



Chateaux of Caledon Mid-Rise

0 Atchison Drive, Caledon

Noise Impact Study

Revision 1

SACL #SW17460A0

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1. Introduction

This document is a Noise Impact Study for a proposed mixed-use development located at the northeast corner of Old Church Road and Atchison Drive in Caledon, Ontario (Project). We understand that the study is required by the Town of Caledon for approval of a site plan application.

The proposed mixed-use development consists of a 5-storey building with part of the ground floor for retail. The site plan is shown in Figure 1. The objective of this study is to determine if the proposed development can meet the requirements of the Town of Caledon and the Region of Peel, using criteria developed by the Ontario Ministry of the Environment, Conservation and Parks (MECP). Noise control recommendations are summarised in Section 4.6 and 5.3.

2. Site

The Project is located at the northeast corner of Old Church Road and Atchison Drive. An aerial photo of the area is provided in Figure 2. There are existing townhouses to the north, west and northeast, and single houses to the east. The Caledon Town Hall is located south of the Project.

The proposed mixed-use development consists of retail spaces on the southwest side of ground floor, 87 residential units on all 5 floors and an underground parking level. An Amenity Room is located on the ground floor on the north side of the building. A public square is located at the southwest corner of the site and there is a surface parking area on the north side of the site. All private balconies, patios and terraces are less than 4 m deep so they are not considered designated outdoor amenity areas. There is no shared outdoor amenity area for the residents.

3. Noise Source

The major noise source that may impact the site is the road traffic along Old Church Road. Atchison Drive to the west of the Project is not an arterial road but a local road that provides access to the nearby subdivisions. Although the traffic on Atchison Drive is not considered a major noise source, it is included in the analysis for the receptor along the west façade of the proposed building.

There are no significant stationary noise sources associated with the Caledon Town Hall. Stationary noise sources associated with the proposed development are discussed in Section 5.

4. Transportation Noise Impact

4.1 Critical Noise Receptors

Critical Noise Receptors are those receptors likely to be most affected by the identified noise sources. The critical indoor noise receptors are the residential units exposed to the traffic noise on Old Church Road. Their locations are summarised in Table 1 and shown in Figure 1.



Since all private balconies, patios and terraces are less than 4 m deep, they are not considered outdoor noise receptors. There is no shared outdoor amenity area for the residents. Therefore, no noise receptors for outdoor amenity areas are included in this report.

Table 1: Critical Noise Receptors

Receptor ID	Receptor Location	Height (m)
POR1	Southeast corner of building, second floor, facing Old Church Road	4.5
POR2	East façade of building, near Old Church Road	13.5
POR3	Southwest corner of building, facing Old Church Road and Atchison Drive	13.5
POR4	Southeast corner of building, ground floor, facing Old Church Road	1.5

4.2 Sound Levels

Traffic volume data for Old Church Road, as summarised in Table 2, was obtained from the Region of Peel. Traffic volume data for Atchison Drive was obtained from NexTrans Consulting Engineers. The traffic data are provided in Appendix A.

Atchison Drive is not an arterial road but a local road to access the subdivisions to the north and northwest from the Project. Existing or planned AADT for Atchison Drive is not available. The ratio between the existing 6-hour turning movement counts of Old Church road and Atchison Drive, which is 47%, is used to estimate the planned AADT. The estimated planned AADT of Atchison Drive is 7679. The truck percentages and day/night split of Old Church Road are used to calculate traffic noise from Atchison Drive. Traffic noise from Atchison Drive is only considered for POR3 due to its proximity.

Table 2: Summary of Traffic Data

Parameter	Old Church Road	Atchison Drive
Existing AADT	4,600	-
Planned AADT	16,200	7679
Day/Night Split	82%/18%	82%/18%
Daytime medium truck	13%	13%
Daytime heavy truck	14%	14%
Night-time medium truck	14%	14%
Night-time medium truck	9%	9%



Parameter	Old Church Road	Atchison Drive
Posted Speed Limit	50 km/h	50 km/h

According to the Town of Caledon Development Standards, Policies & Guidelines Version 4 – January 2009, the traffic speed for noise impact analysis should be 10 km/hr over the posted speed limit. Therefore the speed limit used in our traffic noise prediction model is 60 km/h for both Old Church Road and Atchison Drive.

Calculations of traffic sound levels were performed using STAMSON 5.04, the traffic (and railway) noise prediction model developed and accepted by MECP. Calculations for traffic noise predictions are attached as Appendix B. The calculated sound levels are as follows:

Table 3: Calculated Outdoor Sound Level

Receptor ID	Calculated Sound Level (dBA)	
	Day Leq (16 hrs)	Night Leq (8 hs)
POR1	72	67
POR2	68	63
POR3	71	66
POR4	72	67

4.3 MECP Sound Level Limits

Guidelines for acceptable sound levels of road traffic on residential developments are given in Part C of the MECP publication NPC-300 “Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning” dated 2013.

4.3.1 Outdoor Sound Level Limits

The MECP outdoor sound level limit for traffic noise is as follows:

Table 4: MECP Outdoor Sound Level Limit

Time Period	Sound Level (Leq)
Day-time (07:00 - 23:00)	55

In addition to the above outdoor levels, the MECP has a sliding scale to determine the need for



outdoor noise reduction measures depending on outdoor sound levels:

Table 5: MECP Noise Control Requirements for Outdoor Receptors

<i>Outdoor Sound Level (Day-time Leq)</i>	<i>Need for Noise Reduction Measures</i>
56 to 60 dBA	Noise control measures may be implemented. If no noise control measures are planned, a warning clause must be included in the unit title or lease agreement.
Above 60 dBA	Control measures (barriers) required to reduce the Leq to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible. A warning clause is required if resultant Leq exceeds 55 dBA.

4.3.2 Indoor Sound Level Limits

The indoor sound levels limits developed by MECP for road sources are as follows:

Table 6: MECP Indoor Sound Level Limit

<i>Room</i>	<i>Time Period</i>	<i>Road Sound Level (Leq)</i>
Living rooms	Day-time (07:00 - 23:00)	45 dBA
	Night-time (23:00 - 07:00)	45 dBA
Bedrooms	Day-time (07:00 - 23:00)	45 dBA
	Night-time (23:00 - 07:00)	40 dBA

In addition to the above indoor levels, the MECP has a sliding scale to determine the need for noise reduction measures depending on the outdoor sound level:

Table 7: Combination of Road and Rail Noise, Ventilation and Warning Clause Requirements

<i>ASSESSMENT LOCATION</i>	<i>Leq</i>	<i>VENTILATION REQUIREMENTS</i>	<i>WARNING CLAUSE</i>
PLANE OF BEDROOM, LIVING ROOM	Greater than 55 dBA to less than or equal to 65 dBA.	Forced air heating with provision for central air conditioning.	Required



ASSESSMENT LOCATION	Leq	VENTILATION REQUIREMENTS	WARNING CLAUSE
WINDOW (07:00-23:00)	Greater than 65 dBA.	Central air conditioning	Required
PLANE OF BEDROOM, LIVING ROOM WINDOW (07:00-23:00)	Greater than 50 dBA to less than or equal to 60 dBA.	Forced air heating with provision for central air conditioning.	Required
	Greater than 60 dBA	Central air conditioning	Required

Table 8: Road Noise Building Component Requirements

ASSESSMENT LOCATION	Leq	BUILDING COMPONENT REQUIREMENTS
PLANE OF BEDROOM, LIVING ROOM WINDOW (07:00-23:00)	Less than or equal to 65 dBA	Building compliant with the Ontario Building Code.
	Greater than 65 dBA	Building components must be designed to achieve indoor sound level criteria.
PLANE OF BEDROOM, LIVING ROOM WINDOW (23:00-07:00)	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code.
	Greater than 60 dBA	Building components must be designed to achieve indoor sound level criteria

4.4 Town of Caledon Requirements

In addition to the MECP requirements, the Town of Caledon has the following sound level limits in their Development Standards, Policies & Guidelines Version 4 – January 2009:

- “The Town of Caledon will NOT accept sound levels in excess of the following levels, unless design features exceed standard detail.
 - For outdoor areas the equivalent sound level Leq from 7:00 a.m. to 11:00 p.m. is 55 dBA.
 - For indoor areas such as living rooms during the day the Leq is 45 dBA for roads and 40 dBA for rail.
 - For bedrooms at night the Leq is 40 dBA for road and 35 dBA for rail.”



