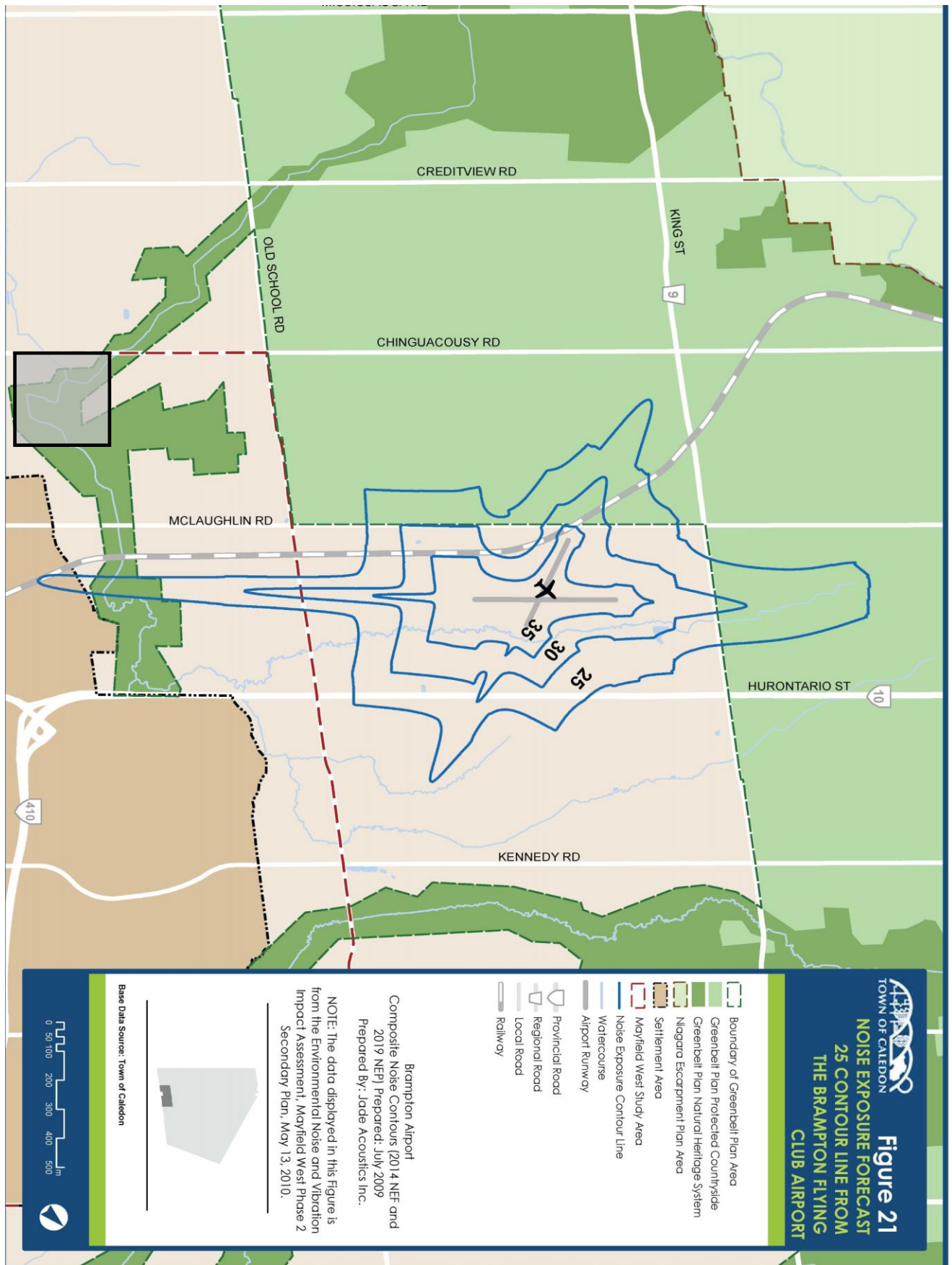


## 2041 Total Traffic – PM Peak Hour

Mayfield West Phase 2 Stage 2 Transportation Assessment  
180001

Figure 2.9





## **APPENDIX 2**

# **SOUND LEVEL CALCULATIONS**

STAMSON 5.0 SUMMARY REPORT Date: 04-09-2020 18:43:45  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: lsw.te Time Period: Day/Night 16/8 hours  
 Description: Lot 1, Side Wall

