

Environmental Noise & Vibration Feasibility Assessment

303 Cundles Road East

Proposed Residential Rental Development
City of Barrie

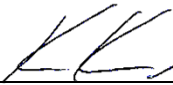
June 22, 2022
Project: 122-0107

Prepared for

Penady (North Barrie) Limited

Prepared by




Kathryn Katsiroumpas, B.Sc.E., P.Eng

VALCOUSTICS

Canada Ltd.

Version History

Version #	Date	Comments
1.0	June 22, 2022	Final – Issued to Client
2.0	June 22, 2022	Inclusion of Vibration

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Environmental Noise Feasibility Assessment

303 Cundles Road East

Proposed Residential Rental Development

City of Barrie

EXECUTIVE SUMMARY

Valcoustics Canada Ltd. (VCL) has been retained to prepare an environmental noise assessment for the proposed residential rental development at the southwest corner of Cundles Road East and Pacific Avenue in Barrie, Ontario in support of the ZBA application. The proposed development will consist of three residential buildings, 8, 11 and 12 storeys in height.

A common outdoor amenity area will be provided on the roof of building B2. Some units will also have private terraces greater than 4 m in depth. The development will also include at grade privately owned public space.

The significant transportation noise source in the vicinity is road traffic on Highway 400 and Cundles Road East. Given the high ambient sound levels and distance separation, stationary noise sources within the retail uses to the east are not expected to impact the site.

The sound levels on the site have been determined and compared with the applicable Ministry of the Environment, Conservation and Parks (MECP) noise guideline limits to determine the need for noise mitigation.

To meet the applicable transportation noise source guideline limits:

- All residential suites in the development require mandatory air conditioning to allow exterior windows to remain closed for noise control purposes; and
- Exterior wall construction meeting a Sound Transmission Class (STC) rating of 54 is required for all three buildings.
- For Building B1, exterior windows of up to STC 47 for south facade directly exposed to Highway 400 and up to STC 44 for east and west facades partially exposed to Highway 400 are required.
- For Building B2, exterior windows of up to STC 39 for south, east and west facades directly exposed to Highway 400 are required.
- For Building B3, exterior windows of up to STC 38 for south, east and west facades directly exposed to Highway 400 are required.

- All private at grade and elevated terraces should be designed to be less than 4 m in depth to avoid being designated OLAs as per MECP guidelines. Otherwise, sound barrier parapet walls upwards of 3.2 m in height will be required for private terraces greater than 4 m in depth.
- Sound barrier parapet walls 2.3 m in height are required for the rooftop amenity area in Building B2.

1.0 INTRODUCTION

Valcoustics Canada Ltd. (VCL) has been retained to prepare an environmental noise feasibility study for the proposed residential development at the southwest corner of Cundles Road East and Pacific Avenue in Barrie, Ontario in support of the ZBA application. The potential sound levels and noise mitigation measures needed for the proposed development to comply with the MECP noise guideline requirements are outlined herein.

1.1 THE SITE AND SURROUNDING AREA

The site is located in the City of Barrie and is bounded by:

- Highway 400 to the south;
- Pacific Avenue with the North Barrie Crossing retail development beyond to the east;
- Cundles Road East with existing low rise residential development beyond to the north; and
- Existing 6 storey residential buildings to the west.

A Key Plan is included as Figure 1.

The study was completed using the site plan and architectural drawings, prepared by SRN Architects, dated January 19, 2022. The Site Plan is shown as Figure 2.

1.2 THE PROPOSED DEVELOPMENT

The proposed development will consist of the following:

- Building B1: 12 storey residential rental building;
- Building B2: 8 storey residential rental building; and
- Building B3: 11 storey residential rental building.

Common outdoor and indoor amenity space will be provided on the roof of Building B2. The majority of units have a private terrace, balcony or patio. In some locations, these terraces are greater than 4 m in depth. The development will also have two levels of underground parking and privately owned public space at grade.

2.0 VIBRATION SOURCES

Based on VCL experience with vibration measurements throughout the GTA, ground borne vibration due to vehicular movements on surrounding roadways, including 400 series highways, is not expected to create significant impact on the proposed development. There are no rail,

industrial or other sources of ground borne vibration in the vicinity of the site. Thus, vibration has not been considered further in the analysis.

3.0 NOISE SOURCES

3.1 TRANSPORTATION NOISE SOURCES

The transportation noise source with potential to impact the proposed development is road traffic on Cundles Road East and Highway 400. Traffic volumes on the other surrounding roadways, including Pacific Avenue, are anticipated to be minor and no significant noise impact is expected.

Current (year 2022) road traffic data for Cundles Road East was obtained from the City of Barrie. The ratio of medium trucks to heavy trucks was assumed to be 60%/40% of the total truck volume. The day/night split was assumed to be 90%/10% as is typical for well-travelled roadways. A growth rate of 2%, compounded annually, was used to calculate the future (year 2032) traffic volume for Cundles Road East.

Ultimate Annual Average Daily Traffic (AADT) and Summer Average Daily Traffic (SADT) data was provided for Highway 400. Since the SADT is higher, this was the traffic data used in our calculations. Highway 400 has 6 lanes as it passes by the site. Since ORNAMENT requires a maximum of 4 lanes per segment, Highway 400 was broken into two segments (i.e., northbound and southbound) for the traffic noise predictions, with 50% SADT levels for each segment. The ratio of medium trucks to heavy trucks was assumed to be 25%/75% of the total truck volume.

Table 1 summarizes the traffic data used in the assessment. Appendix A contains the correspondence regarding the road traffic data.

