

Environmental Noise Feasibility Study

1015-1029 Davis Drive and 22 Hamilton Drive

Proposed Residential Development Town of Newmarket

June 7, 2023
Project: 121-0124-010

Prepared for

Lulu Holdings Inc.

Prepared by



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Reviewed by



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VALCOUSTICS

Canada Ltd.

Version History

Version #	Date	Description of Changes
1.0	January 14, 2022	Final – Issued to Client
2.0	June 7, 2023	Update for SPA submission

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Environmental Noise Feasibility Study

1015-1029 Davis Drive and 22 Hamilton Drive

Proposed Residential Development

Town of Newmarket

EXECUTIVE SUMMARY

Valcoustics Canada Ltd. (VCL) previously prepared an Environmental Noise Feasibility Study to support the Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) application submissions for the proposed residential development. This update report has been prepared in support of the Site Plan Approval (SPA) application submission to the Town of Newmarket.

There have been no major changes to the Site Plan from a noise-perspective since the previous noise report was prepared. The proposed development will consist of three blocks of 3-storey townhouses (Blocks A, B and D), one block of 2-storey townhouses (Block E) and two blocks of 2-storey semi-detached dwellings (Blocks C1 and C2). Blocks D and E will be provided with private rear yard amenity space. All dwelling units will be provided with small (less than 4 m in depth) rooftop terraces. A common outdoor amenity space will be provided north of Block C2.

The significant transportation noise source in the vicinity is road traffic on Davis Drive and Leslie Street and the future bus rapid transit (BRT) corridor along Davis Drive. There are no stationary noise sources in the vicinity with potential for significant impact at the subject site.

The sound levels on 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:

- Blocks A and B require mandatory air conditioning to allow windows to remain closed for noise control purposes;
- Blocks C1, C2 and E require the provision for adding air conditioning at a later date;
- Block A and B require exterior wall construction meeting a Sound Transmission Class (STC) rating of 37 and exterior windows with ratings up to STC 30; and
- Exterior wall and window construction meeting the minimum non-acoustical requirements of the Ontario Building Code (OBC) will be sufficient to meet indoor noise level criteria at Blocks C1, C2, D and E.

1.0 INTRODUCTION

Valcoustics Canada Ltd. (VCL) previously prepared an Environmental Noise Feasibility Study to support the OPA and ZBA application submissions for the proposed residential development. This update report has been prepared in support of the SPA application submission to the Town of Newmarket. The potential sound levels and noise mitigation measures needed for the proposed development to comply with the MECP and York Region noise guideline requirements are outlined herein.

1.1 THE SITE AND SURROUNDING AREA

The site is located at 1015 – 1029 Davis Drive and 22 Hamilton Drive in the Town of Newmarket and is bounded by:

- Existing single-family dwellings to the north;
- Hamilton Drive, with existing single-family dwellings and a commercial plaza beyond, to the east;
- Davis Drive with existing single-family dwellings beyond, to the south; and
- Existing single-family dwellings, with Belfry Drive beyond, to the west.

A Key Plan is included as Figure 1.

The study is based on the architectural drawing set prepared by A& Associates Architects Inc., dated March 17, 2023. The Site Plan from the drawing set is shown as Figure 2.

There are currently four single-family dwellings on the site that will be demolished as part of the development.

1.2 THE PROPOSED DEVELOPMENT

The proposed development will consist of three blocks of 3-storey townhouses (Blocks A, B and D), one block of 2-storey townhouses (Block E) and two blocks of 2-storey semi-detached dwellings (Blocks C1 and C2). Blocks D and E will be provided with private rear yard amenity space. All dwelling units will be provided with small (less than 4 m in depth) rooftop terraces. A common outdoor amenity space will be provided north of Block C2.

2.0 NOISE SOURCES

2.1 TRANSPORTATION NOISE SOURCES

The transportation noise source with the potential for impact on the proposed development is road traffic on Davis Drive and Leslie Street and the future bus rapid transit (BRT) corridor along Davis Drive. Traffic volumes on other surrounding roadways are anticipated to be minor and no significant noise impact is expected.

Ultimate traffic data for Davis Drive and Leslie Street was obtained from the Region of York.

