J.E. COULTER ASSOCIATES LIMITED

Consulting Engineers in
Acoustics, Noise & Vibration

PRESIDENT
John E. Coulter, B.A.Sc., P.Eng.

VICE-PRESIDENT
Howard R. Patlik, C.E.T.

Suite 211
1210 Sheppard Avenue East
Toronto, Ontario M2K 1E3
Tel: (416) 502-8598
Fax: (416) 502-3473
www.jecoulterassoc.com

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Via: E-mail

Title: NOISE IMPACT FEASIBILITY STUDY
290, 294, 298 & 302 GEORGIAN DRIVE
CITY OF BARRIE, ONTARIO

Comments:

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MARKO BIKIC, A+ A ARCHITECTS

Per:F MAGNANTE

NOISE IMPACT FEASIBILITY STUDY
290, 294, 298 & 302 GEORGIAN DRIVE
CITY OF BARRIE ONTARIO

FOR

TMD-ATRIA GROUP

BY

TOBIN COOPER, C.E.T.

CHECKED BY

JOHN E. COULTER, B.A.Sc., P.ENG.

J.E. COULTER ASSOCIATES LIMITED
1210 SHEPPARD AVENUE EAST, SUITE 211
TORONTO, ONTARIO
M2K 1E3

February 25, 2019

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1.0 INTRODUCTION

TMD-ATRIA Group has requested the preparation of a Noise Impact Feasibility Study to support a proposed Official Plan amendment, Zoning ByLaw and site plan approval for the proposed Cascade residential rental apartment units at 209, 294, 298 and 302 Georgian Drive in the City of Barrie (see Appendix A, Figures 1 and 2). The proposed development, as shown in the Site Plan, consists of a single, 19-storey tower with 375 units (see Appendix A, Figure 2).

The site is located just southeast of Highway 400, 950m west of Penetanguishene Road and immediately north of the Royal Victoria Health Centre (see Appendix A, Figure 1).

The purpose of this study is to document any potential noise impact from transportation and stationary noise sources. Mitigation measures are recommended to ensure the current Ministry of the Environment, Conservation and Parks (MECP) and the City of Barrie noise guidelines are satisfied (see Appendix D). The possible impact of the proposed project on the surrounding neighbourhood and the noise impact of sources within the development itself for the occupants are examined. The report provides recommendations on the abatement of identified noise sources where measures are required. The noise criteria are listed in Appendix D. All Figures are provided in Appendix A.

2.0 NOISE AND VIBRATION CRITERIA

The Ministry of the Environment, Conservation and Parks' guidelines that apply to a development site such as this are the guideline publication *NPC-300* and City of Barrie Noise By-Law.

2.1 Transportation Noise Criteria

MECP guidelines for transportation noise are stated in *NPC-300.* MECP will permit sound levels up to 60 dB L_{eq} daytime (5 dB above the criterion level of 55 dB L_{eq}) in private outdoor amenity areas without noise barriers, if the residential unit affected is provided with a warning clause in the *Agreement of Purchase and Sale* of the unit and site development agreement, notifying the owner of the excess. Where the levels exceed 60 dB L_{eq}, noise mitigation measures must be incorporated into the site development design (i.e., intervening structures such as acoustic barriers or buildings and/or greater setbacks from the noise source). Where the criterion levels are marginally exceeded, a warning clause is required in the *Agreement of Purchase and Sale* and the site development agreement. Sound levels above this point interfere significantly with normal speech communication.

According to MECP practice, backyards, terraces, or walkout patios are not considered as part of outdoor living areas when they are less than four metres in depth. For residential buildings, the Ministry's ventilation requirements are based on the sound level at the exterior building façade. Where the sound levels at the exterior of the building façade exceed 55 dB L_{eq} daytime at the living room window or 50 dB L_{eq} nighttime at the bedroom window, the unit must be provided with forced air heating with a provision for future air conditioning by the owner. An excess up to 10 dB is permissible, provided a warning clause is given. Where the sound levels exceed this limit (i.e., 65 dB daytime or 60 dB nighttime), air conditioning must be incorporated into the building design prior to occupancy. Warning clauses are applicable as well.

Air conditioning requirements are applied so that adequate interior sound levels can be maintained with the windows closed. Table 1 gives a summary of the above criteria.