3.2 STATIONARY NOISE SOURCES

There are a number of retail buildings within the North Barrie Crossing development to the east. Potential noise sources for these uses are typically rooftop mechanical equipment and vehicle movements. However, due to the distance separation and high ambient noise levels from the nearby roadways, it is expected that these noise sources will not impact the proposed development and they have not been considered further. This was confirmed during a site visit by VCL staff on June 10, 2022.

4.0 ENVIRONMENTAL NOISE GUIDELINES

4.1 MECP PUBLICATION NPC-300

The applicable noise guidelines for new residential development are those in MECP Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning".

The environmental noise guidelines of the MECP for road traffic noise sources, as provided in Publication NPC-300, are discussed briefly below and summarized in Appendix B.

4.1.1 Architectural Elements

In the daytime (0700 to 2300), the indoor criterion for road noise is $L_{eq\ Day}^{(1)}$ of 45 dBA for sensitive spaces such as living/dining rooms, dens and bedrooms. At night, the indoor criterion for road noise is $L_{eq\ Night}^{(2)}$ of 45 dBA for sensitive spaces such as living/dining rooms and dens and 40 dBA for bedrooms. The architectural design of the building envelope (walls, windows, etc.) must provide adequate sound isolation to achieve these indoor sound level limits.

4.1.2 Ventilation

In accordance with the MECP noise guideline for residential development, if the daytime sound level, $L_{eq\ Day}$, at the exterior face of a noise sensitive window is greater than 65 dBA, means must be provided so that windows can be kept closed for noise control purposes and central air conditioning is required. For daytime sound levels between 56 dBA and 65 dBA inclusive, there need only be the provision for adding air conditioning at a later date. A warning clause advising the occupant of the potential interference with some activities is also required. At nighttime, air conditioning would be required when the sound level exceeds 60 dBA ($L_{eq\ Night}$) at a noise sensitive window (provision for adding air conditioning is required when greater than 50 dBA).

4.1.3 Outdoors

For outdoor living areas (OLA's), the guideline is $L_{eq\ Day}$ of 55 dBA, with an excess not exceeding 5 dBA considered acceptable if it is technically not practicable to achieve the 55 dBA objective, provided warning clauses are registered on title. Note that for road traffic sources, a balcony or terrace is not considered an OLA, unless it is:

- the only OLA for the occupant;
- at least 4 m in depth; and
- unenclosed.

5.0 NOISE IMPACT ASSESSMENT

5.1 ANALYSIS METHOD

Using the road traffic data in Table 1, the sound levels, in terms of $L_{eq\ Day}$ and $L_{eq\ Night}$, were determined using STAMSON V5.04 – ORNAMENT, the computerized road traffic noise prediction model of the MECP.

The daytime and nighttime sound levels at the building facades were calculated at a top floor height for each building, which is the worst case location acoustically.

The daytime sound levels at the common outdoor amenity area located on the rooftop of Building B2 was calculated in the centre of the OLA at a height of 1.5 m above the slab elevation in accordance with NPC-300. There are a number of private terraces within the development that

(1) $L_{eq, Day}$ 16-hour energy equivalent sound level (0700-2300 hours).
(2) $L_{eq, Night}$ 8-hour energy equivalent sound level (0700-2300 hours).

currently qualify as OLAs under MECP guidelines. Daytime sound levels were calculated at the worst case private terraces on Buildings B1 and B3, directly exposed to Highway 400.

Inherent screening of each building face due to its orientation to the noise source as well as that provided by the subject development itself was taken into account.

5.2 RESULTS

The highest daytime/nighttime sound levels of 77 dBA are predicted to occur at plane of window (POW) receptors on the facade of Building B1 directly exposed to Highway 400.

The unmitigated daytime OLA sound level at the common rooftop outdoor amenity area in Building B1 is predicted to be 71 dBA.

Table 2 summarizes the predicted sound levels outdoors at specific locations.

A sample sound level calculation is included in Appendix C.

6.0 NOISE ABATEMENT REQUIREMENTS

The noise control measures can generally be classified into two categories which are interrelated, but which can be treated separately for the most part:

- a) Architectural elements to achieve acceptable indoor noise guidelines for transportation sources; and
- b) Design features to protect the OLA's.

Noise abatement requirements are summarized in Table 3 and the notes to Table 3.

6.1 INDOORS

6.1.1 Architectural Requirements

The indoor noise guidelines for the transportation sources can be achieved by using appropriate construction for exterior walls, windows and doors. In determining the worst-case architectural requirements for the residential buildings, wall and window areas were assumed to be 80% and 30%, respectively, of the associated floor area, at each facade of a corner room with both facades directly exposed to and at an angle to the noise sources, for both living/dining rooms and bedrooms.

To meet the indoor noise guideline limits:

1. All three buildings require exterior wall construction of at least STC 54.
2. For Building B1, exterior windows of up to STC 47 for south facade directly exposed to Highway 400 and up to STC 44 for east and west facades partially exposed to Highway 400 are required.
3. For Building B2, exterior windows of up to STC 39 for south, east and west facades directly exposed to Highway 400 are required.

4. For Building B3, exterior windows of up to STC 38 for south, east and west facades directly exposed to Highway 400 are required.

These were determined using assumed wall and window areas and should be confirmed once detailed building plans are available. Window STC requirements will increase if window sizes are greater than the assumed percentage of floor area stated above.

To achieve STC 54 for exterior walls, a 100mm brick veneer or pre-cast masonry panel with insulated gypsum board back-up wall assembly construction could be used. Alternate wall types with an improved gypsum wall assembly with staggered studs and resilient channel are also possible if preferred.

