REPORT

15441 MOUNT PLEASANT ROAD

CALEDON, ONTARIO

NOISE IMPACT STUDY

RWDI #2400605

April 23, 2024

SUBMITTED TO

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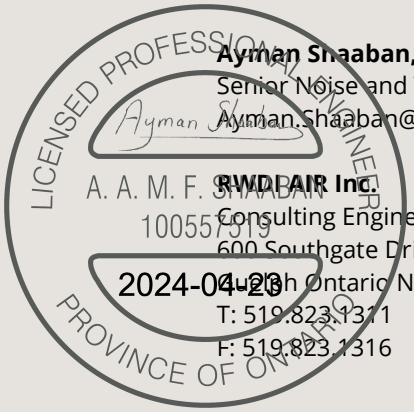

VERSION HISTORY

Index	Date	Description	Prepared by	Reviewed by
1	October 11, 2023	Plan of Subdivision Application Report	Colin Jakubec	Ayman Shaaban
2	April 23, 2024	Plan of Subdivision Application Report - Updated Site Plan	Caelan Weber-Martin	Ayman Shaaban

EXECUTIVE SUMMARY

RWDI was retained to prepare a Noise Impact Study for the proposed development located at 15441 Mount Pleasant Road in Caledon, Ontario. The development consists of five single-detached dwellings. This assessment was completed to support the Plan of Subdivision application as required by the Town of Caledon.

Mount Pleasant was the only identified roadway with potential to impact the development. After completing transportation noise assessment, no noise control measures were deemed necessary.

The potential noise impacts from stationary sources of sound were investigated. Based on publicly available information, zoning, and setback distances, no significant stationary sources of noise, with potential to impact the development, were identified within 1 km setback radius.

The influence of the development on itself and on its surroundings is expected to be dependent on mechanical equipment associated with the residential units. At this stage in design the mechanical design is not available and can therefore not be quantified. However, systems and designs are available that the sound on both the buildings themselves and their surroundings are feasible to meet the applicable criteria.

Based on the results of the analysis including implementation of the recommendations included with this assessment, the proposed development is feasible to meet the applicable sound and vibration criteria.

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1 INTRODUCTION

RWDI was retained to prepare a Noise Impact Study (NIS) for the proposed development located at 15441 Mount Pleasant Road in Caledon, Ontario. The development consists of eight single-detached dwellings. The context site plan is shown in **Figure 1**.

The development is exposed to noise from road traffic from Mount Pleasant Road to the south.

The development is further than 300 meters of any railway, based on the guidelines provided by the Railway Association of Canada (RAC), the development is outside the rail influence area. Noise and vibration from rail traffic has not been assessed further in this report.

A screening level review of nearby stationary sources was conducted. Based on publicly available information, available aerial photography and zoning, no industries or significant stationary sources of noise with the potential to impact the development were identified within a 1 km radius of the development. Thus, stationary sources of noise have not been further investigated in this report.

This assessment was completed to support the Plan of Subdivision application as required by the Town of Caledon. This assessment was based on design drawings dated April 12, 2024. A copy of the drawings is included in **Appendix A.**

2 APPLICABLE CRITERIA

Applicable criteria for transportation noise sources (road) are adopted from the Ontario Ministry of the Environment, Conservation and Parks (MECP) NPC-300 Environmental Noise Guideline (MOE, 2013), and Section 1.17 of the Town of Caledon development standards manual (Town of Caledon, 2019) with a summary of the applicable criteria included with **Appendix B**. This study was completed in accordance with Section 1.17 of the Development Standards Manual of the Town of Caledon (Town of Caledon, 2019).

The proposed development site would be characterized as a “Class 2 Area”, which is defined according to NPC-300 as an area which is dominated by sounds of human activity and traffic during the daytime (07:00 - 19:00) and defined by the environment sounds and infrequent human activity at night (19:00 - 07:00).

3 THE EFFECTS OF THE ENVIRONMENT ON THE PROPOSED DEVELOPMENT

3.1 Transportation Source Assessment

3.1.1 Road Traffic Volume Data

Annual Average Daily Traffic (AADT) volumes for Mount Pleasant Road, dated 2021, were obtained from the Town of Caledon. A typical 90%/10% daytime/nighttime split was applied for the road.

The Town of Caledon requires traffic data to be either ultimate traffic data or grown 20 years from the project completion date. Construction for the project is anticipated to begin in 2025, and thus traffic data has been projected to future horizon-year 2045, i.e. 20 years post construction. The annual growth rate was conservatively taken as 3%. Traffic speed is to be assessed at 10 km/h over the posted speed limit of 60 km/hr. A traffic breakdown of 5%/8% are assumed for medium/heavy trucks which is typical for regional roads based on the Environmental Guide for Noise by Ontario Ministry of Transportation (MTO, 2022).

A summary of the traffic data used is included in **Table 1** below with more detailed information included in **Appendix C**.

Table 1: Road Traffic Volumes

Roadway	2045 Future Traffic (AADT)	% Day/Night	Speed Limit (km/hr.)	% Trucks (Medium/Heavy)
Mount Pleasant Road	3055	90% /10%	60	5/8

Note(s):
1. Road is modelled at 70km/hr. 10 km/hr. above the posted speed limit.

3.1.2 Representative Receptors

The selection of receptors affected by transportation noise sources was based on the drawings reviewed for this assessment.

Facade receptors were investigated for each of the five single-detached houses. The west façade of House 1 was identified as the worst-case facade facing Mount pleasant Road as shown in **Figure 2**. Each house has a corresponding Outdoor Living Area (OLA) as illustrated on the site plans**.** OLAs would include outdoor areas intended and designed for the quiet enjoyment of the outdoor environment and which are readily accessible from the building. OLAs may include any common outdoor amenity spaces associated with a multi-unit residential development (e.g. courtyards, roof-top terraces), and/or private backyards and terraces with a minimum depth of 4m provided they are the only outdoor living area for the occupant.

Daytime sound levels were assessed at the following identified OLAs:

- OLA_01: Outdoor Living Area of House 1
- OLA_02: Outdoor Living Area of House 2
- OLA_03: Outdoor Living Area of House 3
- OLA_04: Outdoor Living Area of House 4
- OLA_05: Outdoor Living Area of House 5

The OLAs are indicated in **Figure 2**. OLA_01 and House 1 are closest to Mount Pleasant Road and was modelled herein as a worst-case scenario for traffic noise impacts.

3.1.3 Transportation Source Assessment–- Analysis and Results

The sound levels due to the road traffic were predicted using ORNAMENT (MOE, 1989) as implemented in the STAMSON software package. The STAMSON modelling files are provided in **Appendix C**. The sound level on the worst-case façade is summarized in **Table 2**. Sound levels at other facades are either equal to or lower than the presented sound levels below.

Table 2: Predicted Ground Transportation Source Sound Levels – Plane of Window

Building	Façade	Road	
		Day L_{EQ}, 16hr	Night L_{EQ}, 8hr
House 1	West	51 dBA	45 dBA

Based on the criteria outlined in **Appendix B**, no warning clauses or noise control measures related to road traffic are required for any lots within the development.

