3996 Innes Road

Environmental Noise Assessment
Orleans, ON

SLR Project No: 241.30290.00000
December 2022

ENVIRONMENTAL NOISE ASSESSMENT
3996 Innes Road
Orleans, Ontario
SLR Project No: 241.30290.00000

Submitted by:
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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 (SLR) was retained by 2809354 Ontario Inc. to conduct an environmental noise assessment for the proposed development at 3996 Innes Road in Orleans, Ontario. The Environmental Noise Assessment is used to support the Zoning Bylaw Amendment (ZBA) and Site Plan Application (SPA) for the proposed development and supports the planning requirements for the City of Ottawa.

1.1 FOCUS OF REPORT

In keeping with the City of Ottawa and the Ontario Ministry of the Environment, Conservation and Parks requirements, this report examines the potential for:

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

1.2 NATURE OF THE SUBJECT LANDS

The proposed development is located at 3996 and 3998 Innes Road, to the south of Innes Road. The site is currently occupied by a single-storey semi-detached residential home, which will be demolished as part of the proposed development.

The proposed development will consist of a single 5-story mixed use building containing 20 units and a ground floor medical facility with basement garage and additional parking at grade. A private outdoor living area is proposed on Level 5 of the building and two communal outdoor amenity areas are proposed at grade.

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

1.3 NATURE OF THE SURROUNDINGS

Immediately surrounding the site are low-rise commercial developments and their parking lots to the east, west and south of the site. Few more low-rise commercial developments are located to the north-east of the site across Innes Road and low-rise residential homes are located to the north of the site. Beyond the immediate surroundings there are low-rise commercial buildings to the east, west and south of the site and mostly low-rise residential buildings to the north of the site.

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

A context plan is shown in Figure 1.

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;
- Stationary noise impacts from the surrounding commercial and industries lands; and
- Stationary noise impacts from the proposed development mechanical equipment on the proposed development itself and surrounding sensitive receptors

There are no railway lines within 1000 m from the proposed development, therefore, there are no concerns related to railway noise or vibration, and further assessments of these sources are not required.

There are no existing significant industrial vibration sources within 75 m of the Project, such as large stamping presses or forges. Under applicable MECP guidelines, a detailed vibration assessment is not required.

There are no airports in the immediate vicinity of the proposed development, and an assessment of aircraft noise impacts is not required.

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 Innes Road and Mer-Bleue Road.

The level of noise from these sources 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 [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.

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

Time Period	Equivalent Sound Level in Outdoor Living Area (dBA)	Mitigation and Warning Clause 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 Table 1, warning clauses advising future occupants of the potential excesses are required. Warning clauses also apply to OLAs.

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

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - L_{eq} (dBA)		Ventilation and Warning Claus 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.

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

2.3.1 ROADWAY TRAFFIC DATA

Road traffic data for Innes Road and Mer-Bleue Road were obtained from The City of Ottawa's Environmental Noise Control Guideline [ENCG]. The ENCG document provides the mature state (Ultimate) traffic volumes, day/night traffic split and commercial truck breakdown % of various roadway types.

Relevant sections of the ENCG document 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	2031 Traffic Volumes (AADT)	% Day/ Night Volume Split		Commercial Traffic Breakdown		Vehicle Speed (km/h)
		Daytime	Night-time	% Medium Trucks	% Heavy Trucks	
Innes Road (4 Lane UAD)	35000[1]	92	8	7	5	60
Mer-Bleue Road (4 Lane UAD)	35000[1]	92	8	7	5	60

Notes: [1] Based on traffic data obtained from the City of Ottawa ENCG, Road types assumed to be 4-lane urban arterial divided.

2.4 PROJECTED SOUND LEVELS

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.

The ground in the study area corresponds mostly to asphalt. A reflective ground type has been assigned in the modelling.

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.

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 Figures 2 and 3.

Table 6: Summary of Transportation Facade Sound Levels

Levels	Façade [1]	Roadway Sound Levels [2]	
		L_{eq} Day (dBA)	L_{eq} Night (dBA)
Levels 1-4	North	73	65
	East	69	62
	South	60	52
	West	70	62
Level 5	North	72	64
	East	69	61
	South	61	53
	West	68	61

Notes: [1] Façade locations are shown in **Figure 2** and **Figure 3**.

[2] The sound levels presented are for the worst-case exposed façade, in which totals may not correspond to the same location.

The façade roadway sound levels are predicted to be above 65 dBA and 60 dBA during the daytime and nighttime periods at the northern, eastern and western facades respectively. Therefore, an assessment of building components is required for the development.

2.4.2 OUTDOOR LIVING AREAS

Two communal amenity areas are located at grade near the southern boundary of the site. These amenity areas are assessed as Outdoor Living Areas (OLA). A private Outdoor Living Area (OLA) is also located on Level 5 of the development in the southern part of the building.

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

Table 7: Summary of Transportation Noise Impacts - OLA

ID	Location	Transportation Impacts L_{eq} Day (dBA)
OLA 1	At Grade – Southwest Corner	64
OLA 2	At Grade – Southeast Corner	63
OLA Level 5	Level 5 – Suite 502 Balcony	60[1]

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

Sound level at the Level 5 OLA is predicted to be at or below 60 dBA, however, the sound levels at OLA 1 and OLA 2 located at grade are predicted to be higher than 60 dBA. Noise barriers with a minimum height of 2 m must be installed to mitigate the sound levels within the communal amenity areas. The barriers must be continuous with no gaps or cracks, have a minimum surface density (mass per unit area) of 20 kg/m^2 (4 lbs per sq ft). A number of different products can be used which meet these specifications, including wood, metal, glass or plexiglass structures. As noise mitigation measures are suggested, a Type B Warning Clause is required

The predicted noise impacts from surrounding roadways on OLA 1 and OLA 2 with the proposed location of the noise barriers are shown in Figure 5 and the predicted noise levels are summarized in the following table:

Table 8: Summary of Transportation Noise Impacts with Mitigation - OLA

ID	Location	Transportation Impacts L_{eq} Day (dBA)
OLA 1	At Grade – Southwest Corner	60
OLA 2	At Grade – Southeast Corner	57

2.5 FAÇADE ASSESSMENT

Based on the roadway levels shown in Table 6, façade sound levels were predicted to exceed the above criteria at multiple locations throughout the development. Therefore, an assessment of glazing requirements is necessary for meeting the indoor sound level requirements 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 CALCULATION INPUTS

The glazing and floor areas were approximately calculated based on the floor plans provided. Non-glazing portion of the walls was assumed to have a rating of STC 43 for all locations.

2.5.2 GLAZING REQUIREMENTS

The acoustical requirements are provided below in Table 9, which is the STC rating taking into consideration roadway noise and the assumptions listed in the previous section. Ontario Building Code (OBC) construction is considered to be sufficient for all living rooms and bedrooms in the proposed development. Any configuration meeting the minimum structural and safety requirements of the Ontario Building Code, which generally produces a minimum STC for glazed elements of STC 29. It should be noted that corner units are likely to require an increase of 3 STC points, as the space has noise contributions from two (2) exposed sides. Detailed Façade Calculations are included in Appendix D.

Table 9: Façade Sound Transmission Class (STC) Requirements

Levels	Façade	Non-Glazing Component	Glazing Requirements	
			Living Room	Bedroom
Levels 2-4	North	43	OBC	30
	East	43	OBC	OBC
	West	43	OBC	OBC
	South	43	OBC	OBC
Level 5	North	43	30	-
	East	43	OBC	OBC
	West	43	OBC	OBC
	South	43	OBC	OBC

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

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 manufacturers test data be reviewed to confirm acoustical performance is met. As the design progresses, final acoustical requirements should be reviewed. It is recommended that window manufacturers test data be reviewed to confirm the acoustical performance is met.

2.6 VENTILATION AND WARNING CLAUSE REQUIREMENTS

2.6.1 RESIDENTIAL UNITS

The requirements regarding warning clauses are summarized in Table 2. 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 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. Central air conditioning, and an MECP Type D warning clause, is recommended for all affected units with façade sound levels from road and rail traffic that exceed 65 dBA during the daytime, or exceed 60 dBA during night-time hours. The most conservative warning clause is for Warning Clause Type D for all units of the proposed development.

2.6.2 OUTDOOR LIVING AREAS

As the outdoor amenity area level is predicted to be between 55 dBA and 60 dBA, an MECP Type A Warning Clause is recommended for both the at grade OLAs and the Level 5 - Suite 502 OLA.

The Type A warning clause is included in Appendix E.

3. STATIONARY SOURCE NOISE IMPACTS

A site visit was complete by SLR personnel on September 15, 2021, with observations made during all periods of the day. The site was found to be primarily surrounded by commercial buildings to the east, west and south and residential lands to the north. A context plan is shown in in **Figure 1.**

Significant ambient roadway noise from Innes Road and Mer-Bleue Road dominate within the area. As the surrounding area is primarily commercial/retail lands, the inclusion of stationary noise sources was determined based on the MECP Guideline D-6 Potential Influence Areas. Commercial/retail lands are considered to be Class 1 Industries, in which a 70 m influence area was applied for the inclusion of stationary noise sources. The 70 m influence area from the property line is shown in **Figure 5.**

3.1 STATIONARY NOISE MODELLING

Based on the information obtained from the local industries and from our site visit, the significant sources of noise in the area of the project have been identified. Modelled noise sources include:

- Commercial buildings in the immediate surrounding rooftop HVAC units;
- KFC/Taco Bell rooftop HVAC units;
- Kingdom Hall of Jehovah's Witnesses HVAC units;
- Touchless Car Wash
    - Car vacuum cleaner;
    - Car wash dryer;
    - Cars idling and queuing; and
- Petrol station HVAC units.

Noise impacts from stationary sources were modelled using Cadna/A, a software implementation of the internationally recognized ISO-9613-2 environmental noise propagation algorithms. Cadna/A / ISO-9613 is the preferred noise model of the MECP. The ISO 9613 equations account for:

- Source to receiver geometry;
- Distance attenuation;
- Atmospheric absorption;
- Reflections off of the ground and ground absorption;
- Reflections off of vertical walls; and
- Screening effects of buildings, terrain, and purpose-built noise barriers (noise walls, berms, etc.).

The following additional parameters were used in the modelling, which are consistent with providing a conservative (worst-case assessment of noise levels):

- Temperature: 10°C;
- Relative Humidity: 70%;
- Ground Absorption G: G=0.0 (reflective) as default global parameter;
- Reflection: An order of reflection of 1 was used (accounts for noise reflecting from walls);
- Wall Absorption Coefficients: Set to 0.37 (37 % of energy is absorbed, 63% reflected); and
- Terrain: Relatively flat near the Project site.

Generic SLR historical sound level data was applied in the stationary noise modelling. A summary of the sound levels used in the analysis and equipment operating conditions is included in **Appendix F**. All stationary sources modelled are shown in **Figure 5.**

3.2 STATIONARY NOISE CRITERIA

3.2.1 MECP NPC-300 GUIDELINES FOR STATIONARY NOISE SOURCES

MECP noise guidelines for stationary source noise impacting residential developments are given in MECP publication NPC-300. The applicable portions of NPC-300 are Part C – Land Use Planning and the associated definitions outlined in Part A Background.

The acoustic environment surrounding the proposed development is dominated by the roadway noise. Therefore, the proposed development is considered to be located in a Class 1 area.

The sound level limit for steady sound sources are expressed as a 1-hr equivalent sound level (L_{eq} (1 hr) values, in dBA) and is the higher of the NPC-300 exclusionary limits and the existing background sound level. The NPC-300 stationary source noise requirements in a Class 1 Area are summarized in Table 10 steady sound sources.