Table 1: Noise Criteria				
Living Area	**Daytime (dB L_{eq}) (0700-2300)**		**Nighttime (dB L_{eq}) (2300-0700)**	
Outdoor Living Area (O.L.A.)	55 dB (up to 60 dB with warning clause)		--	
Interior Sound Levels	**Road Traffic**	**Rail Traffic**	**Road Traffic**	**Rail Traffic**
Bedrooms	45	40	40	35
Living/Dining	45	40	45	40

An outdoor living area in the residential subdivision is used in reference to a private outdoor patio, terrace, or backyard.

2.2 Stationary Noise Criteria

The current MECP noise criteria (*NPC-300*) deal with stationary sound sources that are present at this facility. These criteria are based on the ambient roadway traffic sound levels at the receiving point. The criteria applicable to this site state that the combined stationary noise sources cannot exceed the ambient roadway sound levels or 50 dBA, whichever is higher, based on a 1-hour time period, during the daytime (0700-1900 hours).

The traffic sound levels used to set the stationary sound guidelines are those from current, not future traffic, as they represent the worst case. MECP guidelines for transportation noise are stated in *NPC-300*.

For stationary sources, *NPC-300* states that the sound caused by the operation of any source equipment for any duration that results in an L_{eq} (1 hour) sound level higher than the ambient traffic sound level is prohibited. This By-Law states that the commercial establishments and stationary noise sources should not make more noise on average at a residential location than the ambient sound generated by road traffic during the same hourly time period.

3.0 TRANSPORTATION SOURCES

The primary sources of transportation noise at this development are the sound levels generated by road traffic on Highway 400 and Georgian Drive. Penetanguishene Road (Highway 93) is 950m to the east and is setback too far to have an effect on the sound levels of the project façade. This roadway will not be mentioned further in this report (see Appendix A, Figure 1).

3.1 Road Traffic

All road traffic data were provided by the MTO Simcoe Region and the City of Barrie. Table 2, below, gives the surrounding roadway traffic data.

Table 2: Road Traffic Data				
Roadway	**Existing AADT (Year)**	**% Trucks**	**% Buses**	**Posted Speed (km/h)**
Highway 400	66.800 (2016)	8.0	4.0	100
Georgian Drive	12, 265 (2017)	1.0	1.0	50

Notes:

1. AADT stands for average annual daily traffic for the indicated year.
2. The future growth to the year 2029 (10 years after project completion) on all roadways above is estimated at 2.0% per annum (compounded). Acoustically, this represents an increase of less than 1 dB from the current sound levels.

In the analysis, we have used the most recent year for which the AADT counts were recorded..

3.2 Site-generated Traffic

The project's site-generated traffic has a minimal effect on the overall sound levels in the area.

4.0 STATIONARY NOISE SOURCES

There are a few stationary sources that may impact this development, the rooftop equipment on the nearby Rotary Place facility and, to a lesser extent, the Royal Victoria Health Centre.

4.1 Residential Development

Directly to the east of this proposed project is a 3-storey high residential development. This project has a series of condensers to provide cooling for each unit. These are the only devices that would be considered a stationary noise source. These sources are not expected to present a sound level that could exceed the stationary noise criteria in this area. These will not be mentioned again in this report.

4.2 Royal Victoria Hospital – Rotary Place

To the south of this proposed residential building is the Rotary Place wing of the Victoria Hospital. This facility has a large, 14-fan, air cooled condenser unit that provides cooling for the building during the summer. This unit is the only device that would be considered a stationary noise source. When the sound from this unit is projected back to the rental building, the sound level is expected to be approximately 43 dB under full load. This could be as low as 37 dB in the evening under low load. These levels are well below the exclusion level criteria of 50 dBA (daytime) and 45 dBA (nighttime). This noise source is not expected to be a problem and will not be mentioned again in this report.

5.0 PROJECTED SOUND LEVELS

5.1 Road Traffic

The MECP requires that any road traffic control measures recommended must be based on a minimum 10-year traffic volume projection. All recommendations are based on the road traffic volumes anticipated for the year 2029. *STAMSON 5.03* uses the daily traffic volumes for the road and basic topographical information for the site in its calculations.

MECP's *STAMSON 5.03* computer programme and adjustments for the site conditions explained above were used to predict the sound levels at the upper levels (worst case). For the northern, eastern, and western façades, the sound from the Highway traffic to the north dominates the ambient sound. For the south façade of the proposed development, Highway 400 and Georgian Drive are the dominant sources of transportation noise.

Table 3, below, provides the projected sound levels at various locations exposed to Highway 400 and Georgian Drive.

