Environmental Noise Assessment

2030 Caroline Street - Burlington

Inaria Burlington Inc.

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1.0 Introduction

SLR Consulting (Canada) Ltd. (SLR) was retained by Carriage Gate Homes Inc. to prepare an environmental noise assessment for the proposed 2030 Caroline Street development in Burlington, Ontario ("the Project site"). This report is in support of a planning application including joint Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBA) for the proposed development.

1.1 Focus of Report

In keeping with the Ministry of Environment, Conservation and Parks (MECP) and City of Burlington Bylaw (No. 19-2003) requirements this report examines the potential for:

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

The required noise warning clauses and mitigation measures resulting from this study are summarized in **Appendix A**.

1.2 Nature of the Project and Subject Land

The proposed development is located at 2030 Caroline Street, on the south side of the road between Caroline Street and Maria Street. The site is currently vacant land. **Figure 1** provides an aerial view and context plan of the immediate study area.

This assessment was conducted with the previous site plan and architectural drawings dated January 4, 2024.The most recent site plan and architectural drawings of the site dated June 21, 2024, are provided in **Appendix B**. There are minor changes in building massing for the new design which will have negligible effects on the acoustical modelling results and recommendations. The acoustical assessment will be updated to reflect the final building design as part of future planning applications (e.g., at the time of site plan approval or building permit applications).

The proposed development will consist of a 28-storey residential tower located atop a 7-storey mixed-use podium, with commercial, and underground parking access at grade. A communal outdoor amenity area will be located on the 7th floor roof top.

The Development site is adjacent to the existing "Berkeley Condos" residential tower at 510 Elizabeth Street and 2025 Maria Street, immediately south of the subject land.

1.3 Nature of the Surroundings

Cartesian directions are referred to in this report in relation to Lake Ontario. For example, Brant Street is described as running north and south in relation to Lake Ontario.

The Project site is surrounded by the following:

- Caroline Street, a city-owned commercial parking lot, various commercial and/or retail and residential developments beyond to the north;
- Elizabeth Street and Townhouse residential to the east;
- Maria Street, various commercial/retail and James Street to the south; and,

- John Street, various commercial and/or retail, Brant Street and surface parking and service areas to the west.

A site-specific zoning amendment (DC-397) applies to the subject land within the Downtown central commercial area. The zoning of the lands surrounding the city block in which the subject land is located is Downtown Commercial (DC) Zone to the west and north. The lands on the south side of Maria Street are also zoned DC. The lands immediately to the east are zoned Downtown Medium Density Residential. The Burlington Zoning map is shown in **Figure 2**.

PART 1: IMPACTS OF THE ENVIRONMENT ON THE DEVELOPMENT

In evaluating potential impacts of the environment on the proposed development, the focus of this report is assessment of:

- Transportation noise from surrounding roadways;
- Stationary noise from surrounding industries/facilities on the development; and,
- Stationary noise from the development on itself and the surroundings.

The proposed development is not located in proximity to any airports; therefore, an assessment of aircraft noise is not required.

The proposed development is further than 300m from the closest rail line; therefore, an assessment of railway noise and vibration is not required.

2.0 Transportation Noise Assessment

2.1 Transportation Noise Sources

Transportation sources of interest with the potential to produce road at the proposed development include:

- Road noise -Caroline Street, Elizabeth Street, John Street and Brant Street.

Road sound levels from these sources have been predicted, and this information has been used to identify façade, ventilation, and warning clause recommendations and/or requirements for the proposed development. Road traffic noise from other nearby roadways is expected to be acoustically insignificant relative to those noted above and has not been assessed further.

2.2 MECP Publication NPC-300 Guidelines for Transportation Noise

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 and rail) criteria.

Location-Specific Criteria

Table 1 summarizes criteria in terms of energy equivalent sound levels (L_{eq}) 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.

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

Type of Space	Time Period	Energy Equivalent Sound Level L_{eq} [5] (dBA)		Assessment Location
		Road	Rail [1]	
Outdoor Amenity Area	Daytime (0700-2300h)	55	55	Outdoors [2]
Living/Dining Room [3]	Daytime (0700-2300h)	45	40	Indoors [4]
	Nighttime (2300-0700h)	45	40	Indoors [4]
Sleeping Quarters	Daytime (0700-2300h)	45	40	Indoors [4]
	Nighttime (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, where applicable.

[2] Road and Rail noise impacts are to be combined for assessment of OLA impacts.

[3] Residence area Dens, Hospitals, Nursing Homes, Schools, Daycares are also included. During the nighttime period, Schools and Daycares are excluded.

[4] An assessment of indoor noise levels is required only if the criteria in **Table 4** are exceeded.

[5] L_{eq} – the energy equivalent sound level, integrated over the time period shown.

Outdoor Living 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, total surface transportation noise is determined by combining road and rail traffic sound levels. Whistle noise from trains is not included in the determination of outdoor sound levels.

Table 2: NPC-300 OLA Sound Level Criteria for Road and Rail Noise

Time Period	OLA Energy Equivalent Sound Level L_{eq} (dBA)	Mitigation Requirements/Warning Clause Recommendations
Daytime (0700-2300h)	≤ 55	• None
	56 to 60 inc.	• Noise barrier OR Type A Warning Clause
	> 60	• Noise barrier to reduce noise to 55 dBA OR • Noise barrier to reduce noise to 60 dBA and Type B Warning Clause

Ventilation and Warning Clauses

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

Table 3: NPC-300 Ventilation and Warning Clause Recommendations

Assessment Location	Time Period	Energy Equivalent Sound Level – L_{eq} (dBA)		Ventilation and Warning Clause Recommendations [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 with provision to add air conditioning + Type C Warning Clause
		> 65		Central Air Conditioning + Type D Warning Clause
	Nighttime (2300-0700h)	51 to 60 incl.		Forced Air Heating with provision to add air conditioning + Type C Warning Clause
		> 60		Central Air Conditioning + Type D Warning Clause

Notes: [1] Whistle noise is excluded from assessment.
[2] Road and Rail noise is combined for determining ventilation and warning clause recommendations.

Building Component Requirements

Table 4 provides sound level thresholds which, if exceeded, trigger a requirement for the building shell components (i.e., exterior walls, windows) to be designed accordingly to meet the applicable indoor sound criteria.

Table 4: NPC-300 Building Component Assessment Requirements

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

Notes: [1] Whistle noise is included in assessment.
[2] Building component requirements are assessed separately for Road and Rail, and then combined for a resultant sound isolation parameter.

2.3 Traffic Data and Future Projections

2.3.1 Road Traffic Data

Turning movement counts (TMCs) from were obtained from the City of Burlington, for the intersections of Brant Street /Caroline Street (2022), John Street/Caroline Street (2018), and Elizabeth Street/Caroline Street (2015).

The 8-hour TMCs were used to calculate the Average Annual Daily Traffic (AADT) volumes and commercial vehicle (truck) percentages for Caroline Street, Brant Street, John Street, Emerald Crescent and Elizabeth Street. AADT values were estimated by multiplying the total 8-hour volumes on each link by a typical conversion factor of 1.9). The percentage split between medium and heavy trucks was assumed based on a distribution for municipal roadways. Traffic volumes were projected to future year 2038, based on a 1.05% annual growth rate provided by the City of Burlington. Daytime/nighttime splits of 90%/10% were applied for all the roadways described above, based on typical distributions for municipal roads.

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

Roadway Link	2038 Traffic Volumes AADT [1]	% Day/Night Volume Split		Commercial Vehicle Breakdown		Vehicle Speed (km/hr)
		Daytime	Nighttime	% Medium Trucks	% Heavy Trucks	
Emerald Crescent	83	90	10	0.0%	0.0%	50
Elizabeth Street	977	90	10	1.4%	1.2%	50
Brant Street North of Caroline	16,327	90	10	1.1%	0.9%	50
Brant Street South of Caroline	11,175	90	10	0.9%	0.8%	50
Caroline Street East of Brant Street	5,902	90	10	0.5%	0.5%	40
Caroline Street West of Brant Street	7,018	90	10	1.2%	1.0%	40
John Street North of Caroline	3,532	90	10	2.8%	2.5%	50
John Street South of Caroline	1,779	90	10	4.9%	4.3%	50

Notes: [1] Based on peak hour TMC data noted in **Section 2.3.1**. Base year data was projected to year 2038 using an annual growth rate of 1.05%.

Copies of road traffic data and calculations are provided for reference in **Appendix C**.

2.4 Predicted Transportation Sound Levels

Future road traffic sound levels at the proposed development were predicted using Cadna/A, a commercially available noise propagation modelling software package. 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. Global ground absorption was considered to be hard reflective (G = 0.0). These predictions were validated and are equivalent to those made using the MECP's ORNAMENT or STAMSON v5.04 road traffic noise models.

Sound levels were predicted along the facades of the proposed development using the "building evaluation" feature of Cadna/A. This feature allows for sound levels to be predicted across the entire façade of a structure. OLA sound levels were assessed at a height of 1.5 m above ground level, 3 m from the building facades, or 1.5 m above the roof for terraces.

2.4.1 Façade Sound Levels

Predicted worst-case façade sound levels due to transportation sources for each different building type are presented in **Table 6**.

The transportation façade sound levels on the proposed development, showing the ranges of predicted daytime and nighttime sound levels are shown in **Figure 3**.

Table 6: Summary of Predicted Worst-Case Transportation Façade Sound Levels

Building Component	Façade	Maximum Predicted Road Sound Levels	
		L_{eq} Daytime (dBA)	L_{eq} Nighttime (dBA)
Podium	North	58	52
Podium	East	55	49
Podium	West	59	53
Tower	North	57	51
Tower	East	52	45
Tower	South	54	47
Tower	West	58	51
Notes: [1] Total (road) building façade sound levels are shown in **Figure 3** (daytime) and **Figure 4** (nighttime)			

Sound levels due to road noise were predicted below 65 dBA during daytime and 60 dBA during the nighttime for the development. Therefore, an assessment of building components for these Buildings is not required. Refer to **Section 2.5.1**.

2.4.2 Outdoor Living Area Sound Levels

The Outdoor Living Areas (OLAs) for the proposed development include the following:

- 7th Floor Communal Outdoor Amenity Area (OLA 01 and OLA 02); and
- Tower Rooftop Communal Outdoor Amenity Area (OLA 03 and OLA 04).

There are private terraces on the 8th floor which are more than 4 m in depth. Under Publication NP0-300 noise guidelines, these locations would not be outdoor points of reception for transportation noise, as there are communal outdoor amenity areas provided for all units. Regardless, sound level predictions are provided at worst-case locations, for information purposes (OLA 05 and OLA 06).

Modelled OLA locations are shown in **Figure 3**. Predicted OLA sound levels at these locations are presented in **Table 7** and are also shown in **Figure 3**.

Table 7: Summary of Predicted Transportation Outdoor Living Area Sound Levels

OLA Assessment Location	Predicted Sound Level L_{eq} Daytime (dBA)	Guideline Limit [1] (dBA)	Meets Guideline?
OLA 01 – 7th Floor Communal Amenity Area	47	55	Yes
OLA 02– 7th Floor Communal Amenity Area	40	55	Yes
OLA 03 – Tower Roof Communal Amenity Area	43	55	Yes
OLA 04 – Tower Roof Communal Amenity Area	40	55	Yes
OLA 05 – 8th Floor Private Terraces	52	n/a	Yes
OLA 06 – 8th Floor Private Terraces	43	n/a	Yes
Notes: [1] Sound levels up to 60 dBA are allowed with the use of a Type A or B Warning Clause.			

The predicted sound levels at all locations are below 55 dBA. Therefore, physical mitigation measures and warning clauses are not required.

2.5 Transportation Noise Control Measures

2.5.1 Façade Assessment

2.5.1.1 Building Components

Façade sound levels from road traffic are below 65 dBA during the daytime and 60 dBA during the nighttime. Per **Table 4**, an assessment to ensure that the indoor noise level limits are met is not required. Construction meeting the minimum non-acoustics requirements of the Ontario Building Code (OBC) are predicted to be acoustically sufficient for all facades, exterior walls, and windows.

2.5.1.2 Ventilation and Warning Clause Recommendations

The sound level triggers for warning clauses are summarized in **Table 3**. Where recommended, 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.

Based on the predicted façade sound levels, an MECP Type C warning clause and a provision for installation of air conditioning is recommended for resident units on the development.

Ventilation and warning clause recommendations are summarized in **Appendix A**.

3.0 Effects of Stationary Source Noise from the Surroundings on the Development

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

3.1 D-Series of Guidelines

The D-series of guidelines were developed by the MECP in 1995 as a means to assess recommended separation distances and other control measures for land use planning proposals in an effort to prevent or minimize 'adverse effects' from the encroachment of incompatible land uses where a facility either exists or is proposed. D-series guidelines address sources including sewage treatment (Guideline D-2), gas and oil pipelines (Guideline D3), landfills (Guideline D-4), water services (Guideline D-5) and industries (Guideline D-6).

The guideline applicable to this proposed development is Guideline D-6 - Compatibility between Industrial Facilities and Sensitive Land Uses. The guideline specifically addresses issues of air quality, odour, dust, noise and litter.

Adverse effect is a term defined in the Environmental Protection Act and "means one or more of:

- impairment of the quality of the natural environment for any use that can be made of it,
- injury or damage to property or to plant or animal life,
- harm or material discomfort to any person,
- an adverse effect on the health of any person,
- impairment of the safety of any person,
- rendering any property or plant or animal life unfit for human use,
- loss of enjoyment of normal use of property, and
- interference with the normal conduct of business".

To minimize the potential to cause an adverse effect, areas of influence and recommended minimum setback distances are included within the guidelines. The areas of influence and recommended separation distances from the guidelines are provided in **Table 8**.

Table 8: Guideline D-6 – Potential Influence Area and Recommended Minimum Setback Distances for Industrial Land Uses

Industry Classification	Area of Influence	Recommended Minimum Setback Distance (m)
Class I – Light Industrial	70 m	20 m
Class II – Medium Industrial	300 m	70 m
Class III – Heavy Industrial	1000 m	300 m

Guideline D-6 also recommends that no sensitive land use be placed within the Recommended Minimum Separation Distance. However, it should be noted that this is a recommendation only. Section 4.10 of the Guideline allows for development within the separation distance, in cases of redevelopment, infilling, and transitions to mixed-use, provided that the appropriate studies are conducted and that the relevant air quality and noise guidelines are met.



3.2 Guideline D-6 Review for Proposed Development

The MECP Guideline D-6 setback distances related to the proposed development are shown in **Figures 4a to 4c**.

There are no Class III Heavy Industries within 1 km of the development and there are no Class II Medium or Class I Light Industries within 300 m of the Development. There are no industrially zoned properties within 300 m of the Development.

As noted in **Figure 4c**, there are a number of light commercial land uses within the immediate area of the proposed redevelopment. None of these are industrial land uses, and the requirements of Guideline D-6 do not technically apply. Under Guideline D-6, a detailed assessment of industrial noise impacts is not required, Nonetheless, a stationary noise impact assessment of the commercial operations within 70 m of the development has been conducted, as outlined below.

The following uses have been included in the assessment (moving north to south):

- Bell Canada building (507 Brant Street), to the north;
- Burlington Physiotherapy (2004 Caroline Street) to the west;
- Starbucks (503 Brant Street), to the west;
- Style & Shave (501 Brant Street), to the west;
- Premium Grill N Butcher (495 Brant Street), to the west;
- Simply Gifted (491 Brant Street), to the west;
- Amaya Express (489 Brant Street), to the west;
- Smith's Funeral Home (485 Brant Street), to the west;
- Brant Florist (461 Brant Street and 496 Maria Street) to the southwest; and
- The Berkeley Condos (510 Elizabeth Street and 2025 Maria Street) to the south.

3.3 MECP Publication NPC-300 Guidelines for Stationary Noise

The applicable MECP noise guidelines for new sensitive land uses adjacent to existing industrial commercial uses are provided in MECP Publication NPC-300. NPC-300 revokes and replaces the previous noise assessment guideline, Publication LU-131 and Publication NPC-205, which was previously used for assessing noise impacts as part of Certificates of Approval / Environmental Compliance Approvals granted by the MECP for industries.

The new guideline sets out noise limits for two main types of noise sources:

- Non-impulsive, "continuous" noise sources such as ventilation fans, mechanical equipment, and vehicles while moving within the property boundary of an industry. Continuous noise is measured using 1-hour average sound exposures (L_{eq} (1-hr) values), in dBA; and
- Impulsive noise, which is a "banging" type noise characterized by rapid rise time and decay. Impulsive noise is measured using a logarithmic mean (average) level (L_{LM}) of the impulses in a one-hour period, in dBAI.

Furthermore, the guideline requires an assessment at, and provides separate guideline limits for:

- Outdoor points of reception (e.g., back yards, communal outdoor amenity areas); and
- Façade points of reception such as the plane of windows on the outdoor façade which connect onto noise sensitive spaces, such as living rooms, dens, eat-in kitchens, dining rooms and bedrooms.

The applicable noise limits at a point of reception are the higher of:

- The existing ambient sound level due to road traffic, or
- The exclusion limits set out in the guideline.

The following tables set out the exclusion limits from the guideline.

Table 9: NPC-300 Class 1 Exclusion Limits for Non-Impulsive Sounds (L_{eq} (1-hr), dBA)

Time of Day	Class 1 Area	
	Plane of Windows of Noise Sensitive Spaces	Outdoor Points of Reception
7 am to 7 pm	50	50
7 pm to 11 pm	50	50
11 pm to 7 am	45	n/a

Table 10: NPC-300 Class 1 Exclusion Limits for Impulsive Sounds (L_{LLM}, dBAI)

Time of Day	No. of Impulses in a 1-hour Period	Class 1 Area	
		Plane of Windows of Noise Sensitive Spaces	Outdoor Points of Reception
7 am to 11 pm	9 or more	50	50
	7 to 8	55	55
	5 to 6	60	60
	4	65	65
	3	70	70
	2	75	75
	1	80	80
11 pm to 7 am	9 or more	45	n/a
	7 to 8	50	n/a
	5 to 6	55	n/a
	4	60	n/a
	3	65	n/a
	2	70	n/a
	1	75	n/a
Notes: n/a Not Applicable. Outdoor points of reception are not considered to be noise sensitive during the overnight period.			

There are no impulsive-type sources in the area, and impulsive noise is not considered further.

The applicable guideline limits for infrequent events such as emergency generator set testing are +5 dB higher than the values above. Generator set testing is evaluated by itself when comparing to the guideline limits. There is an emergency generator at the Berkeley condos, and a generator will be located at the proposed development.

3.4 Application of the NPC-300 Guidelines

The stationary noise guidelines apply only to residential land uses and to noise-sensitive commercial and institutional uses, as defined in NPC-300 (e.g., schools, daycares, hotels). For the site, the stationary noise guidelines only apply to the residential portions of the development, including:

- Individual residences;
- Communal indoor amenity areas; and
- Communal outdoor amenity areas.

All of the above have been considered as noise-sensitive points of reception in the analysis.

3.4.1 Proposed Area Classification

Under Ministry of the Environment, Conservation & Parks (MECP) Publication NPC-300 noise guidelines, noise sensitive receptors are defined using area classifications. The receptor areas are classified as either:

- Class 1 – Urban areas
- Class 2 – Suburban / semi-rural areas
- Class 3 – Rural areas
- Class 4 – Infill areas

Depending on the receptor area classification, different guideline limits apply. Classes 1, 2 and 3 were included in the predecessor guidelines to NPC-300, namely MECP Publications NPC-205, NPC-232, and LU-131. The Class 4 designation is a new designation, intended to allow for infill and redevelopment, whilst still protecting residences from undue noise.

Based on the nature of the area, the Class 1 area urban sound level limits apply. The area is urban in nature and dominated by man-made sounds, including road traffic noise and an “urban hum”, 24-hours per day.

3.5 Guideline Summary and Interpretation

The following presents a summary of the guidelines and settlements presented above.

- The applicable Ministry of the Environment noise guideline for assessing new residential development applications is Publication NPC-300.
- **The Class 1 limits have been considered in this study as a conservative assessment.**

3.6 Sources of Interest

Based on the information obtained from SLR historical work and aerial photography, the significant sources of noise in the area of the site have been identified. Noise emission rates for the equipment/ activities were determined based on information from SLR's in-house database.

- Bell Canada Building;
  - 2 Heating, Ventilation and Air Conditioning (HVAC) units; 5 Air Cooled Condensers (ACC) units
- Brant Street Commercial Uses (including Burlington Physiotherapy, Starbucks, Style & Shave, Premium Grill N Butcher, Simply Gifted, Amaya Express, Smith's Funeral Home and Brant Florist);
  - 14 HVAC units and 3 kitchen exhaust fans
- The Berkeley Condos; and
  - 1 cooling tower (CT), 1 make up air unit (MUA), 1 emergency generator
- The proposed development
  - 1 CT, 1 MUA, 1 emergency generator

Figure 5 shows the location of all modelled noise sources. Noise emission data used in the assessment can be found in **Appendix D**.

3.7 Ambient Background Sound Levels

Ambient sound levels in the area will be elevated due to road traffic and will result in elevated applicable noise guideline limits at the Subject Site. Existing road traffic was modelled using Cadna/A. Line sources of sound were used, with sound emission rates calculated using the ORNAMENT algorithms, the road traffic noise model of the MECP.

As discussed previously, road traffic data was obtained from City of Burlington. The following table summarizes the road traffic volumes used in the analysis.

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

Roadway Link	Ambient Traffic Volumes AADT [1]	% Traffic in Quietest Hour [2]			Commercial Vehicle Breakdown		Vehicle Speed (km/hr)
		Daytime	Evening	Nighttime	% Medium Trucks	% Heavy Trucks	
Emerald Crescent	65	5.0	2.5	0.4	0.0%	0.0%	50
Elizabeth Street	768	5.0	2.5	0.4	1.4%	1.2%	50
Brant Street North of Caroline	13814	5.0	2.5	0.4	1.1%	0.9%	50
Brant Street South of Caroline	9455	5.0	2.5	0.4	0.9%	0.8%	50
Caroline Street East of Brant Street	4994	5.0	2.5	0.4	0.5%	0.5%	40
Caroline Street West of Brant Street	5938	5.0	2.5	0.4	1.2%	1.0%	40

Roadway Link	Ambient Traffic Volumes AADT [1]	% Traffic in Quietest Hour [2]			Commercial Vehicle Breakdown		Vehicle Speed (km/hr)
		Daytime	Evening	Nighttime	% Medium Trucks	% Heavy Trucks	
John Street North of Caroline	2866	5.0	2.5	0.4	2.8%	2.5%	50
John Street South of Caroline	1444	5.0	2.5	0.4	4.9%	4.3%	50
Notes: [1] Based on peak hour TMC data noted in **Section 2.3.1**. [2] Based on typical hourly traffic volume distribution for municipal roadways published by US EPA.							

Resulting ambient (background) sound levels from the surrounding roadways are shown in **Figure 6** and the tables below as the applicable guideline limit.

3.8 Stationary Noise Source Modelling Methods

Worst-case scenario noise levels from the surrounding commercial/ industrial operations were modelled using Cadna/A, a computerized version of the internationally recognized ISO 9613-2 noise propagation algorithms. This is the preferred noise modelling methodology 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 = 0.2 as the default global parameter;
- Reflection: An order of reflection of 1 was used (accounts for noise reflecting from walls);
- Wall Absorption Coefficients: Set to typical value of 0.37; and
- Terrain: The surrounding area was assumed to be flat.

3.9 Stationary Noise Source Modelling Results

Predicted façade sound levels for stationary noise are shown in **Figures 7a to 7d.** Overall predicted sound levels are provided in the following tables.

Table 12: Predicted Worst Case Stationary Source Sound Levels – Bell Canada

Building			Guideline Limit [1]		Facility Sound Levels		Meets Guideline?
Area	Floor	Facade	Day/Evening	Night	Day/Evening	Night	
Podium	1	N	53	46	31 to 31	28 to 29	Yes
		E	50 to 51	45	18 to 25	15 to 22	Yes
	2 to 3	N	53 to 54	45 to 46	30 to 33	26 to 30	Yes
		E	50 to 51	45	18 to 25	16 to 22	Yes
		W	55	47	38 to 41	36 to 38	Yes
	4 to 6	N	50 to 53	45 to 46	33 to 43	30 to 39	Yes
		E	50	45	18 to 20	15 to 17	Yes
		W	51 to 55	45 to 47	38 to 45	35 to 41	Yes
Tower	7	N	51 to 53	45	40 to 46	35 to 42	Yes
		E	50	45	18 to 23	15 to 19	Yes
		S	50	45	24 to 27	21 to 24	Yes
		W	50	45	43 to 46	40 to 43	Yes
	8	N	50	45	40 to 46	36 to 43	Yes
		E	50	45	19 to 23	16 to 19	Yes
		S	50	45	27 to 30	23 to 27	Yes
		W	50	45	45 to 47	42 to 44	Yes
	9 to 27	N	50	45	41 to 48	37 to 45	Yes
		E	50	45	19 to 29	16 to 26	Yes
		S	50	45	18 to 39	15 to 36	Yes
		W	50 to 54	45 to 46	44 to 48	41 to 45	Yes
Outdoor Amenity Areas	7th Floor Communal		50	n/a	23 to 32	n/a	Yes
	Tower Roof Communal		50	n/a	18 to 25	n/a	Yes
	8th Floor Terraces		50	n/a	26 to 40	n/a	Yes

Notes: - All Sound Levels are L_{eq} (1hr) values, in dBA.
[1] Higher of predicted ambient sound levels due to road traffic, and 50 dBA during the day/evening (7am to 11pm) and 45 dBA at night (11pm to 7am)

The Publication NPC-300 Class 1 Area noise guideline limits are satisfied. Therefore, additional noise mitigation measures are not required.