To achieve STC 38-39 exterior windows, a double pane glazing system with at least one pane laminated should be anticipated. To achieve STC 44 and above, both panes will need to be laminated with a large (>1”) air space. Alternatively, laminated triple glazed systems could also be used. Note, the window frames themselves must also be designed to ensure that the overall sound isolation performance for the entire window unit meets the sound isolation requirement. This should be confirmed by the window manufacturer.

Wall and window constructions should be reviewed to ensure that they will meet the required sound isolation performance. This is typically required by the City at the time of building permit application.

6.1.2 Ventilation Requirements

Based on the predicted sound levels, all residential units in all three buildings require mandatory air conditioning to allow windows to remain closed for noise control purposes.

6.2 OUTDOORS

The unmitigated daytime sound level in the common rooftop OLA is predicted to 71 dBA, which is above the MECP guideline limits. Thus, additional screening in the form of 2.3 m high sound barrier parapet walls is required. This screening is supplemental to that provided by the upper floors of Building B2 and the barriers extend along either side of the OLA. See Figure 2.

At the private terraces that are greater than 4 m in depth, sound barrier parapet walls of up to 3.2 m in height would be required to meet MECP guidelines. If this is considered prohibitive, terraces can be reduced or restricted to a depth of less than 4 m so that they are not considered OLAs under MECP guidelines. These details can be developed further as part of the site plan approval application.

The sound barrier parapet walls must be of solid construction with no gaps, cracks or holes and must meet a minimum surface density of 20 kg/m². Suitable materials can include glass, metal, wood, concrete, plastic, composites or a combination of these.

6.3 WARNING CLAUSES

Warning clauses are a tool to inform prospective occupants of the potential annoyance due to the environmental noise sources. Where the guideline sound level limits are exceeded, appropriate warning clauses should be registered on title or included in the development agreement that is

registered on title. The warning clauses should also be included in lease/rental agreements to make future occupants aware of the potential noise situation.

Table 3 and the notes to Table 3 summarize the warning clauses recommended for the site.

7.0 THE EFFECT OF THE PROJECT ON THE NEIGHBOURHOOD

The main noise sources associated with the proposed development with the potential to impact the neighbouring noise sensitive land uses will be the mechanical equipment. However, the mechanical design for the development has not been completed. Since there are many options for the mechanical design for this type of building, it is not possible to assess the noise impact to the environment at this time. The mechanical equipment at the proposed building interfacing to the outdoors will need to be designed to comply with the guideline limits in NPC 300. By proper engineering design, all requirements can be met and no significant noise impact would be created for surrounding uses. Appropriate choice of location, equipment type, and noise control features should be considered during detailed design for such items as rooftop equipment and air intakes and exhausts, including underground parking garage ventilation systems (if applicable).

For any emergency generators, appropriate steps should be taken to ensure that the equipment placement, treatment, and the routine testing schedule will not generate adverse noise impact on neighbouring properties. The generator will require silencers on the intake and exhaust cooling air paths, as well as a muffler on the combustion exhaust.

8.0 CONCLUSIONS

With the incorporation of the recommended noise mitigation measures, the applicable MECP noise guidelines can be met, and a suitable acoustical environment provided for the occupants.

The approvals and administrative procedures are available to ensure that the noise requirements are implemented.

9.0 REFERENCES

1. "Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning", Ontario Ministry of the Environment, Publication NPC-300, August 2013.
2. Road and Rail Noise: Effects on Housing", Canada Mortgage and Housing Corporation, Publication NHA 5156, 81/10.
3. PC STAMSON 5.04, "Computer Program for Road Traffic Noise Assessment", Ontario Ministry of the Environment.
4. Building Practice Note No. 56: "Controlling Sound Transmission into Buildings", by J. D. Quirt, Division of Building Research, National Council of Canada, September 1985.

TABLE 1 ROAD TRAFFIC DATA

Roadway	Year	AADT/SADT ⁽¹⁾	% Trucks		Day/Night (%)	Speed Limit (kph)
			Medium	Heavy		
Cundles Road East ⁽²⁾	2022 (2032)	AADT 22,000 (26,818) ⁽³⁾	2	1	90/10	50
Highway 400 North ⁽²⁾	Ultimate Data	SADT 90,000 ⁽⁴⁾	1.5	4.5	67/33	100
Highway 400 South ⁽²⁾	Ultimate Data	SADT 90,000 ⁽⁴⁾	1.5	4.5	67/33	100

Notes:

- (1) AADT - Annual Average Daily Traffic; SADT - Summer Average Daily Traffic; The higher traffic volume between AADT & SADT was used for analysis.
- (2) Current traffic data (AADT/SADT and total truck percentages) was provided by the City of Barrie for Cundles Road East and from Ontario Ministry of Transportation for Highway 400. Day/night was split was assumed.
- (3) The data shown in brackets is projected to the year 2032 with a 2% growth rate, compounded annually as provided by the City of Barrie.
- (4) The overall Highway 400 SADT is 180,000 as provided by the Ontario Ministry of Transportation. Highway 400 has 6 lanes, however STAMSON recommends each segment have a maximum of 4 lanes. Therefore Highway 400 was split into two separate road segments assuming a 50%/50% split in traffic between the northbound and southbound lanes.

