



 **Browlands Development**

**Environmental Noise Study  
Hamilton, ON**

**SLR Project No: 241.20041.00000**  
September 2020

**SLR** 

**ENVIRONMENTAL NOISE STUDY**  
**Browlands Development**  
**Hamilton, Ontario**  
**SLR Project No: 241.20041.00000**

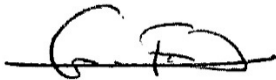
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September 4, 2020

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.

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# 1. INTRODUCTION

SLR Consulting (Canada) Ltd., now including Novus Environmental Inc., (SLR-Novus) was retained by Valery (Chedoke Browlands) Developments Inc. to conduct an Environmental noise study for the Browlands Development in Hamilton, Ontario.

This study was completed in support of the Zoning By-law Amendment (ZBA) applications for the project required by the City of Hamilton.

## 1.1 FOCUS OF REPORT

In keeping with the City of Hamilton requirements, this report examines the potential for:

- Impacts of the environment on the proposed development;
- Impacts of the proposed development on the environment; and
- Impacts of the proposed development on itself.

## 1.2 NATURE OF THE SUBJECT LANDS

The subject property is located on the edge of the escarpment at 801, 820, 828, 885, 865 & 870 Scenic Drive in Hamilton Ontario. The proposed development will include a combination of townhouse units and midrise residential buildings, and also includes underground parking.

The development will be divided in two areas (east and west) with a parkland area in the centre. The east side of the development will include two 8-storey, two 5-storey and one 4-storey condominium buildings. The west side of the development will include two 8-storey apartment buildings and fourteen row-townhouses blocks. Private outdoor amenity areas will be located on the roof of each townhouse block. All the private balconies will be less than 4 m in depth, therefore, has been excluded from the assessment.

A copy of the site plan and floor plans are included in **Appendix A**.

## 1.3 NATURE OF THE SURROUNDINGS

The proposed development site is surrounded by residential lands to the west and east. The Aberdeen Rail Yard is located approximately 850 m north of the development site and down the escarpment, separated by a golf course. Institutional lands are located south of the development, including several colleges, learning centres and lands currently being redeveloped for residential uses.

Highway 403 is located approximately 350 m to the north, with Scenic Drive following the south boundary of the development.

The development is located on the top of the escarpment, with the land dropping off to the north towards Highway 403. The rest of the study area is mainly flat with no significant variations.

A context plan is shown in **Figure 1**.

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## PART 1: IMPACTS OF THE ENVIRONMENT ON THE DEVELOPMENT

In assessing potential impacts of the environment on the proposed development, the focus of this report is to assess the potential for:

- Roadway noise impacts on the development; and
- Stationary noise impacts from the surrounding industries on the development.

The closest railway line is located greater than 1000 m to the north, and the development is located outside of the Hamilton Airport NEF 25 noise contours. Therefore, an assessment of noise from these sources was not completed.

## 2. TRANSPORTATION NOISE IMPACTS

### 2.1 TRANSPORTATION NOISE SOURCES

Transportation sources of interest with the potential to produce noise at the proposed development are roadway noise from Highway 403/Alexander Graham Bell Parkway (Highway 403) and Scenic Drive.

The level of noise from this source 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 summarize 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.

##### 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 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 <sup>[1]</sup>	
Outdoor Living Area (OLA)	Daytime (0700-2300h)	55	55	Outdoors <sup>[2]</sup>
Living / Dining Room	Daytime (0700-2300h)	45	40	Indoors <sup>[4]</sup>
	Night-time (2300-0700h)	45	40	Indoors <sup>[4]</sup>
Sleeping Quarters	Daytime (0700-2300h)	45	40	Indoors <sup>[4]</sup>
	Night-time (2300-0700h)	40	35	Indoors <sup>[4]</sup>

**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.

**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	<ul style="list-style-type: none"> <li>None</li> </ul>
	55 to 60 incl.	<ul style="list-style-type: none"> <li>Noise barrier <b>OR</b> Warning Clause A</li> </ul>
	> 60	<ul style="list-style-type: none"> <li>Noise barrier to reduce noise to 55 dBA <b>OR</b></li> <li>Noise barrier to reduce noise to 60 dBA and Warning Clause B</li> </ul>

**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 <sup>[2]</sup>
		Road	Rail <sup>[1]</sup>	
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 3 and 4** 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 <sup>[1]</sup>	
Plane of Window	Daytime (0700-2300h)	> 65	> 60	Designed/ Selected to Meet Indoor Requirements <sup>[2]</sup>
	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 an overall acoustic parameter.

## 2.3 TRAFFIC DATA AND FUTURE PROJECTIONS

### 2.3.1 ROADWAY TRAFFIC DATA

Road traffic data for Scenic Drive was obtained directly from the City of Hamilton in the form of AADTs. Day/Night split was assumed based on historic data for arterial non-industrial roads. Medium/ Heavy trucks percentage was sourced from the project Traffic Consultant, Nextrans. As per the City of Hamilton requirements, the traffic data was grown using a 2.0% annual growth rate applied from 2006 to 2030. There is a widening projected for Scenic Drive in the future, nonetheless, it was confirmed by Nextrans that the widening will not affect the future traffic volumes.

Road traffic from Highway 403 was obtained from the Ontario Ministry of transportation. Traffic data was grown using a 3.0% annual growth rate applied from 2016 to 2030. Day/Night split was assumed based on SLR-Novus historic data for 400-series highways within an urban area. Medium/Heavy trucks percentage was sourced from the MTO iCorridor website, based on 2008 data.

Copies of all 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	2030 Traffic Volumes <sup>[1]</sup> (AADT)	% Day/ Night Volume Split <sup>[3]</sup>		Commercial Traffic Breakdown		Vehicle Speed (km/h)
		Daytime	Night-time	% Medium Trucks	% Heavy Trucks	
Scenic Drive	4,008 <sup>[1]</sup>	90	10	0.5 <sup>[4]</sup>	0.5 <sup>[4]</sup>	50
Highway 403	126,756 <sup>[2]</sup>	85	15	3.3 <sup>[5]</sup>	9.8 <sup>[5]</sup>	100

**Notes:** [1] Based on 2006 traffic data provided by the City of Hamilton, with a 2.0% annual growth rate applied.

[2] Based on 2016 traffic data provided by the Ontario Ministry of transportation, with a 3.0% annual growth applied.

[3] Based on historic data.

[4] Based on data provided by Traffic Consultant Nextrans

[5] Data from MTO iCorridor website

## 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.

An absorptive ground type has been applied for the area between the proposed development and Highway 403, where grass fields and tree cover are largely present. The ground in the rest of the study area corresponds mostly to concrete/asphalt ground, therefore, a reflective ground type has been assigned in the modelling.

Highway 403 follows the side of the escarpment, with sufficient elevation variation and grade change of 4%. Therefore, the ORNAMENT gradient adjustments were applied to the westbound traffic of Highway 403.

Sound levels were predicted along the facades of the proposed development using the “building evaluation” feature of Cadna/A. This feature allows for noise levels to be predicted across the entire façade of a structure. Facades considered to be non-noise sensitive (e.g. blank walls, lobby space) were excluded from the analysis.

STAMSON validation files are included in **Appendix C**.

### 2.4.1 FAÇADE SOUND LEVELS

Predicted worst-case façade sound levels are presented in **Table 6**. The transportation façade sound levels of the development, showing the ranges of predicted daytime and night-time sound levels are shown in **Figure 2a/2b and 3a/3b** for roadway impacts on the full build-out of the development.