To assess the effect of transportation noise on the qualifying OLAs for the development, predicted worst-case sound level results are summarized in **Table 3.**

Table 3: Transportation Sound Levels in Outdoor Living Areas (OLAs)

Receptor	Description	Daytime L_{EQ}, 16hr
OLA_01	Outdoor Living Area of House 1	51 dBA

The predicted sound level meets the NPC-300 criterion for OLAs. Noise Control Measures for OLAs are not required for any lots within the proposed development.

4 THE EFFECTS OF THE PROPOSED DEVELOPMENT ON ITS SURROUNDINGS AND ON ITSELF

The influence of the development on itself and on its surroundings will be dependent on mechanical equipment associated with the residential units. At this stage in design the mechanical design is not available and can therefore not be quantified. On-site stationary sources for the dwellings are expected to mainly consist of HVAC related equipment. Systems and designs are available that the sound on both the buildings themselves and their surroundings are feasible to meet the applicable criteria. We recommend that the influence of the site's mechanical equipment be evaluated during detailed design to ensure the onsite and offsite impacts achieve the applicable sound level criteria.

5 CONCLUSIONS

RWDI was retained to prepare a NIS for the proposed development located at 15441 Mount Pleasant Road in Caledon, Ontario.

Mount Pleasant was the only identified roadway with potential to impact the development. After completing transportation noise assessment, no noise control measures were deemed necessary.

The potential noise impacts from stationary sources of sound were investigated. Based on publicly available information, zoning, and setback distances, no significant stationary sources of noise, with potential to impact the development, were identified within 1 km setback radius.

The influence of the development on itself and on its surroundings is expected to be dependent on mechanical equipment associated with the residential units. At this stage in design the mechanical design is not available and can therefore not be quantified. However, systems and designs are available that the sound on both the buildings themselves and their surroundings are feasible to meet the applicable criteria.

Based on the results of the analysis including implementation of the recommendations included with this assessment, the proposed development is feasible to meet the applicable sound and vibration criteria.

6 REFERENCES

1. Ontario Ministry of the Environment (MOE), August 2013, Publication NPC-300, Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning (MOE, 2013).
2. Ontario Ministry of the Environment (MOE), 1989, ORNAMENT Ontario Road Noise Analysis Method for Environment and Transportation, Technical Publication (MOE, 1989)
3. Ontario Ministry of Transportation (MTO), 2022, Environmental Guide for Noise, (MTO, 2006)
4. Township of Caledon (Town of Caledon),2019, Development Standards Manual, (Town of Caledon, 2019)

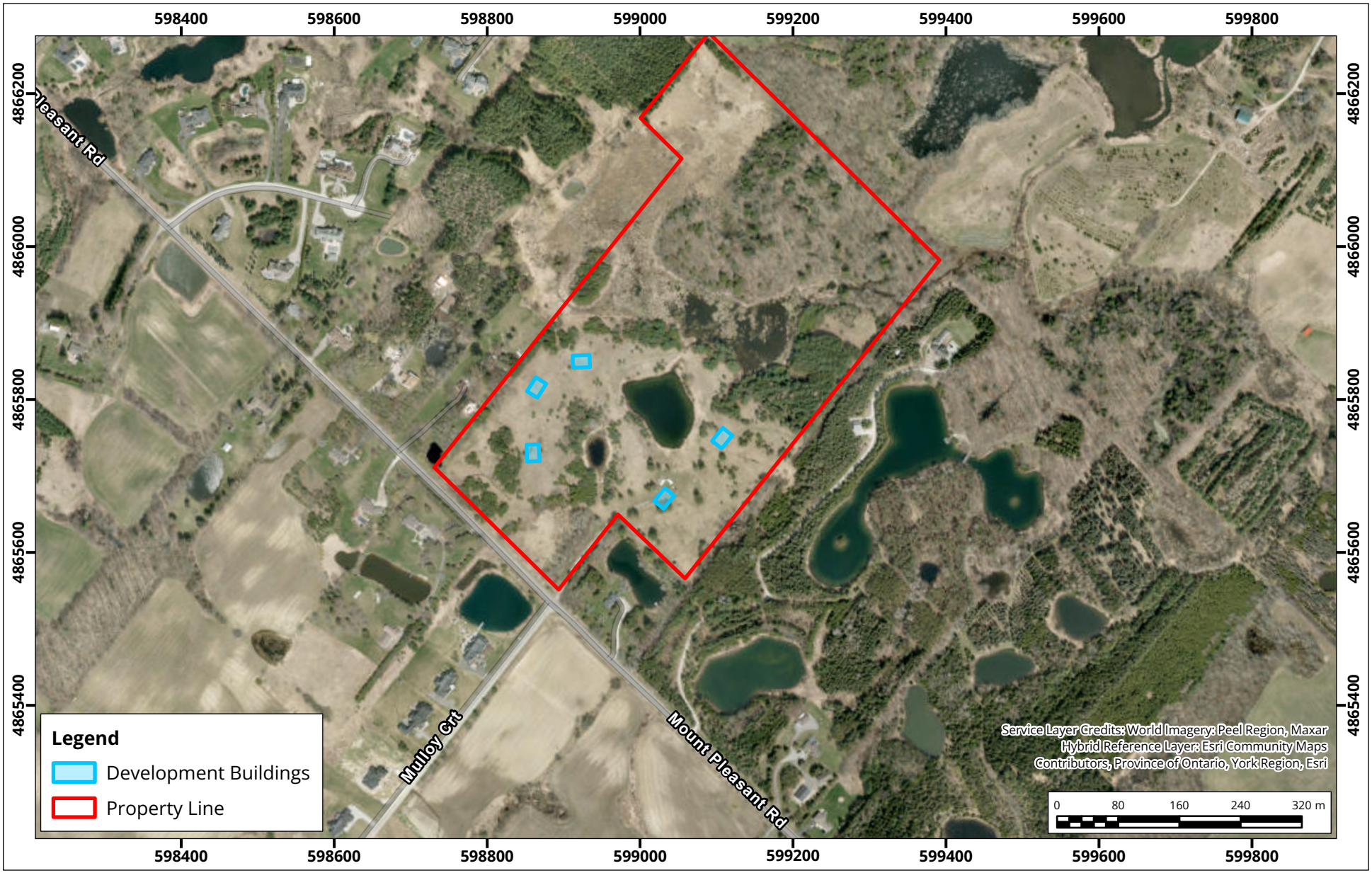
STATEMENT OF LIMITATIONS

This report entitled "15441 Mount Pleasant Road – Noise Impact Study", dated April 23, 2024, was prepared by RWDI Air Inc. ("RWDI") for 2818963 Ontario Inc. ("Client"). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein ("Project"). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared. Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