Table 10: NPC-300 Class 1 Continuous Sound Noise Requirements

Receiver Category	Time Period	Exclusionary Sound Level Limits, L_{eq} (1 hr), dBA [1]
Outdoor	0700 – 1900h 1900 – 2300h 2300 – 0700h	50 50 -
Plane of Window [2]	0700 – 1900h 1900 – 2300h 2300 – 0700h	50 50 45

Notes: [1] or minimum hourly L_{eq} of background noise, whichever is higher.
[2] Applicable for "Noise Sensitive Spaces", as defined in NPC-300

Since the ambient sound levels were anticipated to exceed the NPC-300 exclusionary limits, sound exposures from roadway noise were assessed and the corresponding applicable guideline limits were determined.

Table 11 summarizes 2019 road traffic volumes applied in the ambient noise modelling.

Table 11: Summary of Road Traffic Data Used in the Ambient Noise Analysis

Roadway Link	Traffic Volumes (AADT)	% Day/ Night Volume Split [1]		Commercial Traffic Breakdown [1]		Vehicle Speed (km/h)
		Daytime	Night-time	% Medium Trucks	% Heavy Trucks	
Innes Road (4 Lane UAD)	30382[1]	92	8	7	5	60
Mer-Bleue Road (4 Lane UAD)	19773[1]	92	8	7	5	60

Notes: [1] Based on traffic data obtained from the City of Ottawa Transportation Intersection Volumes 2019 dataset published on http://open.ottawa.ca.

As with the Transportation assessment, ambient roadway noise was modelled as line sources of sound using the Cadna/A computer model. The minimum hourly L_{eq} for the ambient sound levels were found to exceed the NPC-300 default guideline limits during all periods of the day.

As a conservative assessment of stationary impacts, the daytime/evening operations were considered to be the same and were assessed against the stricter evening criteria.

Surrounding facility noise impacts were assessed against the higher of the modelled ambient noise levels and the exclusionary limits in Table 9.

3.2.2 PREDICTED FAÇADE LEVELS

The "building evaluation" feature of the Cadna/A was used to assess noise impacts on the residential portions of the towers, podium and townhouse blocks. This feature allows for noise levels to be predicted across the entire façade of a structure.

A summary of the predicted noise impacts on each façade are shown in Table 12, and Figures 7 and 8 for daytime/evening and night-time periods, respectively. The difference between the existing ambient sound levels and the surrounding stationary noise impacts are shown in Figures 9 and 10 for daytime/evening and night-time periods, respectively.

The stationary noise impacts were found to be at or below established limit for all facades, during all periods of the day. Therefore, the applicable guideline limits are met on all facades of the proposed development.

Table 12: Summary of Stationary Façade Sound Levels

Building Level	Façade [1]	Stationary Sound Levels [2]		Ambient Levels	
		L_{eq} Day /Eve (dBA)	L_{eq} Night (dBA)	L_{eq} Day /Eve (dBA)	L_{eq} Night (dBA)
Levels 1-4	North	45	39	≤ 71	≤ 61
	East	51	44	≤ 68	≤ 58
	South	50	43	≤ 58	≤ 48
	West	51	44	≤ 69	≤ 59
Level 5	North	45	39	≤ 70	≤ 60
	East	51	43	≤ 68	≤ 57
	South	50	43	≤ 58	≤ 48
	West	51	43	≤ 67	≤ 57

Notes: [1] Façade locations are identified on **Figures 6** and **7**.
[2] Sound levels shown represent the worst-case impact along the identified facade.

3.2.3 PREDICTED OLA LEVELS

The predicted worst-case noise impacts from the stationary sources are shown in Figure 11. The at grade OLA and the Level 5 OLA levels are predicted to be below the ambient background levels for outdoor amenity spaces. Therefore, noise mitigation is not required.

PART 2: IMPACTS OF THE DEVELOPMENT ON ITSELF

At the time of this assessment, the proposed development's mechanical systems have not been sufficiently designed.

If common mechanical systems will be implemented as part of the proposed development, the impacts from all equipment should comply with the MECP Publication NPC-300 guideline limits. The mechanical equipment is to be included with proposed development, the 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) into the design. This can be confirmed at either the site plan approval or building permit approval stages.

If individual air conditioning systems are to be implemented for each residential unit for the proposed site, the sound levels from each unit should meet MECP Publication NPC-216.

PART 3: IMPACTS OF THE DEVELOPMENT ON THE SORROUNDING AREA

The building mechanical systems have not been designed at this time.

If common mechanical systems will be implemented as part of the proposed development, such equipment has the potential to result in noise impacts on residential spaces within the development. This equipment is required to meet MECP Publication NPC 300 requirements at the facades of the noise sensitive spaces within the development. Therefore, the potential impacts should be assessed as part of the final building design. The criteria are 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) into the design.

If individual air conditioning systems are to be implemented for each residential unit for the proposed site, there will be very little chance of offsite impacts as compliance is required to be met onsite.

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

4. 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 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 upgraded glazing may not be required within the development, as outlined in outlined in Section 2.5.2.
- Noise impacts within the Level 5 outdoor amenity area are predicted to be within acceptable levels, however, noise impacts within the at grade amenity areas were predicted to exceed 60 dBA. Noise barriers must be installed as outlined in Section 2.4.2.
- As required by MECP Publication NPC-300, Type A, B and Type D Warning Clauses (outlined in Section 2.6) 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 E.

4.2 STATIONARY NOISE

- "Stationary" noise from the surrounding commercial facilities were assessed on the proposed development, as outlined in Section 3.
- Stationary noise impacts from the surrounding commercial noise are predicted to meet NPC-300 Class 1 guideline limits on all façades, and the outdoor living area without noise control measures.

4.3 OVERALL ASSESSMENT

- Impacts of the environment on the proposed development can be adequately controlled with proper glazing and the inclusion of ventilation and warning clause requirements.

5. REFERENCES

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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 2809354 Ontario Inc., 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.

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Figures

Environmental Noise Assessment
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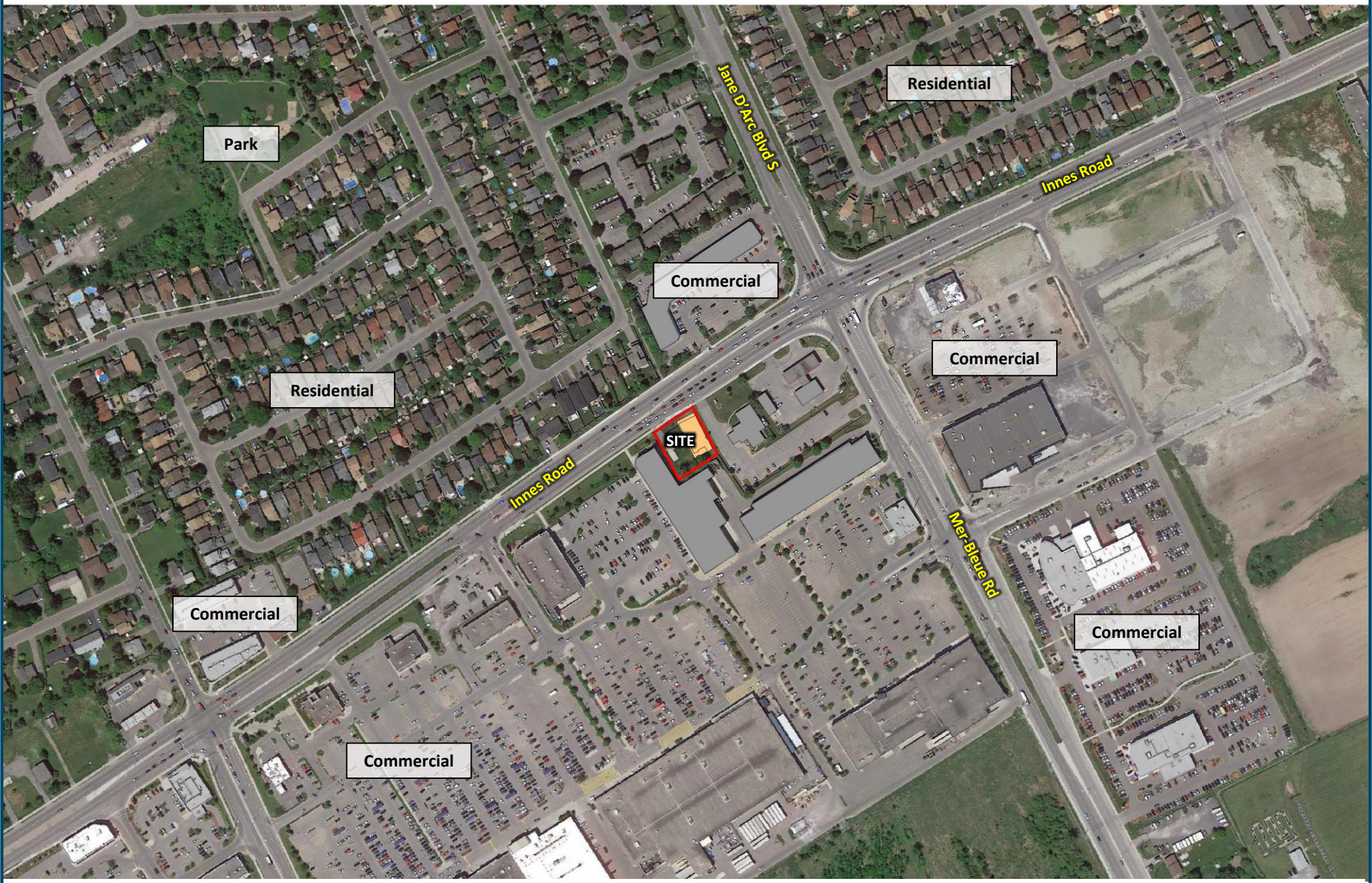
SLR Project No.: 241.30290.00000