Table 13: Predicted Worst Case Stationary Source Sound Levels – Brant Street Commercial Uses

Building			Guideline Limit [1]		Facility Sound Levels		Meets Guideline?
Area	Floor	Facade	Day/Evening	Night	Day/Evening	Night	
Podium	1	N	53	46	26 to 28	20 to 20	Yes
		E	50 to 51	45	19 to 22	13 to 17	Yes
	2 to 3	N	53 to 54	45 to 46	27 to 33	20 to 29	Yes
		E	50 to 51	45	19 to 21	13 to 15	Yes
		W	55	47	48 to 50	42 to 44	Yes
	4 to 6	N	50 to 53	45 to 46	25 to 39	19 to 34	Yes
		E	50	45	20 to 22	14 to 15	Yes
		W	51 to 55	45 to 47	39 to 50	34 to 43	Yes
Tower	7	N	51 to 53	45	28 to 39	22 to 34	Yes
		E	50	45	20 to 22	14 to 16	Yes
		S	50	45	26 to 35	22 to 30	Yes
		W	50	45	49 to 49	41 to 43	Yes
	8	N	50	45	28 to 39	22 to 34	Yes
		E	50	45	20 to 22	14 to 15	Yes
		S	50	45	27 to 42	22 to 34	Yes
		W	50	45	48 to 49	43 to 43	Yes
	9 to 27	N	50	45	26 to 39	20 to 34	Yes
		E	50	45	19 to 25	12 to 17	Yes
		S	50	45	33 to 48	27 to 40	Yes
		W	50 to 54	45 to 46	44 to 49	38 to 43	Yes
Outdoor Amenity Areas	7th Floor Communal		50	n/a	33 to 39	n/a	Yes
	Tower Roof Communal		50	n/a	28 to 30	n/a	Yes
	8th Floor Terraces		50	n/a	32 to 48	n/a	Yes

Notes: - All Sound Levels are L_{eq} (1hr) values, in dBA.
[1] Higher of predicted ambient sound levels due to road traffic, and 50 dBA during the day/evening (7am to 11pm) and 45 dBA at night (11pm to 7am)

The Publication NPC-300 Class 1 Area noise guideline limits are satisfied at the development. Additional noise mitigation measures are not required.

Table 14: Predicted Worst Case Stationary Source Façade Sound Levels – Berkeley Condos Mechanical Systems

Building			Guideline Limit [1]		Facility Sound Levels		Meets Guideline?
Area	Floor	Facade	Day/Evening	Night	Day/Evening	Night	
Podium	1	N	53	46	11 to 12	8 to 9	Yes
		E	50 to 51	45	12 to 19	9 to 16	Yes
	2 to 3	N	53 to 54	45 to 46	11 to 12	8 to 9	Yes
		E	50 to 51	45	12 to 18	9 to 15	Yes
		W	55	47	13 to 15	10 to 12	Yes
	4 to 6	N	50 to 53	45 to 46	13 to 14	10 to 11	Yes
		E	50	45	14 to 20	11 to 17	Yes
		W	51 to 55	45 to 47	13 to 18	10 to 15	Yes
Tower	7	N	51 to 53	45	14 to 15	11 to 12	Yes
		E	50	45	16 to 24	13 to 21	Yes
		S	50	45	27 to 28	24 to 25	Yes
		W	50	45	15 to 21	12 to 18	Yes
	8	N	50	45	14 to 15	11 to 12	Yes
		E	50	45	17 to 18	14 to 15	Yes
		S	50	45	28 to 28	25 to 25	Yes
		W	50	45	15 to 19	12 to 16	Yes
	9 to 27	N	50	45	14 to 18	11 to 15	Yes
		E	50	45	15 to 39	12 to 36	Yes
		S	50	45	28 to 46	25 to 43	Yes
		W	50 to 54	45 to 46	15 to 35	12 to 32	Yes
Outdoor Amenity Areas	7th Floor Communal		50	n/a	29	n/a	Yes
	Tower Roof Communal		50	n/a	34	n/a	Yes
	8th Floor Terraces		50	n/a	29 to 30	n/a	Yes

Notes: - All Sound Levels are L_{eq} (1hr) values, in dBA.
[1] Higher of predicted ambient sound levels due to road traffic, and 50 dBA during the day/evening (7am to 11pm) and 45 dBA at night (11pm to 7am)

The Publication NPC-300 Class 1 Area noise guideline limits are satisfied at the development. Additional noise mitigation measures are not required.



Table 15: Predicted Worst Case Stationary Source Sound Levels – Berkeley Condos Emergency Generator Testing

Building			Guideline Limit [1]		Facility Sound Levels		Meets Guideline?
Area	Floor	Facade	Day/Evening	Night	Day/Evening	Night	
Podium	1	N	55	n/a	22 to 23	n/a	Yes
		E	55	n/a	22 to 26	n/a	Yes
	2 to 3	N	55	n/a	22 to 23	n/a	Yes
		E	55	n/a	23 to 24	n/a	Yes
		W	55	n/a	24 to 26	n/a	Yes
	4 to 6	N	55	n/a	23 to 24	n/a	Yes
		E	55	n/a	23 to 25	n/a	Yes
		W	55	n/a	24 to 29	n/a	Yes
Tower	7	N	55	n/a	24 to 25	n/a	Yes
		E	55	n/a	24 to 28	n/a	Yes
		S	55	n/a	30 to 31	n/a	Yes
		W	55	n/a	25 to 28	n/a	Yes
	8	N	55	n/a	24 to 25	n/a	Yes
		E	55	n/a	24 to 25	n/a	Yes
		S	55	n/a	29 to 31	n/a	Yes
		W	55	n/a	26 to 28	n/a	Yes
	9 to 27	N	55	n/a	24 to 27	n/a	Yes
		E	55	n/a	24 to 27	n/a	Yes
		S	55	n/a	29 to 54	n/a	Yes
		W	55	n/a	25 to 48	n/a	Yes
Outdoor Amenity Areas	7th Floor Communal		55	n/a	31 to 32	n/a	Yes
	Tower Roof Communal		55	n/a	43	n/a	Yes
	8th Floor Terraces		55	n/a	30 to 32	n/a	Yes

Notes: - All Sound Levels are L_{eq} (1hr) values, in dBA.
[1] Higher of predicted ambient sound levels due to road traffic +5 dB, and 55 dBA during the day/evening (7am to 11pm)

The Publication NPC-300 Class 1 Area noise guideline limits are satisfied at the development. Additional noise mitigation measures are not required.

3.10 Mitigation Measures and Warning Clauses

Based on the noise modelling above, excesses of the Class 1 guideline limits are not predicted on the proposed Subject Site. Additional physical noise mitigation measures are not required.

Regardless, a **Type E** noise warning clause is recommended for all units. See **Appendix A** for warning clause details. The warning clauses should be included in documents registered on Title and included in all agreements of purchase and sale or lease and all rental agreements.

PART 2: IMPACTS OF THE DEVELOPMENT ON ITSELF AND THE SURROUNDINGS

4.0 Stationary Source Noise from the Development on Itself and the Surroundings.

4.1 Stationary Source Noise Guidelines

The same stationary source guidelines discussed in **Section 3.0** were applied in assessing impacts of the development building mechanical system. The sound level limits for a Class 1 area were applied at all surrounding noise-sensitive PORs, considering plane-of-window PORs and outdoor points of reception (OPORs).

4.2 Sources of Noise

At the time of study, detailed mechanical plans for the development are not available. As a proxy, data/sources from the Berkeley Condos sister development to the south of the proposed development has been used. Potential sources of stationary sources noise include:

- Rooftop Make-up Air Unit (MUA-1) – 1 unit;
- Rooftop Cooling Tower – 1 Unit; and
- Emergency Generator – 1 Unit.

The location of modelled stationary sources in the development are shown in **Figure 5**. The noise modelling data is provided in **Appendix D**.

4.3 Stationary Noise Source Modelling

Sound levels from stationary sources were modelled using Cadna/A, a software implementation of the internationally recognized ISO-9613-2 environmental noise propagation algorithms. A description of the modelling procedure is provided in **Section 3.10**.

4.4 Stationary Noise Source Noise Modeling Results

4.4.1 Impacts on the Development

Impacts from building mechanical sources on the development itself are presented in **Figures 8a and 8b**, and are tabulated below:

Table 16: Predicted Worst Case Stationary Source Sound Levels – Development Mechanical Sources, On the Development Itself

Building			Guideline Limit [1]		Facility Sound Levels		Meets Guideline?
Area	Floor	Facade	Day/Evening	Night	Day/Evening	Night	
Podium	1	N	53	46	21 to 21	18 to 18	Yes
		E	50 to 51	45	20 to 22	17 to 19	Yes
	2 to 3	N	53 to 54	45 to 46	20 to 22	17 to 19	Yes
		E	50 to 51	45	20 to 23	17 to 20	Yes
		W	55	47	21 to 23	18 to 20	Yes
	4 to 6	N	50 to 53	45 to 46	22 to 23	19 to 20	Yes
		E	50	45	21 to 24	18 to 21	Yes
		W	51 to 55	45 to 47	22 to 23	19 to 20	Yes
Tower	7	N	51 to 53	45	23 to 24	20 to 21	Yes
		E	50	45	22 to 25	19 to 22	Yes
		S	50	45	24 to 26	21 to 23	Yes
		W	50	45	24 to 25	21 to 22	Yes
	8	N	50	45	24 to 24	21 to 21	Yes
		E	50	45	22 to 23	19 to 20	Yes
		S	50	45	26 to 27	23 to 24	Yes
		W	50	45	24 to 24	21 to 21	Yes
	9 to 27	N	50	45	24 to 43	21 to 40	Yes
		E	50	45	23 to 35	20 to 32	Yes
		S	50	45	24 to 37	21 to 34	Yes
		W	50 to 54	45 to 46	24 to 41	21 to 38	Yes
Outdoor Amenity Areas	7th Floor Communal		50	n/a	25 to 26	n/a	Yes
	Tower Roof Communal		50	n/a	43 to 44	n/a	Yes
	8th Floor Terraces		50	n/a	27	n/a	Yes

Notes: - All Sound Levels are L_{eq} (1hr) values, in dBA.
[1] Higher of predicted ambient sound levels due to road traffic, and 50 dBA during the day/evening (7am to 11pm) and 45 dBA at night (11pm to 7am)

Table 17: Predicted Worst Case Stationary Source Sound Levels – Development Emergency Generator Testing, On the Development Itself

Building			Guideline Limit [1]		Facility Sound Levels		Meets Guideline?
Area	Floor	Facade	Day/Evening	Night	Day/Evening	Night	
Podium	1	N	55	n/a	23 to 24	n/a	Yes
		E	55	n/a	24 to 25	n/a	Yes
	2 to 3	N	55	n/a	23 to 25	n/a	Yes
		E	55	n/a	24 to 26	n/a	Yes
		W	55	n/a	23 to 25	n/a	Yes
	4 to 6	N	55	n/a	25 to 26	n/a	Yes
		E	55	n/a	24 to 28	n/a	Yes
		W	55	n/a	24 to 26	n/a	Yes
Tower	7	N	55	n/a	26 to 27	n/a	Yes
		E	55	n/a	26 to 28	n/a	Yes
		S	55	n/a	28 to 29	n/a	Yes
		W	55	n/a	25 to 27	n/a	Yes
	8	N	55	n/a	27 to 27	n/a	Yes
		E	55	n/a	26 to 27	n/a	Yes
		S	55	n/a	27 to 31	n/a	Yes
		W	55	n/a	25 to 26	n/a	Yes
	9 to 27	N	55	n/a	27 to 45	n/a	Yes
		E	55	n/a	27 to 45	n/a	Yes
		S	55	n/a	26 to 41	n/a	Yes
		W	55	n/a	26 to 37	n/a	Yes
Outdoor Amenity Areas	7th Floor Communal		55	n/a	28	n/a	Yes
	Tower Roof Communal		55	n/a	46 to 48	n/a	Yes
	8th Floor Terraces		55	n/a	29 to 30	n/a	Yes

Notes: - All Sound Levels are L_{eq} (1hr) values, in dBA.
[1] Higher of predicted ambient sound levels due to road traffic +5 dB, and 55 dBA during the day/evening (7am to 11pm)

The Publication NPC-300 Class 1 Area noise guideline limits are satisfied at the development. Additional noise mitigation measures are not required.

4.4.2 Impacts on the Surroundings

Impacts from building mechanical sources on the closest surrounding noise-sensitive receptors are presented in **Figures 9a and 9b**, and are tabulated below:

Table 18: Predicted Worst Case Stationary Source Sound Levels – Development On the Surroundings

Off-Site Location	Normal Operations			Generator Testing	
	Day/Evening	Night	Meets Guideline?	Day/Evening	Meets Guideline?
Berkeley Condo Tower	28	25	Yes	32	Yes
2016 Emerald Cres.	25	22	Yes	30	Yes
2036 Emerald Cres.	25	22	Yes	31	Yes
2040 Emerald Cres.	24	21	Yes	31	Yes
2046 Emerald Cres.	25	22	Yes	32	Yes
2035 Caroline St.	25	22	Yes	30	Yes
2041 Caroline St.	24	21	Yes	32	Yes
2045 Caroline St.	24	21	Yes	32	Yes
2049 Caroline St.	23	20	Yes	33	Yes
2044 Caroline St.	23	20	Yes	32	Yes
2048 Caroline St.	24	21	Yes	33	Yes
519 Elizabeth St.	23	20	Yes	29	Yes
509 Elizabeth St.	23	20	Yes	32	Yes
509 Elizabeth St.	24	21	Yes	28	Yes
497 Elizabeth St.	20	17	Yes	31	Yes
477 Elizabeth St.	29	26	Yes	36	Yes
2024 Maria St.	18	15	Yes	23	Yes
2061 Maria St.	24	21	Yes	33	Yes
2061 Maria St.	24	21	Yes	34	Yes
2061 Maria St.	21	18	Yes	34	Yes
478 Pearl St.	30	27	Yes	40	Yes

Notes: - All Sound Levels are L_{eq} (1hr) values, in dBA.
[1] Higher of predicted ambient sound levels due to road traffic, and 50 dBA during the day/evening (7am to 11pm) and 45 dBA at night (11pm to 7am)

The Publication NPC-300 Class 1 Area noise guideline limits are satisfied at all existing off-site residences/ noise-sensitive points of reception. Additional noise mitigation measures are not required.

4.5 Results and Recommendations

The Publication NPC-300 Class 1 Area noise guideline limits are predicted to be satisfied at the development and at all existing off-site residences/ noise-sensitive points of reception. Additional noise mitigation measures are not required.

The mechanical equipment design for the development should be reviewed by an acoustical consultant as the design progresses and detailed data becomes available, later in the design process.

5.0 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:

Transportation Noise

- An assessment of transportation sound levels from surrounding road sources has been completed.
- Based on transportation façade sound levels, exterior wall and window construction meeting the minimum non-acoustical requirements of the OBC are predicted to be sufficient to meet MECP indoor noise guidelines. Wall and window upgrades are not required.
- Noise barriers are not required.
- In accordance with the guidelines, at a minimum, residential units should be equipped with forced air heating systems to allow for future installation of air conditioning by the occupant (in reality, the building will incorporate air conditioning throughout). A Type C noise warning clause is required.
- Warning clauses should be included in agreements registered on Title for the residential units and included in agreements of purchase and sale/rental agreements. Warning clause recommendations are summarized in **Appendix A**.

Stationary Source Noise

- Stationary noise impacts from off-site sources affecting the proposed development were modelled. Predicted sound levels meet the applicable NPC-300 Class 1 Area noise guidelines. Additional noise mitigation is not required. A Type E noise warning clause is required.
- Noise levels from development noise sources (mechanical equipment and emergency generators) were modelled. Predicted sound levels at the development and at all existing off-site residences are predicted to meet the applicable NPC-300 Class 1 Area noise guidelines. Additional noise mitigation is not required.
- The mechanical equipment design for the development should be reviewed by an acoustical consultant as the design progresses and detailed data becomes available, later in the design process.



6.0 Closure

This report has been prepared by and approved by:

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7.0 References

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Figures

Environmental Noise Assessment

2030 Caroline Street - Burlington

Inaria Burlington Inc.

SLR Project No.: 241.031144.00001

June 21, 2024



INARIA BURLINGTON INC.

2030 CAROLINE STREET - BURLINGTON, ONTARIO

CONTEXT SITE PLAN

True North

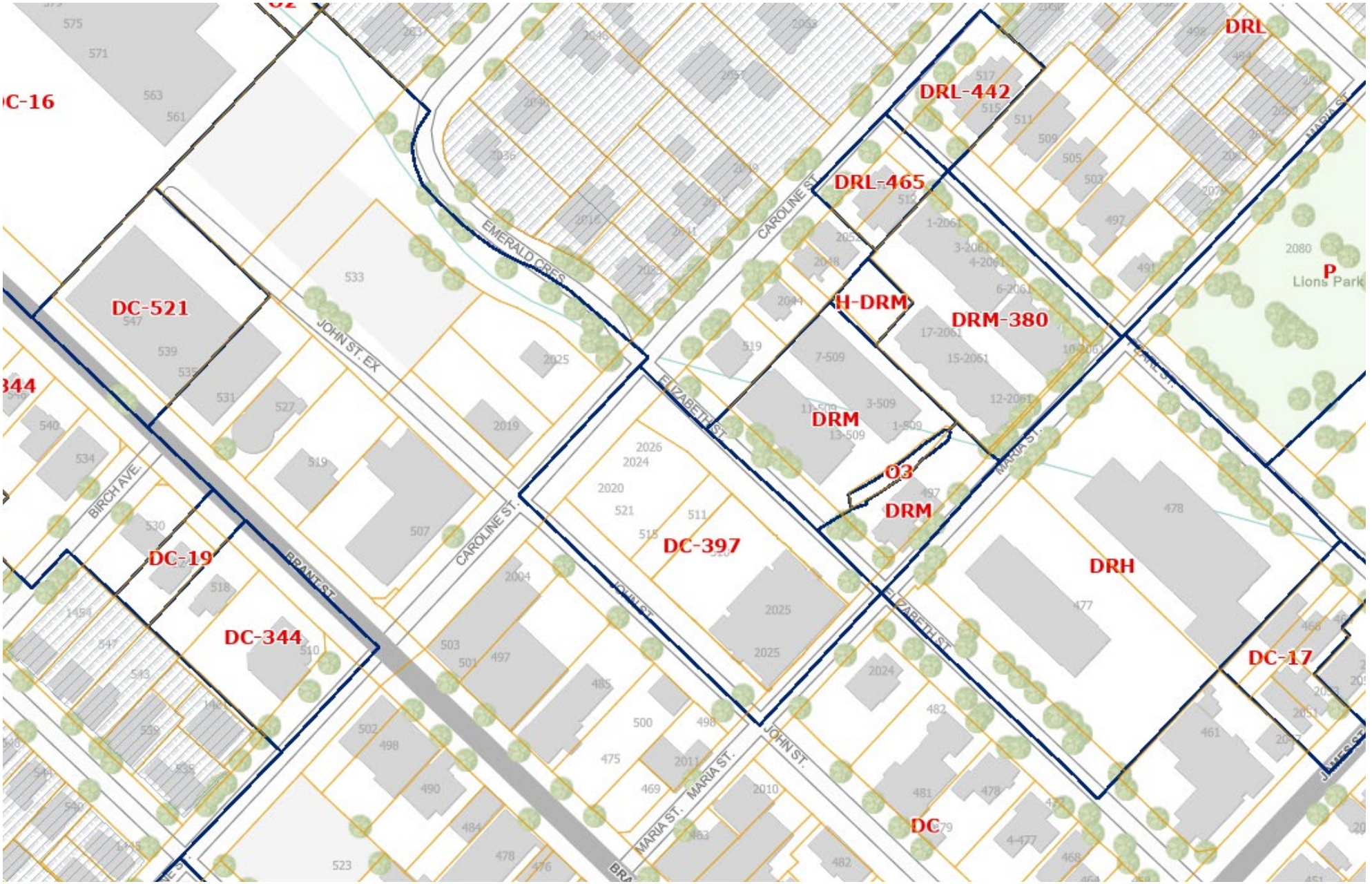
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Date: June 21, 2024 Rev 0.0

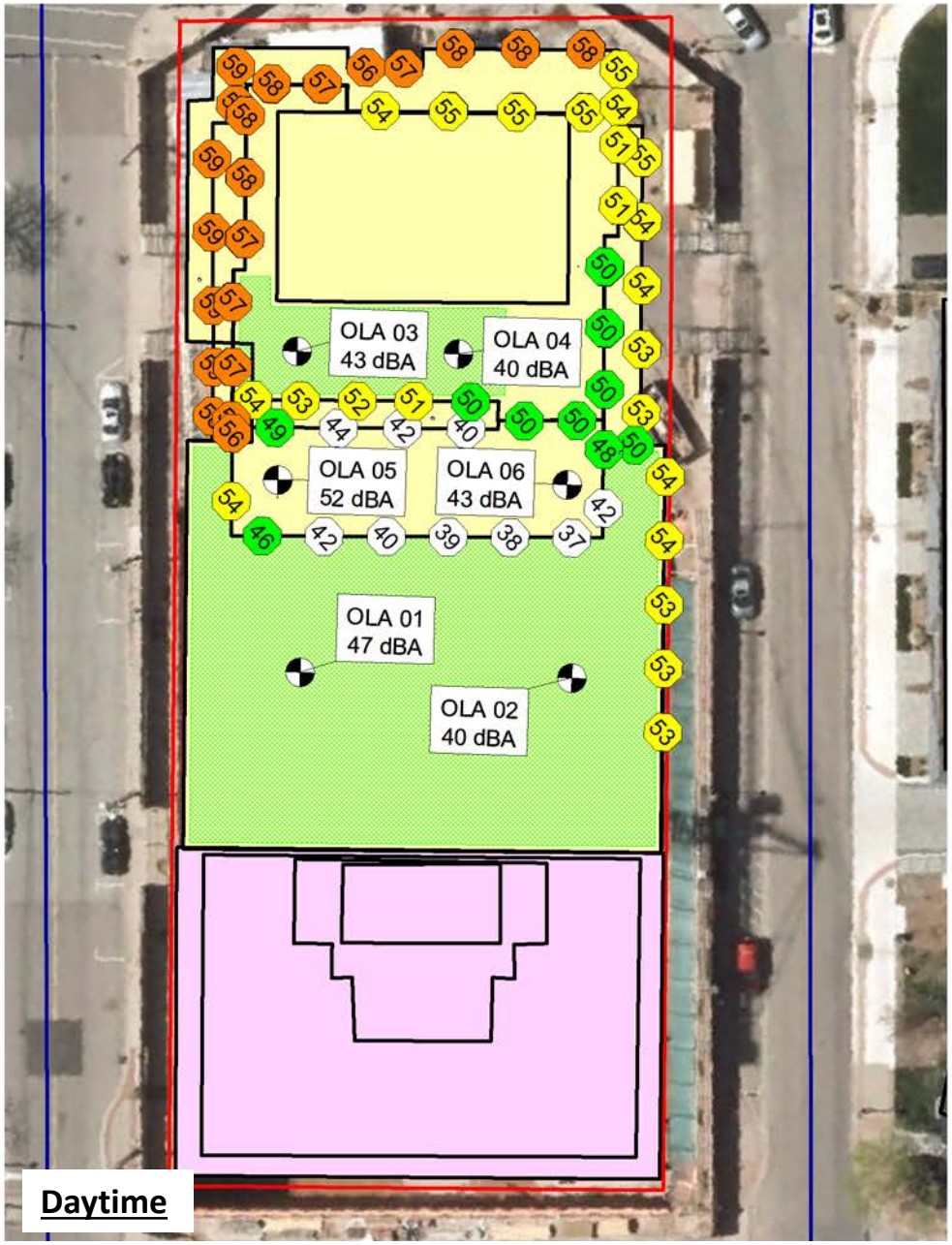
Project No. 241.031144.00001

Figure No. 1

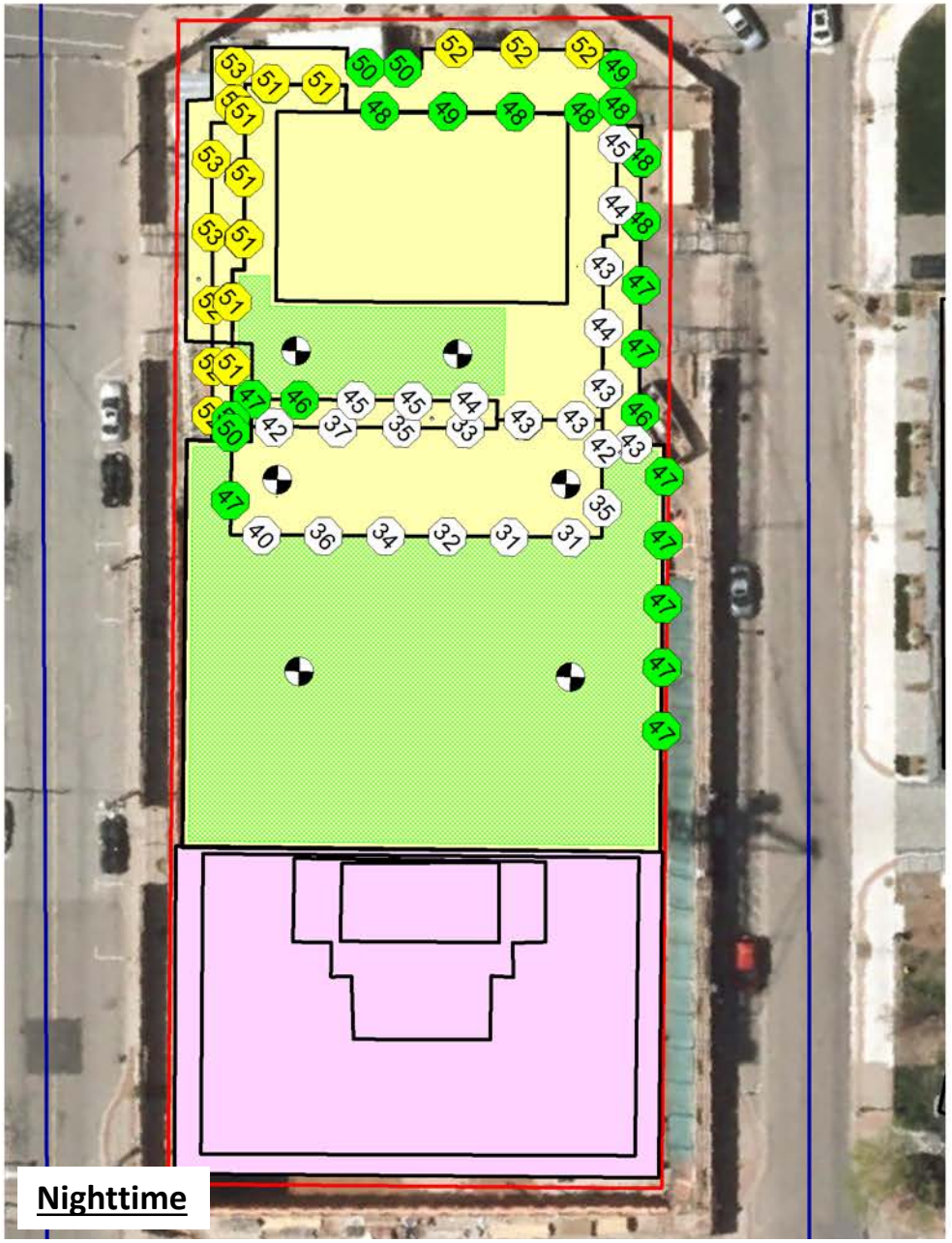
SLR



INARIA BURLINGTON INC.	True North	Scale: 1:500	METRES
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. **2**
BURLINGTON ZONING MAP		Project No. 241.031144.00001	SLR



