Shadow Creek Subdivision

Environmental Noise Assessment

Severn, ON

SLR Project No: 241.30353.00000

January 2022

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ENVIRONMENTAL NOISE ASSESSMENT
Shadow Creek Subdivision
Severn, Ontario
Version 1.1
SLR Project No: 241.30353.00000

Submitted by:
SLR Consulting (Canada) Ltd.
150 Research Lane, Suite 105
Guelph, Ontario, N1G 4T2

Prepared for:
LIV Communities
1005 Skyview Road Suite 301
Burlington, Ontario L7P 5B1

January 18, 2022

This document has been prepared by SLR Canada. The material and data in this report were prepared under the supervision and direction of the undersigned.

Prepared by:

Marcus Li, P.Eng.

Principal, Acoustic Noise and Vibration

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1. INTRODUCTION

SLR Consulting (SLR) was retained by LIV Communities to conduct an environmental noise assessment for the proposed residential development located on Parts of Lot 3, 4 & 5, Concession 9 in Severn, Ontario (Shadow Creek Subdivision). This report is in support of the Draft Plan of Subdivision for the development.

1.1 NATURE OF THE SUBJECT LANDS

The subject property is located between Menoke Beach Road and Bayou Road, on the east side of Highway 11 in Severn, Ontario. The lands cover a 45.45-hectare area, with 534 units consisting of a combination of detached homes and townhouses.

A copy of the Draft Plan of Subdivision is included in Appendix A.

1.2 NATURE OF THE SURROUNDINGS

The lands to the west and south of the development include a combination of residential homes and vacant lands. To the east is a residential neighbourhood, separating the development lands from Lake Couchiching. Commercial lands are located on the adjacent lands to the north, and include a restaurant and coffee shop.

No significant industries are located within a 1000 m radius of the development lands.

The topography of the immediate surrounding area is essentially flat with no significant variations.

A context plan is shown in Figure 1.

2. TRANSPORTATION NOISE IMPACTS

2.1 TRANSPORTATION NOISE SOURCES

Transportation sources of interest with the potential to produce noise at the proposed development include roadway noise from Highway 11. An assessment of railway noise is not required, as the closest railway is approximately 5 km from the development site.

The level of noise from roadway noise has been predicted, and this information has been used to identify façade, ventilation, and warning clause requirements.

2.2 SURFACE TRANSPORTATION NOISE CRITERIA

2.2.1 MINISTRY OF ENVIRONMENT PUBLICATION NPC-300

Noise Sensitive Developments

Ministry of the Environment, Conservation and Parks (MECP) Publication NPC-300 provides sound level criteria for noise sensitive developments. The applicable portions of NPC-300 are Part C – Land Use Planning and the associated definitions outlined in Part A – Background. Tables 1 to 4 below summarizes the applicable surface transportation (road and rail) criteria limits.

Location Specific Criteria

Table 1 summarizes criteria in terms of energy equivalent sound exposure (L_{eq}) levels for specific noise-sensitive locations. Both outdoor and indoor locations are identified, with the focus of outdoor areas being amenity spaces. Indoor criteria vary with sensitivity of the space. As a result, sleep areas have more stringent criteria than Living / Dining room space.

Table 1: MECP Publication NPC-300 Sound Level Criteria for Road and Rail Noise

Type of Space	Time Period	Equivalent Sound Exposure Level - L_{eq} (dBA)		Assessment Location
		Road	Rail [1]	
Outdoor Living Area (OLA)	Daytime (0700-2300h)	55	55	Outdoors [2]
Living / Dining Room	Daytime (0700-2300h)	45	40	Indoors [4]
	Night-time (2300-0700h)	45	40	Indoors [4]
Sleeping Quarters	Daytime (0700-2300h)	45	40	Indoors [4]
	Night-time (2300-0700h)	40	35	Indoors [4]

Notes: [1] Whistle noise is excluded for OLA noise assessments and included for Living / Dining Room and Sleeping Quarter assessments.
[2] Road and Rail noise impacts are to be combined for assessment of OLA impacts.
[3] An assessment of indoor noise levels is required only if the criteria in **Table 4** are exceeded.

Outdoor Amenity Areas

Table 2 summarizes the noise mitigation requirements for communal outdoor amenity areas ("Outdoor Living Areas" or "OLAs"). For the assessment of outdoor sound levels, the surface transportation noise impact is determined by combining road and rail traffic sound levels. Whistle noise due to railway trains is not included in the determination of levels.

Table 2: MECP Publication NPC-300 Outdoor Living Area Mitigation Requirements

Time Period	Equivalent Sound Level in Outdoor Living Area (dBA)	Ventilation Requirements
Daytime (0700-2300h)	≤ 55	• None
	55 to 60 incl.	• Noise barrier **OR** Warning Clause A
	> 60	• Noise barrier to reduce noise to 55 dBA **OR** • Noise barrier to reduce noise to 60 dBA and Warning Clause B

Ventilation and Warning Clauses

Table 3 summarizes requirements for ventilation where windows potentially would have to remain closed as a means of noise control. Despite implementation of ventilation measures where required, if sound exposure levels exceed the guideline limits in Tables 1, warning clauses advising future occupants of the potential excesses are required. Warning clauses also apply to OLAs.

Table 3: MECP Publication NPC-300 Ventilation & Warning Clause Requirements

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - L_{eq} (dBA)		Ventilation and Warning Clause Requirements [2]
		Road	Rail [1]	
Outdoor Living Area	Daytime (0700-2300h)	56 to 60 incl.		Type A Warning Clause
Plane of Window	Daytime (0700-2300h)	≤ 55		None
		56 to 65 incl.		Forced Air Heating /provision to add air conditioning + Type C Warning Clause
		> 65		Central Air Conditioning + Type D Warning Clause
	Night-time (2300-0700h)	51 to 60 incl.		Forced Air Heating/ provision to add air conditioning + Type C Warning Clause
		> 60		Central Air Conditioning + Type D Warning Clause

Notes: [1] Rail whistle noise is excluded.
[2] Road and Rail noise is combined for determining Ventilation and Warning Clause requirements.

Building Shell Requirements

Table 4 provides sound level thresholds which if exceeded, require the building shell and components (i.e., wall, windows) to be designed and selected accordingly to ensure that the **Table 1** indoor sound criteria are met

Table 4: MECP Publication NPC-300 Building Component Requirements

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - L_{eq} (dBA))		Component Requirements
		Road	Rail [1]	
Plane of Window	Daytime (0700-2300h)	> 65	> 60	Designed/ Selected to Meet Indoor Requirements [2]
	Night-time (2300-0700h)	> 60	> 55	

Notes: [1] Including whistle noise.
[2] Building component requirements are assessed separately for Road and Railway noise. The resultant sound isolation parameter is required to be combined to determine and overall acoustic parameter.

2.3 TRAFFIC DATA AND FUTURE PROJECTIONS

2.3.1 ROADWAY TRAFFIC DATA

Road traffic data for Highway 11 was obtained from the MTO as future forecasted traffic volumes and truck percentages. The medium and heavy truck distributions were obtained from the MTO iCorridor website and applied in the assessment. Similarly, the day/night split of data was determined based on the hourly distribution of traffic obtained from the MTO iCorridor website.