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

```
-----
Car traffic volume : 14904/1656 veh/TimePeriod *
Medium truck volume : 648/72 veh/TimePeriod *
Heavy truck volume : 648/72 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 4.00
Heavy Truck % of Total Volume : 4.00
Day (16 hrs) % of Total Volume : 90.00
-----
```

Data for Segment # 1: Chinguacousy (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 24.00 / 24.00 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
-----
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Chinguacousy ! 1.41 ! 66.54 ! 66.54
-----+-----+-----+-----
Total 66.54 dBA
-----
```

Result summary (night)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Chinguacousy ! 1.41 ! 60.01 ! 60.01
-----+-----+-----+-----
Total 60.01 dBA
-----
```

TOTAL Leq FROM ALL SOURCES (DAY): 66.54  
 (NIGHT): 60.01



STAMSON 5.0 SUMMARY REPORT Date: 10-09-2020 14:29:50  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: lrye.te Time Period: Day/Night 16/8 hours  
 Description: Lot 1, Rear Yard

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

-----  
 Car traffic volume : 14904/1656 veh/TimePeriod \*  
 Medium truck volume : 648/72 veh/TimePeriod \*  
 Heavy truck volume : 648/72 veh/TimePeriod \*  
 Posted speed limit : 70 km/h  
 Road gradient : 1 %  
 Road pavement : 1 (Typical asphalt or concrete)  
 \* Refers to calculated road volumes based on the following input:  
 24 hr Traffic Volume (AADT or SADT): 18000  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 4.00  
 Heavy Truck % of Total Volume : 4.00  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Chinguacousy (day/night)

-----  
 Angle1 Angle2 : -55.00 deg 60.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 26.00 / 26.00 m  
 Receiver height : 1.50 / 1.50 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : -55.00 deg Angle2 : 60.00 deg  
 Barrier height : 3.00 m  
 Barrier receiver distance : 4.50 / 4.50 m  
 Source elevation : 261.08 m  
 Receiver elevation : 260.77 m  
 Barrier elevation : 260.77 m

Road data, segment # 2: Chinguacousy (day/night)

-----  
 Car traffic volume : 14904/1656 veh/TimePeriod \*  
 Medium truck volume : 648/72 veh/TimePeriod \*  
 Heavy truck volume : 648/72 veh/TimePeriod \*  
 Posted speed limit : 70 km/h  
 Road gradient : 1 %  
 Road pavement : 1 (Typical asphalt or concrete)  
 \* Refers to calculated road volumes based on the following input:  
 24 hr Traffic Volume (AADT or SADT): 18000  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 4.00  
 Heavy Truck % of Total Volume : 4.00  
 Day (16 hrs) % of Total Volume : 90.00

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

-----  
 Angle1 Angle2 : 60.00 deg 90.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 26.00 / 26.00 m  
 Receiver height : 1.50 / 1.50 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : 60.00 deg Angle2 : 90.00 deg  
 Barrier height : 2.40 m  
 Barrier receiver distance : 4.50 / 4.50 m  
 Source elevation : 261.14 m  
 Receiver elevation : 260.77 m  
 Barrier elevation : 260.77 m

Result summary (day)

-----  

	! source !	Road !	Total
	! height !	Leq !	Leq
	! (m) !	(dBA) !	(dBA)
1.Chinguacousy	! 1.41 !	53.67 !	53.67
2.Chinguacousy	! 1.41 !	50.23 !	50.23
Total			55.29 dBA

