



115 Bridgeport Road East

**Environmental Noise Assessment
Waterloo, ON**

SLR Project No: 241.30409.00000

February 2022



ENVIRONMENTAL NOISE ASSESSMENT

115 Bridgeport Road East

Waterloo, Ontario

SLR Project No: 241.30409.00000

Submitted by:

SLR Consulting (Canada) Ltd.

100 Stone Road West, Suite 201

Guelph, Ontario, N1G 5L3

Prepared for:

115 Bridgeport Inc.

401 Fountain Street North

Cambridge, Ontario, N3H 1H7

February 22, 2022

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

Prepared by:



Keni Mallinen, P.Eng.

Acoustic Engineer

Reviewed by:



Marcus Li, P.Eng.

Principal, Acoustics Noise and Vibration

TABLE OF CONTENTS

TABLE OF CONTENTS.....	ii
TABLES.....	iii
FIGURES.....	iii
APPENDICES	iv
1. Introduction.....	1
1.1 Focus of Report.....	1
1.2 Nature of the Subject Lands	1
1.3 Nature of the Surroundings.....	1
PART 1: IMPACTS OF THE ENVIRONMENT ON THE DEVELOPMENT.....	2
2. Transportation Noise Impacts	2
2.1 Transportation Noise Sources	2
2.2 Surface Transportation Noise Criteria	2
2.2.1 Ministry of Environment Publication NPC-300.....	2
2.3 Traffic Data and Future Projections	4
2.3.1 Roadway Traffic Data	4
2.4 Projected Sound levels	5
2.4.1 Façade Sound Levels	5
2.4.2 Outdoor Living Areas.....	6
2.5 Façade Assessment.....	6
2.6 Ventilation and Warning Clause Requirements	6
2.6.1 Residential Units	6
2.6.2 Outdoor Amenity Areas	6
3. Stationary Source Noise Impacts.....	7
3.1 Stationary Noise Modelling	7
3.2 Stationary Noise Criteria.....	8
3.2.1 MECP NPC-300 Guidelines for Stationary Noise Sources.....	8
3.2.2 Predicted Façade Sound Levels	10
3.2.3 Predicted OLA Sound Levels	10
PART 2: IMPACTS OF THE DEVELOPMENT ON ITSELF	11
4. Stationary Source Noise Impacts on the Development Itself	11
PART 3: IMPACTS OF THE DEVELOPMENT ON THE SURROUNDING AREA	12
5. Stationary Source Noise Impacts on Surrounding Area	12
6. Conclusions and Recommendations.....	13

6.1	Transportation Noise	13
6.2	Stationary Noise.....	13
6.3	Overall Assessment.....	13
7.	References.....	14
8.	Statement of Limitations	14

TABLES

Table 1:	MECP Publication NPC-300 Sound Level Criteria for Road Traffic	3
Table 2:	MECP Publication NPC-300 Outdoor Living Area Mitigation Requirements	3
Table 3:	MECP Publication NPC-300 Ventilation & Warning Clause Requirements	3
Table 4:	MECP Publication NPC-300 Building Component Requirements.....	4
Table 5:	Summary of Road Traffic Data Used in the Transportation Analysis	4
Table 6:	Summary of Transportation Façade Sound Levels	5
Table 7:	Summary of Transportation Noise Impacts - OLAs	6
Table 8:	NPC-300 Class 1 Continuous Sound Level Limits.....	9
Table 9:	Summary of Road Traffic Data Used in the Transportation Analysis	9
Table 10:	Summary of Stationary Source Façade Sound Levels.....	10

FIGURES

Figure 1:	Context Plan
Figure 2:	Façade Sound Levels – Roadway – Daytime
Figure 3:	Façade Sound Levels – Roadway – Nighttime
Figure 4:	Outdoor Living Area Sound Levels – Roadway – Daytime
Figure 5:	Surrounding Stationary Source Locations
Figure 6:	Façade Sound Levels – Stationary Sources – Daytime
Figure 7:	Façade Sound Levels – Stationary Sources – Evening
Figure 8:	Façade Sound Levels – Stationary Sources – Night-Time
Figure 9:	Façade Sound Level Excesses – Stationary Sources – Daytime
Figure 10:	Façade Sound Level Excesses – Stationary Sources – Evening
Figure 11:	Façade Sound Level Excesses – Stationary Sources – Night-Time
Figure 12:	Outdoor Living Area Sound Levels – Stationary Sources – Daytime
Figure 13:	Outdoor Living Area Sound Levels – Stationary Sources – Evening

APPENDICES

Appendix A:	Declaration Statements
Appendix B:	Development Drawings
Appendix C:	Traffic Data and Calculations
Appendix D:	STAMSON Output File
Appendix E:	Ventilation, Warning Clause and Barrier Summary
Appendix F:	Stationary Source Modelling Data

1. INTRODUCTION

SLR Consulting (SLR) was retained by 115 Bridgeport Inc. to conduct an environmental noise assessment for the proposed development at 115 Bridgeport Road East in Waterloo, Ontario. This report is in support of the Official Plan Amendment (OPA) and Zoning Bylaw Amendment (ZBA) applications for the development. A copy of the Declaration Statements is included in **Appendix A**.

1.1 FOCUS OF REPORT

In keeping with Regional Municipality of Waterloo (RMOW) requirements, this report examines the potential for:

- Noise impacts of the environment on the proposed development;
- Noise impacts of the proposed development on the environment; and
- Noise impacts of the proposed development on itself.

1.2 NATURE OF THE SUBJECT LANDS

The proposed development is located at 115 Bridgeport Road East, Waterloo, southeast of the intersection of Bridgeport Road East and Weber Street North. The overall site also encompasses municipal addresses 109 and 133 Bridgeport Road East, and 30-32 Weber Street North, Waterloo. The site is currently primarily vacant, with the western side of the site occupied by two low-rise commercial/retail buildings fronting towards Weber Street North.

The proposed development includes a 6-storey podium structure, three towers (Buildings A, B and C), and a 6-storey parking structure (Building D) at the southeast corner of the site. The parking structure will have a ground level indoor amenity space facing towards Royal Street.

Residential units in the podium structure are planned from level 1 to level 6, along with parking on levels 1 to 4 inclusive. The podium will have a 5th floor common outdoor amenity terrace, surrounding by 5th and 6th floor residential units on the south, west and north sides. Building A will be 25 storeys in height total and located along the western side of the podium. Building B will be 24 storeys in height and located at the northeast portion of the podium, and Building C will be 22 storeys in height, located at the southeast portion of the podium. Access to the site will be either from Bridgeport Road East to the north, or from Royal Street to the south.

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

1.3 NATURE OF THE SURROUNDINGS

The proposed development site is bounded by the following:

- Bridgeport Road East, with an automotive repair shop, Shoppers Drug Mart, other small commercial/retail uses and residential apartment buildings beyond, to the north;
- Weber Street North, with commercial/retail land uses beyond, to the west;
- Royal Street, with low-density residential dwellings and Erb Street East beyond, to the south; and
- Low-rise residential detached dwellings to the east.

The topography of the development site is relatively flat. 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:

- Roadway noise impacts on the development;
- Stationary noise impacts from the surrounding commercial/retail land uses; and
- Stationary noise impacts from the proposed development mechanical equipment onto the development itself, and onto surrounding noise-sensitive receptors.

The closest railway line is located more than 500 m from the development to the southwest, and outside of the minimum separation distances for inclusion. Therefore, noise impacts from rail traffic have not been considered in this study.

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 Bridgeport Road East, Weber Street North, Erb Street East and Lincoln Road.

Roadway noise from these sources has been predicted, and this information has been used to determine façade, ventilation, and warning clause requirements for the proposed development.

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** summarize the applicable surface transportation (road) 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, Sleeping Quarters have more stringent criteria than Living/Dining room spaces.

Outdoor Amenity Areas

Table 2 summarizes the noise mitigation requirements for communal outdoor amenity areas (“Outdoor Living Areas” or “OLAs”) for road traffic.

Table 1: MECP Publication NPC-300 Sound Level Criteria for Road Traffic

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

Notes: [1] 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 Requirements
Daytime (0700-2300h)	≤ 55	• None
	56 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 would potentially 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.

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
		Road	
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

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 applicable 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	
Plane of Window	Daytime (0700-2300h)	> 65	Designed/Selected to Meet Indoor Requirements
	Night-time (2300-0700h)	> 60	

2.3 TRAFFIC DATA AND FUTURE PROJECTIONS

2.3.1 ROADWAY TRAFFIC DATA

Future average annual daily traffic (AADT) volumes and vehicle percentages for Bridgeport Road East, Weber Street North, Erb Street East, and Lincoln Road were provided by the Regional Municipality of Waterloo's Transportation department. Commercial vehicle percentages and the day/night split were also provided. Lincoln Road is under the jurisdiction of the City of Waterloo, who verified the forecasts provided by the RMOW for this roadway.

Copies of all traffic data, correspondence and related calculations are provided for reference in **Appendix C**. **Table 5** summarizes the road traffic volumes and associated details used in the analysis.

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

Roadway Link	2032 Traffic Volumes (AADT)	% Day/ Night Volume Split		Commercial Traffic Breakdown		Vehicle Speed (km/h)
		Daytime	Night-time	% Medium Trucks	% Heavy Trucks	
Bridgeport Road East ^[1]	17,700	90	10	1.0	1.0	50
Weber Street North (north of Bridgeport Road East)	24,700	90	10	1.0	1.0	60
Weber Street North (south of Bridgeport Road East)	24,200	90	10	1.0	1.0	60
Erb Street East	15,500	90	10	1.0	1.0	50
Lincoln Road ^[2]	4,700	90	10	1.0	1.0	50

Notes: [1] Data for Bridgeport Road East was provided separately for the road segments east and west of Weber Street North. Because the forecasted AADT volumes, posted speed limits and commercial vehicle rates were the same, it was treated as a single roadway link.
[2] Lincoln Road is under the jurisdiction of the City of Waterloo who has verified the information provided by the RMOW.

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 MECF. These predictions were validated and are equivalent to those made using the MECF's ORNAMENT or STAMSON v5.04 road traffic noise models. A STAMSON validation file is included for reference in **Appendix D**.

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 **Figure 2** and **Figure 3** for daytime and night-time periods, respectively.

Table 6: Summary of Transportation Facade Sound Levels

Building	Façade ^[1]	Roadway Sound Levels ^[2]	
		L _{eq} Day (dBA)	L _{eq} Night (dBA)
6-Storey Podium	North	65	59
	East	59	53
	South	63	56
	West	65	59
Building A 25-Storey Tower	North	63	56
	East	57	51
	South	60	54
	West	64	57
Building B 24-Storey Tower	North	62	55
	East	58	52
	South	54	48
	West	59	53
Building C 22-Storey Tower	North	53	47
	East	55	48
	South	58	52
	West	58	52

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

[2] The sound levels presented are for the worst-case exposed façade.

The highest façade roadway sound levels are predicted to be below 65 dBA and 60 dBA during the daytime and nighttime periods, respectively. Therefore, based on the guidelines in NPC-300 referenced in **Table 4**, an assessment of building components is not required for the proposed development.

2.4.2 OUTDOOR LIVING AREAS

The proposed development will have a common 5th floor Outdoor Living Areas (OLA) between the three towers, Buildings A, B and C.

The predicted noise impact from the surrounding roadways onto the proposed development OLA is shown in **Figure 4** and summarized in **Table 7**.

Table 7: Summary of Transportation Noise Impacts - OLAs

ID	Location	Transportation Impacts Leq Day (dBA)
OLA 1	5 th Floor Common Outdoor Amenity Terrace	44

Sound levels are predicted to be below 55 dBA at the OLA, and therefore no mitigation is required.

As the development includes a common amenity space for all occupants, the private terraces/balconies are not considered to be the only outdoor amenity spaces available. Therefore, an assessment of private terraces and balconies was excluded based on the definitions outlined in NPC-300.

2.5 FAÇADE ASSESSMENT

Based on the values presented in **Table 6**, predicted façade sound levels are below 65 dBA during the daytime and 60 dBA during the night-time at the worst-case locations on the development. Therefore, construction meeting the minimum Ontario Building Code (OBC) is considered sufficient. Upgraded glazing is not required for the development.

2.6 VENTILATION AND WARNING CLAUSE REQUIREMENTS

2.6.1 RESIDENTIAL UNITS

The requirements for warning clauses are summarized in **Table 3**. Where required, the Warning Clauses should be included in agreements registered on Title for the residential units, 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 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:

- 6-Storey Podium – Outer units along the north, east, west and south facades;
- Building A – Units on all facades;
- Building B – Units along the west, north and east facades; and
- Building C – Units along the west and south facades.

2.6.2 OUTDOOR AMENITY AREAS

As the predicted OLA sound levels are below 55 dBA at all assessment locations, warning clauses are not required.

3. STATIONARY SOURCE NOISE IMPACTS

Site visits to the proposed development site and surrounding area were completed by SLR personnel on January 4, 2022 between approximately 2:00 PM and 4:00 PM, and January 13, 2022 between approximately 6:00 PM and 6:30 PM. The site was found to be primarily surrounded by commercial/retail and residential land uses. Refer to the context plan shown in **Figure 1**.

As the surrounding area contains nearby 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 based on these guidelines, in which a 70 m influence area was applied for the inclusion of stationary noise sources to assess. The 70 m influence area from the proposed development property line is shown in yellow in **Figure 5**.

The closest Class 2 facilities are outside of the 300 m area of influence defined in MECP Guideline D-6.

The closest industrial facility to the proposed development is located more than 700 m away, and is separated by many intervening residential dwellings. As NPC-300 limits are expected to be met at the much closer existing intervening homes, adverse impacts are not expected at the proposed development. Therefore, a detailed assessment of other industries was not completed.

3.1 STATIONARY NOISE MODELLING

Based on previous studies of similar facilities, aerial imagery, and information obtained from the two site visits conducted by SLR staff, the significant sources of noise with the potential to impact the proposed development have been identified. Modelled noise sources include the following.

- Shopper's Drug Mart – 50 Weber Street North:
 - Five (5) rooftop HVAC units;
 - Four (4) rooftop cooling units; and
 - One (1) idling refrigerated delivery truck. **Note:** the City of Waterloo Noise By-Law No. 2010-073 prohibits loading/unloading activities between 7:00am and 7:00pm; therefore, idling has only been considered during daytime hours.
- PTH Auto Inc. & Bridgeport Road Service Centre – 120 Bridgeport Road East:
 - Six (6) open bay doors with noise breakout due to use of tools (i.e., impact wrenches, compressed air).
- S.G. Cunningham Limited – 35 Weber Street North:
 - Two (2) rooftop HVAC units
- Signs by McDougall – 31 Weber Street North:
 - One (1) rooftop exhaust stack
- Meineke Car Care Center – 29 Weber Street North:
 - Three (3) open bay doors with noise breakout due to use of tools (i.e., impact wrenches, compressed air).

- Hakim Optical Waterloo – 21 Weber Street North:
 - Two (2) rooftop 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 (predictable worst-case assessment of noise levels):

- Temperature: 10°C;
- Relative Humidity: 70%;
- Ground Absorption G: $G = 0.0$ (reflective) as the default global parameter;
- Reflection: Two (2) orders of reflection were 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.