A copy of the traffic data used, and calculations can be found in Appendix B. The following table summarizes the road traffic volumes used in the analysis.

Table 5: Summary of Road Traffic Data Used in the Transportation Analysis

Roadway Link	Future Traffic Volumes (AADT)	% Day/ Night Volume Split [1]		Commercial Traffic Breakdown [2]		Vehicle Speed (km/h)
		Daytime	Night-time	% Medium Trucks	% Heavy Trucks	
Highway 11	50,900	94	6	1.6%	7.4%	90

Notes: [1] The Day/Night split was determined from Highway 11 hourly distribution data.
[2] Med and Heavy truck percentages determined from MTO iCorridor data.

2.4 PROJECTED SOUND LEVELS

Future road traffic sound levels at the proposed development were predicted using Cadna/A, a commercially available noise propagation modelling software. Roadways were modelled as line sources of sound, with sound emission rates calculated using the ORNAMENT algorithms, the road traffic noise model of the MECP. These predictions were validated and are equivalent to those made using the MECP's ORNAMENT or STAMSON v5.04 road traffic noise models. STAMSON validation files are included in Appendix C for a simplified condition.

The intervening ground between the development and the roadways was assessed as absorptive, as these lands and the surrounding lands are grass/vegetation covered.

2.4.1 FAÇADE SOUND LEVELS

The transportation façade sound levels of the development, showing the ranges of predicted daytime and night-time sound levels are shown in Figures 2a and 2b, respectively.

The predicted roadway noise levels range from 54 to 75 dBA during the daytime within the development. During the night-time, sound levels are predicted to range from 45 dBA to 68 dBA.

The following units were identified to have levels above 65 dBA during the daytime or above 60 dBA during the night-time:

- Blocks 14 to 16, 26 to 31 (townhouses); and
- Lot 319 (single detached home).

As façade roadway sound levels are predicted to be above 65 dBA during the daytime, an assessment of building components is required for these lots/townhouse blocks.

2.4.2 OUTDOOR AMENITY AREAS

The Outdoor Living Areas (OLA) of the proposed development were assessed based on rear-yards for each lot and/or townhouse block. For this assessment, representative outlines of single detached homes and townhouse blocks were included in the noise modelling, as shown in Figure 3. Roadway noise levels up to 72 dBA are predicted within the various rear yards. As the levels are in excess of 60 dBA, an assessment of mitigation measures is required.

Private terraces/balconies for the single detached homes and townhouse blocks are expected to have a depth less than 4 m, which do not meet the minimum requirements for inclusion by the MECP. Therefore, the private balconies/terraces have been excluded from the assessment.

2.5 FAÇADE ASSESSMENT

Based on the roadway levels shown in Figure 2a, façade sound levels were predicted to exceed the 65 dBA daytime and/or 60 dBA night-time criteria for the townhouse blocks adjacent to Highway 11 and Lot 319. Therefore, an assessment of glazing requirements is necessary for meeting the indoor sound level criteria outlined in Table 1.

Indoor sound levels and required facade Sound Transmission Classes (STCs) were estimated using the procedures outlined in National Research Council Building Practice Note BPN-56.

2.5.1 GLAZING ASSUMPTIONS AND CALCULATION INPUTS

An assessment was completed of the end-lot single detached homes and Townhouse end-units as a worst-case condition given the higher number of exposed facades to highway noise. The following assumptions were considered, as detailed floor plans were not available at the time of the assessment:

Townhouse Units:

- Open concept main floor, with 3 exposed facades;
- Corner Bedrooms with 2 exposed facades;
- 55% glazing for front façade (entrance) and rear façade (walk-out sliding door)
- 35% glazing for all other facades

Single detached home:

- Living Rooms with 2 exposed facades;
- Kitchen with 2 exposed facades, acoustically hard finishes, and a walk-out rear sliding door;
- Corner Bedrooms with 2 exposed facades;
- 55% glazing for front façade (entrance) and rear façade (walk-out sliding door);
- 35% glazing for all other facades

2.5.2 GLAZING REQUIREMENTS

The acoustical requirements are provided below in Table 6, which is the STC rating taking into consideration roadway noise and the assumptions listed in the previous section. Detailed Façade Calculations are included in Appendix D.

Table 6: Façade Sound Transmission Class (STC) Requirements

Location	Non-Glazing Component	Glazing Requirements	
		Living Room /Kitchen	Bedroom
Block 14 to 16, 26 to 31 (townhouses)	39	STC30	STC34
Lot 319	39	OBC	OBC

Notes: OBC = Ontario Building Code, meeting a rating of STC 29.

Based on results shown in Table 6 above, upgraded glazing is required for the block 14 to 16 and Block 26 to 31 townhouse blocks.

For glazing elements, the combined glazing and frame assembly must be designed to ensure the overall sound isolation performance for the entire window unit meets the sound isolation requirements. It is recommended window/door manufacturers test data be reviewed to confirm acoustical performance is met. Windows/doors must be acoustically sealed where the frame meets the window/door sill.

As the glazing requirements above were approximated based on the generic room, façade dimensions, the glazing requirements should be re-assessed and reviewed by an Acoustical Consultant once detailed floor plans (room dimensions) and façade plans become available.

2.5.3 VENTILATION AND WARNING CLAUSE REQUIREMENTS

The requirements regarding warning clauses are summarized in Table 3. Where required, the Warning Clauses should be included in agreements registered on Title for the residential units and included in all agreements of purchase and sale or lease, and all rental agreements. Warning Clauses and ventilation requirements are summarized in Appendix E.

Based on the predicted façade noise levels, forced air heating with provisions for future installation of central air conditioning, and an MECP Type C warning clause, is recommended for all affected units with façade sound levels from road traffic that are between 56 and 65 dBA during the daytime, or between 51 and 60 dBA during night-time hours.

This affects:

- Townhouse Blocks 1, 3 to 6, 9, 17 to 25; and
- Lots 92 to 119, 120 to 132, 172 to 181, 218 to 221,262 to 266, 271, 272, 299 to 318.

Central air conditioning, and an MECP Type D warning clause, is recommended for all affected units with façade sound levels from road traffic that exceed 65 dBA during the daytime or exceed 60 dBA during night-time hours. This affects:

- Townhouse Blocks 14 to 16, 26 to 31; and
- Lot 319.

A figure and table summarizing the ventilation and warning clause requirements is included in Appendix E.

2.6 OUTDOOR AMENITY AREA REQUIREMENTS

2.6.1 ACOUSTIC BARRIERS

An assessment of acoustic barriers was completed for lots and townhouse blocks with rear yard sound levels in excess of 60 dBA. Acoustic barriers are required for the following:

- Block 14 to 16, 26 to 31; and
- Lots 114 to 119

The acoustic barriers range in height from 1.6 m to 5.75 m (3 m berm + 2.75 m barrier) in height. A summary of the barrier height, location and extents is shown in Figure E.2 of Appendix E. The barriers are required to meet the minimum surface density of 20 kg/m^2 and be sealed with no gaps.