 -----

STAMSON 5.0 SUMMARY REPORT Date: 10-09-2020 14:31:11  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: 28rye.te Time Period: Day/Night 16/8 hours  
 Description: Lot 28, Rear Yard

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

-----  
 Car traffic volume : 14904/1656 veh/TimePeriod \*  
 Medium truck volume : 648/72 veh/TimePeriod \*  
 Heavy truck volume : 648/72 veh/TimePeriod \*  
 Posted speed limit : 70 km/h  
 Road gradient : 1 %  
 Road pavement : 1 (Typical asphalt or concrete)  
 \* Refers to calculated road volumes based on the following input:  
 24 hr Traffic Volume (AADT or SADT): 18000  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 4.00  
 Heavy Truck % of Total Volume : 4.00  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Chinguacousy (day/night)

-----  
 Angle1 Angle2 : -70.00 deg 55.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 27.00 / 27.00 m  
 Receiver height : 1.50 / 1.50 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : -70.00 deg Angle2 : 55.00 deg  
 Barrier height : **3.00 m**  
 Barrier receiver distance : 4.50 / 4.50 m  
 Source elevation : 259.00 m  
 Receiver elevation : 259.50 m  
 Barrier elevation : 259.50 m

Road data, segment # 2: Chinguacousy (day/night)

-----  
 Car traffic volume : 14904/1656 veh/TimePeriod \*  
 Medium truck volume : 648/72 veh/TimePeriod \*  
 Heavy truck volume : 648/72 veh/TimePeriod \*  
 Posted speed limit : 70 km/h  
 Road gradient : 1 %  
 Road pavement : 1 (Typical asphalt or concrete)  
 \* Refers to calculated road volumes based on the following input:  
 24 hr Traffic Volume (AADT or SADT): 18000  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 4.00  
 Heavy Truck % of Total Volume : 4.00  
 Day (16 hrs) % of Total Volume : 90.00

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

-----  
 Angle1 Angle2 : -90.00 deg -70.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 27.00 / 27.00 m  
 Receiver height : 1.50 / 1.50 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : -90.00 deg Angle2 : -70.00 deg  
 Barrier height : **2.40 m**  
 Barrier receiver distance : 4.50 / 4.50 m  
 Source elevation : 259.00 m  
 Receiver elevation : 259.50 m  
 Barrier elevation : 259.50 m

Result summary (day)

-----  

	! source !	Road !	Total
	! height !	Leq !	Leq
	! (m) !	(dBA) !	(dBA)
1.Chinguacousy	! 1.41 !	53.28 !	53.28
2.Chinguacousy	! 1.41 !	47.40 !	47.40
Total			54.28 dBA

 -----

STAMSON 5.0 SUMMARY REPORT Date: 10-09-2020 14:31:41  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: 29rye.te Time Period: Day/Night 16/8 hours  
 Description: Lot 29, Rear Yard

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

-----  
 Car traffic volume : 14904/1656 veh/TimePeriod \*  
 Medium truck volume : 648/72 veh/TimePeriod \*  
 Heavy truck volume : 648/72 veh/TimePeriod \*  
 Posted speed limit : 70 km/h  
 Road gradient : 1 %  
 Road pavement : 1 (Typical asphalt or concrete)  
 \* Refers to calculated road volumes based on the following input:  
 24 hr Traffic Volume (AADT or SADT): 18000  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 4.00  
 Heavy Truck % of Total Volume : 4.00  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Chinguacousy (day/night)

-----  
 Angle1 Angle2 : -80.00 deg 80.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 27.00 / 27.00 m  
 Receiver height : 1.50 / 1.50 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : -80.00 deg Angle2 : 80.00 deg  
 Barrier height : **3.00 m**  
 Barrier receiver distance : 4.50 / 4.50 m  
 Source elevation : 258.50 m  
 Receiver elevation : 259.60 m  
 Barrier elevation : 259.60 m

Road data, segment # 2: Chinguacousy (day/night)

