



Howe Gastmeier Chapnik Limited
2000 Argentia Road, Plaza One, Suite 203
Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044

May 11, 2020

VIA E-MAIL TO: sammorra@bell.net

Bolton Midtown Developments Inc.

6198 Tremaine Court
Mississauga, Ontario
L5V 1B5

Re: Responses to Peer Review Comments from Swallow Acoustic Consultants Ltd., Proposed Residential Development, 13233 & 13247 Nunnville Road, Caledon, Ontario

Dear Sam,

As requested, we have reviewed the peer review comments from Swallow Acoustic Consultants Ltd., dated April 14, 2020. Our latest noise report for this site is entitled, "Noise Feasibility Study, Proposed Residential Development, 13233 & 13247 Nunnville Road, Caledon, Ontario" dated May 11, 2020. The report has been updated to address the peer reviewer's comments. Changes to the report have been itemized below:

1. The speed limit of Albion-Vaughan Road was adjusted to 70 km/h, 10 km/h over the posted speed limit, as required by the Town of Caledon.
2. Medium truck and heavy truck percentage volumes have been corrected in the STAMSON calculations to 5.6% and 1.7% (page 4).
3. The day/night split has been adjusted to 87%/13% (page 4).
4. Updated sound level predictions based on increased speed limit (page 5).
5. An acoustic barrier and forced air ventilation is recommended for Lot 11 based on updated sound level predictions (page 5).
6. Type A warning clause removed from lots where warning clause Type B is provided (page 8).

We trust this information is sufficient for your purposes. If you have any questions or concerns, please call.

Yours truly,

HOWE GASTMEIER CHAPNIK LIMITED


Victor Garcia, PEng





Howe Gastmeier Chapnik Limited
2000 Argentia Road, Plaza One, Suite 203
Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044

Noise Feasibility Study


Proposed Residential Development, 13233 & 13247 Nunnville Road Caledon, Ontario

Prepared for:

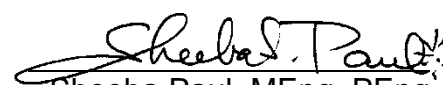
Bolton Midtown Developments Inc.
6198 Tremaine Court
Mississauga, ON
L5V 1B5

Prepared by




Victor Garcia, PEng

Reviewed by


Sheeba Paul, MEng, PEng

May 11, 2020

HGC Project No. 01900347

Table of Contents

- 1 Introduction and Summary 1
- 2 Site Description and Noise Sources 2
- 3 Noise Level Criteria 2
 - 3.1 Road Traffic Noise 2
- 4 Traffic Noise Predictions 4
 - 4.1 Road Traffic 4
 - 4.2 Road Traffic Noise Predictions 4
- 5 Discussion and Recommendations 5
 - 5.1 Outdoor Living Areas..... 5
 - 5.2 Indoor Living Areas and Ventilation Requirements 5
 - 5.3 Building Façade Construction 6
 - 5.4 Warning Clauses 6
- 6 Summary of Recommendations 8
 - 6.1 Implementation..... 9

- Figure 1: Key Site Plan**
- Figure 2: Proposed Site Plan**
- Figure 3: Proposed Site Plan Showing Barrier and Ventilation Requirements**

- Appendix A: Road Traffic Information**
- Appendix B: Sample STAMSON 5.04 Output**

1 Introduction and Summary

HGC Engineering was retained by Bolton Midtown Developments Inc. to conduct a noise feasibility study for a proposed residential development located at 13233 & 13247 Nunnville Road in Caledon, Ontario. This proposed development will consist of 29 single detached dwellings and associated roadways. The noise feasibility study is required as part of the approvals process.

The primary noise source impacting the site was determined to be road traffic on Albion-Vaughan Road. The surrounding area includes existing residences to the west and south.

Road traffic data for Albion-Vaughan Road was obtained from the Town of Caledon. This data was used to predict future sound levels at the proposed development. The predicted sound levels were compared to the guidelines of the Ministry of Environment, Conservation, and Parks (MECP) to develop noise control recommendations for the proposed site.

The sound level predictions indicate that the future road traffic sound levels will exceed MECP guidelines at dwellings closest to Albion-Vaughan Road. Acoustic barriers are recommended for dwellings closest to the roadway. Forced air ventilation systems with ducts sized for the future installation of air conditioning by the occupant are required for dwellings closest to the roadway. Any building construction meeting the minimum requirements of the Ontario Building Code will provide sufficient acoustical insulation for the indoor spaces for all future dwellings. Noise warning clauses are required for dwellings closest to Albion-Vaughan Road in the property and tenancy agreements and offers of purchase and sale to inform the future occupants of traffic noise, and adjacent land uses.



2 Site Description and Noise Sources

The site is located at 13233 & 13247 Nunnville Road in Caledon, Ontario, as indicated in Figure 1. The proposed residential development will include 29 single detached dwellings along with associated roadways. Figure 2 shows a conceptual plan prepared by WSP dated January 17, 2020.

HGC Engineering personnel visited the site during June 2019. The acoustical environment surrounding the site is urban in nature. There are currently two dwellings located on the subject site which will be demolished. Road traffic on Albion-Vaughan Road was confirmed to be the dominant sound source. Old King Road and Nunnville Road were not considered in the analysis as they are low volume roadways. There are existing residential lands to the south and west of the subject site. There are no sources of stationary noise within 500 m of the subject site.

3 Noise Level Criteria

3.1 Road Traffic Noise

Guidelines for acceptable levels of road traffic noise impacting residential developments are given in the MECP publication NPC-300, “Environment Noise Guideline Stationary and Transportation Sources – Approval and Planning”, Part C release date October 21, 2013, and are summarized in Table 1. The values in Table 1 are energy equivalent (average) sound levels [L_{EQ}] in units of A-weighted decibels [dBA].

Table 1: MECP Road Traffic Noise Criteria (dBA)

Area	Daytime L_{EQ} (16 hour) Road	Nighttime L_{EQ} (8 hour) Road
Outdoor Living Area	55 dBA	--
Inside Living/Dining Room	45 dBA	45 dBA
Inside Bedroom	45 dBA	40 dBA

Daytime is considered to be the period between 07:00 and 23:00, while the time between 23:00 and 07:00 is classified as nighttime. The term “Outdoor Living Area” (OLA) is used in reference to an outdoor patio, backyard, terrace or other area where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be OLAs under MECP guidelines.

The MECP guidelines allow the daytime sound levels in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is recommended to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible. The Town of Caledon requires 55 dBA in the OLA's. If higher sound levels are to be achieved in the OLA's, it is the proponent's responsibility to delegate Council to seek relief from the 55 dBA requirement for the amenity areas. The maximum acoustic fence height is 2.4 m. The remainder of the acoustic barrier height can be made up with an earth berm.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where nighttime sound levels outside bedroom/living/dining room windows exceed 60 dBA or daytime sound levels outside bedroom/living/dining room windows exceed 65 dBA. Forced-air ventilation with ducts sized to accommodate the future installation of air conditioning is required when nighttime sound levels at bedroom/living/dining room windows are in the range of 51 to 60 dBA or when daytime sound levels at bedroom/living/dining room windows are in the range of 56 to 65 dBA.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of window nighttime sound level is greater than 60 dBA or the daytime sound level is greater than 65 dBA due to road traffic noise.

Warning clauses to notify future residents of possible excesses are also required when nighttime sound levels exceed 50 dBA at the plane of the bedroom/living/dining room window and daytime sound levels exceed 55 dBA in the outdoor living area and at the plane of the bedroom/living/dining room window due to road traffic.