With the inclusion of the acoustic barriers, sound levels within all rear yards are predicted to be 60 dBA or less, as shown in Figure 4.

2.6.2 WARNING CLAUSES

The sound levels within the rear yards of the development are predicted to be between 55 dBA and 60 dBA, with acoustic barriers required for the following lots and townhouse blocks:

- Block 14 to 16, 26 to 31; and
- Lots 114 to 119.

An MECP Type B warning clause is recommended for the above identified lots, as acoustic barriers are required to reduce levels to 60 dBA.

The rear yard sound levels within the following lots are predicted to be between 55 dBA and 60 dBA, without any physical mitigation:

- Block 5, 6
- Lot 92 to 113, 120 to 132, 262 to 266, 271, 272, 299 to 319

An MECP Type A warning clause is recommended for the above lots.

A figure and table summarizing the ventilation and warning clause requirements is included in Appendix E.

3. STATIONARY SOURCE NOISE IMPACTS

A site visit was completed on November 20, 2021 by SLR personnel to review the surrounding stationary noise sources.

Residential homes are located to the east, south and west, and not a concern for stationary noise.

The Webers restaurant is located approximately 175 m north of the closest lot on the development. Given the large separation distance and high ambient sound levels, the Webers noise sources (kitchen exhaust fan and rooftop HVAC units) are not a concern for the development. This is consistent with the observations made by SLR personnel, in which Webers equipment was inaudible on the development lands.

The Starbucks does not include a drive thru and includes only walk-in service. As no significant noise sources were observed by SLR personnel, the Startbucks is not a concern for stationary noise.

Based on the above review of surrounding area, a detailed assessment of stationary noise was not considered necessary and was not completed.

4. CONCLUSION AND RECOMMENDATIONS

The potential for noise impacts on the proposed development have been assessed. Based on the results of our studies, the following conclusions have been reached:

4.1 TRANSPORTATION NOISE

- An assessment of transportation noise impacts from surrounding roadways has been completed.
- Based on transportation façade sound levels, an assessment of glazing requirement was completed for the development. Upgraded glazing is required for the development townhouses, as outlined in outlined in Section 2.5.2..
- Warning Clauses should be included in agreements registered on Title for the residential units and included in agreements of purchase and sale/rental agreements. MECP Type A to D warning clause, Provision for AC, Mandatory AC Warning clauses are recommended for the development, as outlined in Section 2.5.3 and 2.6.2, and summarized in Appendix E.
- Noise impacts within the townhouse and single detached home rear yards are predicted to be within acceptable levels with the inclusion of acoustic barriers, as outlined in Section 2.6.1. A summary of barrier requirements is included in Appendix E.
- No significant industry or commercial properties are located within the surrounding area. Therefore, stationary noise is not a concern for the development and a detailed assessment was not completed, as outlined in Section 3.

4.2 OVERALL ASSESSMENT

- Impacts of the environment on the proposed development can be adequately controlled with upgraded glazing, without noise controls on surrounding stationary noise, the inclusion of ventilation and warning clause requirements, and the inclusion of acoustic barriers for rear yards.
- As the generic room and façade dimensions were applied in the glazing analysis, the glazing requirements should be re-assessed and reviewed by an Acoustical Consultant once the detailed floorplans (room dimensions) and façade plans become available.

5. REFERENCES

International Organization for Standardization, ISO 9613-2: *Acoustics – Attenuation of Sound During Propagation Outdoors Part 2: General Method of Calculation*, Geneva, Switzerland, 1996.

National Research Council, Building Practice Note 56: *Controlling Sound Transmission into Buildings*, Canada 1985.

Ontario Ministry of the Environment, Conservation and Parks, 1989, Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT).

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

Ontario Ministry of the Environment, Conservation and Parks, 1996, STAMSON v5.03: Road, Rail and Rapid Transit Noise Prediction.

STATEMENT OF LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by SLR Consulting (Canada) Ltd. (SLR) for LIV Communities hereafter referred to as the "Client". It is intended for the sole and exclusive use of the Client. The report has been prepared in accordance with the Scope of Work and agreement between SLR and the Client. Other than by the Client and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted unless payment for the work has been made in full and express written permission has been obtained from SLR.

This report has been prepared in a manner generally accepted by professional consulting principles and practices for the same locality and under similar conditions. No other representations or warranties, expressed or implied, are made.

Opinions and recommendations contained in this report are based on conditions that existed at the time the services were performed and are intended only for the client, purposes, locations, time frames and project parameters as outlined in the Scope or Work and agreement between SLR and the Client. The data reported, findings, observations and conclusions expressed are limited by the Scope of Work. SLR is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. SLR does not warranty the accuracy of information provided by third party sources.