-----  
 Car traffic volume : 14904/1656 veh/TimePeriod \*  
 Medium truck volume : 648/72 veh/TimePeriod \*  
 Heavy truck volume : 648/72 veh/TimePeriod \*  
 Posted speed limit : 70 km/h  
 Road gradient : 1 %  
 Road pavement : 1 (Typical asphalt or concrete)  
 \* Refers to calculated road volumes based on the following input:  
 24 hr Traffic Volume (AADT or SADT): 18000  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 4.00  
 Heavy Truck % of Total Volume : 4.00  
 Day (16 hrs) % of Total Volume : 90.00

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

-----  
 Angle1 Angle2 : 80.00 deg 90.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 27.00 / 27.00 m  
 Receiver height : 1.50 / 1.50 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : 80.00 deg Angle2 : 90.00 deg  
 Barrier height : **2.40 m**  
 Barrier receiver distance : 4.50 / 4.50 m  
 Source elevation : 258.50 m  
 Receiver elevation : 259.85 m  
 Barrier elevation : 259.80 m

Result summary (day)

-----  

	! source !	Road !	Total
	! height !	Leq !	Leq
	! (m) !	(dBA) !	(dBA)
1.Chinguacousy	! 1.41 !	54.42 !	54.42
2.Chinguacousy	! 1.41 !	43.22 !	43.22
Total			54.74 dBA

 -----

STAMSON 5.0 SUMMARY REPORT Date: 04-09-2020 18:44:48  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: 32rw.te Time Period: Day/Night 16/8 hours  
 Description: Lot 32, Rear Wall

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

```

-----
Car traffic volume : 14904/1656 veh/TimePeriod *
Medium truck volume : 648/72 veh/TimePeriod *
Heavy truck volume : 648/72 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
  24 hr Traffic Volume (AADT or SADT): 18000
  Percentage of Annual Growth : 0.00
  Number of Years of Growth : 0.00
  Medium Truck % of Total Volume : 4.00
  Heavy Truck % of Total Volume : 4.00
  Day (16 hrs) % of Total Volume : 90.00
  
```

Data for Segment # 1: Chinguacousy (day/night)

```

-----
Angle1 Angle2 : -70.00 deg 80.00 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 : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
  
```

Result summary (day)

```

-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Chinguacousy ! 1.41 ! 61.94 ! 61.94
-----+-----+-----+-----
Total 61.94 dBA
  
```

Result summary (night)

```

-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Chinguacousy ! 1.41 ! 55.40 ! 55.40
-----+-----+-----+-----
Total 55.40 dBA
  
```

TOTAL Leq FROM ALL SOURCES (DAY): 61.94  
 (NIGHT): 55.40

STAMSON 5.0 SUMMARY REPORT Date: 10-09-2020 14:32:15  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: 32rye.te Time Period: Day/Night 16/8 hours  
 Description: Lot 32, Rear Yard

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

```
-----
Car traffic volume : 14904/1656 veh/TimePeriod *
Medium truck volume : 648/72 veh/TimePeriod *
Heavy truck volume : 648/72 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 4.00
Heavy Truck % of Total Volume : 4.00
Day (16 hrs) % of Total Volume : 90.00
-----
```

Data for Segment # 1: Chinguacousy (day/night)

```
-----
Angle1 Angle2 : -50.00 deg 80.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 43.00 / 43.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -50.00 deg Angle2 : 80.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 258.70 m
Receiver elevation : 259.55 m
Barrier elevation : 259.55 m
-----
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Chinguacousy ! 1.41 ! 55.37 ! 55.37
-----+-----+-----+-----
Total 55.37 dBA
-----
```

STAMSON 5.0 SUMMARY REPORT Date: 04-09-2020 18:45:49  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: bk87sw.te Time Period: Day/Night 16/8 hours  
 Description: Block 87, Side Wall

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

```
-----
Car traffic volume : 14904/1656 veh/TimePeriod *
Medium truck volume : 648/72 veh/TimePeriod *
Heavy truck volume : 648/72 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 4.00
Heavy Truck % of Total Volume : 4.00
Day (16 hrs) % of Total Volume : 90.00
-----
```

