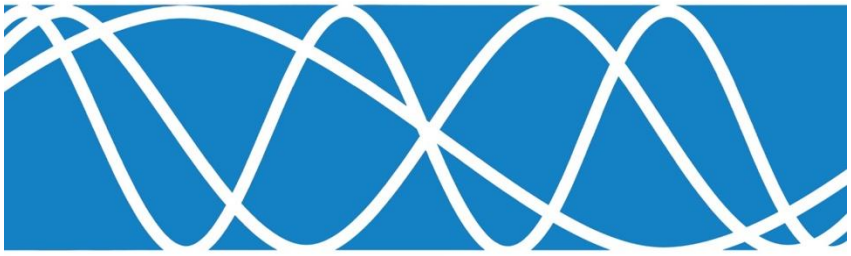
Noise Feasibility Study

Proposed Residential Development

308 Four Mile Creek Road Niagara-on-the-Lake, Ontario

August 19, 2025
HGC Project#: 2500519



Prepared for:
Sleek Developments Inc.
PO Box 612
St. David's, ON
L0S 1P0

HGC
NOISE | VIBRATION | ACOUSTICS

HGC Noise Vibration Acoustics
2000 Argentia Road, Plaza One, Suite 203
Mississauga, Ontario, L5N 1P7
t: 905.826.4044

Version Control

Ver.	Date	Version Description	Prepared By
1.0	Aug 19, 2025	Noise Feasibility Study to support planning and approval process.	J. Shaw / V. Garcia

Prepared by:

Jocelyn Shaw, B.Eng

Reviewed by:

Victor Garcia, P.Eng

Howe Gastmeier Chapnik Limited

Limitations

This document was prepared solely for the addressed party and titled project or named part thereof and should not be relied upon or used for any other project without obtaining prior written authorization from HGC Noise Vibration Acoustics (HGC). Further, the input of content from any document produced by HGC or related HGC intellectual property into any Artificial Intelligence tool is expressly prohibited. HGC accepts no responsibility or liability for any consequence of this document being used for a purpose other than for which it was commissioned. Any person or party using or relying on the document for such other purpose agrees and will by such use or reliance be taken to confirm their agreement to indemnify HGC for all loss or damage resulting therefrom. HGC accepts no responsibility or liability for this document to any person or party other than the party by whom it was commissioned.

Any conclusions and/or recommendations herein reflect the judgment of HGC based on information available at the time of preparation and were developed in good faith on information provided by others, as noted in the report, which has been assumed to be factual and accurate. Changed conditions or information occurring or becoming known after the date of this report could affect the results and conclusions presented.

Table of Contents

1 INTRODUCTION & SUMMARY

HGC Noise Vibration Acoustics (HGC) was retained by Sleek Developments Inc. to conduct a noise feasibility study for a proposed residential development to be located at 308 Four Mile Creek in the Town of Niagara-on-the-Lake, Ontario. The development includes five blocks of townhouses totaling 15 residential units. A noise study is required by the Municipality as part of the planning and approvals process.

This report has been updated to account for the addition of two additional blocks of townhouses and to include updated road traffic data.

Road traffic information for Four Mile Creek Road was obtained from the Regional Municipality of Niagara (RMN). This data was used to predict future traffic sound levels at the locations of the proposed dwelling facades and in the rear yard outdoor living areas. The predicted sound levels were compared to the guidelines of the Ministry of the Environment, Conservation, and Parks (MECP) and the RMN.

The development is feasible from a noise perspective. Future daytime and nighttime sound levels exceed MECP guideline limits at the facades of the dwelling units with exposure to Four Mile Creek Road. The provision for the future installation of air conditioning at the occupant’s discretion is required for all of the dwellings. Any building construction meeting the minimum requirements of the Ontario Building Code will provide sufficient acoustical insulation for the indoor spaces. The MECP guidelines require that noise warning clauses be included in the property and tenancy agreements to inform future residents of the traffic noise impacts and the proximity to existing commercial/office uses.

2 SITE DESCRIPTION AND NOISE SOURCES

Figure 1 is a key plan showing the location of the proposed residential development. The subject site is located at 308 Four Mile Creek in the Town of Niagara-on-the-Lake, Ontario. Figure 2 shows the site plan prepared by Upper Canada Consultants dated July 11, 2025. The proposed development will include 15 dwelling units within five blocks of townhouses and a private roadway.

A site visit was made by HGC personnel on July 17, 2025 to make observations of the acoustical environment, and to identify the significant noise sources in the vicinity. Four Mile Creek Road was noted to be the dominant source of traffic noise. A grade of approximately 10% was noted for Four Mile Creek Road with the Block 2 lands being elevated above the Block 1 lands.

The subject site is currently vacant. Lands to the north are existing residential lands and to the south are proposed future residential lands. To the northeast of the site is St. David's Cold Storage. To the east of the site is a commercial building including: Sun Opta (a food manufacturer); The Chocolate Factory Experience; St. David's Veterinary Clinic and Hummel Properties office. Loading bays are located on the east side of the building, facing away from the proposed development. Noise from these facilities were not audible during the site visit. There are several dwellings to the north of the site at a similar distance to the existing commercial/office uses than the proposed residential uses as well as on the east side of the building closer to the loading bays. There are no other significant stationary sources of noise within 500 meters of the development.

3 TRAFFIC NOISE ASSESSMENT

3.1 Road Traffic Noise Criteria

Guidelines for acceptable levels of road traffic noise impacting residential developments are given in the MECP publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", release date October 21, 2013 and are listed in Table 1 below. The values in

Table 1 are energy equivalent (average) sound levels [LEQ] in units of A weighted decibels [dBA].

Table 1: Applicable Sound Level Limits [dBA]

Space	Daytime [LEQ-16hr] Road	Nighttime [LEQ-8hr] Road
Outdoor Living Areas	55	--
Inside Living/Dining Rooms	45	45
Inside Bedrooms	45	40

These criteria apply to road traffic including intercity transit busses operating on Municipal Streets. Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a 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 outdoor living areas under MECP guidelines.

The guidelines in the MECP publication allow the sound level in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the property and tenancy agreements and offers of purchase and sale. Where OLA sound levels exceed 60 dBA, physical mitigation is required to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where future nighttime sound levels façade will exceed 60 dBA and future daytime sound levels exceed 65 dBA. The provision for the future installation of central air conditioning at the occupant's discretion is required when nighttime sound levels are in the range of 51 to 60 dBA or when daytime sound levels 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 façade and daytime sound levels exceed 55 dBA in the outdoor living area due to road traffic.