4.5 Region of Peel Requirements

The Region of Peel publication “General Guidelines for the Preparation of Acoustic Reports in the Region of Peel” dated November 2012 has the following sound level limits:

- Outdoor Living Area (7 am-11pm) Leq (16 hr) = 55 dBA
- Outside Bedroom Window (11pm-7am) Leq (8 hr) = 50 dBA
- Indoor (bedrooms) (11pm-7pm) Leq (8 hr) = 40 dBA
- Indoor (living rooms) (7 am-11pm) Leq (16 hr) = 45 dBA

4.6 Noise Control Measures

Noise control recommendations for the critical receptors are summarized in Table 9 and discussed in the subsequent sections. As there are no designated outdoor amenity areas in the Project, only noise control measures for indoor receptors are required.

Table 9: Noise Control Measures

Receptor	Ventilation	Building Components	Warning Clause
POR1	Central air conditioning.	Design to achieve indoor sound level criteria.	Yes, Type D
POR2	Central air conditioning.	Design to achieve indoor sound level criteria.	Yes Type D
POR3	Central air conditioning.	Design to achieve indoor sound level criteria.	Yes Type D
POR3	Central air conditioning.	Design to achieve indoor sound level criteria.	Yes Type D

4.6.1 Ventilation

Since the predicted sound levels for POR1, POR2 and POR3 are above 65 dBA during daytime and above 60 dBA during night-time, central air conditioning is required for all residential units.

4.6.2 Building Components

Since the predicted sound levels are above 65 dBA during daytime and above 60 dBA during night-time, building components should be designed to meet the indoor sound level limits.

As the building design is at an early stage, floor plans with residential unit layouts and the construction of building envelope are not available yet. The sound transmission loss of the building façade components required to meet MECP interior sound levels with the above calculated outdoor sound level were determined based on maximum building components percentages. The transmission losses, in terms of Sound Transmission Class (STC), are provided



in Table 10.

Table 10: Building Envelope Requirements

Component	Maximum Component Area Percentage Versus Floor Area of Room	STC Required
Exterior wall	160%	STC 54
Fixed glazing	50%	STC 35
Operable glazing including sliding glass doors	25%	STC 32

Typical minimum constructions for exterior wall and glazing were determined to provide a basis for the final design.

Exterior Wall

The following construction can achieve STC-54:

- 100 mm brick veneer
- 25 mm airspace
- sheathing
- 50 mm or thicker mineral wool or glass fibre batt insulation in inter-stud cavities
- 92 mm metal studs @ 400 mm o.c.
- Vapour barrier
- 13 mm gypsum board

Fixed Glazing

Fixed glazing sealed to the frame and consists of two 6 mm panes of glass separated by an airspace of 13 mm can achieve STC-35.

Operable Glazing

Operable glazing consists of two 6 mm panes separated by an airspace of 13 mm can achieve STC-32.

The above constructions are provided for reference only. Any constructions with equivalent or greater STC values will be acceptable. Changes in window sizes and unit layouts will change these requirements. Specifically, reduced window sizes will reduce the window requirements. With the above building components and assumed building component area percentages, the indoor sound levels will be attenuate to 45 dBA during daytime and 40 dBA during night-time when all windows are closed.



4.6.3 Warning Clauses

Since central air conditioning is required for all residential units, the following Type D warning clause should be inserted in all development agreements of each of the dwellings:

“This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment.”

In addition, “General Guidelines for the Preparation of Acoustic Reports in the Region of Peel” also requires a warning clause with the following wording when mandatory air conditioning is to be installed:

“Purchasers are advised that despite the inclusion of noise control features in this development area and within the building units, noise levels from increasing road traffic may continue to be of concern, occasionally interfering with some activities of the dwelling occupants as the noise level exceeds the Municipality’s and the Ministry of the Environment’s noise criteria.”

5. Stationary Noise Impact

There are no existing significant stationary noise sources that may impact the Project. Future stationary noise sources associated with the Project that may impact surrounding residential properties are discussed in the following sections.

5.1 Sound Level Limits

The MECP Noise Publication NPC-300, Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning states that:

“For sound from a stationary source..., the sound level limit at a point of reception, expressed in terms of the One Hour Equivalent Sound Level (Leq) is the higher of the applicable exclusion limit value given in Table 11, or the background sound level for that point of reception.”

Table 11: Exclusion Limit Values of One-Hour Equivalent Sound Level

<i>Time of Day</i>	<i>Outdoor Points of Reception</i>		<i>Plane of Window</i>	
	<i>Class 1 Area</i>	<i>Class 2 Area</i>	<i>Class 1 Area</i>	<i>Class 2 Area</i>
07:00-19:00	50 dBA	50 dBA	50 dBA	50 dBA
19:00-23:00	50 dBA	45 dBA	50 dBA	50 dBA
23:00-07:00	-	-	45 dBA	45 dBA

The area surrounding the Project is considered to be in a Class 2 Area.

5.2 Noise Sources

Potential significant stationary noise sources associated with the Project include garage ventilation and rooftop mechanical equipment.

Garage ventilation is provided by an intake air shaft adjacent to the east property line and an exhaust air shaft located at the centre of the surface parking area, approximately 24m from the east property line (Figure 1). Only the exhaust air shaft will be equipped with a fan. It is anticipated that the majority of mechanical equipment will be located in the mechanical penthouse.

As this is in the early stage of design, no mechanical system or garage ventilation system has been designed yet.

5.3 Noise Control Recommendations

The garage exhaust air shaft is located at the centre of the surface parking area, approximately 24 m to the nearest property line. A garage exhaust fan has not been selected yet. Assuming the worst case scenario that the exhaust fan may run at low speed continuously for up to 1 hour during night-time, the sound power level of the exhaust fan is recommended to be maximum 80.6 dBA at low speed in order to meet the night-time sound level limit of 45 dBA at the nearest property line. If an exhaust fan with higher sound power level is selected, noise control measure such as a silencer should be implemented to attenuate the sound level at the property line accordingly.

We also recommend to design the mechanical system for the proposed building such that it meets the stationary sound level limits listed in Table 11. This can be achieved by selecting quieter mechanical equipment and/or implementation of noise control measures such as silencers and enclosures.

5.4 Garbage Truck

Garbage loading area is located on the east side of the proposed building (Figure 1). There is an existing townhouse development northeast of the site (Figure 2).