A Bus Rapid Transit Corridor is proposed in the vicinity of the site, running across Davis Drive. Currently, York Region Transit/VIVA runs the yellow line along Davis Drive without its own

dedicated right of way. The future bus volumes were calculated using the current (year 2023) VIVA Yellow schedules for Davis Drive at Leslie Street, projected to the year 2033 design condition using a growth rate of 2% compounded annually.

Tables 1A and 1B summarize the traffic data used in the assessment. Appendix A contains the traffic data.

2.2 STATIONARY NOISE SOURCES

An existing commercial plaza is located at 1065 Davis Drive, approximately 100 m east of the subject site. The main noise source at this facility is expected to be the rooftop HVAC equipment. Due to the distance separation and the presence of existing dwellings at a closer setback distance, noise from this facility is not expected to have a significant impact at the subject site. This was confirmed during a site visit by VCL staff on April 23, 2021 when no noise from these facilities was audible at the subject site. Thus, this facility has not been considered further in this assessment.

3.0 ENVIRONMENTAL NOISE GUIDELINES

3.1 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, as provided in Publication NPC-300, are discussed briefly below and summarized in Appendix B.

3.1.1 Transportation Noise Sources

3.1.1.1 Architectural Elements

In the daytime, the indoor criterion for road traffic 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 traffic 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.

3.1.1.2 Ventilation

In accordance with the MECP noise guideline for road traffic sources, if the daytime sound energy 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

(1) 16-hour energy equivalent sound level (0700-2300 hours).

(2) 8-hour energy equivalent sound level (2300-0700 hours).

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).

3.1.1.3 Outdoors

For outdoor living areas (OLA's), the guideline is $L_{eq\ Day}$ (0700 to 2300 hours) of 55 dBA, with an excess not exceeding 5 dBA considered acceptable if it is technically not practicable to achieve the 55 dBA objective, providing warning clauses are registered on title. Note, a balcony is not considered an OLA, unless it is:

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

3.2 REGION OF YORK GUIDELINES

The Region of York requires noise attenuation fences adjacent to regional roads, be a minimum of 2.2 m high and up to a maximum of 3.0 m high, in situations where deemed appropriate. Also, any mitigation measures deemed necessary shall attempt to achieve a minimum reduction of 6 dBA against the daytime objective level of 55 dBA.

4.0 NOISE IMPACT ASSESSMENT

4.1 ANALYSIS METHOD

Using the road traffic data in Table 1, the sound levels, in terms of energy equivalent continuous sound pressure level over the daytime and nighttime periods ($L_{eq\ Day}$ 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 the following above grade heights, representing the top floor (worst case) windows, as determined from the building elevation drawings:

- 8.4 m for Blocks A and B;
- 3.5 m for Blocks C1 and C2;
- 8.7 m for Block D; and
- 4.9 m for Block E.

The daytime OLA sound level at the common outdoor amenity area was calculated at a standing height of 1.5 m above grade, at the center of the space.

The daytime OLA sound levels at the Block D and E rear yards were calculated at a standing height of 1.5 m above grade, 3 m from the rear wall and aligned with the midpoint of the applicable facade.

All rooftop terraces will be less than 4 m depth and therefore do not qualify as OLA's under the MECP guidelines.

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. Screening from the existing developments in the vicinity was included in the OLA calculation.

4.2 RESULTS

The highest daytime/nighttime sound levels of 68 dBA/59 dBA are predicted to occur at the south facades of Blocks A and B, the closest to Davis Drive.

The highest unmitigated daytime OLA sound level of 52 dBA is predicted to occur at the rear yard of the westernmost unit in Block E.

At the common outdoor amenity area, the unmitigated daytime sound level is predicted to be 48 dBA.

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

A sample sound level calculation is included in Appendix C.

5.0 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.

5.1 INDOORS

5.1.1 Architectural Requirements

The indoor noise guidelines for the transportation sources can be achieved by using appropriate construction for exterior walls, windows and doors. The worst-case architectural requirements for the townhouse blocks were calculated at the third-floor corner bedroom at the southwest corner of Block A. The south wall and window areas were determined to be 32% and 75% respectively of the associated floor area. The west wall area was determined to be 122% of the associated floor area (there are no windows on the west facade).