2809354 ONTARIO INC.

3996 INNES ROAD, ORLEANS

CONTEXT PLAN

True North

Scale: 1:4,000

METRES

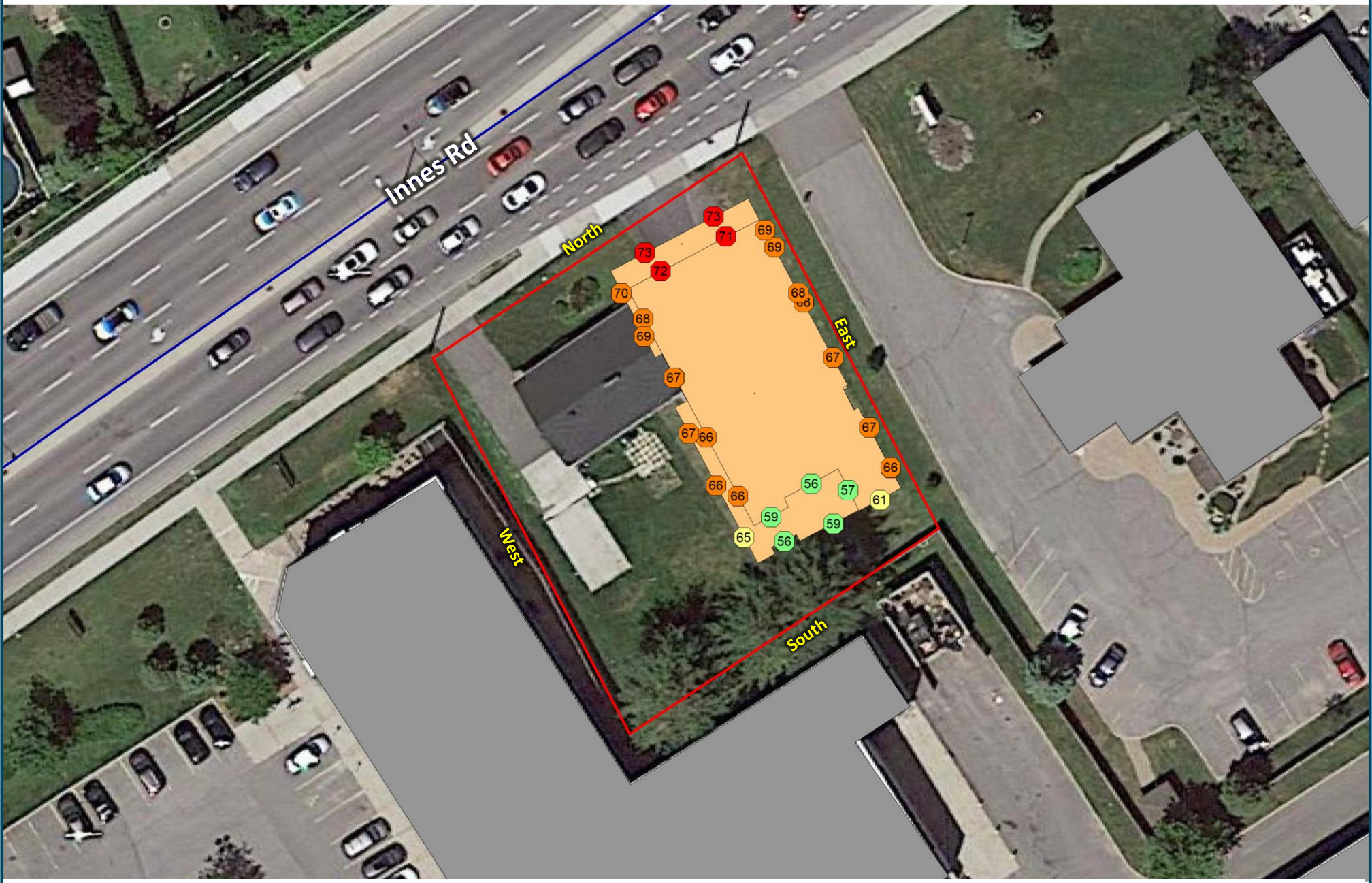
Date: Dec 19, 2022

Rev 1.0

Project No. 241.30290.00000

Figure No. **1**

SLR global environmental solutions



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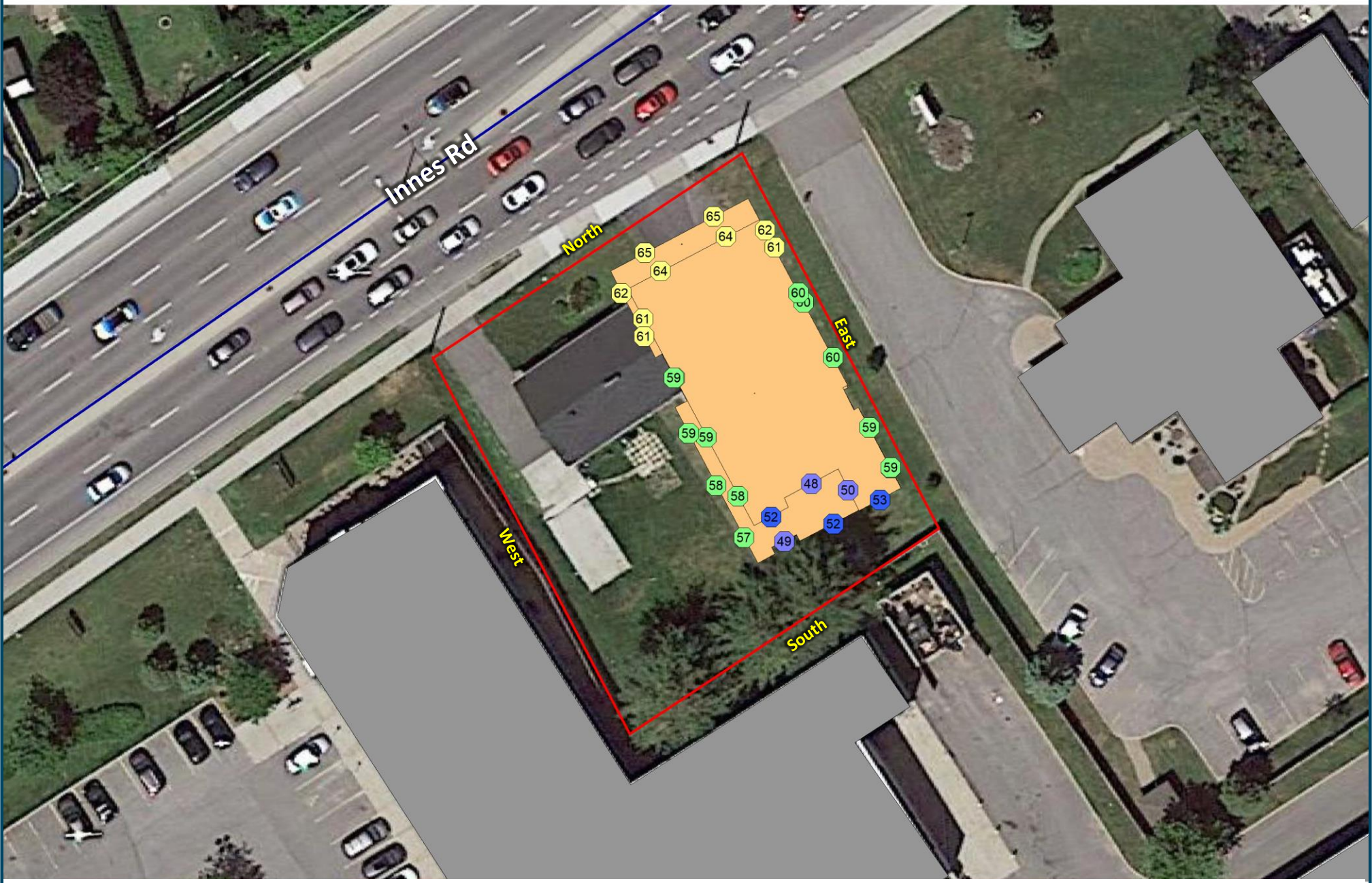
3996 INNES ROAD, ORLEANS		Date: Dec 19, 2022 Rev 1.0	Figure No. **2**	SLR global environmental solutions
FAÇADE SOUND LEVELS – DAYTIME ROAD IMPACTS		Project No. 241.30290.00000		



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OUTDOOR LIVING AREA SOUND LEVELS - ROADWAY