4 Traffic Noise Predictions

4.1 Road Traffic

Road traffic data for Albion-Vaughan Road between Old King Road and Nunnville Road was obtained from the Town of Caledon in the form of 24-Hr Traffic Counts for 2016 and is provided in Appendix A. This data was converted to the form of Average Annual Daily Traffic (AADT) in order to be used in the analysis. A commercial vehicle percentage of 7.3% for Albion-Vaughan Road was split into 5.6% medium trucks and 1.7% heavy trucks. A day/night split of 87/13% was used in the analysis. Albion-Vaughan Road has a posted speed limit of 60 km/h; therefore 70 km/h was used in the analysis in accordance with the Town of Caledon requirements. A road gradient of 7% was also considered for Albion-Vaughan. The data was projected to the year 2030 using a 2.5%/year growth rate. Table 2 summarizes the traffic data.

Table 2: Projected Road Traffic Data (2030)

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Albion-Vaughan Road	Daytime	19 846	1 199	364	21 409
	Nighttime	2 966	179	54	3 199
	Total	22 812	1 378	418	24 608

4.2 Road Traffic Noise Predictions

To assess the levels of the road traffic noise, which will impact the study area in the future, sound level predictions were made using STAMSON version 5.04, a computer algorithm developed by the MECP. Sample STAMSON output is included in Appendix B.

Predictions of the traffic sound levels were made at representative façades. Table 3 summarizes the predicted sound levels at each of the sound level prediction locations; these are outlined in Figure 2.

Table 3: Predicted Road Traffic Sound Levels [dBA] Without Mitigation

Prediction Location	Description	Daytime in OLA $L_{EQ-16\text{ hr}}$	Daytime at Façade $L_{EQ-16\text{ hr}}$	Nighttime at Façade $L_{EQ-8\text{ hr}}$
A	Lot 15	60	61	56
B	Lot 16	56	59	54
C	Lot 12	57	59	54
D	Lot 11	57	56	51

5 Discussion and Recommendations

The sound level predictions indicate that future traffic levels will exceed MECP guidelines at all measured façades. Recommendations to address these excesses are discussed in this section.

5.1 Outdoor Living Areas

The predicted sound level in the rear yards of the dwelling unit with backing exposure to Albion-Vaughan Road (prediction locations [A] – [D]) will be up to 60 dBA, 3 dBA in excess of the MECP limit of 55 dBA. An acoustic barrier 2.0 m in height at prediction locations [A], [C], and [D] will reduce sound levels in the OLAs to less than 55 dBA. With an acoustic barrier provided at prediction location [A], sound levels at prediction location [B] will be reduced to less than 55 dBA. The location of the noise barrier is shown on Figure 3.

When final grading information is available for lots backing onto the roadway, the drawings should be reviewed to refine acoustic barrier requirements.

The predicted daytime sound level in the OLAs of the remaining dwellings units will be less than 55 dBA. Further physical mitigation in the form of acoustic barriers is not required.

5.2 Indoor Living Areas and Ventilation Requirements

Provision for the Future Installation of Air Conditioning

The predicted sound levels for dwellings closest to the roadway were determined to be in the range of 55 to 65 dBA during daytime hours and in the range of 50 to 60 dBA during nighttime



hours. To address this excess, the dwelling units will require a forced air ventilation system with ductwork sized for the future installation of central air conditioning systems by the occupants.

Figure 3 shows the ventilation requirements for the development. Window or through-the-wall air conditioning units are not recommended for any residential units because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall noise insulating properties of the envelope. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300, as applicable. The guidelines also recommend warning clauses for all units with ventilation requirements.

5.3 Building Façade Construction

For all of the lots in the development, the sound level will be less than 60 dBA during the nighttime hours and less than 65 dBA during the daytime hours. For all of the lots, any exterior wall, and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for the dwelling units.

5.4 Warning Clauses

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements for the dwelling units with anticipated traffic sound level excesses. Examples are provided.

Suggested wording for future dwellings with sound level exceeding the MECP criteria.

Type 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 occasionally interfere with some activities of the dwellings occupants as the sound levels exceed the noise criteria of the Municipality and the Ministry of the Environment, Conservation and Parks.

Suggested wording for future dwellings for which physical mitigation has been provided is given below.

Type B:

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 occasion 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. The acoustical barrier as installed shall be maintained, repaired or replaced by the owner. Any maintenance, repair or replacement shall be with the same material, to the same standards and having the same colour and appearance of the original.

Suitable wording for future dwellings with minor excesses and requiring forced air ventilation systems is given below.

Type C:

This dwelling unit has been fitted with a forced air heating system and the ducting etc., was sized to accommodate central air conditioning. Installation of 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 outdoor air conditioning device should be done so as to minimize the noise impacts and comply with criteria of MECP publication NPC-300, as applicable.)

These clauses are provided as examples and can be modified by the Municipality as required.



6 Summary of Recommendations

The results of the study indicate that the proposed residential development is feasible. Future road traffic sound levels will exceed MECP guidelines, but feasible means exist to reduce the impact to within acceptable limits. The following recommendations are provided in regards to noise mitigation and summarized in Table 4:

1. Acoustic barriers are required for the OLAs of dwellings closest to Albion-Vaughan Road. When final grading information is available for dwellings backing onto Albion-Vaughan Road, acoustic barrier requirements should be refined.
2. Forced air ventilation with ducts sized for the future installation of air conditioning by the occupant is required for dwellings closest to the roadway.
3. Noise warning clauses should be included in all offers of purchase and sale and property tenancy agreements for dwellings with noise level excesses, to inform future residents of the traffic noise issues and nearby commercial uses. See Section 5.4.
4. Any double-glazed window construction and exterior wall construction meeting the minimum OBC requirements will provide adequate sound insulation for all of the proposed dwellings.

Table 4 summarizes the recommendations for the proposed residential development.

Table 4: Summary of Noise Control Requirements and Noise Warning Clauses

Prediction Location	Lot No.	Acoustic Barrier	Ventilation Requirements*	Type of Warning Clause	Upgraded Building Constructions
A, B, C	11 – 15	✓	Forced Air	B, C	OBC
B	16	--	Forced Air	A, C	OBC
D	Remaining Lots	--	--	--	OBC

Note:

* The location, installation, and sound rating of the air conditioning condensers must be compliant with MECP Guideline NPC-300, as required.

-- No specific requirement

OBC – meeting the minimum Ontario Building Code requirements

6.1 Implementation

To ensure that the noise control recommendations outlined above are properly implemented, it is recommended that:

1. When final grading information is available, a Professional Engineer qualified to perform acoustical engineering services in the Province of Ontario shall review the drawings for the residential dwellings to certify the required noise barriers and refine the height as necessary.
2. Prior to occupancy, a Professional Engineer qualified to perform acoustical services in the province of Ontario or the Municipal Building Department shall conduct a site inspection to confirm that the sound control measures have been incorporated, installed and constructed in their entirety.