3.2 Traffic Sound Level Assessment

3.2.1 Road Traffic Data

Road traffic data for Four Mile Creek Road was obtained from the Region of Niagara in the form of Summer Average Daily Traffic (SADT) for the year 2021, and is attached in Appendix A. An SADT of 10 000 vehicles for the year 2019 was provided. The data was projected to the year 2045, as per Region of Niagara policy dated November 1, 2006, using a 2.5% growth rate. A commercial vehicle percentage of 2.3% was split into 1.4% and 0.9% medium and heavy trucks respectively and was applied for Four Mile Creek Road. A posted speed limit of 50 km/h was also used along with a day/night split of 85%/15% since Four Mile Creek Road is a regional roadway. The grade of Four Mile Creek Road was approximated as 10%. Table 2 summarizes the road traffic data used in the analysis.

Table 2: Forecasted Road Traffic Data to Year 2045

Roadway	AADT	Day / Night Split [%]	Trucks Percentage (%)		Speed Limit [km/h]
			Medium	Heavy	
Four Mile Creek Rd	19, 003	85 / 15	1.4	0.9	50

3.3 Road Traffic Noise Predictions

To assess the levels of road traffic noise which would impact the site in the future, 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 chosen around the site to obtain a good representation of the future sound levels at various dwelling units. Sound levels were predicted in the dwelling façades during daytime and nighttime hours to investigate ventilation and façade construction requirements. Sound levels were also predicted in the rear yards to determine noise barrier requirements. The results of these predictions are summarized in Table 3. The building envelopes and distance setbacks indicated on the latest site plan were used in the analysis, along with an aerial photograph of the area to determine the distance to the adjacent roadway.

Table 3: Predicted Future Sound Levels, Without Mitigation [dBA]

Prediction Location	Description	Daytime Sound Level in OLA L_{EQ} (16)	Daytime Sound Level at Façade L_{EQ} (16)	Nighttime Sound Level at Façade L_{EQ} (8)
A	Unit 9	<55	63	58
B	Unit 15	<55	62	58

3.4 Discussion and Recommendations

The sound level predictions indicate that the traffic sound levels will exceed the outdoor MECP guidelines listed in Table 1 at the façades with exposure to Four Mile Creek Road. Recommendations to meet the indoor MECP guidelines are discussed below.

3.4.1 Outdoor Living Areas

The predicted daytime sound levels in all of the OLAs will be less than 55 dBA since the dwellings themselves provide shielding form road traffic. No further physical mitigation is required.

3.4.2 Indoor Living Areas and Ventilation Requirements

Provision for Air Conditioning

The predicted future sound levels building façades will be up to 63 dBA during daytime hours and up to 58 dBA during nighttime hours. To address these

excesses, the dwellings require the provision for the future installation of air conditioning at the occupant's discretion. The installation of central air conditioning systems will satisfy and exceed ventilation requirements.

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-216 and NPC-300, as applicable. The guidelines also recommend warning clauses for all units with ventilation requirements.

3.4.3 Building Façade Constructions

All the dwellings in the development will have predicted sound levels less than 65 dBA during the daytime and less 60 dBA during the nighttime. Thus, any exterior wall and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation.

4 STATIONARY (COMMERCIAL) NOISE ASSESSMENT

4.1 Noise Source Description

To the east of the site and across Four Mile Creek Road is a commercial building including: Sun Opta (a food manufacturer); The Chocolate Factory Experience; St. David's Veterinary Clinic and Hummel Properties office. Loading bays are located on the east side of the building, facing away from the proposed development. Noise from these facilities were not audible during the site visit. Other significant noise sources from these buildings include the rooftop mechanical equipment. Based on information found online, it is likely these facilities operate during daytime hours only.

St. David's Cold Storage is located on the northeast of the site. There are several existing dwellings to the north, east, and west closer to this facility than the subject site. Sound levels from the facility are required to be within the applicable MECP criteria at these receptors. This facility is not considered further in this study.

4.2 Criteria for Acceptable Sound Levels

4.2.1 Stationary Noise Criteria

Under MECP guidelines, the acoustical environment in this area is classified as "urban" or "Class I", as background sound levels are dominated by road traffic on surrounding roadways during daytime and nighttime hours.

MECP Guideline NPC-300 is the applicable guideline for use in assessing the sound emissions from stationary sources. Stationary sources of sound are collectively defined as all sources that emit sound within a commercial or industrial facility boundary including regular on-site truck traffic for deliveries, material handling and mechanical equipment. The commercial facilities to the northeast, and east are therefore classified as stationary sources of sound. Commercial activities such as occasional movement of customer and employee vehicles, or garbage collection are not themselves considered to be significant noise sources in the MECP guidelines. Accordingly, these sources have not been considered in this study.

NPC-300 is intended for use in the planning of both residential and commercial/industrial land uses and provides the acceptability limits for sound due to commercial operations. The facade of a residential unit (i.e., in the plane of a window), or NPC-300 stipulates that the exclusionary sound level limit for a stationary noise source in urban Class 1 and 2 areas are taken to be 50 dBA during daytime and evening hours (07:00 to 19:00 and 19:00 to 23:00), and 45 dBA during nighttime hours (23:00 to 07:00) at the plane of the windows of noise sensitive spaces. If the background sound levels due to road traffic exceed the exclusionary limits, then that background sound level becomes the criterion. The background sound level is defined as the sound level that occurs

when the source under consideration is not operating and may include traffic noise and natural sounds.

Hourly Daytime traffic data for Four Mile Creek Road was provided by the Region of Niagara for the year 2019. The hourly traffic volumes provided were then used to predict sound levels in the Cadna model at the residential receptors during the day/night hours to determine the minimum hour background sound levels at those locations due to the traffic on the public roadways.

The minimum hour traffic volumes used in the analysis are summarized in the following table.

Table 4: Minimum Hour Traffic Volumes on Surrounding Roadways [dBA]

	Hourly Data		
Roadway	**Daytime**	**Nighttime**	**Commercial Vehicle %**
Four Mile Creek Road	154	6	12.3

The predicted quietest daytime hour sound levels at the façade of the proposed residence, which will be exposed to the nearby commercial uses are found to be higher than the MECP exclusionary limits in the daytime hours for most façades with exposure to the major roadways. As such, the sound level limits as summarized in Table 5 are therefore used in the following sections of this report as the applicable criteria for each façade of the proposed residential buildings.

The exclusionary minimum sound level limits as summarized in Table 5 used in the following sections of this report as the applicable criteria for all the façades of the proposed building.