True North

Scale: 1:500

METRES

Date: Dec 19, 2022

Rev 1.0

Figure No. **4**

Project No. 241.30290.00000

SLR global environmental solutions

2809354 ONTARIO INC.

3996 INNES ROAD, ORLEANS

OUTDOOR LIVING AREA SOUND LEVELS – ROADWAY - MITIGATED

True North

Scale: 1:500

METRES

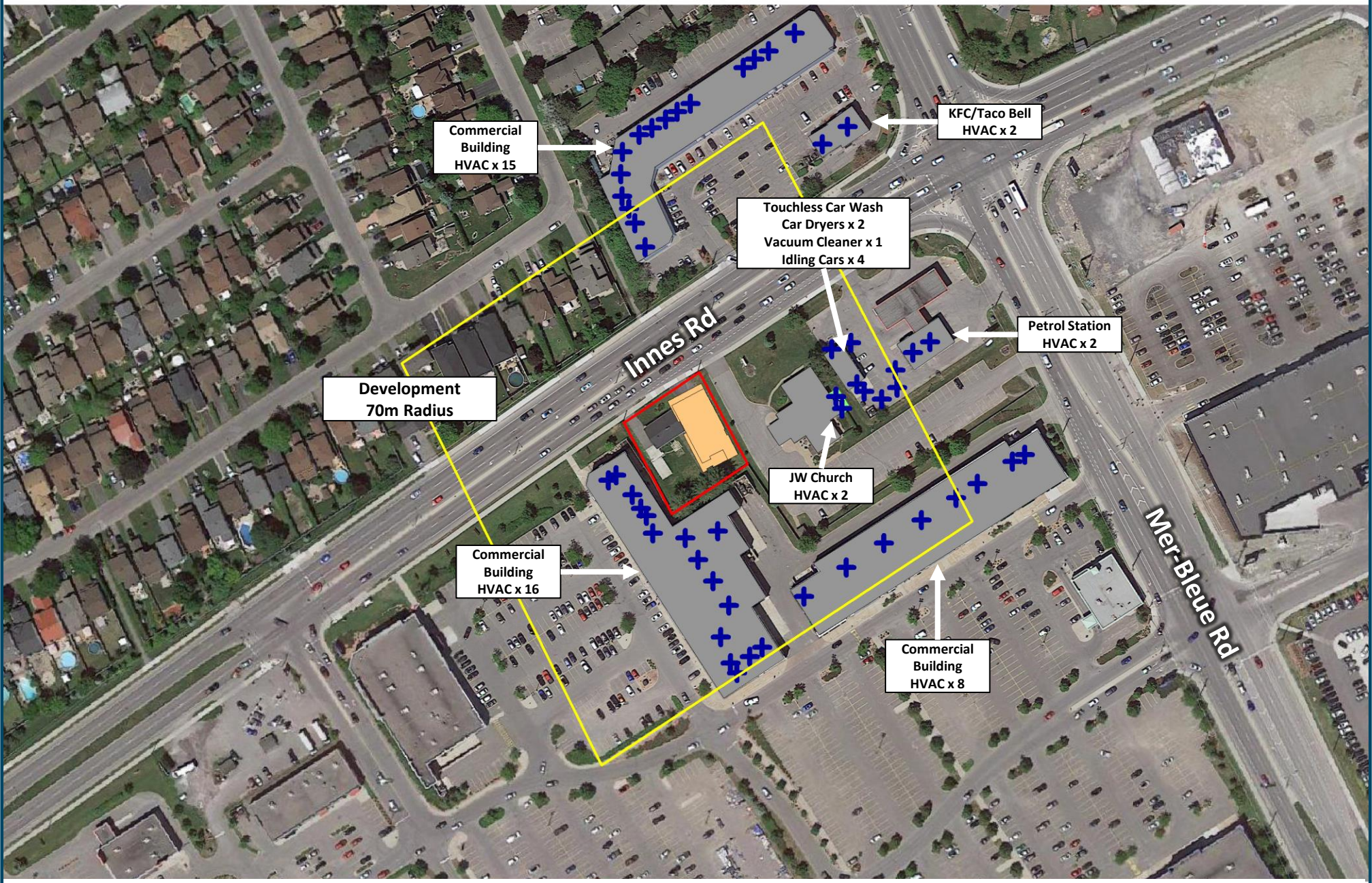
Date: Dec 19, 2022

Rev 1.0

Project No. 241.30290.00000

Figure No. **5**

SLR global environmental solutions



2809354 ONTARIO INC.

3996 INNES ROAD, ORLEANS

SURROUNDING STATIONARY SOURCE LOCATIONS

True North

Scale: 1:2050

METRES

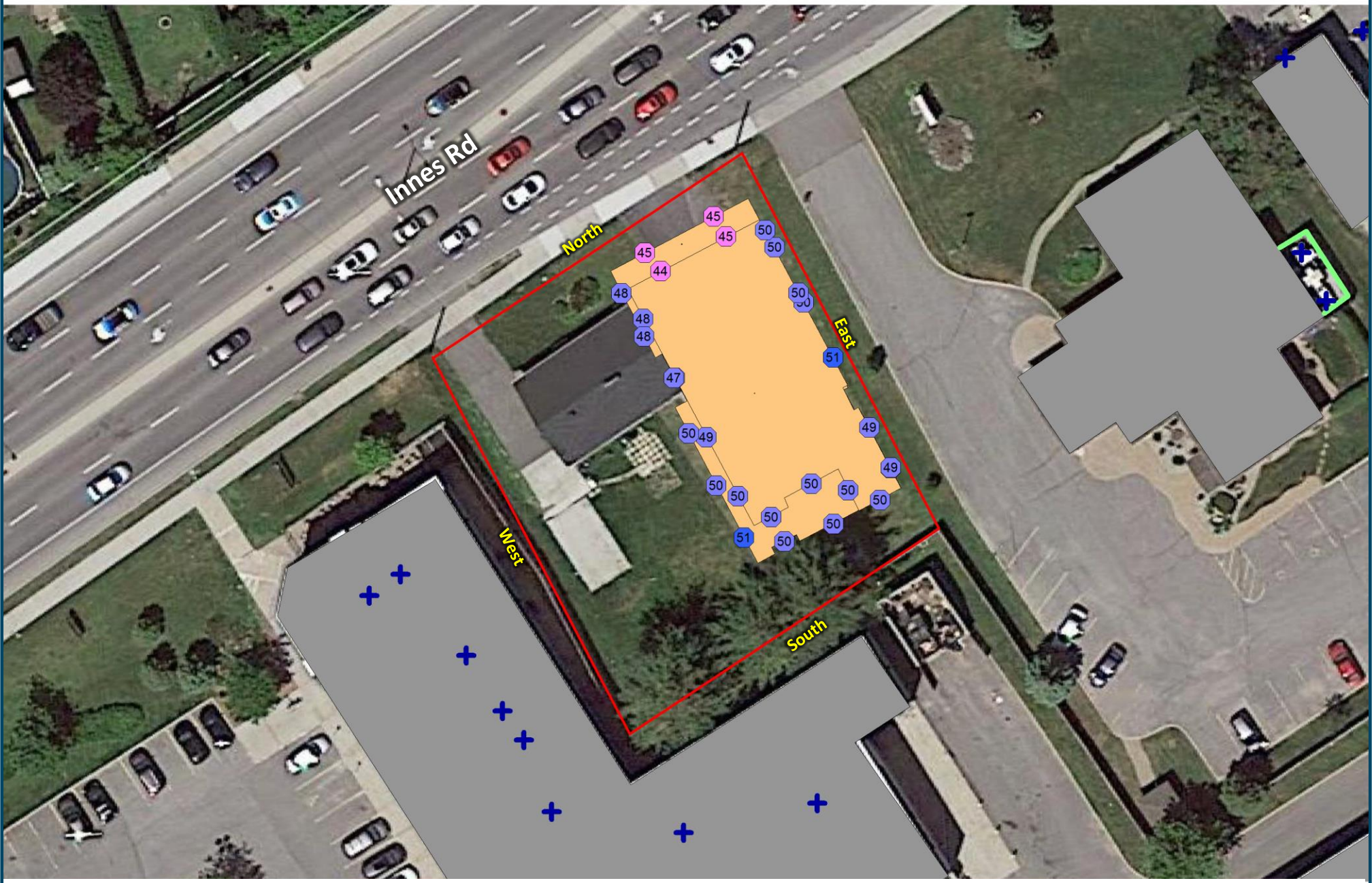
Date: Dec 19, 2022

Rev 1.0

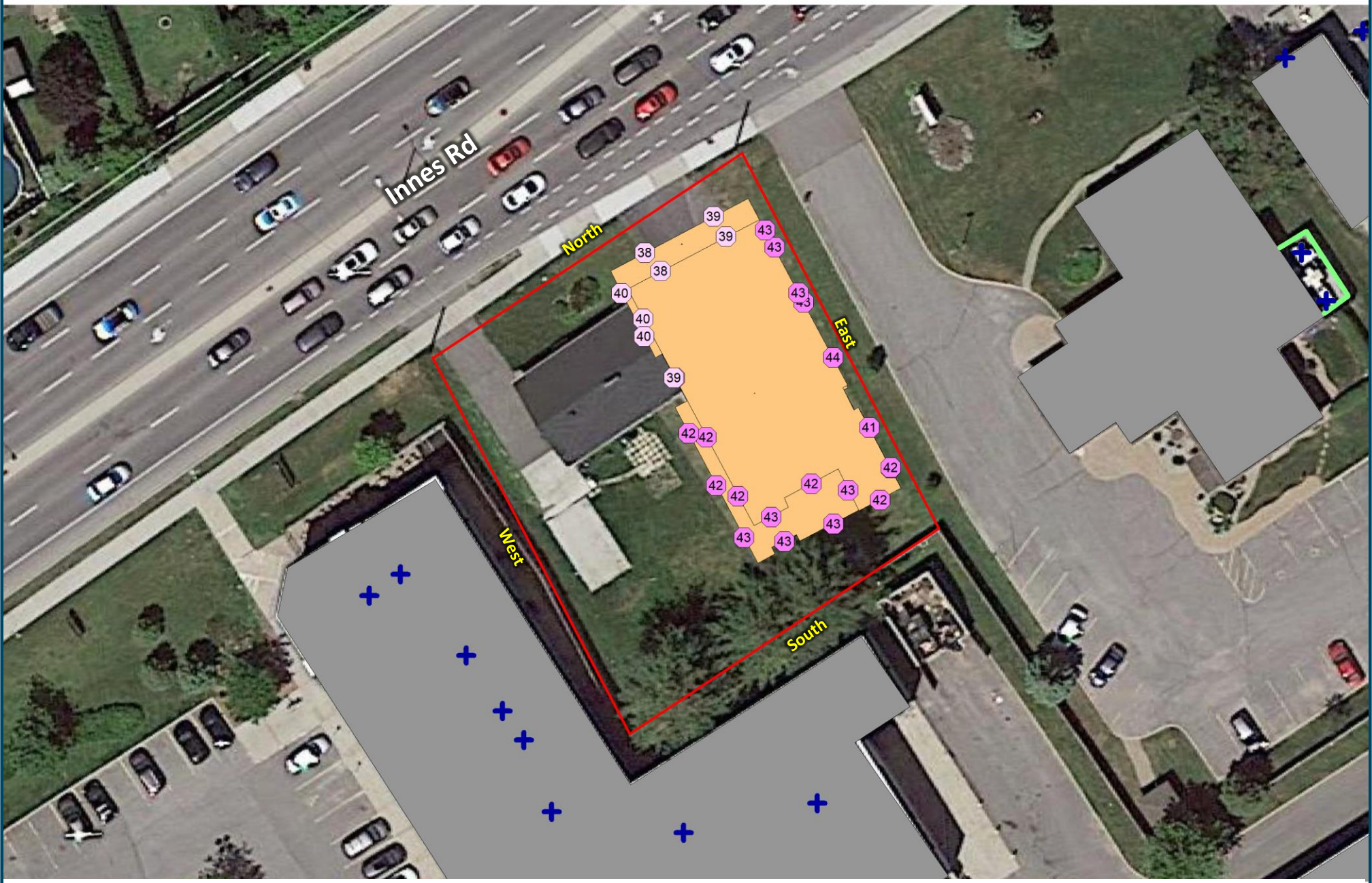
Project No. 241.30290.00000

Figure No. **6**

SLR global environmental solutions



2809354 ONTARIO INC.	True North	Scale: 1:500	METRES	SLR global environmental solutions
3996 INNES ROAD, ORLEANS		Date: Dec 19, 2022 Rev 1.0	Figure No. 7	
MODELLED STATIONARY NOISE IMPACTS – DAYTIME/EVENING		Project No. 241.30290.00000		



2809354 ONTARIO INC.	True North	Scale: 1:500	METRES	SLR global environmental solutions
3996 INNES ROAD, ORLEANS		Date: Dec 19, 2022 Rev 1.0	Figure No. **8**	
MODELLED STATIONARY NOISE IMPACTS – NIGHT-TIME		Project No. 241.30290.00000		

2809354 ONTARIO INC.	True North	Scale: 1:500	METRES	SLR global environmental solutions
3996 INNES ROAD, ORLEANS		Date: Dec 19, 2022 Rev 1.0	Figure No. **9**	
MODELLED EXCESS OF THE GUIDELINE LIMITS STATIONARY NOISE – DAYTIME/EVENING		Project No. 241.30290.00000		

2809354 ONTARIO INC.	True North	Scale: 1:500	METRES	SLR global environmental solutions
3996 INNES ROAD, ORLEANS		Date: Dec 19, 2022 Rev 1.0	Figure No. **10**	
MODELLED EXCESS OF THE GUIDELINE LIMITS STATIONARY NOISE – NIGHT-TIME		Project No. 241.30290.00000		