Table 3: Unmitigated Sound Levels at Residential Receivers (dB L_{eq})

Location	Road and Traffic					
	Daytime			Nighttime		
	Hwy. 400	Georgian Dr.	Total	Hwy. 400	Georgian Dr.	Total
North Façade	73	N/A	**73**	73	N/A	**73**
South Façade	N/A	63	**63**	N/A	56	**56**
East Façade	70	58	**70**	70	52	**70**
West Façade	70	60	**70**	70	53	**70**

It is assumed the receptor is at a 66m elevation. This represents the top floor of the proposed development.

The road traffic sound levels for the top floor will be used for all building façade mitigation recommendations, although the lowest floors along the north façade are somewhat quieter because of shielding from nearby buildings.

6.0 IMPACT OF EXTERIOR NOISE ON DEVELOPMENT

The MECP does not consider balconies whose depths are less than 4m to be amenity space; private terraces and decks whose depths are greater than this would be considered amenity space. The terraces along the north and south elevation are not considered amenity spaces and noise control measures are not required.

7.0 FAÇADE REQUIREMENTS

The building façade components will require upgraded STC (sound transmission class) ratings relative to the minimum OBC requirements in order to satisfy the minimum indoor sound level requirements of the MECP. This is especially true along the northern façade of the development adjacent Highway 400.

All recommendations for interior noise control are based on the current MECP noise criteria (see Appendix D). The overview is listed in Table 1, presented in Section 2.1, above.

The MECP currently accepts the method outlined by the NRC (*BPN 56*, Appendix E) for calculating the acoustical performance required of the exterior façade components. The following analysis assumes direct exposure of the affected rooms to the outdoor sound. At this time, there are no suite layouts or detailed façade drawings; hence our comments are generic in nature, provided as a guideline to the requirements based on typical window-area to floor-area ratios. This data will require refinement once the details of the window and wall selections have been made. The east, west, and south façades can use the same or acoustically lighter glazing, since the sound level will decrease as one moves farther south.

Table 4: Bedroom Window Preliminary Requirements
North Façade

Window Configuration	Operable		Fixed	
	Glazing	STC	Glazing	STC
Window-area to floor-area ratio: 60% (55% fixed and 5% operable)	6(13)6	35	6(25)6	38
Window-area to floor-area ratio: 130% (90% fixed and 40% operable)	6(25)6	39	6L(25)6	41

Table 5: Living/Dining Room Window Preliminary Requirements
North Façade

Window Configuration	Operable		Fixed	
	Glazing	STC	Glazing	STC
Window-area to floor-area ratio: 60% (55% fixed and 5% operable)	3(13)6	32	3(13)6	34
Window-area to floor-area ratio: 130% (90% fixed and 40% operable)	6(13)6	35	6(25)6	38

Notes:

1. It should be noted these glazing options are theoretical. A more detailed review will be necessary once final suite layouts are available.
2. It was assumed a small area of spandrel panelling was used in the living rooms and bedrooms.

The STC ratings noted above are to be confirmed by the window supplier. Once the final façade design and internal suite layouts are available, final recommendations should be provided by the acoustical engineer. Sliding doors onto balconies may also need to be upgraded, as required.

8.0 AIR CONDITIONING AND WARNING CLAUSE REQUIREMENTS

Based on the current requirements of the MECP, central air conditioning and Warning Clause A will be required for all suites in the reviewed building.

The warning clause must be inserted into the *Agreements of Purchase and Sale* or lease and condominium agreements indicating that the sound levels have exceeded the Ministry of the Environment, Conservation and Parks' noise guidelines.

9.0 IMPACT OF THE DEVELOPMENT ON THE NEIGHBOURHOOD

We do not anticipate this development will have a noise impact on the surrounding areas, given the ambient traffic sound level. This aspect should be reviewed prior to issuance of the building permit. Rooftop ventilation equipment and ground level parking garage fans should be reviewed and recommendations, if applicable, provided to meet the MECP noise criteria.

10.0 IMPACT OF THE DEVELOPMENT ON ITSELF

The rooftop mechanical systems and the garage ventilation fans are not expected to create a significant noise impact on the development itself. They should be checked at the time of building permit application, to ensure they are compatible with the closest residential units.

11.0 CONCLUSIONS

In summary, while the site has been found to exceed the MECP noise criteria, the means to mitigate the effects of noise are practical. Warning notices will be required for the roadway noise. For controlling the interior sound levels, air conditioning and upgraded façades (windows and walls) will be necessary to meet the guidelines.