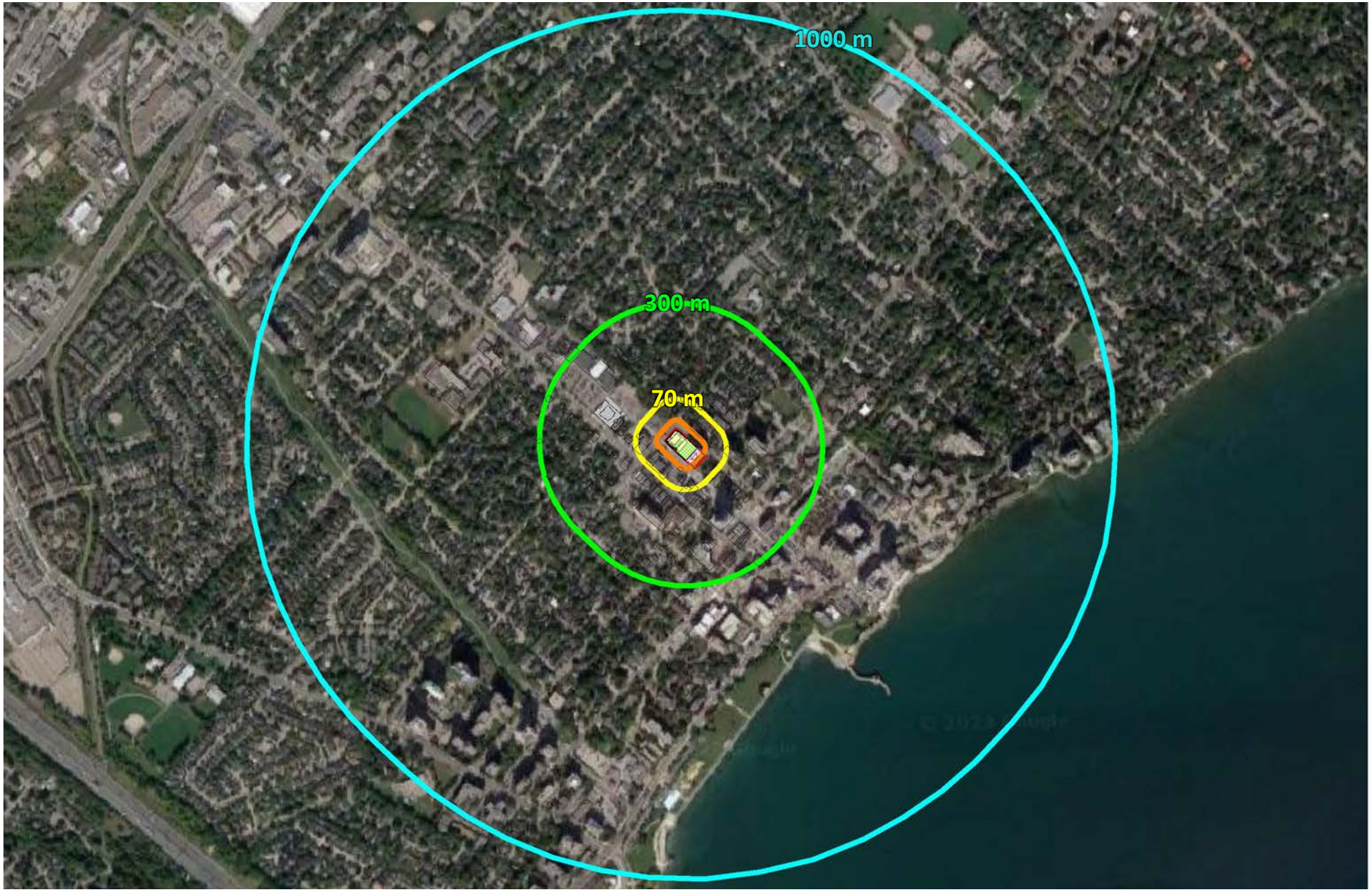
Daytime



Nighttime

INARIA BURLINGTON INC.	True North	Scale: 1:600	METRES
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. **3**
PREDICTED TRANSPORTATION SOUND LEVELS – DAYTIME/NIGHTTIME		Project No. 241.031144.00001	

SLR



INARIA BURLINGTON INC.

2030 CAROLINE STREET - BURLINGTON, ONTARIO

GUIDELINE D-6 SEPARATION DISTANCES – TO 1000 M

True North

Scale: 1:12500

METRES

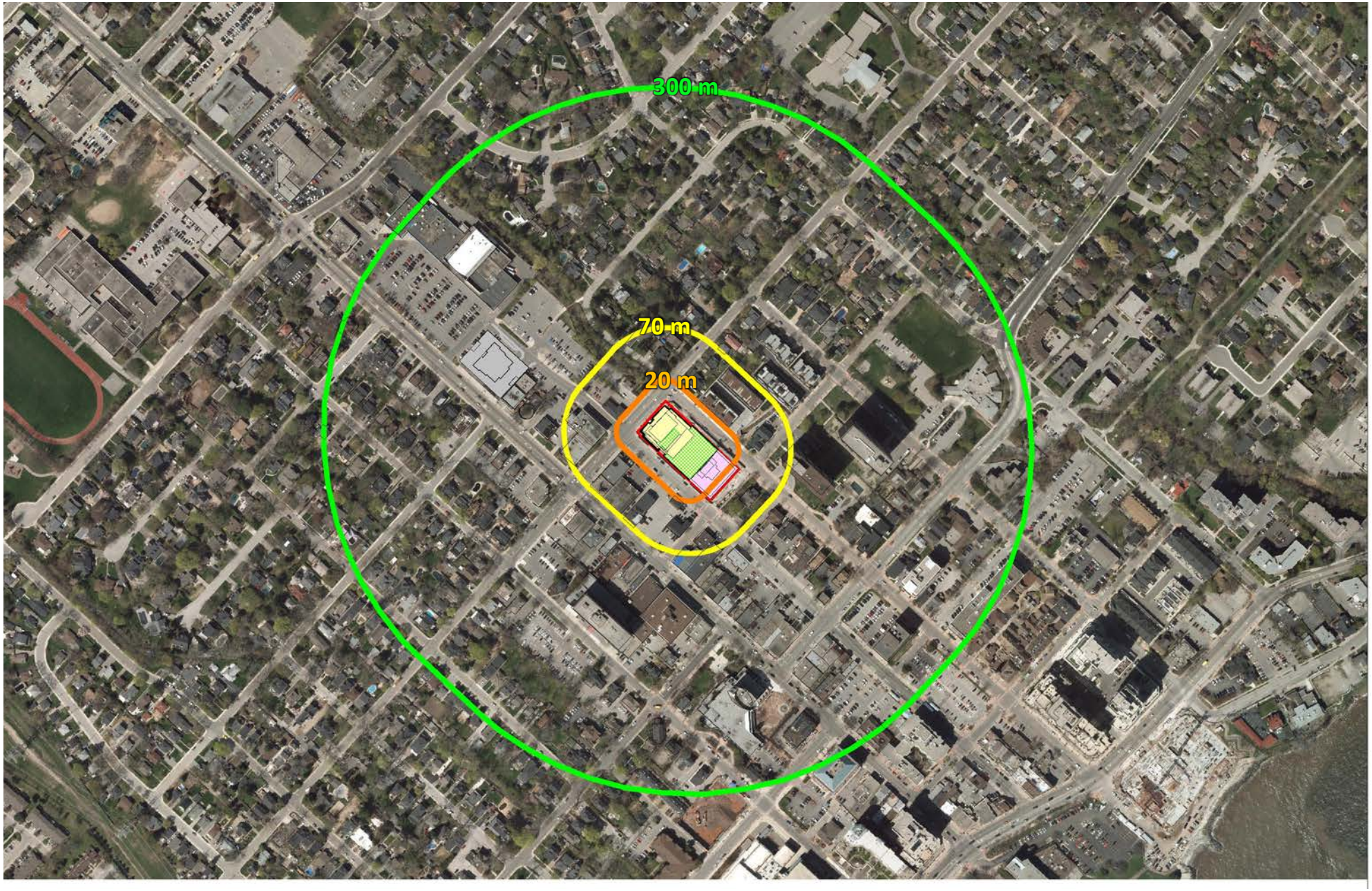
Date: June 21, 2024

Rev 0.0

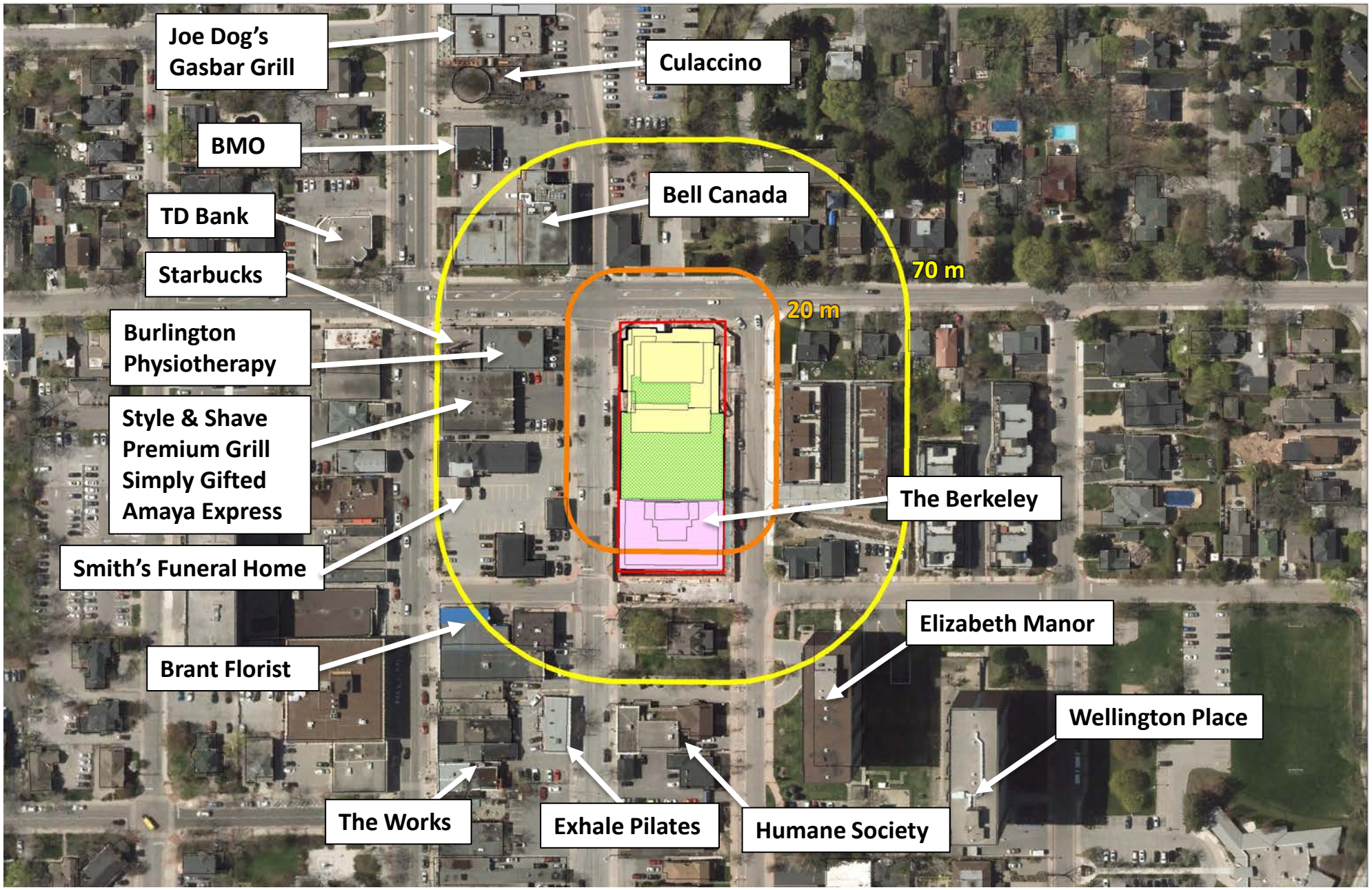
Project No. 241.031144.00001

Figure No. **4a**

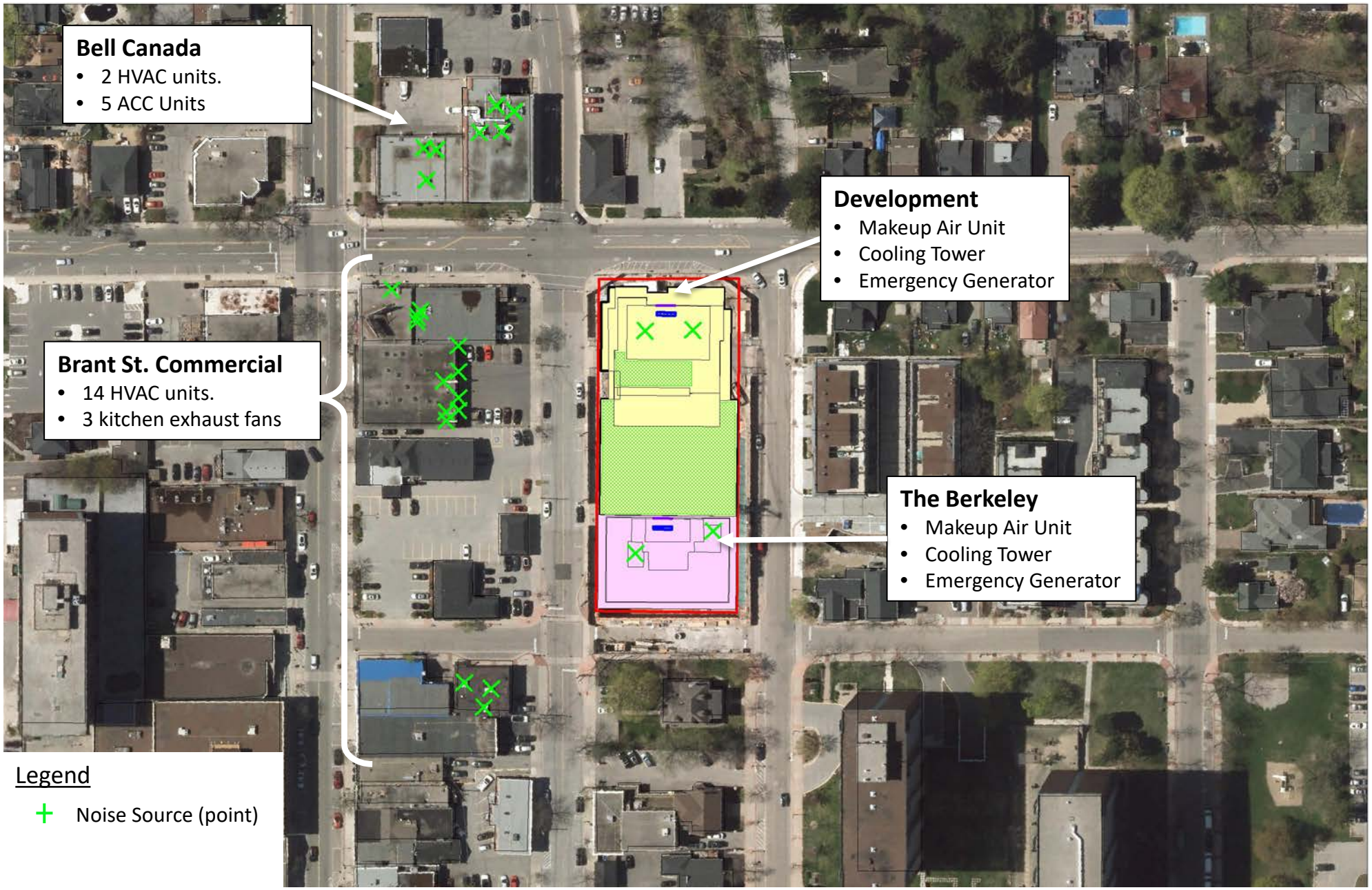
SLR



INARIA BURLINGTON INC.	True North	Scale: 1:5000	METRES	SLR
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. **4b**	
GUIDELINE D-6 SEPARATION DISTANCES – TO 300 M		Project No. 241.031144.00001		

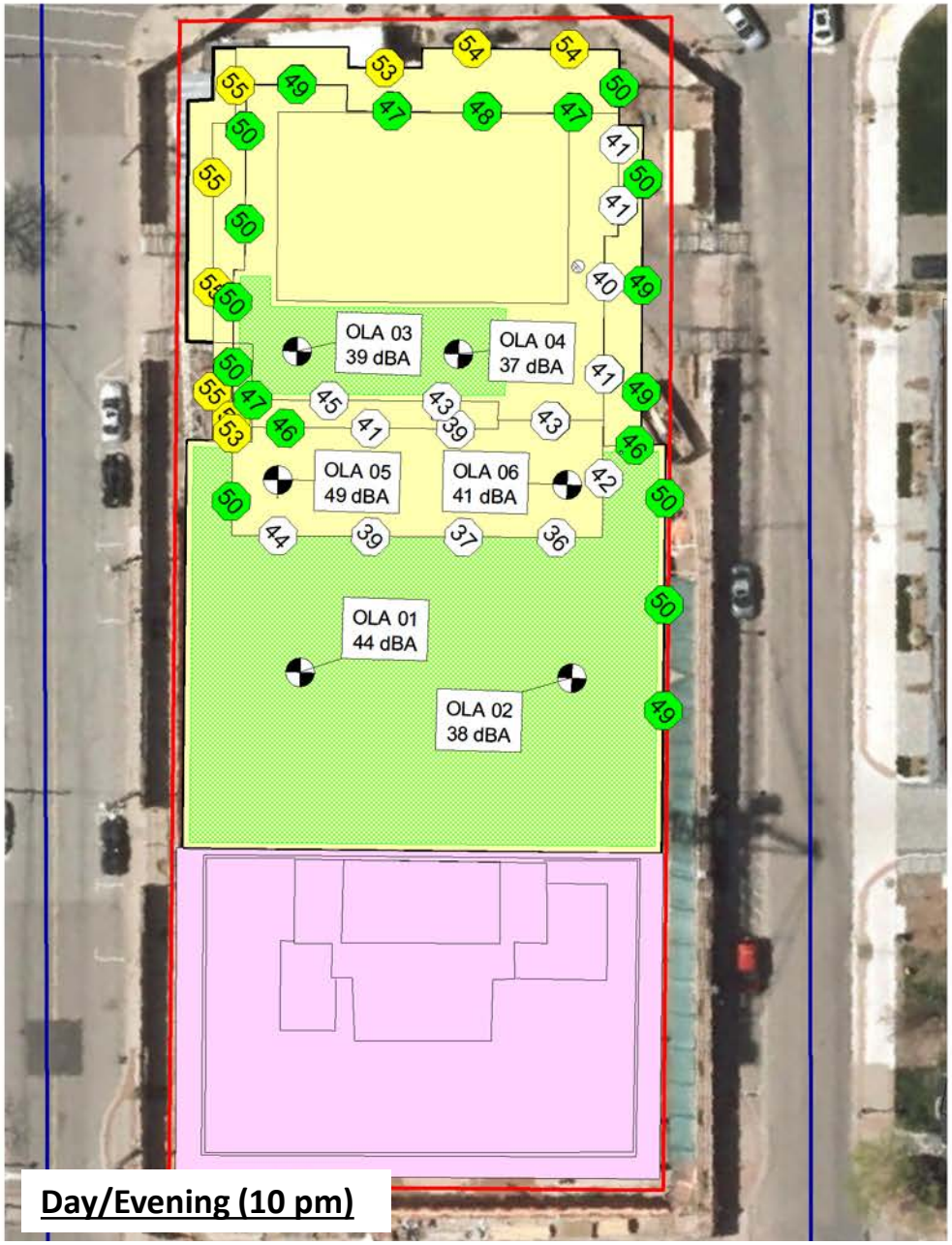


INARIA BURLINGTON INC. 2030 CAROLINE STREET - BURLINGTON, ONTARIO GUIDELINE D-6 SEPARATION DISTANCES – TO 70 M	True North	Scale: 1:2000	METRES	SLR
		Date: June 21, 2024 Rev 0.0	Figure No. **4c**	
		Project No. 241.031144.00001		



INARIA BURLINGTON INC.	True North	Scale: 1:1500	METRES
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. **5**
MODELLED STATIONARY NOISE SOURCE LOCATIONS		Project No. 241.031144.00001	

SLR



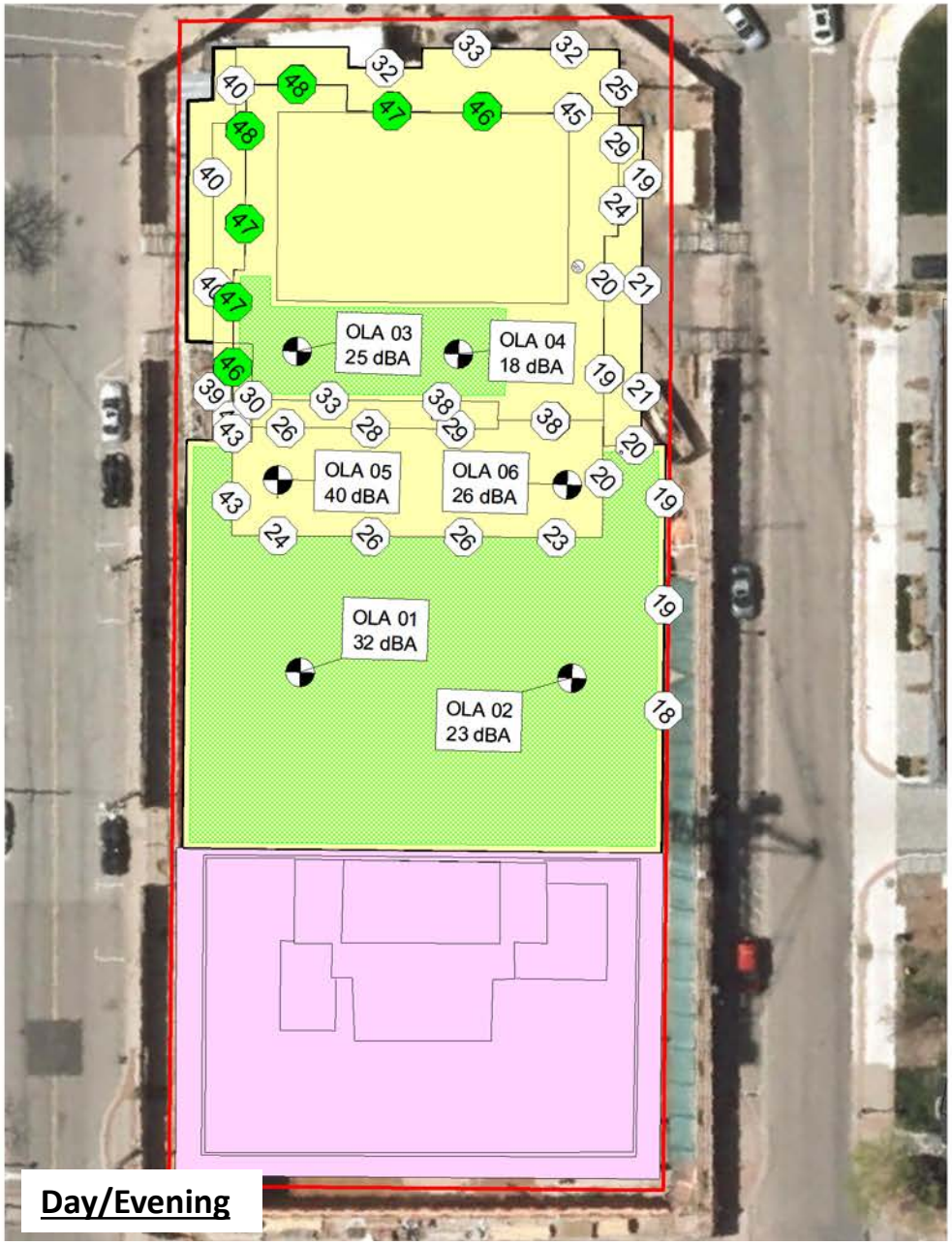
Day/Evening (10 pm)