We were informed by Pluribus Corporation that garbage collection service for the proposed development will be provided by the Region of Peel. It is our understanding that garbage collection by the Region will take place once a week during daytime (7 a.m. to 7 p.m.).

According to Section A5 in the Ministry of Environment, Conservation and Parks (MECP) Publication NPC-300 "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning", "activities related to essential services and maintenance of public facilities such as, but not limited to, roadways, parks and sewers, snow removal, road cleaning, road repair and maintenance, lawn mowing and maintenance, sewage removal, garbage collection" are not considered stationary noise sources. Therefore garbage collection is exempt from noise impact assessment. In addition, garbage collection for the neighbourhood will take place on the same day and will be carried out by the same garbage truck. The townhouse



development adjacent to the site is exposed to garbage truck noise while garbage is collected from their properties along McElroy Court.

To attenuate garbage truck noise on the second floor of the townhouse, a noise barrier taller than 5 m is required. It is not economically feasible and it exceeds the noise barrier maximum height of 2.4 m in the Town of Caledon Development Standards, Policies & Guidelines.

Therefore, in our opinion, garbage truck noise should be excluded from the noise impact study.

6. Concluding Comments

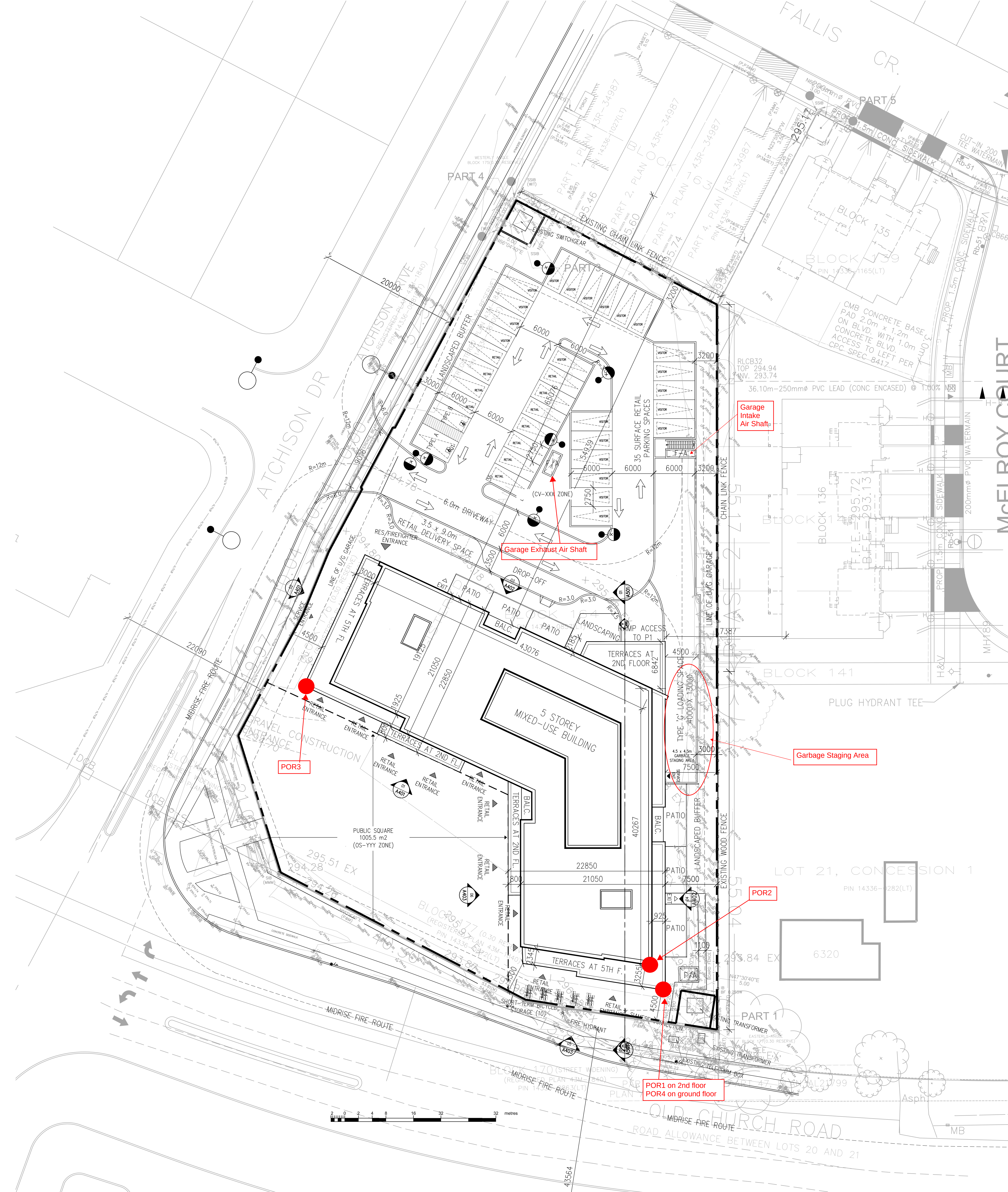
With the incorporation of the noise control measures as presented in Section 4.6 and 5.3 of this report, the noise impact from the transportation noise sources on the proposed mixed-use development will meet the MECP criteria. There are no significant stationary noise sources near the project.

The proposed mixed-use development Pluribus Corp. Mid-Rise located at the northeast corner of Old Church Road and Atchison Drive in the Town of Caledon should therefore be approved from the noise aspect.

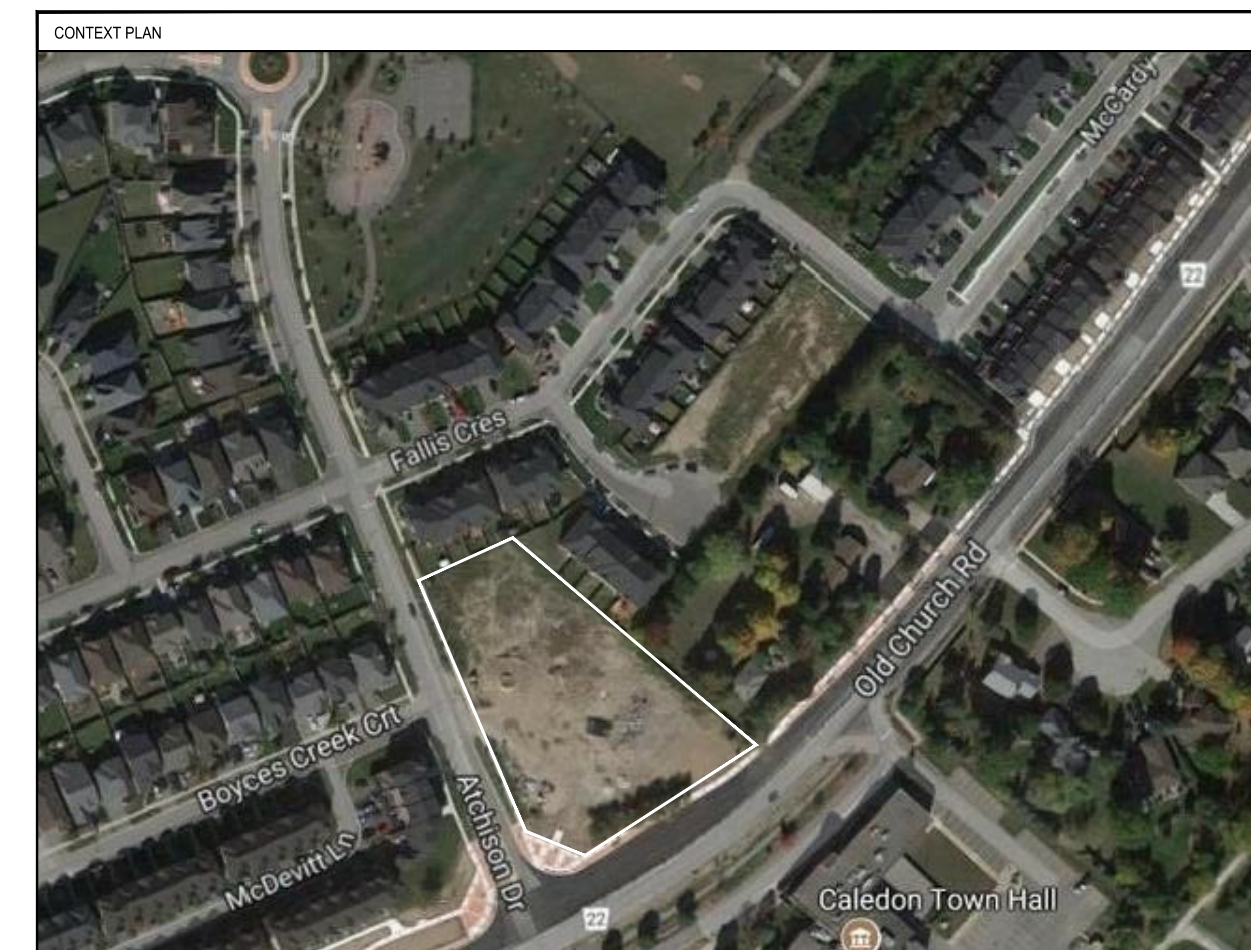
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Figures