Sound level data from site visit measurements and 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 generally dominated by roadway noise from Bridgeport Road East, Weber Road North, and Erb Street East during all periods of the day. Therefore, the proposed development is considered to be located in a Class 1 area.

The sound level limits 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 8** for steady sound sources.

Table 8: NPC-300 Class 1 Continuous Sound Level Limits

Receiver Category	Time Period	Exclusionary Sound Level Limits L_{eq} (1 hr), dBA ^[1]
Outdoor	0700 – 1900h	50
	1900 – 2300h	50
	2300 – 0700h	-
Plane of Window ^[2]	0700 – 1900h	50
	1900 – 2300h	50
	2300 – 0700h	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 for most facades and time periods, sound exposures from roadway noise were assessed and the corresponding applicable guideline limits were determined.

Table 9 summarizes the current road traffic volumes and details applied in the ambient noise modelling.

Table 9: Summary of Road Traffic Data Used in the Transportation Analysis

Roadway Link	Traffic Volumes ^[1] (AADT)	Worst-Case Hour for Day / Eve / Night % of AADT			Commercial Traffic Breakdown ^[1]		Vehicle Speed (km/h)
		Daytime	Evening	Night-time	% Medium Trucks	% Heavy Trucks	
Bridgeport Road East	16,000	4.3	3.1	0.4	1.0	1.0	50
Weber Street North (north of Bridgeport Road East)	23,500	4.3	3.1	0.4	1.0	1.0	60
Weber Street North (south of Bridgeport Road East)	23,000	4.3	3.1	0.4	1.0	1.0	60
Erb Street East	14,000	4.3	3.1	0.4	1.0	1.0	50
Lincoln Road	4,200	4.3	3.1	0.4	1.0	1.0	50

Notes: [1] Provided by RMOW for 2022. Data for Bridgeport Road East was provided separately for the road segments east and west of Weber Street North. Because the forecasted AADT volumes, posted speed limits and commercial vehicle rates were the same, it was treated as a single roadway link.

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 most periods of the day at assessment locations on the facades of the proposed development.

Surrounding facility noise impacts were assessed against the higher of the modelled ambient noise levels and the exclusionary limits calculated using road traffic data summarized in **Table 9**. Ambient sound levels were generally higher than the minimum exclusionary limits, with the exception of façades noted in **Table 10**.

3.2.2 PREDICTED FAÇADE SOUND LEVELS

The “building evaluation” feature of Cadna/A was used to assess noise impacts on the residential portions of the proposed development podium and towers. 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 10**, and **Figures 6, 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, 10, and 11** for daytime, evening and night-time periods, respectively.

Table 10: Summary of Stationary Source Façade Sound Levels

Building	Façade ^[1]	Stationary Source Sound Levels ^[2]			Ambient Levels		
		L _{eq} Day (dBA)	L _{eq} Evening (dBA)	L _{eq} Night (dBA)	L _{eq} Day (dBA)	L _{eq} Evening (dBA)	L _{eq} Night (dBA)
6-Storey Podium	North	57	47	44	≤ 64	≤ 62	≤ 53
	East	49	40	37	≤ 58	≤ 56	≤ 47
	South	56	41	35	≤ 61	≤ 60	≤ 51
	West	57	43	38	≤ 64	≤ 63	≤ 54
Building A 25-Storey Tower	North	51	47	44	≤ 61	≤ 60	≤ 51
	East	50	41	39	≤ 56	≤ 54	45 ^[3]
	South	55	39	33	≤ 59	≤ 57	≤ 49
	West	55	44	40	≤ 62	≤ 61	≤ 52
Building B 24-Storey Tower	North	55	46	43	≤ 60	≤ 59	≤ 50
	East	41	28	25	≤ 57	≤ 55	≤ 46
	South	43	39	35	≤ 53	≤ 51	45 ^[3]
	West	50	46	43	≤ 58	≤ 56	≤ 48
Building C 22-Storey Tower	North	48	43	40	≤ 52	50 ^[3]	45 ^[3]
	East	29	18	14	≤ 53	≤ 52	45 ^[3]
	South	51	37	31	≤ 57	≤ 56	≤ 47
	West	53	44	40	≤ 57	≤ 55	≤ 46

Notes: [1] Façade locations are identified on **Figure 6, Figure 7 and Figure 8**.

[2] Sound levels shown represent the calculated worst-case impact along the identified façade.

[3] The minimum exclusionary limit is higher than or equal to the predicted ambient sound level and was therefore used as the assessment criterion for that façade.

As shown in **Figures 9, 10, and 11**, the stationary source noise impacts were found to be at or below established sound level limits for all façades, during daytime, evening and night-time periods. Therefore, the applicable guideline limits are met on all façades of the proposed development.

3.2.3 PREDICTED OLA SOUND LEVELS

The predicted worst-case noise impacts from the stationary sources are shown in **Figure 12 and Figure 13** for daytime and evening periods, respectively. Predicted OLA sound levels are below the default Class 1 criteria of 50 dBA for outdoor amenity spaces during daytime and evening hours, respectively. Therefore, noise mitigation is not required.

PART 2: IMPACTS OF THE DEVELOPMENT ON ITSELF

4. STATIONARY SOURCE NOISE IMPACTS ON THE DEVELOPMENT ITSELF

The building mechanical systems (e.g., make-up air units, cooling units, and parking garage vents) have not been selected or 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 itself.

Therefore, the potential noise impacts from mechanical systems should be assessed as part of the final building design. 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 appropriate control measures (e.g., silencers, barriers) into the design.

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

PART 3: IMPACTS OF THE DEVELOPMENT ON THE SURROUNDING AREA

5. STATIONARY SOURCE NOISE IMPACTS ON SURROUNDING AREA

With respect to the noise environment of the area (i.e., Class 1), 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 potential noise impacts.

Other noise sources associated with the proposed development with possible adverse impacts on the surrounding neighbourhood are mechanical equipment (e.g., make up air units, cooling units, and parking garage vents). Sound levels due to operation of these sources are required to meet MECP Publication NPC-300 limits at off-site noise sensitive receptors.

Off-site impacts are not anticipated given the elevated ambient sound levels in the area, and because systems will be designed to ensure that the applicable noise guidelines are met at on-site receptors.

Regardless, potential impacts will be assessed as part of the final building design to ensure compliance. The applicable criteria can be met at all surrounding and on-site receptors through the use of routine mitigation measures, including 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 that the mechanical systems be reviewed by an accredited Acoustical Consultant prior to final selection of equipment.

6. CONCLUSIONS 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 this assessment, the following conclusions have been reached:

6.1 TRANSPORTATION NOISE

- An assessment of transportation noise impacts from surrounding roadways has been completed.
- Based on predicted transportation façade sound levels, upgraded glazing is not required for the development.
- Noise impacts at the common outdoor amenity area are predicted to be within acceptable levels without the need for mitigation measures.
- As required by MECP Publication NPC-300, the provision for AC and **Type C** Warning Clauses should be included in agreements registered on Title for the residential units and included in agreements of purchase and sale, outlined in **Section 2.6**. Warning Clauses are summarized in **Appendix E**.

6.2 STATIONARY NOISE

- Stationary source noise impacts onto the proposed development from the surrounding commercial facilities were assessed, as outlined in **Section 3**.
- Noise impacts from the surrounding stationary sources are predicted to meet applicable guideline limits at all building façade and at outdoor living area locations without the need for noise control measures.

6.3 OVERALL ASSESSMENT

- Impacts of the environment on the proposed development can be adequately controlled without upgraded glazing, without acoustic barriers, with the inclusion of appropriate ventilation and warning clause requirements, as detailed in **Part 1** of this report.
- Impacts of the proposed development on itself are not anticipated and can be adequately controlled by following the design guidance 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 by following the design guidance outlined in **Part 3** of this report.
- As the mechanical systems for the proposed development have not been designed at the time of this assessment, equipment selections and acoustical design should be reviewed by an accredited Acoustical Consultant as part of the final building design.

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.

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

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

Ontario Ministry of the Environment, Conservation and Parks, 1996, STAMSON v5.04: Road, Rail and Rapid Transit Noise Prediction.

8. 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 115 Bridgeport 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.

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

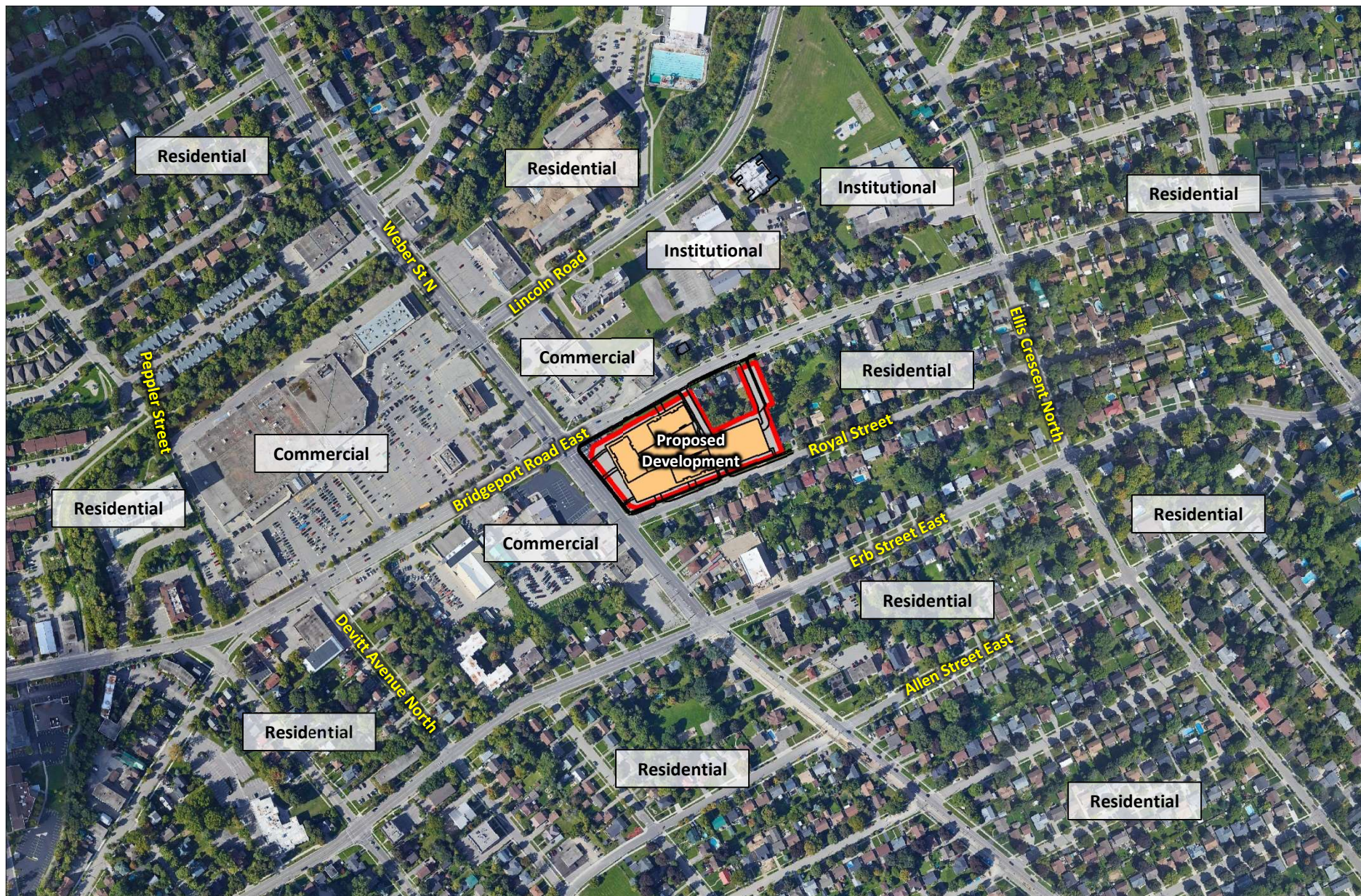
Opinions and recommendations contained in this report are based on conditions that existed at the time the services were performed and are intended only for the client, purposes, locations, time frames and project parameters as outlined in the Scope of Work and agreement between SLR and the Client. The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

 FIGURES**Environmental Noise Assessment**

115 Bridgeport Inc.

Waterloo, ON

SLR Project No.: 241.30409.00000



115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

CONTEXT PLAN

True North



Scale: 1:5000

Date: 2022-02-22

Rev 1.0

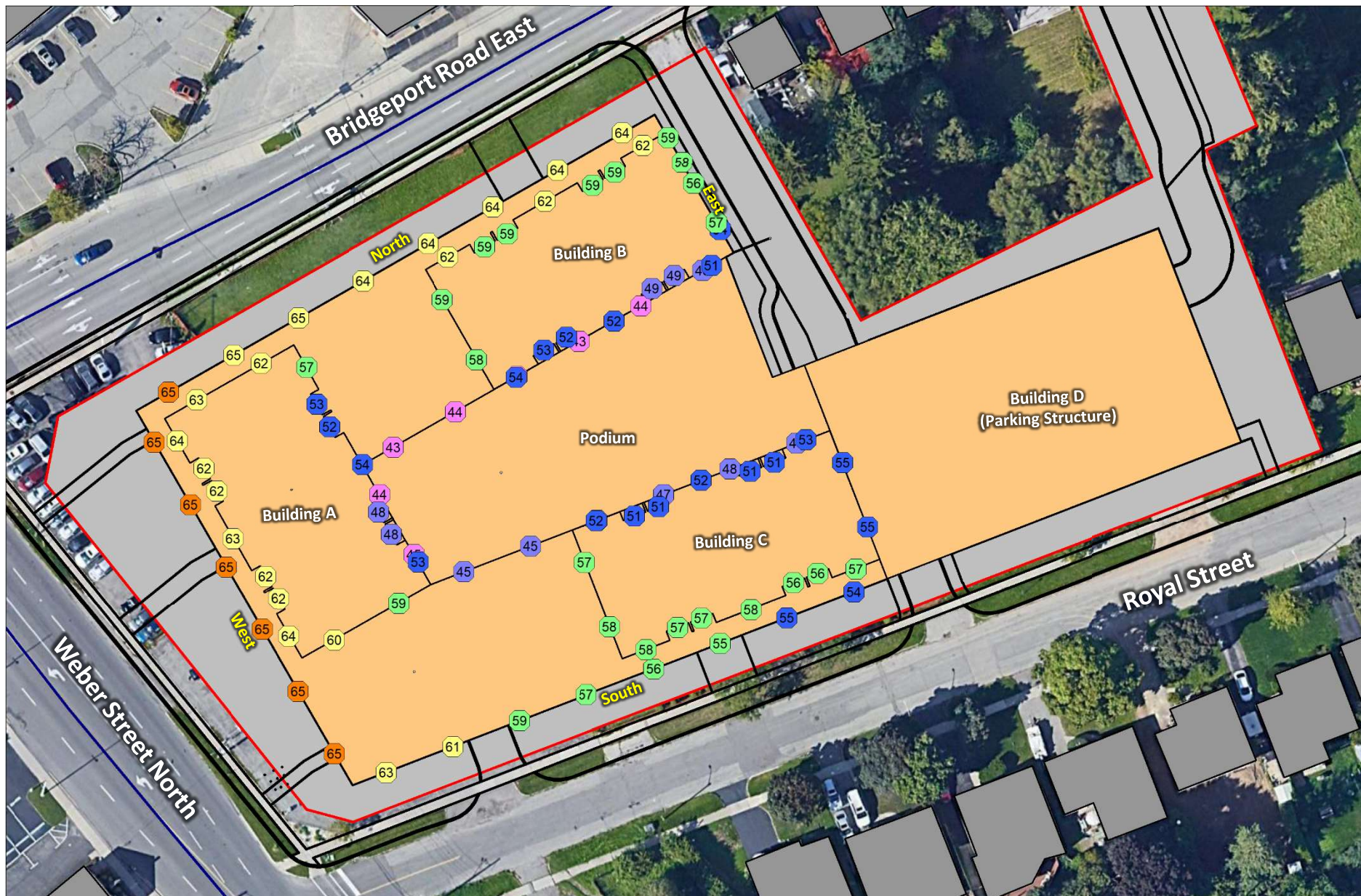
Project No. 241.30409.00000

METRES

Figure No.