ACOUSTICS



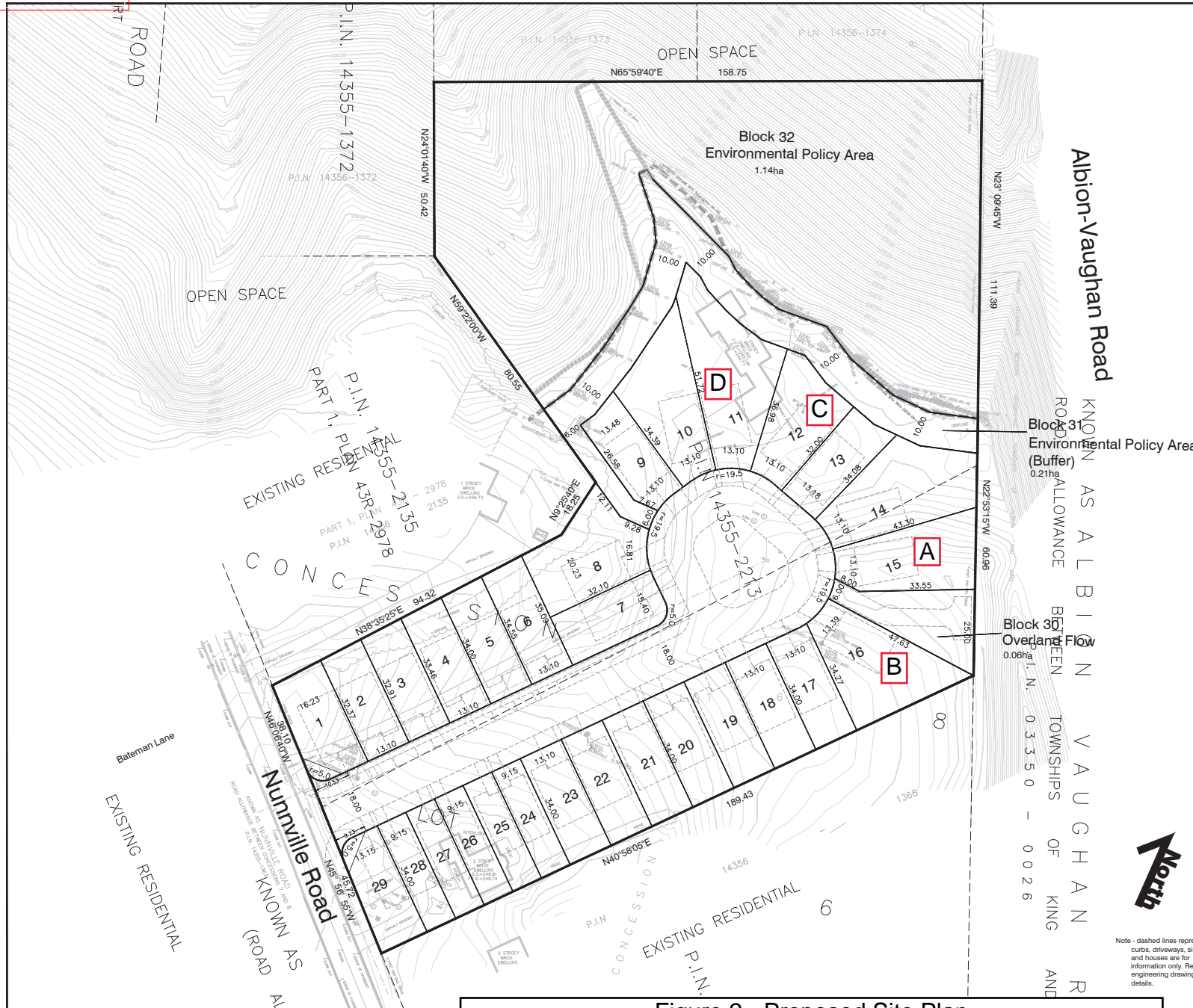
NOISE



VIBRATION



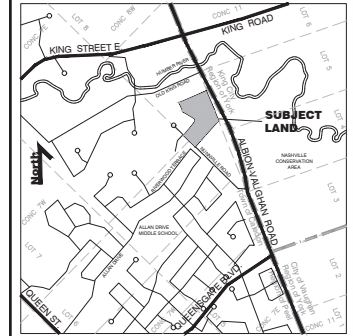
Figure 1 – Key Site Plan



DRAFT PLAN OF SUBDIVISION

PART OF BROKEN LOT 6 AND PART OF LOT 7
CONCESSION 8
GEOGRAPHIC TOWNSHIP OF ALBION
TOWN OF CALEDON, REGIONAL MUNICIPALITY OF PEEL

January 17, 2020



ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 (17) OF THE PLANNING ACT, R.S.O., 1990

- (a) AS SHOWN ON DRAFT PLAN
- (b) AS SHOWN ON DRAFT AND KEY PLANS
- (c) NO ADJACENT LANDS OWNED BY THE APPLICANT
- (d) THE LAND IS TO BE USED ACCORDING TO THE SCHEDULE OF LAND USE
- (e) AS SHOWN ON DRAFT AND KEY PLANS
- (f) AS SHOWN ON DRAFT PLAN
- (g) AS SHOWN ON DRAFT AND KEY PLANS
- (h) MUNICIPAL WATER SUPPLY TO BE MADE AVAILABLE
- (i) SOIL IS SILTY CLAY TILL
- (j) AS SHOWN ON DRAFT PLAN
- (k) FULL MUNICIPAL SERVICES TO BE MADE AVAILABLE
- (l) SUBJECT TO EASEMENTS AS SHOWN ON THE DRAFT PLAN

SCHEDULE OF LAND USE

LAND USE	Lot/Block Number	Units	Area (Acres)
Detached Res. - Min. 9.1m	24 to 29	6	1.49
Detached Res. - Min. 13.1m	1 to 23	23	0.06
Overland Flow	Block 30		0.06
EPA (Buffer)	Block 31		0.21
Environmental Policy Area	Block 32		1.14
Road (Length = 229.2m)			0.43
Total		29	3.33

OWNER'S AUTHORIZATION

I HEREBY AUTHORIZE THIS DRAFT PLAN OF SUBDIVISION TO BE SUBMITTED TO THE TOWN OF CALEDON FOR APPROVAL.

Sam Morris, President
Boltan Malton Development Inc. DATE

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

Shon Goonewardene, S.Eng., O.L.S.
R-P-E Surveying Ltd. August 1, 2019 DATE

Scale 1 : 500
(24 x 36)