ZONING DESIGNATION: TOWN OF CALEDON BY-LAW	CALEDON ZONING BY-LAW 2011-27 CV	PROPOSED
LOT AREA (minimum)	5,500 m ²	5,985.86 m ²
LOT FRONTAGE (minimum)	9.00 m	90.48 m
BUILDING AREA (maximum)	n/a	7,840.26 m ²
BUILDING SETBACKS (minimum)		
FRONT YARD	4.50 m	S = 4.50 m
SIDE YARDS	1.80 m	W = 4.50 m E = 7.50 m
REAR YARD	4.50 m	N = 54.61 m
BUILDING HEIGHT (maximum)	11.00 m	17.9 m
RETAIL GFA (maximum)	650 m ²	696.7 m ²
PARKING SPACES		
RESIDENTIAL	1.5 space/unit = 131	1.57 space/unit = 137
RETAIL	0.25 space/unit = 22	shored w/ retail
VISITOR	1 space/20 m ² = 35	1 space/40 m ² = 17



STATISTICS			
1. ZONING		OS-505 & CV-507	
2. SITE AREA	5,985.86 m ²	64,431.20 ft ²	1.48 ACRES
3. GROSS FLOOR AREA (GFA)	7,116.30 m ²	76,599.14 ft ²	
4. GROUND FLOOR AREA	1,712.10 m ²	18,428.87 ft ²	
5. PROPOSED BUILDING DENSITY		1.19 FSI (NFA / SA)	
6. PROPOSED COVERED COVERAGE		28.6%	
7. LANDSCAPED AREA PROVIDED		0.0%	
8. FLOOR AREA :			
	TOTAL FLOOR AREA (TFA)	GROSS FLOOR AREA (GFA)	NET LEASABLE AREA (NSA)
LEVEL			
P1	5,083.82 m ²	54,700.20 ft ²	0.00 m ²
P2	1,015.40 m ²	10,929.66 ft ²	962.60 m ²
P3	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P4	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P5	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
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P11	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P12	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P13	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P14	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P15	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P16	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P17	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
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P50	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
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P70	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P71	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P72	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P73	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P74	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P75	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P76	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P77	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P78	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P79	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P80	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P81	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P82	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P83	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P84	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P85	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P86	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P87	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P88	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P89	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P90	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P91	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P92	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P93	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P94	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P95	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P96	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P97	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P98	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P99	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²
P100	1,441.40 m ²	15,515.09 ft ²	1,404.00 m ²

notes:

10. UNIT SUMMARY									
FLOOR									
UNIT TYPE									
Studio 18 18-D 28 28-D 38 TOTAL									
TOTAL 0.0% 0.0% 15.6% 33.3% 33.3% 0.0% 18.4%									
12. EFFICIENCY (NSA/GFA) 84.6%									
13. HEIGHT 5 STOREYS (17.3m)									
14. PARKING									
RES. 1.5 PER UNIT (87) = 131									
VIS. 0.25 PER UNIT (87) = 22									
RETAIL 1 SPACE PER 200 m ² = 35									
VISITOR 187									
TOTAL (7 ACCESSIBLE SPACES REQUIRED) 187									
PROPOSED (7 ACCESSIBLE SPACES PROVIDED) 173									
15. LOCKERS									
TOTAL 86									
PROPOSED 86									
16. BICYCLE									
TOTAL 10									
PROPOSED 10									
17. INDOOR AMENITY									
TOTAL 1,891.00 ft ²									
PROPOSED 1,891.00 ft ²									
18. OUTDOOR AMENITY									
TOTAL 10,763.90 ft ²									
PROPOSED 10,763.90 ft ²									
19. LOADING SPACES									
TOTAL 4.5m W x 12m D x 6.2m H									
PROPOSED 4.5m W x 12m D x 6.2m H									

GARAGE STORAGE ROOM TO BE LOCATED INSIDE BUILDING

OBC MATRIX									
Firm name: architecture unfolded									
The Certificate of Practice Number of the holder is the holder's BCIN: 4957									
Name of Project: Chateaux Mid-Rise (GARAGE PORTION)									
Location: Caledon, Ontario									
Item Ontario Building Code Data Matrix Part 3 or 9 OBC Reference									
1. Project Description: ☐ New ☐ Addition ☐ Alteration ☐ Change of Use									
2. Major Occupancy(ies) Group F3, (PARKING)									
3. Building Area: ☐ Existing ☐ New									
4. Gross Area: ☐ Existing ☐ New									
5. Number of Storeys: Future 5 storey bldg									
6. Number of Streets/Fire Fighter Access: 2									
7. Building Classification									
8. Sprinkler System Proposed									
9. Standpipe required									
10. Fire Alarm required									
11. Water Service/Supply is Adequate									
12. High Building									
13. Permitted Construction									
14. Mezzanine(s) Area m ²									
15. Occupant load based on									
16. Barrier-free Design									
17. Hazardous Substances									
18. Required Fire Resistance									
19. Spatial Separation - Construction of Exterior Walls									
20. Other - Describe									