1





115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

FAÇADE SOUND LEVELS – ROADWAY – DAYTIME

True North



Scale:

1:750

METRES

Date: 2022-02-22

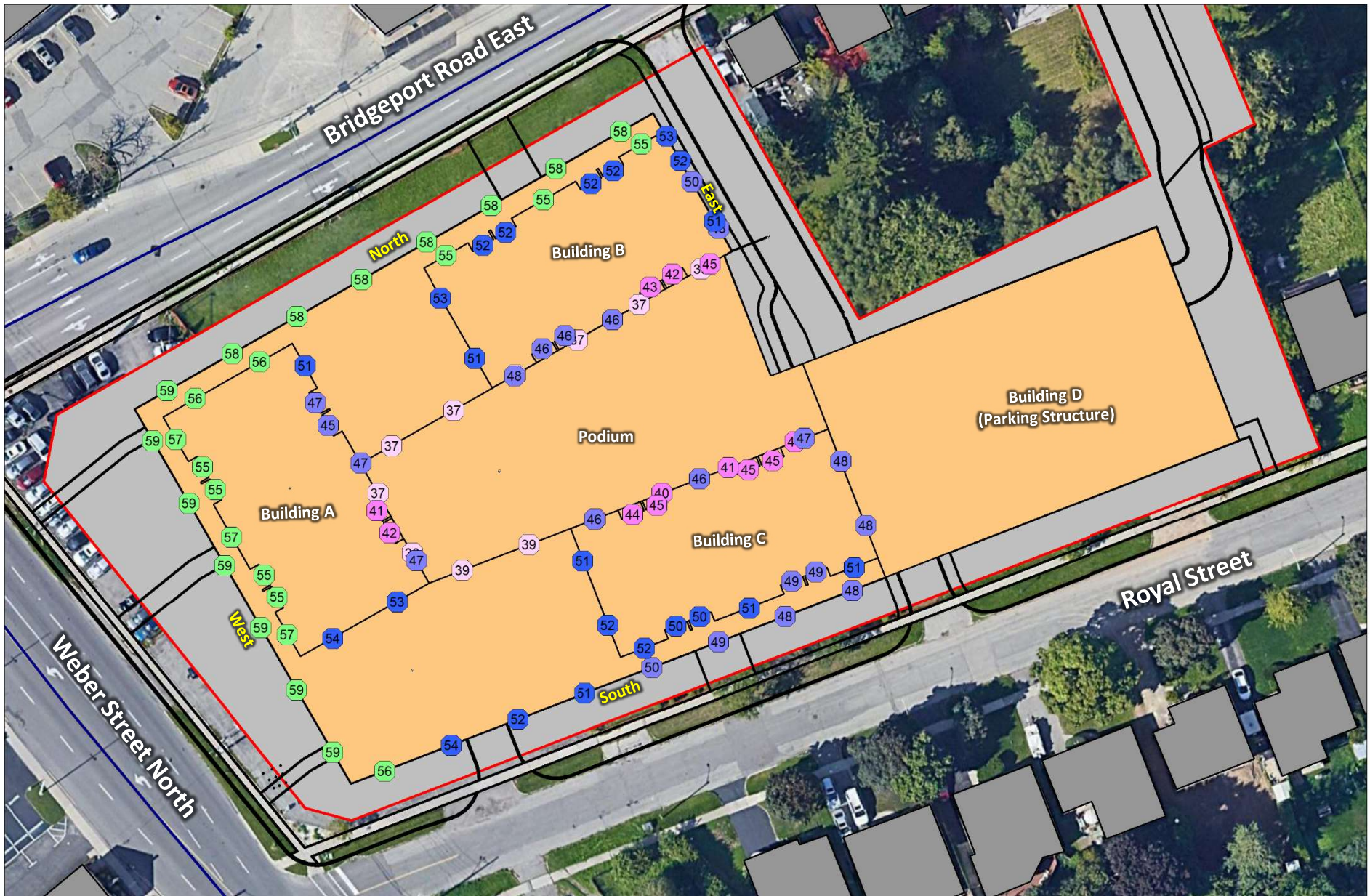
Rev 1.0

Figure No.

Project No. 241.30409.00000

2





115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

FAÇADE SOUND LEVELS – ROADWAY – NIGHT-TIME

True North



Scale:

1:750

METRES

Date: 2022-02-22

Rev 1.0

Figure No.

3

Project No. 241.30409.00000





115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

OUTDOOR LIVING AREA SOUND LEVELS – ROADWAY – DAYTIME

True North



Scale:

1:750

METRES

Date: 2022-02-22

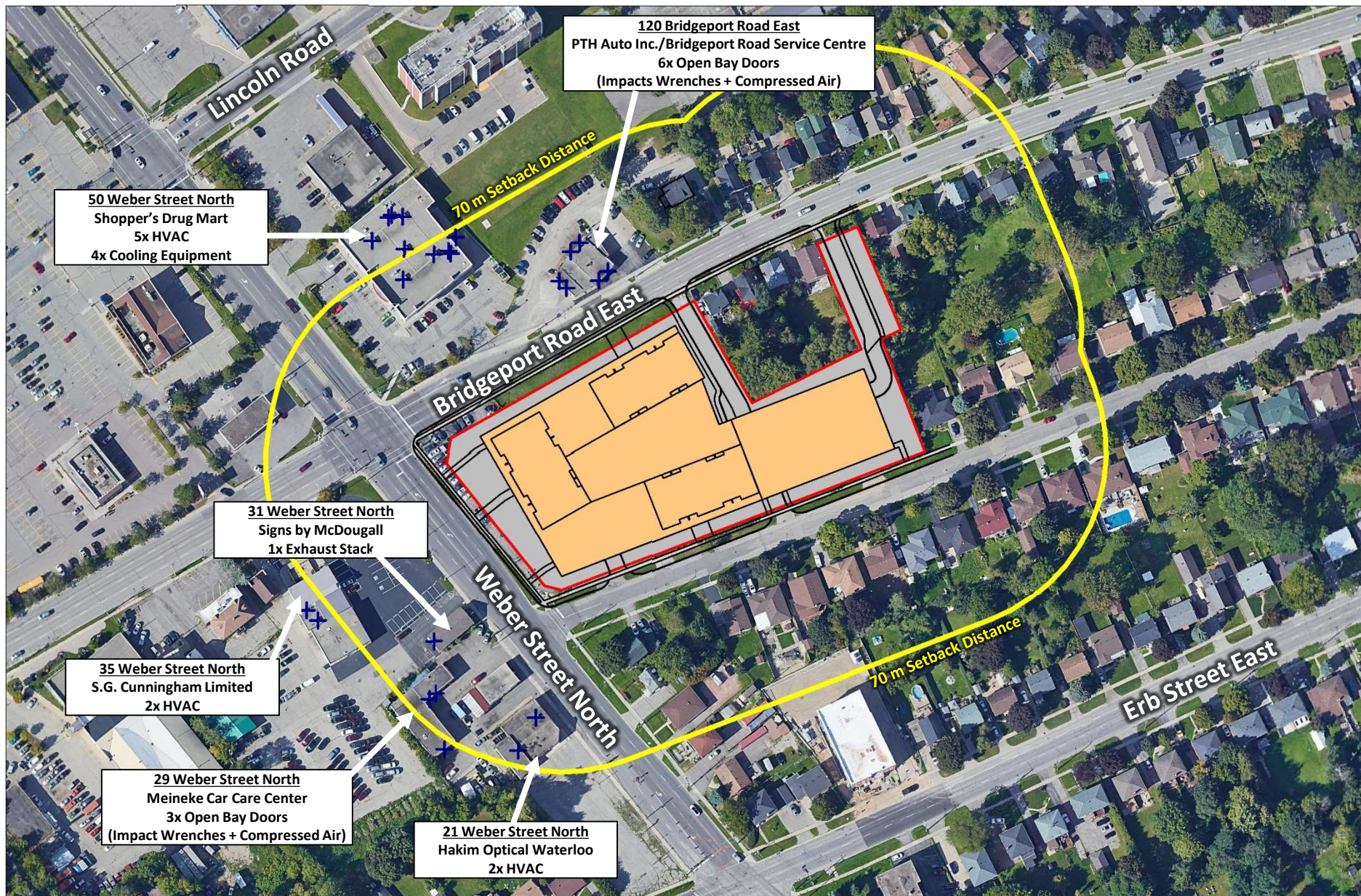
Rev 1.0

Figure No.

4

Project No. 241.30409.00000





115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

SURROUNDING STATIONARY SOURCE LOCATIONS

True North



Scale:

1:2000

METRES

Date: 2022-02-22

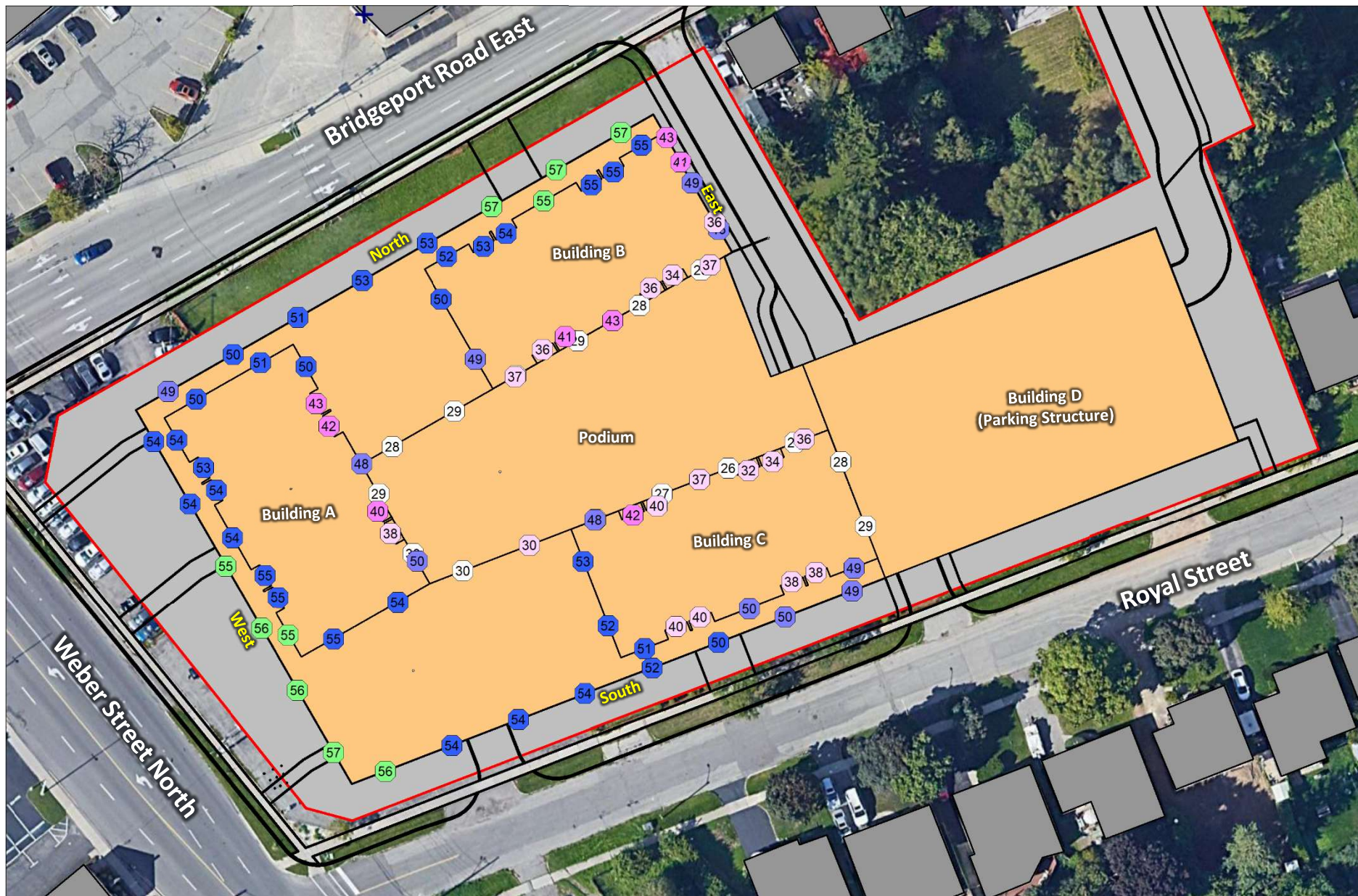
Rev 1.0

Figure No.