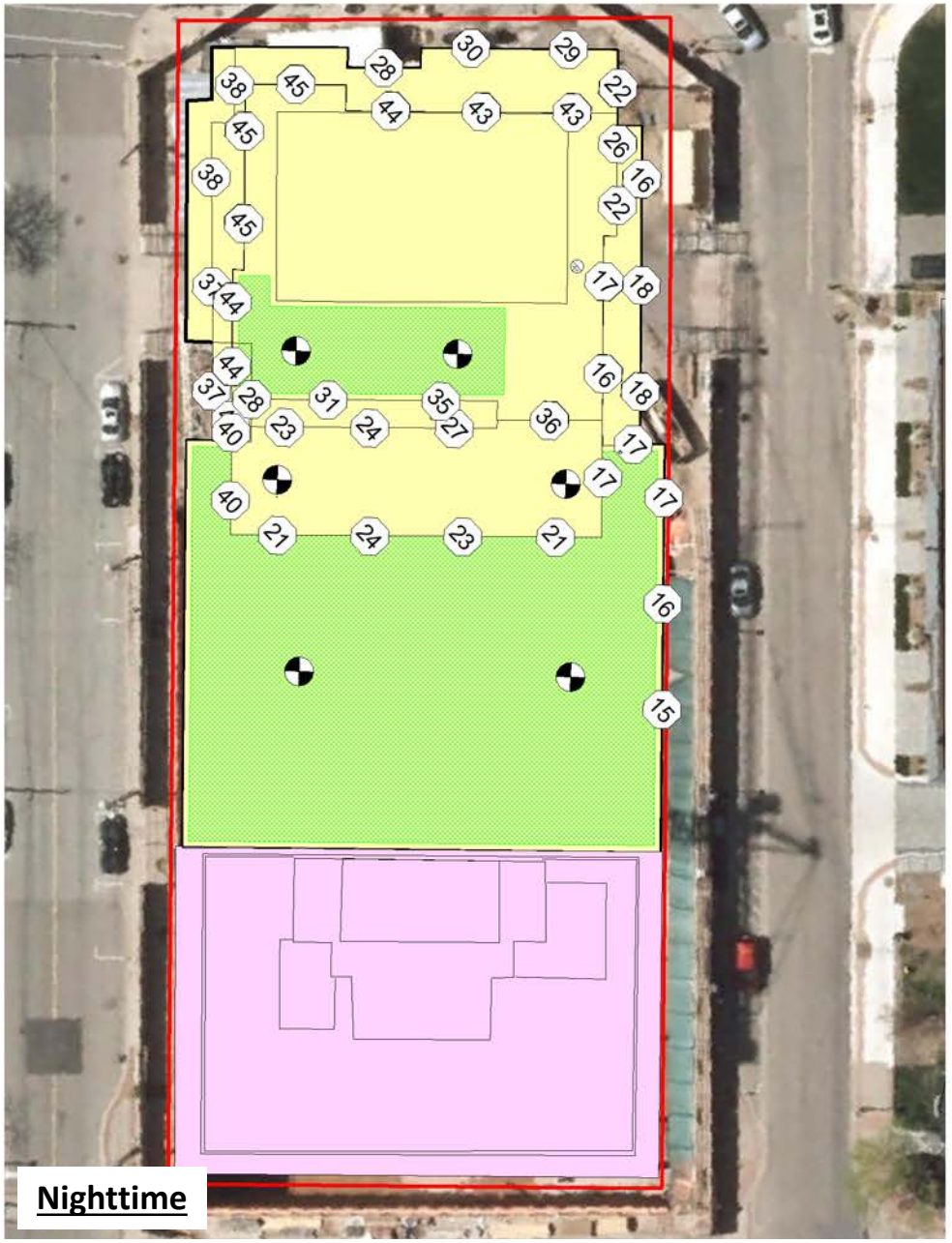
Nighttime (3 am)

INARIA BURLINGTON INC.	True North	Scale: 1:600	METRES
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. 6
PREDICTED AMBIENT ROAD TRAFFIC SOUND LEVELS		Project No. 241.031144.00001	

SLR



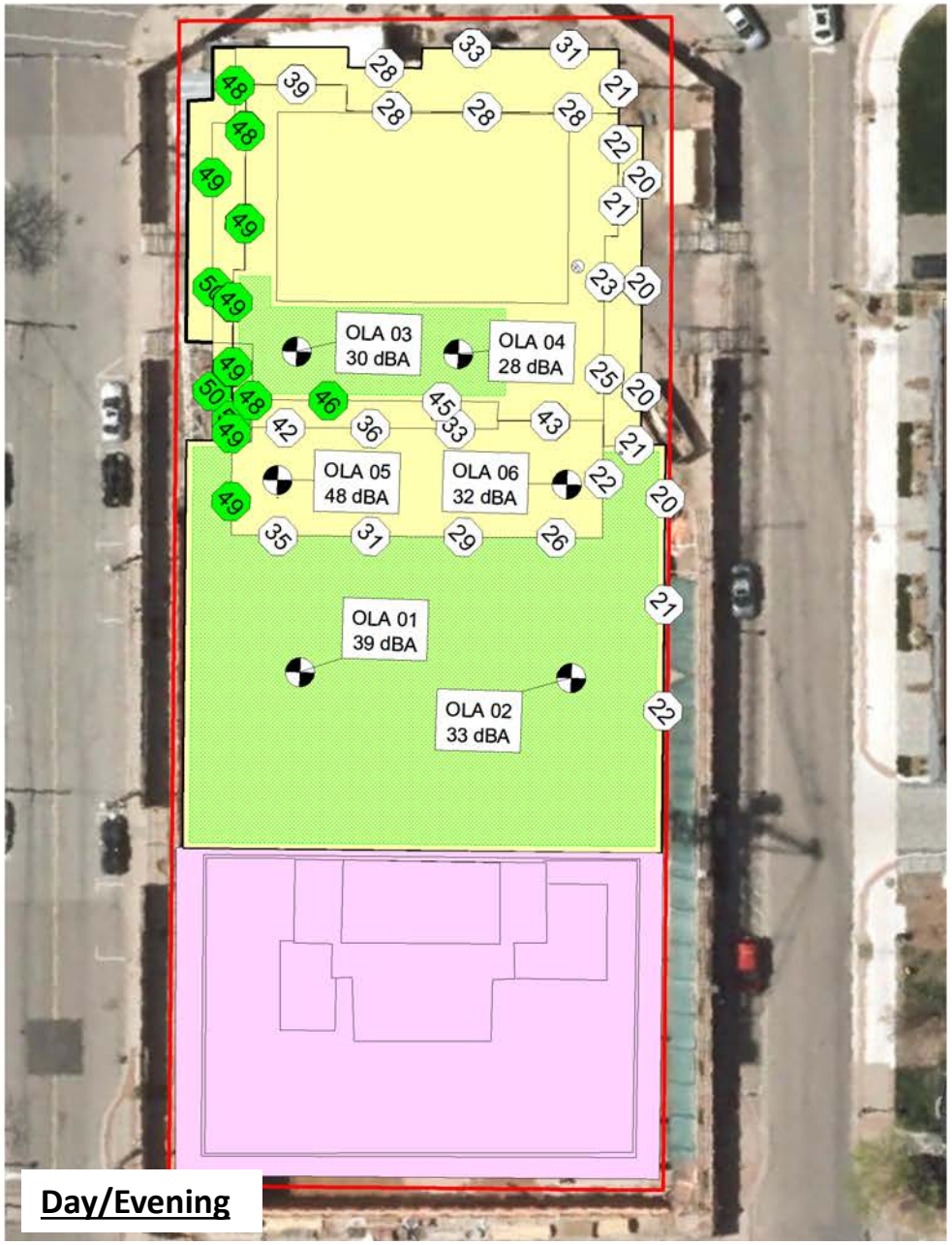
Day/Evening



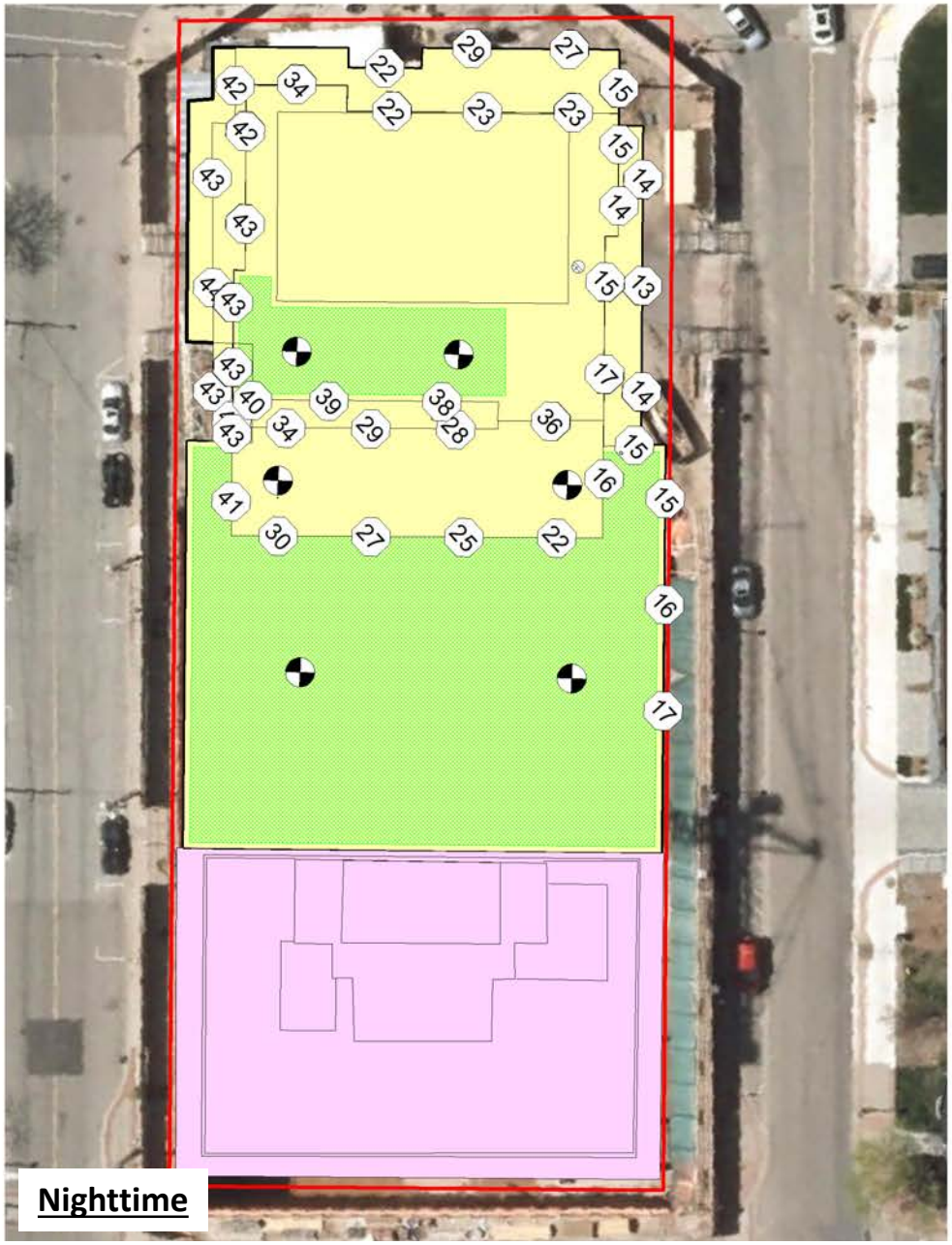
Nighttime

INARIA BURLINGTON INC.	True North	Scale: 1:600	METRES
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. **7a**
PREDICTED STATIONARY SOURCE SOUND LEVELS – BELL CANADA		Project No. 241.031144.00001	

SLR



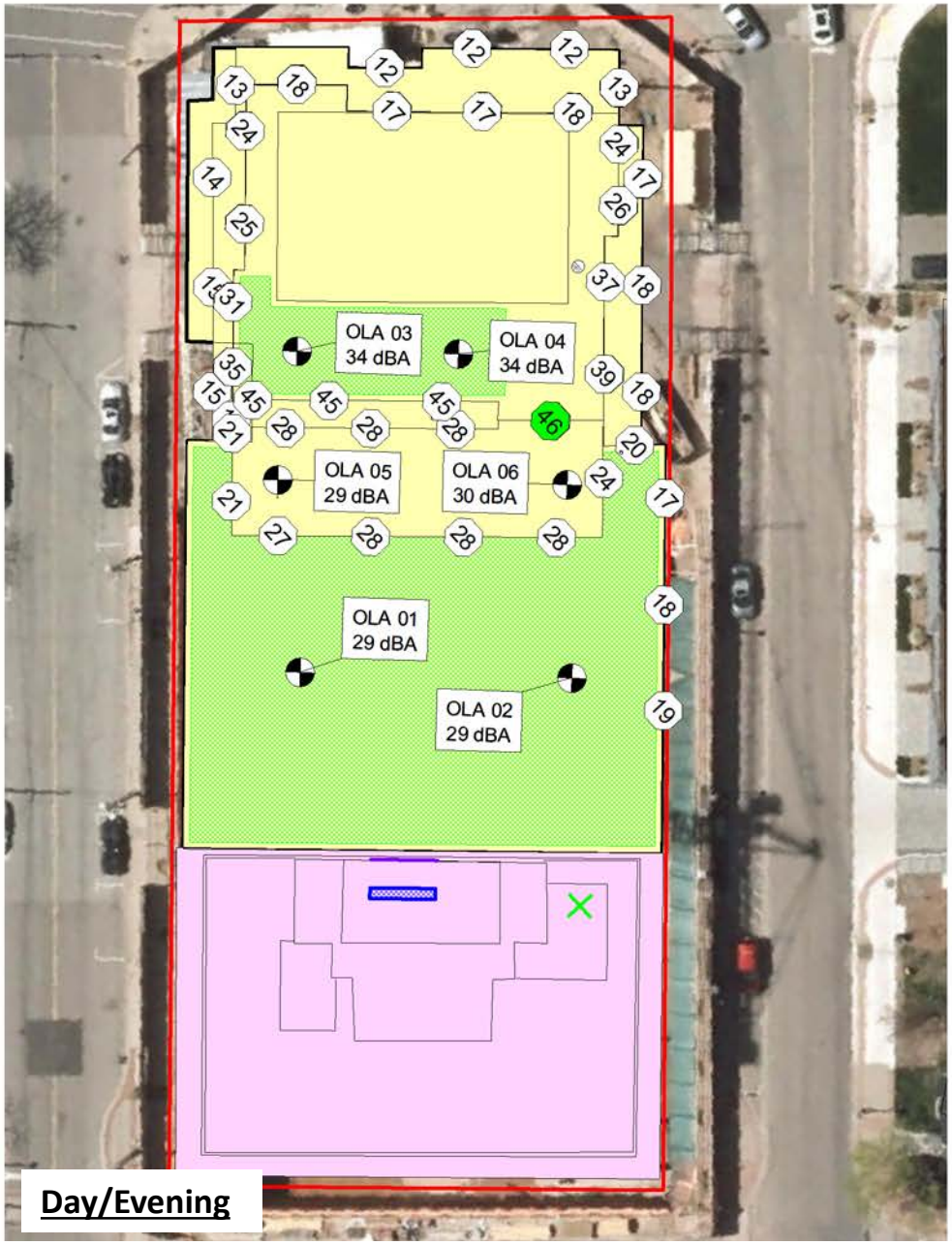
Day/Evening



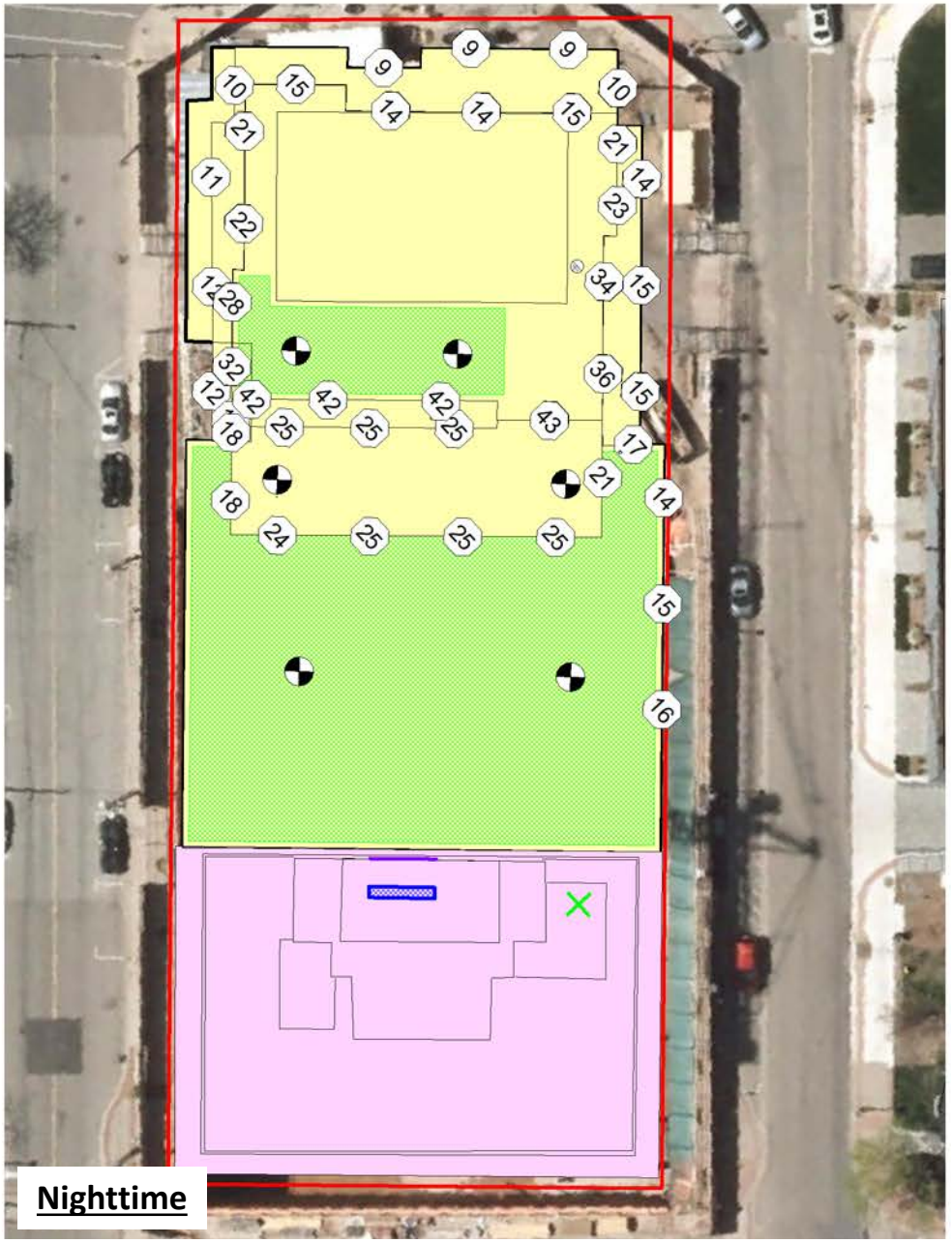
Nighttime

INARIA BURLINGTON INC.	True North	Scale: 1:600	METRES
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. **7b**
PREDICTED STATIONARY SOURCE SOUND LEVELS – BRANT STREET COMMERCIAL USES		Project No. 241.031144.00001	

SLR



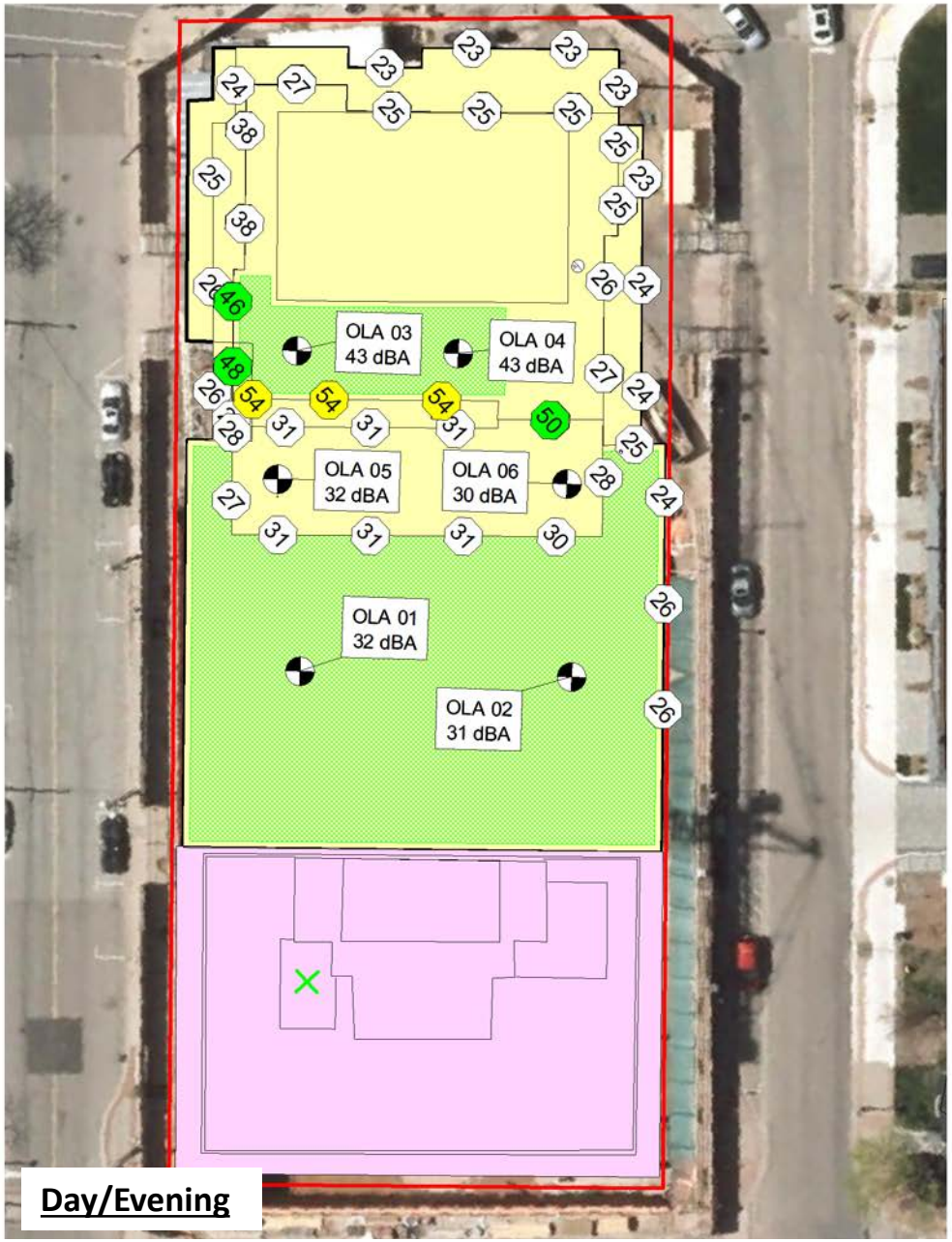
Day/Evening



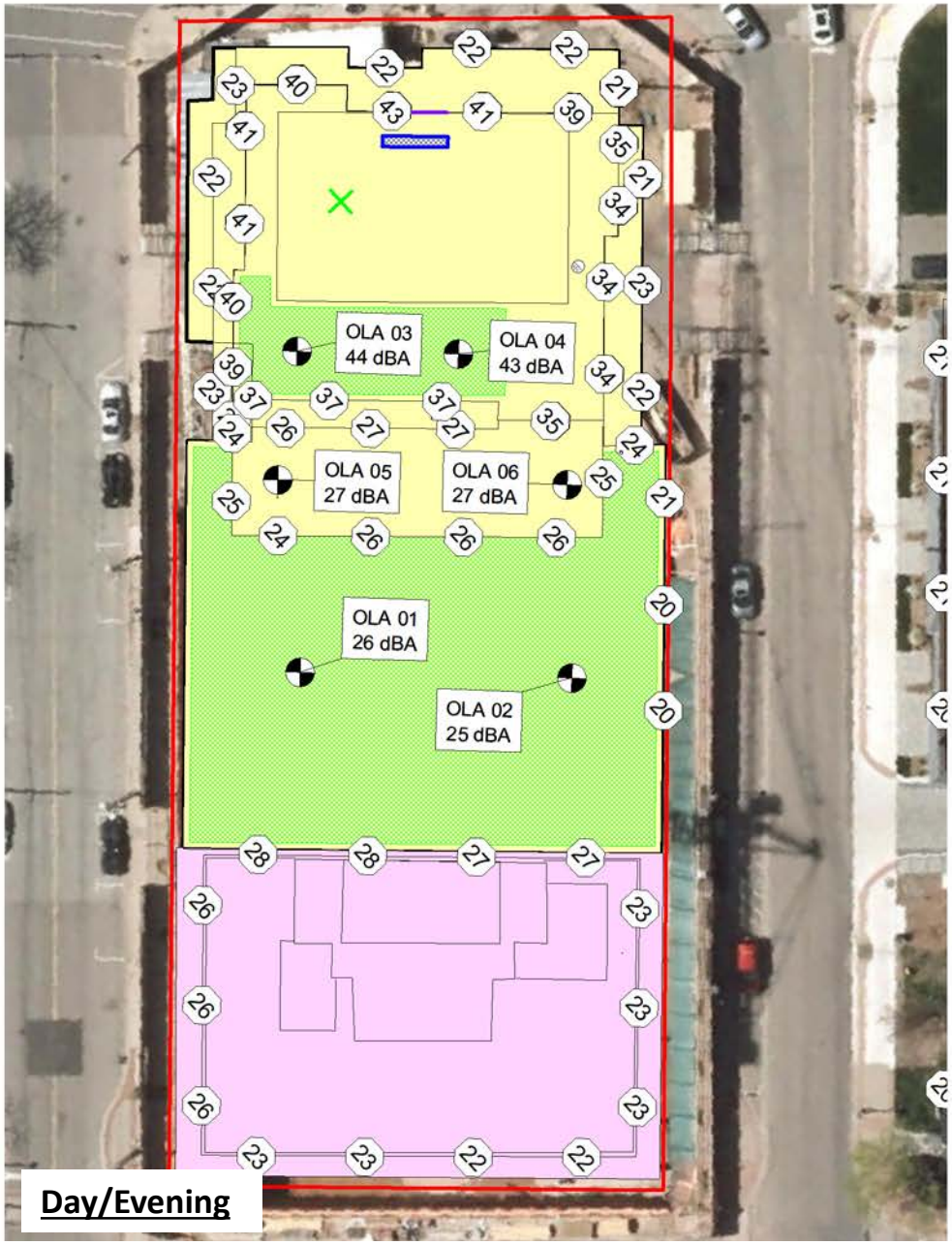
Nighttime

INARIA BURLINGTON INC.	True North	Scale: 1:600	METRES
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. **7c**
PREDICTED STATIONARY SOURCE SOUND LEVELS – BERKELY CONDO MECHANICAL SYSTEM		Project No. 241.031144.00001	