OBC MATRIX									
Firm name: architecture unfolded									
The Certificate of Practice Number of the holder is the holder's BCIN: 4957									
Name of Project: Chateaux Mid-Rise (RESIDENTIAL PORTION)									
Location: Caledon, Ontario									
Item Ontario Building Code Data Matrix Part 3 or 9 OBC Reference									
1. Project Description: ☐ New ☐ Addition ☐ Alteration ☐ Change of Use									
2. Major Occupancy(ies) Group C, (RESIDENTIAL)									
3. Building Area: ☐ Existing ☐ New									
4. Gross Area: ☐ Existing ☐ New									
5. Number of Storeys: 5									
6. Number of Streets/Fire Fighter Access: 2									
7. Building Classification									
8. Sprinkler System Proposed									
9. Standpipe required									
10. Fire Alarm required									
11. Water Service/Supply is Adequate									
12. High Building									
13. Permitted Construction									
14. Mezzanine(s) Area m ²									
15. Occupant load based on									
16. Barrier-free Design									
17. Hazardous Substances									
18. Required Fire Resistance									
19. Spatial Separation - Construction of Exterior Walls									
20. Other - Describe									

2 issued for rezoning / spa
1 issued for client review
revisions: 02.23.18
11.23.17

architectural team
architect:
mark zwicker
bonnie clouthwright
owner:
pluribus corp.
55 blue willow drive, woodbridge, on L1R 9E8
applicant:
paul a. king
905 770 0232
planning:
paul a. king
structural:
electrical:
mechanical:
landscape:
insite landscape architects
interior:
site services:
stanlec consulting ltd
project:
chateaux mid-rise
at chateaux
caledon, ontario
spa# 2018-0008

site plan & statistics

Figure 1 Site Plan

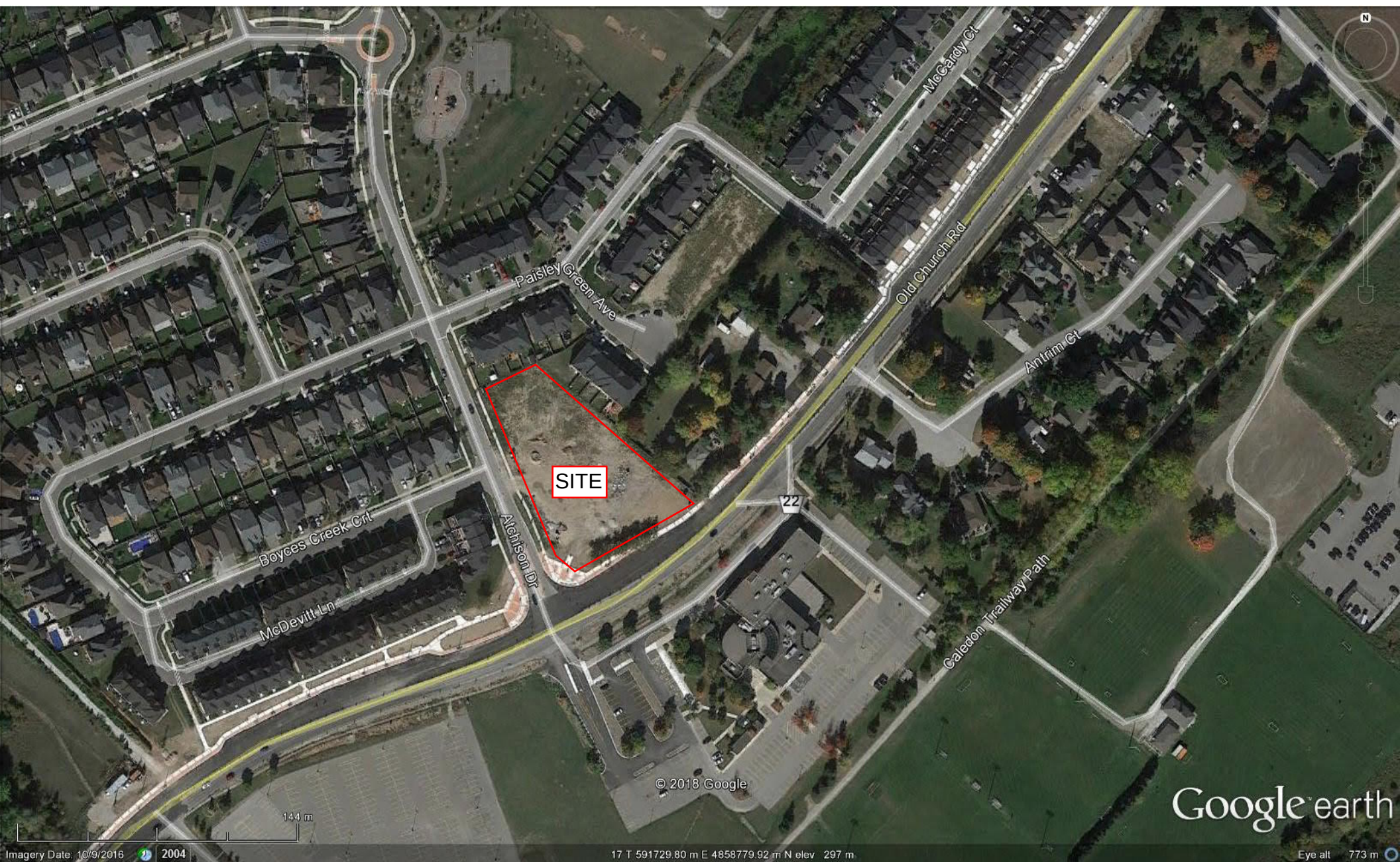


Figure 2 Aerial Photo



Appendices



Appendix A: Traffic Data

Yung, Pearlie

From: Shan, Rosalie <rosalie.shan@peelregion.ca>
Sent: 2018/01/17 10:56 AM
To: Yung, Pearlie
Cc: Kuczynski, Roman
Subject: Peel Region - re-data request - Old Church Road

Hi Pearlie,

This is Rosalie from Region of Peel. Please find the following data summary table as per your request.

The data is based on the nearest Regional Traffic Count Station located on Old Church Road 1.5 km east of Airport Road.

	Existing	Planned
24 Hour Traffic Volume	4,600	16,200
# of Lanes	2	2
Day/Night Split	82/18	82/18
Day Trucks (% of Total Volume)	13% Medium 14% Heavy	13% Medium 14% Heavy
Night Trucks (% of Total Volume)	14% Medium 9% Heavy	14% Medium 9% Heavy
Right-of-Way Width	30 meters	
Posted Speed Limit	50 km/h	

Please let me know if you have any questions or need more information on this. Thank you.

Regards,

Rosalie Shan
Planner (A)
Transportation Systems Planning
Region of Peel

Tel: 905-791-7800, ext. 7999
E-mail: rosalie.shan@peelregion.ca



Turning Movement Count (2 . OLD CHURCH RD & ATCHISON DR)

Start Time	N Approach ATCHISON DR						E Approach OLD CHURCH RD						S Approach ATCHISON DR						W Approach OLD CHURCH RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	21	1	15	0	0	37	2	15	0	0	0	17	0	0	0	0	0	0	0	27	1	0	0	28	82	
07:15:00	28	0	12	0	0	40	2	27	1	0	0	30	0	0	0	0	0	0	0	28	3	0	0	31	101	
07:30:00	21	0	13	0	0	34	1	32	5	0	0	38	0	0	0	0	0	0	0	50	5	0	1	55	127	
07:45:00	30	0	17	0	1	47	1	51	5	0	0	57	0	0	0	0	0	0	8	60	6	0	2	74	178	488
08:00:00	22	0	15	0	0	37	0	55	6	0	0	61	0	0	1	0	0	1	6	70	6	0	0	82	181	587
08:15:00	19	0	9	0	1	28	3	39	21	0	0	63	0	0	2	0	0	2	29	43	6	0	0	78	171	657
08:30:00	18	0	12	0	3	30	6	24	10	1	0	41	1	0	0	0	1	1	30	35	7	0	1	72	144	674
08:45:00	18	3	2	0	0	23	3	33	27	0	2	63	0	0	1	0	0	1	31	28	6	0	0	65	152	648
09:00:00	22	1	7	0	0	30	6	52	16	0	0	74	1	0	0	0	0	1	17	49	13	0	0	79	184	651
09:15:00	11	0	3	0	0	14	6	48	6	0	0	60	2	0	2	0	0	4	10	34	3	0	3	47	125	605
09:30:00	11	0	12	0	0	23	3	25	4	0	0	32	2	1	1	0	3	4	3	26	8	0	4	37	96	557
09:45:00	9	0	6	0	1	15	1	21	3	0	1	25	6	1	3	0	1	10	3	22	3	0	0	28	78	483