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS⁽¹⁾

Location ⁽²⁾	Source	Distance (m) ⁽³⁾	L _{eq} Day (dBA)	L _{eq} Night (dBA)
Building B1				
R1	HWY 400 South	59	73	73
	HWY 400 North	84	72	72
	TOTAL	-	76	76
R2	HWY 400 South	59	70	70
	HWY 400 North	84	69	69
	Cundles Road East	250	51	44
	TOTAL	-	73	73
R3	HWY 400 South	76	69	69
	HWY 400 North	101	68	68
	Cundles Road East	234	52	45
	TOTAL	-	72	72
R4	Cundles Road East	234	54	47
R5	HWY 400 South	96	59	59
	HWY 400 North	58	58	58
	Cundles Road East	203	55	49
	TOTAL	-	63	62
R6	HWY 400 South	96	69	69
	HWY 400 North	121	68	68
	Cundles Road East	203	53	46
	TOTAL	-	72	72
R7	HWY 400 South	46	72	72
	HWY 400 North	71	70	70
	Cundles Road East	253	52	45
	TOTAL	-	75	74
R8	HWY 400 South	46	75	75
	HWY 400 North	71	73	73
	TOTAL	-	77	77
OLA - Level 5/9 Terraces	HWY 400 South	64	65	-
	HWY 400 North	89	70	-
	TOTAL	-	71	-
Building B2				
R9	HWY 400 South	133	68	68
	HWY 400 North	158	67	67
	TOTAL	-	71	71
R10	HWY 400 South	133	67	67
	HWY 400 North	158	66	66
	Cundles Road East	176	53	46
	TOTAL	-	70	70

.../cont'd

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS⁽¹⁾ (continued)

Location ⁽²⁾	Source	Distance (m) ⁽³⁾	Leq Day (dBA)	Leq Night (dBA)
R11	HWY 400 South	172	65	65
	HWY 400 North	197	64	64
	Cundles Road East	138	54	47
	TOTAL	-	68	68
R12	Cundles Road East	138	56	50
R13	HWY 400 South	195	65	65
	HWY 400 North	220	65	65
	Cundles Road East	203	53	45
	TOTAL	-	68	68
R14	Cundles Road East	114	53	47
OLA – Common Rooftop Terrace	HWY 400 South	178	68	-
	HWY 400 North	203	67	-
	TOTAL	-	71	-
Building B3				
R15	HWY 400 South	229	67	67
	HWY 400 North	254	66	66
	TOTAL	-	69	69
R16	HWY 400 South	229	64	64
	HWY 400 North	254	64	64
	Cundles Road East	81	57	50
	TOTAL	-	67	67
R17	HWY 400 South	239	67	67
	HWY 400 North	264	66	66
	TOTAL	-	70	70
R18	HWY 400 South	239	64	64
	HWY 400 North	264	64	64
	Cundles Road East	71	57	50
	TOTAL	-	67	67
R19	HWY 400 South	284	63	63
	HWY 400 North	309	63	63
	Cundles Road East	25	62	55
	TOTAL	-	68	67
R20	Cundles Road East	25	65	58
OLA – Level 6 Terrace	HWY 400 North	233	66	-
	HWY 400 South	258	65	-
	TOTAL	-	69	-

Notes:

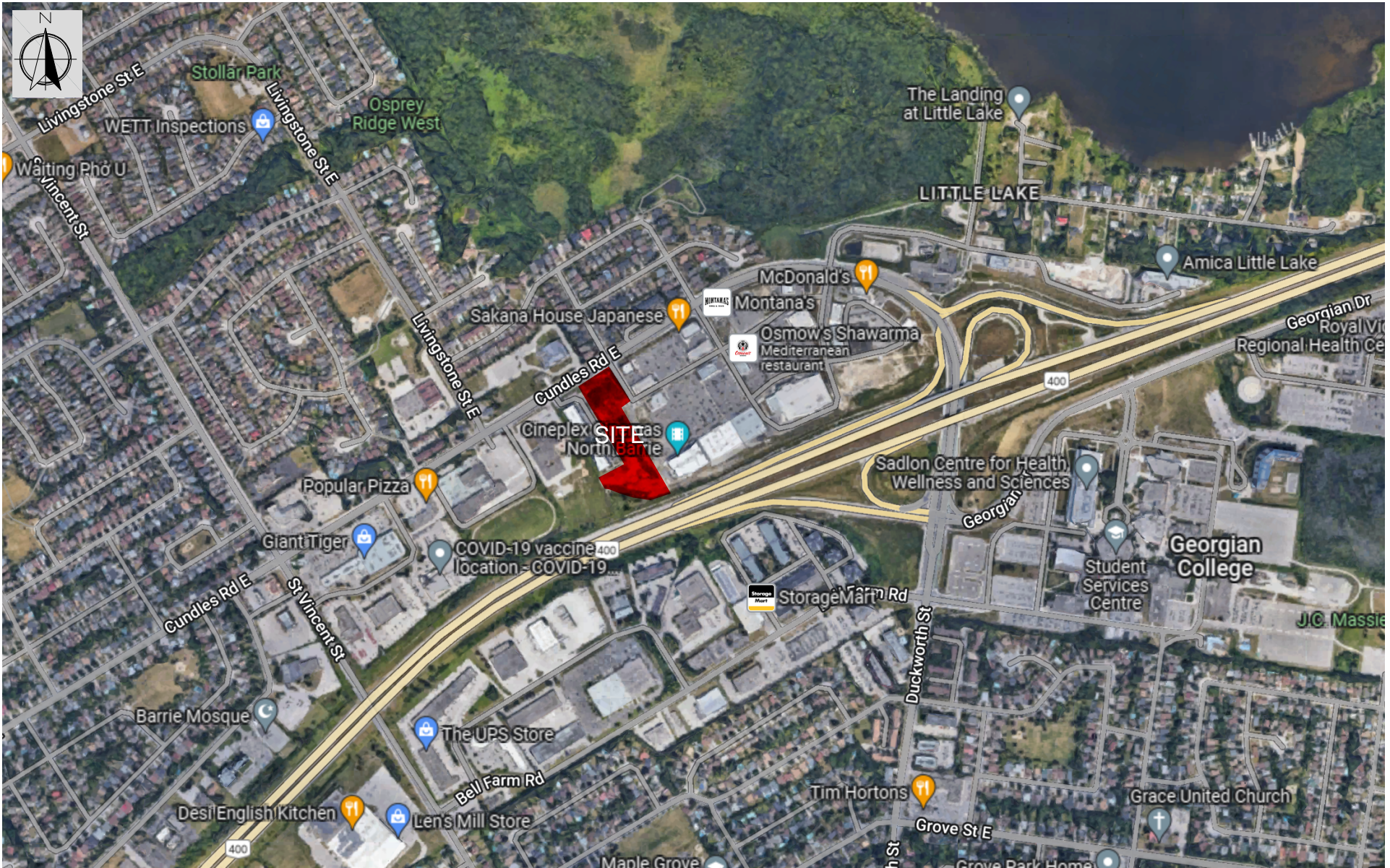
- (1) Daytime/nighttime receptors at the building facades were assessed at the top floor windows. OLA receptors were taken in the middle of the OLA at a height of 1.5 m above slab elevation.
- (2) See Figure 2.
- (3) Distance indicated is taken from the centreline of the noise source to the point of reception.