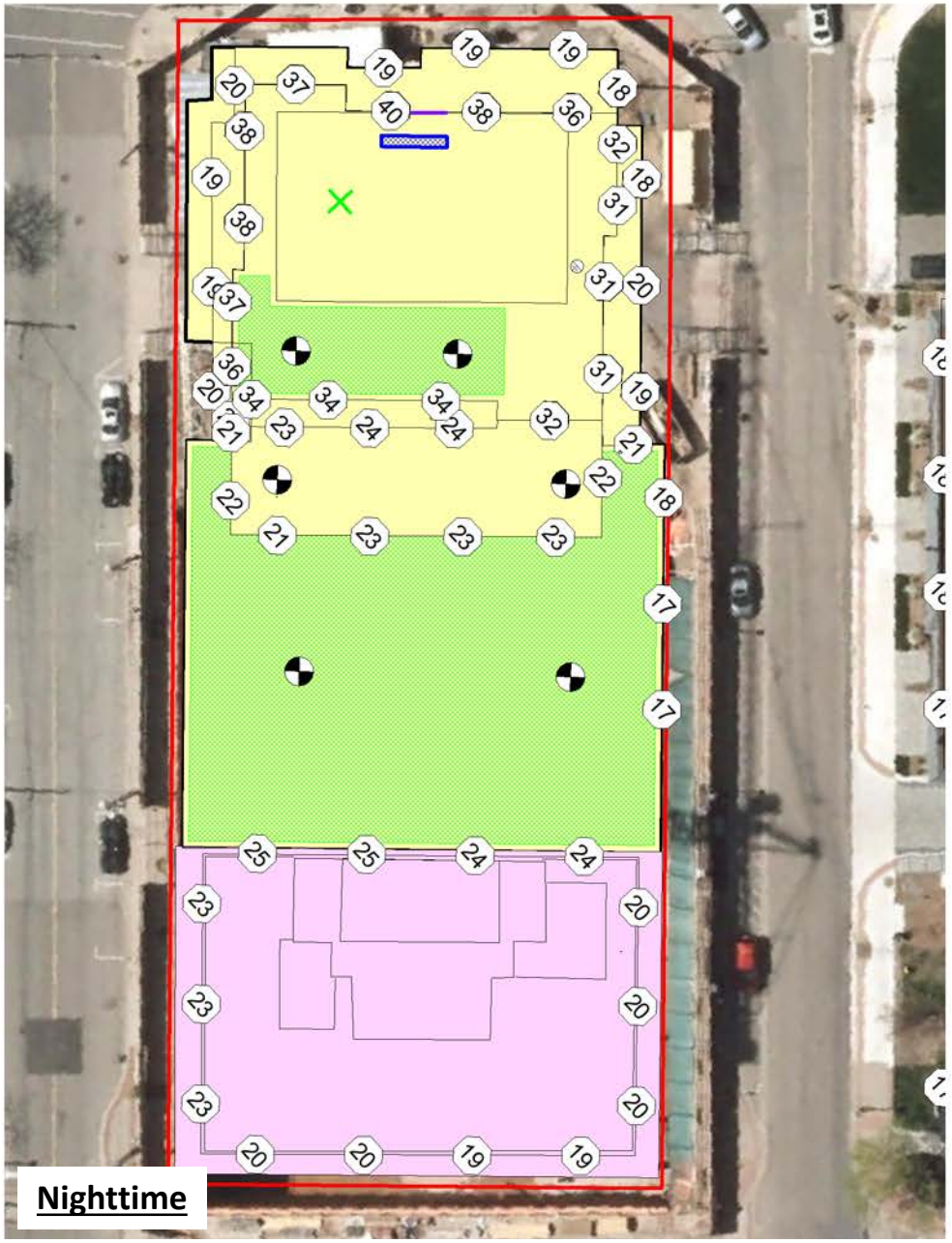
SLR



INARIA BURLINGTON INC.	True North	Scale: 1:600	METRES	SLR
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. **7d**	
PREDICTED STATIONARY SOURCE SOUND LEVELS – BERKELY CONDO EMERGENCY GENERATOR TESTING		Project No. 241.031144.00001		



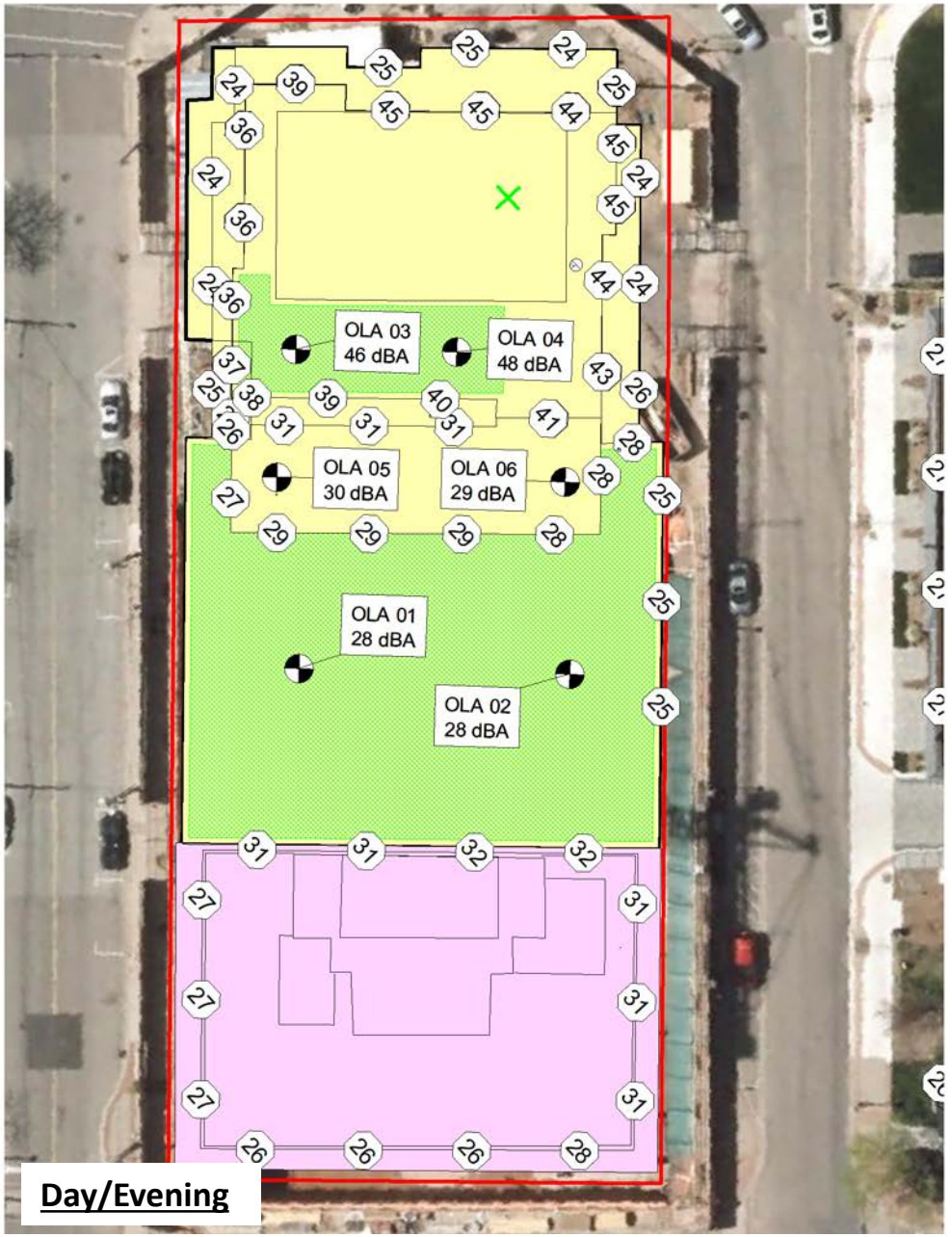
Day/Evening



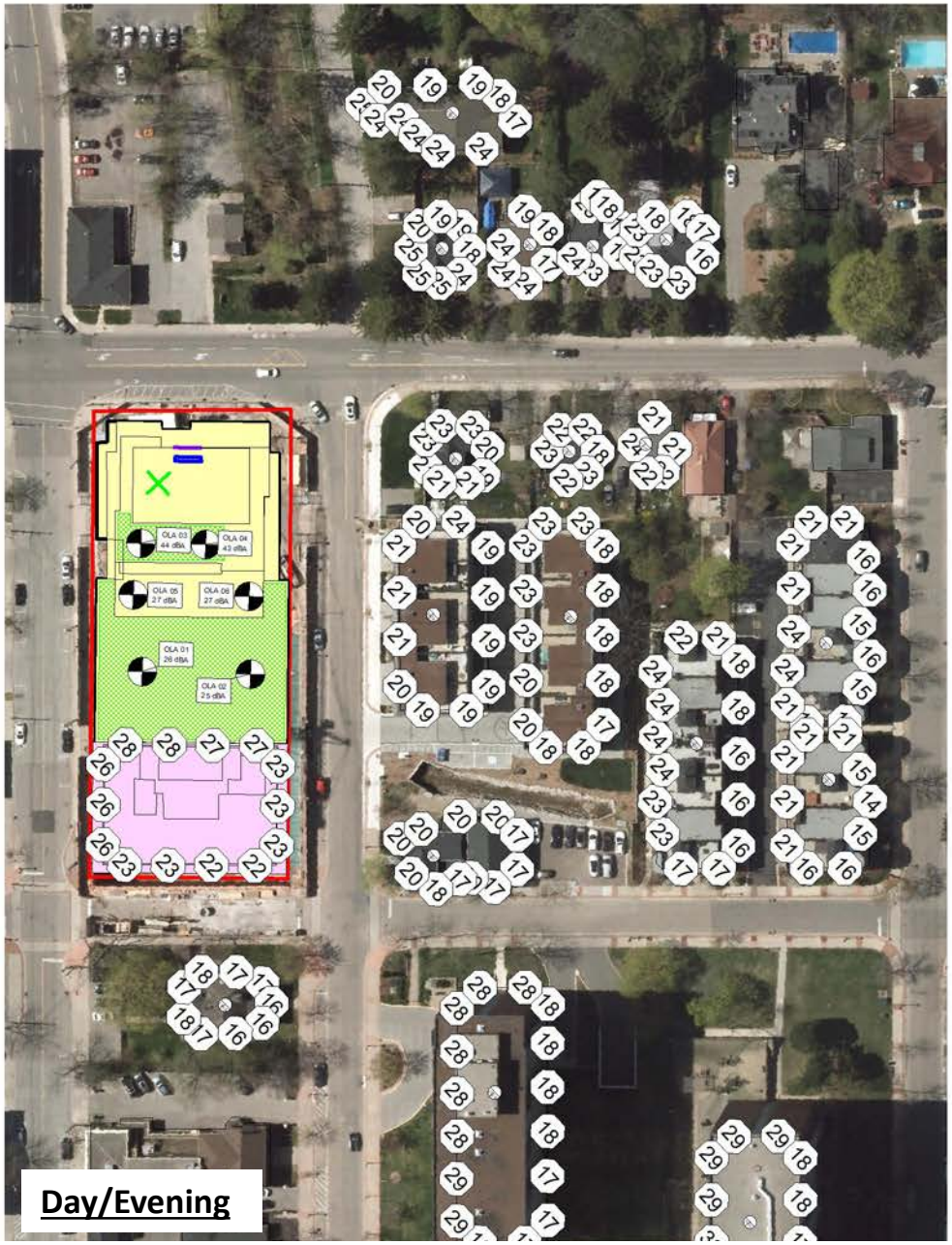
Nighttime

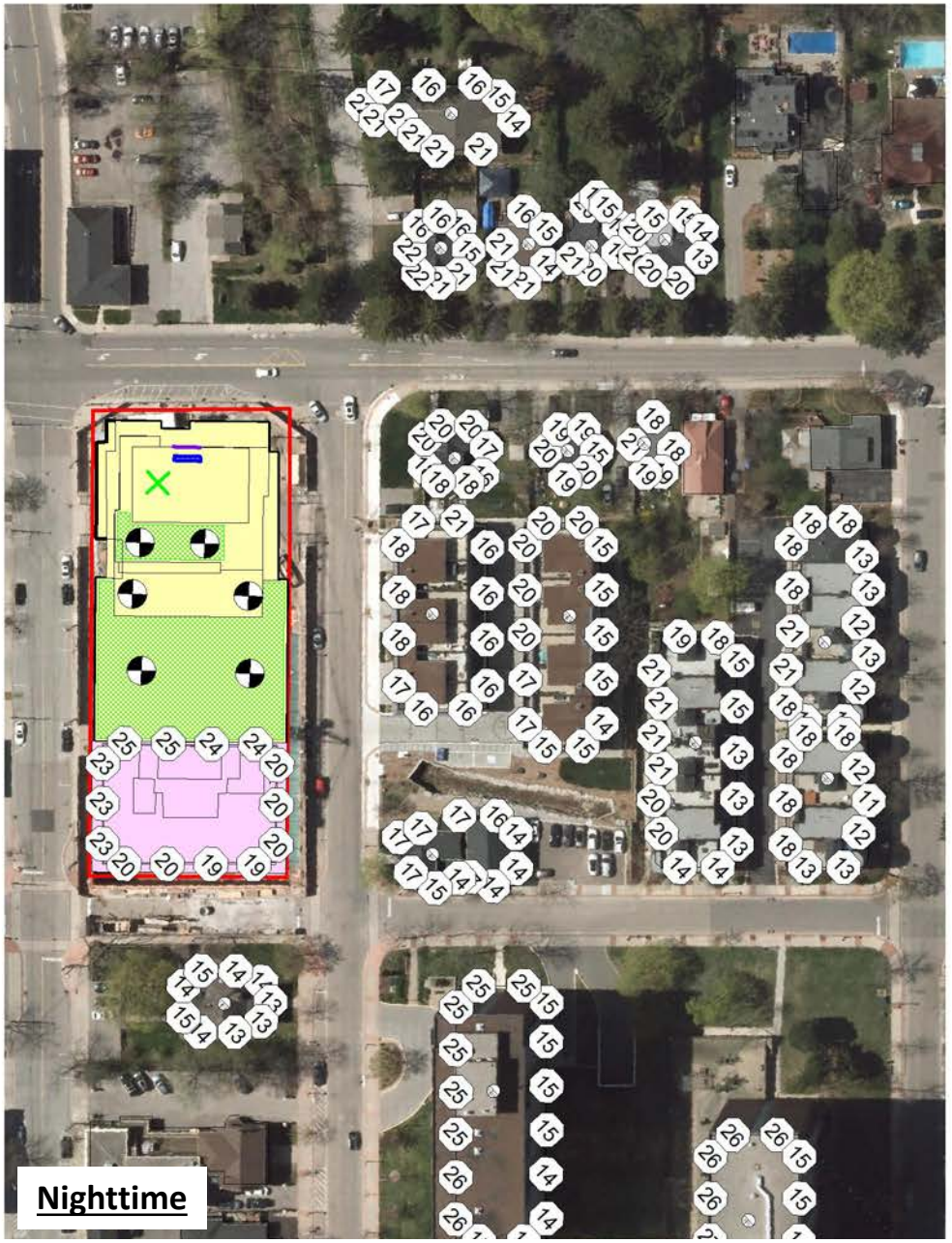
INARIA BURLINGTON INC.	True North	Scale: 1:600	METRES
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. **8a**
PREDICTED STATIONARY SOURCE SOUND LEVELS – DEVELOPMENT MECHANICAL SYSTEMS ON ITSELF		Project No. 241.031144.00001	

SLR



INARIA BURLINGTON INC.	True North	Scale: 1:600	METRES	SLR
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 21, 2024 Rev 0.0	Figure No. **8b**	
PREDICTED STATIONARY SOURCE SOUND LEVELS – DEVELOPMENT EMERGENCY GENERATOR TESTING ON ITSELF		Project No. 241.031144.00001		





INARIA BURLINGTON INC.

2030 CAROLINE STREET - BURLINGTON, ONTARIO

PREDICTED STATIONARY SOUND LEVELS –
DEVELOPMENT MECHANICAL SOURCES ON THE SURROUNDINGS

True North

Scale: 1:500

METRES

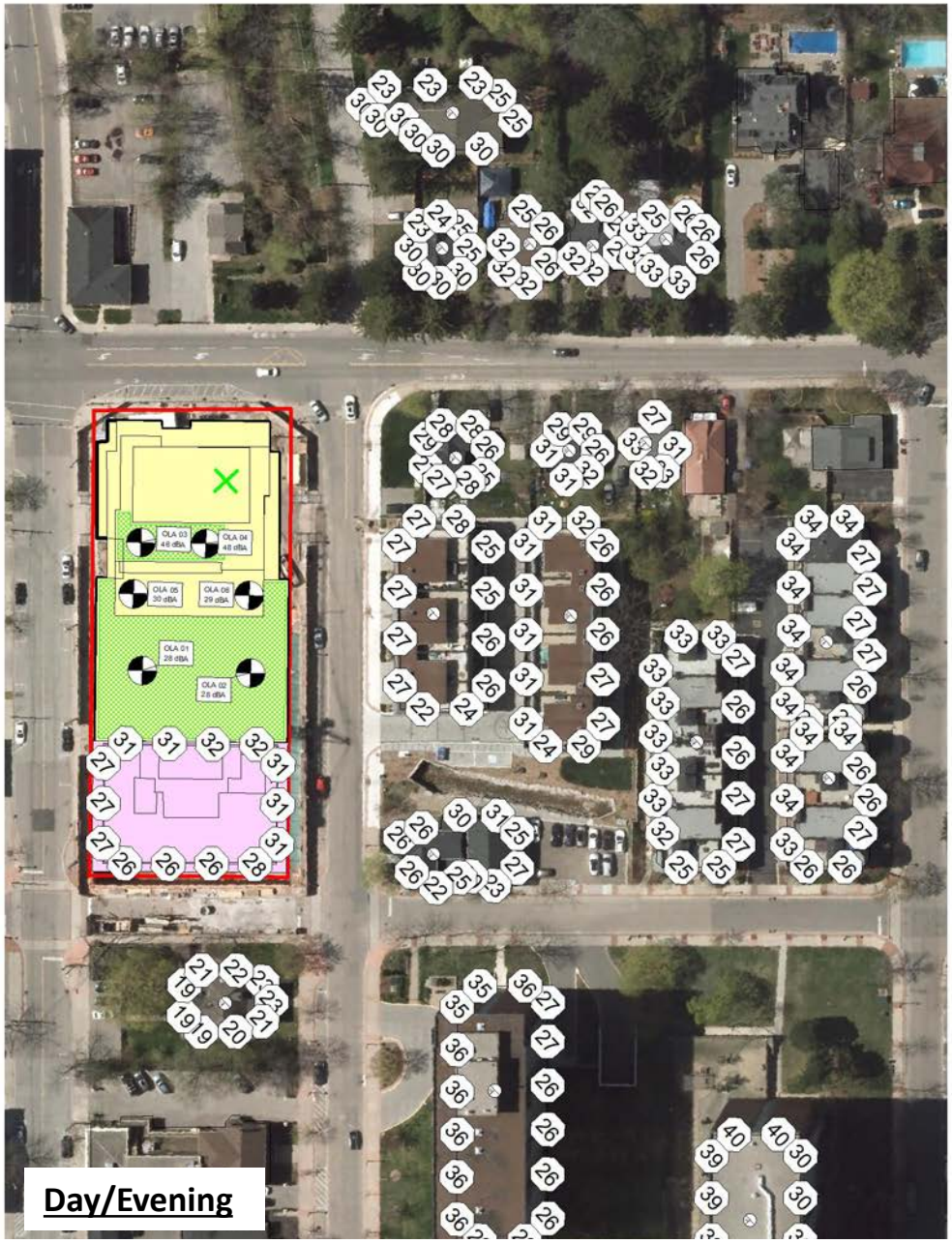
Date: June 21, 2024

Rev 0.0

Project No. 241.031144.00001

Figure No. **9a**

SLR



INARIA BURLINGTON INC. 2030 CAROLINE STREET - BURLINGTON, ONTARIO PREDICTED STATIONARY SOUND LEVELS – DEVELOPMENT EMERGENCY GENERATOR TESTING ON THE SURROUNDINGS	True North	Scale: 1:500 Date: June 21, 2024 Rev 0.0 Project No. 241.031144.00001	METRES Figure No. **9b**	SLR

Appendix A Ventilation, Warning Clause and Mitigation Summary

Environmental Noise Assessment

2030 Caroline Street - Burlington

Inaria Burlington Inc.

SLR Project No.: 241.031144.00001

June 21, 2024

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 and Rail)

MECP Type C Warning Clause (All Units)

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

Industrial Sources

MECP Type E Warning Clause (All Units)

"Purchasers/tenants are advised that due to the proximity of adjacent industries, noise from these facilities may at times be audible."

Receptor-Based Physical Mitigation Measures

Ventilation System Design

Forced Air Heating Systems / Future Air Conditioning (All Units)

The above listed unit should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion.

Appendix B Excerpts From Development Drawings

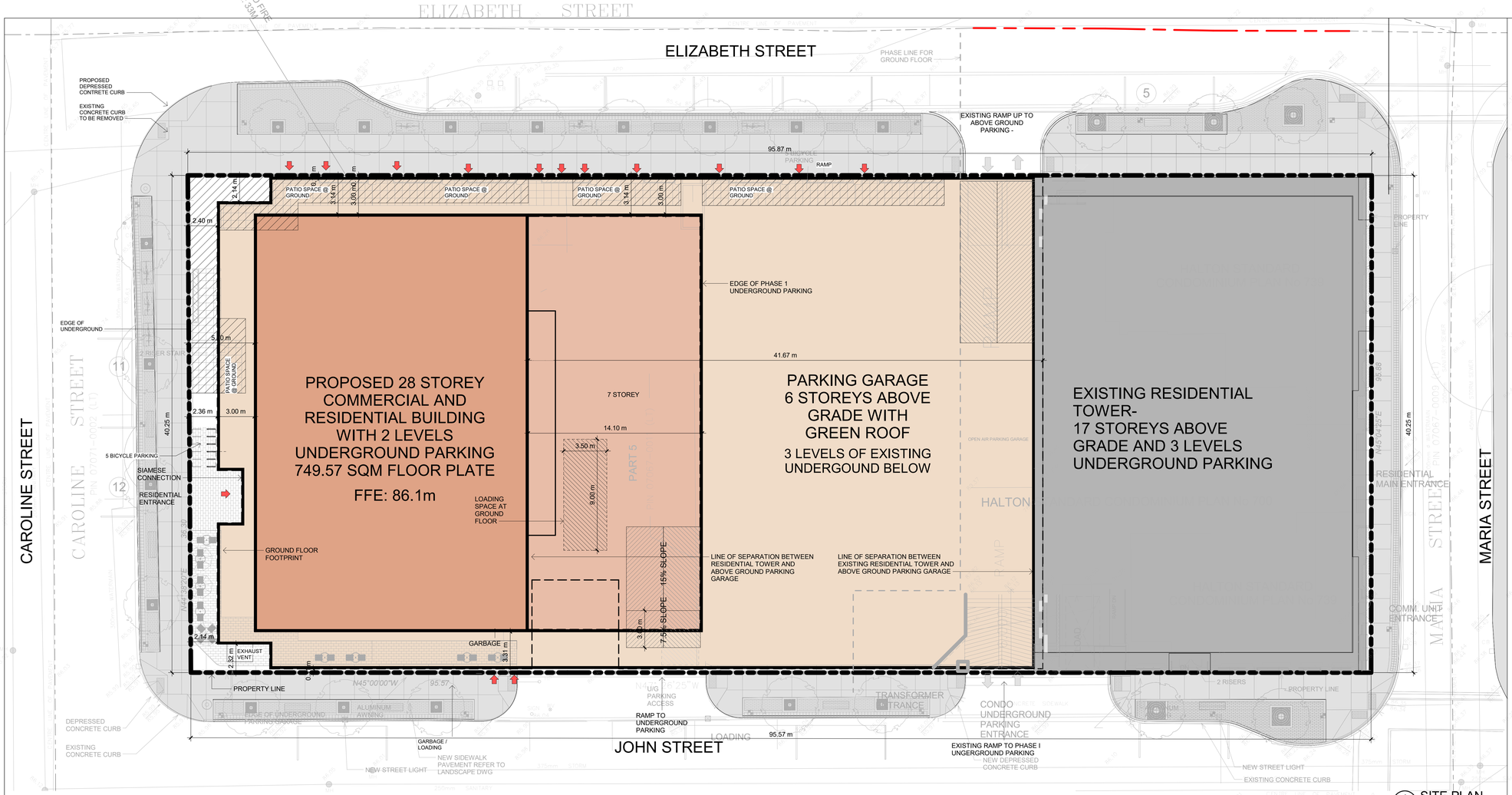
Environmental Noise Assessment

2030 Caroline Street - Burlington

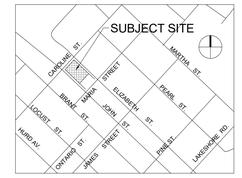
Inaria Burlington Inc.

SLR Project No.: 241.031144.00001

June 21, 2024



1 A001 SITE PLAN
1 : 150



SITE PLAN LEGEND

- ENTRANCE / EXIT
- PROPERTY LINE
- BUILDING SETBACK LINE
- LANDSCAPE SETBACK LINE
- EASEMENT AREA
- PROPOSED BUILDING
- EXISTING BUILDING
- ASPHALT
- LANDSCAPE / SOD AREA
- CONCRETE SIDEWALK c/w SIDEWALK
- PEDESTRIAN CROSSWALK
- MH — MANHOLE
- CB — CATCHBASIN
- DESIGNATED BARRIER-FREE PARKING SPACE
- 6m WIDE FIRE ROUTE WITH HEAVY DUTY ASPHALT
- SIAMESE CONNECTION
- FH — PROPOSED FIRE HYDRANT
- LIGHT STANDARD
- DEPRESSED CURB
- 3 — PARKING COUNT

FLOOR AREA, GROSS
THE SUM OF THE AREAS OF EACH FLOOR OF A BUILDING BUT SHALL INCLUDE A BASEMENT OR CELLAR WHEN USED FOR COMMERCIAL PURPOSE. MEASUREMENT SHALL BE FROM THE EXTERIOR FACE OF OUTSIDE WALLS, OR FROM THE CENTRE LINE OF PARTITION AND COMMON WALLS. GROSS FLOOR AREA SHALL NOT INCLUDE FLOOR SPACE DEVOTED TO:
- VEHICLE PARKING
- STORAGE
- AIR HANDLING EQUIPMENT
- ENCLOSED MALL AND HALLWAYS, EXCLUDING KIOSK, STAIRWAYS
- ELEVATORS AND ASSOCIATED EQUIPMENT
- WASHROOMS
- FOYERS, LOBBIES, BUT NOT WAITING AREAS/ROOMS

100.15.10 Parking Rates - Accessible Parking Spaces

Clearly identified off street accessible parking spaces must be provided on the same lot as every building or structure erected or enlarged, if the total parking space requirement is 5 or more, in compliance with the following:

(A) if the number of required parking spaces is 5 to 24, a minimum of 1 parking space must comply with the minimum dimensions for an accessible parking space;

(B) if the number of required parking spaces is 25 to 100, a minimum of 1 parking space for every 25 parking spaces or part thereof must comply with the minimum dimensions for an accessible parking space; and

(C) if the number of required parking spaces is more than 100, a minimum of 4 parking spaces plus 1 parking space for every 50 parking spaces or part thereof in excess of 100 parking spaces, must comply with the minimum dimensions for an accessible parking space.