FIGURES

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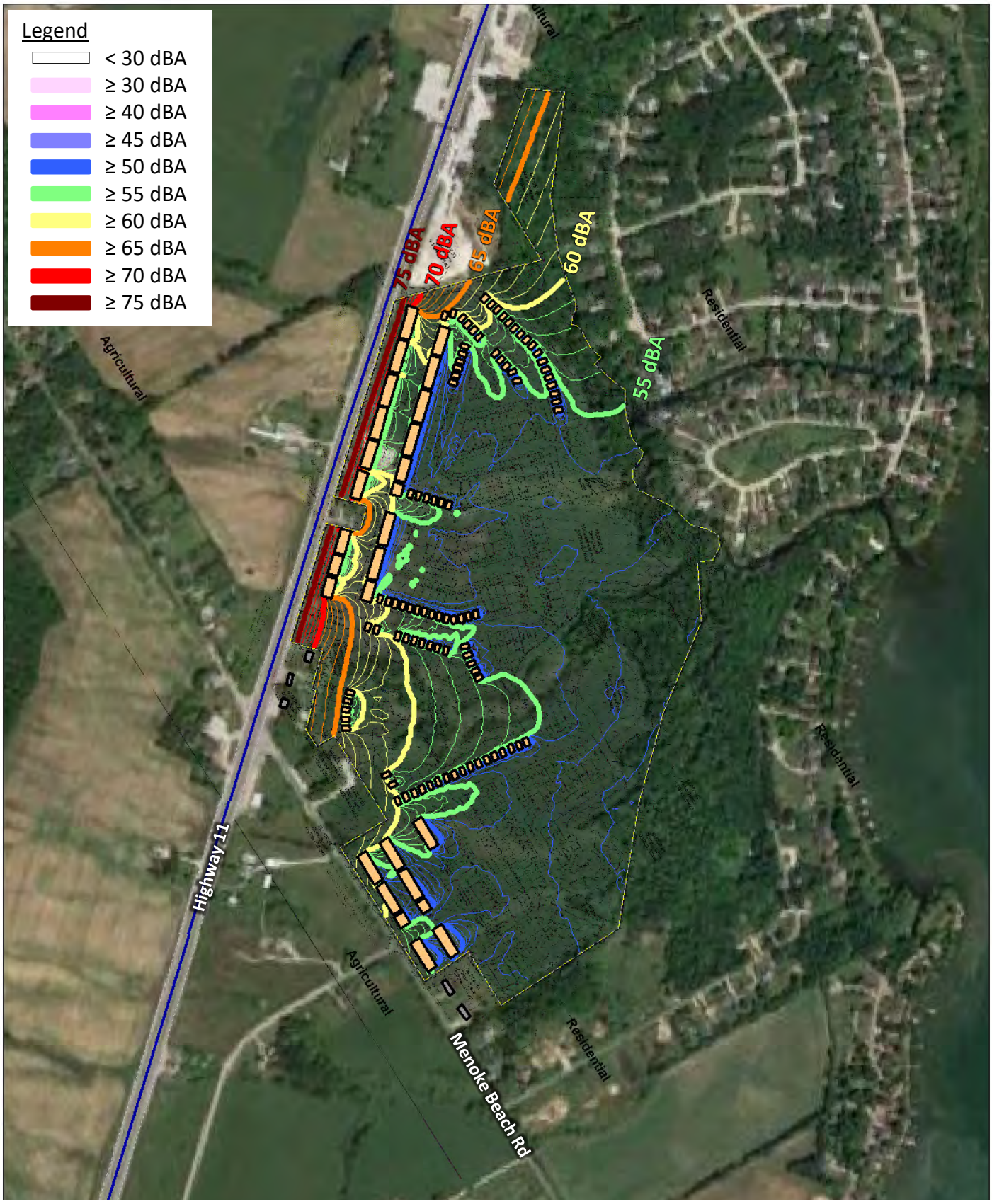
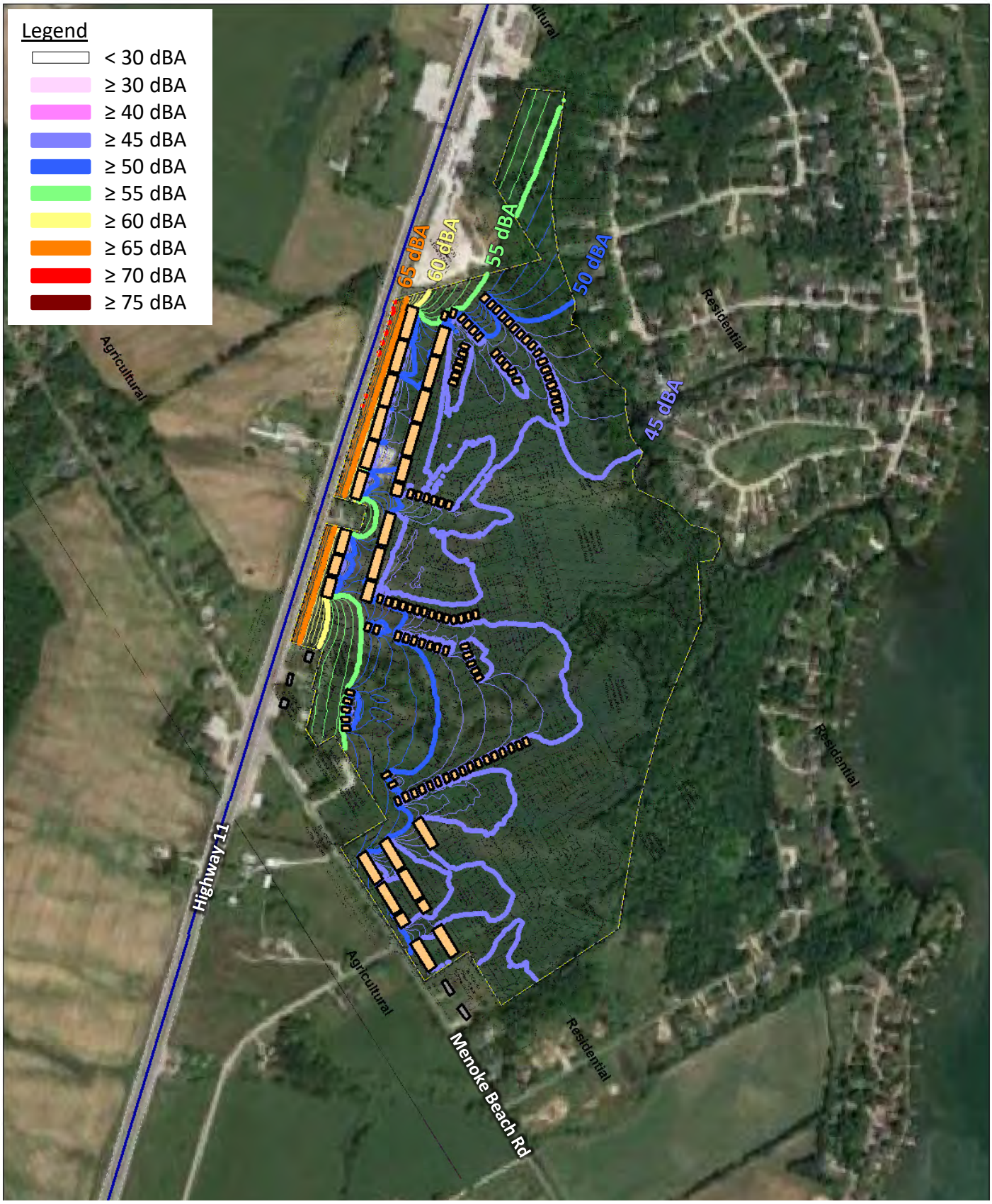
LIV COMMUNITIES	True North	Scale: 1:20,000	METRES	SLR global environmental solutions
Shadow Creek Subdivision		Date: Dec 19, 2021 Rev 0.0	Figure No. **1**	
CONCEPT PLAN		Project No. 241.30353.00000		



LIV COMMUNITIES	True North	Scale: 1:7,500	METRES	
Shadow Creek Subdivision		Date: Jan 14, 2022 Rev 0.0	Figure No. **2a**	SLR global environmental solutions
MODELLED ROADWAY NOISE LEVELS FACADES, DAYTIME		Project No. 241.30353.00000		



LIV COMMUNITIES	True North	Scale: 1:7,500	METRES	SLR global environmental solutions
Shadow Creek Subdivision		Date: Jan 14, 2022 Rev 0.0	Figure No. **2b**	
MODELLED ROADWAY NOISE LEVELS FACADES, NIGHT-TIME		Project No. 241.30353.00000		

LIV COMMUNITIES	True North	Scale: 1:7,500	METRES	SLR global environmental solutions
Shadow Creek Subdivision		Date: Jan 14, 2022 Rev 0.0	Figure No. **3**	
MODELLED ROADWAY NOISE LEVELS REAR YARDS		Project No. 241.30353.00000		

LIV COMMUNITIES	True North	Scale: 1:7,500	METRES	SLR global environmental solutions
Shadow Creek Subdivision		Date: Jan 14, 2022 Rev 0.0	Figure No. **4**	
MODELLED ROADWAY NOISE LEVELS REAR YARDS (MITIGATED)		Project No. 241.30353.00000		