5

Project No. 241.30409.00000





115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

FAÇADE SOUND LEVELS – STATIONARY SOURCES – DAYTIME

True North



Scale:

1:750

METRES

Date: 2022-02-22

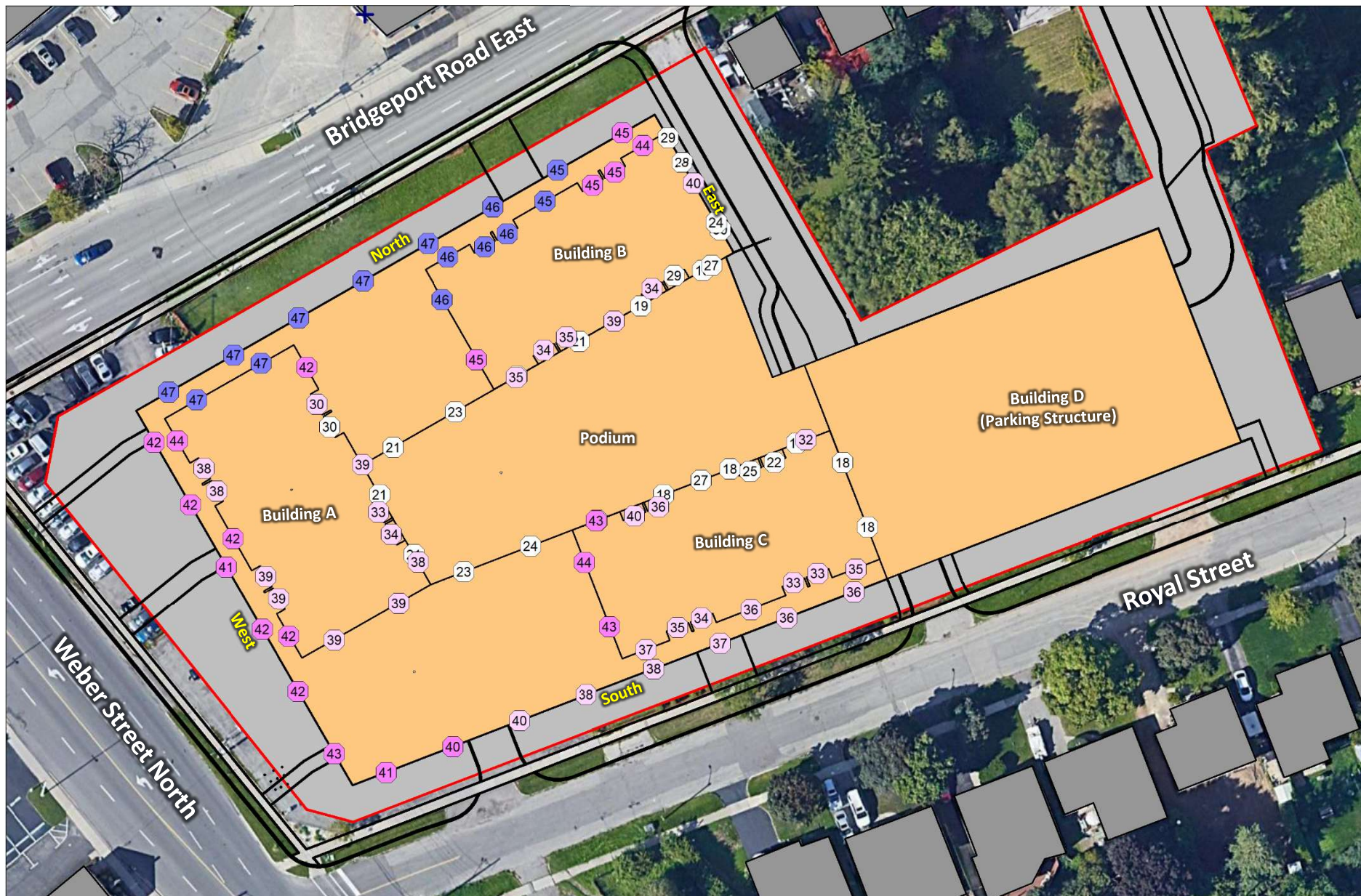
Rev 1.0

Figure No.

Project No. 241.30409.00000

6





115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

FAÇADE SOUND LEVELS – STATIONARY SOURCES – EVENING

True North



Scale:

1:750

METRES

Date: 2022-02-22

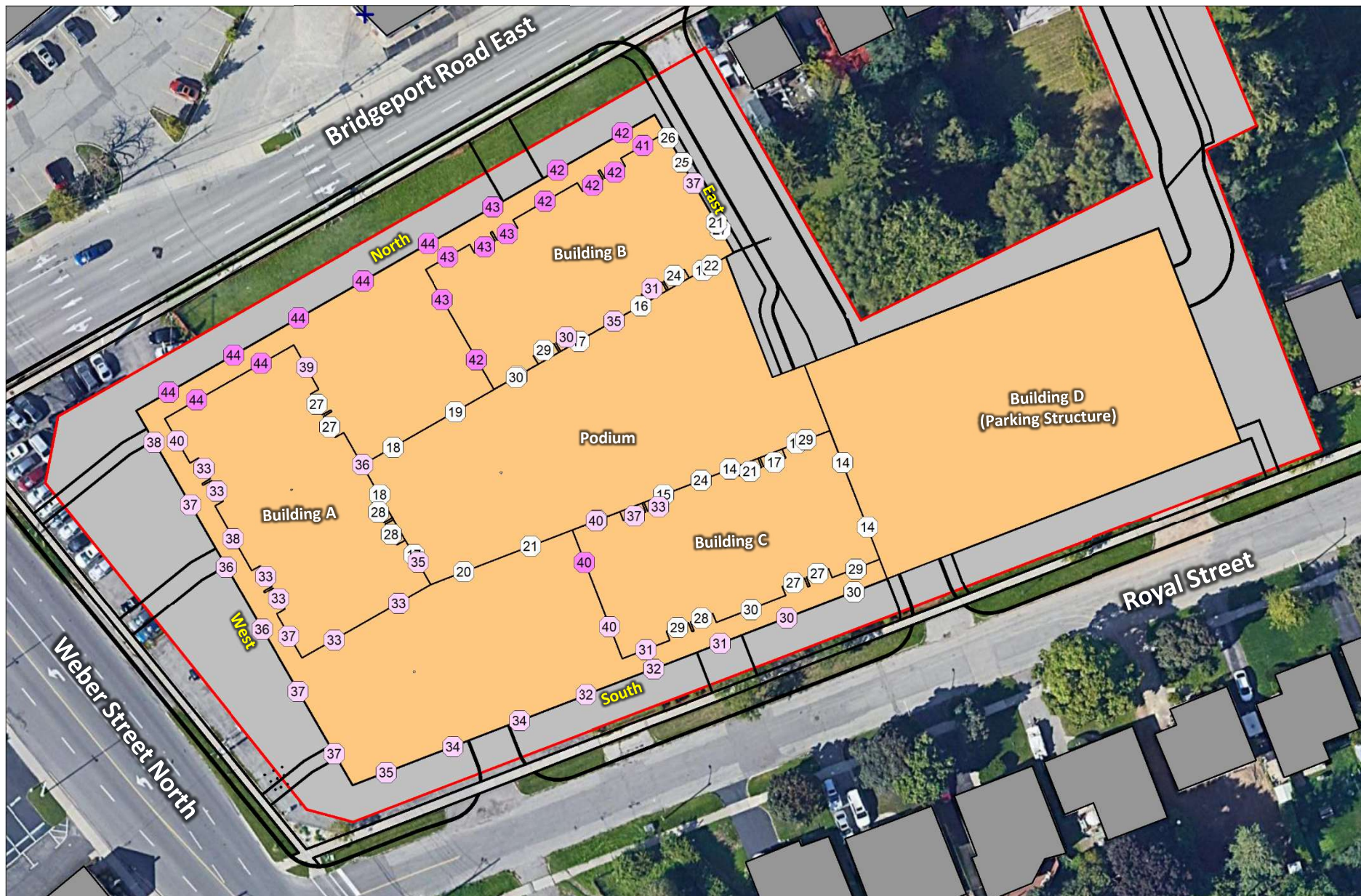
Rev 1.0

Figure No.

Project No. 241.30409.00000

7





115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

FAÇADE SOUND LEVELS – STATIONARY SOURCES – NIGHT-TIME

True North



Scale:

1:750

METRES

Date: 2022-02-22

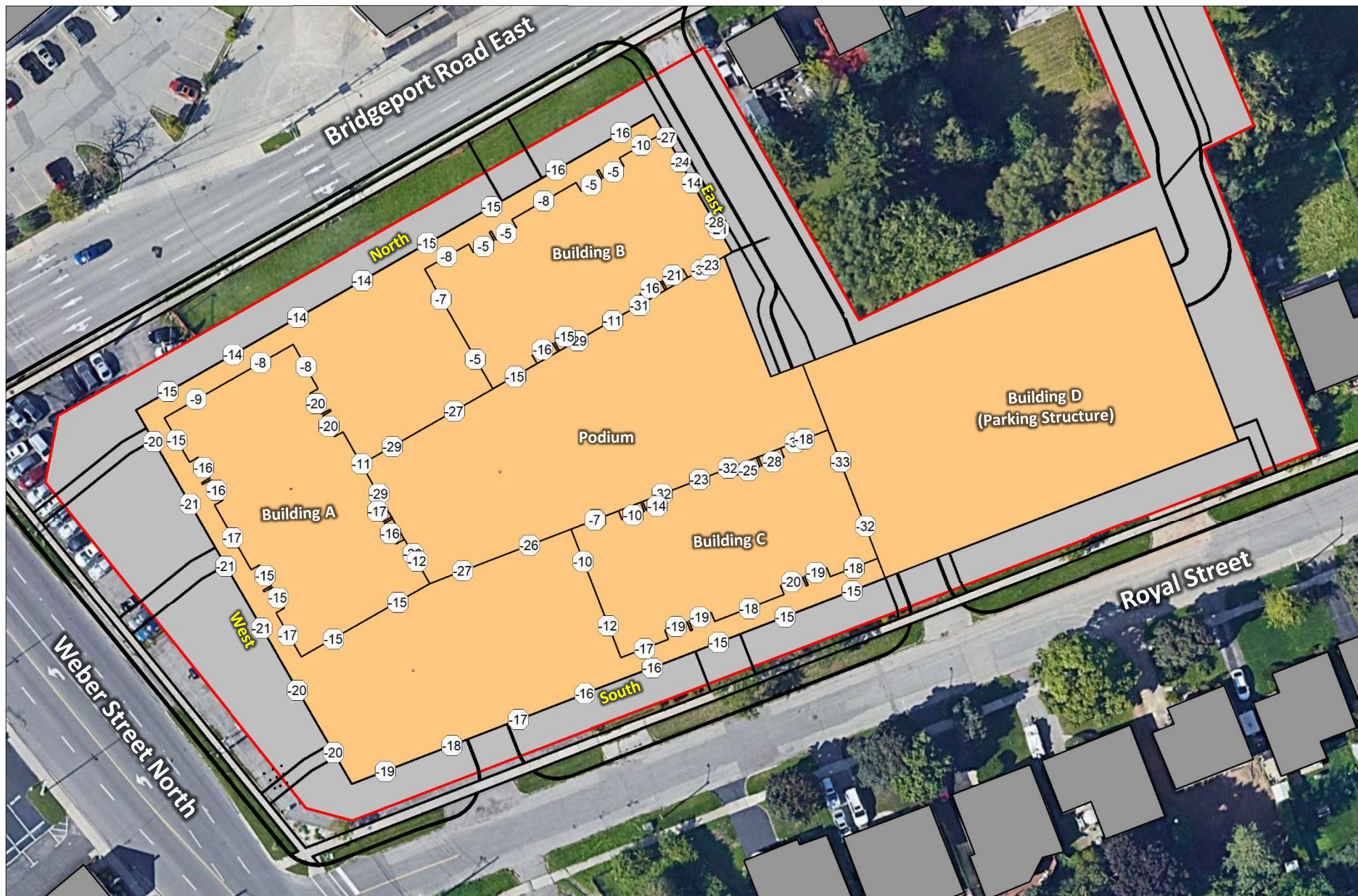
Rev 1.0

Figure No.

8

Project No. 241.30409.00000





8185 BRIDGEPORT INC.

81-85 BRIDGEPORT ROAD EAST, WATERLOO

FAÇADE SOUND LEVEL EXCESSES – STATIONARY SOURCES – EVENING

True North



Scale:

1:750

METRES

Date: 2022-02-22

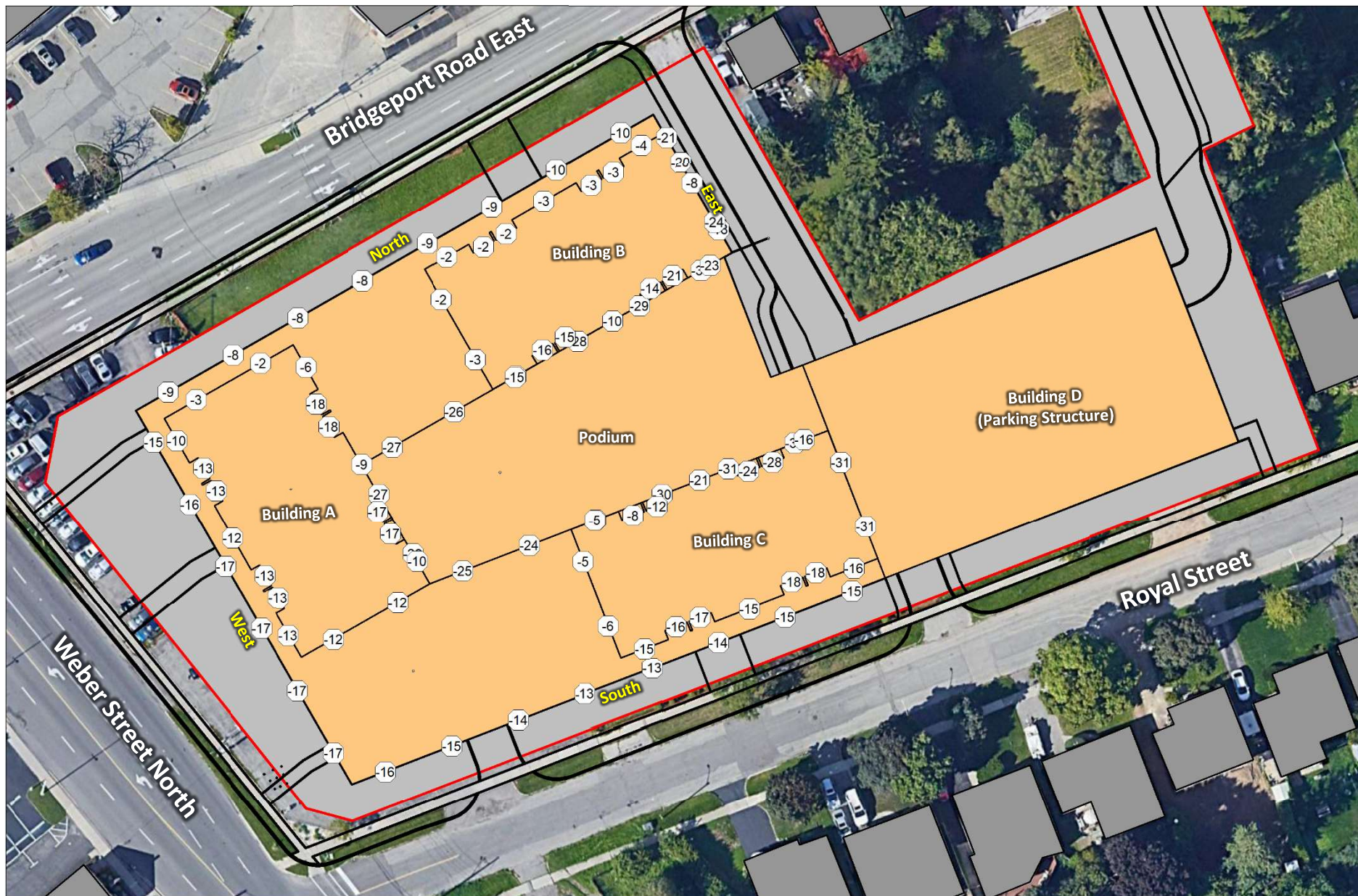
Rev 1.0

Figure No.