2809354 ONTARIO INC.

3996 INNES ROAD, ORLEANS

OUTDOOR LIVING AREA SOUND LEVELS – SURROUNDING STATIONARY

True North

Scale: 1:500

METRES

Date: Dec 19, 2022

Rev 1.0

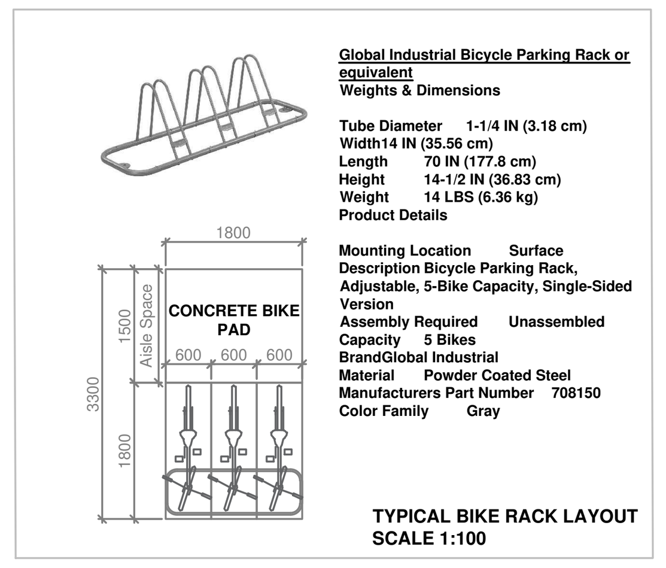
Figure No. **11**

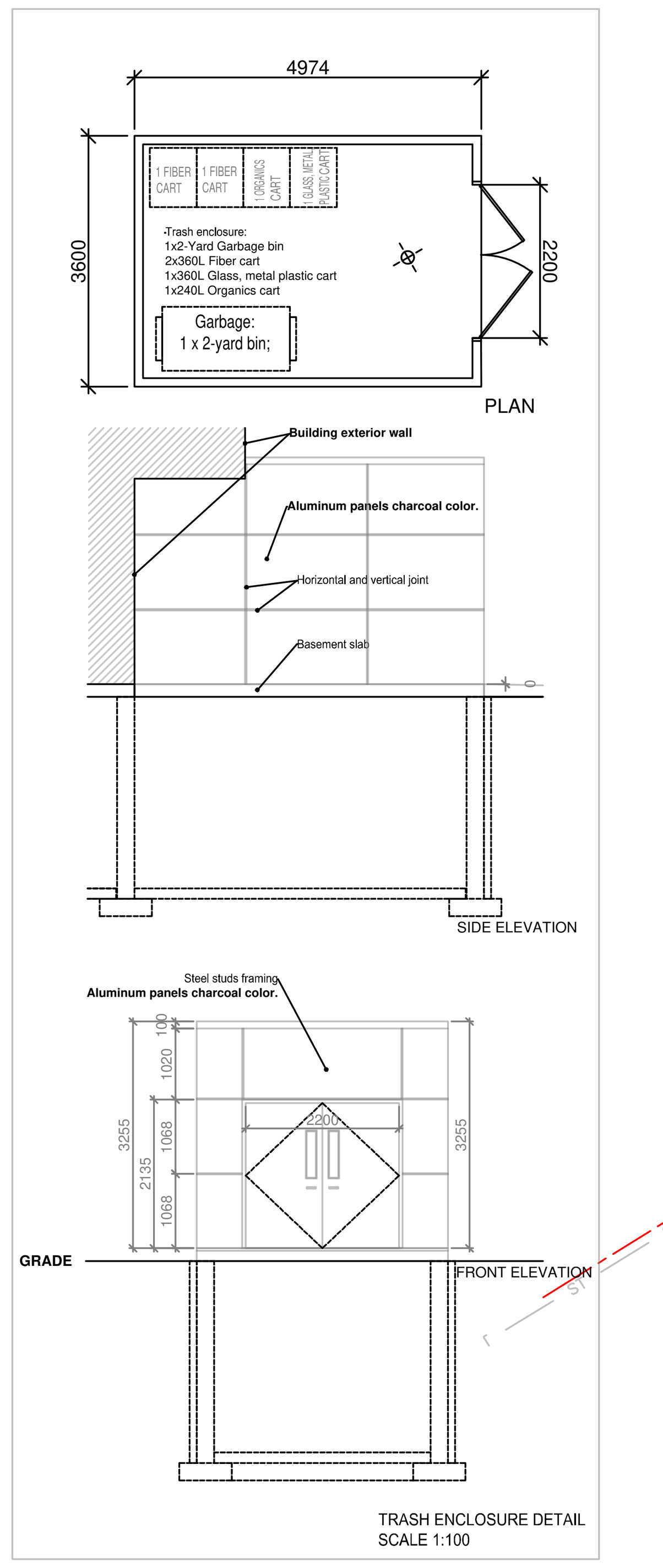
Project No. 241.30290.00000

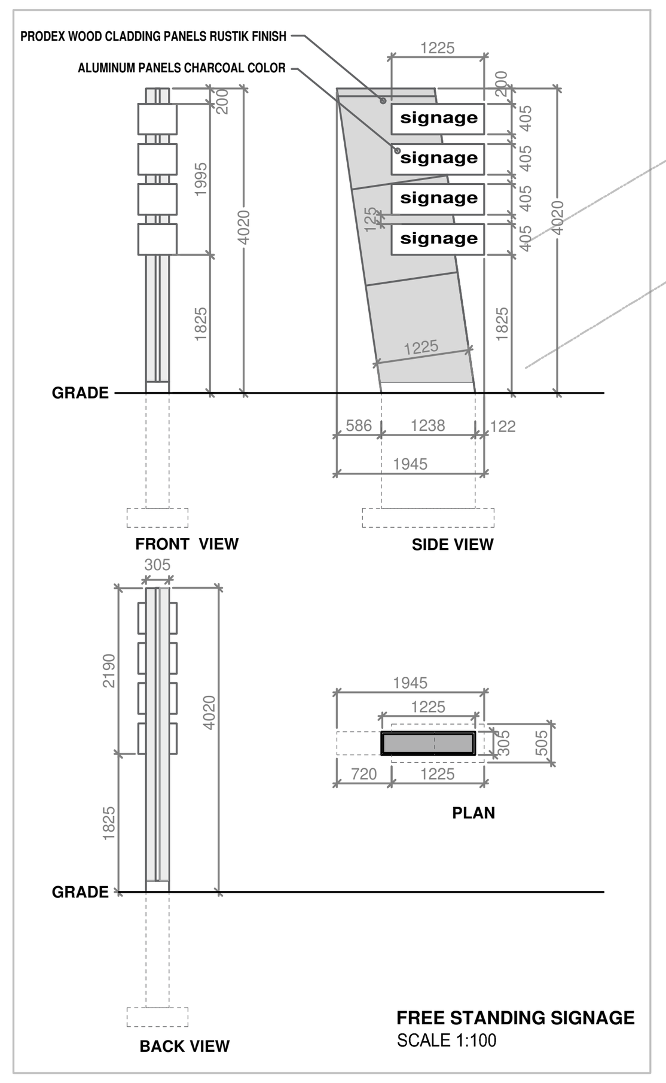
SLR global environmental solutions

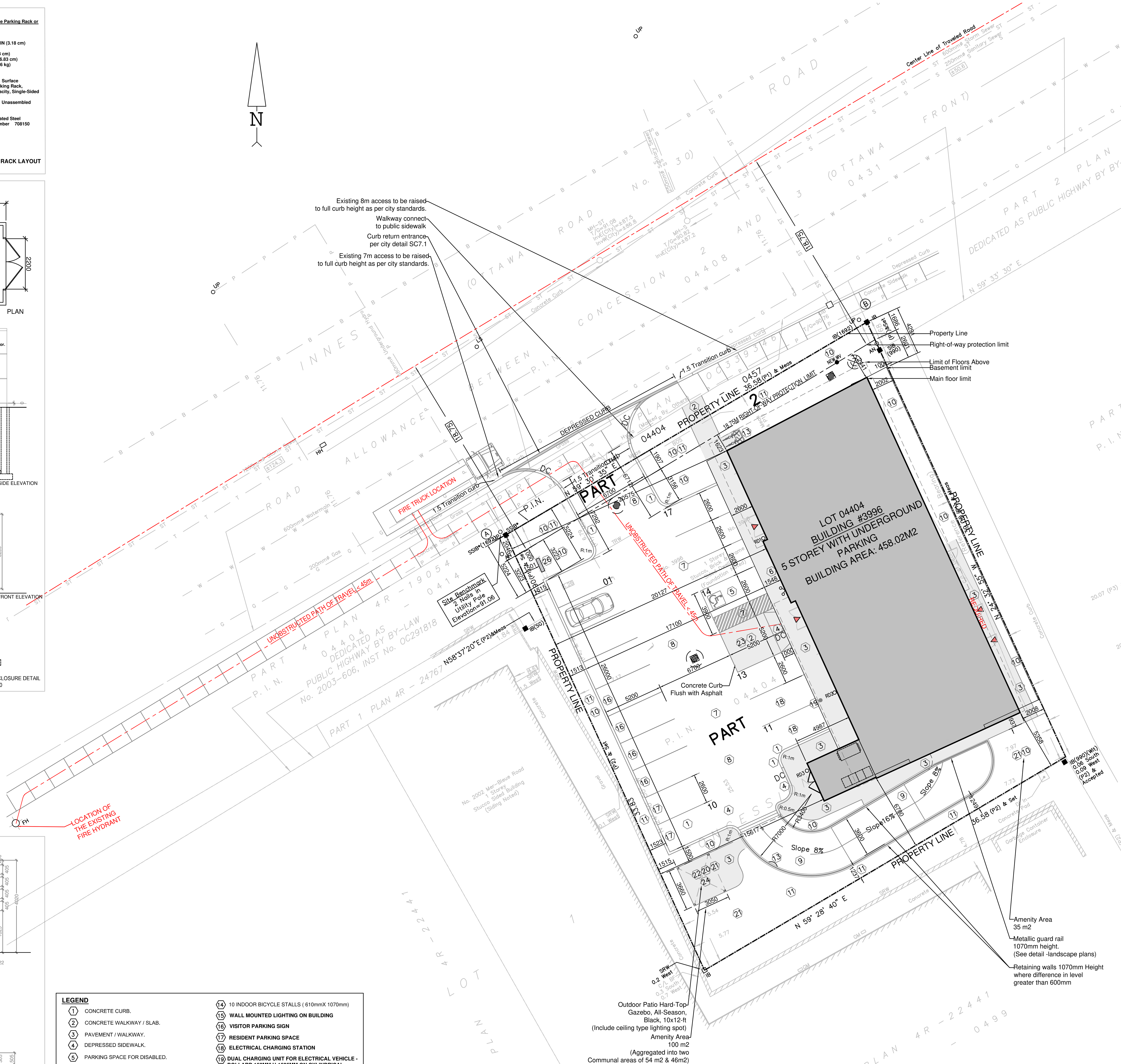
Appendix A
Development Drawings

Environmental Noise Assessment
3996 Innes Road
SLR Project No.: 241.30290.00000

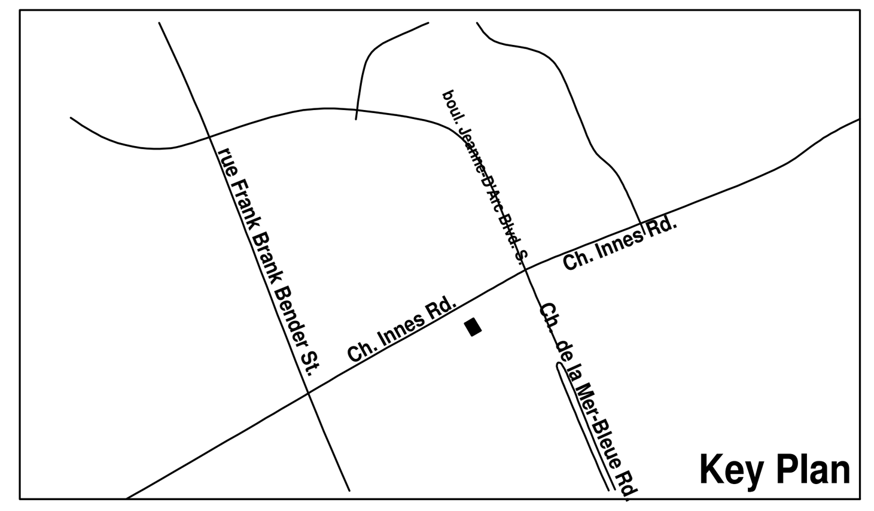








"Boundary information derived from plan of survey prepared by *FARLEY, SMITH & DENIS SURVEYING LTD.* OLS, dated 21st day of December, 2020"



BUILDING CODE ANALYSIS

- 5 STOREYS MIXED USE BUILDING WITH BASEMENT FACING 1 STREET
- PARTS 3 OF OBC 2017. USE: GROUP "E", "D", "C" & F3
- CLASSIFICATION:

3.2.2.43. Group C, up to 6 Storeys, Sprinklered
3.2.2.51. Group D, up to 6 Storeys, Sprinklered
3.2.2.57. Group E, up to 6 Storeys, Sprinklered
3.2.2.74. Group F, Division 3, up to 6 Storeys

- NONCOMBUSTIBLE CONSTRUCTION.
- REQUIRED SPRINKLER AND STANDPIPE SYSTEM.
- OCCUPANCY:
  BASEMENT -CAR PARK.
  1ST FLOOR -PHARMACY AND MEDICAL FACILITY.
  UPPER FLOORS -RESIDENTIAL.
- BUILDING AREA : 458.02 m².
- FLOOR AREA INCLUDE EXTERIOR WALLS :
  BASEMENT 568.76 m² ; 1ST FLOOR 458.02 m²; TYPICAL FLOORS 514.13 m²; 5TH FLOOR 412.6 m².
- TOTAL FLOOR AREA 2981.77 m² / 32095.5 sq.ft.
- FIRST FLOOR FIRE SEPARATION: 2HR FIRE -RESISTANCE REQUIRED C/W VERTICAL STRUCTURAL COMPONENTS.
- SECOND FLOOR FIRE SEPARATION : 2H FIRE -RESISTANCE RATING REQUIRED BETWEEN GROPE "E" AND GROUP "C" C/W VERTICAL STRUCTURAL COMPONENTS.
- FIRE SEPARATION RATING FOR TYPICAL FLOORS : 1 HR F.R.R. REQUIRED C/W VERTICAL STRUCTURAL COMPONENTS.
- 3/4 HR F.RR. 50 STC REQUIRED BETWEEN PUBLIC CORRIDOR AND THE RESIDENTIAL UNITS. 1 HR FIRE-RESISTANCE AND 55 STC REQUIRED REQUIRED BETWEEN ELEVATOR AND THE RESIDENTIAL UNITS.
- FIRE RESISTANCE FOR ROOF: NOT REQUIRED FOR NONCOMBUSTIBLE CONST.
- PLUMBING EQUIPMENTS:
  1 WASHROOM MIN. PER RESIDENTIAL UNIT REQUIRED AND ONE PUBLIC HANDICAP
  2 WASHROOM PROPOSED FOR FIRST FLOOR RETAIL AND MEDICAL FACILITY THAT INCLUDE 1 FOR HANDICAPS.
  2 STANDARD WASHROOM ARE PROPOSED FOR EMPLOYEES ONLY.
- BARRIER FREE PATH OF TRAVEL PROVIDED FOR ALL FLOORS ACCORDING TO SECTION 3.8.