TABLE 3 MINIMUM NOISE ABATEMENT MEASURES

Location	Air Conditioning ⁽¹⁾	Exterior Wall ⁽²⁾	Exterior Window ⁽³⁾	Sound Barrier ⁽⁴⁾	Warning Clauses ⁽⁵⁾
Building B1	Mandatory	STC 54	Up to STC 47 for south facade directly exposed to HWY 400 Up to STC 44 for east and west facades directly exposed to HWY 400	None	A+B+C
Building B2	Mandatory	STC 54	Up to STC 39 for facades directly exposed to HWY 400	2.3 m high sound barrier parapet walls on rooftop OLA (see Figure 2)	A+B+C
Building B3	Mandatory	STC 54	Up to STC 38 for facades directly exposed to HWY 400	None	A+B+C

Notes:

- (1) Where means must be provided to allow windows to remain closed for road noise control purposes, a commonly used technique is that of air central conditioning.
- (2) STC - Sound Transmission Class Rating (Reference ASTM-E413). Analyses were based upon the assumption that all wall and window areas are as indicated in Section 5.1.1 of text. Requirements should be checked once floor plans have been finalized and exterior wall construction details are defined.
- (3) STC values are based upon the assumption that all wall and window areas are as indicated in Section 5.1.1 of text. Requirements should be checked once floor plans have been finalized and exterior wall construction details are defined.
- (4) Sound barriers must be of solid construction with no gaps, cracks or holes and must have a minimum surface density of 20 kg/m². A variety of materials are available including glass, wood, masonry, composites, plastics, earth berms, or a combination of materials. Barrier requirements assume all private terraces, patios and balconies are less than 4 m in depth.
- (5) The warning clauses to be registered on title and be included in rental/lease agreements for designated units:
 - A. "Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."
 - B. "This dwelling unit has been supplied with an 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."
 - C. "Purchasers/occupants are advised that due to the proximity of the existing commercial developments, sound from these facilities may, at times, be audible."
- (6) All exterior doors shall be fully weather-stripped.



No.	Revision/Issue	Date


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Title
Key Plan

Project Name
**303 Cundles Road East
Residential Rental Development**

Project No.
122-0107

Scale
N.T.S.