**Table 6: Summary of Transportation Facade Sound Levels**

Development Location	Building	Roadway Sound Levels <sup>[2]</sup>	
		L <sub>eq</sub> Day (dBA)	L <sub>eq</sub> Night (dBA)
West Side	8-storey Building A	61	57
	8-storey Building B	60	55
	Townhouse 1	63	58
	Townhouse 2	59	55
	Townhouse 3	57	51
	Townhouse 4	58	51
	Townhouse 5	58	51
	Townhouse 6	58	51
	Townhouse 7	62	57
	Townhouse 8	61	57
	Townhouse 9	61	57
	Townhouse 10	60	55
	Townhouse 11	49	45
Townhouse 12	45	39	

Development Location	Building	Roadway Sound Levels <sup>[2]</sup>	
		L <sub>eq</sub> Day (dBA)	L <sub>eq</sub> Night (dBA)
	Townhouse 13	49	44
	Townhouse 14	56	52
East Side	8-storey Condo A	57	53
	8-storey Condo B	55	51
	4-storey Condo	56	49
	5-storey Condo A	55	49
	5-storey Condo B	55	49

**Notes:** [1] Building locations are shown in **Figure 2**.

[2] The sound levels presented are for the worst-case on the entire building

The façade roadway sound levels are predicted to be below 65 dBA and 60 dBA during the daytime and nighttime periods, respectively. Therefore, an assessment of building components is not required.

## 2.4.2 OUTDOOR AMENITY AREAS

The private Outdoor Living Areas (OLA) of the proposed development include will rooftop terraces the townhouse blocks. The locations of the Outdoor Living Areas are shown in **Figure 4**. Three representative OLA locations were modelled for each townhouse block (ends and centre).

The predicted noise impacts from the surrounding roadways are shown in **Figure 4** and summarized in the following table:

**Table 7: Summary of Unmitigated Transportation Noise Impacts - OLAs**

ID	Location	Transportation Impacts L <sub>eq</sub> Day (dBA)
OLA 1a – OLA 1b – OLA 1c	Roof, Townhouse Block 1	59 – 58 – 57
OLA 2a – OLA 2b – OLA 2c	Roof, Townhouse Block 2	57 – 56 – 56
OLA 3a – OLA 3b – OLA 3c	Roof, Townhouse Block 3	55 – 55 – 54
OLA 4a – OLA 4b – OLA 4c	Roof, Townhouse Block 4	54 – 53 – 52
OLA 5a – OLA 5b – OLA 5c	Roof, Townhouse Block 5	51 – 51 – 51
OLA 6a – OLA 6b – OLA 6c	Roof, Townhouse Block 6	51 – 51 – 52
OLA 7a – OLA 7b – OLA 7c	Roof, Townhouse Block 7	57 – 55 – 56
OLA 8a – OLA 8b – OLA 8c	Roof, Townhouse Block 8	56 – 56 – 56
OLA 9a – OLA 9b – OLA 9c	Roof, Townhouse Block 9	56 – 56 – 56
OLA 10a – OLA 10b – OLA 10c	Roof, Townhouse Block 10	56 – 56 – 56
OLA 11a – OLA 11b – OLA 11c	Roof, Townhouse Block 11	51 – 50 – 49
OLA 12a – OLA 12b – OLA 12c	Roof, Townhouse Block 12	47 – 46 – 46
OLA 13a – OLA 13b – OLA 13c	Roof, Townhouse Block 13	44 – 46 – 49
OLA 14a – OLA 14b – OLA 14c	Roof, Townhouse Block 14	50 – 51 – 53

**Notes:** [1] Sound levels up to 60 dBA are allowed with the use of a Type A Warning Clause.

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Sound levels are predicted to be below 60 dBA at all outdoor amenity spaces; therefore, physical noise control measures are not required.

## 2.5 VENTILATION AND WARNING CLAUSE REQUIREMENTS

### 2.5.1 RESIDENTIAL UNITS

Based on the predicted roadway and railway sound levels warning clauses are recommended to be included in agreements of purchase and sale or lease and rental agreements for the residential units.

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 and rail traffic that are between 56 and 65 dBA during the daytime, or between 51 and 60 dBA during night-time hours. This affects:

- Development West Side
  - 8-Storey Building A
  - 8-Storey Building B
  - Townhouse Blocks 1 to 10 and 14
- Development East Side
  - 8-Storey Condo A
  - 4-Storey Condo

The recommended warning clauses for this development are outlined in **Appendix D**.

### 2.5.2 OUTDOOR AMENITY AREAS

As the outdoor amenity area levels at some receptors are between 55 dBA and 60 dBA, an MECP **Type A** Warning Clause is recommended in the following Townhouse blocks:

- Townhouse Block 1
- Townhouse Block 2
- Townhouse Block 7
- Townhouse Block 8
- Townhouse Block 9
- Townhouse Block 10

The **Type A** warning clause is included in **Appendix D**.

## 3. STATIONARY SOURCE NOISE IMPACTS

A review has been conducted for the potential impacts on the development from stationary commercial and institutional noise sources.

### 3.1 STATIONARY SOURCE NOISE IMPACTS

SLR staff completed a site visit on July 16, 2018 and June 18, 2020 to survey the surrounding area for potential stationary noise sources. The acoustic environment is characterized by continuous roadway noise from Highway 403.

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A review was also completed for the available aerial imagery for the development lands and surrounding area. The development is primarily surrounded by single family residential homes, mid-rise residential buildings, student residential buildings, and new developments under construction (555 Sanitorium Road). The following is a summary of our review of the surrounding facilities.

### **3.1.1 CPR ABERDEEN RAIL YARD**

The CPR Aberdeen Rail Yard is located at a distance of approximately 825 m to the north from the proposed development, with Highway 403 also located to the north at distances of around 350 m and greater. An intervening residential townhouse development is located adjacent to the rail yard, including other residential homes located along Scenic Drive at a similar separation distance for the development lands.

Given the large separation distance to the rail yard, the high ambient levels from the closer Highway 403, and the intervening townhouse development restricting noise from the yard, noise impacts from the Rail Yard are not anticipated at the proposed development. Therefore, a detailed assessment was not completed.

### **3.1.2 MOHAWK MEDBUY**

One industry was identified within a 1000 m radius, which is the Mohawk Medbuy facility (60 Chedmac Dr). The facility is located approximately 600 m to the south, with other closer intervening noise sensitive buildings. As noise from this facility is expected to meet the MECP NPC-300 guideline limits at the closer residential buildings, the guideline limits would also be met at the proposed development. Therefore, noise from this facility is not a concern for the proposed development.

### **3.1.3 OTHER BUILDINGS**

Other buildings within the surrounding area include the student residence buildings for the Columbia International College. On review, potentially significant noise sources include rooftop cooling units. No significant noise was clearly audible on the development lands during the site visits completed by SLR-Novus personnel. In addition, any mechanical equipment noise is expected to meet the MECP NPC-300 guideline limits on the student residence buildings themselves and other surrounding residential homes. Therefore, noise from the student residence buildings are not a concern for the proposed development.

### **3.1.4 SUMMARY**

Based on the above review, stationary noise is not a concern for the proposed development. Therefore, a detailed assessment of surrounding stationary noise impacts was not completed.

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## **PART 2: IMPACTS OF THE DEVELOPMENT ON ITSELF**

### **4. STATIONARY SOURCE NOISE IMPACTS ON THE DEVELOPMENT ITSELF**

The building mechanical systems (e.g., chiller, MUA, emergency generator) have not been designed in detail at this stage. Although no adverse impacts are expected, such equipment has the potential to result in noise impacts on the noise sensitive spaces within the development.

Therefore, the potential impacts should be assessed as part of the final building design. The criteria is expected to be met at all on-site receptors with the appropriate selection of mechanical equipment, by locating equipment to minimize noise impacts within the development, and by incorporating control measures (e.g., silencers, barriers) into the design.

It is recommended that the mechanical systems be reviewed by an Acoustical Consultant prior to final selection of equipment.

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## **PART 3: IMPACTS OF THE DEVELOPMENT ON THE SURROUNDING AREA**

### **5. STATIONARY SOURCE NOISE IMPACTS ON SURROUNDING AREA**

In terms of the noise environment of the area, it is expected that the project will have a negligible effect on the neighbouring properties.

The traffic related to the proposed development will be small relative to the existing traffic volumes within the area and is not of concern with respect to noise impact.

Other possible development noise sources with potentially adverse impacts on the surrounding neighbourhood are the mechanical roof-top equipment (eg. chiller, make up air units and generator). This equipment is required to meet MECP Publication NPC-300 requirements at the worst-case off-site noise sensitive receptors. Given the high ambient sound levels in the area and the requirement for the systems to meet the applicable noise guideline at closer on-site receptors, off-site impacts are not anticipated.