BREAK

16:00:00	16	0	8	0	1	24	4	55	3	0	0	62	2	0	15	0	0	17	0	44	23	1	0	68	171	
16:15:00	14	1	6	0	0	21	16	51	5	0	0	72	3	1	2	0	1	6	1	49	29	0	1	79	178	
16:30:00	14	0	5	0	0	19	7	63	3	0	0	73	11	1	52	1	1	65	0	51	33	0	1	84	241	
16:45:00	8	0	4	0	0	12	8	40	2	0	0	50	4	0	15	0	0	19	0	37	30	0	0	67	148	738
17:00:00	14	1	7	0	1	22	7	47	4	0	0	58	4	0	12	0	0	16	0	32	26	0	0	58	154	721
17:15:00	22	0	2	0	2	24	10	45	3	0	0	58	1	0	5	0	0	6	3	30	25	0	0	58	146	689
17:30:00	12	2	6	0	0	20	6	46	5	0	0	57	0	0	4	0	0	4	2	38	39	0	0	79	160	608
17:45:00	16	0	3	0	0	19	10	45	3	0	0	58	1	0	5	0	0	6	5	38	29	0	0	72	155	615
18:00:00	13	0	9	0	1	22	13	31	3	0	0	47	0	0	0	0	0	0	2	34	18	0	0	54	123	584
18:15:00	20	3	5	0	1	28	7	32	4	0	0	43	3	0	0	0	0	3	1	27	22	0	0	50	124	562
18:30:00	22	1	2	0	1	25	7	32	5	0	0	44	10	0	1	0	0	11	3	38	15	0	0	56	136	538
18:45:00	9	0	6	0	1	15	7	31	5	0	0	43	3	1	0	0	0	4	0	28	24	0	0	52	114	497
Grand Total	410	13	186	0	14	609	136	940	149	1	3	1226	54	5	121	1	7	181	154	918	380	1	13	1453	3469	-

Approach%	67.3%	2.1%	30.5%	0%	-	11.1%	76.7%	12.2%	0.1%	-	29.8%	2.8%	66.9%	0.6%	-	10.6%	63.2%	26.2%	0.1%	-	-	-
Totals %	11.8%	0.4%	5.4%	0%	17.6%	3.9%	27.1%	4.3%	0%	35.3%	1.6%	0.1%	3.5%	0%	5.2%	4.4%	26.5%	11%	0%	41.9%	-	-
Heavy	6	0	3	0	-	6	52	1	0	-	1	0	1	0	-	1	47	10	0	-	-	-
Heavy %	1.5%	0%	1.6%	0%	-	4.4%	5.5%	0.7%	0%	-	1.9%	0%	0.8%	0%	-	0.6%	5.1%	2.6%	0%	-	-	-
Bicycles	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	1	0	0	-	-	-
Bicycle %	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0.1%	0%	0%	-	-	-



Turning Movement Count
Location Name: OLD CHURCH RD & ATCHISON DR
Date: Wed, Nov 15, 2017 Deployment Lead: Theo Daglis

NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6



Peak Hour: 07:45 AM - 08:45 AM Weather: Mostly Cloudy (1.6 °C)