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APPENDIX A
Development Drawings

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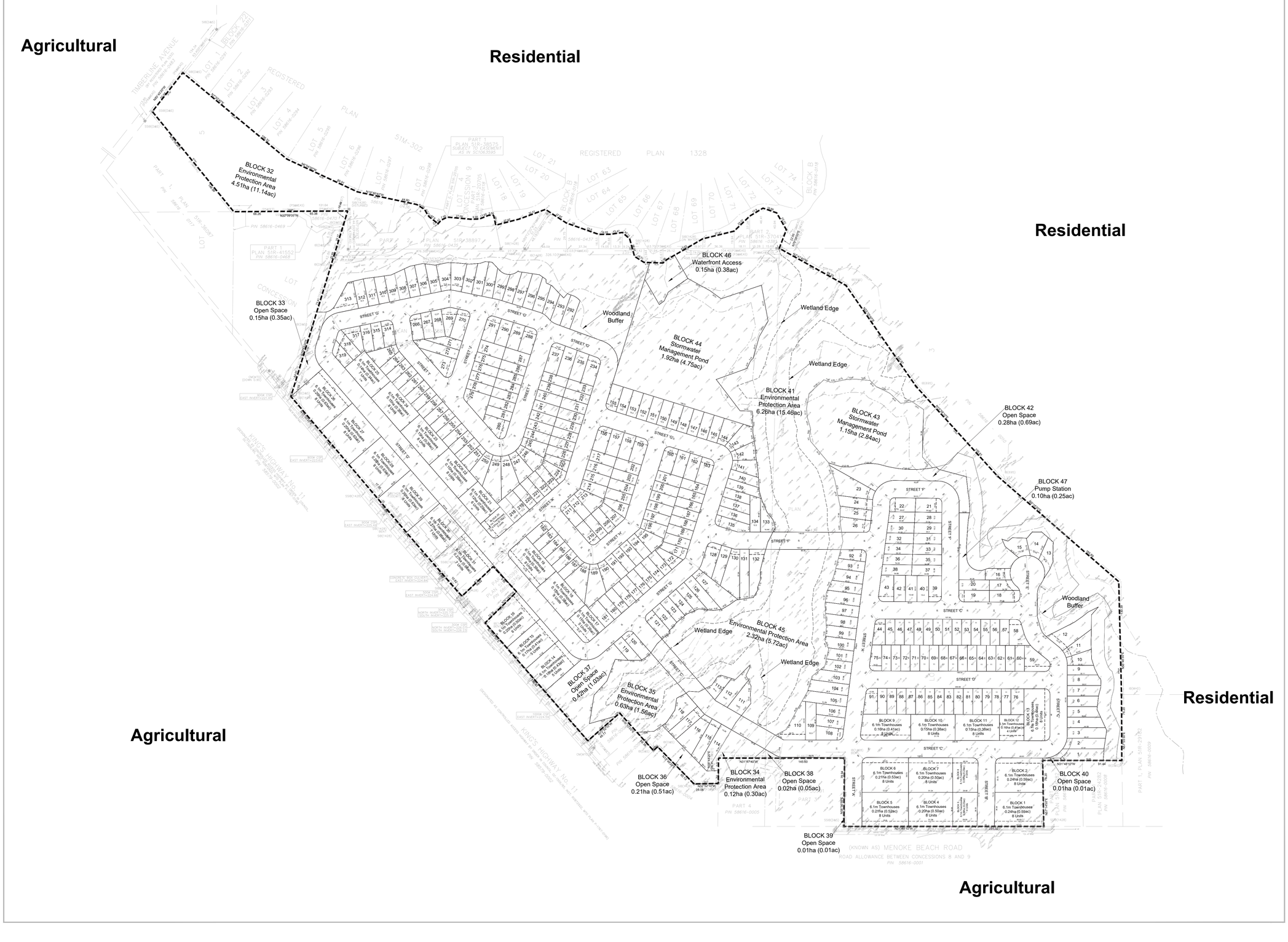

Legal Description

PART OF LOTS 3, 4, AND 5
CONCESSION 9 (NORTH DIVISION)
(GEOGRAPHIC TOWNSHIP OF NORTH ORILLIA)
NOW IN THE
TOWNSHIP OF SEVERN
COUNTY OF SIMCOE

Owner's Certificate

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: _____

_____
LIV Communities

Surveyor's Certificate

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

DATE: _____

_____
PIER DE ROSA- O.L.S.
J.D. BARNES LIMITED

Revision No.	Date	Issued / Revision	By

Additional Information Required Under Section 51(17) of the Planning Act R.S.O. 1990, c.P.13 as Amended

A. As Shown
D. Residential, Parkland
G. As Shown
J. As Shown
L. As Shown
B. As Shown
E. As Shown
H. Municipal Water Supply (Piped)
K. All Services As Required
C. As Shown
F. As Shown
I. Tioga Loamy Sand
Lovering Silty Clay Loam
Alliston Sandy Loam

KEY PLAN

SUBJECT LANDS

NOT TO SCALE

County Signing Block

APPROVED IN ACCORDANCE WITH SECTION 51(31) OF THE PLANNING ACT RSO, 1990, CHAPTER P.13, AS AMENDED

THIS _____ DAY OF _____, 20____

_____
DIRECTOR OF PLANNING, DEVELOPMENT AND TOURISM
COUNTY OF SIMCOE

Area Schedule

Description	Lots/Blocks	Units	Area
11m (36') Single Detached	9-11, 44-91, 130-132, 135-140, 164-229, 232-233, 238-239, 242-265, 271-287	170	6.36 ha (15.70 ac)
12.2m (40') Single Detached	1-8, 12-43, 92-129, 133-134, 141-163, 230-231, 234-237, 240-241, 266-270, 288-318	149	6.94 ha (17.14 ac)
6.1m (20') Townhouses	Block 1-31	215	5.51 ha (13.62 ac)
Open Space	Block 33, 36, 37, 38, 39, 40, 42		1.07 ha (2.63 ac)
Pump Station	Block 47		0.10 ha (0.25 ac)
Environmental Protection Area	Block 32, 34, 35, 41, 45		13.83 ha (34.18 ac)
Stormwater Management Pond	Block 43, 44		3.07 ha (7.59 ac)
Waterfront Access	Block 46		0.15 ha (0.38 ac)
Street A-K			8.42 ha (20.80 ac)
Total		534	45.45 ha (112.31 ac)

MHBC
PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE
230-7050 WESTON ROAD WOODBRIDGE, ON, L4L 8G7 | P: 905 761 5588 F: 905 761 5589 | WWW.MHBCPLAN.COM

Stamp

Date	November 9, 2021
File No.	15226X
Plan Scale	1:2000 (Arch D)
Drawn By	T.H.
Checked By	E.T.
Other	