Data for Segment # 1: Chinguacousy (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 23.00 / 23.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
-----
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Chinguacousy ! 1.41 ! 67.17 ! 67.17
-----+-----+-----+-----
Total 67.17 dBA
-----
```

Result summary (night)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Chinguacousy ! 1.41 ! 60.63 ! 60.63
-----+-----+-----+-----
Total 60.63 dBA
-----
```

TOTAL Leq FROM ALL SOURCES (DAY): 67.17  
 (NIGHT): 60.63

STAMSON 5.0 SUMMARY REPORT Date: 10-09-2020 14:32:57  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: bk87rye.te Time Period: Day/Night 16/8 hours  
 Description: Block 87, Rear Yard

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

```
-----
Car traffic volume : 14904/1656 veh/TimePeriod *
Medium truck volume : 648/72 veh/TimePeriod *
Heavy truck volume : 648/72 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
24 hr Traffic Volume (AADT or SADT): 18000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 4.00
Heavy Truck % of Total Volume : 4.00
Day (16 hrs) % of Total Volume : 90.00
-----
```

Data for Segment # 1: Chinguacousy (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 55.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 26.00 / 26.00 m
Receiver height : 1.50 / 1.50 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 : 4.50 / 4.50 m
Source elevation : 258.74 m
Receiver elevation : 259.20 m
Barrier elevation : 259.20 m
-----
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Chinguacousy ! 1.41 ! 54.86 ! 54.86
-----+-----+-----+-----
Total 54.86 dBA
-----
```

STAMSON 5.0 SUMMARY REPORT Date: 10-09-2020 14:33:17  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: bk90rye.te Time Period: Day/Night 16/8 hours  
 Description: Block 90, Rear Yard

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

-----  
 Car traffic volume : 14904/1656 veh/TimePeriod \*  
 Medium truck volume : 648/72 veh/TimePeriod \*  
 Heavy truck volume : 648/72 veh/TimePeriod \*  
 Posted speed limit : 70 km/h  
 Road gradient : 1 %  
 Road pavement : 1 (Typical asphalt or concrete)  
 \* Refers to calculated road volumes based on the following input:  
 24 hr Traffic Volume (AADT or SADT): 18000  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 4.00  
 Heavy Truck % of Total Volume : 4.00  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Chinguacousy (day/night)

-----  
 Angle1 Angle2 : -60.00 deg 55.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 26.00 / 26.00 m  
 Receiver height : 1.50 / 1.50 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : -60.00 deg Angle2 : 55.00 deg  
 Barrier height : 3.00 m  
 Barrier receiver distance : 4.50 / 4.50 m  
 Source elevation : 259.71 m  
 Receiver elevation : 259.86 m  
 Barrier elevation : 259.86 m

Road data, segment # 2: Chinguacousy (day/night)

-----  
 Car traffic volume : 14904/1656 veh/TimePeriod \*  
 Medium truck volume : 648/72 veh/TimePeriod \*  
 Heavy truck volume : 648/72 veh/TimePeriod \*  
 Posted speed limit : 70 km/h  
 Road gradient : 1 %  
 Road pavement : 1 (Typical asphalt or concrete)  
 \* Refers to calculated road volumes based on the following input:  
 24 hr Traffic Volume (AADT or SADT): 18000  
 Percentage of Annual Growth : 0.00  
 Number of Years of Growth : 0.00  
 Medium Truck % of Total Volume : 4.00  
 Heavy Truck % of Total Volume : 4.00  
 Day (16 hrs) % of Total Volume : 90.00

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

-----  
 Angle1 Angle2 : -90.00 deg -60.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 26.00 / 26.00 m  
 Receiver height : 1.50 / 1.50 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : -90.00 deg Angle2 : -60.00 deg  
 Barrier height : 2.40 m  
 Barrier receiver distance : 4.50 / 4.50 m  
 Source elevation : 259.86 m  
 Receiver elevation : 259.86 m  
 Barrier elevation : 259.86 m

Result summary (day)

-----  

	! source !	Road !	Total
	! height !	Leq !	Leq
	! (m) !	(dBA) !	(dBA)
1.Chinguacousy	! 1.41 !	53.26 !	53.26
2.Chinguacousy	! 1.41 !	50.08 !	50.08
Total			54.97 dBA

 -----



STAMSON 5.0 SUMMARY REPORT Date: 04-09-2020 18:46:33  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT  
 Filename: bk97fw.te Time Period: Day/Night 16/8 hours  
 Description: Block 97, Front Wall

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