10

Project No. 241.30408.00000





115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

FAÇADE SOUND LEVEL EXCESSES – STATIONARY SOURCES – NIGHT-TIME

True North



Scale:

1:750

METRES

Date: 2022-02-22

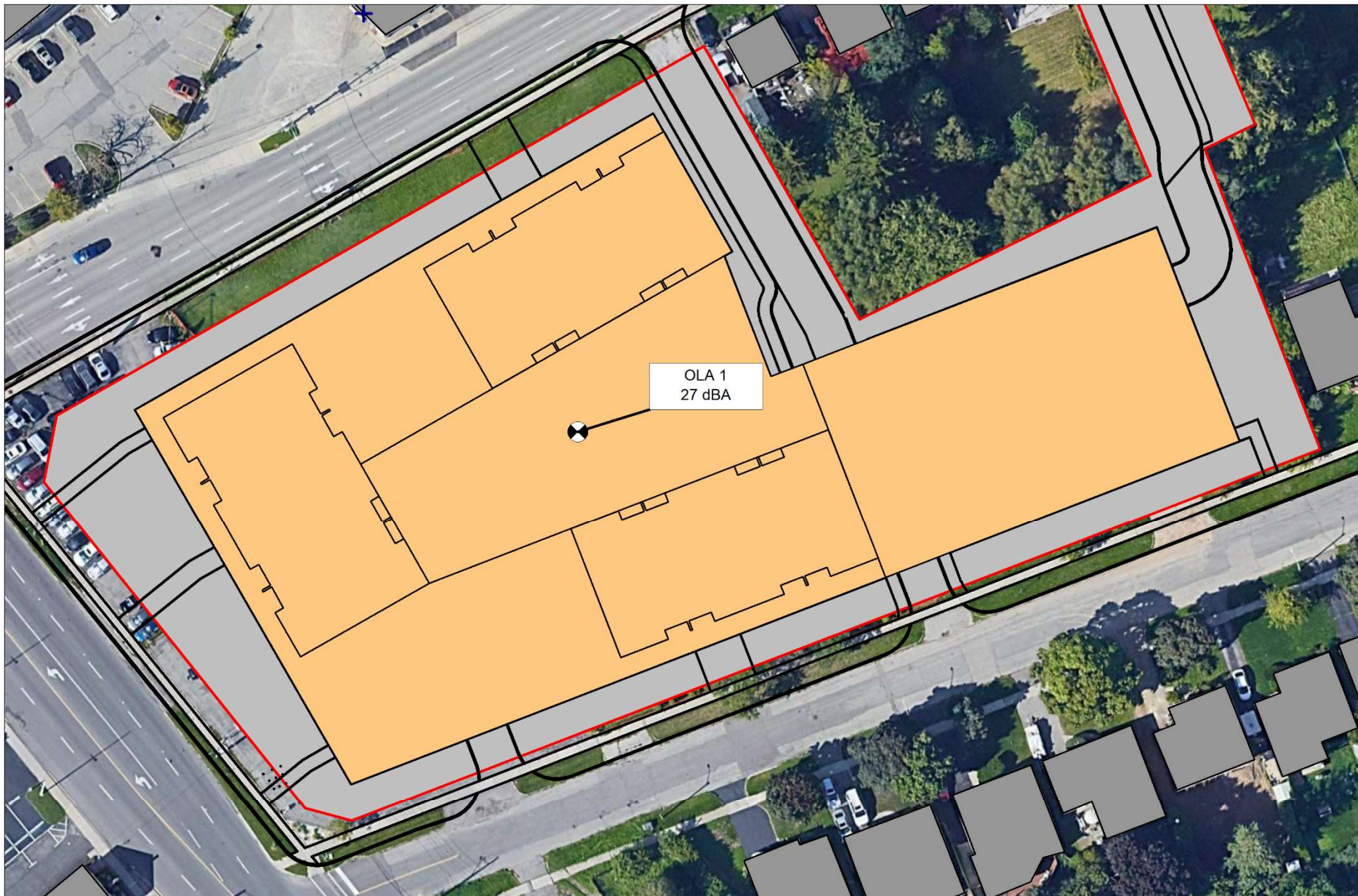
Rev 1.0

Figure No.

11

Project No. 241.30409.00000





115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

OUTDOOR LIVING AREA SOUND LEVELS – STATIONARY SOURCES - DAYTIME

True North



Scale:

1:750

METRES

Date: 2022-02-22

Rev 1.0

Project No. 241.30409.00000

Figure No.

12





115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

OUTDOOR LIVING AREA SOUND LEVELS – STATIONARY SOURCES - EVENING

True North



Scale:

1:750

METRES

Date: 2022-02-22

Rev 1.0

Project No. 241.30409.00000

Figure No.

13



 Appendix A

Declaration Statements

Environmental Noise Assessment

115 Bridgeport Inc.

Waterloo, ON

SLR Project No.: 241.30409.00000

CANADA
PROVINCE OF ONTARIO

) In the Matter of the
) Environmental Protection
) Act and the Planning Act
)
) And in the Matter of 115 Bridgeport
) Road East in the City of Waterloo
) in the Regional Municipality
) of Waterloo

I, Marcus Li, P.Eng., of the Town of Oakville, in the Halton Region, SOLEMNLY DECLARE THAT:

1. I am a Professional Engineer employed by SLR Consulting (Canada) Ltd., which holds a Certificate of Authorization from the Association of Professional Engineers of Ontario and have personal knowledge of the matters set out below.
2. I was retained or employed as the principal consultant to undertake the assessment of noise impacts and recommendation of noise mitigation measures for the property described as 115 Bridgeport Road East in Waterloo, Ontario.
3. I have the expertise required to perform these services. Any assessment activities or recommendations requiring the application of engineering principles have been undertaken or supervised by an engineer qualified to perform such services.
4. The information used in the study entitled:
"115 Bridgeport Road East – Environmental Noise Assessment, Waterloo, ON, SLR Project No: 241.30409.00000"
and dated February 22, 2022 is based on the best information available as of the date of the study.
5. The noise level calculations, the interpretation of noise attenuation requirements, and the recommended measures are in accordance with Ministry of Environment guidelines, Region Municipality of Waterloo policies, and any applicable policy or guidelines of the Area Municipality, and any other applicable policy or guideline.
6. The physical noise attenuation measures proposed in this study are feasible to implement and will provide the level of attenuation indicated in the study.
7. I acknowledge that this study may be subject to a peer review conducted at my cost.
8. I acknowledge that public authorities and future owners, occupants and others may rely on this statement.

AND I make this solemn Declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath.

DECLARED before me at the City
of Guelph, in the County of
Wellington,
this 23 day of Feb, 2022

)
)
) Marcus Li
)



Wanda-Lee Harris, Notary Public,
County of Wellington, limited to the attestation
of instruments and the taking of affidavits,
for SLR Consulting (Canada) Ltd. and
Novus Environmental.
Expires January 14, 2023

Wanda-Lee Harris

PROVINCE OF ONTARIO

) In the Matter of the
) Environmental Protection
) Act and the Planning Act
)
) And in the Matter of 115 Bridgeport
) Road East in the City of Waterloo
) in the Regional Municipality
) of Waterloo

this 22nd day of February 2022.

)
)
)
)
)
)
)

 Appendix B

Development Drawings

Environmental Noise Assessment

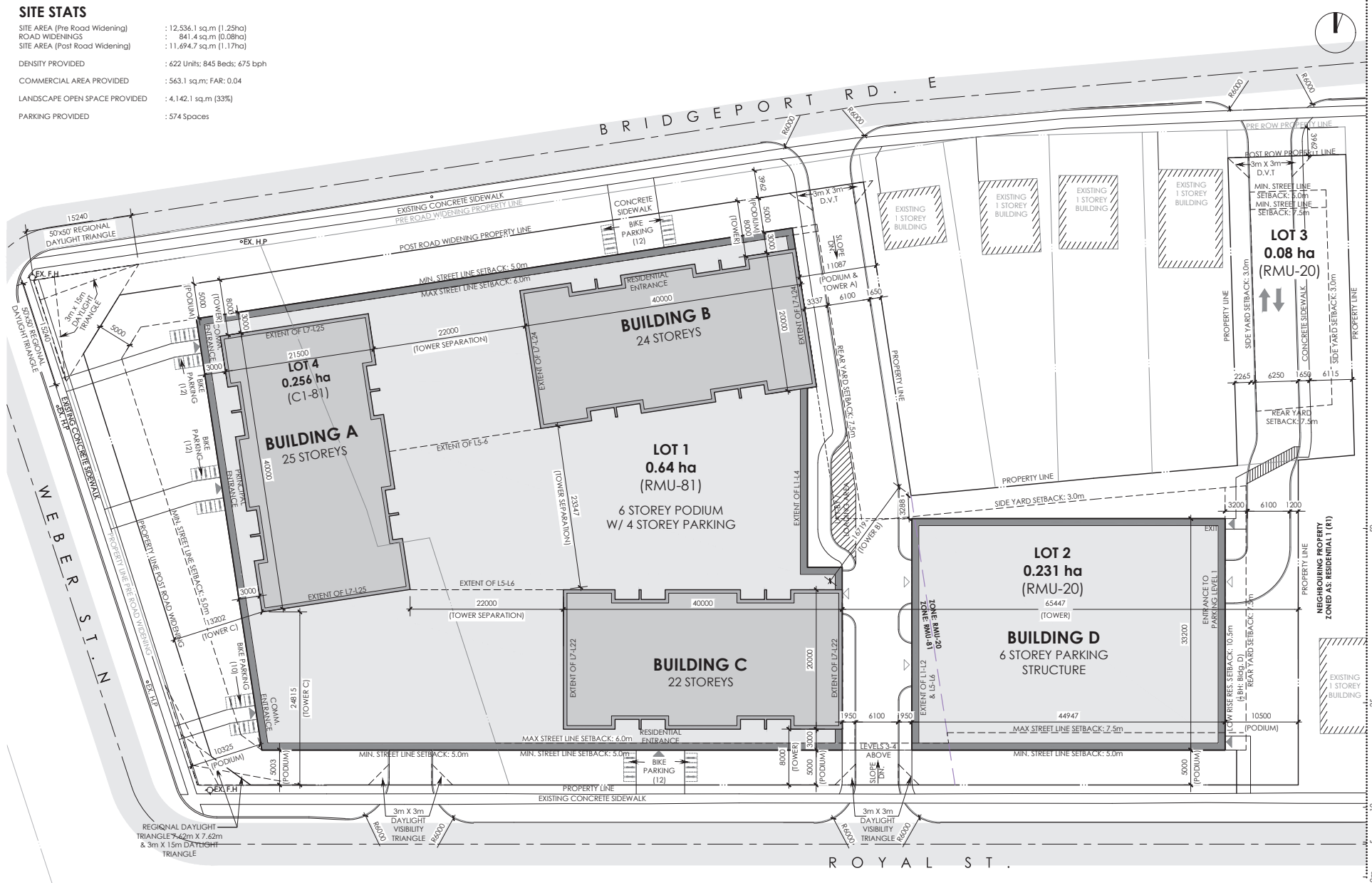
115 Bridgeport Inc.

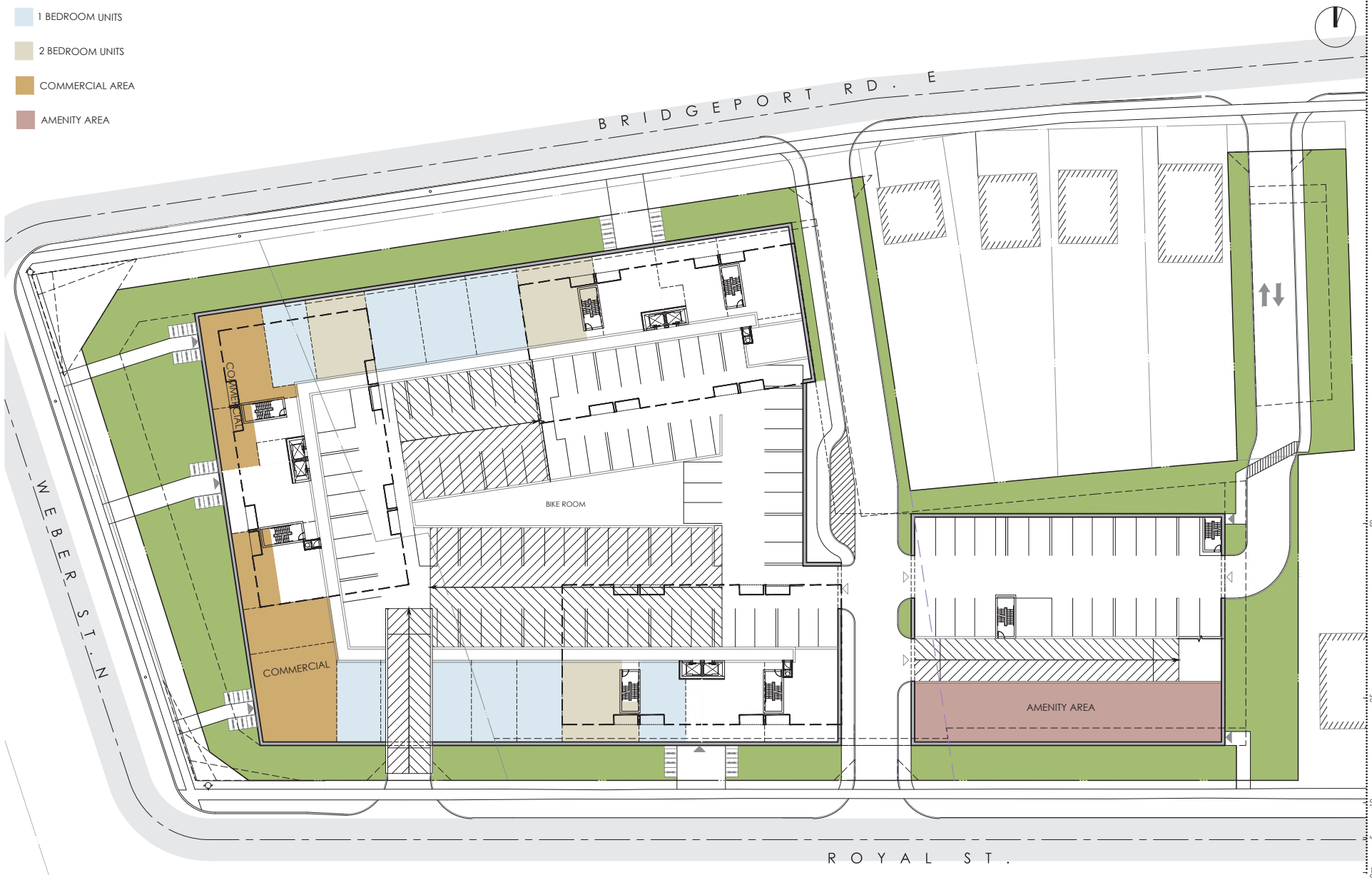
Waterloo, ON

SLR Project No.: 241.30409.00000

SITE STATS

SITE AREA (Pre Road Widening)	: 12,536.1 sq.m (1.25ha)
ROAD WIDENINGS	: 841.4 sq.m (0.08ha)
SITE AREA (Post Road Widening)	: 11,694.7 sq.m (1.17ha)
DENSITY PROVIDED	: 622 Units; 845 Beds; 675 bph
COMMERCIAL AREA PROVIDED	: 563.1 sq.m; FAR: 0.04
LANDSCAPE OPEN SPACE PROVIDED	: 4,142.1 sq.m (33%)
PARKING PROVIDED	: 574 Spaces