Based on the predicted sound levels, Blocks A and B require exterior wall construction meeting STC 37 and exterior windows with ratings up to STC 30.

Exterior walls and windows meeting the minimum non-acoustical requirements of the OBC will be sufficient to achieve the indoor noise guideline criteria of the MECP for Blocks C1, C2, D and E.

It is expected that typical exterior wall construction meeting the minimum non-acoustical requirements of the OBC will meet the STC 37 requirement. 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 must be confirmed by the window manufacturer through the submission of acoustical test data.

The final sound isolation requirements should be reviewed if the architectural plans change. Wall and window constructions should also 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.

5.1.2 Ventilation Requirements

Based on the predicted sound levels, all dwelling units in Blocks A and B require mandatory air conditioning.

Blocks C1, C2 and E require the provision for adding air conditioning at a later date. This typically takes the form of a ducted, forced air heating system, suitably sized to accommodate central air conditioning.

There are no special ventilation requirements for Block D.

5.2 OUTDOORS

The unmitigated daytime OLA sound levels at the rear yards and common outdoor amenity area are predicted to meet the 55 dBA design objective. Thus, sound barriers are not required for noise control purposes.

5.3 WARNING CLAUSES

Warning clauses are a tool to inform prospective owners/occupants of potential annoyance due to existing 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 agreements of Offers of Purchase and Sale and 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 for the site.

6.0 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.

7.0 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.
5. “Environmental Noise Feasibility Study, 1015-1029 Davis Drive and 22 Hamilton Drive, Proposed Residential Development, Town of Newmarket” Valcoustics Canada Ltd., Project: 121-0124, January 14, 2022.

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TABLE 1A ROAD TRAFFIC DATA

Roadway ⁽²⁾	Ultimate AADT ⁽¹⁾	% Trucks		Speed Limit (km/h)	Day/Night Split (%)
		Medium	Heavy		
Davis Drive	37 000	2.0	2.0	60	93/7
Leslie Street	35 000	1.0	2.0	60	94/6

Notes:

- (1) AADT – Annual Average Daily Traffic.
(2) Ultimate traffic data obtained from the Region of York.

TABLE 1B RAPID TRANSIT CORRIDOR TRAFFIC VOLUMES

Corridor	Year	Daytime Volume	Nighttime Volume	Speed (km/hr)
Davis Drive BRT	2023 (2033)	139 (169.4)	31 (37.8)	60

Note:

- (1) Current (year 2023) bus volumes for the VIVA Yellow Line were obtained from the York Region Transit website. Future (year 2033) volumes were obtained by escalation the current counts at a rate of 2% compounded annually. The future volume is shown in brackets.

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS

Location ⁽¹⁾	Source	Distance (m) ⁽²⁾	L _{eq} Day (dBA)	L _{eq} Night (dBA)
Block A Southeast Corner (South Facade)	Davis Drive	26	67	59
	Leslie Street	210	51	42
	Davis Drive BRT	26	49	45
	TOTAL	-	68	59
Block B Southeast Corner (South Facade)	Davis Drive	26	67	59
	Leslie Street	179	52	43
	Davis Drive BRT	26	49	45
	TOTAL	-	68	59
Block B Southeast Corner (East Facade)	Davis Drive	26	64	56
	Leslie Street	179	55	46
	Davis Drive BRT	26	46	42
	TOTAL	-	65	57
Block C1 Southeast Corner (East Facade)	Davis Drive	56	58	50
	Leslie Street	171	53	44
	Davis Drive BRT	56	40	36
	TOTAL	-	60	51
Block D Southeast Corner (South Facade)	Davis Drive	57	55	46
	Leslie Street	203	47	38
	Davis Drive BRT	57	36	33
	TOTAL	-	55	47
Block E Southwest Corner (South Facade)	Davis Drive	56	58	49
	Davis Drive BRT	56	39	36
	TOTAL	-	58	49
Block E Westernmost Unit Rear Yard (OLA)	Davis Drive	74	52	-
	Davis Drive BRT	74	33	-
	TOTAL	-	52	-
Common Outdoor Amenity Area	Davis Drive	90	48	-
	Davis Drive BRT	90	30	-
	TOTAL	-	48	-

Notes:

(1) See Figure 2.