With the above noise and vibration control measures in mind, the development can be designed to meet the requirements of the MECP and the City of Barrie. It will be feasible to satisfy the noise and vibration criteria.

12.0 RECOMMENDATIONS

To meet the current requirements of MECP's and the City of Barrie's noise guidelines, the following measures would be required:

1. All suites will require central air conditioning. All units will also require a warning clause to be inserted into all purchase/lease agreements indicating that the sound levels have exceeded MECP's noise criteria (see Appendix C, Warning Clauses).

2. Roadway noise will impact the development. Warning Clause 'A' is required to notify occupants about the presence of the roadways.

3. The mechanical system plans should be examined by an acoustical consultant for noise from the cooling tower, ventilation openings, parking exhausts, and diesel generator sound, which may require treatment to meet the noise guidelines. Minor noise attenuation measures may be required to meet the noise guidelines at or in the proposed building as well as at residential neighbours.

/pt

APPENDIX A: FIGURES

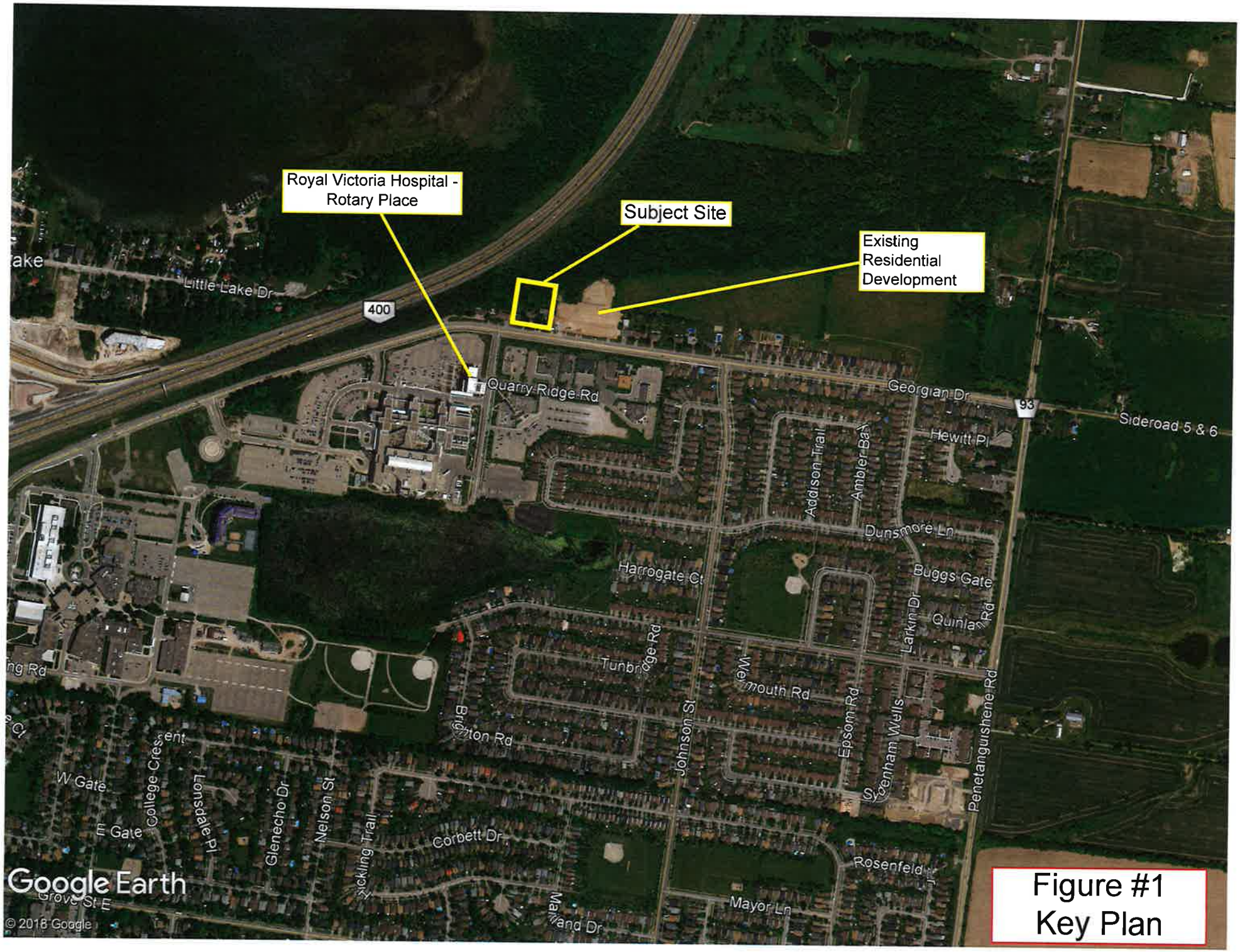

Figure #1
Key Plan

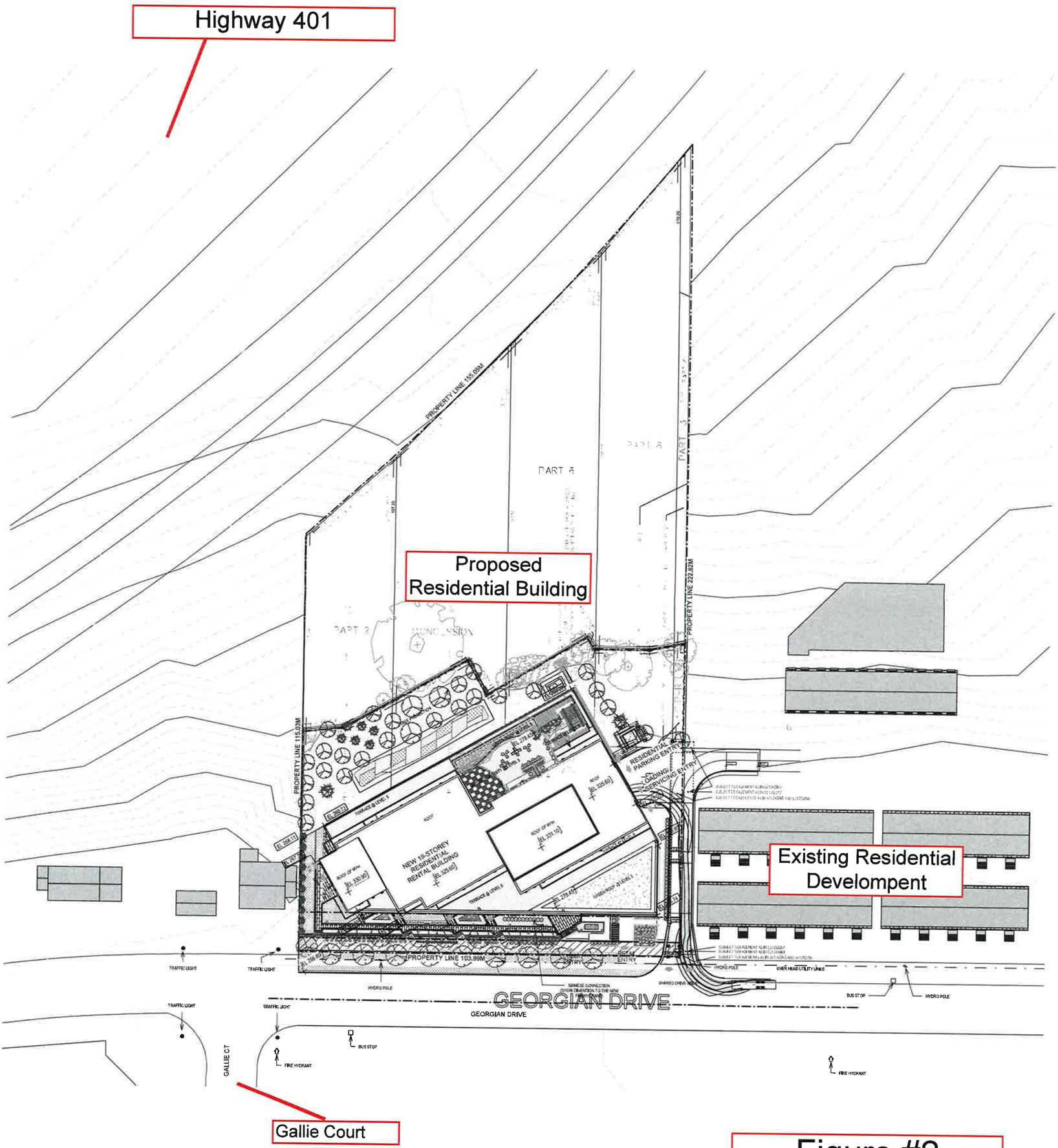

Figure #2
Site Plan

APPENDIX B: SOUND LEVEL CALCULATIONS

STAMSON 5.0 NORMAL REPORT Date: 25-02-2019 14:39:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: westfac.te Time Period: Day/Night 16/8 hours
Description: ATRGEO - West Facade