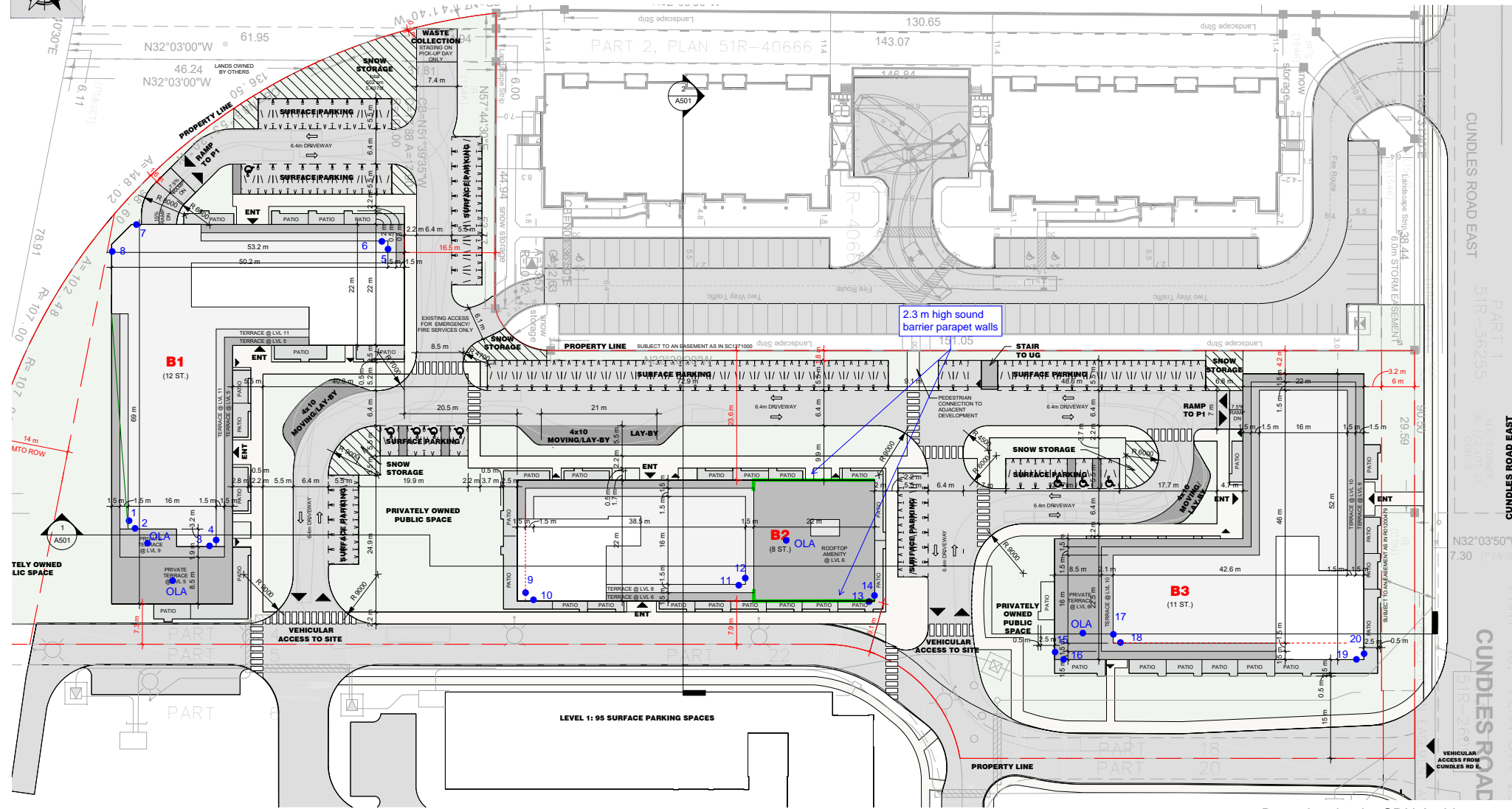
Date
June 22, 2022

Figure
1

PROJECT



All dwelling units require air conditioning. See report for wall and window requirements.



Base drawing by SRN Architects



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Title
 Site Plan and Receptor Locations

Project Name
 303 Cundles Road East
 Residential Rental Development

Project No.
 122-0107

Scale
 N.T.S.

Date
 June 22, 2022

Figure
 2

No.	Revision/Issue	Date

APPENDIX A

ROAD TRAFFIC DATA

kathy Katsiroumpas

From: Caimano, Riccardo (MTO) <Riccardo.Caimano@ontario.ca>
Sent: March 31, 2021 10:24 AM
To: John Emeljanow
Subject: RE: Ultimate Traffic Data Request for Highway 400 in Barrie

Hi John,

In response to your request please find below the information available from this office for Highway 400 between Bayfield Street and Duckworth Street.

2016 AADT = 80,200
2016 SADT = 97,800
Number of through lanes = 6
Ultimate AADT = 146,880
Ultimate SADT = 180,000
Ultimate number of through lanes = 8
Posted Speed = 100 km/hr
Percentage of Trucks = 6%

Please note that the above information is estimated based upon our current knowledge of the area, which may be subject to change in the future. Other information related to ROW and gradient will be available from Central Region Traffic Office.

If you require further information, please don't hesitate to contact me.

Regards,

Riccardo Caimano (he/him) | Planner
Systems Analysis and Forecasting Office
Ministry of Transportation Ontario
Mobile: 416.587.9098 | E: Riccardo.Caimano@ontario.ca

From: John Emeljanow <john@valcoustics.com>
Sent: March 30, 2021 9:22 AM
To: Caimano, Riccardo (MTO) <Riccardo.Caimano@ontario.ca>
Subject: Ultimate Traffic Data Request for Highway 400 in Barrie

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good Morning Riccardo:

We are preparing an environmental noise study for a proposed development at 20 Rose Street in Barrie. It is the site of the former OPP station. See below. Could you please provide ultimate traffic data for Highway 400 (between Bayfield Street and Duckworth Street) in this area.



Appreciate your help with this.

Regards,

John Emeljanow, P.Eng.
Principal



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Our staff are working remotely during this period while our office is closed. We will continue to respond to emails and telephone inquiries at our regular extensions. The health and safety of our staff and clients is our top priority surrounding this uncertain period regarding COVID-19. We are closely monitoring the situation and have implemented policies to minimize the risk of exposure.

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kathy Katsiroumpas

From: Justin MacDonald <Justin.MacDonald@barrie.ca>
Sent: June 16, 2022 3:23 PM
To: kathy Katsiroumpas
Subject: RE: 1220107.000 - Penady/Cundles Rd E & Pacific Ave-Noise

Sorry! As per your request:

Cundles:

Current ADT – 22,000
Growth Rate – 2% per year.
Percentage heavy – 3%
Speed limit – 50km/h
Cross Section – 5 lanes
Time of Day Spilt – N/A

Pacific

Current ADT – 2,000 – this is an estimate as we do not have any specific counts.
Growth Rate – 1% per year.
Percentage heavy – 1%
Speed limit – 50km/h
Cross Section – single lane per direction
Time of Day split – N/A

Thanks.

Justin MacDonald, C.E.T., PTP
Project Delivery – Transportation Planning, Development Services
The City of Barrie
Mobile 705-734-8020
Please consider the environment before printing this email.

From: kathy Katsiroumpas <kathy@valcoustics.com>
Sent: Thursday, June 16, 2022 9:09 AM
To: Justin MacDonald <Justin.MacDonald@barrie.ca>
Subject: RE: 1220107.000 - Penady/Cundles Rd E & Pacific Ave-Noise

Hi Justin,

Just following up on this request. We're on a tight schedule on this one so a response this week would be greatly appreciated. Thanks!

Regards,

Kathy

Kathryn Katsiroumpas, P.Eng.