FIGURES



Site Context Plan

True North

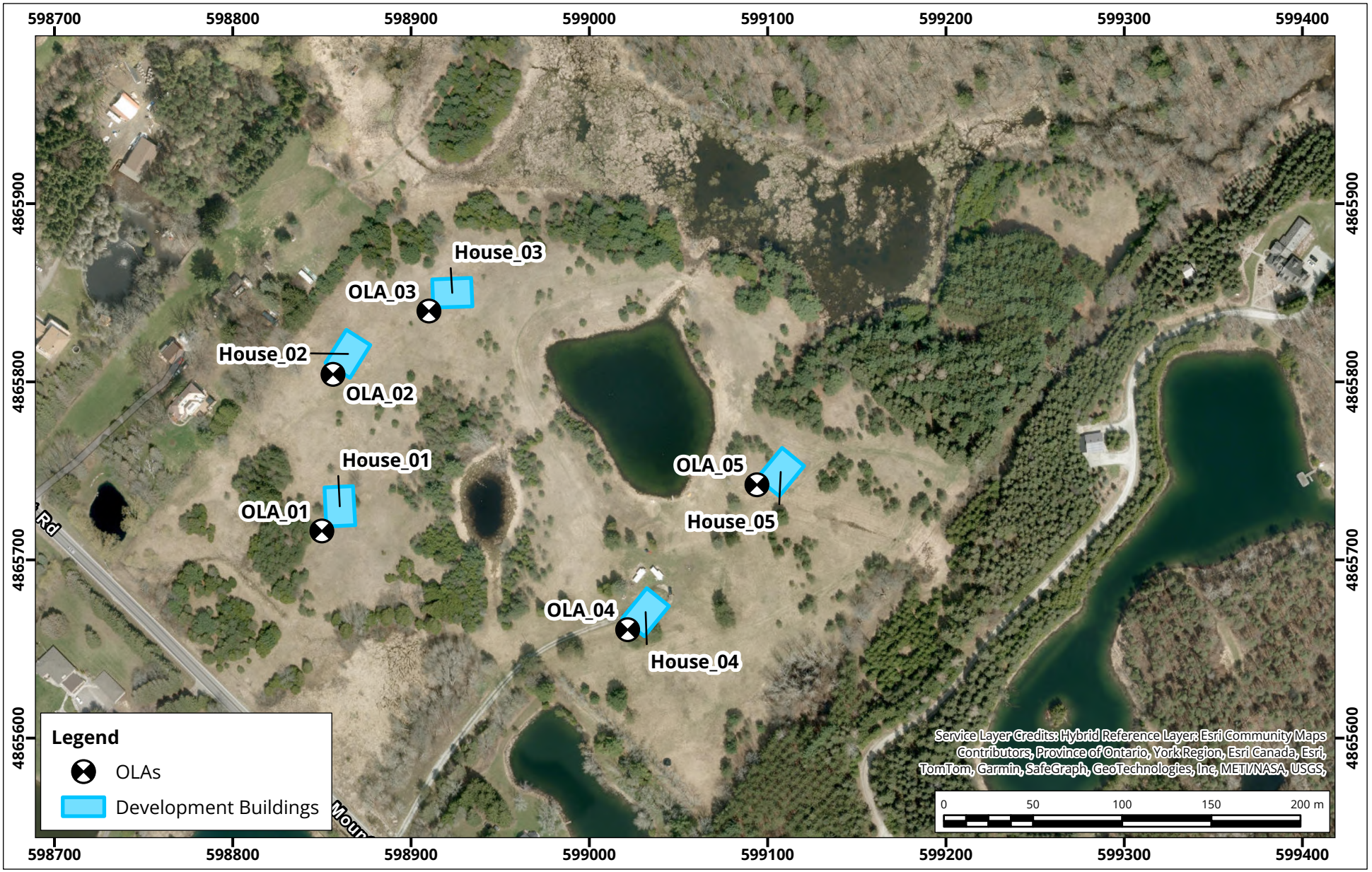
Drawn by: CWM	Figure:	1
Approx. Scale:	1:7,000	
Date Revised:	Apr 19, 2024	

Map Projection: NAD 1983 UTM Zone 17N

15441 Mount Pleasant Road- Caledon, Ontario

Project #: 2400605

Map Document: \\rwdlgroup\guelph\AM_Jobs\2024\2400605\03WorkItems\06EnvironmentalNoise\Figures\OntarioLUP.aprx



Outdoor Living Areas (OLAs)