Road data, segment # 1: Highway 400 (day/night)

Car traffic volume : 47771/23886 veh/TimePeriod
Medium truck volume : 4343/2171 veh/TimePeriod
Heavy truck volume : 2171/1086 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Highway 400 (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 84.00 / 84.00 m
Receiver height : 66.00 / 66.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 13450/1494 veh/TimePeriod *
Medium truck volume : 137/15 veh/TimePeriod *
Heavy truck volume : 137/15 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12265
Percentage of Annual Growth : 2.00
Number of Years of Growth : 11.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 1.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Georgian Dr (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 20.00 / 20.00 m
Receiver height : 66.00 / 66.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Highway 400 (day)

Source height = 1.41 m

ROAD (0.00 + 69.75 + 0.00) = 69.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	80.24	0.00	-7.48	-3.01	0.00	0.00	0.00	69.75

Segment Leq : 69.75 dBA

Results segment # 2: Georgian Dr (day)

Source height = 1.00 m

ROAD (0.00 + 59.61 + 0.00) = 59.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	63.87	0.00	-1.25	-3.01	0.00	0.00	0.00	59.61

Segment Leq : 59.61 dBA

Total Leq All Segments: 70.15 dBA

Results segment # 1: Highway 400 (night)

Source height = 1.41 m

ROAD (0.00 + 69.75 + 0.00) = 69.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	80.24	0.00	-7.48	-3.01	0.00	0.00	0.00	69.75

Segment Leq : 69.75 dBA

Results segment # 2: Georgian Dr (night)

Source height = 1.00 m

ROAD (0.00 + 53.05 + 0.00) = 53.05 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	57.31	0.00	-1.25	-3.01	0.00	0.00	0.00	53.05

Segment Leq : 53.05 dBA
Total Leq All Segments: 69.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.15
(NIGHT): 69.84

STAMSON 5.0 NORMAL REPORT Date: 25-02-2019 14:39:11
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: sthfac.te Time Period: Day/Night 16/8 hours
Description: ATRGEO - South Facade

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

Car traffic volume : 13450/1494 veh/TimePeriod *
Medium truck volume : 137/15 veh/TimePeriod *
Heavy truck volume : 137/15 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12265
Percentage of Annual Growth : 2.00
Number of Years of Growth : 11.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 1.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Georgian Dr (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 20.00 / 20.00 m
Receiver height : 66.00 / 66.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Georgian Dr (day)

Source height = 1.00 m

ROAD (0.00 + 62.62 + 0.00) = 62.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.87	0.00	-1.25	0.00	0.00	0.00	0.00	62.62

Segment Leq : 62.62 dBA

Total Leq All Segments: 62.62 dBA

Results segment # 1: Georgian Dr (night)

Source height = 1.00 m

ROAD (0.00 + 56.06 + 0.00) = 56.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	57.31	0.00	-1.25	0.00	0.00	0.00	0.00	56.06

Segment Leq : 56.06 dBA

Total Leq All Segments: 56.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.62
(NIGHT): 56.06

STAMSON 5.0 NORMAL REPORT Date: 25-02-2019 14:37:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: nthfac.te Time Period: Day/Night 16/8 hours
Description: ATRGEO - North Facade

Road data, segment # 1: Highway 400 (day/night)

Car traffic volume : 47771/23886 veh/TimePeriod
Medium truck volume : 4343/2171 veh/TimePeriod
Heavy truck volume : 2171/1086 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Highway 400 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 84.00 / 84.00 m
Receiver height : 66.00 / 66.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Highway 400 (day)

Source height = 1.41 m

ROAD (0.00 + 72.76 + 0.00) = 72.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	80.24	0.00	-7.48	0.00	0.00	0.00	0.00	72.76

Segment Leq : 72.76 dBA

Total Leq All Segments: 72.76 dBA

Results segment # 1: Highway 400 (night)

Source height = 1.41 m

ROAD (0.00 + 72.76 + 0.00) = 72.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	80.24	0.00	-7.48	0.00	0.00	0.00	0.00	72.76

Segment Leq : 72.76 dBA

Total Leq All Segments: 72.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 72.76
(NIGHT): 72.76

STAMSON 5.0 NORMAL REPORT Date: 25-02-2019 14:37:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: eastfac.te Time Period: Day/Night 16/8 hours
Description: ATRGEO - East Facade