TOTAL SITE AREA		
SQM	SFT	ACRES
2781.80 m²	29943.04 ft²	0.69 acres

FLOOR AREA RATIO: DETERMINED BY DIVIDING THE GROSS BUILDING FLOOR AREA OF ALL BUILDINGS ON A LOT BY THE NET AREA OF THAT LOT.

FSI FOR PHASE = 8.59

UNIT MIX

Name	Area	Count	% BY COUNT
1 BR	6236.92 m²	137	45%
1 BR+D	843.06 m²	14	5%
2 BR	8077.95 m²	108	36%
3BR TH	291.60 m²	5	2%
STUDIO	1483.78 m²	38	13%
	16933.30 m²	302	100%

CITY OF BURLINGTON OFFICIAL PLAN 2020
DESIGNATION: UPPER BRANT PRECINT

CITY OF BURLINGTON ZONING BY-LAW 2020
ZONE: MIXED USE GENERAL (MXG)

DEFINITIONS:

Gross Floor Area
The sum of the areas of each floor of a building, but shall include a basement or cellar when used for commercial purpose. Measurement shall be from the exterior face of outside walls, or from the centre line of partition and common walls. Gross Floor Area shall not include floor space devoted to:
- Vehicle Parking
- Storage
- Air Handling Equipment
- Enclosed mall and hallways, excluding kiosk, stairways
- Elevators and associated equipment
- Washrooms
- Foyers, lobbies, but not waiting areas/rooms

Landscape Area
An area of land within a lot dedicated to the planting of trees, shrubs, flower beds, or a combination thereof and which may include other decorative landscape features. A Landscape Area may be crossed by a driveway or walkway provided it is substantially perpendicular to the Landscape Area. A ground sign may be located within a Landscape Area. A Landscape Buffer may be included in the calculation of Landscape

Amenity Area
The area situated within the boundaries of a project and intended for recreational purposes, which may include open spaces, patios, balconies, communal play areas, lounges, sundecks, and roofdecks, but shall not include the area occupied at grade by the buildings, service areas, parking, and driveways.

LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

CREDIT NOTES

THIS SITE PLAN IS BASED UPON AND MUST BE READ IN CONJUNCTION WITH THE TOPOGRAPHICAL PLAN OF SURVEY PREPARED BY A.T. MCLAREN LTD., 69 JOHN ST SOUTH SOUTH, SUITE 230, HAMILTON, ON. PROJECT NO. 37260, DATED JAN. 2023.
CHAMBERLAIN ARCHITECT SERVICES ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE DATA SUPPLIED AND SUCH DATA IS NOT INCLUDED UNDER SEALS OF CERTIFICATION, IF ANY

GROSS FLOOR AREA BREAKDOWN | GROSS FLOOR AREA (GFA) - TFA EXCLUSIONS | GROSS BUILDING FLOOR AREA (GBFA) | EXCLUSIONS | TOTAL FLOOR AREA | OUTDOOR AMENITY

FLOOR	RES UNITS	RETAIL SELLABLE Area ft2	RETAIL SELLABLE Area m2	RESIDENTIAL SELLABLE Area ft2	RESIDENTIAL SELLABLE Area m2	INDOOR AMENITY Area ft2	INDOOR AMENITY Area m2	GFA - GROSS FLOOR AREA Area ft2	GFA - GROSS FLOOR AREA Area m2	GBFA - GROSS BUILDING FLOOR AREA Area ft2	GBFA - GROSS BUILDING FLOOR AREA Area m2	TOTAL EXCLUSIONS Area ft2	TOTAL EXCLUSIONS Area m2	TOTAL FLOOR AREA (TFA) Area ft2	TOTAL FLOOR AREA (TFA) Area m2	ALL OUTDOOR AMENITY Area ft2	ALL OUTDOOR AMENITY Area m2	BALCONIES / TERRACES Area ft2	BALCONIES / TERRACES Area m2
-1 - T/O UGP 1		0.00	0.00	0.00	0.00	0.00	0.00	252.44	23.45	2486.82	231.03	732.18	68.0	17600.30	1635.1	0.00	0.00	0.00	0.00
-2 - T/O UGP 2		0.00	0.00	0.00	0.00	0.00	0.00	252.44	23.45	2486.82	231.03	732.18	68.0	17600.30	1635.1	0.00	0.00	0.00	0.00
GROUND	10	4120.72	382.83	6780.77	629.95	1707.10	158.60	19181.45	1782.02	20360.85	1891.58	1179.40	109.6	20360.85	1891.6	1932.22	179.51	0.00	0.00
T/O 2ND FLR	5	0.00	0.00	6241.39	579.84	0.00	0.00	7420.48	689.39	10861.13	1009.03	18859.30	1752.1	26279.78	2441.5	1852.53	172.11	1852.53	172.11
T/O 3RD FLR	9	0.00	0.00	6247.14	580.38	0.00	0.00	7426.24	689.92	10737.83	997.58	18658.60	1733.4	26084.84	2423.4	2261.74	210.12	2261.74	210.12
T/O 4TH FLR	9	0.00	0.00	6015.62	558.87	0.00	0.00	7194.71	668.41	10506.30	976.07	18658.60	1733.4	25853.31	2401.9	2493.27	231.63	2493.27	231.63
T/O 5TH FLR	9	0.00	0.00	6015.62	558.87	0.00	0.00	7194.71	668.41	10506.30	976.07	18658.60	1733.4	25853.31	2401.9	1432.37	133.07	1432.37	133.07
T/O 6TH FLR	9	0.00	0.00	6015.62	558.87	0.00	0.00	7194.71	668.41	10506.30	976.07	18658.60	1733.4	25853.31	2401.9	1432.37	133.07	1432.37	133.07
T/O 7TH FLR	11	0.00	0.00	7729.81	718.12	3352.10	311.42	11908.51	1106.34	13197.51	1226.09	1288.99	119.8	13197.51	1226.1	6986.20	649.04	1842.04	171.13
T/O 8TH FLR	12	0.00	0.00	7415.42	688.91	0.00	0.00	7868.29	730.99	8494.40	789.16	626.11	58.2	8494.40	789.2	2650.46	246.24	2650.46	246.24
T/O 9TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 10TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 11TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 12TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 13TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 14TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 15TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 16TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 17TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 18TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 19TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 20TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 21ST FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 22ND FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 23RD FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 24TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 25TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 26TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O 27TH FLR	12	0.00	0.00	6989.00	649.30	0.00	0.00	7441.87	691.37	8067.99	749.54	626.11	58.2	8067.99	749.5	1885.26	175.15	1885.26	175.15
T/O ROOF DECK	: 302	0.00	0.00	0.00	0.00	0.00	0.00	308.00	28.61	3824.59	355.32	3516.59	326.7	3824.59	355.3	0.00	0.00	0.00	0.00
: 348	Grand total: 302	4120.72	382.83	185252.40	17210.51	5059.20	470.02	217597.58	20215.48	257260.58	23900.29	113465.28	10541.3	364294.21	33844.0	56861.05	5282.56	49784.68	4625.15
Grand total: 348		4120.72	382.83	185252.40	17210.51	5059.20	470.02	217597.58	20215.48	257260.58	23900.29	113465.28	10541.3	364294.21	33844.0	56861.05	5282.56	49784.68	4625.15

Chamberlain Architects Constructors Managers

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LICENCE
9814

CONSTRUCTION NORTH | TRUE NORTH

PROJECT
INARIA MIXED USE DEVELOPMENT
2030 Caroline Street, Burlington, ON, Canada

SHEET NAME
SITE PLAN

START DATE	2020.02.01
DRAWN BY	MA
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	122056
DRAWING	A001

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AMENITY REQUIREMENTS:

Min. amenity space required per unit is 20sqm/unit

AMENITY PROVIDED:

Name	AMENITY AREAS PROVIDED	
	Area ft2	Area m2
BALCONY	42122.49	3913.31
INDOOR AMENITY	5059.20	470.02
OUTDOOR AMENITY	7076.38	657.42
TERRACE	7662.19	711.84
	61920.25	5752.58

Amount of amenity space per unit: 19.04sqm/unit

STADARD CITY PARKING RATE:

Residential:
- 1.25 parking spaces per residential unit
  1.25 x 296= **370 spaces**
- 2 spaces per townhouse
  2x5= **10 spaces**

Total residential spaces required: **380 spaces**

PARKING PROVIDED:

PARKING SCHEDULE - UNDERGROUND		
TYPE	DESCRIPTION	COUNT
-2 - T/O UGP 2		
<varies>	2.75 x 6.0m	29
ACCESSIBLE TYPE B	3.4m x 6.0m	2
		31
-1 - T/O UGP 1		
<varies>	2.75 x 6.0m	29
ACCESSIBLE TYPE B	3.4m x 6.0m	2
		31
TOTAL		62

PARKING SCHEDULE - ABOVE GROUND		
TYPE	DESCRIPTION	COUNT
T/O 2ND FLR		
ACCESSIBLE TYPE A	2.75 x 6.0m	1
ACCESSIBLE TYPE B	3.4m x 6.0m	1
TYPICAL PARKING	2.75 x 6.0m	41
		43
T/O 3RD FLR		
ACCESSIBLE TYPE A	2.75 x 6.0m	1
ACCESSIBLE TYPE B	3.4m x 6.0m	1
TYPICAL PARKING	2.75 x 6.0m	41
		43
T/O 4TH FLR		
ACCESSIBLE TYPE A	2.75 x 6.0m	1
ACCESSIBLE TYPE B	3.4m x 6.0m	1
TYPICAL PARKING	2.75 x 6.0m	41
		43
T/O 5TH FLR		
ACCESSIBLE TYPE A	2.75 x 6.0m	1
ACCESSIBLE TYPE B	3.4m x 6.0m	1
TYPICAL PARKING	2.75 x 6.0m	41
		43
T/O 6TH FLR		
ACCESSIBLE TYPE A	2.75 x 6.0m	1
ACCESSIBLE TYPE B	3.4m x 6.0m	1
TYPICAL PARKING	2.75 x 6.0m	41
		43
TOTAL ABOVE GROUND		215

PARKING PROVIDED			
Type	Count	Dimensions	Ratio
ABOVE GRADE PARKING			
ACCESSIBLE TYPE A	5	2.75 x 6.0m	2%
ACCESSIBLE TYPE B	5	3.4m x 6.0m	2%
TYPICAL PARKING	205	2.75 x 6.0m	74%
ABOVE GRADE PARKING: 215	215		78%
UNDERGROUND PARKING			
ACCESSIBLE TYPE A	4	2.75 x 6.0m	1%
ACCESSIBLE TYPE B	4	3.4m x 6.0m	1%
TYPICAL PARKING	54	2.75 x 6.0m	19%
UNDERGROUND PARKING: 62	62		22%
Grand total: 277	277		100%

Total parking spaces = 277
Publicly accessible spaces =10
Residential parking ratio = 0.89/unit
Publicly accessible parking ratio = 0.03/unit.
Total parking rate proposed = 0.92 spaces/unit

BICYCLE PARKING REQUIREMENT:

RETAIL= 2 SPACES PLUS 1 SPACE/ 1000 M2 GFA

BICYCLE PARKING PROVIDED:

BICYCLE PARKING	
Level	Count
GROUND	80
ABOVE GRADE	20
Grand total	100

UNIT MIX PROVIDED AND AVERAGE UNIT SIZE:

UNIT MIX			
Name	Area	Count	% BY COUNT
1 BR	6236.92 m²	137	45%
1 BR+D	843.06 m²	14	5%
2 BR	8077.95 m²	108	36%
3BR TH	291.60 m²	5	2%
STUDIO	1483.78 m²	38	13%
	16933.30 m²	302	100%

SETBACKS

STREETS	BUILDINGS	FLOORS	REQUIRED	PROPOSED
CAROLINE STREET	RESIDENTIAl TOWER	FLOORS 1, 2 & 3	2 M	MIN. 2.14 M
		FLOORS 4 & GREATER	4 M	MIN.5.14 M
	UNDERGROUND PARKING GARAGE		NO MIN.	0 M
ELIZABETH STREET AND JOHN STREET	RESIDENTIAL TOWER	FLOORS 1, 2 & 3	0.1 M	MIN. 0.14 M
		FLOORS 4 & GREATER	1.5 M	3.14 M
	UNDERGROUND PARKING GARAGE	ALL FLOORS	NO MIN.	0 M
	ABOVE GROUND PARKING GARAGE	ALL FLOORS	0.1 M	MIN. 0.14 M
ELIZABETH STREET	PARKING GARAGE RAMP	FLOOR 1	1 M	6 M
JOHN STREET	PARKING GARAGE RAMP	FLOOR 1	2 M	2 M

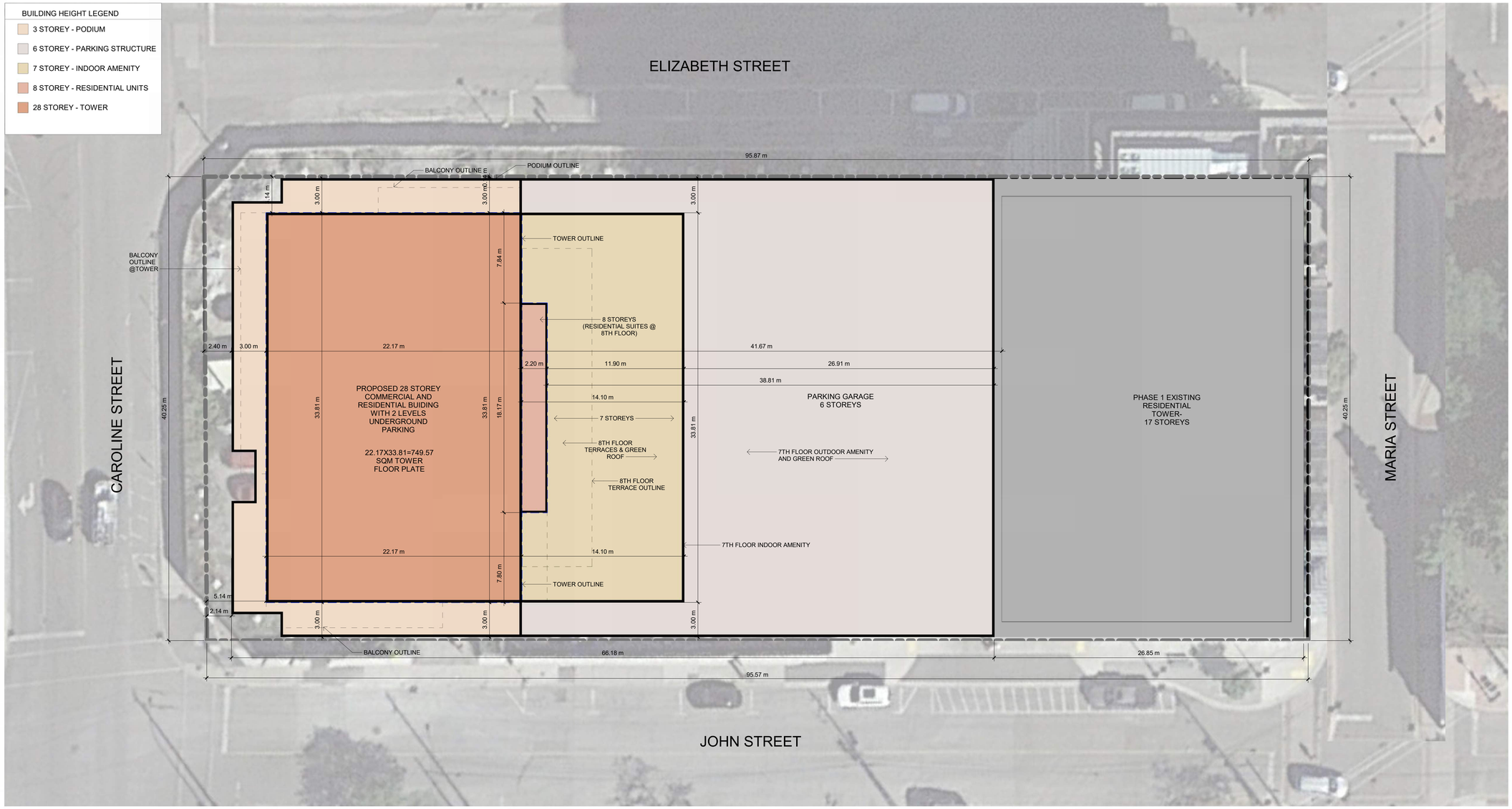
SETBACK PLAN LEGEND

LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

BUILDING HEIGHT LEGEND

- 3 STOREY - PODIUM
- 6 STOREY - PARKING STRUCTURE
- 7 STOREY - INDOOR AMENITY
- 8 STOREY - RESIDENTIAL UNITS
- 28 STOREY - TOWER



1 SETBACK PLAN
A002 1 : 150

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CONSTRUCTION NORTH TRUE NORTH

PROJECT

INARIA MIXED USE DEVELOPMENT

2030 Caroline Street, Burlington, ON, Canada

SHEET NAME

SITE STATS

START DATE	2020.02.01
DRAWN BY	SM
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	122056
DRAWING	A002

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PROPOSED UNDERGROUND

EXISTING UNDERGROUND



LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

1 / A100 -1 - T/O UGP 1
1 : 100

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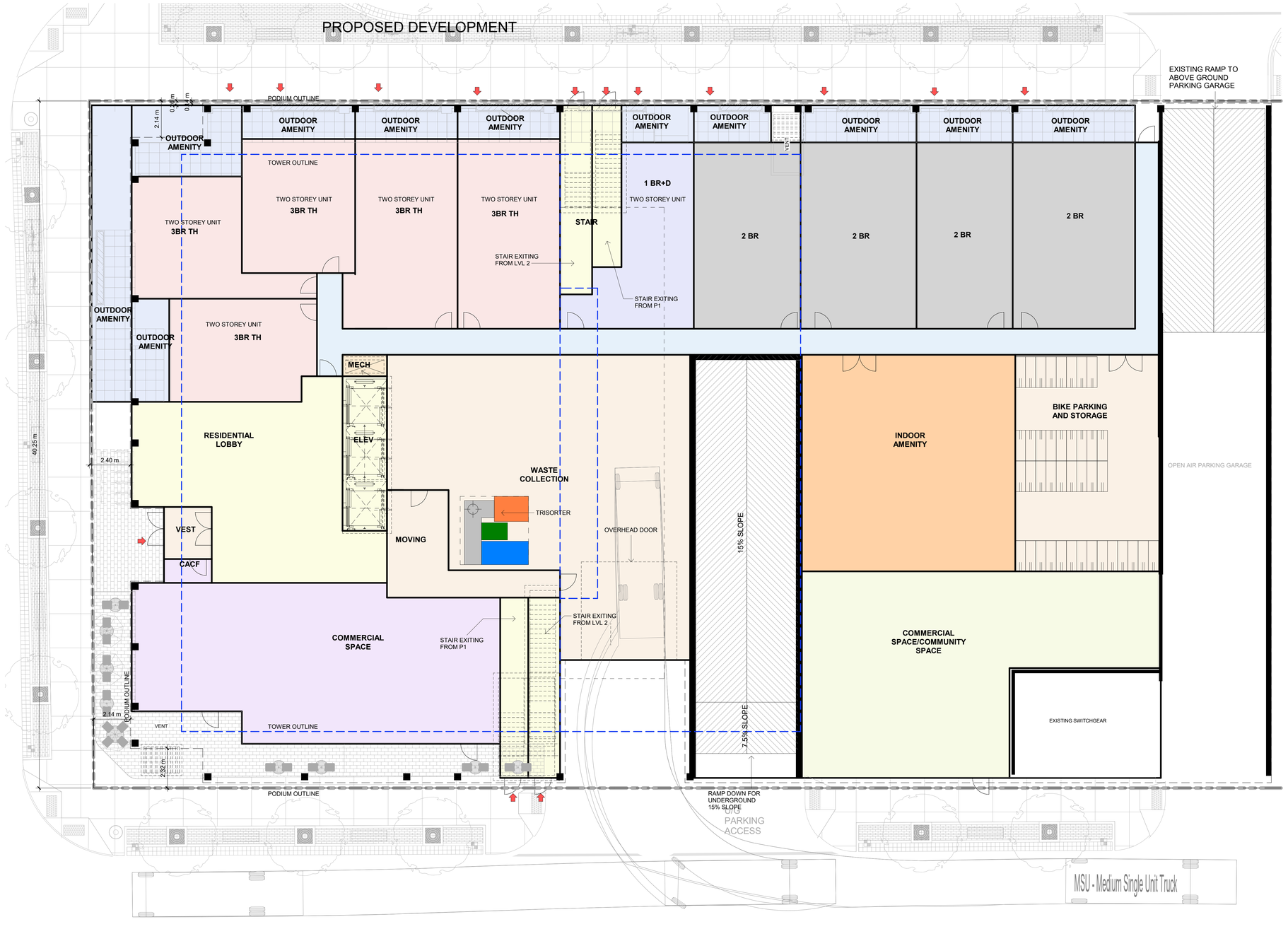
SHEET NAME

UNDERGROUND PARKING

START DATE	2020.02.01
DRAWN BY	MOR
CHECKED BY	SM
SCALE	1 : 100
PROJECT NO.	122056
DRAWING	A100

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LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

1 A101 GROUND 1 : 100

ROOM LEGEND

Room Legend

- 1 BR+D
- 2 BR
- 3BR TH
- BIKE PARKING AND STORAGE
- CACF
- COMMERCIAL SPACE
- COMMERCIAL SPACE/COMMUNITY SPACE
- CORRIDOR
- ELEV
- INDOOR AMENITY
- MECH
- MOVING
- OUTDOOR AMENITY
- RESIDENTIAL LOBBY
- STAIR
- VEST
- WASTE COLLECTION

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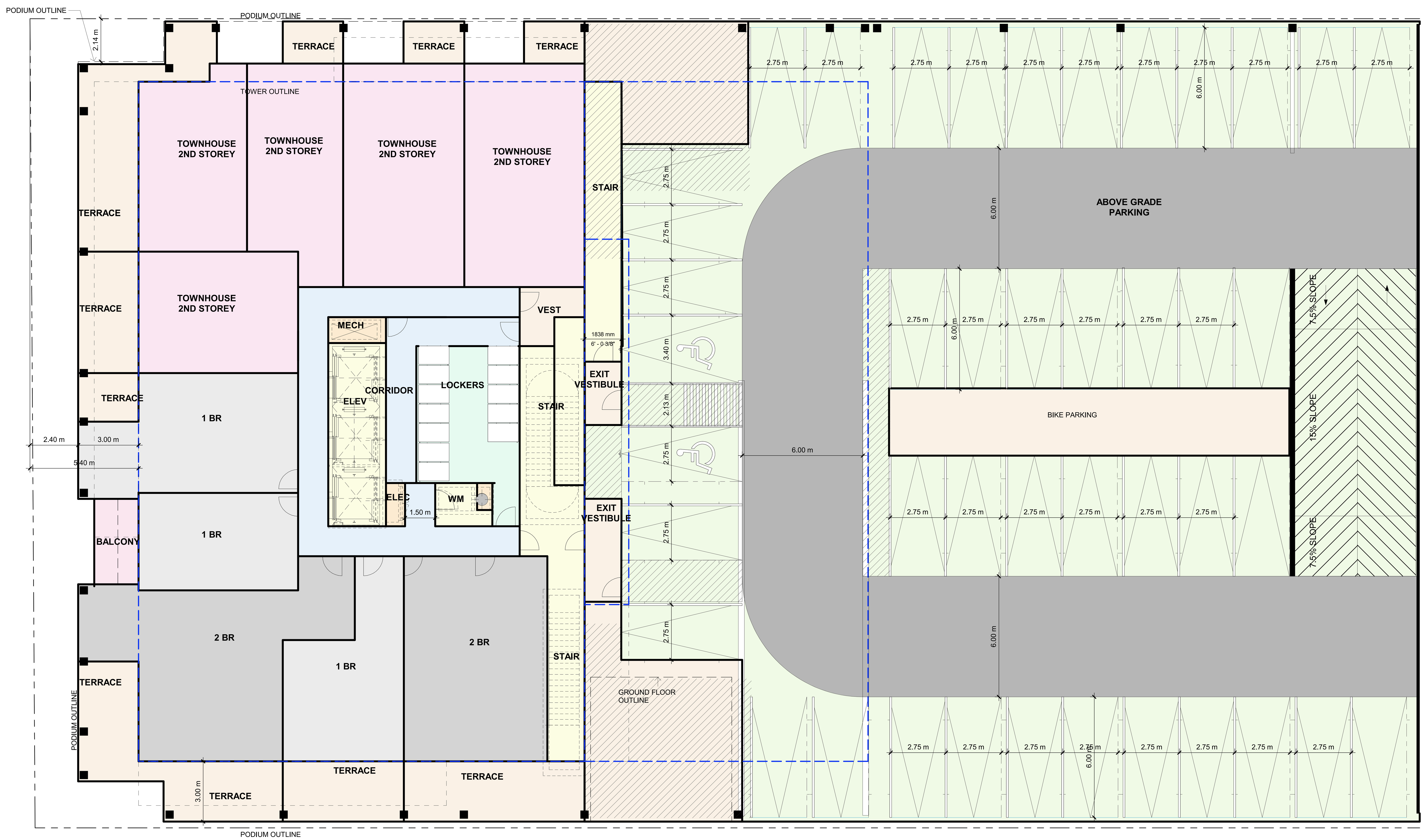
SHEET NAME

GROUND FLOOR PLAN

START DATE	2020.02.01
DRAWN BY	SM
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	122056
DRAWING	A101

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1 T/O 2ND FLR
A102 1 : 100

LINE LEGEND

GROUND FLOOR OUTLINE
PODIUM FLOOR OUTLINE
TOWER FLOOR OUTLINE
BALCONY OUTLINE

ROOM LEGEND

Room Legend

- 1 BR
- 2 BR
- ABOVE GRADE PARKING
- BALCONY
- BIKE PARKING
- CHUTE
- CORRIDOR
- ELEC
- ELEV
- EXIT VESTIBULE
- LOCKERS
- MECH
- STAIR
- TERRACE
- TOWNHOUSE 2ND STOREY
- VEST
- WM