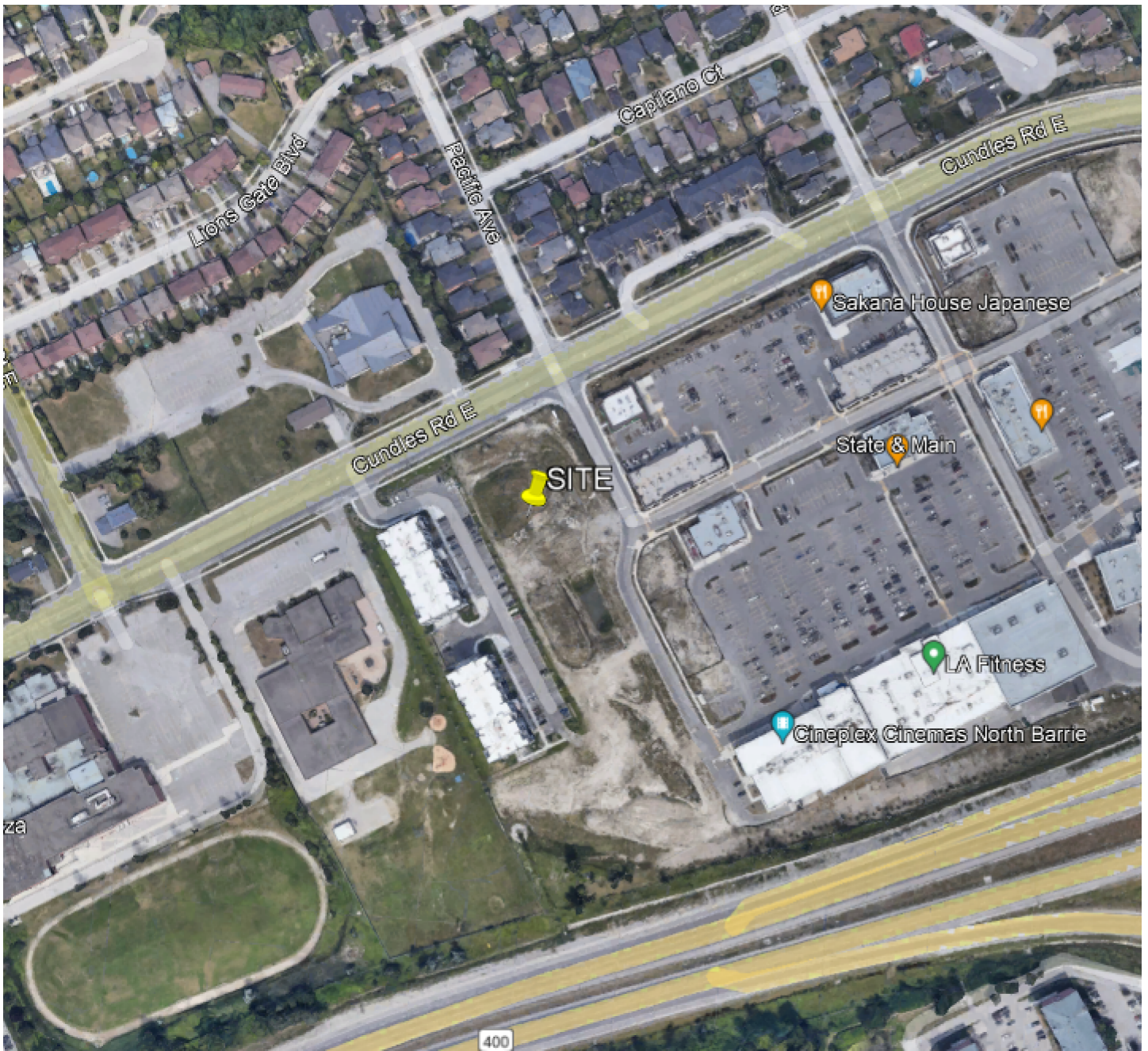


30 Wertheim Court, Unit 25
Richmond Hill, Ontario
Canada L4B 1B9
Tel: 905-764-5223 ext. 224
Fax: 905-764-6813
kathy@valcoustics.com

From: kathy Katsiroumpas
Sent: June 9, 2022 9:19 AM
To: 'justin.macdonald@barrie.ca' <justin.macdonald@barrie.ca>
Subject: 1220107.000 - Penady/Cundles Rd E & Pacific Ave-Noise

Hi Justin,

We are preparing a noise study for a development in the vicinity of Cundles Road East and Pacific Avenue. Could you please provide ultimate traffic data for these two roadways (including truck percentages)? Thank you!



Regards,

Kathy

Kathryn Katsiroumpas, P.Eng.



30 Wertheim Court, Unit 25
Richmond Hill, Ontario
Canada L4B 1B9
Tel: 905-764-5223 ext. 224
Fax: 905-764-6813
kathy@valcoustics.com

APPENDIX B

ENVIRONMENTAL NOISE GUIDELINES

APPENDIX B
ENVIRONMENTAL NOISE GUIDELINES
MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP)

Reference: MECP Publication NPC-300, October 2013: “*Environmental Noise Guideline, Stationary and Transportation Source – Approval and Planning*”.