PLAN PREPARED BY
wsp

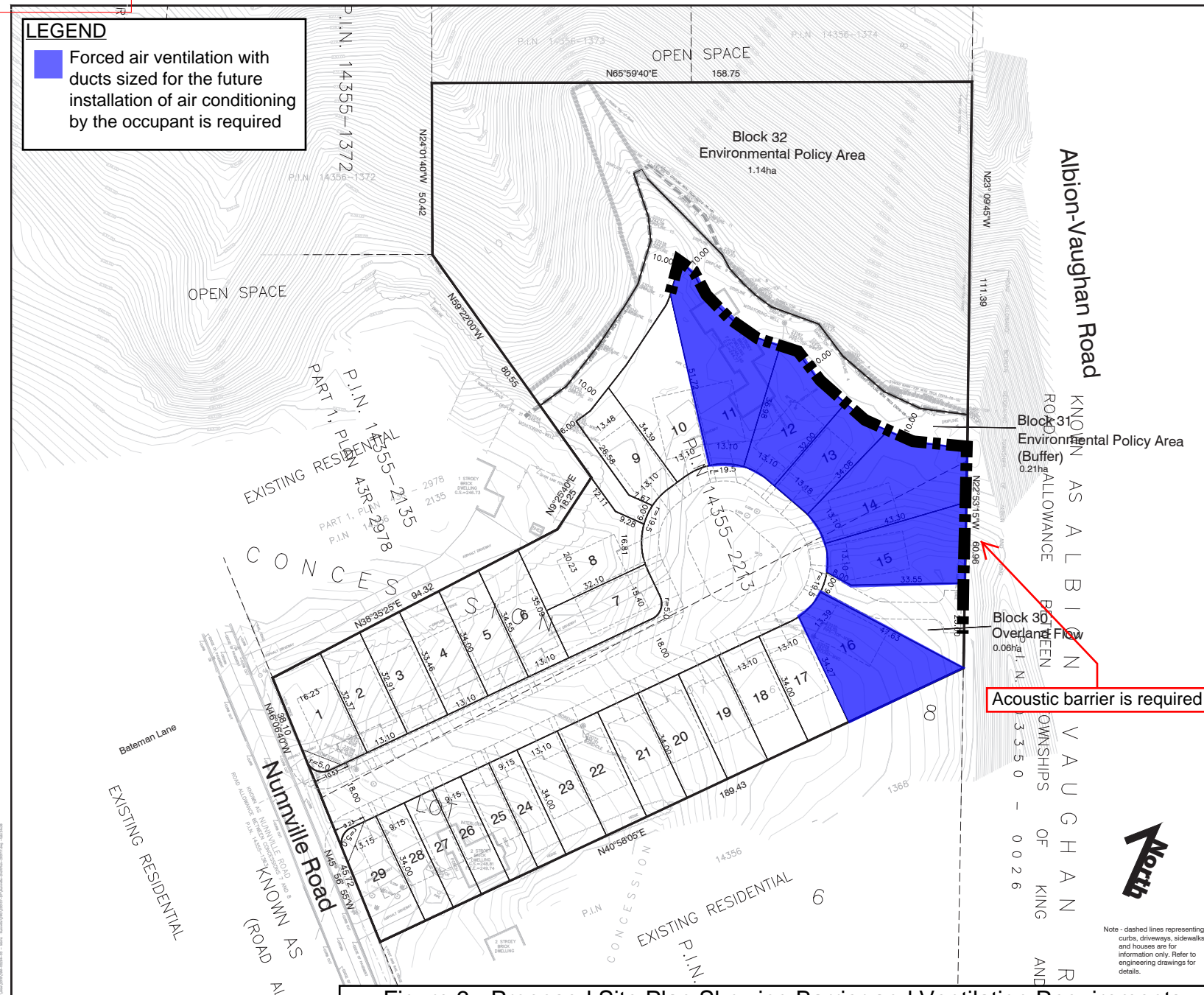
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Figure 2 - Proposed Site Plan

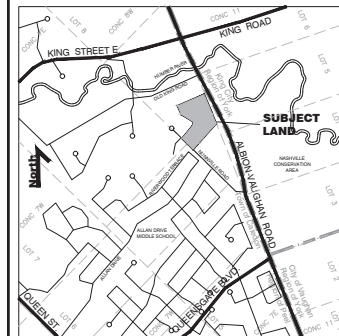
May 21, 2020

LEGEND

 Forced air ventilation with ducts sized for the future installation of air conditioning by the occupant is required

**DRAFT PLAN OF
SUBDIVISION**

PART OF BROKEN LOT 6 AND PART OF LOT 7
CONCESSION 8
GEOGRAPHIC TOWNSHIP OF ALBION
TOWN OF CALEDON, REGIONAL MUNICIPALITY OF PEEL

January 17, 2020**ADDITIONAL INFORMATION REQUIRED
UNDER SECTION 51 (17) OF THE
PLANNING ACT, R.S.O., 1990**

- (a) AS SHOWN ON DRAFT PLAN
- (b) AS SHOWN ON DRAFT AND KEY PLANS
- (c) NO ADJACENT LANDS OWNED BY THE APPLICANT
- (d) THE LAND IS TO BE USED ACCORDING TO THE SCHEDULE OF LAND USE
- (e) AS SHOWN ON DRAFT AND KEY PLANS
- (f) AS SHOWN ON DRAFT PLAN
- (g) AS SHOWN ON DRAFT AND KEY PLANS
- (h) MUNICIPAL WATER SUPPLY TO BE MADE AVAILABLE
- (i) SOIL IS SILTY CLAY TILL
- (j) AS SHOWN ON DRAFT PLAN
- (k) FULL MUNICIPAL SERVICES TO BE MADE AVAILABLE
- (l) SUBJECT TO EASEMENTS AS SHOWN ON THE DRAFT PLAN

SCHEDULE OF LAND USE

LAND USE	Lot/Block Number	Units	Area (Ac)	Area (Sq)
Detached Res. - Min. 9.1m	24 to 29	6	1.49	3.58
Detached Res. - Min. 13.1m	1 to 23	23		
Overland Flow	Block 30		0.06	0.15
EPA (Buffer)	Block 31		0.21	0.52
Environmental Policy Area	Block 32		1.14	2.85
Road (Length = 229.2m)			0.43	1.06
Total		29	3.33	8.23

OWNER'S AUTHORIZATION

I AUTHORIZE THIS DRAFT PLAN OF SUBDIVISION TO BE SUBMITTED TO THE TOWN OF CALEDON FOR APPROVAL.

Sam Morro, President
Boltan Malton Development Inc.

DATE

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

Shon Goonewardene, S.Eng., O.L.S.
R+PE Surveying Ltd.

August 1, 2019

DATE

Scale 1 : 500
(24 x 36)

PLAN PREPARED BY
wsp

19M-00294-00

Figure 3 - Proposed Site Plan Showing Barrier and Ventilation Requirements

APPENDIX A

Road Traffic Information



ACOUSTICS



NOISE



VIBRATION

Report-1.1	Location : C16F025-21121NS Albion Vaughan Road - Old King Road & Nunville Road													
	Direction : North Road : Dates : 04/10/2016													
Classes ----->	Class-1	Class-2	Class-3	Class-4	Class-5	Class-6	Class-7	Class-8	Class-9	Class-10	Class-11	Class-12	Class-13	Total
00:00 1:00		46	6		4									56 0.7%
1:00 2:00		25	4			1			1					31 0.4%
2:00 3:00		12	4			1			1					18 0.2%
3:00 4:00		14	2						1				1	18 0.2%
4:00 5:00		23	3	1		2			5	3			2	39 0.5%
5:00 6:00	2	80	32	2	8	4		2	7	8			6	151 1.9%
6:00 7:00	3	196	52	2	15	13		4	6	4			3	298 3.8%
7:00 8:00	3	272	55	12	12	5		3	3	3			3	371 4.7%
8:00 9:00	2	267	40	11	18	6		1	2	4				351 4.4%
9:00 10:00		200	50	4	19	15		1	3	1				293 3.7%
10:00 11:00		166	40	6	13	8	1	1	4	1			1	241 3.0%
11:00 12:00	3	203	51	4	13	5		4	2	3			1	289 3.6%
12:00 13:00	3	207	52	6	15	7		2	4	5				301 3.8%
13:00 14:00	3	230	79	1	12	6	2		9	4			3	349 4.4%
14:00 15:00	4	311	60	9	19	9		2	1	2			1	418 5.3%
15:00 16:00	1	601	145	9	25	6		3	4	5			3	802 10.1%
16:00 17:00	5	749	154	5	31	5	2	6	4	2			3	966 12.2%
17:00 18:00	5	827	151	2	23	3		1	2	2				1016 12.8%
18:00 19:00	1	611	123	1	27	2		2	2	2				771 9.7%
19:00 20:00		352	65		10			1	1					429 5.4%
20:00 21:00		231	33		8			1	1					274 3.5%
21:00 22:00		161	24		6	1			1					193 2.4%
22:00 23:00	1	108	18		3					1				131 1.7%
23:00 00:00		101	17		2									120 1.5%
Total	36 0.5%	5993 75.6%	1260 15.9%	75 0.9%	283 3.6%	99 1.2%	5 0.1%	34 0.4%	64 0.8%	50 0.6%			27 0.3%	7926
AM PEAK	3	272	55	12	19	15	1	4	7	8			6	371
period	6:00	7:00	7:00	7:00	9:00	9:00	10:00	6:00	5:00	5:00			5:00	7:00
% of class	8.3%	4.5%	4.4%	16.0%	6.7%	15.2%	20.0%	11.8%	10.9%	16.0%			22.2%	4.7%
PM PEAK	5	827	154	9	31	9	2	6	9	5			3	1016
period	16:00	17:00	16:00	14:00	16:00	14:00	13:00	16:00	13:00	12:00			13:00	17:00
% of class	13.9%	13.8%	12.2%	12.0%	11.0%	9.1%	40.0%	17.6%	14.1%	10.0%			11.1%	12.8%