Location of Common Outdoor Amenity Areas

Map Projection: NAD 1983 UTM Zone 17N

15441 Mount Pleasant Road- Caledon, Ontario

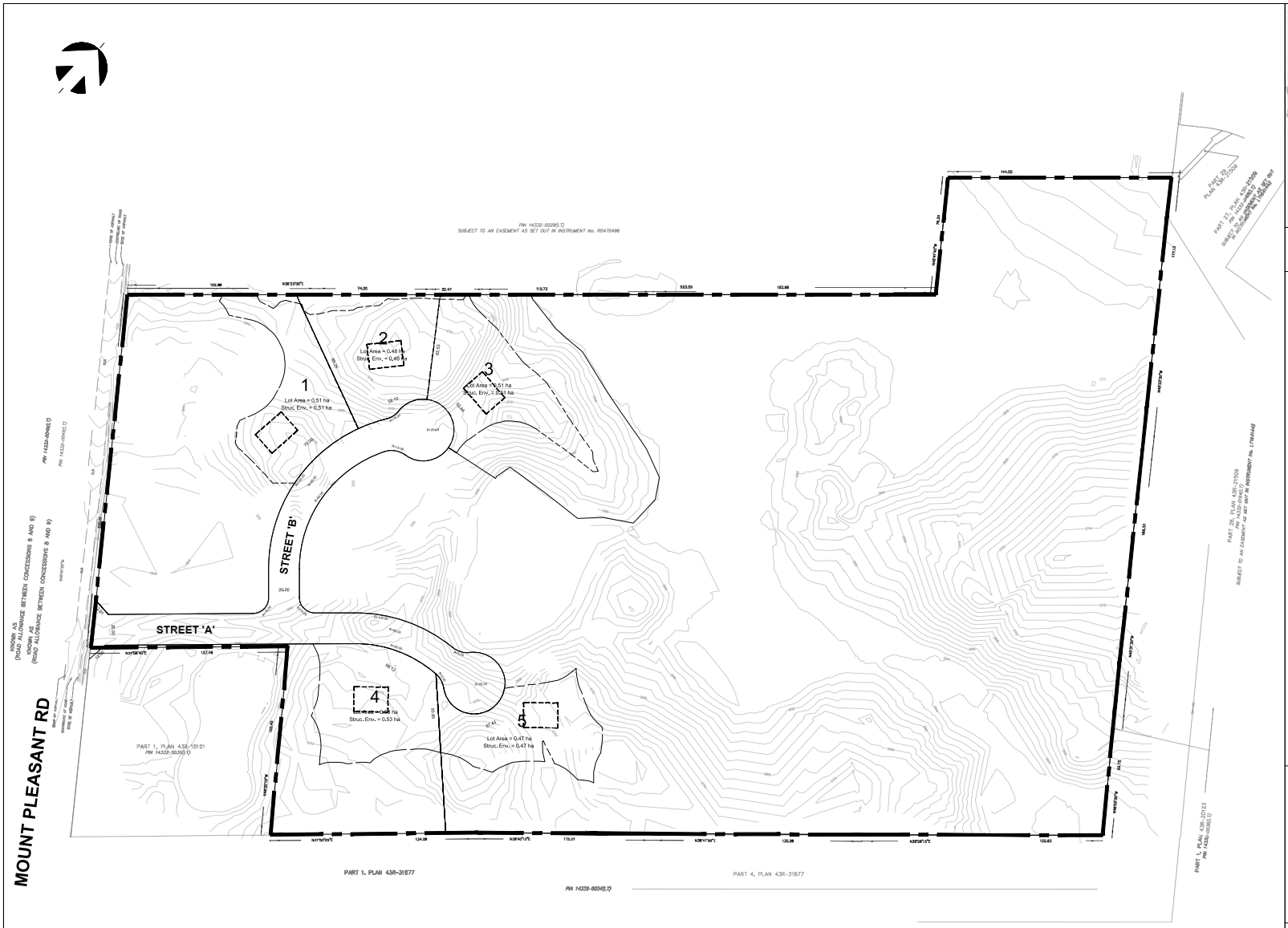
True North

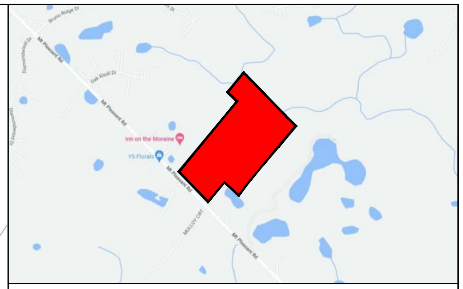
Project #: 2400605

Drawn by:CWM	Figure:	2
Approx. Scale:	1:3,000	
Date Revised:	Apr 19, 2024	

Map Document: \\rwdgroup\guelph\AM_Jobs\2024\2400605\03WorkItems\06EnvironmentalNoise\Figures\OntarioLUP.aprx

APPENDIX A





KEY PLAN — Subject Property

LEGEND

- Subject Property
- Building Envelope
- Lot Lines
- Structural Envelope

LOT NUMBER	LOT AREA	STRUCTURAL ENVELOPE	BUILDING ENVELOPE	LOT AREA INCLUDING ENVIRONMENTAL FEATURES
Lot 1	0.51 ha	0.51 ha	0.036 ha	2.58 ha
Lot 2	0.48 ha	0.48 ha	0.036 ha	0.55 ha
Lot 3	0.51 ha	0.51 ha	0.036 ha	1.37 ha
Lot 4	0.53 ha	0.53 ha	0.036 ha	1.27 ha
Lot 5	0.47 ha	0.47 ha	0.036 ha	16.05 ha
TOTAL	2.50 ha	2.50 ha	0.18 ha	21.82 ha

AREA STATISTICS

Developable Area	2.90
Non-Developable Area	19.96
EZ1	19.68
EZ2	0.32
TOTAL	22.86

NOTES

- All measurements are in meters.
- Structural envelopes to generally be confined to areas with slopes of 10% or less (areas with 11-15% slope and above may be considered in certain instances). (Secondary Plan Policy 7.1.9.11)
- All elevations refer to Geodetic Datum.
- Candidate Environmental Zones 1 & 2 information referenced from Sumac Environmental Consultants Ltd, "Figure 3: Constraints to Develop" Map. Dated 04/06/2022.
- Base Survey information was referenced from Surveyor's Real Property Report - Part 1 - Plan Showing - PART 1 - Plan Showing PART 1 OF LOT 18 CONCESSION 9, Geographic Township of Albion, Town of Caledon - Regional Municipality of Peel from Guido Papa Surveying - A division of J.D. Barnes Limited, Dated May 13, 2022.
- On this plan, the lot area shown excludes any land that falls under the EZ 1 and EZ 2 environmental constraints.

PART 1 OF LOT 18
CONCESSION 9
GEOGRPAHIC TOWNSHIP OF ALBION
NOW IN THE
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

DESIGN PLAN SERVICES INC.
Town Planning Consultants

900 The East Mall, Suite 300
Toronto, ON M9B 6K2
Telephone: 416.626.5445
www.designplan.ca

Scale	Date	Drawing Number	Rev.	Drawn
1:1200	April 12, 2024	21303-16E		JD

DRAFT FOR DISCUSSION PURPOSES ONLY

APPENDIX B

CRITERIA

Transportation Sources

Guidance from the Ontario Ministry of the Environment, Conservation and Parks (MECP) NPC-300 Environmental Noise Guideline was used to assess environmental noise generated by transportation-related sources. There are three aspects to consider, which include the following:

i. Transportation source sound levels in indoor living areas (living rooms and sleeping quarters), which determines building façade elements (windows, exterior walls, doors) sound insulation design recommendations.
ii. Transportation source sound levels at the plane of the window, which determines air-conditioning and ventilation system recommendations and associated warning clauses which inform the future occupants that windows and doors must be closed in order to meet the indoor sound level criteria.
iii. Transportation source sound levels in Outdoor Living Areas (OLAs), which determines OLA noise mitigation and related warning clause recommendations.

Road and Rail

Indoor Sound Level Criteria

For assessing sound originating from transportation sources, NPC-300 defines sound level criteria as summarized in **Table 1** for indoor areas of sensitive uses. The specified values are maximum sound levels and apply to the indicated indoor spaces with the windows and doors closed.

Table 1: Indoor Sound Level Criteria for Road and Rail Sources

Type of Space	Source	Sound Level Criteria (Indoors)	
		Daytime $L_{eq,16\text{-}hr}$ 07:00h – 23:00h	Nighttime $L_{eq,8\text{-}hr}$ 23:00h – 07:00h
Living Quarters Examples: Living, dining and den areas of residences, hospitals, nursing homes, schools and daycare centres	**Road**	45 dBA	
	Rail	40 dBA	
Sleeping Quarters	**Road**	45 dBA	40 dBA
	Rail	40 dBA	35 dBA

NPC-300 also provides guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The guideline sound level criteria presented in **Table 2** are provided to inform good-practice design objectives.

Table 2: Supplementary Indoor Sound Level Criteria for Road and Rail Sources

Type of Space	Source	Sound Level Criteria (Indoors)	
		Daytime $L_{eq,16\text{-}hr}$ 07:00h – 23:00h	Nighttime $L_{eq,8\text{-}hr}$ 23:00h – 07:00h
General offices, reception areas, retail stores, etc.	**Road**	50 dBA	-
	Rail	45 dBA	-
Theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	**Road**	45 dBA	-
	Rail	40 dBA	-
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	**Road**	-	40 dBA
	Rail	-	35 dBA
Sleeping quarters of hotels/motels	**Road**	-	45 dBA
	Rail	-	40 dBA

Outdoor Living Areas (OLAs)

Outdoor Living Areas (OLAs) would include outdoor areas intended and designed for the quiet enjoyment of the outdoor environment and which are readily accessible from the building.

OLAs may include any common outdoor amenity spaces associated with a multi-unit residential development (e.g. courtyards, roof-top terraces), and/or private backyards and terraces with a minimum depth of 4m provided they are the only outdoor living area for the occupant. The sound level criteria for outdoor living areas is summarized in **Table 3**.