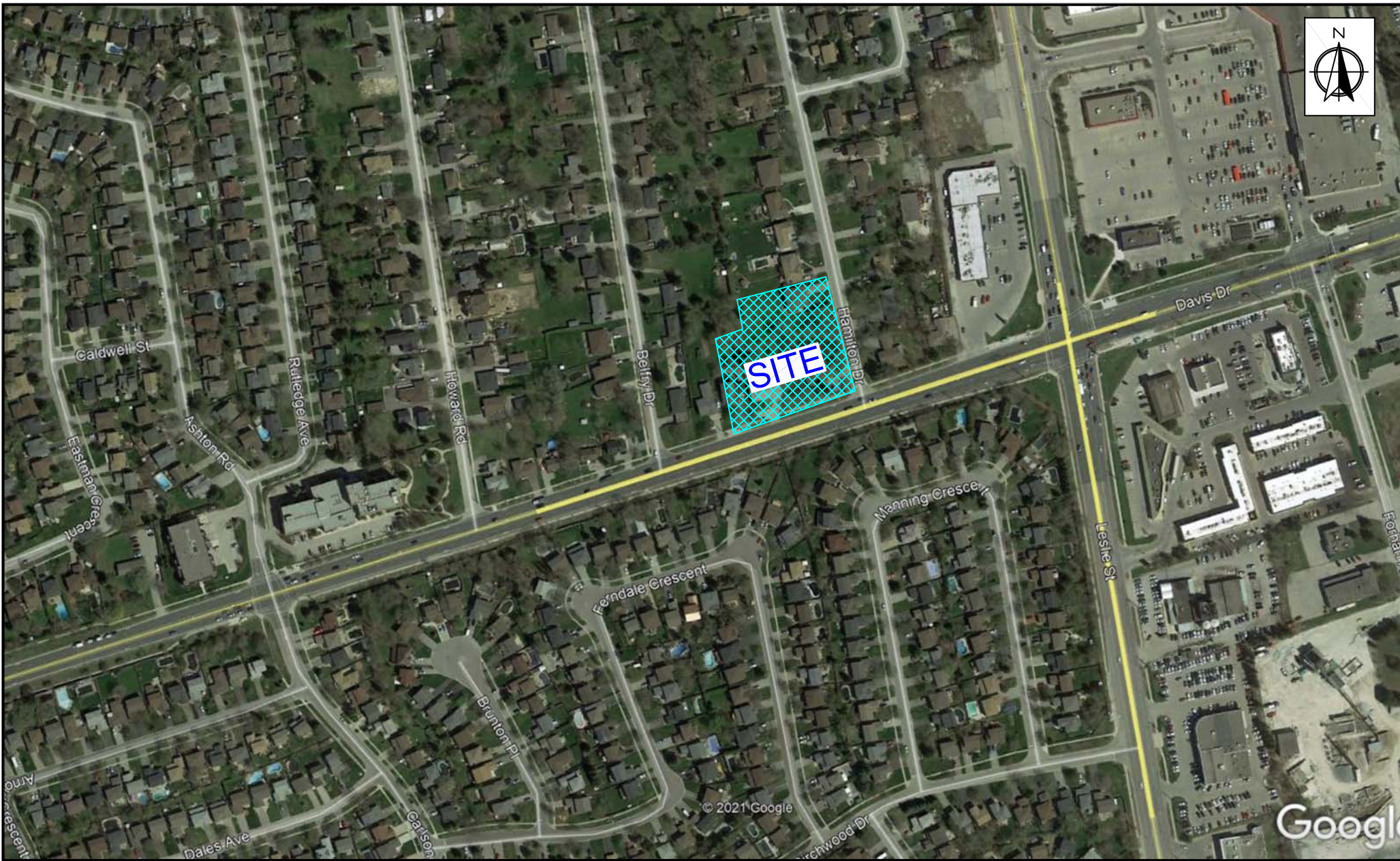
(2) Distance indicated is taken from the centreline of the noise source to the point of reception.