Report-1.2	Location : C16F025-21121NS Albion Vaughan Road - Old King Road & Nunville Road														
	Direction : North Road :														
	Dates : 05/10/2016														
Classes ----->	Class-1	Class-2	Class-3	Class-4	Class-5	Class-6	Class-7	Class-8	Class-9	Class-10	Class-11	Class-12	Class-13	Total	
00:00 1:00		54	13		1				1					69	0.8%
1:00 2:00		43	8		3				1					55	0.7%
2:00 3:00		20	7			1		1	1				1	31	0.4%
3:00 4:00	1	13	4		1	1	1	1	2					24	0.3%
4:00 5:00	1	26	5		1	3			3	7				46	0.6%
5:00 6:00	1	85	36	2	5	8			3	6			4	150	1.8%
6:00 7:00	1	188	43	1	16	6		2	4	3			3	267	3.3%
7:00 8:00	2	279	57	11	17	5	1	4	7	3				386	4.7%
8:00 9:00	2	258	45	8	16	4		3	4	2				342	4.2%
9:00 10:00		205	50	10	10	10		1	3	3			1	293	3.6%
10:00 11:00	2	187	53	6	8	7			5	3				271	3.3%
11:00 12:00	1	205	59	10	8	6	1		5	3			2	300	3.7%
12:00 13:00	2	210	49	4	15	8		4	8	3				303	3.7%
13:00 14:00	3	237	66	6	11	8		4	2	2				339	4.2%
14:00 15:00	1	319	84	8	16	7		1	3				2	441	5.4%
15:00 16:00	4	561	128	7	25	7		1	3	1			1	738	9.1%
16:00 17:00	2	801	145	6	44	12	2	6	1	3				1022	12.5%
17:00 18:00	7	836	143	2	19	12	2	3	2	1			1	1028	12.6%
18:00 19:00	8	584	105	2	34	1		3					1	738	9.1%
19:00 20:00	3	366	81	1	13	1		1	2					468	5.7%
20:00 21:00		268	51	1	7									327	4.0%
21:00 22:00	1	197	27		3	1		1	1					231	2.8%
22:00 23:00	1	122	25		4				1					153	1.9%
23:00 00:00	2	98	19		3									122	1.5%
Total		45 0.6%	6162 75.7%	1303 16.0%	85 1.0%	280 3.4%	108 1.3%	7 0.1%	36 0.4%	62 0.8%	40 0.5%		16 0.2%	8144	
AM PEAK	2	279	59	11	17	10	1	4	7	7			4	386	
period	7:00	7:00	11:00	7:00	7:00	9:00	3:00	7:00	7:00	4:00			5:00	7:00	
% of class	4.4%	4.5%	4.5%	12.9%	6.1%	9.3%	14.3%	11.1%	11.3%	17.5%			25.0%		4.7%
PM PEAK	8	836	145	8	44	12	2	6	8	3			2	1028	
period	18:00	17:00	16:00	14:00	16:00	16:00	16:00	16:00	12:00	12:00			14:00	17:00	
% of class	17.8%	13.6%	11.1%	9.4%	15.7%	11.1%	28.6%	16.7%	12.9%	7.5%			12.5%		12.6%

Report-1.3		Location : C16F025-21121NS Albion Vaughan Road - Old King Road & Nunville Road														
		Direction : North Road :														
		Dates : 06/10/2016														
Classes ----->		Class-1	Class-2	Class-3	Class-4	Class-5	Class-6	Class-7	Class-8	Class-9	Class-10	Class-11	Class-12	Class-13	Total	
00:00	1:00	1	44	8		3	1								57	0.7%
1:00	2:00		31	2						1					34	0.4%
2:00	3:00		19	4						1	1			1	26	0.3%
3:00	4:00	1	17	4	1	1				4	1				29	0.3%
4:00	5:00		28	2		3	3			6	7			1	50	0.6%
5:00	6:00	4	98	32	3	3	4		1	2	4			4	155	1.8%
6:00	7:00		178	51	4	15	9	1	4	1	4			1	268	3.2%
7:00	8:00	1	293	54	9	9	2	2	2	2	5			1	380	4.5%
8:00	9:00	2	295	54	13	14	1		3	4				3	389	4.6%
9:00	10:00		205	53	9	15	11	2	2	2	3			1	303	3.6%
10:00	11:00	3	172	50	6	12	5		2	5	4			2	261	3.1%
11:00	12:00	6	217	65	4	9	12		3	3	2				321	3.8%
12:00	13:00	2	254	59	8	21	8	1	2	2	3				360	4.3%
13:00	14:00	3	257	63	8	13	5		2	3	1			1	356	4.2%
14:00	15:00	1	345	75	6	23	6	2		3				1	462	5.5%
15:00	16:00	2	586	135	9	27	7	2		1	3			3	775	9.2%
16:00	17:00	3	840	158	8	34	9		5	2	2				1061	12.6%
17:00	18:00	6	801	149	1	29	9	1	2	2	2			2	1004	12.0%
18:00	19:00	3	619	92	2	18	5		2		1			2	744	8.9%
19:00	20:00	1	373	68		15	1			2					460	5.5%
20:00	21:00	2	271	57		13				1	1				345	4.1%
21:00	22:00		249	40	1	4									294	3.5%
22:00	23:00	1	121	16		4	1			1					144	1.7%
23:00	00:00		100	15	4	3									122	1.5%
Total		42 0.5%	6413 76.3%	1306 15.5%	96 1.1%	288 3.4%	99 1.2%	11 0.1%	30 0.4%	48 0.6%	44 0.5%			23 0.3%	8400	
AM PEAK		6	295	65	13	15	12	2	4	6	7			4	389	
period		11:00	8:00	11:00	8:00	6:00	11:00	7:00	6:00	4:00	4:00			5:00	8:00	
% of class		14.3%	4.6%	5.0%	13.5%	5.2%	12.1%	18.2%	13.3%	12.5%	15.9%			17.4%	4.6%	
PM PEAK		6	840	158	9	34	9	2	5	3	3			3	1061	
period		17:00	16:00	16:00	15:00	16:00	16:00	14:00	16:00	13:00	12:00			15:00	16:00	
% of class		14.3%	13.1%	12.1%	9.4%	11.8%	9.1%	18.2%	16.7%	6.3%	6.8%			13.0%	12.6%	