Table 5: Applicable Sound Level Limits [dBA]

Unit	Sound Level Limits	
	Daytime & Evening (07:00 to 23:00)	Nighttime (23:00 to 07:00)
1-7	58	45
8-9	59	45
10-12	56	45
13	57	45
14-15	58	45

Compliance with MECP criteria generally results in acceptable levels of sound at residential receptors although there may be residual audibility during periods of low background sound.

4.3 Stationary Source Assessment

Predictive noise modelling was used to assess the potential sound impact of the nearby land uses at the closest sensitive receptors. The noise prediction model was based on the sound emission levels from the nearby noise sources, assumed operational profiles (during the day and night), and established engineering methods for the prediction of outdoor sound propagation. These methods include the effects of distance, air absorption, and acoustical screening by barrier obstacles.

The potentially significant noise sources associated with the nearby commercial uses are rooftop equipment. The majority of the neighbouring commercial uses operate during daytime hours only. Conservative data obtained from HGC project files was used in the analysis for the rooftop equipment based on a site visit and a review of aerial photography. The source levels associated used in the analysis is listed in Table 6 below.

Table 6: Source Sound Power Levels [dB re 10-12 W]

Source	Octave Band Centre Frequency [Hz]								
	63	125	250	500	1k	2k	4k	8k	dBA
Lennox LGA036	--	86	82	80	76	72	66	60	82
Lennox LGA060	--	86	82	80	76	72	66	60	82
Lennox LGA150	--	91	86	85	82	77	73	66	87
Lennox LGA240	--	94	91	90	87	93	79	72	92
Tractor Trailer Accel	101	100	94	96	97	95	91	86	101
Tractor Trailer Idle	96	91	88	88	91	90	81	70	95
Tractor Trailer Reefer	112	105	96	95	93	91	85	77	98

The above outlined sound levels and site features were used as input to a predictive computer model. The software used for this purpose (*Cadna-A Version 2025 build: 209.5501*) is a computer implementation of ISO Standard 9613-2.2 "Acoustics - Attenuation of Sound During Propagation Outdoors." The ISO method accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures such as barriers.

The following information and assumptions were used in the analysis.

Commercial Buildings

- The rooftop units were assumed to be located as shown in Figure 4. The majority of rooftop units were assumed to be 1.5 m to 2 m tall.

- Typical hours of operation for the majority of the commercial buildings is daytime only (07:00 to 23:00).

Receptors

- Residential façades of proposed townhouse blocks

Assumed daytime worst-case scenario:

- All rooftop HVAC equipment operating for 60 minutes in an hour;

- Five trucks arriving/departing the site were assumed, with four trucks idling for 15 minutes each. One truck was assumed to have a reefer unit as a worst-case scenario

Assumed night-time worst-case scenario:

- All rooftop HVAC equipment operating for 20 minutes in an hour

4.3.1 Results

The calculations consider the acoustical effects of distance and shielding by the buildings. The sound levels due to the rooftop mechanical equipment at the closest neighbouring residences are summarized in the following table.

Table 7: Predicted Sound Levels from existing Commercial Buildings at the Sensitive Receptors [dBA]

Unit No.	Criteria (Day/Night)	Sound Levels	
		Daytime & Evening (07:00 to 23:00)	Nighttime (23:00 to 07:00)
1	58 / 45	46	38
2	58 / 45	47	49
3	58 / 45	47	40
4,5	59 / 45	49	44
6	58 / 45	50	45
7	58 / 45	51	45
8,9	59 /45	51	45
10,11	56 / 45	47	42
12	56 / 45	46	41
13	57 / 45	46	41
14	58 /45	46	41
15	58 /45	45	40

The results of the calculations indicate that the predicted sound levels due to the surrounding uses are expected to be within the applicable MECP criteria at the proposed residences.

Regardless, the presence of the commercial uses should be addressed through the implementation of an additional warning clause in the tenancy and property agreements and offers of purchase and sale.

5 WARNING CLAUSES

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements and offers of purchase and sale for all dwelling units with anticipated traffic sound level excesses. Examples are provided below and follows the labels outlined in NPC-300.

Suggested wording for future dwellings which have minor sound level excesses is given below.

Type A:

> Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally 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.

Suitable wording for future dwellings requiring the provision for adding central air conditioning at the occupant's discretion is given below.

Type C:

> This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound limits of the Municipality and the Ministry of the Environment.

A suggested wording for dwellings adjacent to a commercial facility where sound levels will at times be audible is given below.

Type E:

> Purchasers are advised that due to the proximity of the existing commercial facilities, sound levels from the facilities may be at times be audible.

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

6 SUMMARY

The following recommendations are provided in regard to road traffic noise mitigation.

1. The provision for the future installation of air conditioning at the occupant's discretion is required for all of the proposed dwellings. The location, installation and sound rating of the air conditioning devices should comply with NPC-300.
2. Any exterior wall, and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation.
3. Noise warning clauses to inform the occupants of the sound level excesses and the proximity to existing commercial/office uses should be placed in the property and tenancy agreements.

The noise control recommendations are summarized Table 8. The reader is referred to the previous sections of the report where these recommendations are discussed in more detail.

Table 8: Summary of Noise Control Requirements and Noise Warning Clauses

Unit No.	Acoustic Barrier	*Ventilation Requirements	Type of Warning Clause	Building Façade Constructions
Units 1-15	--	Provision for A/C	A, C, E	OBC

Note:
-- no specific requirement
* The location, installation and sound rating of the air conditioning condensers must be compliant with MECP Guideline NPC-300, as applicable.
OBC – Ontario Building Code Requirements

7 REFERENCES

1. *Ontario Ministry of the Environment, Conservation and Parks, Publication NPC-300, Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning, August 2013.*