Regardless, potential impacts should be assessed as part of the final building design. The criteria can be met at all surrounding and on-site receptors by the appropriate selection of mechanical equipment, by locating equipment with sufficient setback from noise sensitive locations, and by incorporating control measures (e.g., silencers, barriers) into the design.

It is recommended the mechanical systems be reviewed by an Acoustical Consultant prior to final selection of equipment.

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## 6. CONCLUSION AND RECOMMENDATIONS

The potential for noise impacts on and from the proposed development have been assessed. Impacts of the environment on the development, the development on itself, and the development on the surrounding area have been considered. Based on the results of the study, the following conclusions have been reached:

### 6.1 TRANSPORTATION NOISE

- An assessment of transportation noise impacts from surrounding roadways has been completed.
- Based on transportation façade sound levels, outlined in **Section 2.4.1**, upgraded glazing is not required to meet the MECP Publication NPC-300 Building Component Requirements on the development. OBC construction is anticipated to be sufficient for meeting the MECP NPC-300 Building Component Requirements.
- Noise impacts within the common outdoor amenity areas are predicted to be within acceptable levels and no physical mitigation measures are required, as outlined in **Section 2.4.2**.
- As required by MECP Publication NPC-300, the **Type A** and **Type C** Warning Clauses (outlined in **Section 2.5**) should be included in agreements registered on Title for the residential units, and included in agreements of purchase and sale. Warning Clauses are summarized in **Appendix D**.

### 6.2 SURROUNDING STATIONARY NOISE

- Site visits were completed by SLR-Novus personnel on July 16, 2018 and June 18, 2020 to review the surrounding area.
- The ambient environment is characterized by constant roadway noise from Highway 403 within the development lands.
- No significant stationary noise was found to be audible on the development lands.
- Stationary noise facilities in the surrounding area include the Aberdeen Rail Yard (approx.. 825 m to north), Mohawk Medbuy (approx.. 600 m to south) and other residential buildings. Stationary noise impacts are not a concern for the proposed development, based on a combination of high ambient noise, requirements to meet MECP NPC-300 guideline limits at closer noise sensitive buildings, and/or the requirement to meet on the building itself (eg. student residences).
- Based on the above, stationary noise impacts on the proposed development is not anticipated to be a concern, and a detailed stationary noise assessment was not completed.

### 6.3 OVERALL ASSESSMENT

- Impacts of the environment on the proposed development can be adequately controlled through the warning clauses detailed in **Part 1** of this report.
- Impacts of the proposed development on itself are not anticipated and can be adequately controlled by appropriate equipment selection as outlined in **Part 2** of this report.



- 
- Impacts of the proposed development on the surroundings are expected to meet the applicable guideline limits and can be adequately controlled with the appropriate equipment selection, as outlined **Part 3** of this report.
  - As the mechanical systems for the proposed development have not been finalized at the time of this assessment, the acoustical requirements above should be confirmed by an Acoustical Consultant as part of the final building design.

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## 7. 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.

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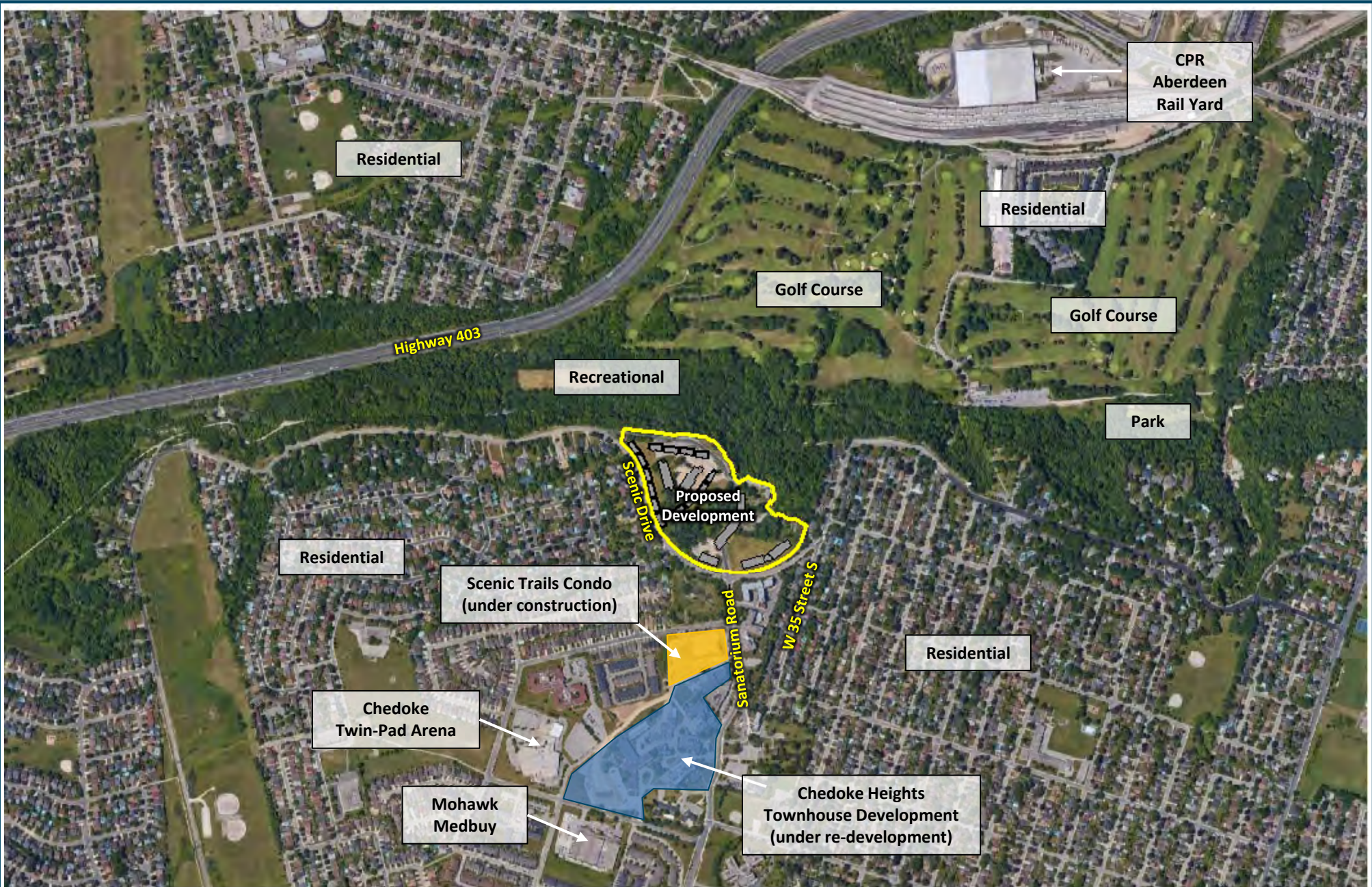
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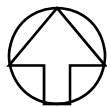
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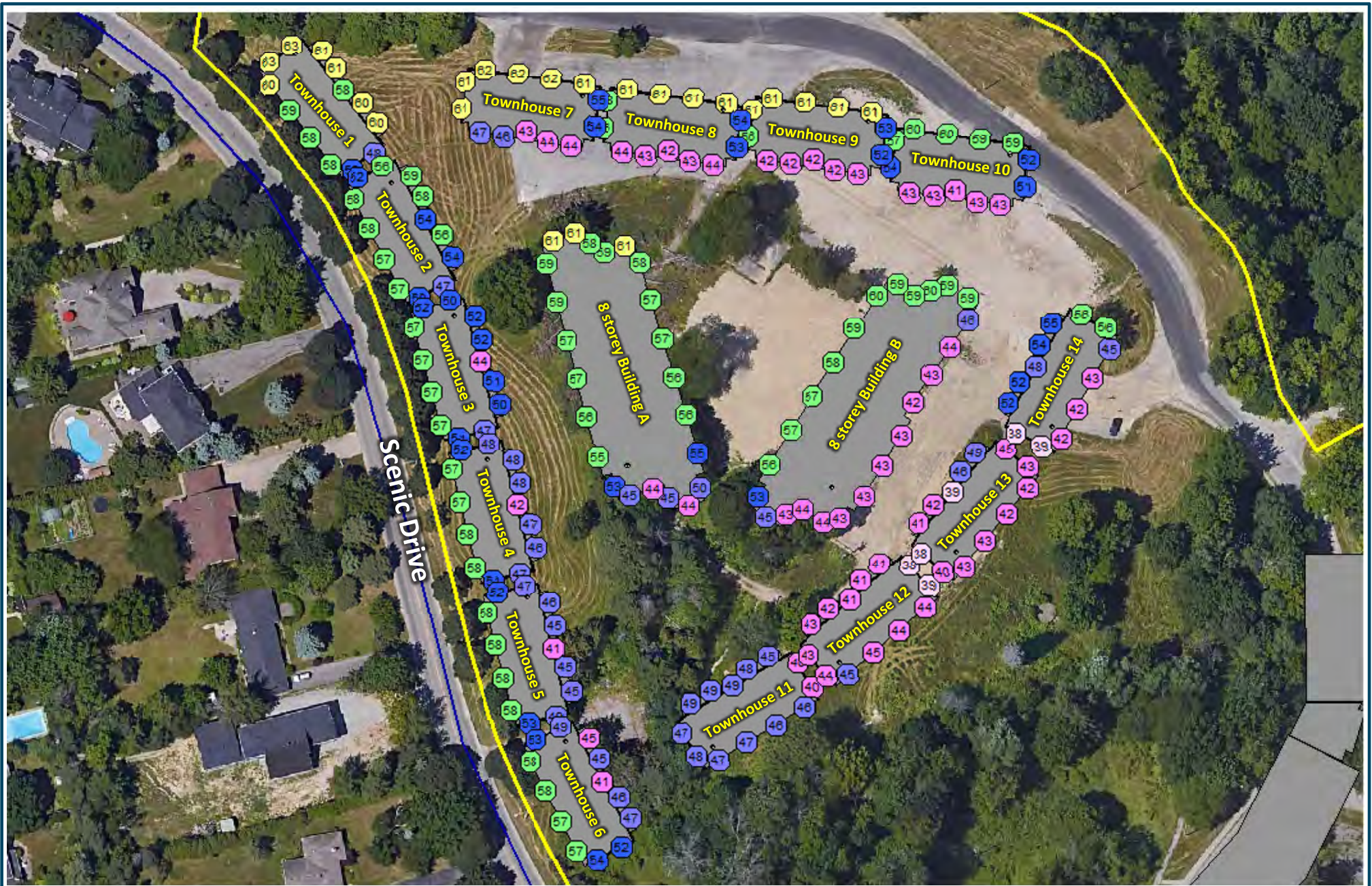
## **FIGURES**