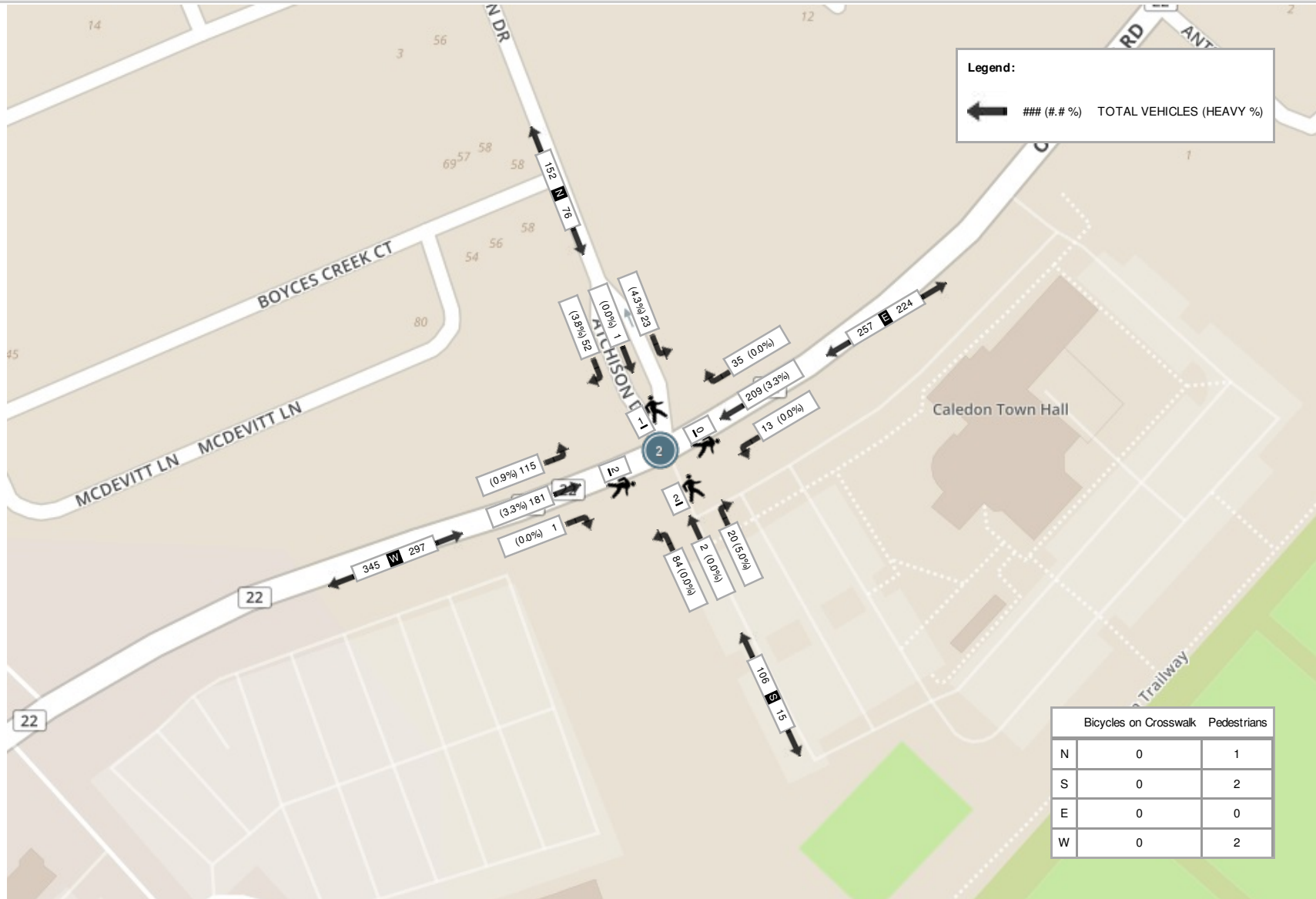
Start Time	N Approach ATCHISON DR						E Approach OLD CHURCH RD						S Approach ATCHISON DR						W Approach OLD CHURCH RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	30	0	17	0	1	47	1	51	5	0	0	57	0	0	0	0	0	0	8	60	6	0	2	74	178
08:00:00	22	0	15	0	0	37	0	55	6	0	0	61	0	0	1	0	0	1	6	70	6	0	0	82	181
08:15:00	19	0	9	0	1	28	3	39	21	0	0	63	0	0	2	0	0	2	29	43	6	0	0	78	171
08:30:00	18	0	12	0	3	30	6	24	10	1	0	41	1	0	0	0	1	1	30	35	7	0	1	72	144
Grand Total	89	0	53	0	5	142	10	169	42	1	0	222	1	0	3	0	1	4	73	208	25	0	3	306	674
Approach%	62.7%	0%	37.3%	0%	-	-	4.5%	76.1%	18.9%	0.5%	-	-	25%	0%	75%	0%	-	-	23.9%	68%	8.2%	0%	-	-	-
Totals %	13.2%	0%	7.9%	0%	21.1%	1.5%	25.1%	6.2%	0.1%	32.9%	0.1%	0%	0.4%	0%	0.6%	10.8%	30.9%	3.7%	0%	45.4%	-	-	-	-	-
PHF	0.74	0	0.78	0	0.76	0.42	0.77	0.5	0.25	0.88	0.25	0	0.38	0	0.5	0.61	0.74	0.89	0	0.93	-	-	-	-	-
Heavy	1	0	0	0	1	1	20	1	0	22	0	0	1	0	1	0	14	5	0	19	-	-	-	-	-
Heavy %	1.1%	0%	0%	0%	0.7%	10%	11.8%	2.4%	0%	9.9%	0%	0%	33.3%	0%	25%	0%	6.7%	20%	0%	6.2%	-	-	-	-	-
Lights	88	0	53	0	141	9	149	41	1	200	1	0	2	0	3	73	194	20	0	287	-	-	-	-	-
Lights %	98.9%	0%	100%	0%	99.3%	90%	88.2%	97.6%	100%	90.1%	100%	0%	66.7%	0%	75%	100%	93.3%	80%	0%	93.8%	-	-	-	-	-
Single-Unit Trucks	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	6	3	0	9	-	-	-	-	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	1.8%	0%	0%	1.4%	0%	0%	0%	0%	0%	0%	2.9%	12%	0%	2.9%	-	-	-	-	-
Buses	1	0	0	0	1	1	17	1	0	19	0	0	1	0	1	0	7	2	0	9	-	-	-	-	-
Buses %	1.1%	0%	0%	0%	0.7%	10%	10.1%	2.4%	0%	8.6%	0%	0%	33.3%	0%	25%	0%	3.4%	8%	0%	2.9%	-	-	-	-	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	-	-	-	-	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.3%	-	-	-	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	0	-	-	-	-	1	-	-	-	-	3	-	-	-	-	-
Pedestrians%	-	-	-	-	55.6%	-	-	-	-	0%	-	-	-	-	11.1%	-	-	-	-	33.3%	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-	-	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-



Peak Hour: 04:00 PM - 05:00 PM Weather: Rain (2.8 °C)

Start Time	N Approach ATCHISON DR						E Approach OLD CHURCH RD						S Approach ATCHISON DR						W Approach OLD CHURCH RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:00:00	16	0	8	0	1	24	4	55	3	0	0	62	2	0	15	0	0	17	0	44	23	1	0	68	171
16:15:00	14	1	6	0	0	21	16	51	5	0	0	72	3	1	2	0	1	6	1	49	29	0	1	79	178
16:30:00	14	0	5	0	0	19	7	63	3	0	0	73	11	1	52	1	1	65	0	51	33	0	1	84	241
16:45:00	8	0	4	0	0	12	8	40	2	0	0	50	4	0	15	0	0	19	0	37	30	0	0	67	148
Grand Total	52	1	23	0	1	76	35	209	13	0	0	257	20	2	84	1	2	107	1	181	115	1	2	298	738
Approach%	68.4%	1.3%	30.3%	0%	-	-	13.6%	81.3%	5.1%	0%	-	-	18.7%	1.9%	78.5%	0.9%	-	-	0.3%	60.7%	38.6%	0.3%	-	-	-
Totals %	7%	0.1%	3.1%	0%	10.3%	4.7%	28.3%	1.8%	0%	34.8%	2.7%	0.3%	11.4%	0.1%	14.5%	0.1%	24.5%	15.6%	0.1%	40.4%	-	-	-	-	-
PHF	0.81	0.25	0.72	0	0.79	0.55	0.83	0.65	0	0.88	0.45	0.5	0.4	0.25	0.41	0.25	0.89	0.87	0.25	0.89	-	-	-	-	-
Heavy	2	0	1	0	3	0	7	0	0	7	1	0	0	0	1	0	6	1	0	7	-	-	-	-	-
Heavy %	3.8%	0%	4.3%	0%	3.9%	0%	3.3%	0%	0%	2.7%	5%	0%	0%	0%	0.9%	0%	3.3%	0.9%	0%	2.3%	-	-	-	-	-
Lights	50	1	22	0	73	35	202	13	0	250	19	2	84	1	106	1	175	114	1	291	-	-	-	-	-
Lights %	96.2%	100%	95.7%	0%	96.1%	100%	96.7%	100%	0%	97.3%	95%	100%	100%	100%	99.1%	100%	96.7%	99.1%	100%	97.7%	-	-	-	-	-
Single-Unit Trucks	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	0	1	0	0	1	-	-	-	-	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	1%	0%	0%	0.8%	5%	0%	0%	0%	0.9%	0%	0.6%	0%	0%	0.3%	-	-	-	-	-
Buses	2	0	1	0	3	0	4	0	0	4	0	0	0	0	0	0	4	1	0	5	-	-	-	-	-
Buses %	3.8%	0%	4.3%	0%	3.9%	0%	1.9%	0%	0%	1.6%	0%	0%	0%	0%	0%	0%	2.2%	0.9%	0%	1.7%	-	-	-	-	-
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	-	-	-	-	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.4%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0.3%	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	0	-	-	-	-	2	-	-	-	-	2	-	-	-	-	-
Pedestrians%	-	-	-	-	20%	-	-	-	-	0%	-	-	-	-	40%	-	-	-	-	40%	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-	-	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-

Peak Hour: 04:00 PM - 05:00 PM Weather: Rain (2.8 °C)





Appendix B: STAMSON Calculations

STAMSON 5.0 NORMAL REPORT Date: 29-04-2019 15:18:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: porlday.te Time Period: 16 hours
Description: Predicted Daytime Traffic Sound Level at POR1

Road data, segment # 1: OldChurch

Car traffic volume : 9697 veh/TimePeriod *
Medium truck volume : 1727 veh/TimePeriod *
Heavy truck volume : 1860 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: OldChurch