```
-----
Car traffic volume : 14904/1656 veh/TimePeriod *
Medium truck volume : 648/72 veh/TimePeriod *
Heavy truck volume : 648/72 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
  24 hr Traffic Volume (AADT or SADT): 18000
  Percentage of Annual Growth : 0.00
  Number of Years of Growth : 0.00
  Medium Truck % of Total Volume : 4.00
  Heavy Truck % of Total Volume : 4.00
  Day (16 hrs) % of Total Volume : 90.00
-----
```

Data for Segment # 1: Chinguacousy (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.00 / 22.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
-----
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Chinguacousy ! 1.41 ! 67.45 ! 67.45
-----+-----+-----+-----
Total 67.45 dBA
```

Result summary (night)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+-----
1.Chinguacousy ! 1.41 ! 60.92 ! 60.92
-----+-----+-----+-----
Total 60.92 dBA
```

TOTAL Leq FROM ALL SOURCES (DAY): 67.45  
 (NIGHT): 60.92

**Project No: Y2021**  
**Project: FP Mayfield West Caledon**  
**Date: September, 20**

**Receiver Table**

Name	Level Lr		Limit. Value		Height		Coordinates		
	Day	Night	Day	Night			X	Y	Z
	(dBA)	(dBA)	(dBA)	(dBA)	(m)		(m)	(m)	(m)
R1	45.8	43.2	50.0	45.0	7.50	r	274.94	350.26	267.20
R2	45.5	42.2	50.0	45.0	7.50	r	276.37	384.74	266.50
R3	46.2	44.0	50.0	45.0	7.50	r	276.17	416.52	266.00
R4	43.6	41.8	50.0	45.0	7.50	r	277.50	457.51	265.50
R5	45.0	42.9	50.0	45.0	7.50	r	298.83	346.86	267.50

**Sound Data**

Name	Type	Oktave Spectrum (dB)												Source
		Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
TruckMov	Lw		101.0	98.0	97.0	91.0	95.0	97.0	101.0	105.0	107.0	110.1	111.1	
TractorMov	Lw		100.0	101.0	99.0	97.0	96.0	94.0	92.0	90.0	85.0	99.5	106.5	
Dryer	Lw		100.0	102.0	104.0	105.0	106.0	105.0	103.0	101.0	100.0	110.2	112.9	
Conveyor	Lw		76.0	77.0	80.0	83.0	84.0	84.0	84.0	82.0	79.0	90.0	91.4	
Grainloading	Lw		82.0	83.0	81.0	81.0	82.0	79.0	78.0	76.0	74.0	85.2	89.9	
Tridling	Lw (c)		97.0	99.0	99.0	96.0	95.0	96.0	92.0	84.0	78.0	99.4	105.3	
Tractor	Lw (c)		92.0	94.0	95.0	93.0	94.0	90.0	89.0	87.0	85.0	96.5	101.6	

**Point Source Table**

Name	Result. PWL			Lw / Li		Operating Time			Freq.	Height		Coordinates		
	Day	Evening	Night	Type	Value	Day	Special	Night				X	Y	Z
	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)	(Hz)	(m)		(m)	(m)	(m)
GD1	110.0	110.0	110.0	Lw	Dryer					1.50	r	127.86	323.23	259.50
GD2	110.0	110.0	110.0	Lw	Dryer					1.50	r	122.36	332.51	259.50
GD3	110.0	110.0	110.0	Lw	Dryer					2.50	r	86.99	26.76	260.50
GD4	110.0	110.0	110.0	Lw	Dryer					2.50	r	94.38	20.36	260.50

**Line Source Table**

Name	Result. PWL			Result. PWL'			Lw / Li		Operating Time			Freq.	Moving Pt. Src			
	Day	Evening	Night	Day	Evening	Night	Type	Value	Day	Special	Night		Number			Speed
	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)	(Hz)	Day	Evening	Night	(km/h)
T1	95.8	-11.2	-11.2	74.1	-32.9	-32.9	PWL-Pt	TruckMov	30.00	0.00	0.00		5.0	0.0	0.0	20.0
T2	95.0	-12.0	-12.0	74.1	-32.9	-32.9	PWL-Pt	TruckMov	30.00	0.00	0.00		5.0	0.0	0.0	20.0
T3	88.8	-18.2	-18.2	74.1	-32.9	-32.9	PWL-Pt	TruckMov	30.00	0.00	0.00		5.0	0.0	0.0	20.0