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PROJECT

INARIA MIXED USE DEVELOPMENT

2030 Caroline Street, Burlington, ON, Canada

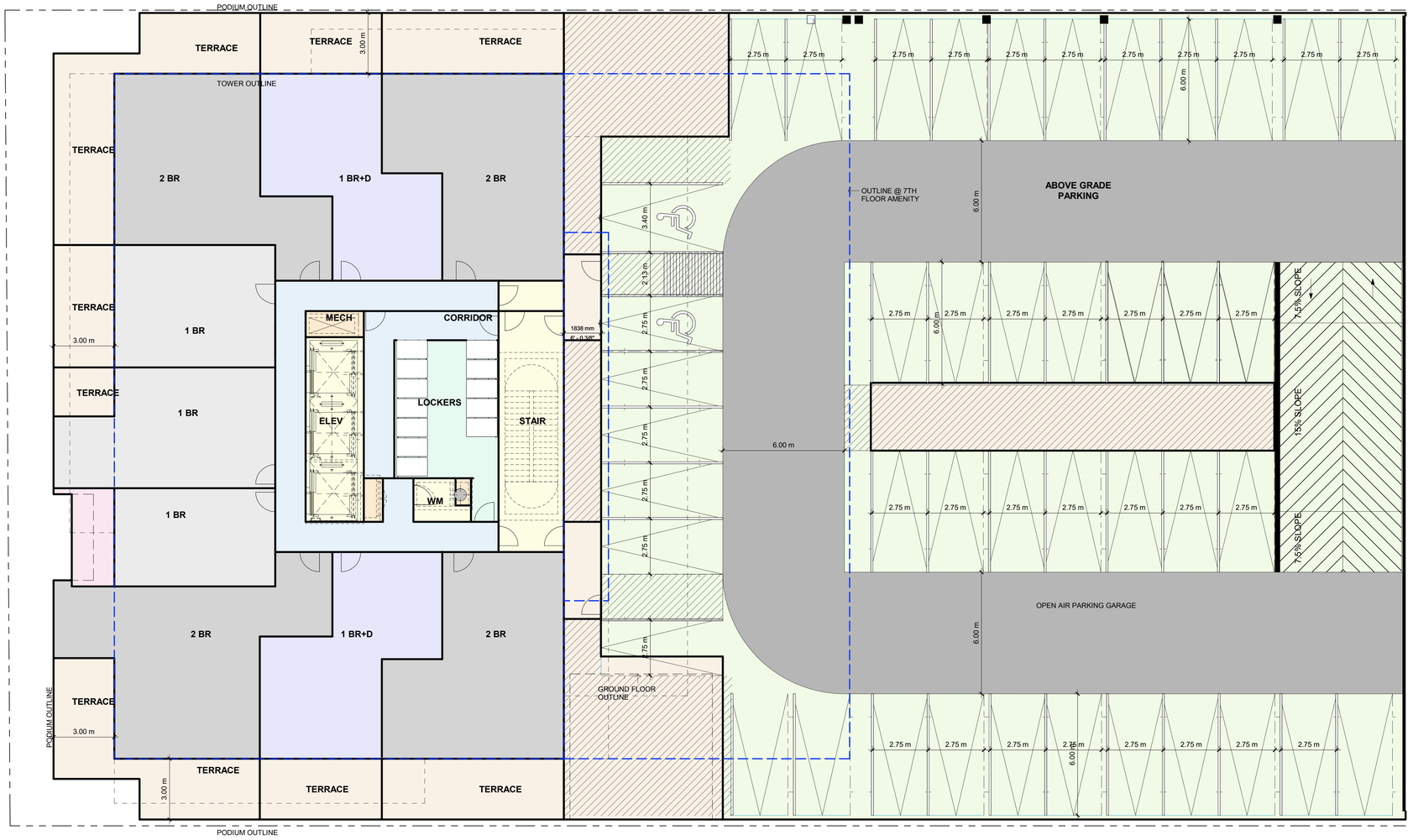
SHEET NAME

2ND FLOOR PLAN

START DATE	2020.02.01
DRAWN BY	SM
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	122056
DRAWING	A102

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LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

1 / A103 T/O 3RD FLR
1 : 100

ROOM LEGEND

Room Legend

- 1 BR
- 1 BR+D
- 2 BR
- ABOVE GRADE PARKING
- BALCONY
- BIKE PARKING
- CHUTE
- CORRIDOR
- ELEC
- ELEV
- EXIT VESTIBULE
- LOCKERS
- MECH
- STAIR
- TERRACE
- WM

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2030 Caroline Street, Burlington, ON, Canada

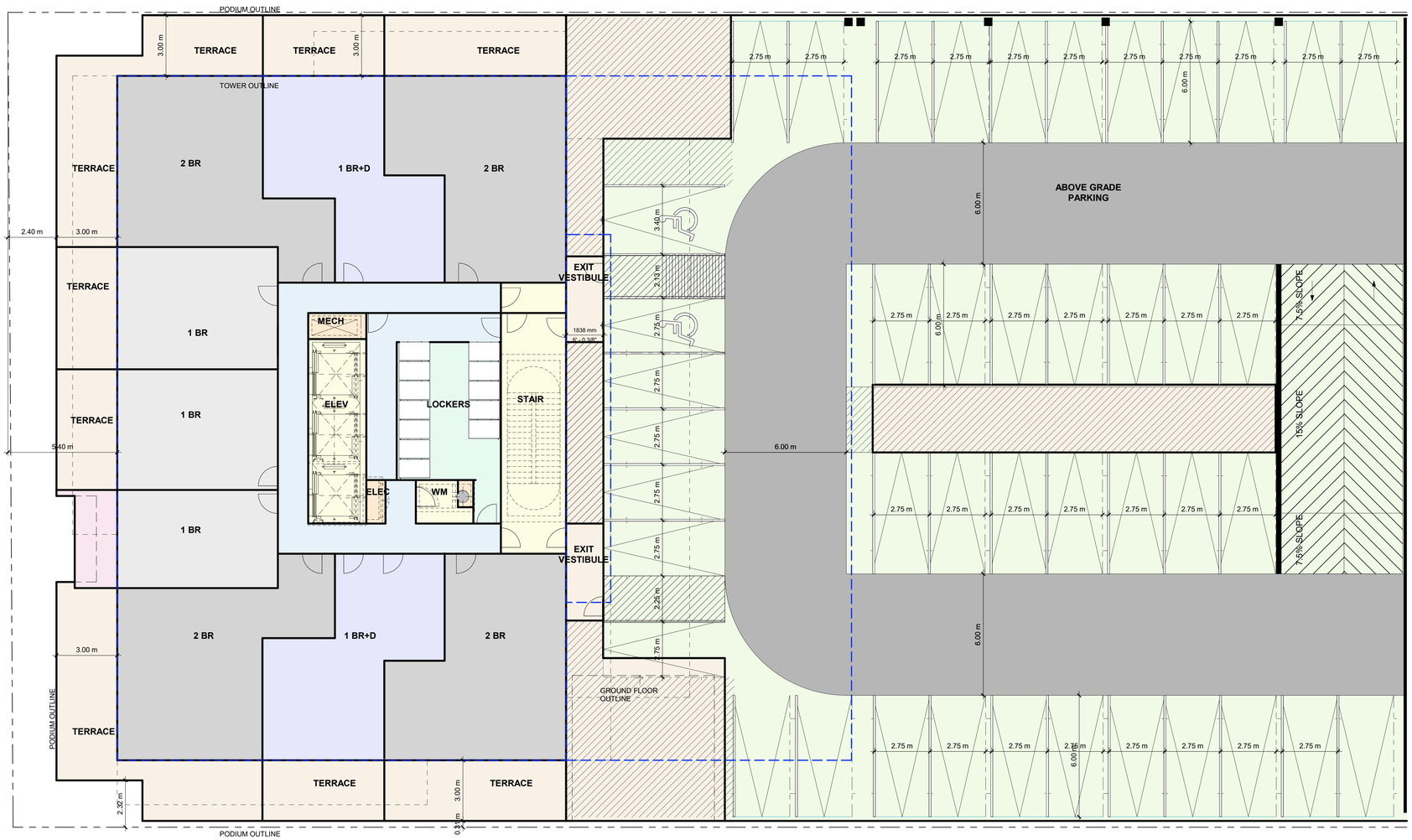
SHEET NAME

3RD FLOOR PLAN

START DATE	2020.02.01
DRAWN BY	SM
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SCALE	As indicated
PROJECT NO.	122056
DRAWING	A103

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ROOM LEGEND

Room Legend

- 1 BR
- 1 BR+D
- 2 BR
- ABOVE GRADE PARKING
- BALCONY
- BIKE PARKING
- CHUTE
- CORRIDOR
- ELEC
- ELEV
- EXIT VESTIBULE
- LOCKERS
- MECH
- STAIR
- TERRACE
- WM

LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

1 / A104 T/O 4TH FLR
1 : 100

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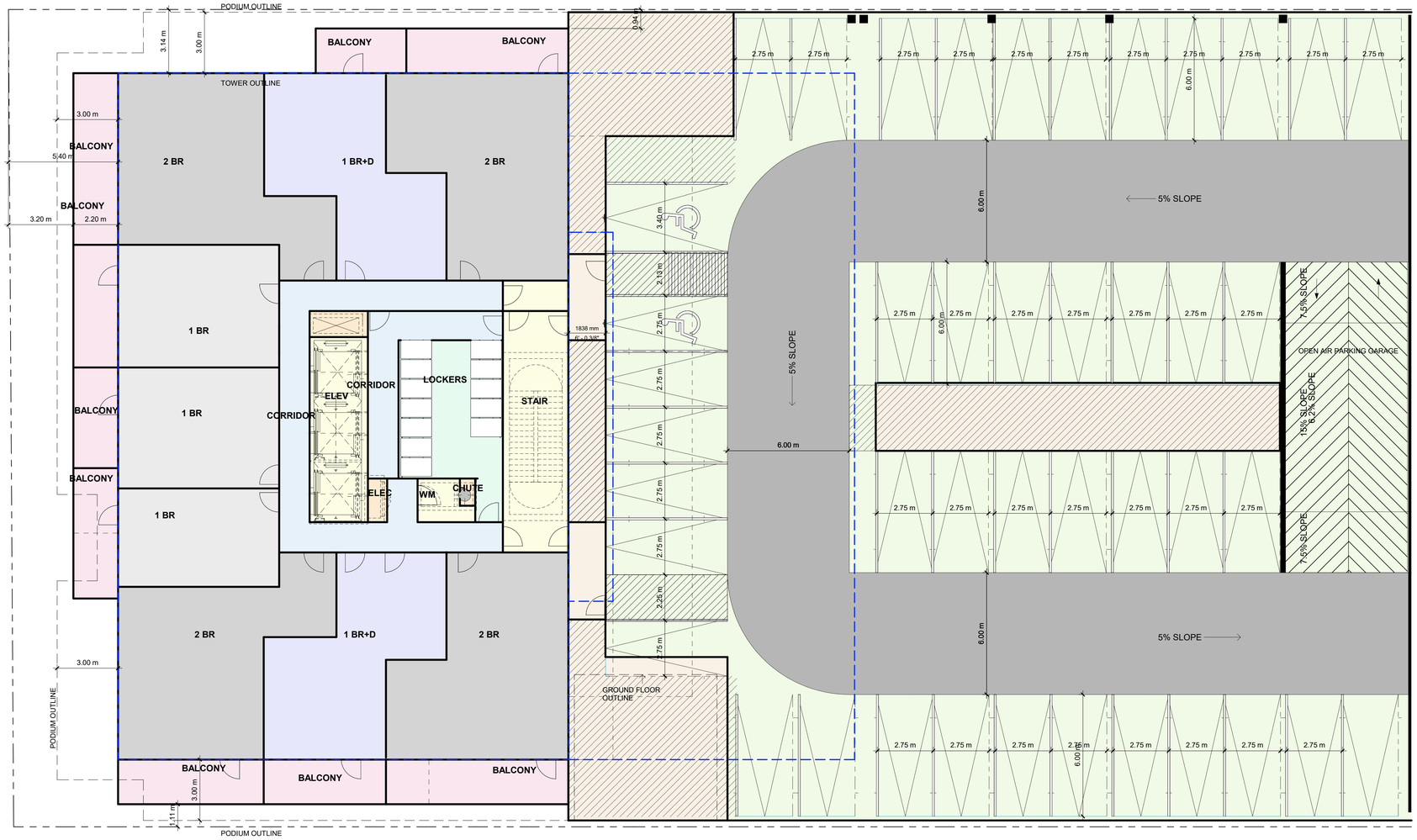
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SHEET NAME

4TH FLOOR PLAN

START DATE	2020.02.01
DRAWN BY	Author
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SCALE	As indicated
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DRAWING	A104

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ROOM LEGEND

Room Legend

- 1 BR
- 1 BR+D
- 2 BR
- ABOVE GRADE PARKING
- BALCONY
- BIKE PARKING
- CHUTE
- CORRIDOR
- ELEC
- ELEV
- EXIT VESTIBULE
- LOCKERS
- MECH
- STAIR
- WM

LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

1 / A105 T/O 5TH- 6TH FLR
1 : 100

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PROJECT

INARIA MIXED USE DEVELOPMENT

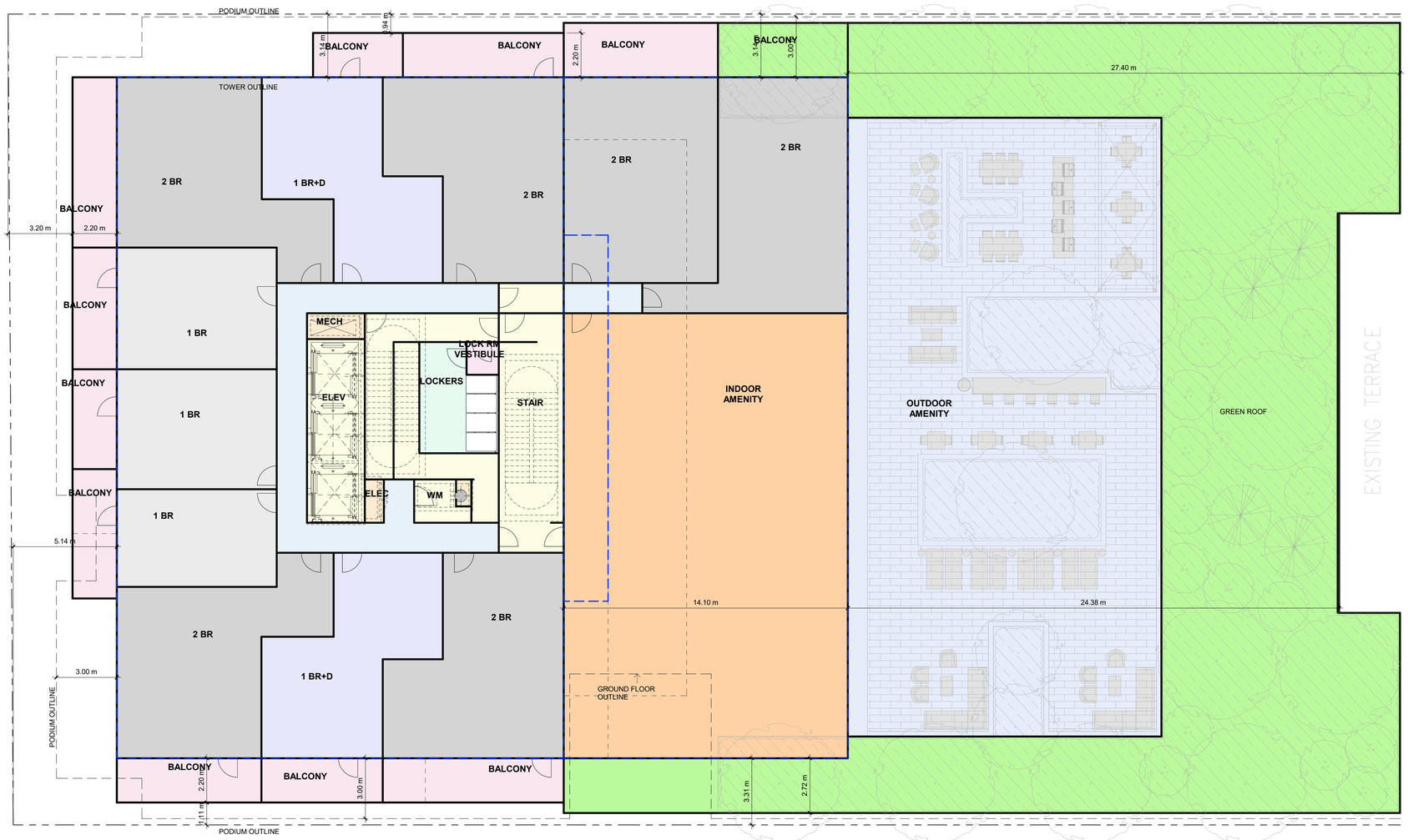
2030 Caroline Street, Burlington, ON, Canada

SHEET NAME

5TH - 6TH FLOOR

START DATE	2020.02.01
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SCALE	As indicated
PROJECT NO.	122056
DRAWING	A105

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ROOM LEGEND

Room Legend

- 1 BR
- 1 BR+D
- 2 BR
- BALCONY
- CHUTE
- CORRIDOR
- ELEC
- ELEV
- INDOOR AMENITY
- LOCK RM VESTIBULE
- LOCKERS
- MECH
- OUTDOOR AMENITY
- STAIR
- WM

LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

1 / A106 T/O 7TH
1 : 100

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NO.	ISSUED	DATE
1	REZONING	2024.06.21

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SEAL

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STEPHEN A. MAURO
LICENCE
6814

CONSTRUCTION NORTH | TRUE NORTH

PROJECT

INARIA MIXED USE DEVELOPMENT

2030 Caroline Street, Burlington, ON, Canada

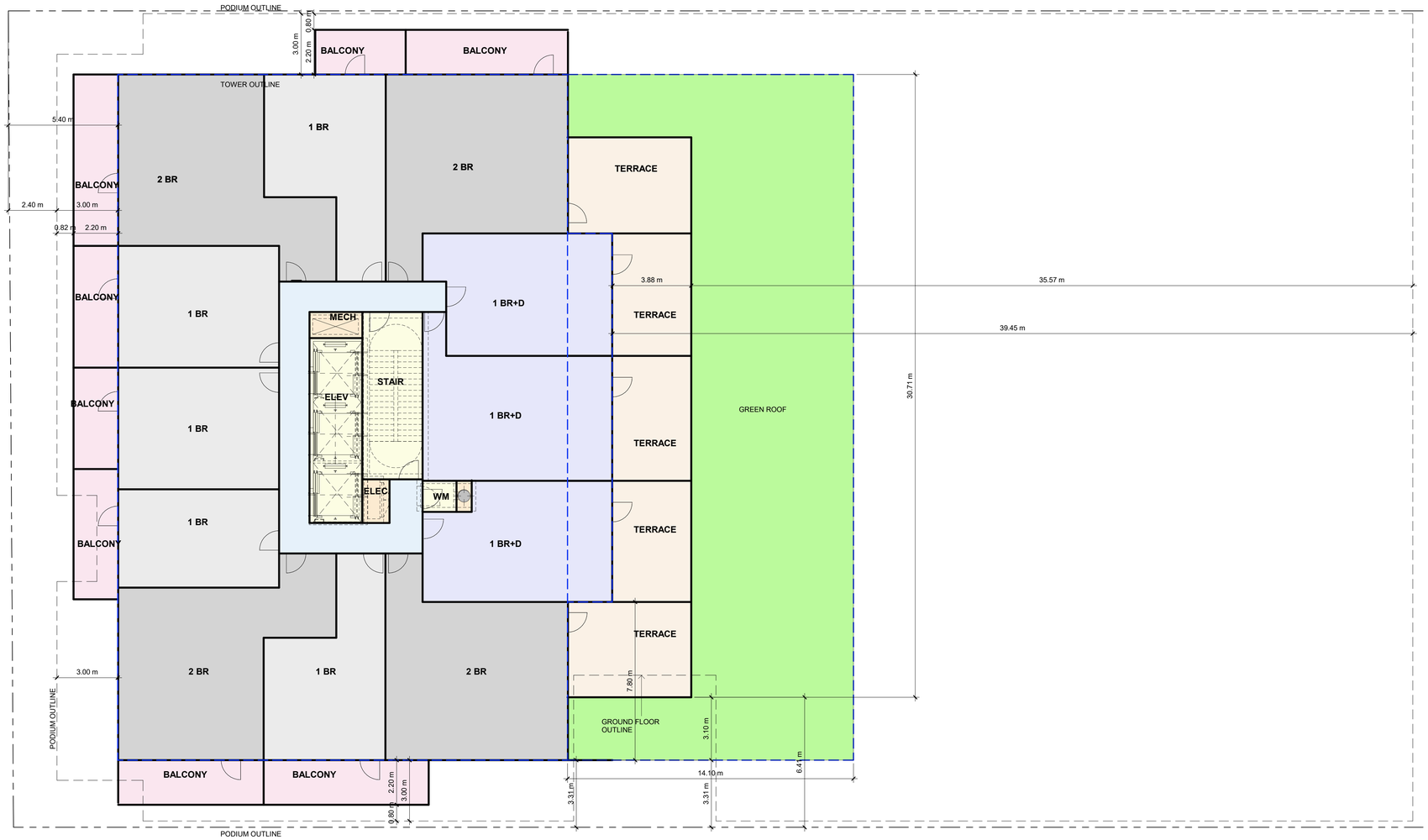
SHEET NAME

7TH FLOOR PLAN

START DATE	2020.02.01
DRAWN BY	SM
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	122056
DRAWING	A106

C:\Users\smauro\Documents\122056 - Inaria - Building_2024.01.14 - PLANS FILE_smauro.rvt

6/17/2024 5:05:44 PM



ROOM LEGEND

Room Legend

- 1 BR
- 1 BR+D
- 2 BR
- BALCONY
- CHUTE
- CORRIDOR
- ELEC
- ELEV
- MECH
- STAIR
- TERRACE
- WM

LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

1 / A107 T/O 8TH FLR
1 : 100

Chamberlain
Architects
Constructors
Managers

Chamberlain Architect Services Limited

4671 Palladium Way (Unit 1)
Burlington, Ontario. L7M 0W9
CANADA

Phone: 905.631.7777

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1	REZONING	2024.06.21

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PROJECT

INARIA MIXED USE DEVELOPMENT

2030 Caroline Street, Burlington, ON, Canada

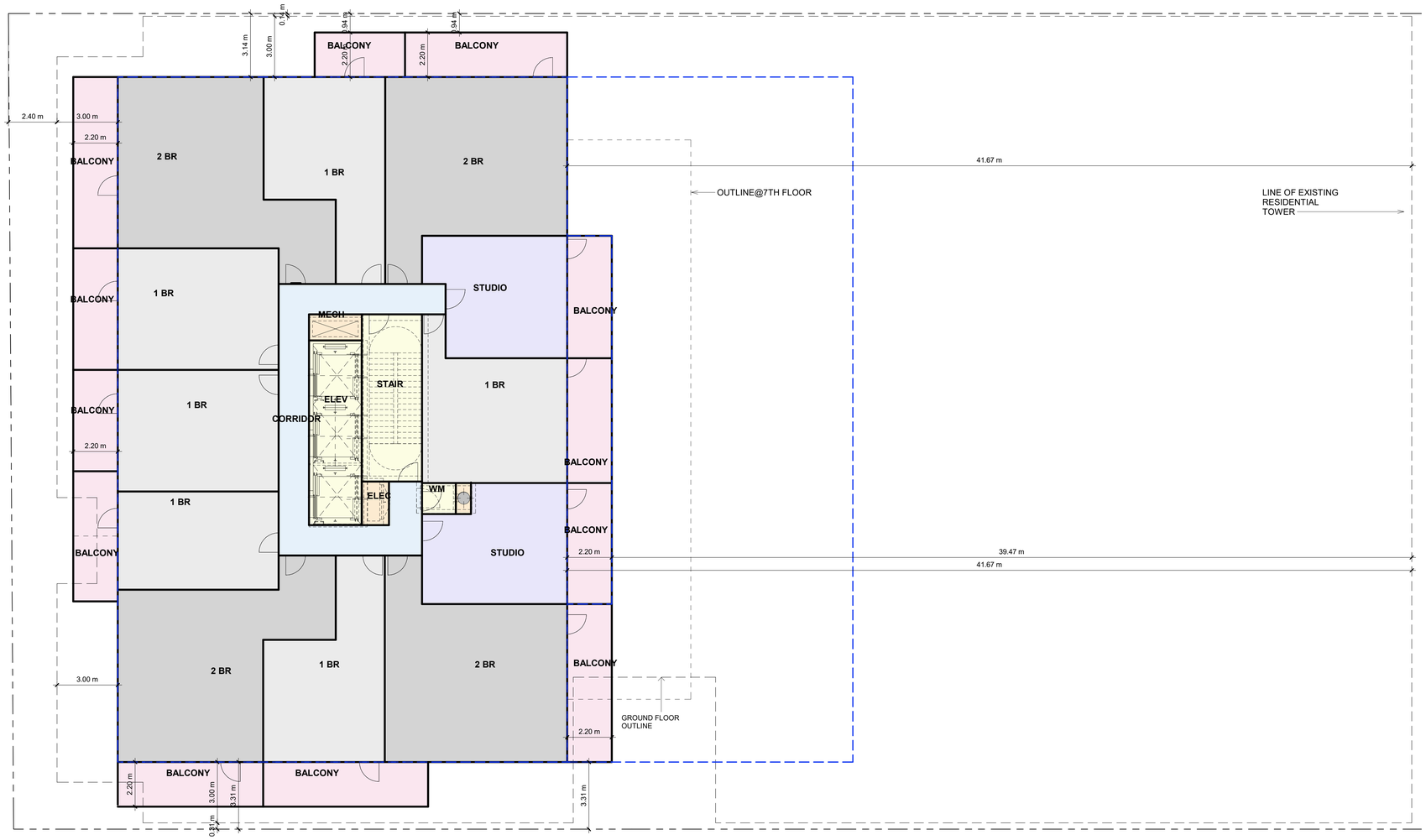
SHEET NAME

8th FLOOR PLAN

START DATE	2020.02.01
DRAWN BY	SM
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	122056
DRAWING	A107

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LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

1 / A108 T/O 9TH FLR
1 : 100

ROOM LEGEND

Room Legend

- 1 BR
- 2 BR
- BALCONY
- CHUTE
- CORRIDOR
- ELEC
- ELEV
- MECH
- STAIR
- STUDIO
- WM

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1	REZONING	2024.06.21

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INARIA MIXED USE DEVELOPMENT