TABLE 3 MINIMUM NOISE ABATEMENT MEASURES

Location	Air Conditioning ⁽¹⁾	Exterior Wall ⁽²⁾	Exterior Window ⁽³⁾	Sound Barrier ⁽⁴⁾	Warning Clauses ⁽⁵⁾
Blocks A and B	Mandatory	STC 37	Up to STC 30	None	A + B
Blocks C1, C2 and E	Provision for Adding	No special acoustical requirements		None	A + C
Block D	None	No special acoustical requirements		None	None

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. Provision for adding air conditioning typically takes the form of a ducted ventilation system suitably sized to permit the addition of central air conditioning by the occupant.
- (2) STC - Sound Transmission Class Rating (Reference ASTM-E413).
The requirements are based on the architectural drawing set prepared by A& Associates Architects Inc., dated March 17, 2023 and should be reviewed if the drawings change.
- (3) STC - Sound Transmission Class Rating (Reference ASTM-E413). A sliding glass walkout door should be considered as a window and be included in the percentage of glazing.
The requirements are based on the architectural drawing set prepared by A& Associates Architects Inc., dated March 17, 2023 and should be reviewed if the drawings change.
- (4) Sound barriers must be of solid construction with no gaps, cracks or holes and must meet a minimum surface density of 20 kg/m². Suitable material can include wood, concrete metal sandwich panel, glazing or a combination of these.
- (5) The warning clauses to be registered on title and be included in Offers of Purchase and Sale for designated lots:
 - A. "Purchases/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, Conservation and Parks."
 - B. "This dwelling 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, Conservation and Parks."
 - C. "This dwelling has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant 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, Conservation and Parks."
- (6) All exterior doors shall be fully weather-stripped.



			 30 Wertheim Court, Unit 25 Richmond Hill, Ontario Canada L4B 1B9 solutions@valcoustics.com Phone: (905) 764-5223 Fax: (905) 764-6813	Title Key Plan	Project No. 121-0124	Date Mar. 20, 2023
No.	Revision/Issue	Date		Project Name 1015 - 1029 Davis Drive and 22 Hamilton Drive, Newmarket	Scale N.T.S.	Figure 1


- ◆ Provision for Adding Air Conditioning
- ▲ Mandatory Adding Air Conditioning



TO ENABLE IDENTIFICATION FOR EMERGENCY SERVICES, INDIVIDUAL
UNIT NUMBERS NEED TO BE CLEARLY VISIBLE FROM DIRECTION OF
APPROACH



BASE DRAWING BY A& ASSOCIATES ARCHITECTS INC.

			 VALCOUSTICS <i>Canada Ltd.</i> 30 Wertheim Court, Unit 25 Richmond Hill, Ontario Canada L4B 1B9 solutions@valcoustics.com Phone: (905) 764-5223 Fax: (905) 764-6813	Title	Project No.	Date
				Site Plan	121-0124	Mar. 20, 2023
				Project Name	Scale	Figure
				1015 - 1029 Davis Drive and 22 Hamilton Drive, Newmarket	N.T.S.	2
No.	Revision/Issue	Date				

APPENDIX A

ROAD TRAFFIC DATA



Transportation Services Department
Transportation and Infrastructure Planning

May 4, 2021

Brett Lipson
Valcoustics Canada Ltd.
30 Wertheim Court, Unit 25
Richmond Hill, Ontario L4B 1B9

Re: Request for Traffic Data
File No. T09, Forecasts - Newmarket

As requested, the traffic data for your study are summarized below.

	<u>Davis Drive</u>	<u>Leslie Street</u>
Section No.	31-28	12-30
Location	West of Leslie Street	North of Davis Drive
Existing AADT	27,700 (2018)	19,750 (2019)
Ultimate AADT	37,000	35,000
No. of Lanes	4	4
Posted Speed	Up to 60 km/h	60 km/h
Trucks (Med/Heavy)	2% / 2%	1% / 2%
Grade	Up to 6%	Up to 6%
Day/Night Split	93/7	94/6
Planned ROW	Up to 43 m	Up to 36 m

I trust that this will be satisfactory for your study. The invoice will be mailed to you separately.