2. *Google Maps Aerial Imagery, Internet application: maps.google.com.*

Figure 1- Key Plan

308 FOUR MILE CREEK ROAD
NIAGARA-ON-THE-LAKE

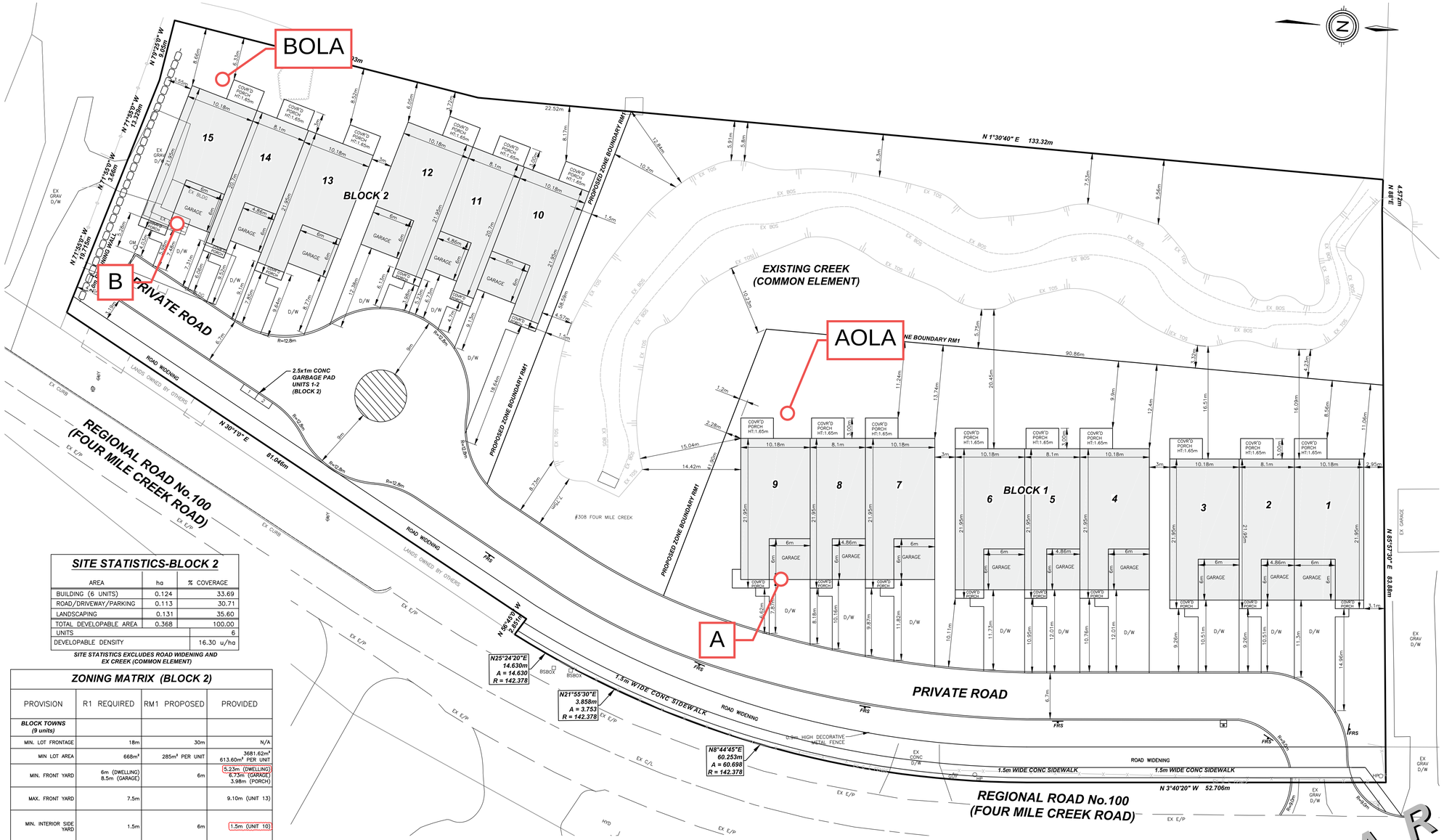
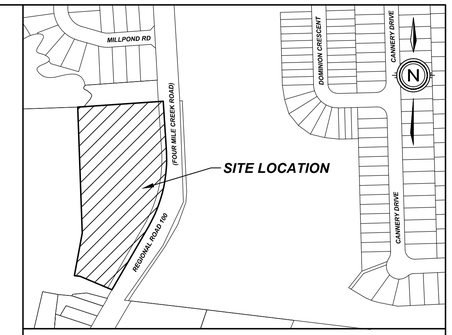


Figure 2: Proposed Site Concept Plan



KEY PLAN
N.T.S.

LEGAL DESCRIPTION

PART OF TOWNSHIP LOT 89
(GEOGRAPHIC TOWNSHIP OF NIAGARA)
TOWN OF NIAGARA-ON-THE-LAKE
REGIONAL MUNICIPALITY OF NIAGARA

ZONING MATRIX (BLOCK 1)

PROVISION	RM1–41–H
BLOCK TOWNS (9 units)	
MIN. LOT FRONTAGE	30m
MIN LOT AREA	1033.5m² PER UNIT
MIN. FRONT YARD	6m FROM PRIVATE LANE TO MAIN FACADE OF DWELLING 16m FROM PROPERTY LINE ABUTTING FOUR MILE CREEK ROAD TO MAIN FACADE OF DWELLING AN ATTACHED GARAGE SHALL BE SETBACK A MIN OF 1M BEHIND MAIN FACADE OF DWELLING UNIT GROUND FLR
MIN. INTERIOR SIDE YARD	1.2m FROM DWELLING UNIT OR COVERED PORCH TO PROPERTY LINE; 0m FROM A COMMON WALL
MIN EXTERIOR SIDE YARD	N/A
MIN REAR YARD	41m FROM DWELLING UNIT WALL TO PROPERTY LINE & 8m FROM REAR OF CONDOMINIUM UNIT LINE TO REAR FACE OF DWELLING UNIT
MAX. BUILDING HEIGHT	10m
MIN. LANDSCAPED AREA	79% INCLUDING CREEK AREA
MAX LOT COVERAGE	12% INCLUDING CREEK AREA
MAX DENSITY	10.9 un/ha
MIN DISTANCE BETWEEN BUILDINGS ON SAME LOT	SIDE WALL TO SIDE WALL 2.4m
MIN DISTANCE BETWEEN BUILDING AND INTERNAL DRIVEWAY/PARKING AREA	N/A
MAX GARAGE DOOR WIDTH	50% OF THE FRONT FACE OF A DWELLING UNIT
PERMITTED ENCROACHMENT OF UNCOV'D, UNENCLOSED OR COV'D PATIO, PORCH OR STEPS INTO FRONT YARD	2.0m
PERMITTED ENCROACHMENT OF UNCOV'D, UNENCLOSED OR COV'D PORCH, DECK OR PATIO INTO REAR YARD, PROVIDED COV'D ARE IS NOT GREATER THAN 15m²	3.5m (EXCLUDING EAVES AND GUTTERS)

SITE STATISTICS-BLOCK 1

AREA	ha	% COVERAGE
BUILDING (9 UNITS)	0.194	34.38
ROAD/DRIVEWAY/PARKING	0.137	24.29
LANDSCAPING	0.233	41.33
TOTAL DEVELOPABLE AREA	0.564	100.00
UNITS		9
DEVELOPABLE DENSITY		15.96 u/ha

SITE STATISTICS EXCLUDES ROAD WIDENING AND EX CREEK (COMMON ELEMENT)