Table 3: Sound Level Criteria – Outdoor Living Area

Assessment Location	Sound Level Criteria (Outdoors)	
	Daytime $L_{eq,16\text{-}hr}$ 07:00h – 23:00h	Nighttime $L_{eq,8\text{-}hr}$ 23:00h – 07:00h
Outdoor Living Area (OLA) (Combined Road and Rail)	55 dBA	-

Outdoor and Plane of Window Sound Levels

In addition to the sound level criteria, noise control measures and requirements for ventilation and warning clauses requirements are recommended for residential land-uses based on predicted transportation source sound levels incident in the plane of window at bedrooms and living/dining rooms, and/or at outdoor living areas. These recommendations are summarized in **Table 4** below.

Table 4: Ventilation, Building Component, and Warning Clauses Recommendations for Road/Rail Sources

Assessment Location	Transportation Sound Level (Outdoors)		Recommendations
	Daytime $L_{eq,16\text{-}hr}$ 07:00h – 23:00h	Nighttime $L_{eq,8\text{-}hr}$ 23:00h – 07:00h	
Plane of Window (Road)	> 65 dBA	> 60 dBA	Installation of air conditioning to allow windows to remained closed. The sound insulation performance of building components must be specified and designed to meet the indoor sound level criteria. Warning clause "Type D" is recommended.
	> 55 dBA	> 50 dBA	Applicable for low and medium density development: Forced-air ventilation system to allow for the future installation of air-conditioning. Warning clause "Type C" is recommended. Applicable for high density development: Air conditioning to allow windows to remained closed. Warning clause "Type D" is recommended.
Plane of Window (Rail [1, 2])	> 60 dBA	> 55 dBA	The acoustical performance of building façade components should be specified such that the indoor sound level limits are predicted to be achieved. Warning clause "Type D" is recommended.
	> 60 dBA ($L_{eq,\ 24hr}$) and < 100m from tracks		Exterior walls consisting of a brick veneer or masonry equivalent for the first row of dwellings. Warning clause "Type D" is recommended.
Outdoor Living Area (Combined Road and Rail [3])	≤ 60 dBA > 55 dBA	-	If sound levels are predicted to exceed 55 dBA, but are less than 60 dBA, noise controls may be applied to reduce the sound level to 55 dBA. If noise control measures are not provided, a warning clause "Type A" is recommended.
	> 60 dBA	-	Noise controls (barriers) should be implemented to meet the 55 dBA criterion. If mitigation is not feasible to meet the 55 dBA criterion for technical, economic or administrative reasons, an exceedance of 5 dB may be acceptable (to a maximum sound level of 60 dBA). In this case a warning clause "Type B" would be recommended.

Note(s):

1. Whistle noise is included (if applicable) in the determination of the sound level at the plane of window.
2. Some railway companies (e.g. CN, CP) may require that the exterior walls include a brick veneer or masonry equivalent for the façade facing the railway line, regardless of the sound level.
3. Whistle noise is not included in the determination of the sound level at the OLA.

Rail Layover Sites

NPC-300 provides a sound level limit for rail layover sites to be the higher of the background sound level or 55 dBA $L_{eq,1\text{-}hr,}$ for any one-hour period.

Rail Vibration Criteria

An assessment of rail vibration is generally recommended for developments within 75m of a rail corridor or rail yard, and adjacent to or within a setback of 15m of a transit (subway or light-rail) rail line.

The generally accepted vibration criterion for sensitive land-uses is the threshold of perception for human exposure to vibration, being a vibration velocity level of 0.14 mm/s RMS in any one-third octave band centre frequency in the range of 4 Hz to 200 Hz.

This vibration criterion is based on a one-second exponential time-averaged maximum hold root-mean-square (RMS) vibration velocity level and is consistent with the Railway Associations of Canada (RAC, 2013) guideline, the U.S. Federal Transit Authority (FTA, 2018) criterion for residential land-uses, the Toronto Transit Commission (TTC) guidelines for the assessment of potential vibration impact of future expansion (MOEE/TTC, 1993).

Aircraft

Land-use compatibility in the vicinity of airports is addressed in Ministry of the Environment, Conservation, and Parks (MECP) Guideline NPC-300 (MOE, 2013). The guideline provides recommendations for ventilation, and noise control for different Noise Exposure Forecast (NEF) values, which would be based on NEF contour maps available from the airport authority. The NEF values can be expressed as $L_{A,eq,24hr}$ sound levels by using the expression NEF = $L_{Aeq,24hr}$ -32 dBA.

Table 5: Indoor Sound Level Criteria for Aircraft Sources

Assessment Location	Indoor Sound Level Criteria NEF ($L_{eq,\ 24hr}$) [1]
Living/dining/den areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, etc.	NEF- 5 (37 dBA)
Sleeping quarters	NEF-0 (32 dBA)

NPC-300 also provides guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The guideline sound level criteria presented in **Table 6** are provided to inform good-practice design objectives.

Table 6: Supplementary Indoor Sound Level Criteria for Aircraft Sources

Assessment Location	Indoor Sound Level Criteria[1]
General offices, reception areas, retail stores, etc.	NEF-15 (47 dBA)
Individual or semi-private offices, conference rooms, etc.	NEF-10 (42 dBA)
Sleeping quarters of hotels/motels, theatres, libraries, places of worship, etc.	NEF-5 (37 dBA)

Table 7: NPC-300 Sound Level Criteria for Aircraft (Outdoors)

Assessment Location	Outdoor Sound Level Criteria[1]
Outdoor areas, including OLA	NEF-30 (62 dBA)

Table 8: Ventilation, Building Component, and Warning Clauses Recommendations for Aircraft Sources

Assessment Location	Aircraft Sound Level	NPC-300 Requirements
	NEF ($L_{EQ,24\text{-}hr}$)	
Outdoors	≥NEF 30	Air conditioning to allow windows to remained closed. The sound insulation performance of building components must be specified and designed to meet the indoor sound level criteria. Warning clauses "Type D" and "Type B" are recommended.
	< NEF 30 ≥ NEF 25	The sound insulation performance of building components must be specified and designed to meet the indoor sound level criteria. Applicable for low and medium density development: Forced-air ventilation system to allow for the future installation of air-conditioning. Warning clause "Type C" is recommended. Applicable for high density development: Air conditioning to allow windows to remained closed. Warning clause "Type D" is recommended.
	< NEF 25	Further assessment not required

Stationary Sources

NPC-300 Sound Level Criteria – Stationary Sources

Guidance from the MECP NPC-300 Environmental Noise Guideline is used to assess environmental noise generated by stationary sources, for example industrial and commercial facilities.

Noise from stationary sources is treated differently from transportation sources and requires sound levels be assessed for the predictable worst-case one-hour average sound level (L_{eq}) for each period of the day. For assessing sound originating from stationary sources, NPC-300 defines sound level criteria for two types of Points of Reception (PORs): outdoor and plane of window.

The assessment criteria for all PORs is the higher of either the exclusion limit per NPC-300 or the minimum background sound level that occurs or is likely to occur at a POR. The applicable exclusion limit is determined based on the level of urbanization or "Class" of the area. The NPC-300 exclusion limits for continuously operating stationary sources are summarized in **Table 9**.