GROSS FLOOR AREA (WITHOUT EXTERIOR WALLS)
BASEMENT AREA: 542.9m². 1ST FLOOR AREA :418.1m²
COMMERCIAL AREA : 418.1M2 (RETAIL/PHARMACY: 170.9m², CLINIC: 185.4m²,
RESIDENTIAL ENTRANCES, LOBBY /STAIR: 61.8m²
RESIDENTIAL AREA : 1 828.8 M2

GROSS FLOOR AREA OF RESIDENTIAL SUITES

SUITE 201, 301, 401 74.17M2	SUITE 203, 303, 403 71.1M2	SUITE 205, 305,405 74.9M2	SUITE 501 175.4M2
SUITE 202, 302,402 77.24M2	SUITE 204, 304,404 60.15M2	SUITE 206. 306,406 61.2M2	SUITE 502 173.7M2

AREA (C) OF SCHEDULE A1 ZONING BY-LAW NO.2008-250

PARKING TYPE	RATE	UNIT	PARKING REQUIRED
DWELLING UNITS IN MIXED-USE BUILDING (TABLE 101-R15)	1 Stall /dwelling unit	20 units	20 Stalls
VISITOR PARKING (TABLE 102)	0.2 Stalls / dwelling unit	20 units	4 Stalls
MEDICAL FACILITY (table 101-N51)	4 Stalls / 100m2 of GFA (185.4m²)	185.4 m2	7.4 Stalls
RETAIL USE (PHARMACY)	3.4 Stalls/ 100m2 of GFA (170.9m²)	170.9 m2	5.8 Stalls
SHARED PARKING REDUCTION WEEKDAY AFTERNOON (TABLE 104)	-25% of visitor parking -15% of retail store	1 0.8	-2 Stalls
TOTAL OF REQUIRED PARKING STALLS			35.2 Stalls
35 PARKING STALLS PROVIDED IN THE BASE BUILDING INCLUDE 2 ACCESSIBLE			

ZONING MECHANISMS : AM ZONE

DESCRIPTION	REQUIREMENTS	PROVIDED
MINIMUM LOT AREA	NO MINIMUM	**1 524.64m²**
MINIMUM LOT WIDTH	NO MINIMUM	**36.5 m**
FRONT YARD	NO MINIMUM	**1.6 m**
MINIMUM INTERIOR SIDE YARD	NO MINIMUM	**2 m & 15.6 m**
MINIMUM REAR YARD	NO MINIMUM	**5.36 m**
MAXIMUM BUILDING HEIGHT	25M	**18.6m**
MAXIMUM FLOOR SPACE INDEX	2 or 3.5 IF 80% PARKING BELOW GRADE	
MINIMUM WIDTH OF LANDSCAPED AREA AROUND A PARKING LOT ABUTTING A STREET	3m	3.15m + 1.9m
MINIMUM WIDTH OF LANDSCAPED AREA AROUND A PARKING LOT NOT ABUTTING A STREET	1.5m	1.51m
AMENITY SPACE REQUIREMENTS FOR MIXED USE BUILDING, SEC.137 (5) .MIN. 50% COMMUNAL AMENITY AREA	6m² per dwelling unit = 120 m2	135m² Include Communal 100m2
MINIMUM LANDSCAPED AREA REQUIREMENT SEC.110 (1)	15% of parking area: 442.65 m²	102.5 m² (23.15%)
FLOOR SPACE INDEX	-	**1.83**

BYCILCLE PARKING SPACE TABLE

PARKING TYPE	RATE	UNIT	PARKING REQUIRED
MEDICAL FACILITY ()	1 per 1000m2 of GFA	185 m2	1 Space
RETAIL STORE (PHARMACY)	1 per 250m of GFA	160 m2	1 Space
DWELLING UNITS IN A MIXED-USE BUILDING (TABLE 101-R15)	0.5 / dwelling unit	20 units	10 Space
TOTAL			12 Spaces

PLAN OF SURVEY OF

PART OF LOT 1
CONCESSION 3 (OTTAWA FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA

Scale 1: 200

0 2.5 5 10 15 20 metres

Metric Note
Distances and coordinates on this plan are in metres and can be converted to feet by dividing by 0.3048.

Distance Note
Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.99996.

Bearing Note
Bearings are MTM grid, derived from Can-Net Real Time Network GPS observations on reference points A and B, shown hereon, having a bearing of N 59° 30' 35" E and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) Nad-83 (Original).

For bearing comparisons, a rotation of 0°00'45" clockwise was applied to bearings on P2.

LEGEND

1. CONCRETE CURB.
2. CONCRETE WALKWAY / SLAB.
3. PAVEMENT / WALKWAY.
4. DEPRESSED SIDEWALK.
5. PARKING SPACE FOR DISABLED.
6. WALL MOUNTED MUNICIPAL SIGN FOR DISABLED PARKING .
7. PAINT MARKS.
8. ASPHALT.
9. CONCRETE SLAB / OR RAMP.
10. GRASS.
11. LANDSCAPED AREA.
12. TRASH ENCLOSURE FOR CARTS.
13. 2 OUTDOOR BICYCLE STALLS
14. 10 INDOOR BICYCLE STALLS (610mmX 1070mm)
15. **WALL MOUNTED LIGHTING ON BUILDING**
16. **VISITOR PARKING SIGN**
17. **RESIDENT PARKING SPACE**
18. **ELECTRICAL CHARGING STATION**
19. **DUAL CHARGING UNIT FOR ELECTRICAL VEHICLE - BOLLARD 152MM H:1525MM ON CYLINDRICAL CONCRETE PAD 305MM DIAMETER**
20. OUTDOOR PATIO GAZEBO
21. AMENITY AREA
22. COMMUNAL AMENITY AREA AREA
23. **CONCRETE PAVED AREA DELIVERY TRUCK LOADING/UNLOADING AND THREE-POINTS TURN SPACE FOR GARBAGE TRUCK**
24. **CEILING MOUNTED LIGHTING**
25. **FIRE DEPARTMENT CONNECTION**
26. **FREE STANDING SIGNAGE**

ISSUED FOR			
No	DATE	DESCRIPTION	App.
	2021.11.23	SITE PLAN CONTROL APPLICATION	P.T.
			P.T.

REVISION			
No	DATE	DESCRIPTION	App.
	2022.04.11	CITY COMMENTS 11 MARCH 2022	P.T.
	2022.07.08	CITY COMMENTS 29 APRIL 2022	P.T.
	2022.09.14	COORDINATION WITH NEW CIVIL DRAWINGS	P.T.
	2022.11.24	CITY COMMENTS 22 NOVEMBER 2022	P.T.

Stamps

ONTARIO ASSOCIATION OF ARCHITECTS — PIERRE J. TABET — LICENCE

PTabet architecte
2232 rue Saint-Louis, Gatineau QC J8T 5L6
t.: 819.568.3994
c.: 613.797.5375
pierretabetarchitecte.com

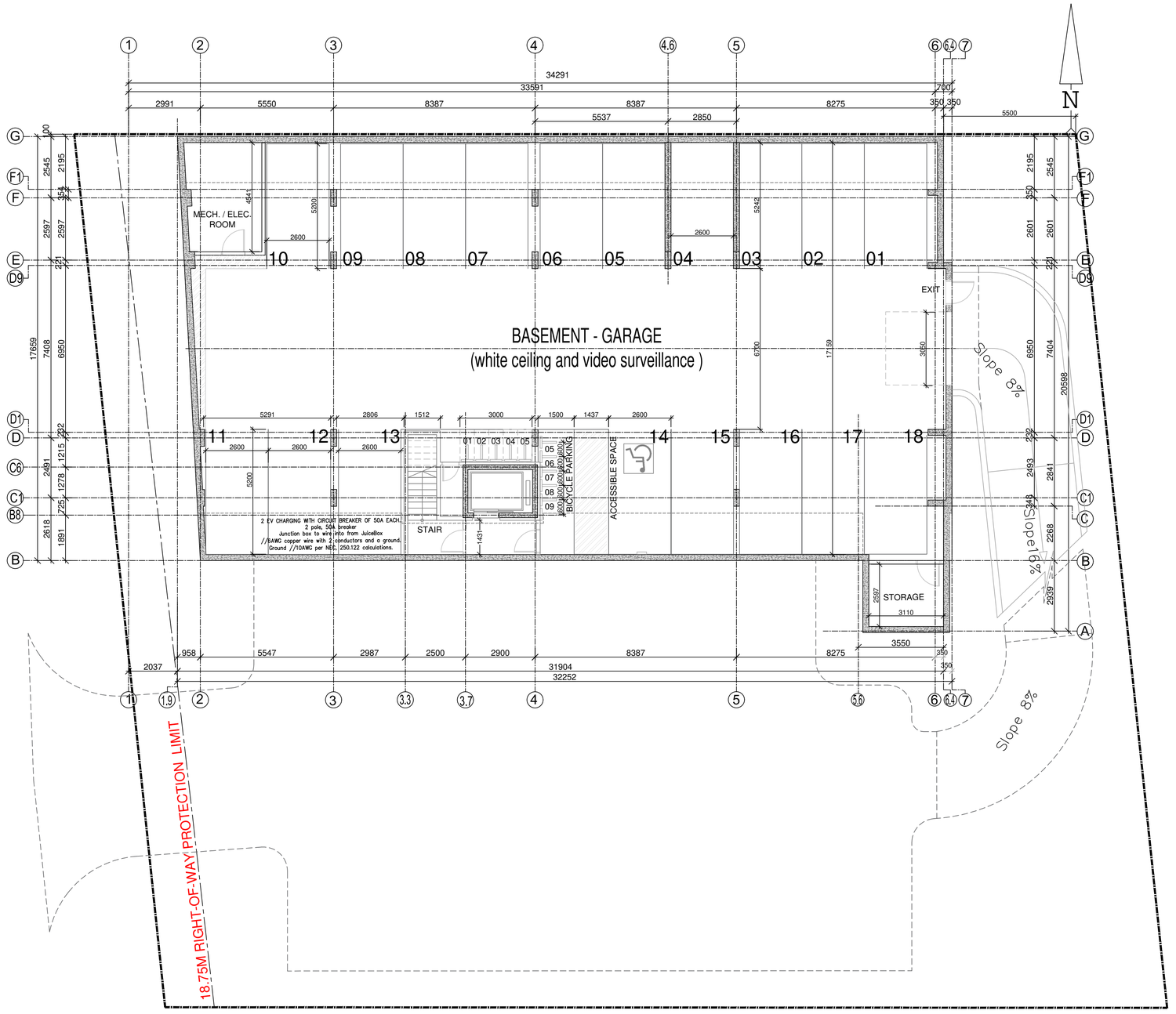
Project: ORLEANS RESIDENTIAL & MEDICAL FACILITY
3996 INNES RD, OTTAWA ON.