SITE STATISTICS-BLOCK 2

AREA	ha	% COVERAGE
BUILDING (6 UNITS)	0.124	33.69
ROAD/DRIVEWAY/PARKING	0.113	30.71
LANDSCAPING	0.131	35.60
TOTAL DEVELOPABLE AREA	0.368	100.00
UNITS		6
DEVELOPABLE DENSITY		16.30 u/ha

SITE STATISTICS EXCLUDES ROAD WIDENING AND EX CREEK (COMMON ELEMENT)

ZONING MATRIX (BLOCK 2)

PROVISION	R1 REQUIRED	RM1 PROPOSED	PROVIDED
BLOCK TOWNS (9 units)			
MIN. LOT FRONTAGE	18m	30m	N/A
MIN LOT AREA	668m²	285m² PER UNIT	3681.62m² 613.60m² PER UNIT
MIN. FRONT YARD	6m (DWELLING) 8.5m (GARAGE)	6m	5.23m (DWELLING) 6.73m (GARAGE) 3.98m (PORCH)
MAX. FRONT YARD	7.5m		9.10m (UNIT 13)
MIN. INTERIOR SIDE YARD	1.5m	6m	1.5m (UNIT 10)
MIN EXTERIOR SIDE YARD	4.5m	6m	N/A
MIN REAR YARD	7.5m	6m	6.05m (UNIT 12)
MAX. BUILDING HEIGHT	10m	10m	2 STOREYS
MIN. LANDSCAPED AREA	30%	30%	35.60%
MAX LOT COVERAGE	33%	35%	33.69%
MAX DENSITY	N/A	30 un/ha	16.30 un/ha
MIN DISTANCE BETWEEN BUILDINGS ON SAME LOT	N/A	BETWEEN WALLS WITHOUT WINDOWS–3m	3m
MIN DISTANCE BETWEEN BUILDING AND INTERNAL DRIVEWAY/PARKING AREA	N/A	4.5m (DWELLING) 6m (GARAGE)	5.23m (DWELLING) 6.73m (GARAGE) 3.98m (PORCH)
MIN DWELLING UNIT AREA	125m²	80m²	131.33m² (EXLC. GARAGE & COV'D DECK/PORCH)
MIN ACCESSORY BUILDING YARDS SETBACK	1.5m	0.5m	N/A
MIN ACCESSORY BUILDING EXT SIDE YARD SETBACK	4.5m	6m	N/A
MIN SETBACK OF UNCOV'D, UNENCLOSED OR COV'D PATIO OR DECK FORM	N/A	0.6m	3.72m

PRELIMINARY

#	REVISION	DATE	INIT
.	.	.	.
.	.	.	.
0	ISSUED FOR REVIEW	2025–07–11	TA

UPPER CANADA CONSULTANTS
ENGINEERS / PLANNERS

DRAWING TITLE

SITE PLAN

DRAFTING	TA
DATE	JULY 11 2025
PRINTED	JULY 11, 2025
SCALE	1:1000
DWG No.	REV
1520-SP	**0**

DRAWING FILE: F:\1520\ENGINEERING\1520-SP-DP JUNE 2025.dwg PLOTTED: Jul 11, 2025 – 12:15pm PLOTTED BY: TAllen

308 FOUR MILE CREEK ROAD
NIAGARA-ON-THE-LAKE

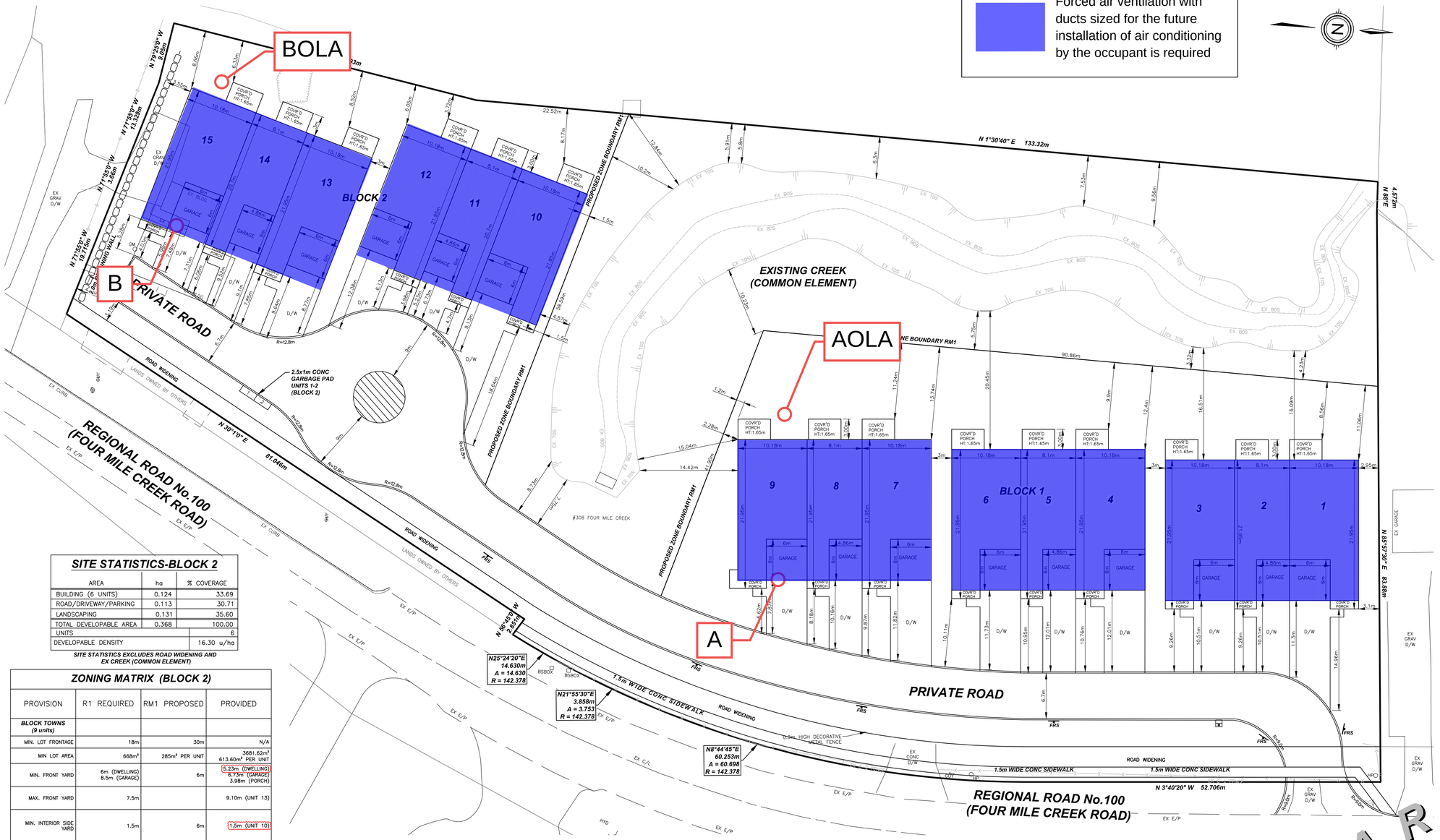
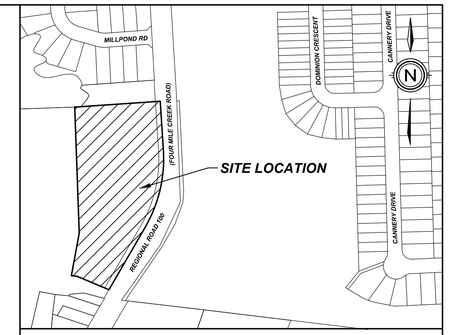