Road data, segment # 1: Highway 400 (day/night)

Car traffic volume : 47771/23886 veh/TimePeriod
Medium truck volume : 4343/2171 veh/TimePeriod
Heavy truck volume : 2171/1086 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Highway 400 (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 84.00 / 84.00 m
Receiver height : 66.00 / 66.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 13450/1494 veh/TimePeriod *
Medium truck volume : 137/15 veh/TimePeriod *
Heavy truck volume : 137/15 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12265
Percentage of Annual Growth : 2.00
Number of Years of Growth : 11.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 1.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Georgian Dr (day/night)

Angle1 Angle2 : 0.00 deg 75.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 20.00 / 20.00 m
Receiver height : 66.00 / 66.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Highway 400 (day)

Source height = 1.41 m

ROAD (0.00 + 69.75 + 0.00) = 69.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	80.24	0.00	-7.48	-3.01	0.00	0.00	0.00	69.75

Segment Leq : 69.75 dBA

Results segment # 2: Georgian Dr (day)

Source height = 1.00 m

ROAD (0.00 + 58.82 + 0.00) = 58.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	75	0.00	63.87	0.00	-1.25	-3.80	0.00	0.00	0.00	58.82

Segment Leq : 58.82 dBA

Total Leq All Segments: 70.09 dBA

Results segment # 1: Highway 400 (night)

Source height = 1.41 m

ROAD (0.00 + 69.75 + 0.00) = 69.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	80.24	0.00	-7.48	-3.01	0.00	0.00	0.00	69.75

Segment Leq : 69.75 dBA

Results segment # 2: Georgian Dr (night)

Source height = 1.00 m

ROAD (0.00 + 52.26 + 0.00) = 52.26 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	75	0.00	57.31	0.00	-1.25	-3.80	0.00	0.00	0.00	52.26

Segment Leq : 52.26 dBA

Total Leq All Segments: 69.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.09

(NIGHT): 69.83

Subject: RE: Request for Traffic Data for Highway 400
From: "Bee, Christopher (MTO)" <Christopher.Bee@ontario.ca>
Date: 2019-01-04, 11:13 AM
To: Tobin Cooper <tcooper@jecoulterassoc.com>
CC: "Bee, Christopher (MTO)" <Christopher.Bee@ontario.ca>

You are welcome

-----Original Message-----
From: Tobin Cooper [mailto:tcooper@jecoulterassoc.com]
Sent: January-03-19 12:17 PM
To: Bee, Christopher (MTO)
Cc: Bukhari, Iram (MTO); Nasrullah, Qazi (MTO); Terro, Eric (MTO)
Subject: Re: Request for Traffic Data for Highway 400

Thank you Chris.

Tobin

On 2019-01-02 10:37 AM, Bee, Christopher (MTO) wrote:

> To Tobin Cooper, Coulter Associates:
>
> There is no charge for the data.
>
> The latest official MTO Head Office data is up to 2016.
> You can plot the data points overtime below, and draw the best straight line through the data points, and extend the line to 2018-2019 to get an estimate for now.
> The location is designated as LHRS 46904 offset 0.0
>
> | Year | AADT (2 way) | % truck |
> |---|---|---|
> | 2016 | 66800 | 12 |
> | 2015 | 66200 | 12 |
> | 2014 | 65600 | 12 |
> | 2013 | 65000 | 12 |
> | 2012 | 64400 | 12 |
>
> "% truck" is defined as short trucks, buses, cars with trailer, long trucks, and specials (motorcycle, snowmobile, tractor),
> but NOT REGULAR CARS. There is no further breakdown details.
>
> Regards.
>
> Christopher Bee
> MTO CR Traffic Office
> Safety Traffic Information and Roadwork Coordination Section (STIRCS)
>
> -----Original Message-----
> From: Bukhari, Iram (MTO)
> Sent: January-02-19 9:28 AM

Hi Daniel,

I have reviewed the Novus study. There are a number of differences in the data provided by Metrolinx and CNR.

Metrolinx projection at the time (2015) to Novus was only 126 trains per day. The most recent data from Metrolinx expanson plans is 237 per day.
CNR indicated no freight traffic to Novus (It is not clear why CNR indicated no freight trains). CNR indicated in their letter to us 14 freight trains per day.
The report also used an average train speed limit which lowered their sound level results. Metrolinx and CNR require that the maximum speed limit is used.
All of these factors will result in significantly higher levels.