SPACE	SOURCE	TIME PERIOD	CRITERION
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	Road	23:00 to 07:00	45 dBA
	Rail	23:00 to 07:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Sleeping quarters	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 0
Sleeping quarters	Road	23:00 to 07:00	40 dBA
	Rail	23:00 to 07:00	35 dBA
	Aircraft	24-hour period	NEF/NEP 0
Outdoor Living Areas	Road and Rail	07:00 to 23:00	55 dBA
Outdoor Point of Reception	Aircraft	24-hour period	NEF/NEP 30 [#]
	Stationary Source		
	Class 1 Area	07:00 to 19:00 ⁽¹⁾ 19:00 to 23:00 ⁽¹⁾	50 ⁺ dBA 50 ⁺ dBA
	Class 2 Area	07:00 to 19:00 ⁽²⁾ 19:00 to 23:00 ⁽²⁾	50 ⁺ dBA 45 ⁺ dBA
	Class 3 Area	07:00 to 19:00 ⁽³⁾ 19:00 to 23:00 ⁽³⁾	45 ⁺ dBA 40 ⁺ dBA
	Class 4 Area	07:00 to 19:00 ⁽⁴⁾ 19:00 to 23:00 ⁽⁴⁾	55 ⁺ dBA 55 ⁺ dBA

.../cont'd

SPACE	SOURCE	TIME PERIOD	CRITERION
Plane of a Window of Noise Sensitive Spaces	Stationary Source Class 1 Area	07:00 to 19:00 ⁽¹⁾	50 ⁺ dBA
		19:00 to 23:00 ⁽¹⁾	50 ⁺ dBA
		23:00 to 07:00 ⁽¹⁾	45 ⁺ dBA
	Class 2 Area	07:00 to 19:00 ⁽²⁾	50 ⁺ dBA
		19:00 to 23:00 ⁽²⁾	50 ⁺ dBA
		23:00 to 07:00 ⁽²⁾	45 ⁺ dBA
	Class 3 Area	07:00 to 19:00 ⁽³⁾	45 ⁺ dBA
		19:00 to 23:00 ⁽³⁾	45 ⁺ dBA
		23:00 to 07:00 ⁽³⁾	40 ⁺ dBA
	Class 4 Area	07:00 to 19:00 ⁽⁴⁾	60 ⁺ dBA
		19:00 to 23:00 ⁽⁴⁾	60 ⁺ dBA
		23:00 to 07:00 ⁽⁴⁾	55 ⁺ dBA

- # may not apply to in-fill or re-development.
 * or the minimum hourly background sound exposure $L_{eq(1)}$, due to road traffic, if higher.
 (1) Class 1 Area: Urban.
 (2) Class 2 Area: Urban during day; rural-like evening and night.
 (3) Class 3 Area: Rural.
 (4) Class 4 Area: Subject to land use planning authority's approval.

Reference: MECP Publication ISBN 0-7729-2804-5, 1987: "Environmental Noise Assessment in Land-Use Planning".

EXCESS ABOVE RECOMMENDED SOUND LEVEL LIMITS (dBA)	CHANGE IN SUBJECTIVE LOUDNESS ABOVE	MAGNITUDE OF THE NOISE PROBLEM	NOISE CONTROL MEASURES (OR ACTION TO BE TAKEN)
No excess (<55 dBA)	—	No expected noise problem	None
1 to 5 inclusive (56 to 60 dBA)	Noticeably louder	Slight noise impact	If no physical measures are taken, then prospective purchasers or tenants should be made aware by suitable warning clauses.
6 to 10 inclusive (61 - 65 dBA)	Almost twice as loud	Definite noise impact	Recommended.
11 to 15 inclusive (66 - 70 dBA)	Almost three times as loud	Serious noise impact	Strongly Recommended.
16 and over (>70 dBA)	Almost four times as loud	Very serious noise impact	Strongly Recommended (may be mandatory).

APPENDIX C

SAMPLE SOUND LEVEL CALCULATION

STAMSON 5.04 NORMAL REPORT Date: 22-06-2022 17:13:30
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: r8_w.te Time Period: Day/Night 16/8 hours
Description: **Receptor 8 - closest location to Highway 400 on Building B1**

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

Car traffic volume : 56403/28197 veh/TimePeriod *
Medium truck volume : 900/450 veh/TimePeriod *
Heavy truck volume : 2700/1350 veh/TimePeriod *
Posted speed limit : 100 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): 90000
Percentage of Annual Growth : 2.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 66.67

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

Angle1 Angle2 : -90.00 deg 75.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 46.00 / 46.00 m
Receiver height : 36.70 / 36.70 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: HWY 400 NB (day/night)

Car traffic volume : 56403/28197 veh/TimePeriod *
Medium truck volume : 900/450 veh/TimePeriod *
Heavy truck volume : 2700/1350 veh/TimePeriod *
Posted speed limit : 100 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): 90000
Percentage of Annual Growth : 2.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 66.67

Data for Segment # 2: HWY 400 NB (day/night)

Angle1 Angle2 : -90.00 deg 75.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 71.00 / 71.00 m
Receiver height : 36.70 / 36.70 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: HWY 400 SB (day)

Source height = 1.46 m

ROAD (0.00 + 74.50 + 0.00) = 74.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	75	0.00	79.74	0.00	-4.87	-0.38	0.00	0.00	0.00	74.50

Segment Leq : 74.50 dBA

Results segment # 2: HWY 400 NB (day)

Source height = 1.46 m

ROAD (0.00 + 72.61 + 0.00) = 72.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	75	0.00	79.74	0.00	-6.75	-0.38	0.00	0.00	0.00	72.61

Segment Leq : 72.61 dBA

Total Leq All Segments: 76.67 dBA

Results segment # 1: HWY 400 SB (night)

Source height = 1.46 m

ROAD (0.00 + 74.50 + 0.00) = 74.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	75	0.00	79.74	0.00	-4.87	-0.38	0.00	0.00	0.00	74.50

Segment Leq : 74.50 dBA

Results segment # 2: HWY 400 NB (night)

Source height = 1.46 m

ROAD (0.00 + 72.61 + 0.00) = 72.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	75	0.00	79.74	0.00	-6.75	-0.38	0.00	0.00	0.00	72.61

Segment Leq : 72.61 dBA

Total Leq All Segments: 76.67 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 76.67
(NIGHT): 76.67