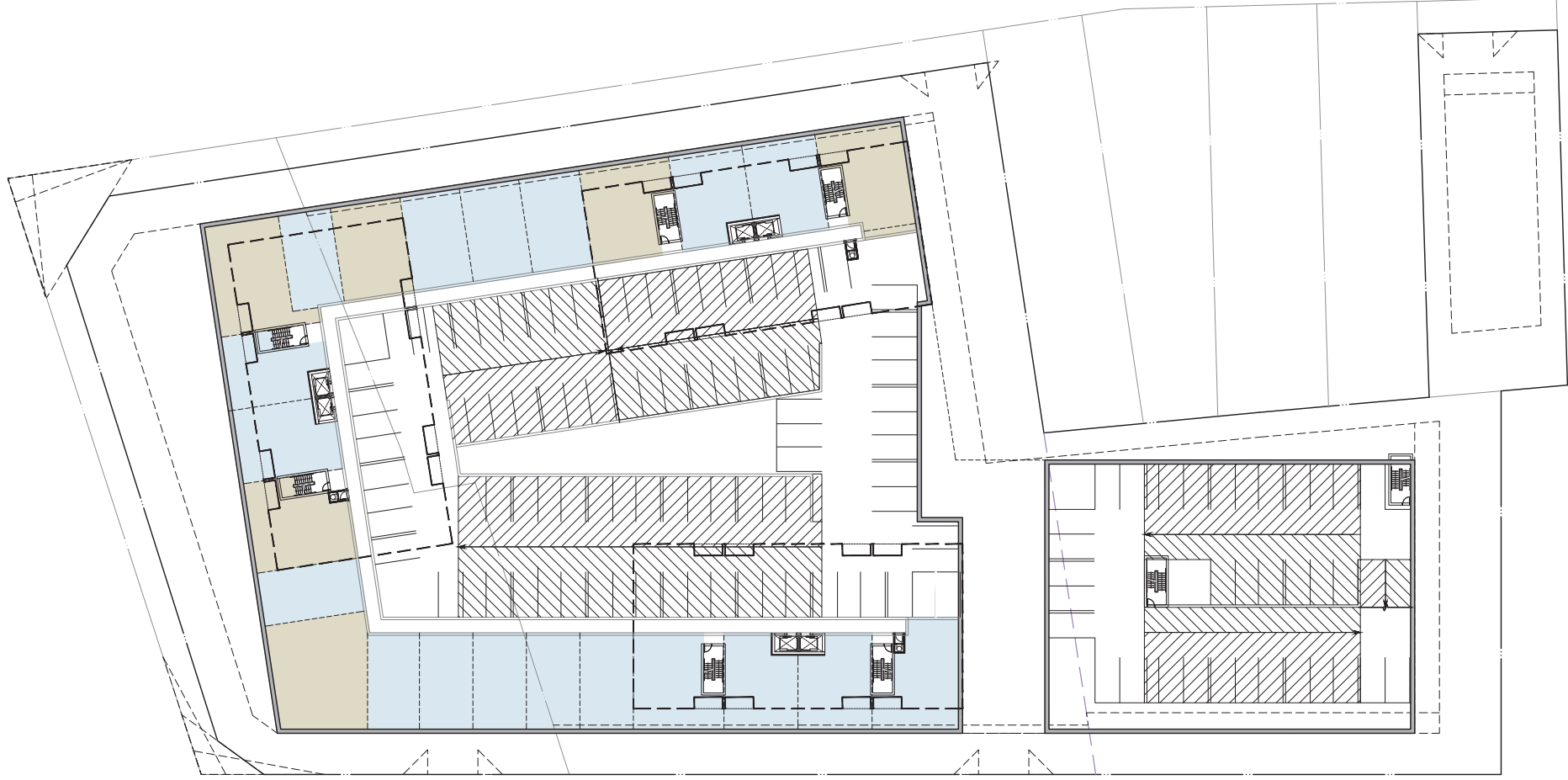


PROJECT NO. 2019-104
115 & 133 BRIDGEPORT RD. E

GROUND FLOOR PLAN

1:500
2021.11.22

- 1 BEDROOM UNITS
- 2 BEDROOM UNITS



0m 5 10 25 50

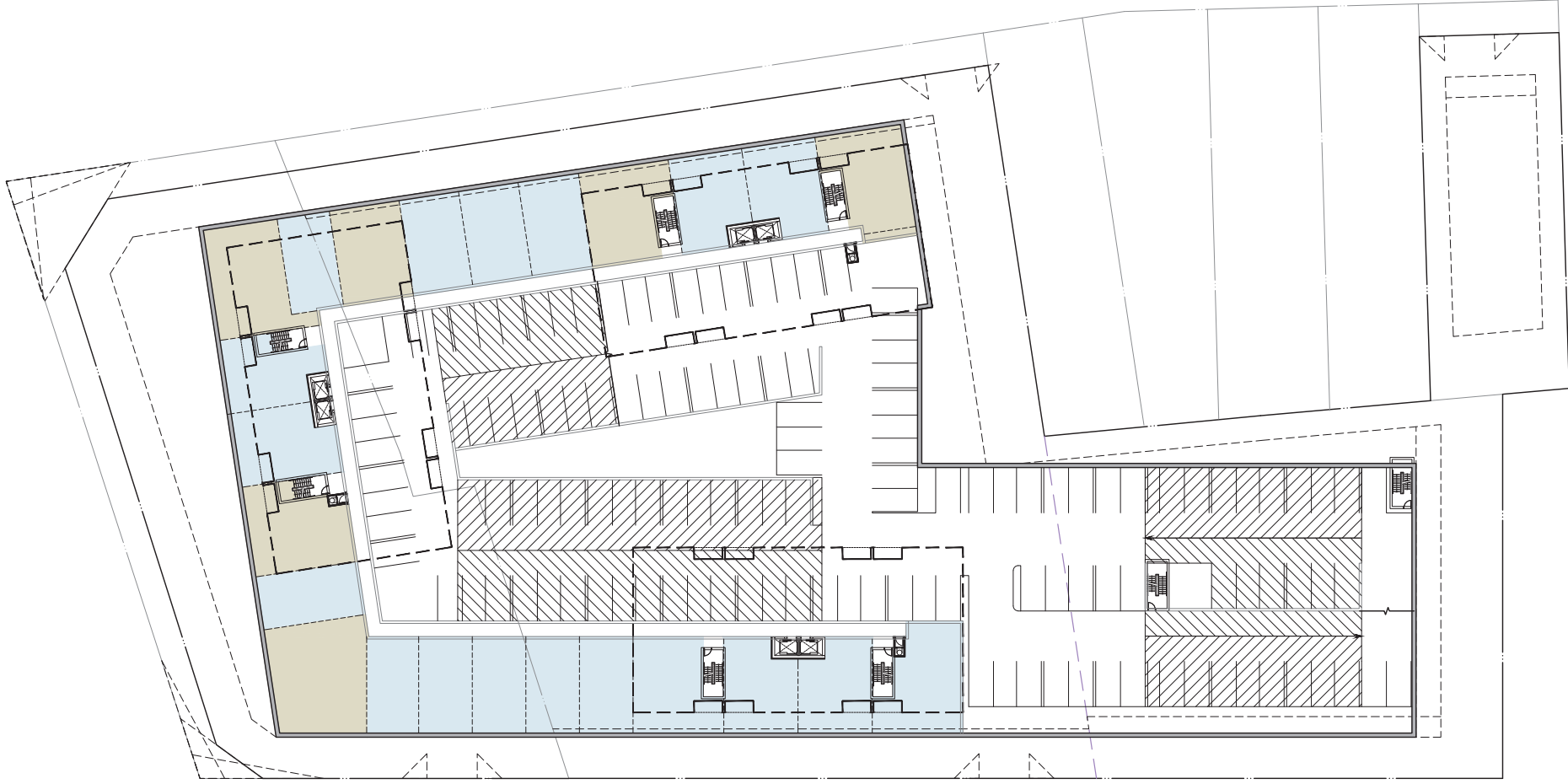
2nd FLOOR PLAN

1:500
2021.11.22



PROJECT NO. 2019-104
115 & 133 BRIDGEPORT RD. E

- 1 BEDROOM UNITS
- 2 BEDROOM UNITS



0m 5 10 25 50

3rd FLOOR PLAN

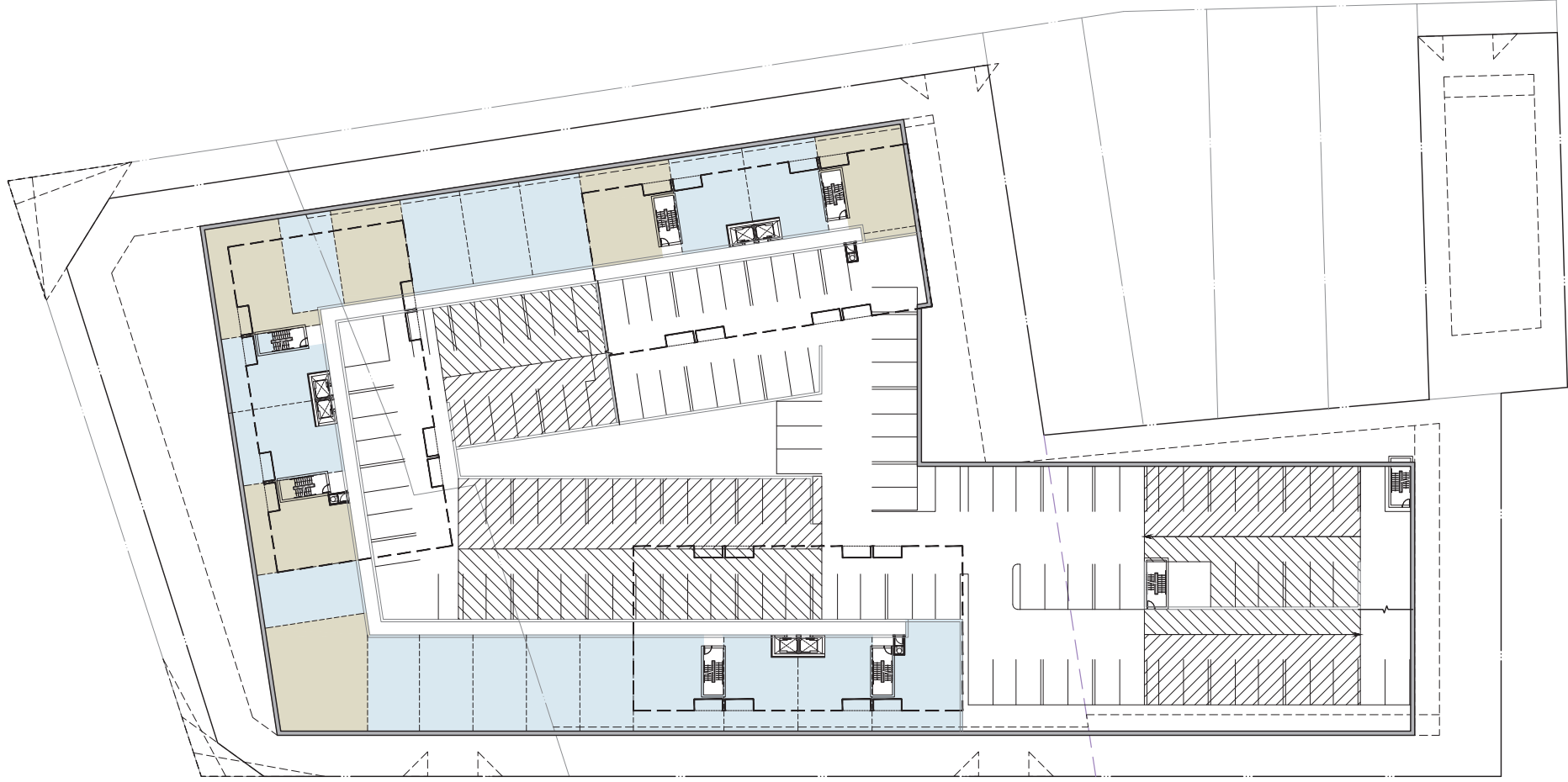
1:500
2021.11.22

115 & 133 BRIDGEPORT RD. E

PROJECT NO. 2019-104



- 1 BEDROOM UNITS
- 2 BEDROOM UNITS



0m 5 10 25 50

4th FLOOR PLAN

1:500
2021.11.22



115 & 133 BRIDGEPORT RD. E
PROJECT NO. 2019-104

- 1 BEDROOM UNITS
- 2 BEDROOM UNITS



0m 5 10 25 50

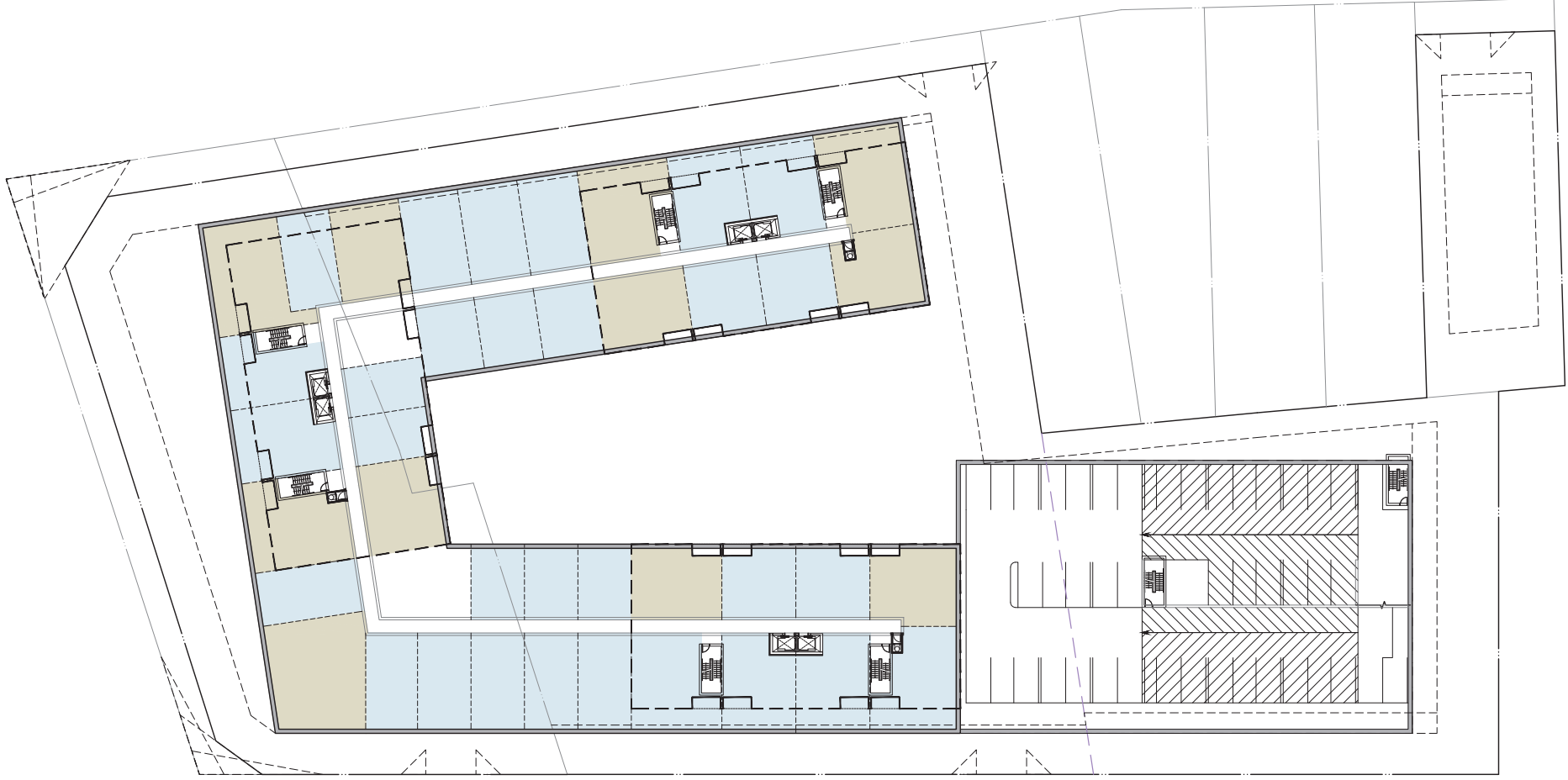
5th FLOOR PLAN

1:500
2021.11.22

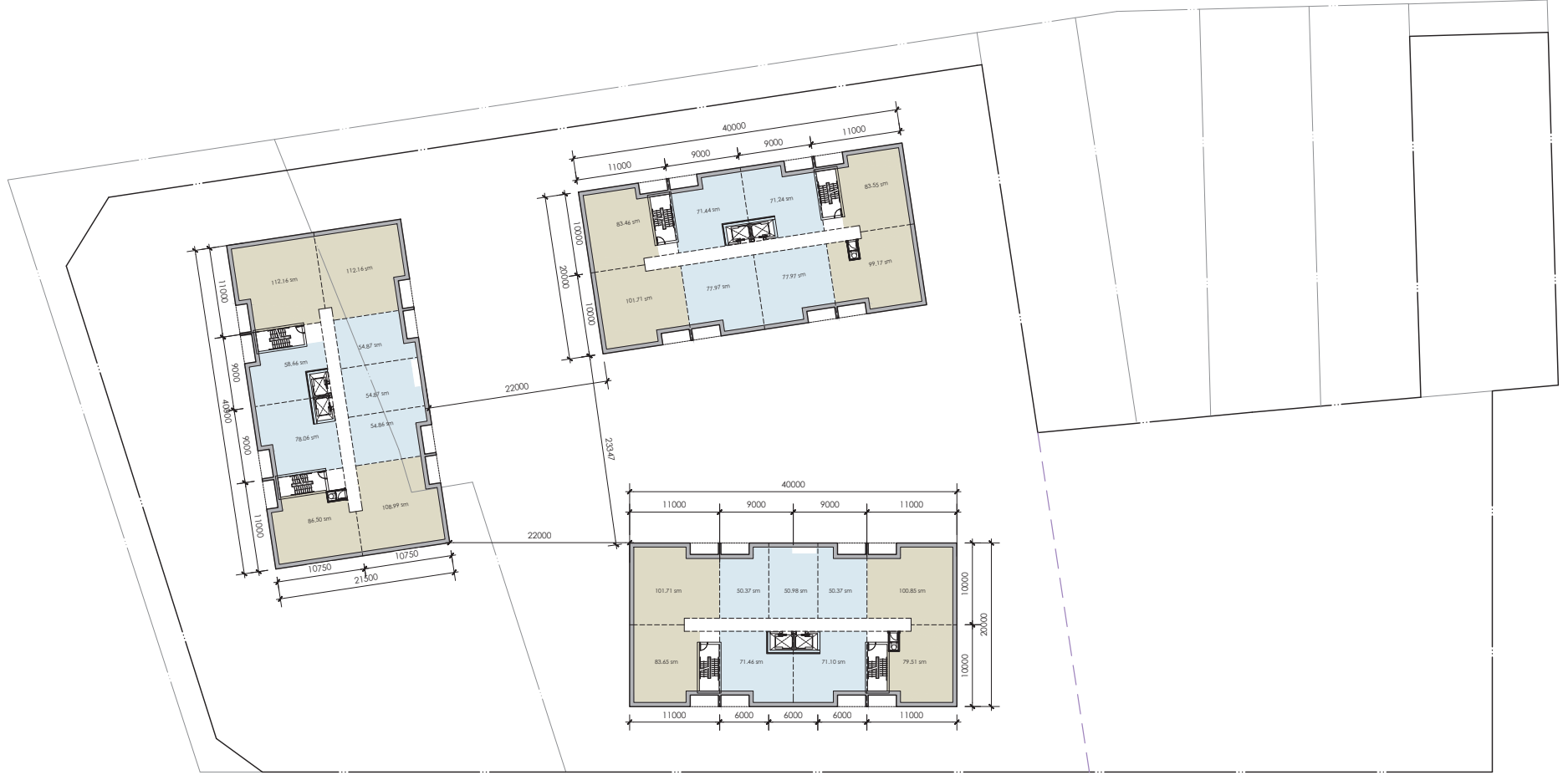


PROJECT NO. 2019-104
115 & 133 BRIDGEPORT RD. E

- 1 BEDROOM UNITS
- 2 BEDROOM UNITS

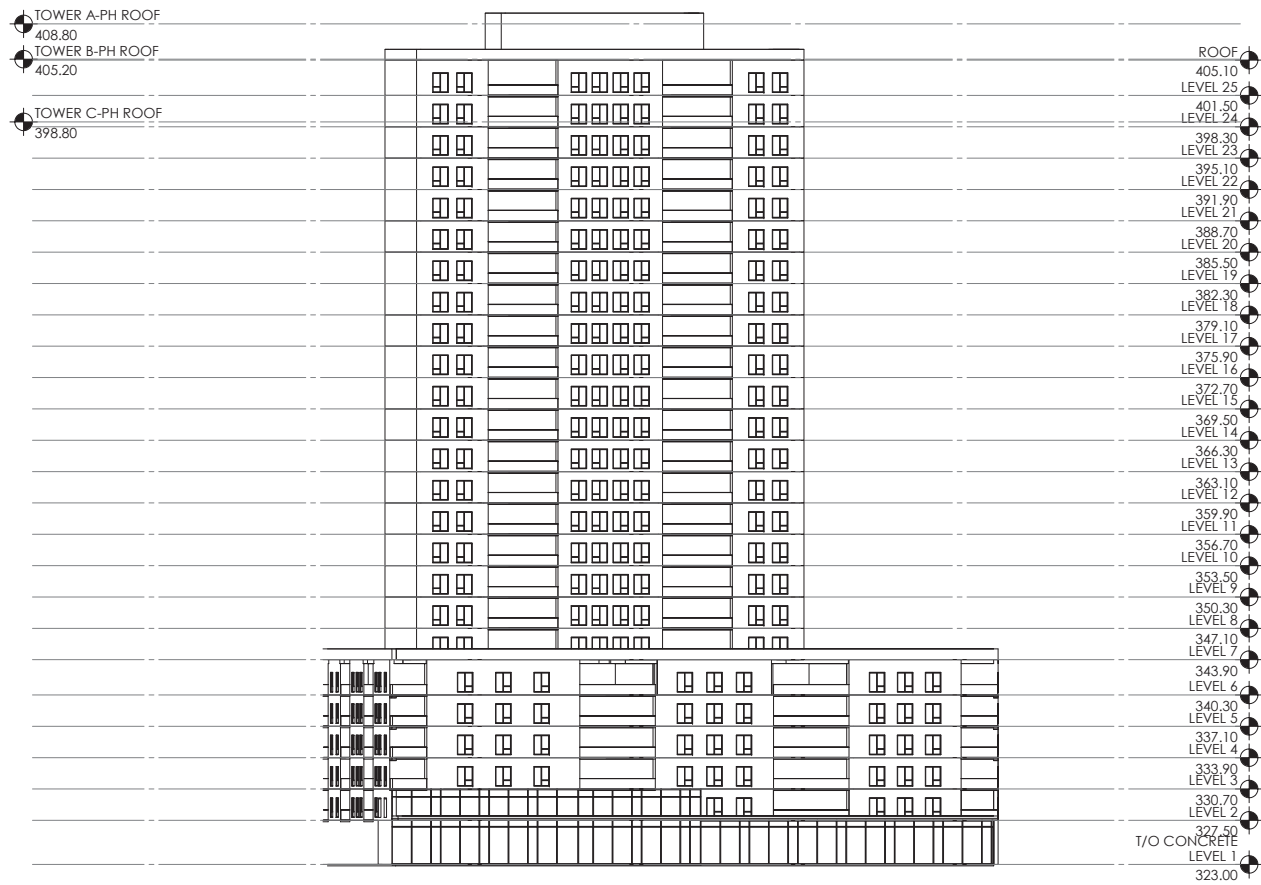


- 1 BEDROOM UNITS
- 2 BEDROOM UNITS



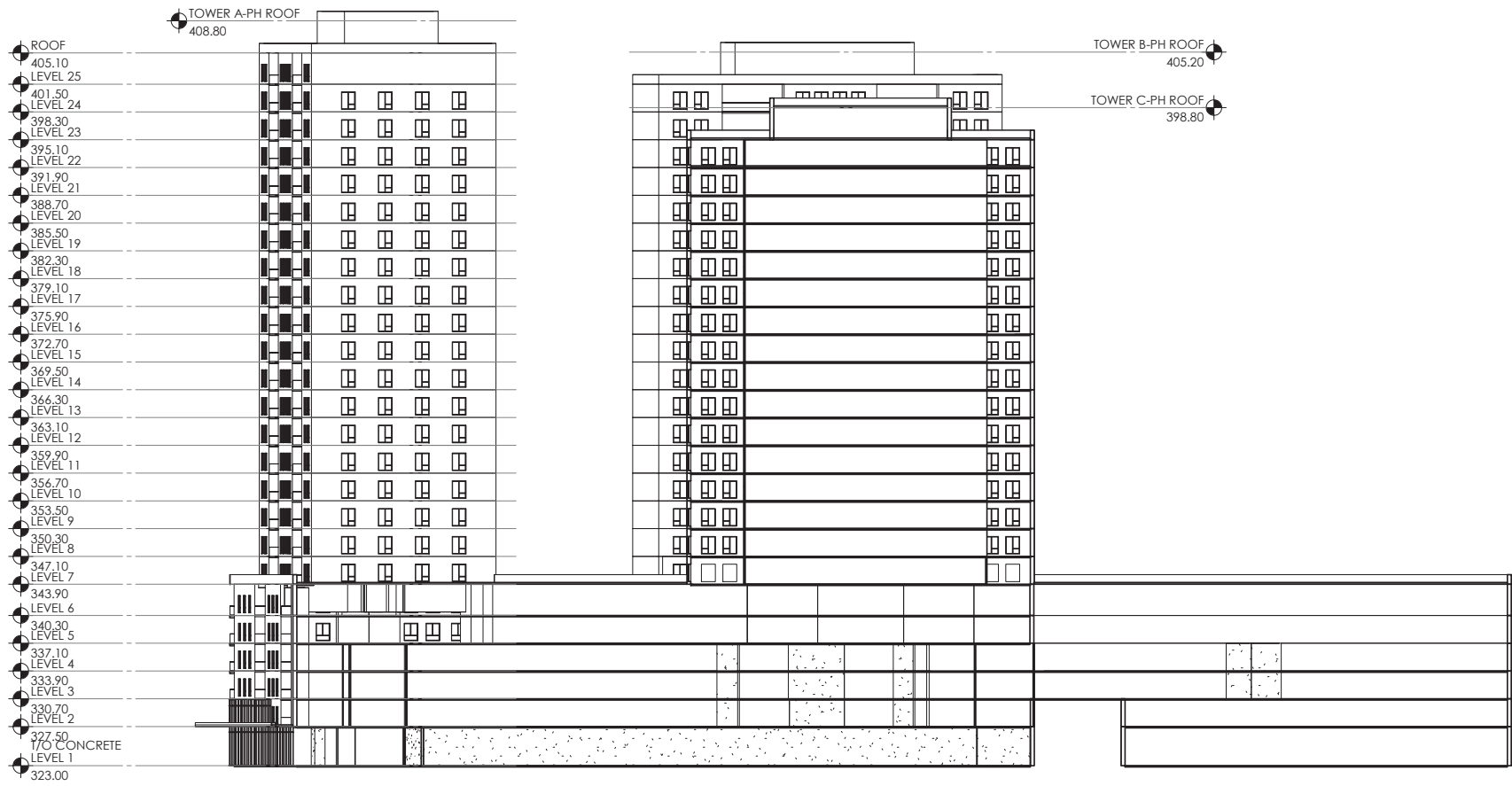
- 1 BEDROOM UNITS
- 2 BEDROOM UNITS











Appendix C

Traffic Data and Calculations

Environmental Noise Assessment

115 Bridgeport Inc.

Waterloo, ON

SLR Project No.: 241.30409.0000

Region of Waterloo AADT Forecast for Noise Studies

1. Development/Location

85 Bridgeport Rd E, Waterloo

2. Current AADT (2022)