Report-1.4		Location : C16F025-21121NS Albion Vaughan Road - Old King Road & Nunville Road														
		Direction : South Road :														
		Dates : 04/10/2016														
Classes ----->		Class-1	Class-2	Class-3	Class-4	Class-5	Class-6	Class-7	Class-8	Class-9	Class-10	Class-11	Class-12	Class-13	Total	
00:00	1:00		28	3						1					32	0.4%
1:00	2:00		16												16	0.2%
2:00	3:00		15	3			1			1					20	0.2%
3:00	4:00		19	6					1						26	0.3%
4:00	5:00	1	63	17		5									86	1.0%
5:00	6:00	1	266	101		17	1		2					2	390	4.5%
6:00	7:00	2	580	174	1	37	2	1	6	2				1	806	9.2%
7:00	8:00	1	830	178	5	37	2	3	2	3	1			6	1068	12.2%
8:00	9:00	4	788	130	17	23	2	3	4	4	2			2	979	11.2%
9:00	10:00		460	82	9	18	5		1	7				1	583	6.7%
10:00	11:00	1	261	82	1	13	7	1	2	2	3			1	374	4.3%
11:00	12:00	3	256	56	6	22	5	2	5	4	3			1	363	4.1%
12:00	13:00	2	263	43	2	18	5	2	1	4	1			1	342	3.9%
13:00	14:00	6	268	62	7	16	9	1	4	3	1			1	378	4.3%
14:00	15:00	8	304	52	8	17	5	1	2	4	4				405	4.6%
15:00	16:00	4	391	65	7	16	9	1	2	5				2	502	5.7%
16:00	17:00	7	386	62	4	8	9	1	1	3	3			3	487	5.6%
17:00	18:00	4	456	74	5	19	11		1	7				3	580	6.6%
18:00	19:00	7	358	69	4	19	9	1	2	3	1			2	475	5.4%
19:00	20:00	1	269	61	2	6	1		1	2	1			1	345	3.9%
20:00	21:00	1	163	26	2	3	1			1					197	2.3%
21:00	22:00	1	114	32	1	2									150	1.7%
22:00	23:00		83	14	1					1					99	1.1%
23:00	00:00	1	39	6			2			1					49	0.6%
Total		55 0.6%	6676 76.3%	1398 16.0%	82 0.9%	296 3.4%	86 1.0%	17 0.2%	37 0.4%	58 0.7%	20 0.2%		27 0.3%		8752	
AM PEAK		4	830	178	17	37	7	3	6	7	3		6		1068	
period		8:00	7:00	7:00	8:00	6:00	10:00	7:00	6:00	9:00	10:00		7:00		7:00	
% of class		7.3%	12.4%	12.7%	20.7%	12.5%	8.1%	17.6%	16.2%	12.1%	15.0%		22.2%		12.2%	
PM PEAK		8	456	74	8	19	11	2	4	7	4		3		580	
period		14:00	17:00	17:00	14:00	17:00	17:00	12:00	13:00	17:00	14:00		16:00		17:00	
% of class		14.5%	6.8%	5.3%	9.8%	6.4%	12.8%	11.8%	10.8%	12.1%	20.0%		11.1%		6.6%	

Report-1.5	Location : C16F025-21121NS Albion Vaughan Road - Old King Road & Nunville Road														
	Direction : South Road :														
	Dates : 05/10/2016														
Classes ----->	Class-1 Class-2 Class-3 Class-4 Class-5 Class-6 Class-7 Class-8 Class-9 Class-10 Class-11 Class-12 Class-13													Total	
00:00 1:00	20 3 2 1 1													27 0.3%	
1:00 2:00	13 3 1													17 0.2%	
2:00 3:00	14 2													16 0.2%	
3:00 4:00	20 6 1 1													28 0.3%	
4:00 5:00	62 10 3													75 0.9%	
5:00 6:00	1	270	101		13	4		1						390 4.5%	
6:00 7:00	1	564	140	1	37	4	2	2	1	1			3	756 8.6%	
7:00 8:00	2	805	164	3	23	2		3		2				1004 11.5%	
8:00 9:00	4	838	129	14	22	6	2	4	1	2			2	1024 11.7%	
9:00 10:00	1	447	78	4	14	9	3	1	5	2			4	568 6.5%	
10:00 11:00	2	270	61	8	11	8	3	1	2	2			2	370 4.2%	
11:00 12:00	1	224	65	6	12	8	2	2	6	1			2	329 3.8%	
12:00 13:00	3	265	65	4	15	7	1	2	4	3			3	372 4.2%	
13:00 14:00	4	284	66	7	12	10	2	2	3				3	393 4.5%	
14:00 15:00	6	322	57	9	18	7	1	4	2	2				428 4.9%	
15:00 16:00	1	388	68	12	16	8	2	3	2	3			1	504 5.8%	
16:00 17:00	3	387	76	12	12	8		1	2	3			6	510 5.8%	
17:00 18:00	8	420	52		12	8		3		3			4	510 5.8%	
18:00 19:00		408	79	4	11	3		4	5	1			2	517 5.9%	
19:00 20:00	2	282	57	3	10			1	3	1				359 4.1%	
20:00 21:00		194	45		1		1		1					242 2.8%	
21:00 22:00	6	125	23		5									159 1.8%	
22:00 23:00		93	14		3				1					111 1.3%	
23:00 00:00		47	6			1							1	55 0.6%	
Total		45 0.5%	6762 77.2%	1370 15.6%	87 1.0%	254 2.9%	94 1.1%	20 0.2%	34 0.4%	39 0.4%	26 0.3%		33 0.4%	8764	
AM PEAK		4	838	164	14	37	9	3	4	6	2		4	1024	
period		8:00	8:00	7:00	8:00	6:00	9:00	9:00	8:00	11:00	7:00		9:00	8:00	
% of class		8.9%	12.4%	12.0%	16.1%	14.6%	9.6%	15.0%	11.8%	15.4%	7.7%		12.1%	11.7%	
PM PEAK		8	420	79	12	18	10	2	4	5	3		6	517	
period		17:00	17:00	18:00	15:00	14:00	13:00	13:00	14:00	18:00	12:00		16:00	18:00	
% of class		17.8%	6.2%	5.8%	13.8%	7.1%	10.6%	10.0%	11.8%	12.8%	11.5%		18.2%	5.9%	

Report-1.6	Location : C16F025-21121NS Albion Vaughan Road - Old King Road & Nunville Road														
	Direction : South Road :														
	Dates : 06/10/2016														
Classes ----->	Class-1 Class-2 Class-3 Class-4 Class-5 Class-6 Class-7 Class-8 Class-9 Class-10 Class-11 Class-12 Class-13													Total	
00:00 1:00	18 4 2													24 0.3%	
1:00 2:00	12 2 1													15 0.2%	
2:00 3:00	19 3 1													23 0.3%	
3:00 4:00	17 5 1													23 0.3%	
4:00 5:00	62 19 3 2													86 1.0%	
5:00 6:00	2	274	87		21	3			2	1					390 4.3%
6:00 7:00	5	556	173		32	2		2	2	3					775 8.6%
7:00 8:00	2	838	154	3	37	3	1	3		1				2	1044 11.6%
8:00 9:00	7	797	118	15	21	6		5	2	1				3	975 10.8%
9:00 10:00	2	459	71	5	23	3	2	5	4	3					577 6.4%
10:00 11:00	1	300	55	10	15	7	1	2	5	5				2	403 4.5%
11:00 12:00	1	299	65	5	16	6	1	1	2	3				2	401 4.4%
12:00 13:00	3	299	65	5	15	7	3	1	7	2					407 4.5%
13:00 14:00	4	289	57	11	19	5	3	4	2	2				2	398 4.4%
14:00 15:00	1	348	63	9	15	16	3		2	1	1				459 5.1%
15:00 16:00	3	375	81	15	14	8	2	3	3					4	508 5.6%
16:00 17:00	4	464	65	4	21	10	1	2	3	3				2	579 6.4%
17:00 18:00	2	441	76		12	12	1	2	1	4				3	554 6.1%
18:00 19:00	4	386	73	2	11	4	1	2	1	1				3	488 5.4%
19:00 20:00	4	255	43		9			1	3					4	319 3.5%
20:00 21:00	1	190	43	1	8			1							244 2.7%
21:00 22:00	2	136	24		5									1	168 1.9%
22:00 23:00		88	14	2	5										109 1.2%
23:00 00:00		35	5		6				1						47 0.5%
Total		48 0.5%	6957 77.2%	1365 15.1%	87 1.0%	308 3.4%	93 1.0%	19 0.2%	35 0.4%	45 0.5%	30 0.3%	1 0.0%		28 0.3%	9016
AM PEAK		7	838	173	15	37	7	2	5	5	5			3	1044
period		8:00	7:00	6:00	8:00	7:00	10:00	9:00	8:00	10:00	10:00			8:00	7:00
% of class		14.6%	12.0%	12.7%	17.2%	12.0%	7.5%	10.5%	14.3%	11.1%	16.7%			10.7%	11.6%
PM PEAK		4	464	81	15	21	16	3	4	7	4	1		4	579
period		13:00	16:00	15:00	15:00	16:00	14:00	12:00	13:00	12:00	17:00	14:00		15:00	16:00
% of class		8.3%	6.7%	5.9%	17.2%	6.8%	17.2%	15.8%	11.4%	15.6%	13.3%	100.0%		14.3%	6.4%