Project

8743 Highway 11
Draft Plan of Subdivision

File Name
DRAFT PLAN OF SUBDIVISION

Dwg No. 1 of 1

Scale Bar

0 25 50 100 200

MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

N:\15226\X – MBR Phase III – Shadow Creek, Severn\1 – MHBC Documents\Draft Plan\CAD\15226X- Draft Plan of Subdivision- 03 January 2022.dwg

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APPENDIX B
Traffic Data and Calculations

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Marcus Li

From: Du, Shuming (MTO) <Shuming.Du@ontario.ca>
Sent: October 29, 2021 5:32 PM
To: Marcus Li
Cc: Tai, Arthur (MTO); Wells, Kara (MTO)
Subject: RE: Highway 11 Traffic Data Requests

Hi Marcus,

In response to your request please find below the information available from this office for Highway 11 near Eastside Dr and Menoke Beach Rd:

2016 AADT: 26600
2016 SADT: 33500
Number of Lanes: 4
Ultimate AADT: 40500
Ultimate SADT: 50900
Ultimate Number of Lanes: 4
Posted Speed: 90 km/h
Percentage of Trucks: 9%

and for Highway 11 near West St N and Coldwater Rd W:

2016 AADT: 30500
2016 SADT: 44100
Number of Lanes: 4
Ultimate AADT: 59800
Ultimate SADT: 75200
Ultimate Number of Lanes: 4
Posted Speed: 100 km/h
Percentage of Trucks: 10%

Please note that the above information is estimated based upon our current knowledge of the area, which may be subject to change in the future.

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

From: Marcus Li <mli@slrconsulting.com>
Sent: October 27, 2021 10:28 AM
To: Du, Shuming (MTO) <Shuming.Du@ontario.ca>
Cc: Tai, Arthur (MTO) <Arthur.Tai@ontario.ca>
Subject: RE: Highway 11 Traffic Data Requests

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O R N A M E N T - Sound Power Emissions & Source Heights

Ontario Road Noise Analysis Method for Environment and Transportation

Road Segment ID	Roadway Name	Link Description	Speed (kph)	Period (h)	Auto	Med	Heavy	Road Gradient (%)	Cadna/A Ground Absorption G	PWL (dBA)	Source Height, s (m)
Hwy11_avg_D	Hwy 11 (Ultimate SADT)	Daytime Impacts	90	16	43,540	750	3,556	0	0.00	**94.1**	**1.7**
Hwy11_avg_N		Nighttime Impacts	90	8	2,779	48	227	0	0.00	**85.2**	**1.7**

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APPENDIX C
STAMSON Output Files

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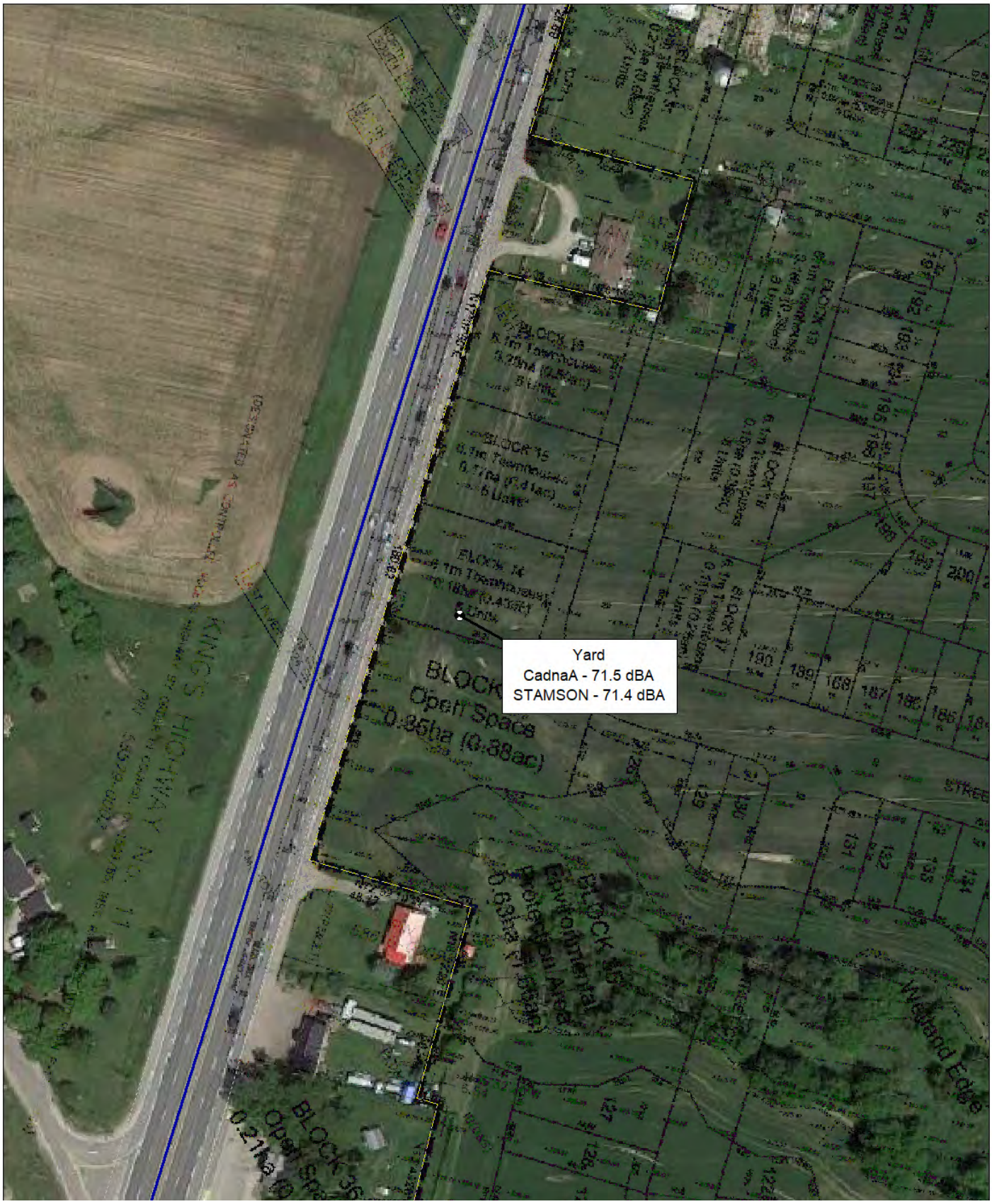
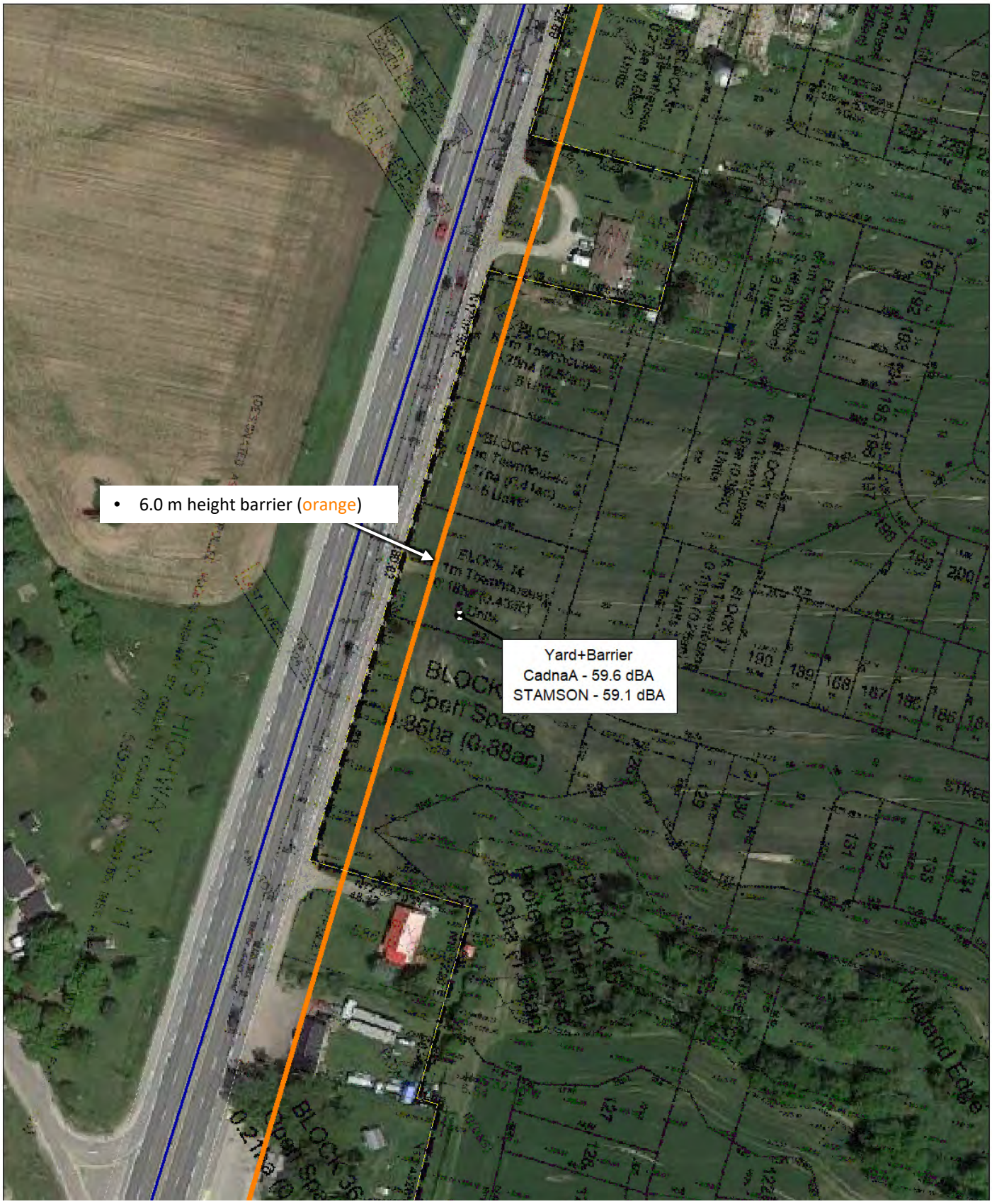