Title: PROPOSED SITE PLAN

Scale: 1:200	Sheet: 1	
Date: 2022/11/24	Drawn /: A. Aldu.	Drawing No.
Revision: 4	Verify /: P.Tabet	A-100

City File No. D07-12-21-0209

City Plan Number 18675



Scale 1: 100

0 2.5 5 10 15 20 metres

Metric Note

Distances and coordinates on this plan are in metres and can be converted to feet by dividing by 0.3048.

ISSUED FOR			
No	DATE	DESCRIPTION	App.
	2021.11.23	SITE PLAN CONTROL APPLICATION	P.T.
			P.T.

REVISION			
No	DATE	DESCRIPTION	App.
	2022.04.11	CITY COMMENTS 11 MARCH 2022	P.T.
	2022.07.08	CITY COMMENTS 29 APRIL 2022	P.T.
	2022.09.14	COORDINATION WITH NEW CIVIL DRAWINGS	P.T.
	2022.11.24	CITY COMMENTS 22 NOVEMBER 2022	P.T.

Stamps

ONTARIO ASSOCIATION OF ARCHITECTS
PIERRE-J. TABET
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2232 rue Saint-Louis, Gatineau, QC J8T 5L6
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c.: 613.797.5375
pierretabetarchitecte.com

Project: ORLEANS RESIDENTIAL & MEDICAL FACILITY
3996 INNES RD, OTTAWA ON.

Title: UNDERGROUND PARKING BASEMENT PLAN

Scale: Scale: 1:100

Sheet:

Date: 2022/11/24

Drawn /: A. Aldu.

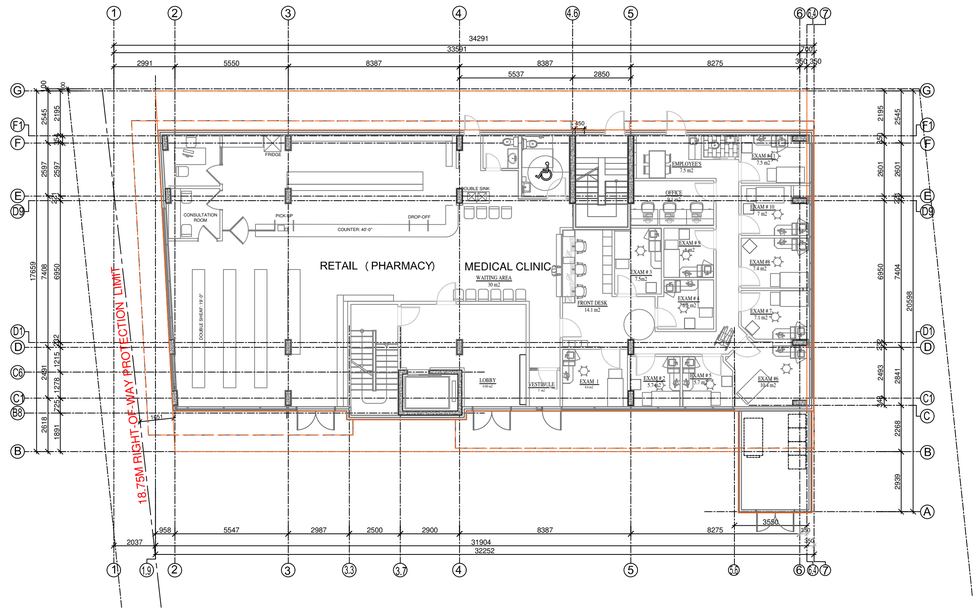
Revision: 4

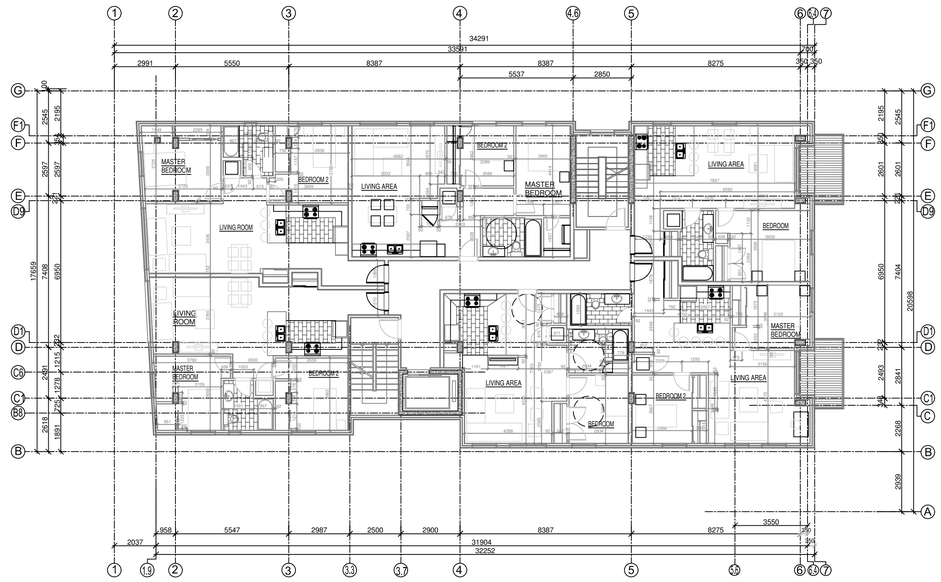
Verify /: P.Tabet

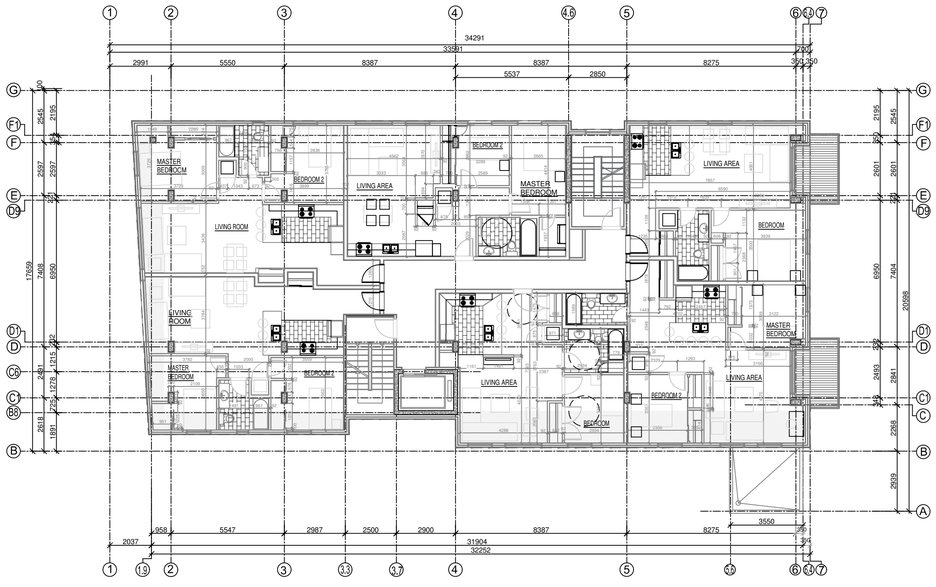
Drawing No. A-300

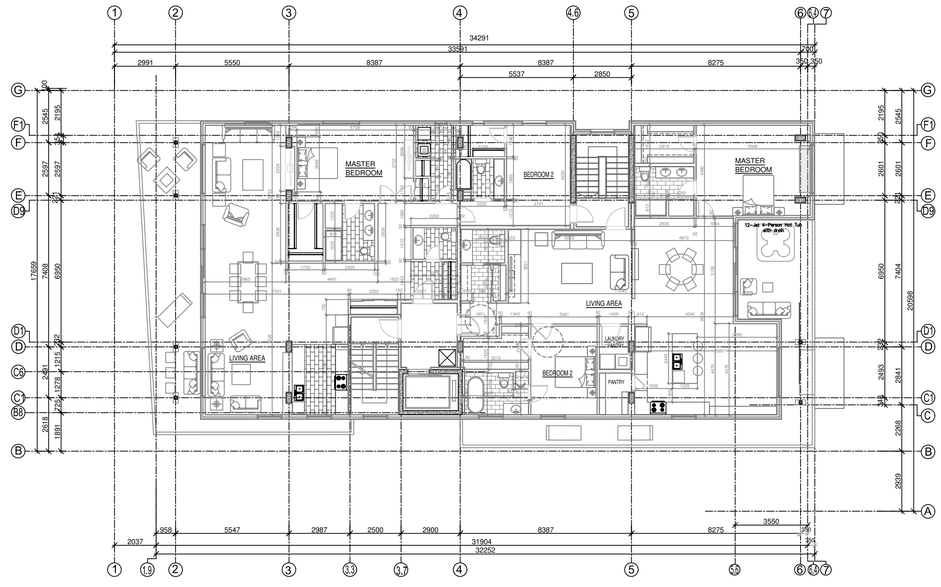
City File No. D07-12-21-0209

City Plan Number 18675









ISSUED FOR			
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			P.T.

REVISION			
No	DATE	DESCRIPTION	App.
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	2022.07.08	CITY COMMENTS 29 APRIL 2022	P.T.
	2022.09.14	COORDINATION WITH NEW CIVIL DRAWINGS	P.T.
	2022.11.24	CITY COMMENTS 22 NOVEMBER 2022	P.T.

Stamps

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pierretabetarchitecte.com

Project: ORLEANS RESIDENTIAL & MEDICAL FACILITY
3996 INNES RD, OTTAWA ON.

Title: UNDERGROUND PARKING BASEMENT PLAN

Scale: Scale: 1:150
Sheet:
Date: 2022/11/24
Drawn /: A. Aldu.
Drawing No. A-310-
Revision: 4
Verify /: P.Tabet

City File No. D07-12-21-0209

City Plan Number 18675

Appendix B

Traffic Data and Calculations

Environmental Noise Assessment

3996 Innes Road

SLR Project No.: 241.30290.00000

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)	Total Traffic Volumes	Auto %	Med %	Hvy %	Auto	Med	Heavy	Road Gradient (%)	PWL (dBA)	Source Height, s (m)	Reference Leq (dBA)
Innes Road (4 Lane UAD)	Innes Road	Daytime Impacts	60	16	32200	88.0%	7.0%	5.0%	28336	2254	1610	0	**88.7**	**1.5**	**73.7**
		Nighttime Impacts	60	8	2800	88.0%	7.0%	5.0%	2464	196	140	0	**81.1**	**1.5**	**66.1**
Mer Bleue Road (4 Lane UAD)	Mer Bleue Road	Daytime Impacts	60	16	32200	88.0%	7.0%	5.0%	28336	2254	1610	0	**88.7**	**1.5**	**73.7**
		Nighttime Impacts	60	8	2800	88.0%	7.0%	5.0%	2464	196	140	0	**81.1**	**1.5**	**66.1**

Note:
1) This schedule forms part of the Official Plan of the City of Ottawa and must be read in conjunction with the text.
2) This schedule is intended as a framework for planning and design;consequently alignments of proposed roads are approximate and subject to detailed study.
3) An unidentified new facility from Highway 416 to Highway 417 East is not shown.