Report-1.7		Location : C16F025-21121NS Albion Vaughan Road - Old King Road & Nunville Road														
		Direction : North + South Road :														
		Dates : 04/10/2016														
Classes ----->		Class-1	Class-2	Class-3	Class-4	Class-5	Class-6	Class-7	Class-8	Class-9	Class-10	Class-11	Class-12	Class-13	Total	
00:00	1:00		74	9		4				1					88	0.5%
1:00	2:00		41	4				1		1					47	0.3%
2:00	3:00		27	7				2		2					38	0.2%
3:00	4:00		33	8					1	1				1	44	0.3%
4:00	5:00	1	86	20	1	5	2			5	3			2	125	0.7%
5:00	6:00	3	346	133	2	25	5		4	7	8			8	541	3.2%
6:00	7:00	5	776	226	3	52	15	1	10	8	4			4	1104	6.6%
7:00	8:00	4	1102	233	17	49	7	3	5	6	4			9	1439	8.6%
8:00	9:00	6	1055	170	28	41	8	3	5	6	6			2	1330	8.0%
9:00	10:00		660	132	13	37	20		2	10	1			1	876	5.3%
10:00	11:00	1	427	122	7	26	15	2	3	6	4			2	615	3.7%
11:00	12:00	6	459	107	10	35	10	2	9	6	6			2	652	3.9%
12:00	13:00	5	470	95	8	33	12	2	3	8	6			1	643	3.9%
13:00	14:00	9	498	141	8	28	15	3	4	12	5			4	727	4.4%
14:00	15:00	12	615	112	17	36	14	1	4	5	6			1	823	4.9%
15:00	16:00	5	992	210	16	41	15	1	5	9	5			5	1304	7.8%
16:00	17:00	12	1135	216	9	39	14	3	7	7	5			6	1453	8.7%
17:00	18:00	9	1283	225	7	42	14		2	9	2			3	1596	9.6%
18:00	19:00	8	969	192	5	46	11	1	4	5	3			2	1246	7.5%
19:00	20:00	1	621	126	2	16	1		2	3	1			1	774	4.6%
20:00	21:00	1	394	59	2	11	1		1	2					471	2.8%
21:00	22:00	1	275	56	1	8	1			1					343	2.1%
22:00	23:00	1	191	32	1	3				1	1				230	1.4%
23:00	00:00	1	140	23		2	2			1					169	1.0%
Total		91 0.5%	12669 76.0%	2658 15.9%	157 0.9%	579 3.5%	185 1.1%	22 0.1%	71 0.4%	122 0.7%	70 0.4%		54 0.3%		16678	
AM PEAK		6	1102	233	28	52	20	3	10	10	8		9		1439	
period		8:00	7:00	7:00	8:00	6:00	9:00	7:00	6:00	9:00	5:00		7:00		7:00	
% of class		6.6%	8.7%	8.8%	17.8%	9.0%	10.8%	13.6%	14.1%	8.2%	11.4%		16.7%		8.6%	
PM PEAK		12	1283	225	17	46	15	3	7	12	6		6		1596	
period		14:00	17:00	17:00	14:00	18:00	13:00	13:00	16:00	13:00	12:00		16:00		17:00	
% of class		13.2%	10.1%	8.5%	10.8%	7.9%	8.1%	13.6%	9.9%	9.8%	8.6%		11.1%		9.6%	

Report-1.8	Location : C16F025-21121NS Albion Vaughan Road - Old King Road & Nunville Road														
	Direction : North + South Road :														
	Dates : 05/10/2016														
Classes ----->	Class-1	Class-2	Class-3	Class-4	Class-5	Class-6	Class-7	Class-8	Class-9	Class-10	Class-11	Class-12	Class-13	Total	
00:00 1:00		74	16		3	1	1		1					96	0.6%
1:00 2:00		56	11		4				1					72	0.4%
2:00 3:00		34	9			1		1	1				1	47	0.3%
3:00 4:00	1	33	10		2	1	1	1	3					52	0.3%
4:00 5:00	1	88	15		4	3			3	7				121	0.7%
5:00 6:00	2	355	137	2	18	12		1	3	6			4	540	3.2%
6:00 7:00	2	752	183	2	53	10	2	4	5	4			6	1023	6.1%
7:00 8:00	4	1084	221	14	40	7	1	7	7	5				1390	8.2%
8:00 9:00	6	1096	174	22	38	10	2	7	5	4			2	1366	8.1%
9:00 10:00	1	652	128	14	24	19	3	2	8	5			5	861	5.1%
10:00 11:00	4	457	114	14	19	15	3	1	7	5			2	641	3.8%
11:00 12:00	2	429	124	16	20	14	3	2	11	4			4	629	3.7%
12:00 13:00	5	475	114	8	30	15	1	6	12	6			3	675	4.0%
13:00 14:00	7	521	132	13	23	18	2	6	5	2			3	732	4.3%
14:00 15:00	7	641	141	17	34	14	1	5	5	2			2	869	5.1%
15:00 16:00	5	949	196	19	41	15	2	4	5	4			2	1242	7.3%
16:00 17:00	5	1188	221	18	56	20	2	7	3	6			6	1532	9.1%
17:00 18:00	15	1256	195	2	31	20	2	6	2	4			5	1538	9.1%
18:00 19:00	8	992	184	6	45	4		7	5	1			3	1255	7.4%
19:00 20:00	5	648	138	4	23	1		2	5	1				827	4.9%
20:00 21:00		462	96	1	8		1		1					569	3.4%
21:00 22:00	7	322	50		8	1		1	1					390	2.3%
22:00 23:00	1	215	39		7				2					264	1.6%
23:00 00:00	2	145	25		3	1							1	177	1.0%
Total		90 0.5%	12924 76.4%	2673 15.8%	172 1.0%	534 3.2%	202 1.2%	27 0.2%	70 0.4%	101 0.6%	66 0.4%		49 0.3%	16908	
AM PEAK	6	1096	221	22	53	19	3	7	11	7			6	1390	
period	8:00	8:00	7:00	8:00	6:00	9:00	9:00	7:00	11:00	4:00			6:00	7:00	
% of class	6.7%	8.5%	8.3%	12.8%	9.9%	9.4%	11.1%	10.0%	10.9%	10.6%			12.2%	8.2%	
PM PEAK	15	1256	221	19	56	20	2	7	12	6			6	1538	
period	17:00	17:00	16:00	15:00	16:00	16:00	13:00	16:00	12:00	12:00			16:00	17:00	
% of class	16.7%	9.7%	8.3%	11.0%	10.5%	9.9%	7.4%	10.0%	11.9%	9.1%			12.2%	9.1%	