LIV COMMUNITIES	True North	Scale: 1:1,500	METRES	SLR global environmental solutions
Shadow Creek Subdivision		Date: Dec 19, 2021 Rev 0.0	Figure No. **C.1**	
COMPARISON OF CADNAA AND STAMSON		Project No. 241.30353.00000		



LIV COMMUNITIES	True North	Scale: 1:1,500	METRES	SLR global environmental solutions
Shadow Creek Subdivision		Date: Dec 19, 2021 Rev 0.0	Figure No. **C.2**	
COMPARISON OF CADNAA AND STAMSON BARRIER EFFECT		Project No. 241.30353.00000		

STAMSON 5.0 COMPREHENSIVE REPORT Date: 19-12-2021 23:35:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1.te Time Period: 16 hours
Description: Rear Yard

Road data, segment # 1: Hwy11

Car traffic volume : 43540 veh/TimePeriod
Medium truck volume : 750 veh/TimePeriod
Heavy truck volume : 3556 veh/TimePeriod
Posted speed limit : 90 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Hwy11

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 35.70 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Segment # 1: Hwy11

Source height = 1.65 m

ROAD (0.00 + 71.39 + 0.00) = 71.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	79.07	0.00	-6.23	-1.45	0.00	0.00	0.00	71.39

Segment Leq : 71.39 dBA

Total Leq All Segments: 71.39 dBA

TOTAL Leq FROM ALL SOURCES: 71.39

STAMSON 5.0 COMPREHENSIVE REPORT Date: 19-12-2021 23:35:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1_bar.te Time Period: 16 hours
Description: Rear Yard, berm + barrier

Road data, segment # 1: Hwy11

Car traffic volume : 43540 veh/TimePeriod
Medium truck volume : 750 veh/TimePeriod
Heavy truck volume : 3556 veh/TimePeriod
Posted speed limit : 90 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Hwy11

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 35.70 m
Receiver height : 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 11.40 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Segment # 1: Hwy11

Source height = 1.65 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.65	1.50	1.55	1.55

ROAD (0.00 + 59.11 + 0.00) = 59.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.30	79.07	0.00	-4.88	-0.76	0.00	0.00	-14.33	59.11

Segment Leq : 59.11 dBA

Total Leq All Segments: 59.11 dBA

TOTAL Leq FROM ALL SOURCES: 59.11

APPENDIX D
BPN-56 Façade Calculations

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BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer) - ROADWAY

Receptor ID	Receptor Description	Sound Levels		Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2		
		Façade Sound Level: (dBA)	Req'd Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exp Wall Ht (m)	Exp Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Veneer STC (STC)	Component Category:	Component Category:	Req'd Glazing STC (STC)	Req'd Glazing STC (combined) (STC)
DAYTIME															
Block 14to16, 26to31 Townhomes LvgRm/Kitchen	Living/Dining/Kitchen, North Façade	69	45	55%	2.7	6.0	15.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22	30
	Living/Dining/Kitchen, West Façade	72	45	35%	2.7	15.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28	
	Living/Dining/Kitchen, South Façade	69	45	55%	2.7	6.0	15.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22	
Block 14to16, 26to31 Townhomes Bdrm	Bedroom, West Façade	72	45	35%	2.7	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	33	34
	Bedroom, South Façade	69	45	35%	2.7	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28	
Lot 319 - LvgRm	Living Room, West Façade	66	45	35%	2.7	5.0	5.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22	25
	Living Room, North Façade	63	45	55%	2.7	5.0	5.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21	
Lot 319 - Kitchen	Kitchen, West Façade	66	45	35%	2.7	5.0	5.0	Hard	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24	27
	Kitchen, South Façade	63	45	55%	2.7	5.0	5.0	Hard	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23	
Lot 319 - Bdrm	Bedroom, West Façade	66	45	35%	2.7	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25	26
	Bedroom, North Façade	63	45	35%	2.7	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21	
NIGHT-TIME															
Block 14to16, 26to31 Townhomes LvgRm/Kitchen	Living/Dining/Kitchen, North Façade	60	45	55%	2.7	6.0	15.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	13	20
	Living/Dining/Kitchen, West Façade	63	45	35%	2.7	15.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18	
	Living/Dining/Kitchen, South Façade	60	45	55%	2.7	6.0	15.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	13	
Block 14to16, 26to31 Townhomes Bdrm	Bedroom, West Façade	63	40	35%	2.7	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	27	28
	Bedroom, South Façade	60	40	35%	2.7	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23	
Lot 319 - LvgRm	Living Room, West Façade	56	45	35%	2.7	5.0	5.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12	15
	Living Room, North Façade	53	45	55%	2.7	5.0	5.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	11	
Lot 319 - Kitchen	Kitchen, West Façade	56	45	35%	2.7	5.0	5.0	Hard	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	14	17
	Kitchen, South Façade	53	45	55%	2.7	5.0	5.0	Hard	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	13	
Lot 319 - Bdrm	Bedroom, West Façade	56	40	35%	2.7	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	19	21
	Bedroom, North Façade	53	40	35%	2.7	3.0	3.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	39	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16	