Note:
1) La présente annexe fait partie du Plan officiel de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente annexe doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.
3) **Une nouvelle installation non identifiée et située entre l'autoroute 416 et l'autoroute 417E n'apparaît pas.**

SEE SCHEDULE F
VOIR ANNEXE F

City of Ottawa Official Plan Consolidation and Amendments

Ville d'Ottawa Plan officiel Amendement au plan directeur approuvé

# 14 (09/2004)	# 96 (03/2012)	# 192 (08/2017)
# 44 (06/2006)	# 97 (03/2012)	# 213 (07/2018)
# 50 (06/2006)	#113 (11/2012)	
# 77 (06/2009)	#123 (09/2019)	
# 76	#173 (01/2017)	

OMB decision/Décision de la CAMO - N° 1787; 2711;PL#160875

Official Plan - Schedule E
Urban Road Network

Prepared by: Planning, Infrastructure and Economic Development Department

Plan officiel - Annexe E
Routes Arterial - Urbain

Preparé par : Services de la planification, de l'infrastructure et du développement économique

Provincial Highway / **Route provinciale**
City Freeway / **Autoroute de ville**

Federally Owned Road / **Chemins de propriété fédéral**
Existing / Établie
Proposed / Proposé
(Alignment defined) / (Alignement déterminée)

Arterials / **Artère**
Existing / Établie
Proposed / Proposé
(Alignment Defined) / (Alignement déterminée)
Conceptual / Conceptuelle
(Alignment Undefined) / (Alignement à déterminée)

Major Collectors / **Grande collectrice**
Existing / Établie
Proposed / Proposé

Collectors / **Collectrice**
Existing / Établie
Proposed / Proposé

Ottawa

Scale / Échelle
2km 1 0 1 2 3 4km

Appendix B: Table of Traffic and Road Parameters To Be Used For Sound Level Predictions

Table B1 Traffic And Road Parameters To Be Used For Sound Level Predictions

Row Width (m)	Implied Roadway Class	AADT Vehicles/Day	Posted Speed Km/Hr	Day/Night Split %	Medium Trucks %	Heavy Trucks % [1]
NA [2]	Freeway, Queensway, Highway	18,333 per lane	100	92/8	7	5
37.5-44.5	6-Lane Urban Arterial-Divided (6 UAD)	50,000	50-80	92/8	7	5
34-37.5	4-Lane Urban Arterial-Divided (4-UAD)	35,000	50-80	92/8	7	5
23-34	4-Lane Urban Arterial-Undivided (4-UAU)	30,000	50-80	92/8	7	5
23-34	4-Lane Major Collector (4-UMCU)	24,000	40-60	92/8	7	5
30-35.5	2-Lane Rural Arterial (2-RAU)	15,000	50-80	92/8	7	5
20-30	2-Lane Urban Arterial (2-UAU)	15,000	50-80	92/8	7	5
20-30	2-Lane Major Collector (2-UMCU)	12,000	40-60	92/8	7	5
30-35.5	2-Lane Outer Rural Arterial (near the extremities of the City) (2-RAU)	10,000	50-80	92/8	7	5
20-30	2-Lane Urban Collector (2-UCU)	8,000	40-50	92/8	7	5

[1] The MOE Vehicle Classification definitions should be used to estimate automobiles, medium trucks and heavy trucks.

[2] The number of lanes is determined by the future mature state of the roadway.

Appendix C

STAMSON Output Files

Environmental Noise Assessment

3996 Innes Road

SLR Project No.: 241.30290.00000

2809354 ONTARIO INC.

3996 INNES ROAD, ORLEANS

COMPARISON OF CADNAA AND STAMSON

True North

Scale: 1:500

METRES

Date: Dec 19, 2022

Rev 1.0

Project No. 241.30290.00000

Figure No.
C.1

SLR global environmental solutions

STAMSON 5.0 NORMAL REPORT Date: 26-10-2021 16:11:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: innes1.te Time Period: 16 hours
Description:

Road data, segment # 1: Innes Rd

Car traffic volume : 28336 veh/TimePeriod
Medium truck volume : 2254 veh/TimePeriod
Heavy truck volume : 1610 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Innes Rd

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 18.25 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Innes Rd

Source height = 1.50 m

ROAD (0.00 + 72.82 + 0.00) = 72.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	73.68	0.00	-0.85	0.00	0.00	0.00	0.00	72.82

Segment Leq : 72.82 dBA

Total Leq All Segments: 72.82 dBA

Appendix D

BPN-56 Façade Calculations

Environmental Noise Assessment

3996 Innes Road

SLR Project No.: 241.30290.00000

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

ROADWAY

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs					Source Inputs			Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Free - field Correction: (dBA)	Required Indoor Sound Level: (dBA)	Required Noise Reduction: (dBA)	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Angle Correction Factor:	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Require Glazing STC (STC)
DAYTIME																	
L1-4_N_MBR	Level 1-4 - North Façade - Master Bedroom	73	3	45	31	16%	3.0	3.7	2.9	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**30**
L1-4_W_MBR	Level 1-4 - West Façade - Master Bedroom	70	3	45	28	21%	3.0	2.9	3.7	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**26**
L1-4_N_LR	Level 1-4 - North Façade - Living Room	73	3	45	31	68%	3.0	3.0	11.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**28**
L1-4_N_BR2	Level 1-4 - North Façade - Bedroom 2	73	3	45	31	16%	3.0	3.7	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**30**
L1-4_W_BR	Level 1-4 - West Façade - Bedroom	69	3	45	27	17%	3.0	3.6	3.6	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**23**
L14_W_LR	Level 1-4 - West Façade - Living Room	69	3	45	27	34%	3.0	4.3	7.4	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**23**
L1-4_E_MBR	Level 1-4 - East Façade - Master Bedroom	69	3	45	27	21%	3.0	2.8	3.8	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**24**
L1-4_E_LR	Level 1-4 - East Façade - Living Room	69	3	45	27	32%	3.0	4.6	6.4	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**24**
L5_N_LR	Level 5 - North Façade - Living Room	72	3	45	30	70%	3.0	14.2	6.8	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**30**
L5_W_LR	Level 5 - West Façade - Living Room	69	3	45	27	17%	3.0	6.8	14.2	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**18**
L5_E_LR	Level 5 - East Façade - Living Room	69	3	45	27	16%	3.0	3.7	14.2	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**17**
L5_E_MBR	Level 5 - East Façade - Master Bedroom	69	3	45	27	16%	3.0	5.7	3.8	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**23**
NIGHT-TIME																	
L1-4_N_MBR	Level 1-4 - North Façade - Master Bedroom	65	3	40	28	16%	3.0	3.7	2.9	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**26**
L1-4_W_MBR	Level 1-4 - West Façade - Master Bedroom	63	3	40	26	21%	3.0	2.9	3.7	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**23**
L1-4_N_LR	Level 1-4 - North Façade - Living Room	65	3	45	23	68%	3.0	3.0	11.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**20**
L1-4_N_BR2	Level 1-4 - North Façade - Bedroom 2	65	3	40	28	16%	3.0	3.7	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**26**
L1-4_W_BR	Level 1-4 - West Façade - Bedroom	62	3	40	25	17%	3.0	3.6	3.6	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**21**
L14_W_LR	Level 1-4 - West Façade - Living Room	62	3	45	20	34%	3.0	4.3	7.4	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**16**
L1-4_E_MBR	Level 1-4 - East Façade - Master Bedroom	62	3	40	25	21%	3.0	2.8	3.8	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**22**
L1-4_E_LR	Level 1-4 - East Façade - Living Room	62	3	45	20	32%	3.0	4.6	6.4	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**17**
L5_N_LR	Level 5 - North Façade - Living Room	64	3	45	22	70%	3.0	14.2	6.8	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**22**
L5_W_LR	Level 5 - West Façade - Living Room	60	3	45	18	17%	3.0	6.8	14.2	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**9**
L5_E_LR	Level 5 - East Façade - Living Room	61	3	45	19	16%	3.0	3.7	14.2	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**9**
L5_E_MBR	Level 5 - East Façade - Master Bedroom	61	3	40	24	16%	3.0	5.7	3.8	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	**20**

Appendix E

Required Warning Clauses

Environmental Noise Assessment

3996 Innes Road

SLR Project No.: 241.30290.00000

SUMMARY OF MITIGATION MEASURES AND WARNING CLAUSES

Warning Clauses

Warning Clauses may be used individually or in combination. The following 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:

Transportation Sources (Road)

MECP Type A Warning Clause – All units

"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 Warning Clause - All units

"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road and rail 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 D Warning Clause – All units

"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."

Appendix F

Stationary Source Sound Level Data

Environmental Noise Assessment

3996 Innes Road

SLR Project No.: 241.30290.00000

Modelling Information Summary

Source Description	Maximum Sound Power Levels (1/1 Octave Band Levels)									Modelled Sound Power Level (dBA)	Notes
	32	63	125	250	500	1000	2000	4000	8000		
North-East Commercial Building											
Rooftop 5 Ton HVAC	70	73	74	74	73	71	67	63	57	76	- Based on historical SLR data. - 60 min of operation applied during daytime/evening and 10 min during nighttime
KFC/Taco Bell											
Rooftop 10 Ton HVAC	75	78	79	79	78	76	73	68	63	81	- Based on historical SLR data. - 60 min of operation applied during daytime/evening and 15 min during nighttime
Rooftop 15 Ton HVAC	87	90	91	91	90	88	84	80	74	93	- Based on historical SLR data. - 60 min of operation applied during daytime/evening and 15 min during nighttime
Petrol Station											
Rooftop 5 Ton HVAC	70	73	74	74	73	71	67	63	57	76	- Based on historical SLR data. - 60 min of operation applied during daytime/evening and 30 min during nighttime
Touchless Car Wash											
Car Wash Dryer Entrance	92	97	92	89	95	89	90	84	77	96	- Based on historical SLR data.
Car Wash Dryer Exit	102	107	102	99	105	99	100	94	87	106	- Based on historical SLR data.
Car Wash Vacuum	80	84	81	90	78	81	85	87	84	92	- Based on historical SLR data.
Drive-Thru Idling Car Queue	--	85	80	75	72	70	69	65	55	76	- Based on average idling vehicle sound level. - 60 min of operation applied during daytime.
Kingdom Hall of Jehova's Witnesses											
5 Ton HVAC	70	73	74	74	73	71	67	63	57	76	- Based on historical SLR data. - 60 min of operation applied during daytime/evening and 15 min during nighttime
Immediate Surrounding Commercial Building											
Rooftop 5 Ton HVAC	70	73	74	74	73	71	67	63	57	76	- Based on historical SLR data. - 60 min of operation applied during daytime/evening and 10 min during nighttime

Source Description	Maximum Sound Power Levels (1/1 Octave Band Levels)									Modelled Sound Power Level (dBA)	Notes
	32	63	125	250	500	1000	2000	4000	8000		
Rooftop 10 Ton HVAC	75	78	79	79	78	76	73	68	63	81	- Based on historical SLR data. - 60 min of operation applied during daytime/evening and 10 min during nighttime