Environmental Noise Study  
Browlands Development  
SLR Project No.: 241.20041.00000

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<b>VALERY (CHEDOKE BROWLANDS) DEVELOPMENTS INC.</b>  BROWLANDS DEVELOPMENT  CONTEXT PLAN	True North	Scale: 1:12,000	METRES	 NOW PART OF 	
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			Project No. 241-20041-0000		<b>1</b>



VALERY (CHEDOKE BROWLANDS) DEVELOPMENTS INC.

BROWLANDS DEVELOPMENT

FAÇADE SOUND LEVELS – WEST SIDE - ROADWAY – DAYTIME

True North



Scale: 1:1,250

Date: Jul 08, 2020

Rev 1.0

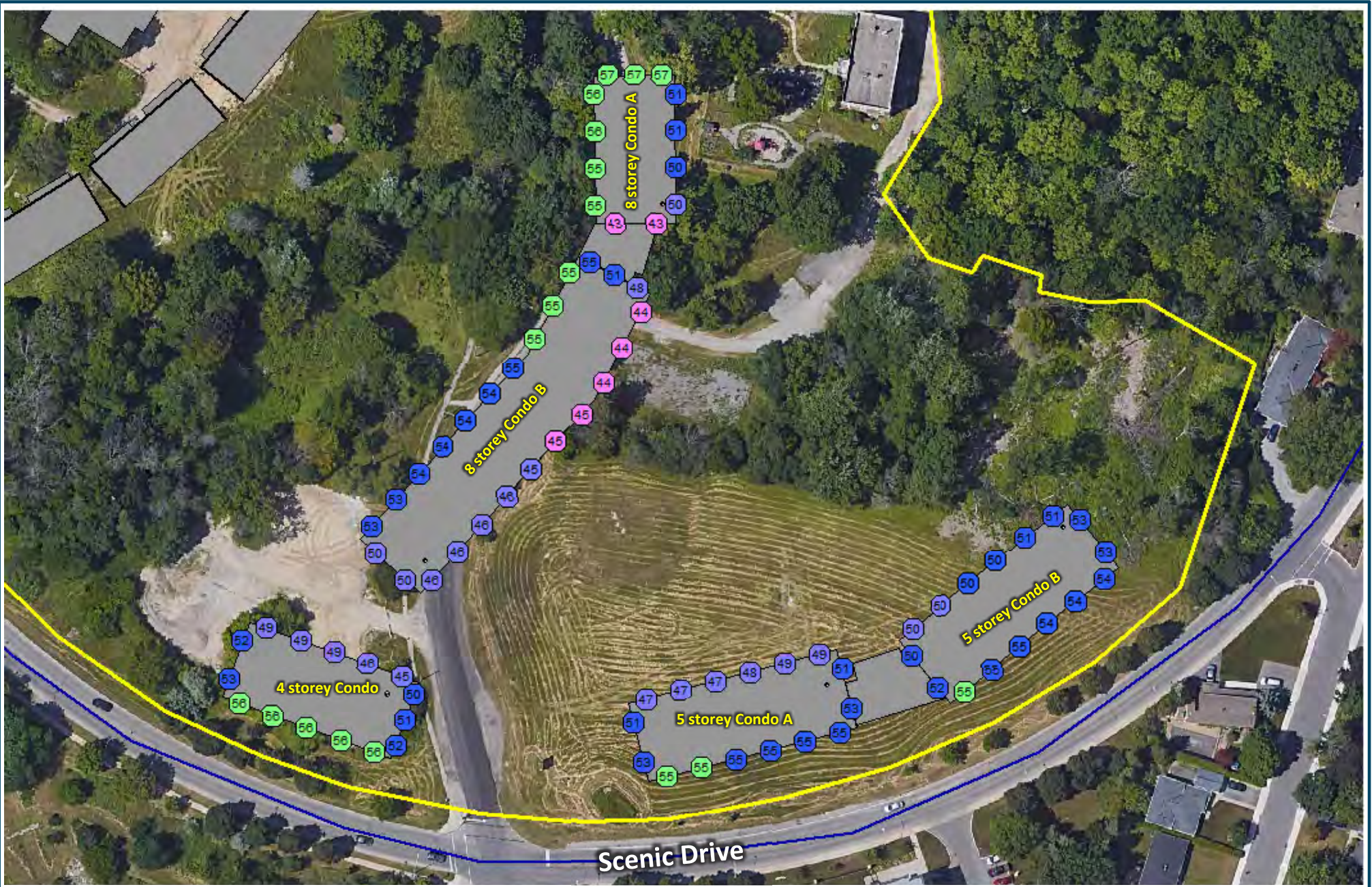
Project No. 241-20041-0000

METRES

Figure No.

2a





VALERY (CHEDOKE BROWLANDS) DEVELOPMENTS INC.