Bridgeport Rd E (east of Weber St N)	Bridgeport Rd E (west of Weber St N)	Weber St N (north of Bridgeport Rd E)	Weber St N (south of Bridgeport Rd E)	Erb St E (east of Weber St N/S)	Lincoln Rd
16,000	16,000	23,500	23,000	14,000	4,200

3. Forecast AADT (2032)

Bridgeport Rd E (east of Weber St N)	Bridgeport Rd E (west of Weber St N)	Weber St N (north of Bridgeport Rd E)	Weber St N (south of Bridgeport Rd E)	Erb St E (east of Weber St N/S)	Lincoln Rd
17,700	17,700	24,700	24,200	15,500	4,700

4. Commercial Vehicle Rates

	Bridgeport Rd E (east of Weber St N)	Bridgeport Rd E (west of Weber St N)	Weber St N (north of Bridgeport Rd E)	Weber St N (south of Bridgeport Rd E)	Erb St E (east of Weber St N/S)	Lincoln Rd
% Medium Trucks	1%	1%	1%	1%	1%	1%
% Heavy Trucks	1%	1%	1%	1%	1%	1%

5. Posted Speed Limit

Bridgeport Rd E (east of Weber St N)	Bridgeport Rd E (west of Weber St N)	Weber St N (north of Bridgeport Rd E)	Weber St N (south of Bridgeport Rd E)	Erb St E (east of Weber St N/S)	Lincoln Rd
50 km/h	50 km/h	60 km/h	60 km/h	50 km/h	50 km/h

6. Day/Night Splits

Regional Standard 90/10 Day/Night Split

7. Expiry

Dec 31 2022

8. Notes

This forecast is intended for the purpose of carrying out a noise study for 115 Bridgeport Rd E, Waterloo, only. The above AADTs represent the traffic volumes on Bridgeport Rd E, Weber St N, Erb St E, and Lincoln Rd.