Sincerely,

Wenli Gao
Transportation Planning, Forecasting

WG/wg

YORK-#12945678-v1-210051_Lipson_Davis_Leslie.docx

Route VIVA YELLOW VIVA YELLOW EASTBOUND

Tue, Mar 21, 4:00 a.m.

1_WK service in effect from Sunday, January 8th 2023 to Saturday, April 29th 2023

9851 DAVIS DR / LESLIE ST
4:15 a.m.
4:27 a.m.
4:39 a.m.
4:51 a.m.
5:03 a.m.
5:16 a.m.
5:28 a.m.
5:41 a.m.
5:53 a.m.
6:05 a.m.
6:17 a.m.
6:29 a.m.
6:41 a.m.
6:53 a.m.
7:05 a.m.
7:17 a.m.
7:29 a.m.
7:41 a.m.
7:53 a.m.
8:05 a.m.
8:18 a.m.
8:31 a.m.
8:44 a.m.
8:57 a.m.
9:10 a.m.
9:23 a.m.
9:36 a.m.
9:49 a.m.
10:02 a.m.
10:15 a.m.
10:28 a.m.
10:41 a.m.
10:54 a.m.
11:07 a.m.
11:20 a.m.
11:33 a.m.
11:46 a.m.
11:59 a.m.
12:12 p.m.
12:25 p.m.
12:38 p.m.
12:51 p.m.
1:04 p.m.
1:17 p.m.
1:30 p.m.
1:43 p.m.
1:56 p.m.
2:09 p.m.
2:22 p.m.
2:36 p.m.
2:50 p.m.
3:04 p.m.
3:18 p.m.
3:32 p.m.
3:46 p.m.
4:00 p.m.

	9851 DAVIS DR / LESLIE ST
	4:14 p.m.
	4:28 p.m.
	4:42 p.m.
	4:56 p.m.
	5:10 p.m.
	5:24 p.m.
	5:38 p.m.
	5:52 p.m.
	6:05 p.m.
	6:19 p.m.
	6:33 p.m.
	6:47 p.m.
	7:01 p.m.
	7:15 p.m.
	7:29 p.m.
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	8:29 p.m.
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	9:03 p.m.
	9:20 p.m.
	9:37 p.m.
	9:54 p.m.
	10:11 p.m.
	10:28 p.m.
	10:45 p.m.
	11:02 p.m.
	11:19 p.m.

Route VIVA YELLOW VIVA YELLOW WESTBOUND

Tue, Mar 21, 4:00 a.m.

1_WK service in effect from Sunday, January 8th 2023 to Saturday, April 29th 2023

9852 DAVIS DR / LESLIE ST
4:26 a.m.
4:38 a.m.
4:50 a.m.
5:02 a.m.
5:14 a.m.
5:26 a.m.
5:38 a.m.
5:50 a.m.
6:02 a.m.
6:14 a.m.
6:26 a.m.
6:38 a.m.
6:50 a.m.
7:02 a.m.
7:14 a.m.
7:26 a.m.
7:38 a.m.
7:50 a.m.
8:02 a.m.
8:15 a.m.
8:28 a.m.
8:41 a.m.
8:54 a.m.
9:07 a.m.
9:20 a.m.
9:33 a.m.
9:46 a.m.
9:59 a.m.
10:12 a.m.
10:25 a.m.
10:38 a.m.
10:51 a.m.
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1:01 p.m.
1:14 p.m.
1:27 p.m.
1:40 p.m.
1:53 p.m.
2:06 p.m.
2:19 p.m.
2:32 p.m.
2:46 p.m.
3:00 p.m.
3:14 p.m.
3:28 p.m.
3:42 p.m.
3:56 p.m.
4:10 p.m.