BROWLANDS DEVELOPMENT

FAÇADE SOUND LEVELS – EAST SIDE - ROADWAY – DAYTIME

True North



Scale: 1:1,250

Date: Jul 08, 2020

Rev 1.0

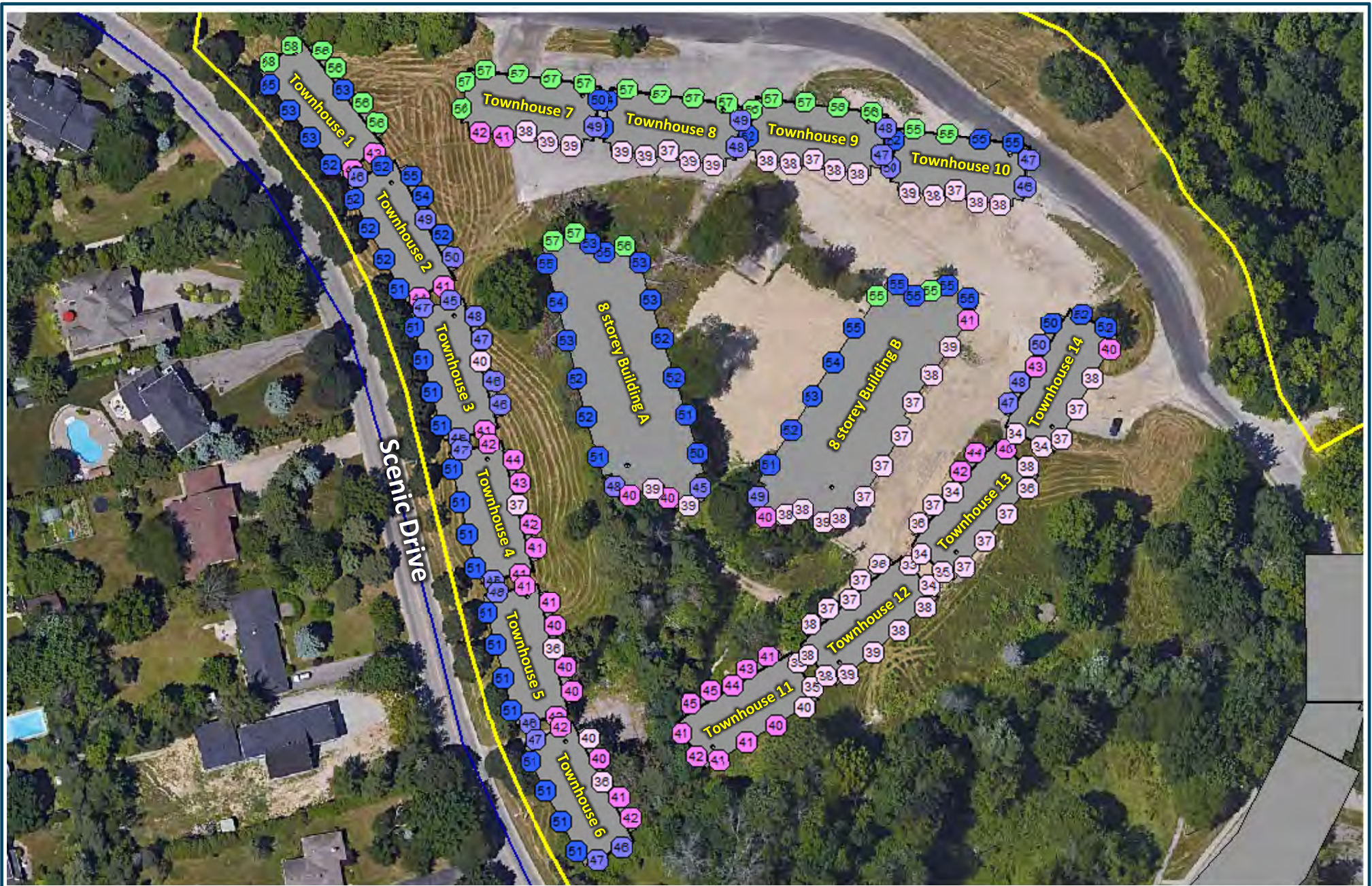
Project No. 241-20041-0000

METRES

Figure No.

**2b**





VALERY (CHEDOKE BROWLANDS) DEVELOPMENTS INC.

BROWLANDS DEVELOPMENT

FAÇADE SOUND LEVELS – WEST SIDE - ROADWAY – NIGHTTIME

True North



Scale:

1:1,250

METRES

Date: Jul 08, 2020

Rev 1.0

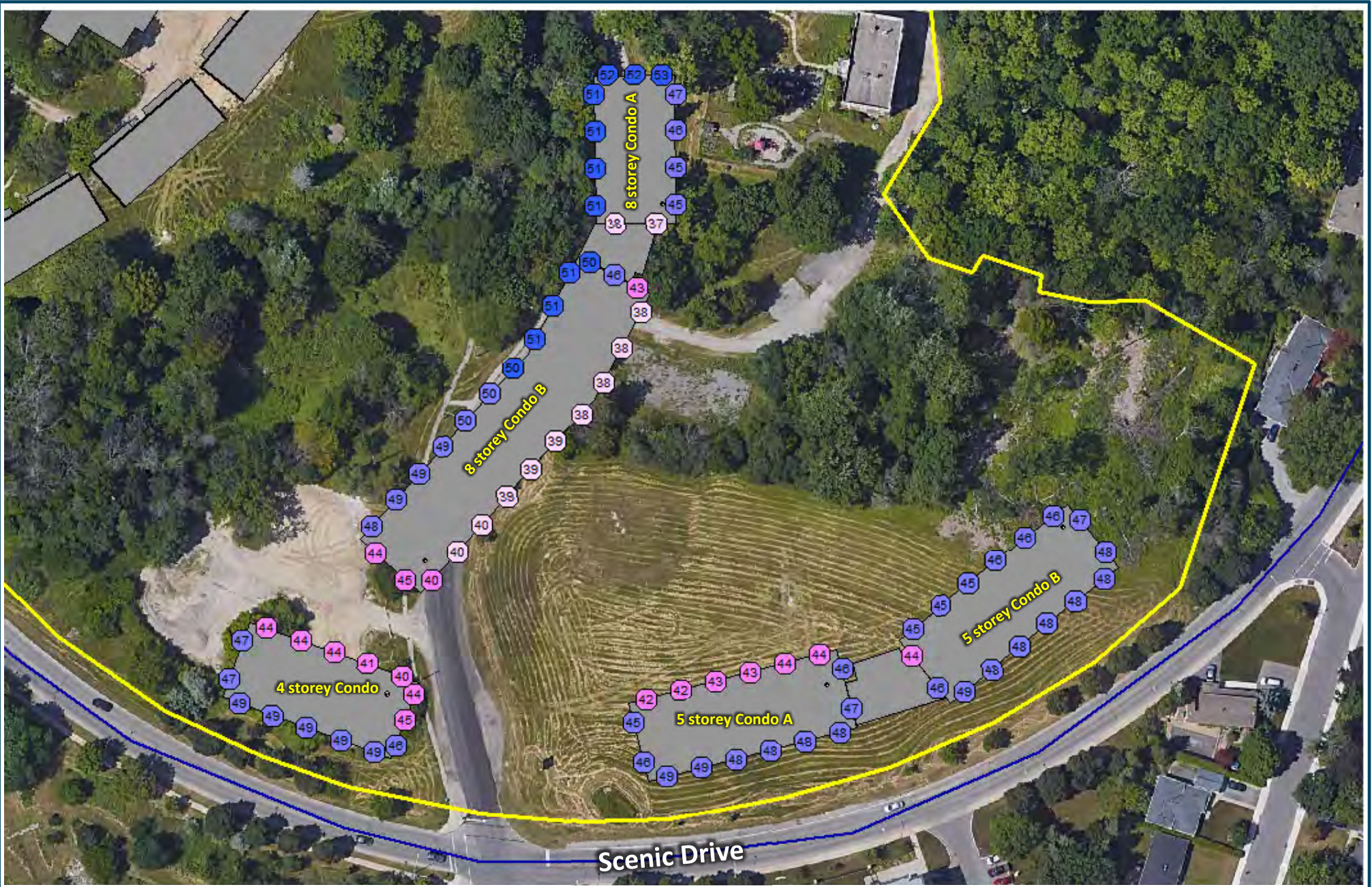
Figure No.