Table 9: NPC-300 Exclusion Limits – Continuous and Quasi-Steady Impulsive Stationary Sources (LAeq-1hr)

Time Period	Class 1 Area		Class 2 Area		Class 3 Area		Class 4 Area	
	Outdoor	Plane of Window	Outdoor	Plane of Window	Outdoor	Plane of Window	Outdoor	Plane of Window
Daytime 0700-1900h	50 dBA	50 dBA	50 dBA	50 dBA	45 dBA	45 dBA	55 dBA	60 dBA
Evening 1900-2300h	50 dBA	50 dBA	45 dBA	50 dBA	40 dBA	40 dBA	55 dBA	60 dBA
Nighttime 2300-0700h	--	45 dBA	--	45 dBA	--	40 dBA	--	55 dBA

Note(s):

1. The applicable sound level criterion is the background sound level or the exclusion limit, whichever is higher.
2. Class 1, 2 and 3 sound level criteria apply to a window that is assumed to be open.
3. Class 4 area criteria apply to a window that is assumed closed. Class 4 area requires formal designation by the land-use planning authority.
4. Sound level criteria for emergency backup equipment (e.g. generators) operating in non-emergency situations such as testing or maintenance are 5 dB greater than the applicable sound level criteria for stationary sources.

For impulsive sound, other than quasi-steady impulsive sound, from a stationary source, the sound level criteria at a POR is expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}), and is summarized in **Table 10**.

Table 10: NPC-300 Exclusion Limits – Impulsive Stationary Sources (L_{LM})

Time Period	Number of Impulses in Period of One-Hour	Class 1 and 2 Areas		Class 3 Areas		Class 4 Areas	
		Outdoor	Plane of Window	Outdoor	Plane of Window	Outdoor	Plane of Window
Daytime (0700-2300h)	9 or more	50 dBAI	50 dBAI	45 dBAI	45 dBAI	55 dBAI	60 dBAI
Nighttime (2300–0700h)		-	45 dBAI	-	40 dBAI	-	55 dBAI
Daytime (0700-2300h)	7 to 8	55 dBAI	55 dBAI	50 dBAI	50 dBAI	60dBAI	65 dBAI
Nighttime (2300–0700h)		-	50 dBAI	-	45 dBAI	-	60 dBAI
Daytime (0700-2300h)	5 to 6	60 dBAI	60 dBAI	55 dBAI	55 dBAI	65 dBAI	70 dBAI
Nighttime (2300–0700h)		-	55 dBAI	-	50 dBAI	-	65 dBAI
Daytime (0700-2300h)	4	65 dBAI	65 dBAI	60 dBAI	60 dBAI	70 dBAI	75 dBAI
Nighttime (2300–0700h)		-	60 dBAI	-	55 dBAI	-	70 dBAI
Daytime (0700-2300h)	3	70 dBAI	70 dBAI	65 dBAI	65 dBAI	75 dBAI	80 dBAI
Nighttime (2300–0700h)		-	65 dBAI	-	60 dBAI	-	75 dBAI
Daytime (0700-2300h)	2	75 dBAI	75 dBAI	70 dBAI	70 dBAI	80 dBAI	85 dBAI
Nighttime (2300–0700h)		-	70 dBAI	-	65 dBAI	-	80 dBAI
Daytime (0700-2300h)	1	80 dBAI	80 dBAI	75 dBAI	75 dBAI	85 dBAI	90 dBAI
Nighttime (2300–0700h)		-	75 dBAI	-	70 dBAI	-	85 dBAI

Note(s):

1. The applicable sound level criterion is the background sound level or the exclusion limit, whichever is higher.

D-Series Guidelines

The MECP D-series guidelines (MOE, 1995) provide direction for land use planning to maximize compatibility of industrial uses with adjacent land uses. The goal of Guideline D-6 is to minimize encroachment of sensitive land uses on industrial facilities and vice versa, in order to address potential incompatibility due to adverse effects such as noise, odour and dust.

For each class of industry, the guideline provides an estimate of potential influence area and states that this influence area shall be used in the absence of the recommended technical studies. Guideline D-6 also recommends a minimum separation distance between each class of industry and sensitive land uses (see **Table 11**). Section 4.10 of D-6 identifies exceptional circumstances with respect to redevelopment, infill and mixed-use areas. In these cases, the guideline suggests that separation distances at, or less than, the recommended minimum separation distance may be acceptable if a justifying impact assessment is provided.

Table 11: Summary of Guideline D-6

Industry Class	Definition	Potential Influence Area	Recommended Minimum Separation Distance (property line to property line)
Class I	Small scale, self-contained, daytime only, infrequent heavy vehicle movements, no outside storage.	70 m	20 m
Class II	Medium scale, outdoor storage of wastes or materials, shift operations and frequent heavy equipment movement during the daytime.	300 m	70 m
Class III	Large scale, outdoor storage of raw and finished products, large production volume, continuous movement of products and employees during daily shift operations.	1000 m	300 m

Guideline D-6 provides criteria for classifying industrial land uses, based on their outputs, scale of operations, processes, schedule and intensity of operations. **Table 12** provides the classification criteria and examples.

Table 12: Guideline D-6 Industrial Categorization Criteria

Criteria	Class I	Class II	Class III
Outputs	• Sound not audible off property • Infrequent dust and/ or odour emissions and not intense • No ground-borne vibration	• Sound occasionally audible off property • Frequent dust and/ or odour emissions and occasionally intense • Possible ground-borne vibration	• Sound frequently audible off property • Persistent and intense dust and/ or odour emissions • Frequent ground-borne vibration
Scale	• No outside storage • Small scale plant or scale is irrelevant in relation to all other criteria	• Outside storage permitted • Medium level of production	• Outside storage of raw and finished products • Large production levels
Process	• Self-contained plant or building which produces / stores a packaged product • Low probability of fugitive emissions	• Open process • Periodic outputs of minor annoyance • Low probability of fugitive emissions	• Open process • Frequent outputs of major annoyances • High probability of fugitive emissions
Operation / Intensity	• Daytime operations only • Infrequent movement of products and/or heavy trucks	• Shift operations permitted • Frequent movements of products and/or heavy trucks with majority of movements during daytime hours	• Continuous movement of products and employees • Daily shift operations permitted
Examples	• Electronics Manufacturing • Furniture refinishing • Beverage bottling • Auto parts • Packaging services • Dairy distribution • Laundry and linen supply	• Magazine printing • Paint spray booths • Metal command • Electrical production • Dairy product manufacturing • Feed packing plant	• Paint and varnish manufacturing • Organic chemicals manufacturing • Breweries • Solvent recovery plant • Soap manufacturing • Metal manufacturing

1.15. Canada Post

The number and locations of community mail boxes must be approved by Canada Post and the Town. Design and layout must comply with Canada Post standards for postal facilities. The permanent and temporary location shall be clearly shown on the approved engineering drawings. Warning clauses are required in the purchase and sale agreements for lots adjacent to Canada Post facilities.

1.16. Fencing

Fencing shall be in accordance with the most recent requirements and specifications of the Town of Caledon and series 600 drawings.

Note:

For Highway Fencing installation, use (O.P.S.D. 971.101).