Figure 3: Proposed Site Plan Showing Ventilation Requirments



KEY PLAN
N.T.S.

LEGAL DESCRIPTION

PART OF TOWNSHIP LOT 89
(GEOGRAPHIC TOWNSHIP OF NIAGARA)
TOWN OF NIAGARA-ON-THE-LAKE
REGIONAL MUNICIPALITY OF NIAGARA

ZONING MATRIX (BLOCK 1)

PROVISION	RM1–41–H
BLOCK TOWNS (9 units)	
MIN. LOT FRONTAGE	30m
MIN LOT AREA	1033.5m² PER UNIT
MIN. FRONT YARD	6m FROM PRIVATE LANE TO MAIN FACADE OF DWELLING 16m FROM PROPERTY LINE ABUTTING FOUR MILE CREEK ROAD TO MAIN FACADE OF DWELLING AN ATTACHED GARAGE SHALL BE SETBACK A MIN OF 1M BEHIND MAIN FACADE OF DWELLING UNIT GROUND FLR
MIN. INTERIOR SIDE YARD	1.2m FROM DWELLING UNIT OR COVERED PORCH TO PROPERTY LINE; 0m FROM A COMMON WALL
MIN EXTERIOR SIDE YARD	N/A
MIN REAR YARD	41m FROM DWELLING UNIT WALL TO PROPERTY LINE & 8m FROM REAR OF CONDOMINIUM UNIT LINE TO REAR FACE OF DWELLING UNIT
MAX. BUILDING HEIGHT	10m
MIN. LANDSCAPED AREA	79% INCLUDING CREEK AREA
MAX LOT COVERAGE	12% INCLUDING CREEK AREA
MAX DENSITY	10.9 un/ha
MIN DISTANCE BETWEEN BUILDINGS ON SAME LOT	SIDE WALL TO SIDE WALL 2.4m
MIN DISTANCE BETWEEN BUILDING AND INTERNAL DRIVEWAY/PARKING AREA	N/A
MAX GARAGE DOOR WIDTH	50% OF THE FRONT FACE OF A DWELLING UNIT
PERMITTED ENCROACHMENT OF UNCOV'D, UNENCLOSED OR COV'D PATIO, PORCH OR STEPS INTO FRONT YARD	2.0m
PERMITTED ENCROACHMENT OF UNCOV'D, UNENCLOSED OR COV'D PORCH, DECK OR PATIO INTO REAR YARD, PROVIDED COV'D ARE IS NOT GREATER THAN 15m²	3.5m (EXCLUDING EAVES AND GUTTERS)

SITE STATISTICS-BLOCK 1

AREA	ha	% COVERAGE
BUILDING (9 UNITS)	0.194	34.38
ROAD/DRIVEWAY/PARKING	0.137	24.29
LANDSCAPING	0.233	41.33
TOTAL DEVELOPABLE AREA	0.564	100.00
UNITS		9
DEVELOPABLE DENSITY		15.96 u/ha

SITE STATISTICS EXCLUDES ROAD WIDENING AND EX CREEK (COMMON ELEMENT)

SITE STATISTICS-BLOCK 2

AREA	ha	% COVERAGE
BUILDING (6 UNITS)	0.124	33.69
ROAD/DRIVEWAY/PARKING	0.113	30.71
LANDSCAPING	0.131	35.60
TOTAL DEVELOPABLE AREA	0.368	100.00
UNITS		6
DEVELOPABLE DENSITY		16.30 u/ha

SITE STATISTICS EXCLUDES ROAD WIDENING AND EX CREEK (COMMON ELEMENT)

ZONING MATRIX (BLOCK 2)

PROVISION	R1 REQUIRED	RM1 PROPOSED	PROVIDED
BLOCK TOWNS (9 units)			
MIN. LOT FRONTAGE	18m	30m	N/A
MIN LOT AREA	668m²	285m² PER UNIT	3681.62m² 613.60m² PER UNIT
MIN. FRONT YARD	6m (DWELLING) 8.5m (GARAGE)	6m	5.23m (DWELLING) 6.73m (GARAGE) 3.98m (PORCH)
MAX. FRONT YARD	7.5m		9.10m (UNIT 13)
MIN. INTERIOR SIDE YARD	1.5m	6m	1.5m (UNIT 10)
MIN EXTERIOR SIDE YARD	4.5m	6m	N/A
MIN REAR YARD	7.5m	6m	6.05m (UNIT 12)
MAX. BUILDING HEIGHT	10m	10m	2 STOREYS
MIN. LANDSCAPED AREA	30%	30%	35.60%
MAX LOT COVERAGE	33%	35%	33.69%
MAX DENSITY	N/A	30 un/ha	16.30 un/ha
MIN DISTANCE BETWEEN BUILDINGS ON SAME LOT	N/A	BETWEEN WALLS WITHOUT WINDOWS–3m	3m
MIN DISTANCE BETWEEN BUILDING AND INTERNAL DRIVEWAY/PARKING AREA	N/A	4.5m (DWELLING) 6m (GARAGE)	5.23m (DWELLING) 6.73m (GARAGE) 3.98m (PORCH)
MIN DWELLING UNIT AREA	125m²	80m²	131.33m² (EXLC. GARAGE & COV'D DECK/PORCH)
MIN ACCESSORY BUILDING YARDS SETBACK	1.5m	0.5m	N/A
MIN ACCESSORY BUILDING EXT SIDE YARD SETBACK	4.5m	6m	N/A
MIN SETBACK OF UNCOV'D, UNENCLOSED OR COV'D PATIO OR DECK FORM	N/A	0.6m	3.72m