Project No. 241-20041-0000

**3a**







**VALERY (CHEDOKE BROWLANDS) DEVELOPMENTS INC.**

BROWLANDS DEVELOPMENT

FAÇADE SOUND LEVELS – EAST SIDE - ROADWAY – NIGHTTIME

True North



Scale: 1:1,250

Date: Jul 08, 2020

Rev 1.0

Project No. 241-20041-0000

METRES

Figure No.

**3b**





**VALERY (CHEDOKE BROWLANDS) DEVELOPMENTS INC.**

BROWLANDS DEVELOPMENT

OUTDOOR LIVING AREA- TRANSPORTATION NOISE IMPACTS

True North



Scale: 1:1,250

Date: Jul 08, 2020

Rev 1.0

Project No. 241-20041-0000

METRES

Figure No.

**4**



**APPENDIX A**  
**Development Drawings**

Environmental Noise Study  
Browlands Development  
SLR Project No.: 241.20041.00000

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LEGEND	
APARTMENT PRINCIPAL ENTRY	HATCH KEY
APARTMENT EXIT DOOR	HEAVY DUTY ASPHALT
APARTMENT SUITE EXTERIOR DOOR	PAVES
UNDERGROUND PARKING GARAGE ENTRY	CONCRETE SIDEWALK
TOWNHOUSE ENTRY	LANDSCAPED
TB BALCONY @ TOWNHOME MAIN FLOOR LEVEL	8 STOREY BUILDING
1ST TO 2ND FLOOR BALCONY	4-6 STOREY BUILDING
2ND TO 3RD FLOOR BALCONY	2-3 STOREY BUILDING
3RD TO 4TH FLOOR BALCONY	
4TH TO 5TH FLOOR BALCONY	
5TH TO 6TH FLOOR BALCONY	
6TH TO 7TH FLOOR BALCONY	
7TH TO 8TH FLOOR BALCONY	
8TH TO 9TH FLOOR BALCONY	
9TH TO 10TH FLOOR BALCONY	
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95TH TO 96TH FLOOR BALCONY	
96TH TO 97TH FLOOR BALCONY	
97TH TO 98TH FLOOR BALCONY	
98TH TO 99TH FLOOR BALCONY	
99TH TO 100TH FLOOR BALCONY	

**NOTES:**

1. THE OWNER IS REQUIRED TO REMOVE SHOW STOP SITE AND MAINTAIN REQUIRED PARKING UNOCCUPIED BY SHOW DURING MAJOR SHOW TRAFFIC.

2. THE OWNER IS REQUIRED TO REMOVE SIGN AND ICE FROM ALL EXISTING PATHS AND STAIRS.

3. SHOW TRAFFIC WILL BE REQUIRED TO BE PROVIDED BY PRIVATE COMPANY.

4. DRIVEWAYS ARE TO BE 1.5 CLEAR OF UTILITY STRUCTURES AND HYDRANTS.

5. BLOCKS TO BE OPEN TO ALL TOWNSHIP GREEN SPACES, TRANSFERWAYS, AND OTHER SERVICES.

6. IF HUMAN OBSTRUCTION IS NOT MAINTAINED, SIGNAGE IS TO BE LOCATED AT HIS OWN EXPENSE.

7. SIGNAGE TO BE KEPT SERVICE CONSTRUCTION SIGNAGE OR CONSTRUCTION SIGNAGE.

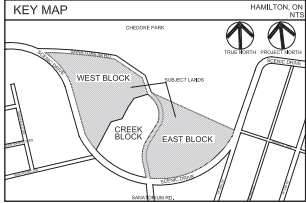
8. PRIOR TO THE COMMENCEMENT OF ANY WORKS ON THE SITE, SIGNAGE SHALL BE INSTALLED ON THE PERIMETER OF THE PROPERTY AND AT KEY LOCATIONS AS DETERMINED BY THE ENGINEERING SERVICE PROVIDER.

9. OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE ENGINEERING SERVICE PROVIDER, TOWN OF CAMBRIDGE, FOR THE PURPOSE OF VERTICAL ACCESS TO THE PROPERTY, ENTRANCE PERMITS, AND TEMPORARY OBSTRUCTION PERMITS.

10. ALL SIGNAGE SHALL BE INSTALLED AT THE PROPERTY, ENTRANCE PERMITS, AND TEMPORARY OBSTRUCTION PERMITS.

11. VISITOR PARKING TO BE MARKED WITH A PAINTED 'X'.

12. RESIDENT PARKING TO BE MARKED WITH PAINTED NUMBERS.



**ELECTRONIC DRAWINGS OF SUBJECT LANDS:**

**REVISED PLAN OF THE BOUNDARIES**

1. PART OF LOT 1 SANATORIUM ROAD

2. PART OF LOT 2 SANATORIUM ROAD

3. PART OF LOT 3 SANATORIUM ROAD

4. PART OF LOT 4 SANATORIUM ROAD

5. PART OF LOT 5 CONCESSION 2 CITY OF HAMILTON

**SURVEY OF EXISTING LAND & LOT BOUNDARIES**

**DRAFT PLAN OF SUBDIVISION**

PREPARED BY:

A.T. McLachlan Limited  
 PLANNING & LAND SURVEYING  
 23 SHANNON PARK UNIT 1  
 HAMILTON ON L8L 0C5  
 TEL: 905.278.2811 FAX: 905.278.2822  
 WWW.ATMCLACHLAN.COM

URBAN SOLUTIONS  
 PLANNING & LAND SURVEYING  
 100 HURON ST. 4TH FLOOR  
 HAMILTON ON L8N 1R1  
 TEL: 905.546.2888 FAX: 905.546.2889  
 WWW.URBANSOLUTIONS.PDF

**BLOCK 4**  
 SUBJECT TO AN EASTMOUNT AS-IN-INST 1M112300  
 OPEN SPACE  
 AREA: 10,939.17 m<sup>2</sup> (1.09 HA)

**PHASE 1 - 254 UNITS**  
 REQUESTED PARKING 380 TOTAL SPACES  
 REQUESTED UNDERGROUND SPACES  
 REQUESTED SURFACE SPACES  
 REQUESTED PARKING 380 TOTAL SPACES  
 REQUESTED UNDERGROUND SPACES  
 REQUESTED SURFACE SPACES  
 REQUESTED PARKING 380 TOTAL SPACES

**ZONE A - CONSERVATION, OPEN SPACE, PARK AND RECREATION**

**EAST BLOCK**  
 453 UNDERGROUND SPACES  
 102 SURFACE SPACES  
 555 TOTAL SPACES  
 1.50 SPACES PER UNIT

**EAST BLOCK**  
 216 UNITS - 8 STOREY  
 116 UNITS - 4 STOREY  
 38 UNITS - 4 STOREY  
 TOTAL = 370 UNITS

**SITE STATISTICS - EAST BLOCK**

DESCRIPTION	PHASE #1	PHASE #2	TOTAL
NUMBER OF BUILDINGS	2	1	3
# OF APARTMENTS	2	1	3
# OF TOWNHOUSES	0	0	0
NUMBER OF UNITS	254	116	370
# OF APARTMENTS	254	116	370
# OF TOWNHOUSES	0	0	0
PROPOSED FLOOR AREA	RESIDENTIAL 441,000 sqm	RESIDENTIAL 241,000 sqm	RESIDENTIAL 682,000 sqm
BLDG HEIGHT - TOWNS	N/A	N/A	N/A
OFF AREA	132,000 sqm	132,000 sqm	264,000 sqm
CENSITY GRASSY	145	116.4	261.4
BLDG AREA TOTAL	573,000 sqm	373,000 sqm	946,000 sqm
LOT COVERAGE	39.6%	33.3%	36.5%
APPROX. SURFACE STORAGE AREA	44,000 sqm	12,000 sqm	56,000 sqm
FLOOR AREA 2ND FL	120	116	236
AREA OF UNDERGROUND PARKING	12,800 sqm	5,385 sqm	18,185 sqm

ALL DRAWINGS ARE UNDERSTOOD TO BE SUBJECT TO CHANGE DUE TO COMMENTS FROM MAJOR PLN, CONTRACTORS AND OTHER AGENCIES WITH AUTHORITY.