Fencing is required:

- Where public property abuts private property;
- Along public walkways;
- Parks, SWM Facilities, Open Space Blocks and Reforestation Blocks;
- Acoustic fencing per approved acoustic report;
- Fencing of property lines along non-developed bordering properties must be done with a minimum of Post and Wire Fence Highway Fence. To allow independent future upgrading of the fence, the wood posts must be placed at every rear lot corner to allow individuals to remove the Highway Fence and not disturb the neighbouring fence, “T” bars must be placed at a spacing in accordance between O.P.S.D. 971.101;
- Fencing along property lines of active agricultural properties must be done with a minimum Town standard chain link fence;
- As designated by the Town.

The minimum requirement for residential chain link fence is 1.5m high and screen fencing is 1.8m. Existing and proposed fencing is to be shown on the Above Ground Engineering Drawings.

1.17. Noise Attenuation Measures

Noise Attenuation Measures are required in site specific situations to mitigate existing or anticipated noise levels which exceed the MECP Criteria for acceptable noise levels for specific land uses. Typical locations where Noise Attenuation Measures may be required occur where residential land uses are adjacent to arterial roads, expressways, freeways, industrial lands, and railway lines. Noise Attenuation Measures can be setbacks, building orientation, earthen berms, noise walls, or any combination necessary to achieve an acceptable noise level, based on MECP Criteria.

A noise attenuation investigation shall be required to be carried out by a competent Consulting Engineer to assess noise attenuation with respect to the proposed infrastructures and building construction.

The Town of Caledon requires two (2) reports on noise attenuation. The first (preliminary) Acoustical Report shall be submitted with the draft plan and indicate whether or not noise attenuation is required. The second report shall be submitted with the Subdivision Design Plan and indicate the design details of the proposed noise attenuation measures. All costs associated with the noise attenuation report are the responsibility of the Developer. All noise attenuation reports are to be peer reviewed.

1.17.1. Assessing Traffic Noise

The following information is obtained when assessing the road traffic noise impact on planned sensitive land uses.

- The Average Daily Traffic Volume (AADT) and when available the Summer Annual Daily Traffic Volume (SADT), the higher of the two is used.
- Composition of traffic in terms of the percentages of cars, medium trucks and heavy trucks.
- Traffic Speed, use 10 km/h over the posted speed.

When assessing the noise impact, traffic volumes must be based in future traffic projections of at least 20 years after the completion of the planned project, or the ultimate capacity of the road as determined by the road authority.

1.17.2. Allowable Levels

The most common sound level descriptor used by the MECP is the energy equivalent continuous sound level (LEQ) also known as equivalent sound level.

The Town of Caledon will NOT accept sound levels in excess of the following levels, unless approved by the Town:

- For outdoor areas the equivalent sound level LEQ from 7:00 am to 11:00 PM is 55 dB;
- For indoor areas such as living rooms during the day the LEQ is 45 dB for roads and 40 dB for rail;
- For bedrooms at night the LEQ is 40 dB for road and 35 dB for rail.

1.17.3. Control Measures

Noise control measures usually fall into the following categories:

Barriers:	berms, walls, favourable topographical features and other intervening structures.
Architectural Design:	room and corridor arrangement, blank walls, the placement of windows, balconies and courtyards, building height.
Building Construction:	acoustical treatment of the dwellings walls and ceilings, selection of acoustical materials and other control devices, provision or installation of air conditioning.

Mitigation at Source:	noise control applied directly to the noise source.
Site Planning:	orientation of buildings and Outdoor Living Areas with respect to noise sources, spatial separation such as the insertion of noise insensitive land uses between source and receiver, appropriate setbacks, and the use of intervening service roads.
Windows/Doors:	acoustically designed windows or doors that provide the required noise reduction, in order to allow for the windows and doors to remain closed, air conditioning units must be installed in the dwelling.

A qualified Professional Engineer must certify implementation of noise control measures with experience in environmental acoustics.

1.17.4. Noise Barriers

To ensure attractive streetscape appearance, the Town discourages development layouts that require noise barriers. The need for noise attenuation is identified in the Acoustical Report prepared and submitted in support of the Draft Plan. The heights of walls will be minimized through the use of fence/berm combinations. All aspects of installation must conform to Town policy and MECP Guidelines.

Noise barrier fences are to be constructed on private property unless approved otherwise by the Town. The Developer shall guarantee the noise barrier wall, until Assumption of the subdivision by the Town. The construction of the noise barrier wall shall be inspected and certified by the Engineering Consultant.

Note:

Construction and installation of all noise attenuation barriers will be as per the drawings, plans, reports and specification approved by the Town or Region of Peel. Installation of the barriers must be completed prior to the occupancy of any building constructed or erected on any lot or block adjacent thereto.

Where a noise barrier wall is required adjacent to a Town roadway, all aspects of the barrier shall be placed 150mm on the private property side of the property line.

Requirements:

- A survey drawing, stamped and signed, from an Ontario Land Surveyor (OLS) to the satisfaction of the Town, confirming that the fence posts, including any associated footings are completely located on private property, prior to installation of any fence board materials.

- A Structural Certification of all column or post footings will be required from a Geotechnical Consultant, to confirm that all aspects of the footing have been constructed to the approved design drawings and specifications.

- A Construction Certification from the Civil Engineering Consultant will be required, certifying that the noise attenuation barrier has been constructed to the approved design drawings and specifications.

Where the wall is on private property adjacent to public property, the Developer shall enter into an Agreement with the Town of Caledon which shall be registered on title of Lots immediately upon registration of the subdivision. Said agreement shall implement the following clause with respect to the noise barrier wall located on these lots and must be included in all offers of purchase/sale and tenancy agreements.

“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”.

It is important that continuity of appearance be achieved within neighborhoods’. Noise barrier walls shall be constructed as per Town Standards 614 - 617 or approved equivalent. However, the design of any acoustic barriers to be constructed along Region of Peel roads, must comply with Regional Standards.

Note:

The maximum barrier wall height shall be 2.4 m. Should a greater height be required, the difference in height may be achieved with the use of a berm.

Barrier walls and footings, shall be installed entirely on private property. No part of the berm will be allowed within the Right of Way.

Grading and berm construction associated with the barrier installation shall be completed to within 5 mm below the bottom of the barrier prior to constructing the barrier footings.

A. There shall be no visible gaps between any barrier panels or beneath the bottom panels after completion of the barrier, unless approved by the Acoustic Consultant for drainage purposes.

B. Where footings are to be installed on or within 1.0 m from a downward slope of 3:1 or steeper, the embedment depth shall be increased a minimum of 0.5m greater than the requirements of the Canadian Highway Bridge Design Code. The design of the depths may be altered based on the design by a Consulting Engineer.