T4	100.9	-13.1	-13.1	79.3	-34.7	-34.7	PWL-Pt	TruckMov	60.00	0.00	0.00		25.0	0.0	0.0	30.0
Tractor1	78.1	-24.9	-24.9	57.7	-45.3	-45.3	PWL-Pt	TractorMov	60.00	0.00	0.00		2.0	0.0	0.0	30.0
Tractor2	72.7	-30.3	-30.3	57.7	-45.3	-45.3	PWL-Pt	TractorMov	60.00	0.00	0.00		2.0	0.0	0.0	30.0
Conab	100.2	100.2	100.2	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con2	99.7	99.7	99.7	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con56	103.0	103.0	103.0	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con4	99.7	99.7	99.7	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con1	101.1	101.1	101.1	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con9	99.7	99.7	99.7	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con8	98.8	98.8	98.8	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con7	98.6	98.6	98.6	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					

Con10	100.9	100.9	100.9	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con11a	98.8	98.8	98.8	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con11b	98.7	98.7	98.7	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con11c	98.9	98.9	98.9	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con11d	99.6	99.6	99.6	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					
Con11e	99.5	99.5	99.5	90.0	90.0	90.0	Lw'	Conveyor	60.00	0.00	0.00					

## Area Source

Name	Result. PWL			Result. PWL"			Lw / Li		Operating Time			Freq.	Moving Pt. Src		
	Day	Evening	Night	Day	Evening	Night	Type	Value	Day	Special	Night		Number		
	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)	(Hz)	Day	Evening	Night
Trucks	99.4	99.4	99.4	67.1	67.1	67.1	Lw	Tridling	60.00	0.00	0.00				
Tractor	96.5	96.5	96.5	48.9	48.9	48.9	Lw	Tractor	60.00	0.00	0.00				
Truckidl	99.4	99.4	99.4	63.8	63.8	63.8	Lw	Tridling	30.00	0.00	0.00				

## Vert. Area Source

Name	Result. PWL			Result. PWL"			Lw / Li		Operating Time			Freq.
	Day	Evening	Night	Day	Evening	Night	Type	Value	Day	Special	Night	
	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)	(Hz)
Silo3	85.2	85.2	85.2	60.4	60.4	60.4	Lw	Grainloading	30.00	0.00	0.00	
Silo4	85.2	85.2	85.2	59.3	59.3	59.3	Lw	Grainloading	30.00	0.00	0.00	
Silo2	85.2	85.2	85.2	61.6	61.6	61.6	Lw	Grainloading	30.00	0.00	0.00	
Silo5	85.2	85.2	85.2	60.5	60.5	60.5	Lw	Grainloading	30.00	0.00	0.00	
Silo1	85.2	85.2	85.2	62.7	62.7	62.7	Lw	Grainloading	30.00	0.00	0.00	
Silo6	85.2	85.2	85.2	63.0	63.0	63.0	Lw	Grainloading	30.00	0.00	0.00	
Silo7	85.2	85.2	85.2	59.2	59.2	59.2	Lw	Grainloading	30.00	0.00	0.00	
Silo9	85.2	85.2	85.2	60.4	60.4	60.4	Lw	Grainloading	30.00	0.00	0.00	
Silo8	85.2	85.2	85.2	60.1	60.1	60.1	Lw	Grainloading	30.00	0.00	0.00	
Silo10	85.2	85.2	85.2	61.3	61.3	61.3	Lw	Grainloading	30.00	0.00	0.00	
Silo11	85.2	85.2	85.2	62.3	62.3	62.3	Lw	Grainloading	30.00	0.00	0.00	

## Result Table

Receiver	Limiting Value		rel. Axis		Lr w/o Noise Control		dL req.		Lr w/ Noise Control		Exceeding	
Name	Day	Night	Distance	Height	Day	Night	Day	Night	Day	Night	Day	Night
	dB(A)	dB(A)	m	m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
R1	50	45	63.63	6.70	<b>45.8</b>	<b>43.2</b>	-	-	0.0	0.0	-	-
R2	50	45	95.09	6.00	<b>45.5</b>	<b>42.2</b>	-	-	0.0	0.0	-	-