ALL DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF THE PROJECTS AND MUST BE RETURNED AT THE COMPLETION OF THE WORK.

THE CONTRACTOR WORKING FROM DRAWINGS MUST BE FULLY RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS ON THE DRAWINGS AND MUST OBTAIN ANY CORRECTIONS OR CHANGES RESULTING FROM THE FIELD WORK.

**KEY TO DETAIL LOCATION**

NO. DETAIL NUMBER  
 NO. DRAWING SHEET NUMBER

DRAWING SET ISSUED	NO.	DATE (DD.MM.YY)	BY
PLANNING DEP. SUBMISSION	1	06/20/20	SP
REVISED PLAN OF SUBDIVISION	2	10/20/20	SP

ALL PREVIOUS REVIEWS OF THE DRAWING ARE SUPERSEDED.

REVISIONS TO DRAWING

NO. DATE (DD.MM.YY) BY

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

BUILDING PERMIT NUMBER:

NOT FOR CONSTRUCTION WITHOUT PERMIT

**KNYMH**  
 ARCHITECTURE • SOLUTIONS

KNYMH INC.  
 1108 SPENCER STREET • SUITE 101  
 BURLINGTON, ONTARIO • L7R 9H1  
 T 905.639.6885  
 F 905.639.0394  
 www.knymh.com #info@knymh.com



**CHEDOKE BROWLDS**

HAMILTON, ONTARIO

DRAWING SHEET TITLE

**BLOCK 5 EAST SITE PLAN**

DRAWING SCALE: 1:500 PROJECT NUMBER: 19066

DRAWN BY: SP2 CHECKED BY: GPVW DRAWING SHEET NUMBER: SP2

DESIGNED BY: SP2 DATE: 2020-09-21

PLOT DATE: September 2, 2020

**APPENDIX B**  
**Traffic Data and Calculations**

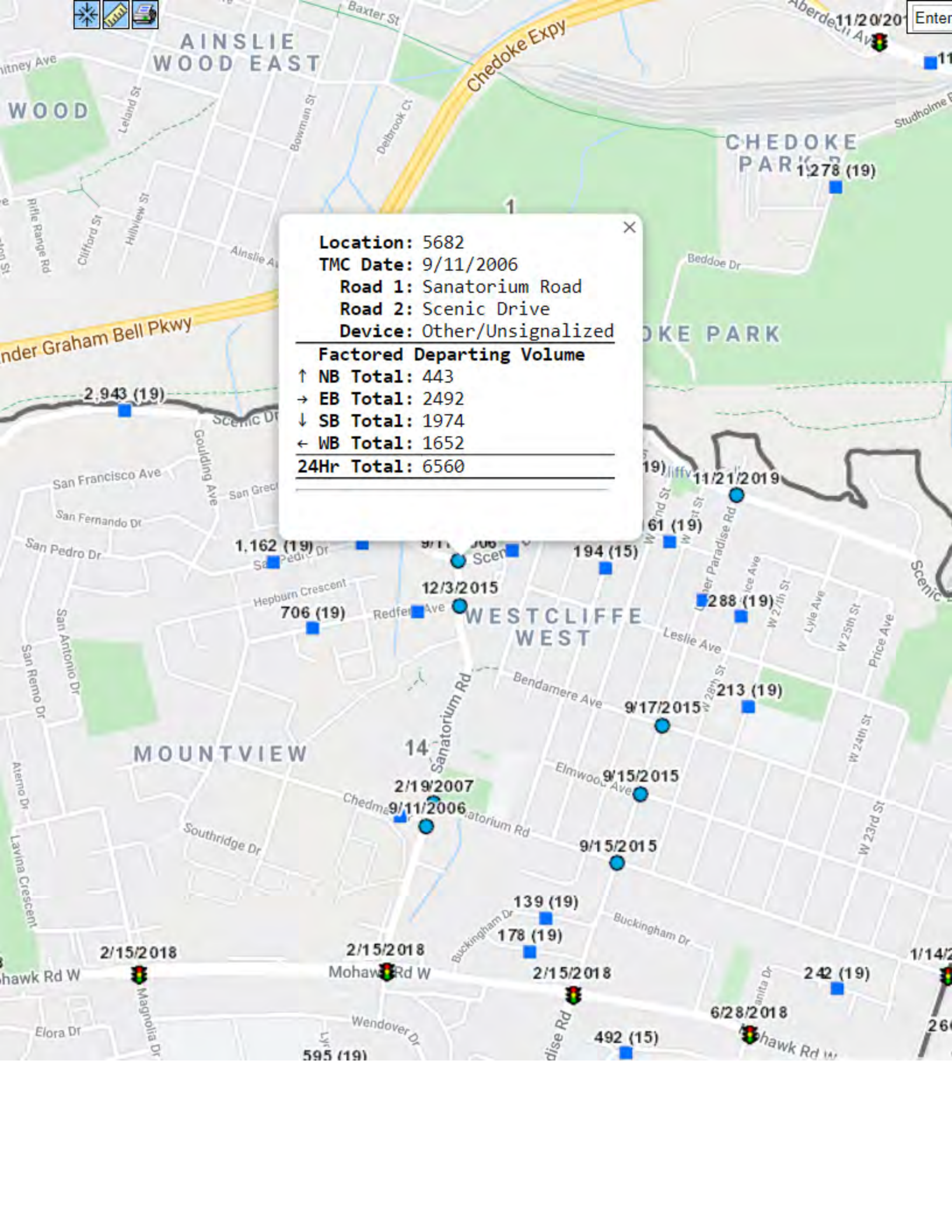
Environmental Noise Study  
Browlands Development  
SLR Project No.: 241.20041.00000