C. The minimum density of the noise barrier wall shall be 20 kg/m2 with no holes or gaps.

APPENDIX C

Date	Direction	Lane Info	Total	AADT	Hours
9/12/2021	Northbound	All Lanes	487	717	24
9/12/2021	Southbound	All Lanes	534	786	24
9/11/2021	Southbound	All Lanes	657	637	24
9/11/2021	Northbound	All Lanes	681	660	24
9/13/2021	Southbound	All Lanes	686	645	24
9/14/2021	Southbound	All Lanes	701	639	24
9/14/2021	Northbound	All Lanes	716	653	24
9/15/2021	Southbound	All Lanes	728	664	24
9/13/2021	Northbound	All Lanes	742	698	24
9/15/2021	Northbound	All Lanes	750	684	24
9/10/2021	Southbound	All Lanes	755	617	24
9/9/2021	Northbound	All Lanes	792	685	24
9/9/2021	Southbound	All Lanes	803	694	24
9/10/2021	Northbound	All Lanes	812	663	24
9/12/2021	Both Directions	All Lanes	1,021	1,503	24
9/11/2021	Both Directions	All Lanes	1,338	1,297	24
9/14/2021	Both Directions	All Lanes	1,417	1,292	24
9/13/2021	Both Directions	All Lanes	1,428	1,343	24
9/15/2021	Both Directions	All Lanes	1,478	1,348	24
9/10/2021	Both Directions	All Lanes	1,567	1,280	24
9/9/2021	Both Directions	All Lanes	1,595	1,379	24

STAMSON 5.0 NORMAL REPORT Date: 19-04-2024 10:59:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mtpfday2.te Time Period: 1 hours
Description: Worst Case Facade Daytime

Road data, segment # 1: Mt Pleasant

Car traffic volume : 150 veh/TimePeriod
Medium truck volume : 9 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Mt Pleasant

Angle1 Angle2 : 58.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 2: Mt Pleasant

Car traffic volume : 150 veh/TimePeriod
Medium truck volume : 9 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 5 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Mt Pleasant

Angle1 Angle2 : -18.00 deg 58.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 3: Mt Pleasant

Car traffic volume : 150 veh/TimePeriod

```
Medium truck volume :     9 veh/TimePeriod
Heavy truck volume  :    14 veh/TimePeriod
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Mt Pleasant
---------------------------------
Angle1   Angle2           : -90.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 110.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

↟
Results segment # 1: Mt Pleasant
---------------------------------

Source height = 1.69 m

ROAD (0.00 + 40.89 + 0.00) = 40.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    58     90   0.56  65.35   0.00 -13.54 -10.93   0.00   0.00   0.00  40.89
-------------------------------------------------------------------------------

Segment Leq : 40.89 dBA

↟
Results segment # 2: Mt Pleasant
---------------------------------

Source height = 1.69 m

ROAD (0.00 + 48.99 + 0.00) = 48.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -18     58   0.56  66.62   0.00 -13.54  -4.09   0.00   0.00   0.00  48.99
-------------------------------------------------------------------------------

Segment Leq : 48.99 dBA

↟
Results segment # 3: Mt Pleasant
---------------------------------

Source height = 1.69 m

ROAD (0.00 + 46.16 + 0.00) = 46.16 dBA
```

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-18	0.56	65.35	0.00	-13.54	-5.65	0.00	0.00	0.00	46.16

Segment Leq : 46.16 dBA

Total Leq All Segments: 51.23 dBA

TOTAL Leq FROM ALL SOURCES: 51.23

STAMSON 5.0 NORMAL REPORT Date: 19-04-2024 11:02:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mtpfnt2.te Time Period: 1 hours
Description: Worst Case Facade Nighttime

Road data, segment # 1: Mt Pleasant

Car traffic volume : 67 veh/TimePeriod
Medium truck volume : 4 veh/TimePeriod
Heavy truck volume : 7 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Mt Pleasant

Angle1 Angle2 : 58.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 2: Mt Pleasant

Car traffic volume : 67 veh/TimePeriod
Medium truck volume : 4 veh/TimePeriod
Heavy truck volume : 7 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 5 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Mt Pleasant

Angle1 Angle2 : -18.00 deg 58.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 3: Mt Pleasant

Car traffic volume : 67 veh/TimePeriod

```
Medium truck volume :     4 veh/TimePeriod
Heavy truck volume  :     7 veh/TimePeriod
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Mt Pleasant
---------------------------------
Angle1   Angle2           : -90.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 110.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

↟
Results segment # 1: Mt Pleasant
---------------------------------

Source height = 1.73 m

ROAD (0.00 + 37.74 + 0.00) = 37.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    58     90   0.56  62.19   0.00 -13.53 -10.92   0.00   0.00   0.00  37.74
-------------------------------------------------------------------------------

Segment Leq : 37.74 dBA

↟
Results segment # 2: Mt Pleasant
---------------------------------

Source height = 1.73 m

ROAD (0.00 + 45.87 + 0.00) = 45.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -18     58   0.56  63.49   0.00 -13.53  -4.09   0.00   0.00   0.00  45.87
-------------------------------------------------------------------------------

Segment Leq : 45.87 dBA

↟
Results segment # 3: Mt Pleasant
---------------------------------

Source height = 1.73 m

ROAD (0.00 + 43.01 + 0.00) = 43.01 dBA
```

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-18	0.56	62.19	0.00	-13.53	-5.65	0.00	0.00	0.00	43.01

Segment Leq : 43.01 dBA

Total Leq All Segments: 48.10 dBA - 3dB for doubling of traffic
= 45.10 dBA

TOTAL Leq FROM ALL SOURCES: 45.10

STAMSON 5.0 NORMAL REPORT Date: 19-04-2024 11:05:03
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mtpoday1.te Time Period: 1 hours
Description: Worst Case Outdoor Living Area

Road data, segment # 1: Mt Pleasant

Car traffic volume : 150 veh/TimePeriod
Medium truck volume : 9 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Mt Pleasant

Angle1 Angle2 : 60.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 107.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 2: Mt Pleasant

Car traffic volume : 150 veh/TimePeriod
Medium truck volume : 9 veh/TimePeriod
Heavy truck volume : 14 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 5 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Mt Pleasant

Angle1 Angle2 : -18.00 deg 60.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 107.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 3: Mt Pleasant

Car traffic volume : 150 veh/TimePeriod

```
Medium truck volume :     9 veh/TimePeriod
Heavy truck volume  :    14 veh/TimePeriod
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Mt Pleasant
---------------------------------
Angle1   Angle2           : -90.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 107.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

↟
Results segment # 1: Mt Pleasant
---------------------------------

Source height = 1.69 m

ROAD (0.00 + 39.37 + 0.00) = 39.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    60     90   0.65  65.35   0.00 -14.12 -11.87   0.00   0.00   0.00  39.37
-------------------------------------------------------------------------------

Segment Leq : 39.37 dBA

↟
Results segment # 2: Mt Pleasant
---------------------------------

Source height = 1.69 m

ROAD (0.00 + 48.44 + 0.00) = 48.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -18     60   0.65  66.62   0.00 -14.12  -4.07   0.00   0.00   0.00  48.44
-------------------------------------------------------------------------------

Segment Leq : 48.44 dBA

↟
Results segment # 3: Mt Pleasant
---------------------------------

Source height = 1.69 m

ROAD (0.00 + 45.37 + 0.00) = 45.37 dBA
```

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-18	0.65	65.35	0.00	-14.12	-5.86	0.00	0.00	0.00	45.37

Segment Leq : 45.37 dBA

Total Leq All Segments: 50.53 dBA

TOTAL Leq FROM ALL SOURCES: 50.53