Regards,

JECL
Howard Patlik
On 2019-02-25 11:05 a.m., Daniel Teperman wrote:

> Hi John,
>
> Please see attached.
>
> --
>
> MainLogo_Haven-EMAIL.png
>
> **Daniel Teperman | Land Development Associate**
>
> 905-851-1010| 1-844-554-2836
> 1-71 Marycroft Ave.
> Vaughan, ON L4L 5Y6
> HAVENDEVELOPMENTS.CA
>
> Connecting you to the city you love.

--

Howard R. Patlik, C.E.T.

J.E. Coulter Associates Limited
T: 416-502-8598 ext. 222
F: 416-502-3473
hpatlik@jecoulterassoc.com

Traffic Count

OBJECTID	4017
ADT Label	ADT-12265
Daily Total Volume	12265
Count Year	2017
Traffic Count Type	TMC
Peak 8 Hour Volume	6814
Heavy Vehicle Percentage	
Average Speed kmph 85 Percentile	
Contract ID	
Location Description	W Georgian Drive and

Traffic Count

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Showing 11 to 18 of 18

Hint: Click on ▼ to filter columns

OBJECTID	ADT Label	Daily Total Volume	Count Year	Traffic Count Type	Peak 8 Hour Volume	Heavy Vehicle Percentage	Avera
3756	ADT-5384	5384	2014	TMC	2991	2	
3757	ADT-13745	13745	2014	TMC	7636	2	
3758	ADT-10685	10685	2014	TMC	5936	2	
4007	ADT-9572	9572	2017	TMC	5318		
4008	ADT-7846	7846	2017	TMC	4359		
4017	ADT-12265	12265	2017	TMC	6814		
4030	ADT-5346	5346	2017	TMC	2970		
4031	ADT-11383	11383	2017	TMC	6324		

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APPENDIX C: WARNING CLAUSES

WARNING CLAUSE A – Applicable to all units

"Purchasers are advised that the dwelling units have been fitted with central air-conditioning units. Central air-conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the Municipality's and the Ministry of the Environment, Conservation and Parks' noise criteria. (Note: The location and installation of the air-conditioning equipment should comply with the Ministry of the Environment's criteria.)

"Purchasers are advised that despite the inclusion of noise control features in this development area and within the units, sound levels from Highway 400 and Georgian Drive may continue to be a concern, occasionally interfering with some activities of the dwelling occupants as the noise level exceeds the Municipality's and the Ministry of the Environment, Conservation and Parks' noise criteria."

APPENDIX D: NOISE CRITERIA

NOISE CRITERIA

The noise study will be based on the following criteria for residential units, as required by the MECP, CP Rail, and City of Barrie.

MECP'S NOISE CRITERIA

1. Bedroom areas (2300 – 0700 hours) = 40 dB L_{eq} (Roadways)
2. Bedroom areas (2300 – 0700 hours) = 35 dB L_{eq} (Railways)
3. Living/dining room areas (0700 – 2300 hours) = 45 dB L_{eq} (Roadways)
4. Living/dining room areas (0700 – 2300 hours) = 45 dB L_{eq} (Railways)
5. Outdoor areas (0700 – 2300 hours) = 55 dB L_{eq}

Up to 5 dB excess with warning clause is permissible. Where the levels exceed 60 dB L_{eq}, an acoustic barrier is required.

RAILWAY'S NOISE CRITERIA

1. Bedroom areas (2300 – 0700 and 0700 – 2300 hours) = 35 dB L_{eq}
2. Living/dining room areas (0700 – 2300 hours) = 40 dB L_{eq}
3. Outdoor areas (0700 – 2300 hours) = 55 dB L_{eq}

All calculations are based on the Architectural Plans by A & Associates Architects, dated December 21, 2018.

L_{eq} (Definition)

The L_{eq} is defined as the mean energy of the noise level averaged over the measurement period. It can be considered as the continuous steady noise level which would have the same acoustic energy as the real fluctuating noise measured over the same period of time.

APPENDIX E: REFERENCES

1. Ministry of the Environment's *STAMSON* Computer Programme (*Version 5.03*) for the IBM PC.

2. Ministry of the Environment, "Publication *NPC-300*, Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning", August 2013.

3. Ministry of the Environment, *ORNAMENT*, "Ontario Road Noise Analysis Method for Environment and Transportation", November 1988.

4. Quirt, D.J., "Controlling Sound Transmission into Buildings", National Research Council, *Building Practice Note 56.*