.	.	.	.
..	..	..	..
0	ISSUED FOR REVIEW	2025–07–11	TA
#	REVISION	DATE	INIT

PRELIMINARY

UPPER CANADA CONSULTANTS
ENGINEERS / PLANNERS

DRAWING TITLE	DRAFTING TA
SITE PLAN	DATE JULY 11 2025
	PRINTED JULY 11, 2025
	SCALE 1:1000
	DWG No. 1520-SP / REV 0

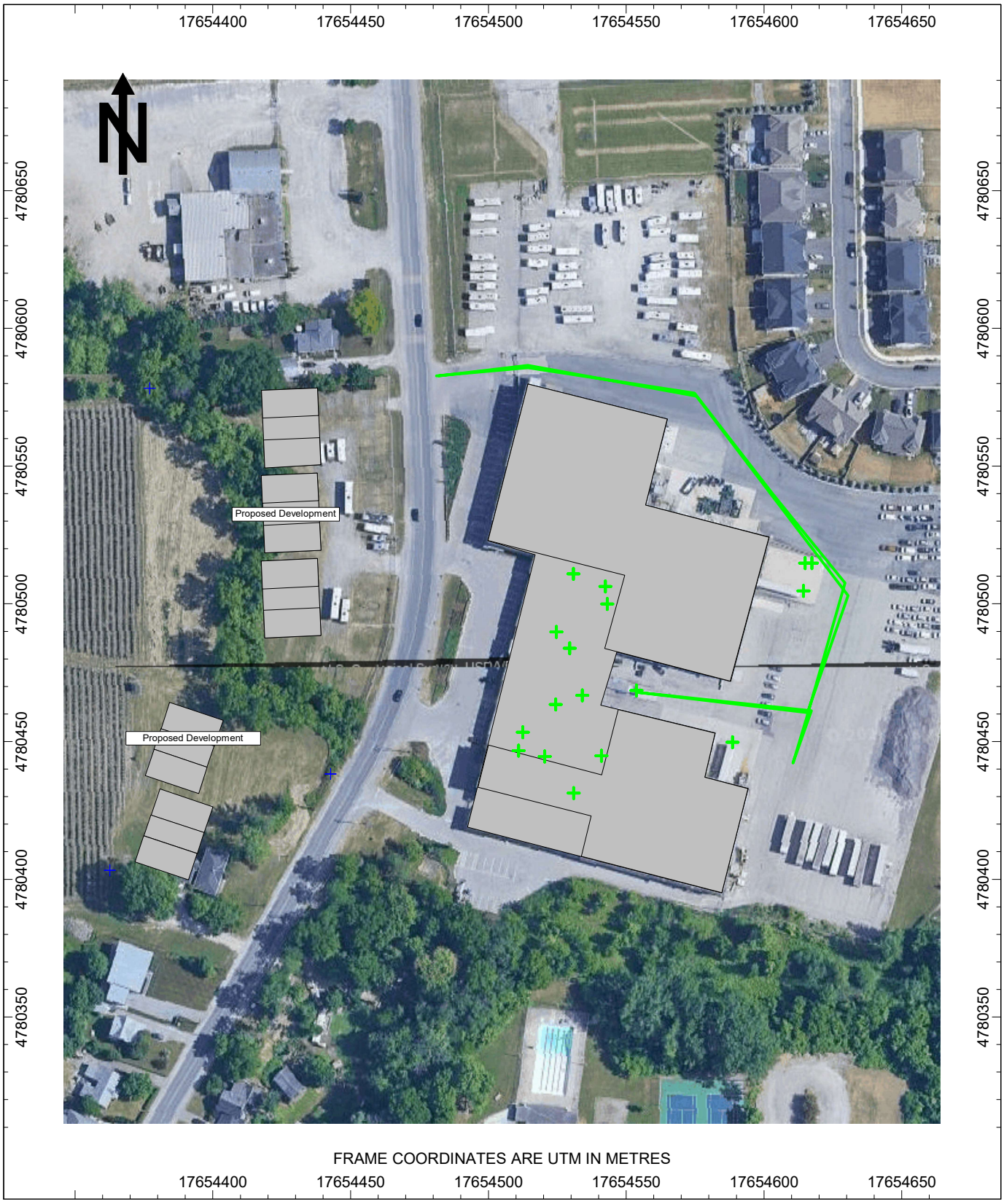


Figure 4: Aerial Photo Showing Noise Source and Receptor Locations

Appendix A
Road Traffic Data

MH Corbin Traffic Analyzer Study
Computer Generated Summary Report
City: Niagara Region
Street: 610123 - NB
Location: 610123

A study of vehicle traffic was conducted with the device having serial number 402526. The study was done in the NB lane at 610123 - NB in Niagara Region, ON in county. The study began on 2021-09-01 at 12:00 AM and concluded on 2021-09-02 at 12:00 AM, lasting a total of 24.00 hours. Traffic statistics were recorded in 15 minute time periods. The total recorded volume showed 3,238 vehicles passed through the location with a peak volume of 88 on 2021-09-01 at [11:30 AM-11:45 AM] and a minimum volume of 0 on 2021-09-01 at [02:00 AM-02:15 AM]. The AADT count for this study was 3,238.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin. At least half the vehicles were traveling in the 50 - 55 KM/H range or lower. The average speed for all classifed vehicles was 55 KM/H with 79.11% vehicles exceeding the posted speed of 50 KM/H. 0.68% percent of the total vehicles were traveling in excess of 89 KM/H. The mode speed for this traffic study was 50KM/H and the 85th percentile was 65.93 KM/H.

< to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 to 104	105 to >
208	134	332	812	669	531	302	143	52	22	11	11	0	0	0

CHART 1

CLASSIFICATION

Chart 2 lists the values of the classification bins and the total traffic volume accumulated for each bin.
Most of the vehicles classified during the study were Passenger Vehicles. The number of Passenger Vehicles in the study was 3049 which represents 94 percent of the total classified vehicles. The number of Small Trucks in the study was 59 which represents 2 percent of the total classified vehicles. The number of Trucks/Buses in the study was 67 which represents 2 percent of the total classified vehicles. The number of Tractor Trailers in the study was 52 which represents 2 percent of the total classified vehicles.

< to 4.9	5.0 to 7.9	8.0 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 21.9	22.0 to >							
967	2082	59	67	24	9	9	10							

CHART 2

HEADWAY

During the peak traffic period, on 2021-09-01 at [11:30 AM-11:45 AM] the average headway between vehicles was 10.112 seconds. During the slowest traffic period, on 2021-09-01 at [02:00 AM-02:15 AM] the average headway between vehicles was 900 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 25.00 and 40.00 degrees C.