Report-1.9	Location : C16F025-21121NS Albion Vaughan Road - Old King Road & Nunville Road														
	Direction : North + South Road :														
	Dates : 06/10/2016														
Classes ----->	Class-1	Class-2	Class-3	Class-4	Class-5	Class-6	Class-7	Class-8	Class-9	Class-10	Class-11	Class-12	Class-13	Total	
00:00 1:00	1	62	12		3	1			2					81	0.5%
1:00 2:00		43	4						2					49	0.3%
2:00 3:00		38	7					1	1	1			1	49	0.3%
3:00 4:00	1	34	9	1	1	1			4	1				52	0.3%
4:00 5:00		90	21		6	3			8	7			1	136	0.8%
5:00 6:00	6	372	119	3	24	7		1	4	5			4	545	3.1%
6:00 7:00	5	734	224	4	47	11	1	6	3	7			1	1043	6.0%
7:00 8:00	3	1131	208	12	46	5	3	5	2	6			3	1424	8.2%
8:00 9:00	9	1092	172	28	35	7		8	6	1			6	1364	7.8%
9:00 10:00	2	664	124	14	38	14	4	7	6	6			1	880	5.1%
10:00 11:00	4	472	105	16	27	12	1	4	10	9			4	664	3.8%
11:00 12:00	7	516	130	9	25	18	1	4	5	5			2	722	4.1%
12:00 13:00	5	553	124	13	36	15	4	3	9	5				767	4.4%
13:00 14:00	7	546	120	19	32	10	3	6	5	3			3	754	4.3%
14:00 15:00	2	693	138	15	38	22	5		5	1	1		1	921	5.3%
15:00 16:00	5	961	216	24	41	15	4	3	4	3			7	1283	7.4%
16:00 17:00	7	1304	223	12	55	19	1	7	5	5			2	1640	9.4%
17:00 18:00	8	1242	225	1	41	21	2	4	3	6			5	1558	8.9%
18:00 19:00	7	1005	165	4	29	9	1	4	1	2			5	1232	7.1%
19:00 20:00	5	628	111		24	1		1	5				4	779	4.5%
20:00 21:00	3	461	100	1	21			1	1	1				589	3.4%
21:00 22:00	2	385	64	1	9								1	462	2.7%
22:00 23:00	1	209	30	2	9	1			1					253	1.5%
23:00 00:00		135	20	4	9				1					169	1.0%
Total	90 0.5%	13370 76.8%	2671 15.3%	183 1.1%	596 3.4%	192 1.1%	30 0.2%	65 0.4%	93 0.5%	74 0.4%	1 0.0%		51 0.3%	17416	
AM PEAK	9	1131	224	28	47	18	4	8	10	9			6	1424	
period	8:00	7:00	6:00	8:00	6:00	11:00	9:00	8:00	10:00	10:00			8:00	7:00	
% of class	10.0%	8.5%	8.4%	15.3%	7.9%	9.4%	13.3%	12.3%	10.8%	12.2%			11.8%	8.2%	
PM PEAK	8	1304	225	24	55	22	5	7	9	6	1		7	1640	
period	17:00	16:00	17:00	15:00	16:00	14:00	14:00	16:00	12:00	17:00	14:00		15:00	16:00	
% of class	8.9%	9.8%	8.4%	13.1%	9.2%	11.5%	16.7%	10.8%	9.7%	8.1%	100.0%		13.7%	9.4%	

APPENDIX B

Sample STAMSON 5.04 Output



ACOUSTICS



NOISE



VIBRATION

A

STAMSON 5.0 NORMAL REPORT Date: 08-05-2020 12:23:02
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te Time Period: Day/Night 16/8 hours

Description: Lot 15 with backing exposure to Alibon-Vaughan Road

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

Car traffic volume : 19846/2966 veh/TimePeriod *
Medium truck volume : 1199/179 veh/TimePeriod *
Heavy truck volume : 364/54 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 7 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 17416
Percentage of Annual Growth : 2.50
Number of Years of Growth : 14.00
Medium Truck % of Total Volume : 5.60
Heavy Truck % of Total Volume : 1.70
Day (16 hrs) % of Total Volume : 87.00

Data for Segment # 1: Albion (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 : 70.00 / 70.00 m
Receiver height : 7.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 0.00 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 233.00 m
Receiver elevation : 242.00 m
Barrier elevation : 244.00 m
Reference angle : 0.00

Results segment # 1: Albion (day)

Source height = 1.14 m

A

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.14	7.50	3.31	247.31

ROAD (0.00 + 61.10 + 0.00) = 61.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.49	72.23	0.00	-9.97	-1.16	0.00	0.00	-0.15	60.95*
-90	90	0.49	72.23	0.00	-9.97	-1.16	0.00	0.00	0.00	61.10

* Bright Zone !

Segment Leq : 61.10 dBA

Total Leq All Segments: 61.10 dBA

Results segment # 1: Albion (night)

Source height = 1.14 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.14	7.50	3.31	247.31

ROAD (0.00 + 55.84 + 0.00) = 55.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.49	66.97	0.00	-9.97	-1.16	0.00	0.00	-0.15	55.69*
-90	90	0.49	66.97	0.00	-9.97	-1.16	0.00	0.00	0.00	55.84

* Bright Zone !

Segment Leq : 55.84 dBA

Total Leq All Segments: 55.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.10 dBA
(NIGHT): 55.84 dBA

AOLA

STAMSON 5.0 NORMAL REPORT Date: 08-05-2020 12:25:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a_ola.te Time Period: 16 hours

Description: OLA of lot 15 with backing exposure to Albion-Vaughan Road with 2.0 m acoustic barrier

Road data, segment # 1: Albion

Car traffic volume : 19846 veh/TimePeriod *
Medium truck volume : 1199 veh/TimePeriod *
Heavy truck volume : 364 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 7 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Albion

Angle1 Angle2 : -90.00 deg 70.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.00 m
Receiver height : 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 70.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 7.00 m
Source elevation : 233.00 m
Receiver elevation : 242.00 m
Barrier elevation : 242.00 m
Reference angle : 0.00

Road data, segment # 2: Albion

Car traffic volume : 19846 veh/TimePeriod *
Medium truck volume : 1199 veh/TimePeriod *
Heavy truck volume : 364 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 7 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Albion

Angle1 Angle2 : 70.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0



AOLA

Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.00 m
Receiver height : 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 70.00 deg Angle2 : 90.00 deg
Barrier height : 0.00 m
Barrier receiver distance : 43.00 m
Source elevation : 233.00 m
Receiver elevation : 242.00 m
Barrier elevation : 246.00 m
Reference angle : 0.00

Results segment # 1: Albion

Source height = 1.14 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.14	1.50	0.52	242.52

ROAD (0.00 + 51.73 + 0.00) = 51.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	70	0.55	72.23	0.00	-10.08	-1.51	0.00	0.00	-8.91	51.73

Segment Leq : 51.73 dBA

Results segment # 2: Albion

Source height = 1.14 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.14	1.50	-8.51	237.49

ROAD (0.00 + 35.06 + 0.00) = 35.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
70	90	0.66	72.23	0.00	-10.79	-14.79	0.00	0.00	-11.60	35.06

AOLA

Segment Leq : 35.06 dBA

Total Leq All Segments: 51.82 dBA

TOTAL Leq FROM ALL SOURCES: 51.82 dBA