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Highway	Location Description From	Location Description To	Dist. (KM)	2016 AADT
403	ABERDEEN AV UP IC-HAMILTON	LINC. AX PKY/ ROUSSEAU ST IC	4.7	83,800
403	LINC. AX PKY/ ROUSSEAU ST IC	W JCT HWY 6/GARNER RD IC	2.9	98,100
403	W JCT HWY 6/GARNER RD IC	FIDDLERS GREEN RD IC	1.1	75,400
403	FIDDLERS GREEN RD IC	WILSON ST IC - ANCASTER	1.8	75,600
403	WILSON ST IC - ANCASTER	HAMILTON 52 - TRINITY RD UNDERPASS	3.3	61,200
403	HAMILTON 52 - TRINITY RD UNDERPASS	CITY OF HAMILTON-COUNTY OF BRANT BDRY	6.9	52,800
403	CITY OF HAMILTON-COUNTY OF BRANT BDRY	GARDEN AVE. IC - 41	7.5	52,300
403	GARDEN AVE. IC - 41	WAYNE GRETZKY PKWY IC-38 UP	2.4	49,700
403	WAYNE GRETZKY PKWY IC-38 UP	HWY 24/KING GEORGE RD IC-36 UP	2.6	48,700
403	HWY 24/KING GEORGE RD IC-36 UP	BRANT RD 202-PARIS RD IC-33 OP	2.6	39,200
403	BRANT RD 202-PARIS RD IC-33 OP	BRANT RD 27/OAK PARK RD IC-30 UP	2.9	37,800
403	BRANT RD 27/OAK PARK RD IC-30 UP	HWY 24-REST ACRES RD IC-27	3.5	35,600
403	HWY 24-REST ACRES RD IC-27	BRANT RD 25 - MIDDLE TOWN-LINE RD UP IC-16	11.3	23,600
403	BRANT RD 25 - MIDDLE TOWN-LINE RD UP IC-16	OXFORD RD 55 UP IC-6	9.8	24,000
403	OXFORD RD 55 UP IC-6	HWY 401 OP IC - HWY END	5.4	20,900
404	AT RAMPS TO & FROM HWY 401	HWY 401 IC 56-DON VALLEY PKWY	0.5	293,900
404	HWY 401 IC 56-DON VALLEY PKWY	SHEPPARD AV IC 18-NORTH YORK	0.9	328,300
404	SHEPPARD AV IC 18-NORTH YORK	FINCH AV IC 20-NORTH YORK	2.1	236,500
404	FINCH AV IC 20-NORTH YORK	STEELES AV IC 22-NORTH YORK	2.1	229,600
404	STEELES AV IC 22-NORTH YORK	HWY 407 IC	3.2	197,000
404	HWY 407 IC	HWY 7 IC 27-MARKHAM	0.9	151,900
404	HWY 7 IC 27-MARKHAM	16TH AV IC 29	2.0	158,000
404	16TH AV IC 29	MAJOR MACKENZIE DR- YORK RD 25 IC 31-MARKHAM	2.0	143,600
404	MAJOR MACKENZIE DR- YORK RD 25 IC 31-MARKHAM	ELGIN MILLS RD - IC 33	1.9	109,300
404	ELGIN MILLS RD - IC 33	YORK RD 14-STOUFFVILLE RD IC 37	4.3	92,500
404	YORK RD 14-STOUFFVILLE RD IC 37	YORK RD 40-BLOOMINGTON RD IC 41	4.1	89,200
404	YORK RD 40-BLOOMINGTON RD IC 41	YORK RD 15-AURORA RD IC 45 / WELLINGTON STREET E	4.1	85,900
404	YORK RD 15-AURORA RD IC 45 / WELLINGTON STREET E	REG RD 74-MULOCK DR(W)VIVIAN RD(E)IC 49	4.0	65,400
404	REG RD 74-MULOCK DR(W)VIVIAN RD(E)IC 49	DAVIS DR-REG RD 31 IC 51	2.0	42,000
404	DAVIS DR-REG RD 31 IC 51	GREEN LANE-REG RD 19 IC 53	2.1	42,000
404	GREEN LANE-REG RD 19 IC 53	DOANE ROAD OVERPASS	4.3	33,800
404	DOANE ROAD OVERPASS	QUEENSVILLE SIDE ROAD – REG. RD 77	2.0	31,000
404	QUEENSVILLE SIDE ROAD – REG. RD 77	WOODBINE AVENUE - REG. RD 8 (END OF HWY)	5.9	31,000
405	LEWISTON/QUEENSTON BR-NIAGARA ON THE LAKE	STANLEY AV- REG. RD. 102 IC-NIAGARA FALLS	3.1	8,700
405	STANLEY AV- REG. RD. 102 IC-NIAGARA FALLS	QEW IC-NIAG-ON-THE-LAKE - HWY END	5.4	13,100
406	EAST MAIN ST-WELLAND	SOUTH END OF WELLAND RIV BR.	2.7	18,500
406	SOUTH END OF WELLAND RIV BR.	PORT ROBINSON RD	2.0	20,800
406	PORT ROBINSON RD	NIAGARA RD 20/58 IC - CANBORO RD-THOROLD	3.0	32,000
406	NIAGARA RD 20/58 IC - CANBORO RD-THOROLD	BEAVERDAMS RD IC-THOROLD	3.1	38,000
406	BEAVERDAMS RD IC-THOROLD	HWY 58 IC	2.6	34,100
406	HWY 58 IC	GLENDALE AV IC(NBL) ST CATHARINES	2.0	65,000

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# ORNAMENT - 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)	Total Traffic Volumes	Auto %	Med %	Hvy %	Auto	Med	Heavy	Road Gradient (%)	Cadna/A Ground Absorption G	PWL (dBA)	Source Height, s (m)	Reference Leq (dBA)
Hwy 403 - East	Hwy 403 - Eastbound	Daytime Impacts	100	16	53871	87.0%	3.3%	9.8%	46868	1751	5252	0	0.00	96.5	1.2	81.4
		Nighttime Impacts	100	8	9507	87.0%	3.3%	9.8%	8271	309	927	0	0.00	92.0	1.2	76.9
Hwy 403 - West	Hwy 403 - Westbound	Daytime Impacts	100	16	53871	87.0%	3.3%	9.8%	46868	1751	5252	4.0	0.00	97.7	1.2	82.7
		Nighttime Impacts	100	8	9507	87.0%	3.3%	9.8%	8271	309	927	4.0	0.00	93.2	1.2	78.1
Scenic Dr	Scenic Drive	Daytime Impacts	50	16	3607	99.0%	0.5%	0.5%	3571	19	17	0	0.00	72.0	1.2	57.0
		Nighttime Impacts	50	8	401	99.0%	0.5%	0.5%	397	2	2	0	0.00	65.5	1.2	50.4

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**APPENDIX C**  
**STAMSON Validation Files**

Environmental Noise Study  
Browlands Development  
SLR Project No.: 241.20041.00000

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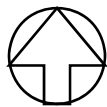




Ground Level  
 CadnaA = 61.29 dBA  
 STAMSON = 61.21 dBA

Scenic Drive

VALERY (CHEDOKE BROWLANDS) DEVELOPMENTS INC.
BROWLANDS DEVELOPMENT
COMPARISON OF CADNAA AND STAMSON- GROUND LEVEL

	Scale:	1:1,000	METRES
	Date: Jul 08, 2020	Rev 1.0	Figure No.
	Project No. 241-20041-0000		<b>C-1</b>

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Filename: browland.te            Time Period: 16 hours  
Description:

Road data, segment # 1: Hwy 403 East  
-----

Car traffic volume : 46868 veh/TimePeriod  
Medium truck volume : 1751 veh/TimePeriod  
Heavy truck volume : 5252 veh/TimePeriod  
Posted speed limit : 100 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Hwy 403 East  
-----

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 : 343.40 m  
Receiver height            : 1.50 m  
Topography                : 1            (Flat/gentle slope; no barrier)  
Reference angle            : 0.00

↑

Road data, segment # 2: Hwy 403 West  
-----

Car traffic volume : 46868 veh/TimePeriod  
Medium truck volume : 1751 veh/TimePeriod  
Heavy truck volume : 5252 veh/TimePeriod  
Posted speed limit : 100 km/h  
Road gradient : 4 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Hwy 403 West  
-----

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 : 361.30 m  
Receiver height            : 1.50 m  
Topography                : 1            (Flat/gentle slope; no barrier)  
Reference angle            : 0.00

↑

Road data, segment # 3: Scenic Dr

```

-----
Car traffic volume : 3571 veh/TimePeriod
Medium truck volume : 19 veh/TimePeriod
Heavy truck volume : 17 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

```

Data for Segment # 3: Scenic Dr

```

-----
Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 24.50 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

```

↑  
Results segment # 1: Hwy 403 East

Source height = 1.77 m

ROAD (0.00 + 57.51 + 0.00) = 57.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.65	81.42	0.00	-22.46	-1.44	0.00	0.00	0.00	57.51

Segment Leq : 57.51 dBA

↑  
Results segment # 2: Hwy 403 West

Source height = 1.77 m

ROAD (0.00 + 57.81 + 0.00) = 57.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.65	82.08	0.00	-22.83	-1.44	0.00	0.00	0.00	57.81

Segment Leq : 57.81 dBA

↑  
Results segment # 3: Scenic Dr

Source height = 0.83 m

ROAD (0.00 + 51.83 + 0.00) = 51.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	56.97	0.00	-2.13	-3.01	0.00	0.00	0.00	51.83

Segment Leq : 51.83 dBA

Total Leq All Segments: 61.21 dBA

↑

TOTAL Leq FROM ALL SOURCES: 61.21

↑

↑

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**APPENDIX D**  
**Warning Clauses**

Environmental Noise Assessment  
Browlands Development  
SLR Project No.: 241.20041.00000

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# Warning Clauses

The following Warning Clauses should be registered on Title and/or included in the Agreement of Purchase and Sale or Lease and in the relevant Development Agreement:

MECP Type A – Units in Townhouse Blocks 1, 2, 7 to 10

"Purchasers/tenants are advised that sound levels due to increasing road traffic and rail 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 C – Units in 8-storey Building A and B, Townhouse Blocks 1 to 10 and 14, 8-storey Condo A, 4-storey Condo.

"Purchasers are advised that the dwelling unit has been or will be fitted with a forced air heating system and the ducting, etc. was sized to accommodate central air conditioning. Installation of central air conditioning by the occupant will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the Municipality's and the Ministry of the Environment's noise criteria."

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