R3	50	45	122.77	5.50	<b>46.2</b>	<b>44.0</b>	-	-	0.0	0.0	-	-
R4	50	45	161.24	5.00	<b>43.6</b>	<b>41.8</b>	-	-	0.0	0.0	-	-
R5	50	45	76.00	7.00	<b>45.0</b>	<b>42.9</b>	-	-	0.0	0.0	-	-

**APPENDIX 3**

**SOUND LEVEL CRITERIA**

# MINISTRY OF THE ENVIRONMENT

## 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 <sub>eq</sub> (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 <sub>eq</sub> (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 <sub>eq</sub> exceeds 55 dBA Type A
	Greater than 60 dBA	N/A	Control measures (barriers) required to reduce the L <sub>eq</sub> below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible	Required if resultant L <sub>eq</sub> 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 <sub>eq</sub> (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	R	Less than or equal to 65 dBA	Building compliant with the Ontario Building Code
	O		
	A	Greater than 65 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	D		
	R	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
	A		
	I	Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	L		

**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	R	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
	O		
	A	Greater than 65 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	D		
	R	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
	A		
	I	Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	L		

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

### **TYPE B:**

*"Purchasers/tenants are advised that despite the inclusion of noise control features, sound levels due to increasing road traffic, may occasionally interfere with some activities of the occupants as the sound levels exceed the sound level limits of the Municipality's and the Ministry of Environment's noise criteria."*

*"That the acoustical barrier as installed shall be maintained, repaired or replaced by the owner. Any maintenance, repair or replacement shall be with the same material to the same standards and having the same colour and appearance of the original"*

### **TYPE C:**

*"This dwelling unit was fitted with a forced air heating system and the ducting, etc. sized to accommodate central air conditioning unit. Air conditioning can be installed at the owners' option and cost. (Note: locate air cooled condenser unit in a noise insensitive area and ensure that unit has a maximum ARI rating of 7.6 Bels for 3.5 tons or less)".*

### **TYPE D:**

*"This dwelling unit was fitted with a central air conditioning system in order to permit closing of windows for noise control. (Note: locate air cooled condenser unit in a noise insensitive area and ensure that unit has a maximum ARI rating of 7.6 Bels for 3.5 tons or less.)"*

### **TYPE E:**

*"Purchasers/tenants are advised that due to the proximity of existing agricultural lands, noise from these facilities may at times be audible"*



## **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
<b>STC Rating</b>	<b>38</b>	<b>40</b>	<b>43</b>	<b>46</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>54</b>	<b>55</b>	<b>57</b>	<b>58</b>	<b>62</b>

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.