As Lincoln Rd is under the jurisdiction of City of Waterloo, City of Waterloo data was included in the forecasting for this road segment, and City of Waterloo should be contacted to verify the forecast for this road segment.

This forecast remains valid until the expiry date above. The Region of Waterloo should be contacted for an updated forecast if there are plans to use this forecast beyond the above validity period.

Transportation Noise (Day/Night):

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 Absorpti on G	PWL (dBA)	Source Height, s (m)	Reference Leq (dBA)
Bridgeport_avg	Bridgeport Road East	Daytime Impacts	50	16	15930	98.0%	1.0%	1.0%	15611	159	159	0	0.00	79.6	1.0	64.5
Bridgeport_avg	Bridgeport Road East	Nighttime Impacts	50	8	1770	98.0%	1.0%	1.0%	1735	18	18	0	0.00	73.1	1.0	58.0
Weber_N_avg	Weber Street North of Bridgeport	Daytime Impacts	60	16	22230	98.0%	1.0%	1.0%	21785	222	222	0	0.00	82.9	1.0	67.8
Weber_N_avg	Weber Street North of Bridgeport	Nighttime Impacts	60	8	2470	98.0%	1.0%	1.0%	2421	25	25	0	0.00	76.3	1.0	61.3
Weber_S_avg	Weber Street South of Bridgeport	Daytime Impacts	60	16	21780	98.0%	1.0%	1.0%	21344	218	218	0	0.00	82.8	1.0	67.7
Weber_S_avg	Weber Street South of Bridgeport	Nighttime Impacts	60	8	2420	98.0%	1.0%	1.0%	2372	24	24	0	0.00	76.3	1.0	61.2
Erb_avg	Erb Street East	Daytime Impacts	50	16	13950	98.0%	1.0%	1.0%	13671	140	140	0	0.00	79.0	1.0	63.9
Erb_avg	Erb Street East	Nighttime Impacts	50	8	1550	98.0%	1.0%	1.0%	1519	16	16	0	0.00	72.5	1.0	57.4
Lincoln_avg	Lincoln Road	Daytime Impacts	50	16	4230	98.0%	1.0%	1.0%	4145	42	42	0	0.00	73.8	1.0	58.8
Lincoln_avg	Lincoln Road	Nighttime Impacts	50	8	470	98.0%	1.0%	1.0%	461	5	5	0	0.00	67.3	1.0	52.2

Ambient Traffic Noise (Day/Evening/Night):

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 Absorpti on G	PWL (dBA)	Source Height, s (m)	Reference Leq (dBA)
Bridgeport_min_D	Bridgeport Road East	Daytime Ambient	50	1	688	98.0%	1.0%	1.0%	674	7	7	0	0.00	78.0	1.0	62.9
Bridgeport_min_E	Bridgeport Road East	Evening Ambient	50	1	496	98.0%	1.0%	1.0%	486	5	5	0	0.00	76.6	1.0	61.5
Bridgeport_min_N	Bridgeport Road East	Nighttime Ambient	50	1	64	98.0%	1.0%	1.0%	63	1	1	0	0.00	67.7	1.0	52.6
Weber_N_min_D	Weber Street North of Bridgeport	Daytime Ambient	60	1	1011	98.0%	1.0%	1.0%	990	10	10	0	0.00	81.5	1.0	66.4
Weber_N_min_E	Weber Street North of Bridgeport	Evening Ambient	60	1	729	98.0%	1.0%	1.0%	714	7	7	0	0.00	80.1	1.0	65.0
Weber_N_min_N	Weber Street North of Bridgeport	Nighttime Ambient	60	1	94	98.0%	1.0%	1.0%	92	1	1	0	0.00	71.2	1.0	56.1
Weber_S_min_D	Weber Street South of Bridgeport	Daytime Ambient	60	1	989	98.0%	1.0%	1.0%	969	10	10	0	0.00	81.4	1.0	66.3
Weber_S_min_E	Weber Street South of Bridgeport	Evening Ambient	60	1	713	98.0%	1.0%	1.0%	699	7	7	0	0.00	80.0	1.0	64.9
Weber_S_min_N	Weber Street South of Bridgeport	Nighttime Ambient	60	1	92	98.0%	1.0%	1.0%	90	1	1	0	0.00	71.1	1.0	56.0
Erb_min_D	Erb Street East	Daytime Ambient	50	1	602	98.0%	1.0%	1.0%	590	6	6	0	0.00	77.4	1.0	62.3
Erb_min_E	Erb Street East	Evening Ambient	50	1	434	98.0%	1.0%	1.0%	425	4	4	0	0.00	76.0	1.0	60.9
Erb_min_N	Erb Street East	Nighttime Ambient	50	1	56	98.0%	1.0%	1.0%	55	1	1	0	0.00	67.1	1.0	52.0
Lincoln_min_D	Lincoln Road	Daytime Ambient	50	1	181	98.0%	1.0%	1.0%	177	2	2	0	0.00	72.2	1.0	57.1
Lincoln_min_E	Lincoln Road	Evening Ambient	50	1	130	98.0%	1.0%	1.0%	128	1	1	0	0.00	70.8	1.0	55.7
Lincoln_min_N	Lincoln Road	Nighttime Ambient	50	1	17	98.0%	1.0%	1.0%	16	0	0	0	0.00	61.9	1.0	46.8

 Appendix D

STAMSON Output File

Environmental Noise Assessment

115 Bridgeport Inc.

Waterloo, ON

SLR Project No.: 241.30409.00000

STAMSON 5.04 NORMAL REPORT Date: 18-02-2022 10:55:01
MINISTRY OF ENVIRONMENT CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: st5val.te Time Period: Day/Night 16/8 hours

Description: STAMSON Validation File - Sample Calculation

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

Car traffic volume : 15611/1735 veh/TimePeriod
Medium truck volume : 159/18 veh/TimePeriod
Heavy truck volume : 159/18 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Bridgeport (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 18.52 / 19.20 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Weber N (day/night)

Car traffic volume : 21785/2421 veh/TimePeriod
Medium truck volume : 222/25 veh/TimePeriod
Heavy truck volume : 222/25 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Weber N (day/night)

Angle1 Angle2 : 37.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 50.35 / 50.35 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Weber S (day/night)

Car traffic volume : 21344/2372 veh/TimePeriod
Medium truck volume : 218/24 veh/TimePeriod
Heavy truck volume : 218/24 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Weber S (day/night)

```

-----
Angle1   Angle2           :    5.00 deg   37.00 deg
Wood depth      :          0      (No woods.)
No of house rows :          0 / 0
Surface         :          2      (Reflective ground surface)
Receiver source distance : 50.35 / 50.35 m
Receiver height  :    1.50 / 1.50 m
Topography      :          1      (Flat/gentle slope; no barrier)
Reference angle  :    0.00
  
```

Road data, segment # 4: Lincoln (day/night)

```

-----
Car traffic volume : 4145/461   veh/TimePeriod
Medium truck volume : 42/5      veh/TimePeriod
Heavy truck volume  : 42/5      veh/TimePeriod
Posted speed limit  : 50 km/h
Road gradient       : 0 %
Road pavement       : 1 (Typical asphalt or concrete)
  
```

Data for Segment # 4: Lincoln (day/night)

```

-----
Angle1   Angle2           : -20.00 deg   90.00 deg
Wood depth      :          0      (No woods.)
No of house rows :          0 / 0
Surface         :          2      (Reflective ground surface)
Receiver source distance : 162.30 / 162.30 m
Receiver height  :    1.50 / 1.50 m
Topography      :          1      (Flat/gentle slope; no barrier)
Reference angle  :    0.00
  
```

Results segment # 1: Bridgeport (day)

Source height = 1.00 m

ROAD (0.00 + 63.60 + 0.00) = 63.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	64.52	0.00	-0.92	0.00	0.00	0.00	0.00	63.60

Segment Leq : 63.60 dBA

Results segment # 2: Weber N (day)

Source height = 1.00 m

ROAD (0.00 + 57.24 + 0.00) = 57.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
37	90	0.00	67.81	0.00	-5.26	-5.31	0.00	0.00	0.00	57.24

Segment Leq : 57.24 dBA

Results segment # 3: Weber S (day)

Source height = 1.00 m

ROAD (0.00 + 54.96 + 0.00) = 54.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
5	37	0.00	67.72	0.00	-5.26	-7.50	0.00	0.00	0.00	54.96

Segment Leq : 54.96 dBA

Results segment # 4: Lincoln (day)

Source height = 1.00 m

ROAD (0.00 + 46.27 + 0.00) = 46.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	90	0.00	58.75	0.00	-10.34	-2.14	0.00	0.00	0.00	46.27

Segment Leq : 46.27 dBA

Total Leq All Segments: 65.02 dBA

Results segment # 1: Bridgeport (night)

Source height = 1.00 m

ROAD (0.00 + 56.95 + 0.00) = 56.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	58.02	0.00	-1.07	0.00	0.00	0.00	0.00	56.95

Segment Leq : 56.95 dBA

Results segment # 2: Weber N (night)

Source height = 1.00 m

ROAD (0.00 + 50.73 + 0.00) = 50.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
37	90	0.00	61.30	0.00	-5.26	-5.31	0.00	0.00	0.00	50.73

Segment Leq : 50.73 dBA

Results segment # 3: Weber S (night)

Source height = 1.00 m

ROAD (0.00 + 48.42 + 0.00) = 48.42 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
5	37	0.00	61.18	0.00	-5.26	-7.50	0.00	0.00	0.00	48.42

Segment Leq : 48.42 dBA

Results segment # 4: Lincoln (night)

Source height = 1.02 m

ROAD (0.00 + 39.87 + 0.00) = 39.87 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	90	0.00	52.35	0.00	-10.34	-2.14	0.00	0.00	0.00	39.87

Segment Leq : 39.87 dBA

Total Leq All Segments: 58.41 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.02
(NIGHT): 58.41



115 BRIDGEPORT INC.

115 BRIDGEPORT ROAD EAST, WATERLOO

COMPARISON OF CADNA/A AND STAMSON – ROAD NOISE

True North



Scale:

1:1500

METRES

Date: 2022-02-22

Rev 1.0

Project No. 241.30409.00000

Figure No.

D1



Appendix E

Ventilation, Warning Clause and Barrier Summary

Environmental Noise Assessment

115 Bridgeport Inc.

Waterloo, ON

SLR Project No.: 241.30409.0000

Ventilation, Warning Clause and Barrier Summary

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

A summary of the Warning Clause and Ventilation Requirements is included in **Table E1** below.

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

Table E1: Summary of Ventilation and Warning Clause Requirements

Residential Units	Applicable Facade ^[1]	Barrier Required	Air Conditioning Requirement ^[2]	Warning Clause
Podium (6-Storey) – Outer units only	N, E, S, W	-	Provision for AC	Type C
Building A (Tower)	N, E, S, W (all)	-	Provision for AC	Type C
Building B (Tower)	N, E, W	-	Provision for AC	Type C
Building C (Tower)	W, S	-	Provision for AC	Type C
Building D (Parking Structure)	-	-	-	-
5 th Floor Outdoor Amenity Terrace	-	No	-	-

Notes: [1] N = North facade, E = East facade, S = South facade, W = West facade

[2] Provision for AC = forced air heating with a provision for installation of central air conditioning

Appendix F

Stationary Source Modelling Data

Environmental Noise Assessment

115 Bridgeport Inc.

Waterloo, ON

SLR Project No.: 241.30409.00000

Stationary Source Modelling Data

Source Description	Maximum Sound Power Level (1/1 Octave Bands)									Modelled Sound Power Level (dBA)	Source Notes
	31.5	63	125	250	500	1000	2000	4000	8000		
PTH Auto Inc. & Bridgeport Road Service Centre - 120 Bridgeport Road East											
Open Bay Door x 6 - Impact Wrench	82.6	77.9	82.4	75.8	79.3	78.4	85.6	85.1	84.9	91.0	Based on historical SLR data - Operates 1 minute per hour during daytime - +10 dB penalty for quasi-steady-state impulsive sound quality
Open Bay Door x 2 - Compressed Air	101.1	100.5	95.8	89.3	86	86.3	83.5	84.8	80.8	92.1	Based on historical SLR data - Operates 10 minutes per hour during daytime - +5 dB penalty for tonal sound quality
Shopper's Drug Mart - 50 Weber Street North											
Rooftop HVAC x 5 - 10-ton Units	80.0	83.0	84.0	84.0	83.0	81.0	77.0	730.0	67.0	85.5	Based on historical SLR data - Operates 60 minutes per hour during daytime/evening - Operates 30 minutes per hour during night-time
Rooftop Units x 4 - Cooling	76.9	91.0	86.3	77.5	74.0	75.6	73.4	64.4	60.9	80.1	Based on historical SLR data - Operates 60 minutes per hour during daytime/evening - Operates 30 minutes per hour during night-time
Idling Delivery Truck - with Reefer Unit	103.8	107.4	98.1	99.7	97.3	90.8	86.5	84.0	77.9	98.0	Based on historical SLR data - Operates 30 minutes per hour during daytime hours only (note: loading/unloading prohibited during evening-night-time hours based on City of Waterloo Noise By-Law 2010-073)
S.G. Cunningham Limited - 35 Weber Street North											
Rooftop HVAC - 5-ton Unit	77.0	80.0	81.0	81.0	80.0	78.0	74.0	70.0	64.0	82.5	Based on historical SLR data - Operates 60 minutes per hour during daytime/evening - Operates 15 minutes per hour during night-time (unoccupied space during night-time hours)
Rooftop HVAC - 1-ton Unit	73.3	76.3	77.3	77.3	76.3	74.3	70.3	66.3	60.3	78.8	Based on historical SLR data - Operates 60 minutes per hour during daytime/evening - Operates 15 minutes per hour during night-time (unoccupied space during night-time hours)
Signs by McDougall - 31 Weber Street North											
Rooftop Exhaust Stack	93.7	92.5	90	86.4	93.1	92.1	77.6	67	55.3	94.4	Based on SLR measurement obtained January 4, 2021 - +5 dB for tonal sound quality - Operates for 60 minutes per hour during daytime
Meineke Car Care Center - 29 Weber Street North											
Open Bay Door x 3 - Impact Wrench	82.6	77.9	82.4	75.8	79.3	78.4	85.6	85.1	84.9	91.0	Based on historical SLR data - Operates 1 minute per hour during daytime - +10 dB penalty for quasi-steady-state impulsive sound quality
Open Bay Door x 1 - Compressed Air	101.1	100.5	95.8	89.3	86	86.3	83.5	84.8	80.8	92.1	Based on historical SLR data - Operates 10 minutes per hour during daytime - +5 dB penalty for tonal sound quality
Hakim Optical Waterloo - 21 Weber Street North											
Rooftop HVAC x 2 - 5-ton Units	77.0	80.0	81.0	81.0	80.0	78.0	74.0	70.0	64.0	82.5	Based on historical SLR data - Operates 60 minutes per hour during daytime/evening - Operates 15 minutes per hour during night-time (unoccupied space during night-time hours)