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APPENDIX E
Ventilation, Warning Clause and Acoustic Barrier Summary

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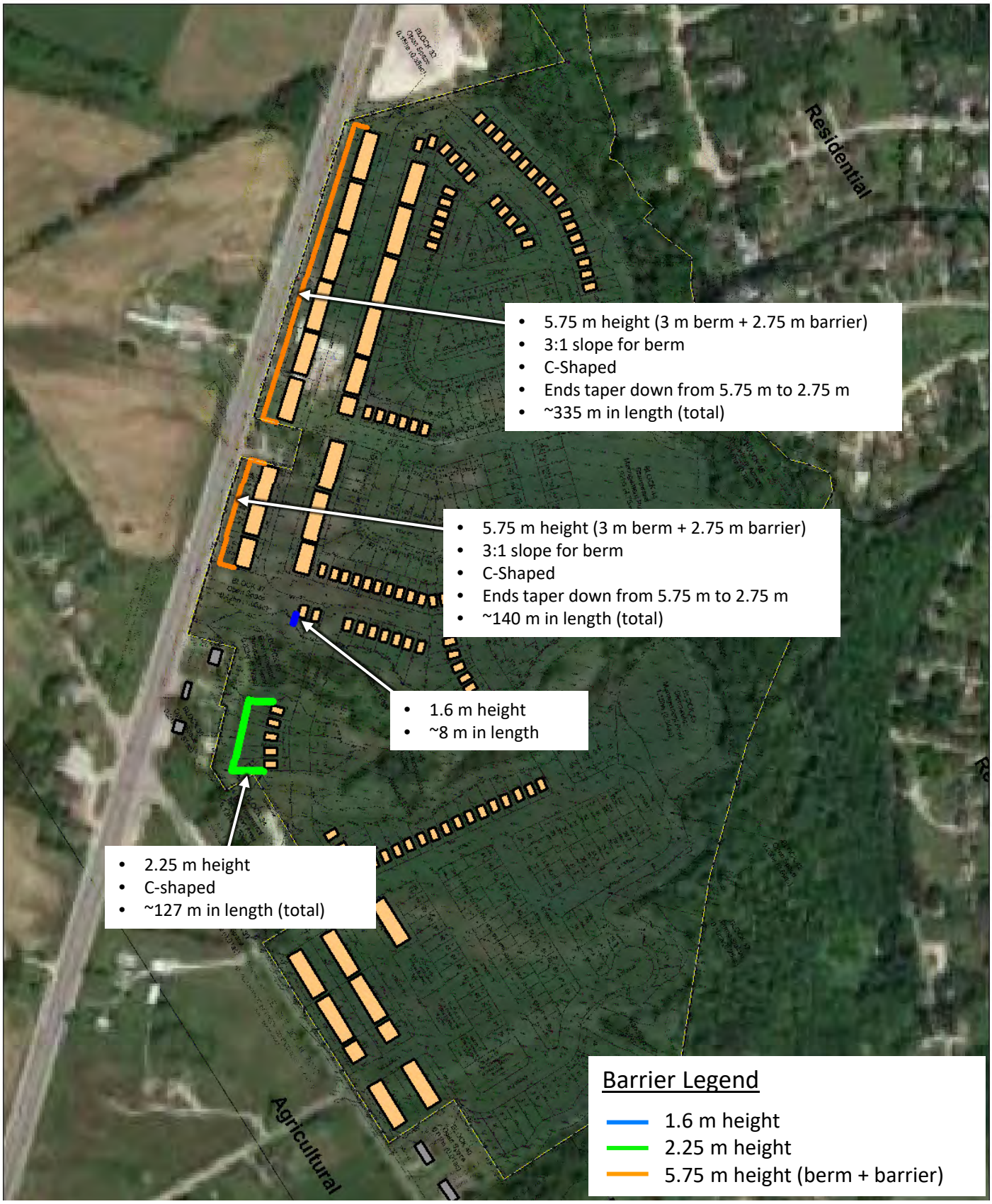
LIV COMMUNITIES	True North	Scale: 1:7,500	METRES	SLR global environmental solutions
Shadow Creek Subdivision		Date: Dec 19, 2021 Rev 0.0	Figure No. **E.1**	
WARNING CLAUSE AND VENTILATION REQUIREMENTS		Project No. 241.30353.00000		



LIV COMMUNITIES	True North	Scale: 1:5,000	METRES	SLR global environmental solutions
Shadow Creek Subdivision		Date: Jan. 14, 2022 Rev 0.0	Figure No. **E.2**	
ACOUSTIC BARRIER REQUIREMENTS		Project No. 241.30353.00000		

Ventilation, Warning Clause and Barrier Summary

The following Warning Clauses are recommended for inclusion in agreements registered on Title for the residential units, and included in all agreements of purchase and sale or lease, and all rental agreements.

A summary of the Warning Clause and Ventilation Requirements is included in Table E.1 below, and summarized in Figure E.1. A summary of the Acoustic Barrier Requirements is summarized in Figure E.2.

MECP 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."

MECP Type B: " Purchasers/tenants are advised that despite the inclusion of noise control features in the development, 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."."

MECP 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 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."

MECP Type D: "This dwelling unit 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."

Table E.1: Summary of Ventilation and Warning Clause Requirements

Lot/Block	Barrier Required	Air Conditioning Requirement	Warning Clause
Block 1, 3, 4, 9, 17 to 25 Lots 172 to 181, 218 to 221	N	Provision for AC	Type C
Block 5, 6 Lot 92 to 113, 120 to 132, 262 to 266, 271, 272, 299 to 318	N	Provision for AC	Type A, Type C
Lot 319	N	AC	Type A, Type D
Lot 114 to 119	Y	Provision for AC	Type B, Type C
Block 14 to 16, 26 to 31	Y	AC	Type B, Type D

Notes: [1] AC = Central Air conditioning required, Provision for AC = forced air heating with a provision for installation of central air conditioning

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