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 21.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: OldChurch

Source height = 1.93 m

ROAD (0.00 + 71.76 + 0.00) = 71.76 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

 -90 90 0.00 73.23 0.00 -1.46 0.00 0.00 0.00 0.00 71.76

Segment Leq : 71.76 dBA

Total Leq All Segments: 71.76 dBA

TOTAL Leq FROM ALL SOURCES: 71.76

STAMSON 5.0 NORMAL REPORT Date: 29-04-2019 15:18:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: porlni.te Time Period: 8 hours
Description: Predicted Night-time Traffic Sound Level at POR1

Road data, segment # 1: OldChurch

Car traffic volume : 2245 veh/TimePeriod *
Medium truck volume : 408 veh/TimePeriod *
Heavy truck volume : 262 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: OldChurch

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 21.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: OldChurch

Source height = 1.73 m

ROAD (0.00 + 66.97 + 0.00) = 66.97 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

-90 90 0.00 68.44 0.00 -1.46 0.00 0.00 0.00 0.00 66.97

Segment Leq : 66.97 dBA

Total Leq All Segments: 66.97 dBA

TOTAL Leq FROM ALL SOURCES: 66.97

STAMSON 5.0 NORMAL REPORT Date: 29-04-2019 15:19:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por2day.te Time Period: 16 hours
Description: Predicted Daytime Traffic Sound Level at POR2

Road data, segment # 1: OldChurch

Car traffic volume : 9697 veh/TimePeriod *
Medium truck volume : 1727 veh/TimePeriod *
Heavy truck volume : 1860 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: OldChurch

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 27.26 m
Receiver height : 13.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: OldChurch

Source height = 1.93 m

ROAD (0.00 + 67.62 + 0.00) = 67.62 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

-90 0 0.00 73.23 0.00 -2.59 -3.01 0.00 0.00 0.00 67.62

Segment Leq : 67.62 dBA

Total Leq All Segments: 67.62 dBA

TOTAL Leq FROM ALL SOURCES: 67.62

STAMSON 5.0 NORMAL REPORT Date: 29-04-2019 15:19:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por2ni.te Time Period: 8 hours
Description: Predicted Night-time Traffic Sound Level at POR2

Road data, segment # 1: OldChurch

Car traffic volume : 2245 veh/TimePeriod *
Medium truck volume : 408 veh/TimePeriod *
Heavy truck volume : 262 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: OldChurch

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 27.26 m
Receiver height : 13.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: OldChurch

Source height = 1.73 m

ROAD (0.00 + 62.83 + 0.00) = 62.83 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

-90 0 0.00 68.44 0.00 -2.59 -3.01 0.00 0.00 0.00 62.83

Segment Leq : 62.83 dBA

Total Leq All Segments: 62.83 dBA

TOTAL Leq FROM ALL SOURCES: 62.83

Filename: por3day.te Time Period: 16 hours
Description: Predicted Daytime Traffic Sound Level at POR3

Road data, segment # 1: OldChurch

Car traffic volume : 9697 veh/TimePeriod *
Medium truck volume : 1727 veh/TimePeriod *
Heavy truck volume : 1860 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: OldChurch

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 53.00 m
Receiver height : 13.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -54.00 deg
Barrier height : 15.00 m
Barrier receiver distance : 26.60 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Road data, segment # 2: Atchison

Car traffic volume : 4597 veh/TimePeriod *
Medium truck volume : 819 veh/TimePeriod *
Heavy truck volume : 882 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Atchison

Angle1 Angle2 : -70.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 17.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: OldChurch

Source height = 1.93 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.93	!	13.50	!
		7.70	!
			7.70

ROAD (0.00 + 47.92 + 66.77) = 66.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-54	0.00	73.23	0.00	-5.48	-6.99	0.00	0.00	-12.83	47.92
-54	90	0.00	73.23	0.00	-5.48	-0.97	0.00	0.00	0.00	66.77

Segment Leq : 66.83 dBA

Results segment # 2: Atchison

Source height = 1.93 m

ROAD (0.00 + 68.93 + 0.00) = 68.93 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	90	0.00	69.99	0.00	-0.54	-0.51	0.00	0.00	0.00	68.93

Segment Leq : 68.93 dBA

Total Leq All Segments: 71.02 dBA

TOTAL Leq FROM ALL SOURCES: 71.02

Filename: por3ni.te Time Period: 8 hours
Description: Predicted Night-time Traffic Sound Level at POR3

Road data, segment # 1: OldChurch

Car traffic volume : 2245 veh/TimePeriod *
Medium truck volume : 408 veh/TimePeriod *
Heavy truck volume : 262 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: OldChurch

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 53.00 m
Receiver height : 13.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -54.00 deg
Barrier height : 15.00 m
Barrier receiver distance : 26.60 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Road data, segment # 2: Atchison

Car traffic volume : 1064 veh/TimePeriod *
Medium truck volume : 194 veh/TimePeriod *
Heavy truck volume : 124 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Atchison

Angle1 Angle2 : -70.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 15.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: OldChurch

Source height = 1.73 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
1.73	!	13.50	!	7.59	!	7.59

ROAD (0.00 + 43.05 + 61.99) = 62.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-54	0.00	68.44	0.00	-5.48	-6.99	0.00	0.00	-12.91	43.05
-54	90	0.00	68.44	0.00	-5.48	-0.97	0.00	0.00	0.00	61.99

Segment Leq : 62.04 dBA

Results segment # 2: Atchison

Source height = 1.73 m

ROAD (0.00 + 63.54 + 0.00) = 63.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	90	0.65	65.19	0.00	0.00	-1.65	0.00	0.00	0.00	63.54

Segment Leq : 63.54 dBA

Total Leq All Segments: 65.86 dBA

TOTAL Leq FROM ALL SOURCES: 65.86

STAMSON 5.0 NORMAL REPORT Date: 29-04-2019 15:22:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por4day.te Time Period: 16 hours
Description: Predicted Daytime Traffic Sound Level at POR4

Road data, segment # 1: OldChurch

Car traffic volume : 9697 veh/TimePeriod *
Medium truck volume : 1727 veh/TimePeriod *
Heavy truck volume : 1860 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: OldChurch

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 21.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: OldChurch

Source height = 1.93 m

ROAD (0.00 + 71.76 + 0.00) = 71.76 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

-90 90 0.00 73.23 0.00 -1.46 0.00 0.00 0.00 0.00 71.76

Segment Leq : 71.76 dBA

Total Leq All Segments: 71.76 dBA

TOTAL Leq FROM ALL SOURCES: 71.76

STAMSON 5.0 NORMAL REPORT Date: 29-04-2019 15:22:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por4ni.te Time Period: 8 hours
Description: Predicted Night-time Traffic Sound Level at POR4

Road data, segment # 1: OldChurch

Car traffic volume : 2245 veh/TimePeriod *
Medium truck volume : 408 veh/TimePeriod *
Heavy truck volume : 262 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: OldChurch

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 21.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: OldChurch

Source height = 1.73 m

ROAD (0.00 + 66.97 + 0.00) = 66.97 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

-90 90 0.00 68.44 0.00 -1.46 0.00 0.00 0.00 0.00 66.97

Segment Leq : 66.97 dBA

Total Leq All Segments: 66.97 dBA

TOTAL Leq FROM ALL SOURCES: 66.97