	9852 DAVIS DR / LESLIE ST
	4:24 p.m.
	4:38 p.m.
	4:52 p.m.
	5:06 p.m.
	5:20 p.m.
	5:34 p.m.
	5:48 p.m.
	6:02 p.m.
	6:16 p.m.
	6:30 p.m.
	6:44 p.m.
	6:58 p.m.
	7:12 p.m.
	7:26 p.m.
	7:40 p.m.
	7:54 p.m.
	8:04 p.m.
	8:21 p.m.
	8:38 p.m.
	8:55 p.m.
	9:12 p.m.
	9:29 p.m.
	9:46 p.m.
	10:03 p.m.
	10:20 p.m.
	10:37 p.m.
	10:54 p.m.
	11:11 p.m.
	11:28 p.m.

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⁾	50 ⁺ dBA
		19:00 to 23:00 ⁽¹⁾	50 ⁺ dBA
Class 2 Area		07:00 to 19:00 ⁽²⁾	50 ⁺ dBA
		19:00 to 23:00 ⁽²⁾	45 ⁺ dBA
Class 3 Area		07:00 to 19:00 ⁽³⁾	45 ⁺ dBA
		19:00 to 23:00 ⁽³⁾	40 ⁺ dBA
Class 4 Area		07:00 to 19:00 ⁽⁴⁾	55 ⁺ dBA
		19:00 to 23:00 ⁽⁴⁾	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: 20-03-2023 12:41:47
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: b_se_sf.te Time Period: Day/Night 16/8 hours
Description: **Block B - Southeast Corner - South Facade**

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

Car traffic volume : 33034/2486 veh/TimePeriod *
Medium truck volume : 688/52 veh/TimePeriod *
Heavy truck volume : 688/52 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 6 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 37000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 93.00

Data for Segment # 1: Davis (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 : 26.00 / 26.00 m
Receiver height : 8.40 / 8.40 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 31913/2037 veh/TimePeriod *
Medium truck volume : 329/21 veh/TimePeriod *
Heavy truck volume : 658/42 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 6 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 94.00

Data for Segment # 2: Leslie (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 : 179.00 / 179.00 m
Receiver height : 8.40 / 8.40 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Davis (day)

Source height = 1.19 m

ROAD (0.00 + 67.37 + 0.00) = 67.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.46	71.96	0.00	-3.49	-1.10	0.00	0.00	0.00	67.37

Segment Leq : 67.37 dBA

Results segment # 2: Leslie (day)

Source height = 1.19 m

ROAD (0.00 + 51.70 + 0.00) = 51.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.46	71.56	0.00	-15.75	-4.11	0.00	0.00	0.00	51.70

Segment Leq : 51.70 dBA

Total Leq All Segments: 67.49 dBA

Results segment # 1: Davis (night)

Source height = 1.19 m

ROAD (0.00 + 59.16 + 0.00) = 59.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.46	63.75	0.00	-3.49	-1.10	0.00	0.00	0.00	59.16

Segment Leq : 59.16 dBA

Results segment # 2: Leslie (night)

Source height = 1.19 m

ROAD (0.00 + 42.76 + 0.00) = 42.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.46	62.62	0.00	-15.75	-4.11	0.00	0.00	0.00	42.76

Segment Leq : 42.76 dBA

Total Leq All Segments: 59.26 dBA

RT/Custom data, segment # 1: Davis BRT (day/night)

1 - Custom (74.1 dBA):

Traffic volume : 169/38 veh/TimePeriod
Speed : 60 km/h

Data for Segment # 1: Davis BRT (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	:	26.00 / 26.00	m	
Receiver height	:	8.40 / 8.40	m	
Topography	:	1	(Flat/gentle slope; no barrier)	
Reference angle	:	0.00		

Results segment # 1: Davis BRT (day)

Source height = 1.80 m

RT/Custom (0.00 + 48.80 + 0.00) = 48.80 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.44	53.32	-3.45	-1.07	0.00	0.00	0.00	48.80

Segment Leq : 48.80 dBA

Total Leq All Segments: 48.80 dBA

Results segment # 1: Davis BRT (night)

Source height = 1.80 m

RT/Custom (0.00 + 45.33 + 0.00) = 45.33 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
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-90	90	0.44	49.85	-3.45	-1.07	0.00	0.00	0.00	45.33
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Segment Leq : 45.33 dBA

Total Leq All Segments: 45.33 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.54
(NIGHT): 59.43