MH Corbin Traffic Analyzer Study
Computer Generated Summary Report
City: Niagara Region
Street: 610123 - SB
Location: 610123

A study of vehicle traffic was conducted with the device having serial number 406295. The study was done in the SB lane at 610123 - SB in Niagara Region, ON in county. The study began on 2021-09-01 at 12:00 AM and concluded on 2021-09-02 at 12:00 AM, lasting a total of 24.00 hours. Traffic statistics were recorded in 15 minute time periods. The total recorded volume showed 3,028 vehicles passed through the location with a peak volume of 94 on 2021-09-01 at [04:00 PM-04:15 PM] and a minimum volume of 0 on 2021-09-01 at [01:30 AM-01:45 AM]. The AADT count for this study was 3,028.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin. At least half the vehicles were traveling in the 50 - 55 KM/H range or lower. The average speed for all classifed vehicles was 57 KM/H with 83.31% vehicles exceeding the posted speed of 50 KM/H. 0.63% percent of the total vehicles were traveling in excess of 89 KM/H. The mode speed for this traffic study was 50KM/H and the 85th percentile was 67.87 KM/H.

< to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 to 104	105 to >
128	111	265	640	639	606	308	201	64	39	13	6	0	0	0

CHART 1

CLASSIFICATION

Chart 2 lists the values of the classification bins and the total traffic volume accumulated for each bin.
Most of the vehicles classified during the study were Passenger Vehicles. The number of Passenger Vehicles in the study was 2877 which represents 95 percent of the total classified vehicles. The number of Small Trucks in the study was 42 which represents 1 percent of the total classified vehicles. The number of Trucks/Buses in the study was 58 which represents 2 percent of the total classified vehicles. The number of Tractor Trailers in the study was 43 which represents 1 percent of the total classified vehicles.

< to 4.9	5.0 to 7.9	8.0 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 21.9	22.0 to >							
1239	1638	42	58	23	5	10	5							

CHART 2

HEADWAY

During the peak traffic period, on 2021-09-01 at [04:00 PM-04:15 PM] the average headway between vehicles was 9.474 seconds. During the slowest traffic period, on 2021-09-01 at [01:30 AM-01:45 AM] the average headway between vehicles was 900 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 24.00 and 40.00 degrees C.

Prepared For: Niagara Region
Prepared By: *PYRAMID* Traffic Inc.
Location: Four Mile Creek Rd, btwn Line 2 Rd & Lorraine St
Start Date: Tuesday May 4, 2021

Site ID: 610123
Interval: 15 min.

Period Ending	Channel 1 NB	Channel 2 SB	Hourly Summary
0:15	2	0	
0:30	0	2	
0:45	1	1	
1:00	3	0	9
1:15	0	1	8
1:30	0	1	7
1:45	0	0	5
2:00	1	0	3
2:15	0	1	3
2:30	0	0	2
2:45	1	0	3
3:00	0	0	2
3:15	0	0	1
3:30	0	1	2
3:45	0	1	2
4:00	0	1	3
4:15	1	0	4
4:30	3	0	6
4:45	2	1	8
5:00	1	2	10
5:15	2	2	13
5:30	1	1	12
5:45	4	2	15
6:00	11	6	29
6:15	9	3	37
6:30	12	13	60
6:45	17	15	86
7:00	26	18	113
7:15	32	20	153
7:30	42	28	198
7:45	30	23	219
8:00	48	33	256
8:15	36	22	262
8:30	46	23	261
8:45	34	25	267
9:00	70	29	285
9:15	34	23	284
9:30	34	37	286
9:45	42	32	301
10:00	43	32	277
10:15	42	44	306
10:30	51	41	327
10:45	49	50	352
11:00	48	43	368
11:15	43	25	350
11:30	47	39	344
11:45	50	45	340
12:00	45	47	341
12:15	61	41	375
12:30	51	62	402
12:45	58	39	404
13:00	53	67	432
13:15	52	52	434
13:30	52	50	423
13:45	36	44	406
14:00	52	43	381
14:15	52	46	375
14:30	53	55	381
14:45	53	46	400
15:00	53	46	404
15:15	32	50	388
15:30	49	54	383
15:45	49	49	382
16:00	49	51	383
16:15	74	59	434
16:30	54	59	444
16:45	63	81	490
17:00	46	54	490
17:15	36	69	462
17:30	42	67	458
17:45	36	52	402
18:00	34	30	366
18:15	35	35	331
18:30	27	28	277
18:45	33	25	247
19:00	36	24	243
19:15	12	29	214
19:30	27	29	215
19:45	21	23	201
20:00	22	21	184
20:15	10	17	170
20:30	15	17	146
20:45	12	11	125
21:00	11	6	99
21:15	9	12	93
21:30	9	8	78
21:45	5	7	67
22:00	4	5	59
22:15	8	11	57
22:30	6	8	54
22:45	3	4	49
23:00	6	3	49
23:15	2	5	37
23:30	1	4	28
23:45	1	2	24
0:00	0	1	16

AM Peak: 368

PM Peak: 490

24 HR VOLUME: 4802

Appendix B

Sample STAMSON Calculations

STAMSON 5.0 NORMAL REPORT Date: 05-08-2025 08:54:57

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Description: Road traffic at predcition location a

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

Car traffic volume : 15781/2785 veh/TimePeriod *

Medium truck volume : 226/40 veh/TimePeriod *

Heavy truck volume : 145/26 veh/TimePeriod *

Posted speed limit : 50 km/h

Road gradient : 10 %

Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 10000

Percentage of Annual Growth : 2.50

Number of Years of Growth : 26.00

Medium Truck % of Total Volume : 1.40

Heavy Truck % of Total Volume : 0.90

Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: Four Mile (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg

Wood depth : 0 (No woods.)

No of house rows : 0 / 0

Surface : 2 (Reflective ground surface)

Receiver source distance : 30.60 / 30.60 m

Receiver height : 4.50 / 4.50 m

Topography : 1 (Flat/gentle slope; no barrier)

Reference angle : 0.00

Results segment # 1: Four Mile (day)

Source height = 0.97 m

ROAD (0.00 + 62.67 + 0.00) = 62.67 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

---

-90 90 0.00 65.77 0.00 -3.10 0.00 0.00 0.00 0.00 62.67

Segment Leq : 62.67 dBA

Total Leq All Segments: 62.67 dBA

Results segment # 1: Four Mile (night)

Source height = 0.98 m

ROAD (0.00 + 58.19 + 0.00) = 58.19 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

---

-90 90 0.00 61.28 0.00 -3.10 0.00 0.00 0.00 0.00 58.19

Segment Leq : 58.19 dBA

Total Leq All Segments: 58.19 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.67

(NIGHT): 58.19