2030 Caroline Street, Burlington, ON, Canada

SHEET NAME

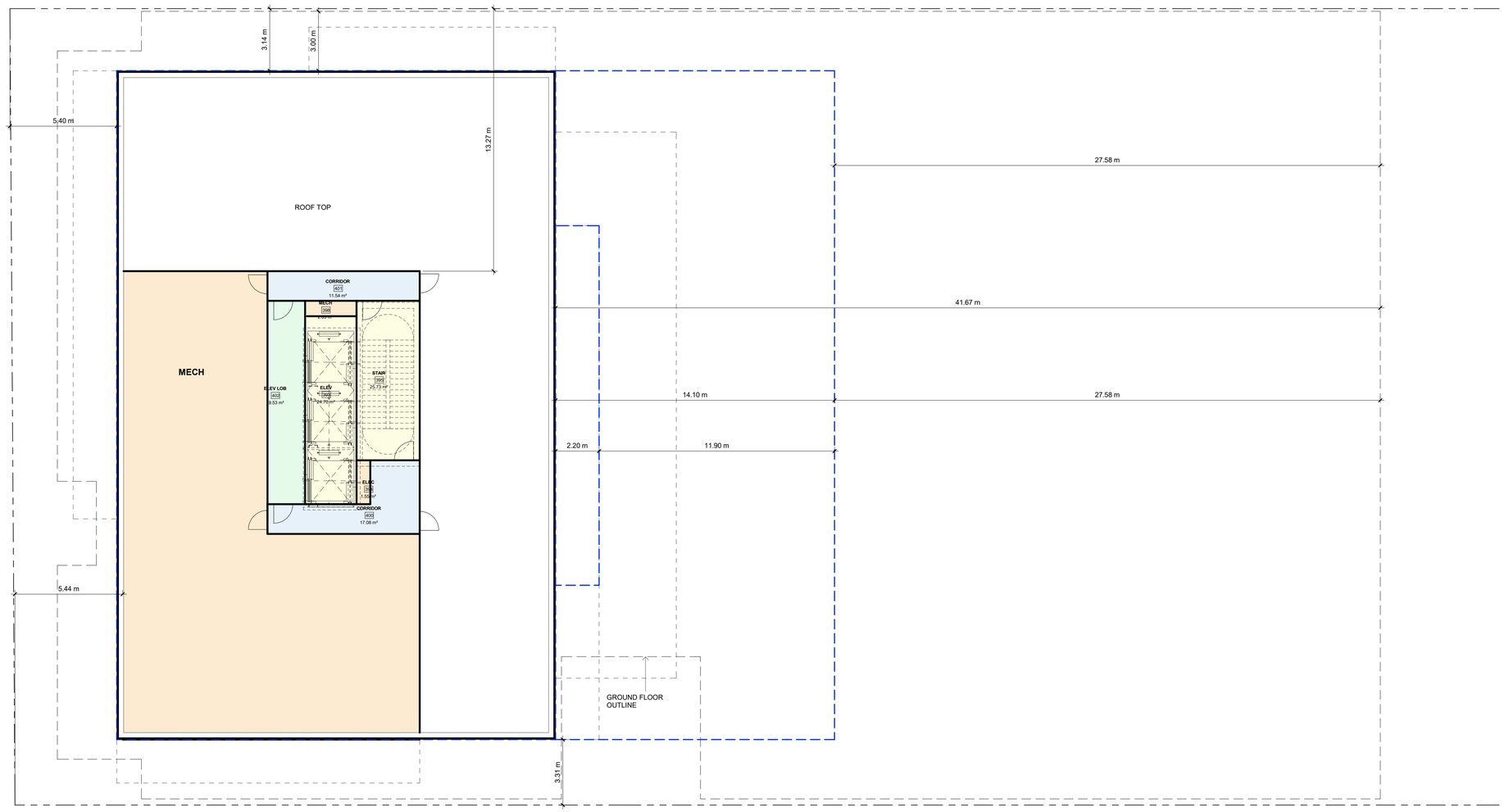
9-27th FLOOR PLAN

START DATE	2020.02.01
DRAWN BY	SM
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	122056

DRAWING

A108

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LINE LEGEND

- GROUND FLOOR OUTLINE
- PODIUM FLOOR OUTLINE
- TOWER FLOOR OUTLINE
- BALCONY OUTLINE

1 / A109 T/O ROOF DECK
1 : 100

ROOM LEGEND

Room Legend

- CORRIDOR
- ELEC
- ELEV
- ELEV LOB
- MECH
- STAIR

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NO.	ISSUED	DATE
1	REZONING	2024.06.21

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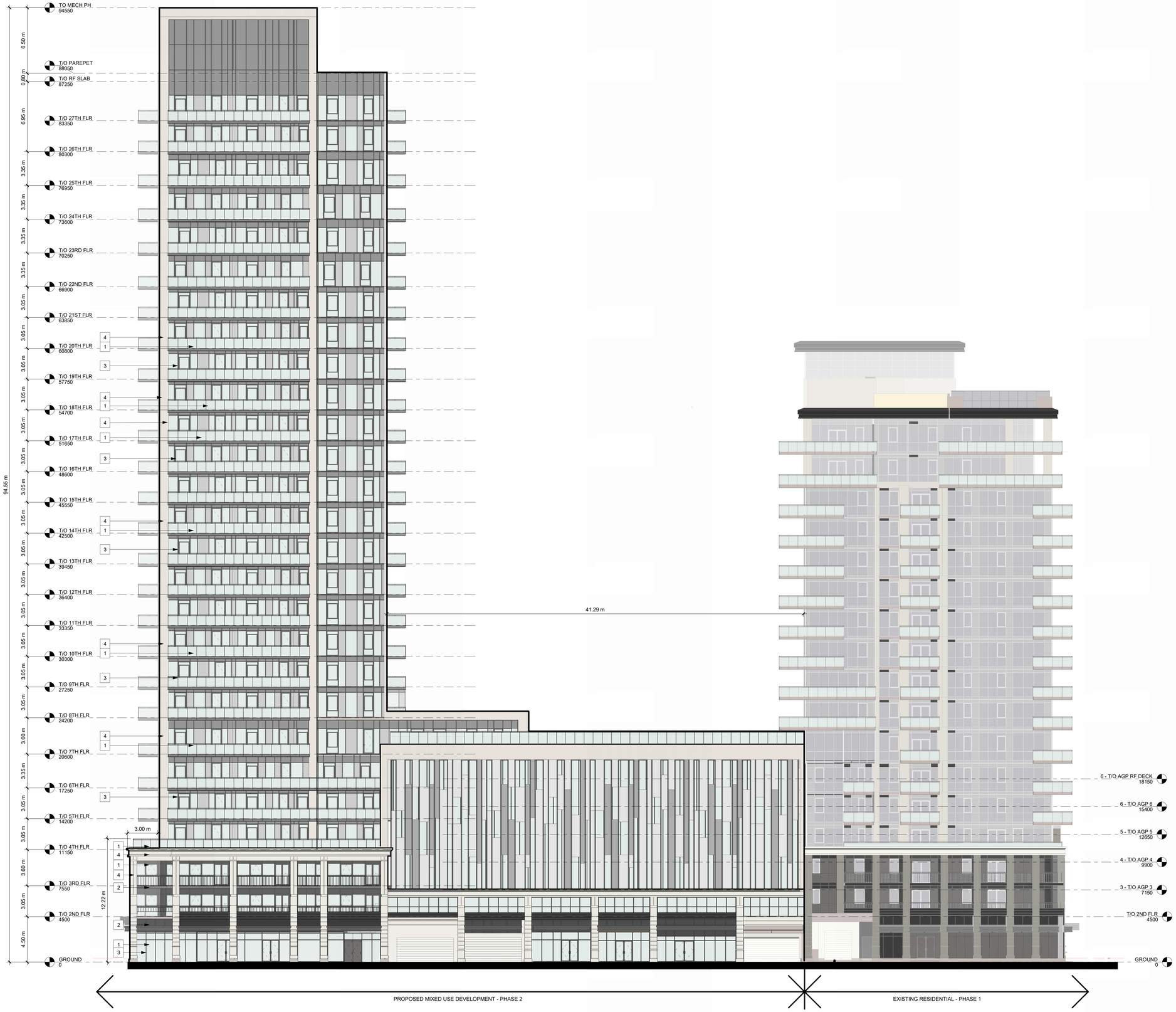
SHEET NAME

ROOF PLAN & DETAILS

START DATE	2020.02.01
DRAWN BY	SM
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	122056
DRAWING	A109

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MATERIAL LEGEND

1	-	GLASS
2	-	SPANDREL GLASS
3	-	MULLION
4	-	PRECAST PANEL

1 / A201 WEST ELEVATION
1 : 150

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INARIA MIXED USE DEVELOPMENT

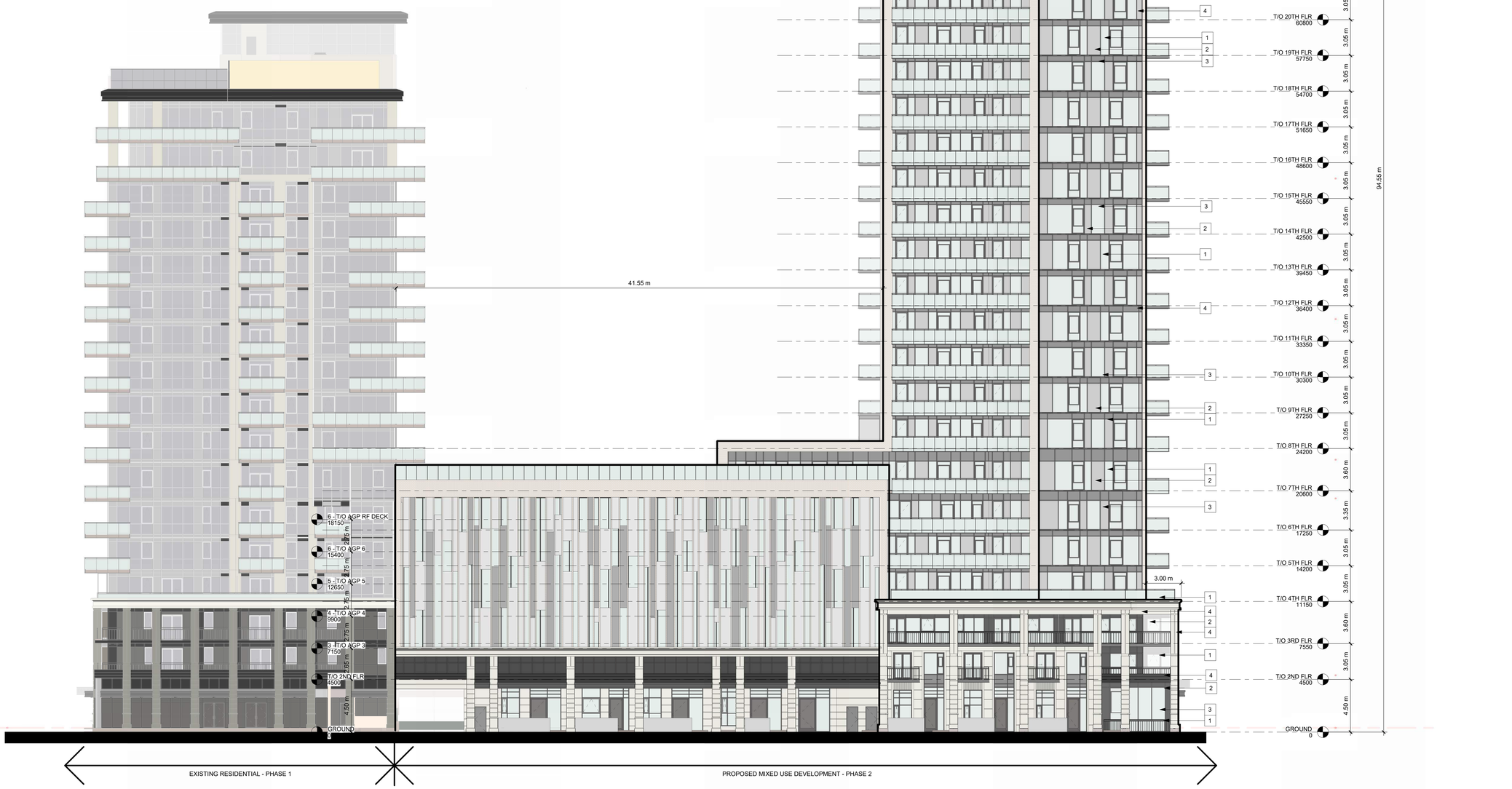
2030 CAROLINE STREET, BURLINGTON

SHEET NAME

EXTERIOR ELEVATION I

START DATE	2020.02.01
DRAWN BY	MOR
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	122056
DRAWING	A201

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6/13/2024 5:45:28 PM



1 A202 EAST ELEVATION
1 : 150

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1	REZONING	2024.06.21

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INARIA MIXED USE DEVELOPMENT

2030 CAROLINE STREET, BURLINGTON

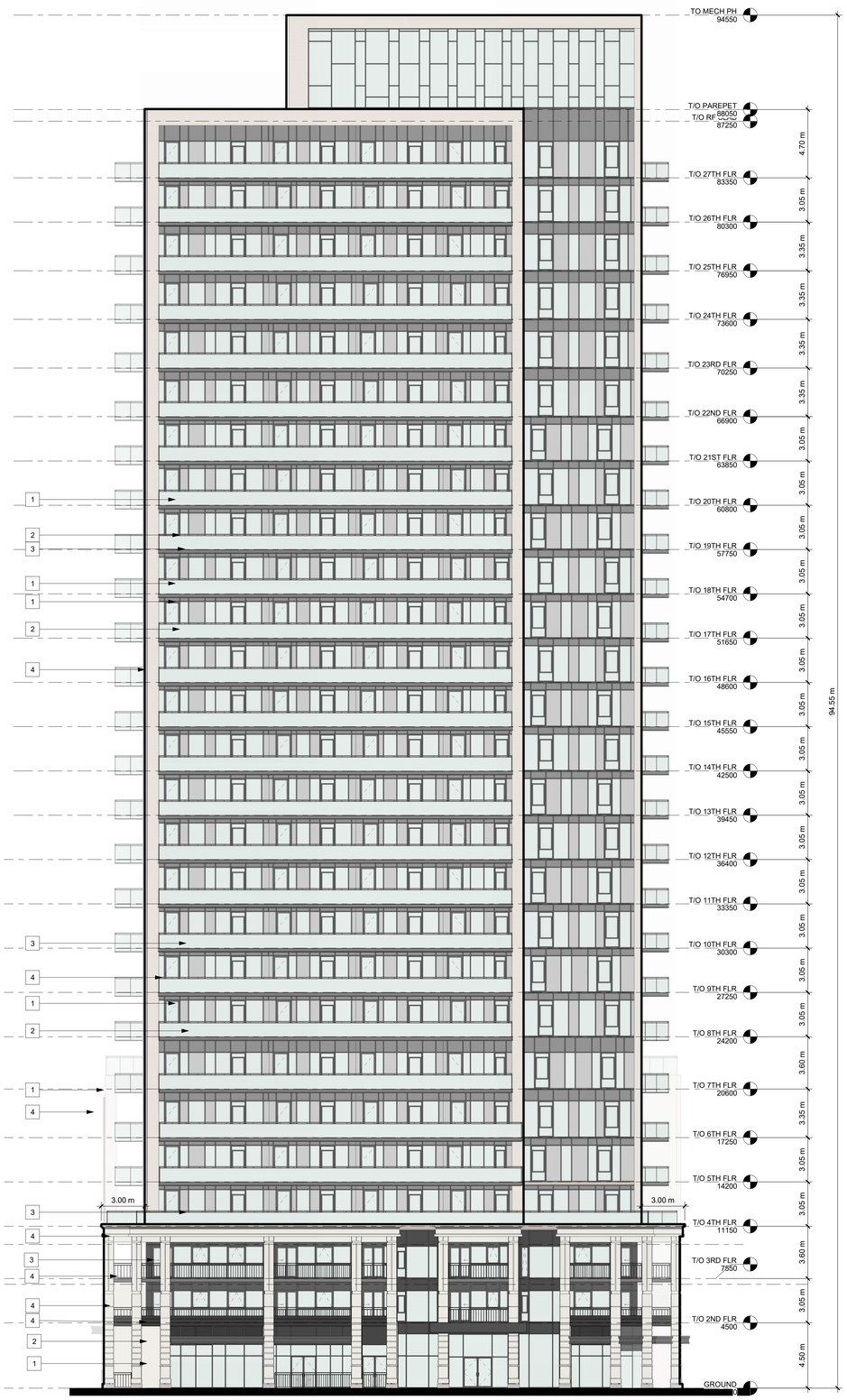
SHEET NAME

EXTERIOR ELEVATION II

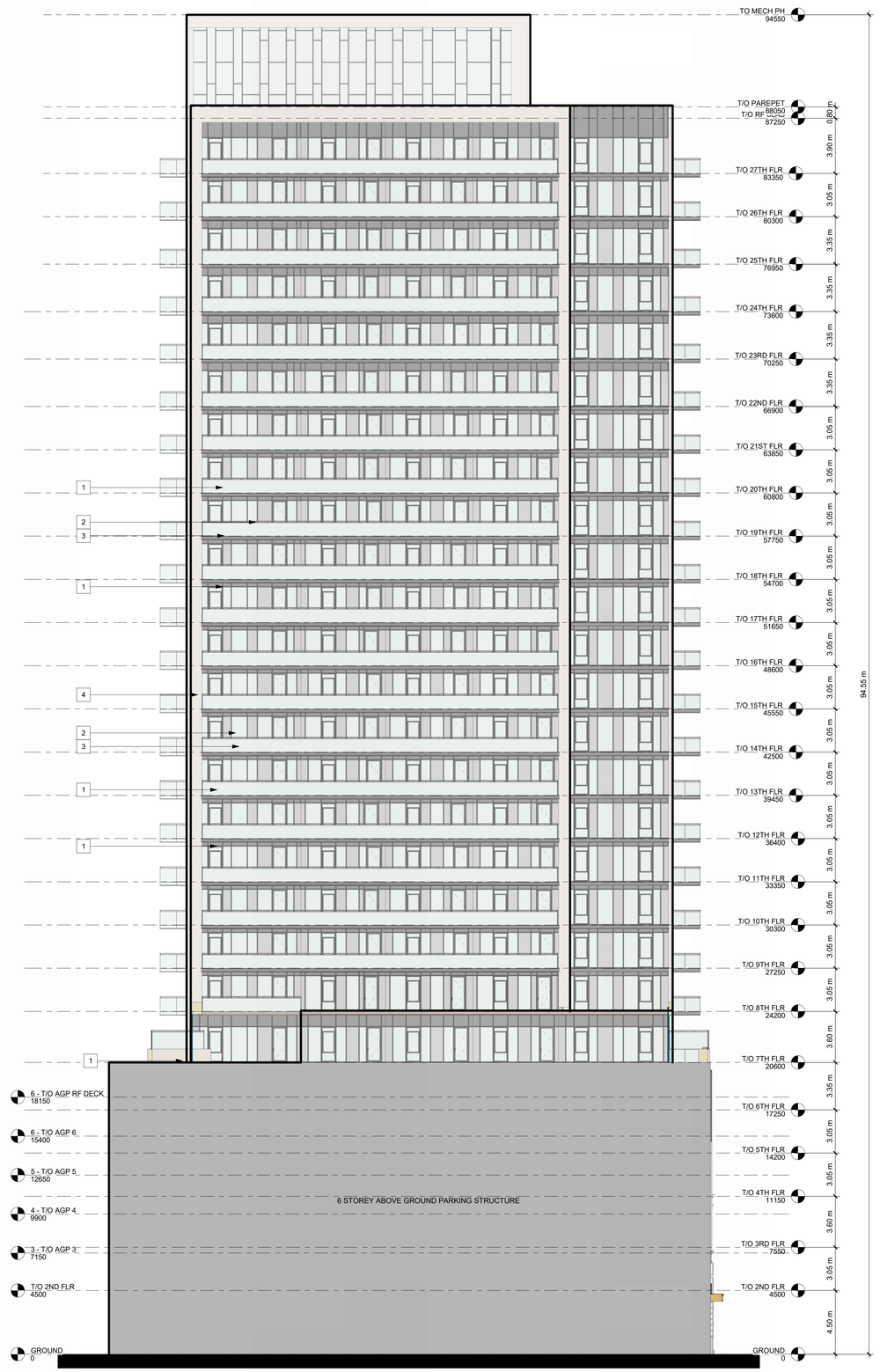
START DATE	2020.02.01
DRAWN BY	MOR
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	122056
DRAWING	A202

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6/13/2024 5:36:47 PM



2 A203 NORTH ELEVATION
1 : 150



1 A203 SOUTH ELEVATION
1 : 150

MATERIAL LEGEND

1	-	GLASS
2	-	SPANDREL GLASS
3	-	MULLION
4	-	PRECAST PANEL

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Chamberlain Architect Services Limited

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Burlington, Ontario. L7M 0W9
CANADA

Phone: 905.631.7777

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NO.	ISSUED	DATE
1	REZONING	2024.06.21

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STEPHEN A. MAURO
LICENCE
8814

CONSTRUCTION NORTH TRUE NORTH

PROJECT

INARIA MIXED USE DEVELOPMENT

2030 CAROLINE STREET, BURLINGTON

SHEET NAME

EXTERIOR ELEVATION III

START DATE	2020.02.01
DRAWN BY	Author
CHECKED BY	Checker
SCALE	As indicated
PROJECT NO.	122056

DRAWING

A203

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6/13/2024 5:34:03 PM

Appendix C Traffic Data and Calculations

Environmental Noise Assessment

2030 Caroline Street - Burlington

Inaria Burlington Inc.

SLR Project No.: 241.031144.00001

June 21, 2024

Scott Penton

From: Patrau, Florin <Florin.Patrau@burlington.ca>
Sent: November 30, 2023 1:57 PM
To: Scott Penton
Cc: Stefan Gopaul
Subject: RE: Noise Study for 2030 Caroline Street - Traffic Data Request.
Attachments: Receipt-Nov 29.pdf; 200272-Brant @ Caroline.pdf; 200272-Brant @ Caroline.xls; 200398-John St @ Caroline St.pdf; 200398-John St @ Caroline St.xls; 200399 - CAROLINE @ ELIZABETH.pdf; 200399 - CAROLINE @ ELIZABETH.xls

Hello Scott, please see attached files & receipt.

For any questions let me know.

Thanks,

Florin Patrau
Traffic Technologist
Transportation Services

(905) 335-7671 ext.7838
florin.patrau@burlington.ca

Our working hours may be different. You are not obligated to reply outside of your typical working hours.

From: Scott Penton <spenton@slrconsulting.com>
Sent: Wednesday, November 29, 2023 9:37 AM
To: Patrau, Florin <Florin.Patrau@burlington.ca>
Cc: Stefan Gopaul <sgopaul@slrconsulting.com>
Subject: RE: Noise Study for 2030 Caroline Street - Traffic Data Request.

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Perfect! Please proceed.
Thanks,
Scott

Scott Penton P.Eng.
Principal Acoustics Engineer

O +1 226 706 8080
M +1 519 362 3538
E spenton@slrconsulting.com

SLR Consulting (Canada) Ltd
100 Stone Road West, Suite 201, Guelph ON Canada N1G 5L3



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From: Patrau, Florin <Florin.Patrau@burlington.ca>
Sent: November 29, 2023 9:35 AM
To: Scott Penton <spenton@slrconsulting.com>
Cc: Stefan Gopaul <sgopaul@slrconsulting.com>
Subject: RE: Noise Study for 2030 Caroline Street - Traffic Data Request.

Good morning Scott, please see bellow what we have available for your study.
Let me know if you want to make a purchase and I'll prepare the invoice.

Regards,

Florin Patrau
Traffic Technologist
Transportation Services

(905) 335-7671 ext.7838
florin.patrau@burlington.ca

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From: Scott Penton <spenton@slrconsulting.com>
Sent: Tuesday, November 28, 2023 3:04 PM
To: Patrau, Florin <Florin.Patrau@burlington.ca>
Cc: Stefan Gopaul <sgopaul@slrconsulting.com>
Subject: RE: Noise Study for 2030 Caroline Street - Traffic Data Request.

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Hi Florin,

The City's Planning Department has the requirement for noise studies. What they are telling noise consultants doing these studies to do is to get the traffic data from you. Apparently, they haven't told you yet that that's what they're doing.

If I can get the following from you, I can do my analysis:

- Turning movement counts at intersections in the area:

- Ideally Brant and Caroline, (2022 TMC) John and Caroline, (2018 TMC) and Elizabeth and Caroline (2015 TMC)

- Typical “day/night” traffic splits. In the absence of specific data, we generally assume 90% of the traffic occurs in the day (7am to 11pm), and 10% overnight (11pm to 7am) – not available
- A typical per annum growth rate for traffic in the area. In the absence of specific data, we generally assume 1.0 % per annum for built up areas like the Burlington core. -we use 1.05% for our aadt predictions city wide

Please let me know if any of the above is available, and the costs.

Warmest regards,
Scott

Scott Penton P.Eng.
Principal Acoustics Engineer

O +1 226 706 8080
M +1 519 362 3538
E spenton@slrconsulting.com

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100 Stone Road West, Suite 201, Guelph ON Canada N1G 5L3



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From: Patrau, Florin <Florin.Patrau@burlington.ca>
Sent: November 28, 2023 2:21 PM
To: Scott Penton <spenton@slrconsulting.com>
Cc: Stefan Gopaul <sgopaul@slrconsulting.com>
Subject: RE: Noise Study for 2030 Caroline Street - Traffic Data Request.

You don't often get email from florin.patrau@burlington.ca. Learn why this is important

Hello Scott,
I’m a bit confused here…Traffic Operations do not have a requirement for noise studies, nor do we utilize such studies for our processes.
All I can assist with is to provide you with whatever data we may have available for your study, should this be requested. Standard data request fees will apply.

Please let me know if any questions.

Regards,

Florin Patrau
Traffic Technologist
Transportation Services

(905) 335-7671 ext.7838
florin.patrau@burlington.ca

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From: Scott Penton <spenton@slrconsulting.com>
Sent: Thursday, November 23, 2023 8:49 AM
To: Patrau, Florin <Florin.Patrau@burlington.ca>
Cc: Stefan Gopaul <sgopaul@slrconsulting.com>
Subject: Noise Study for 2030 Caroline Street - Traffic Data Request.

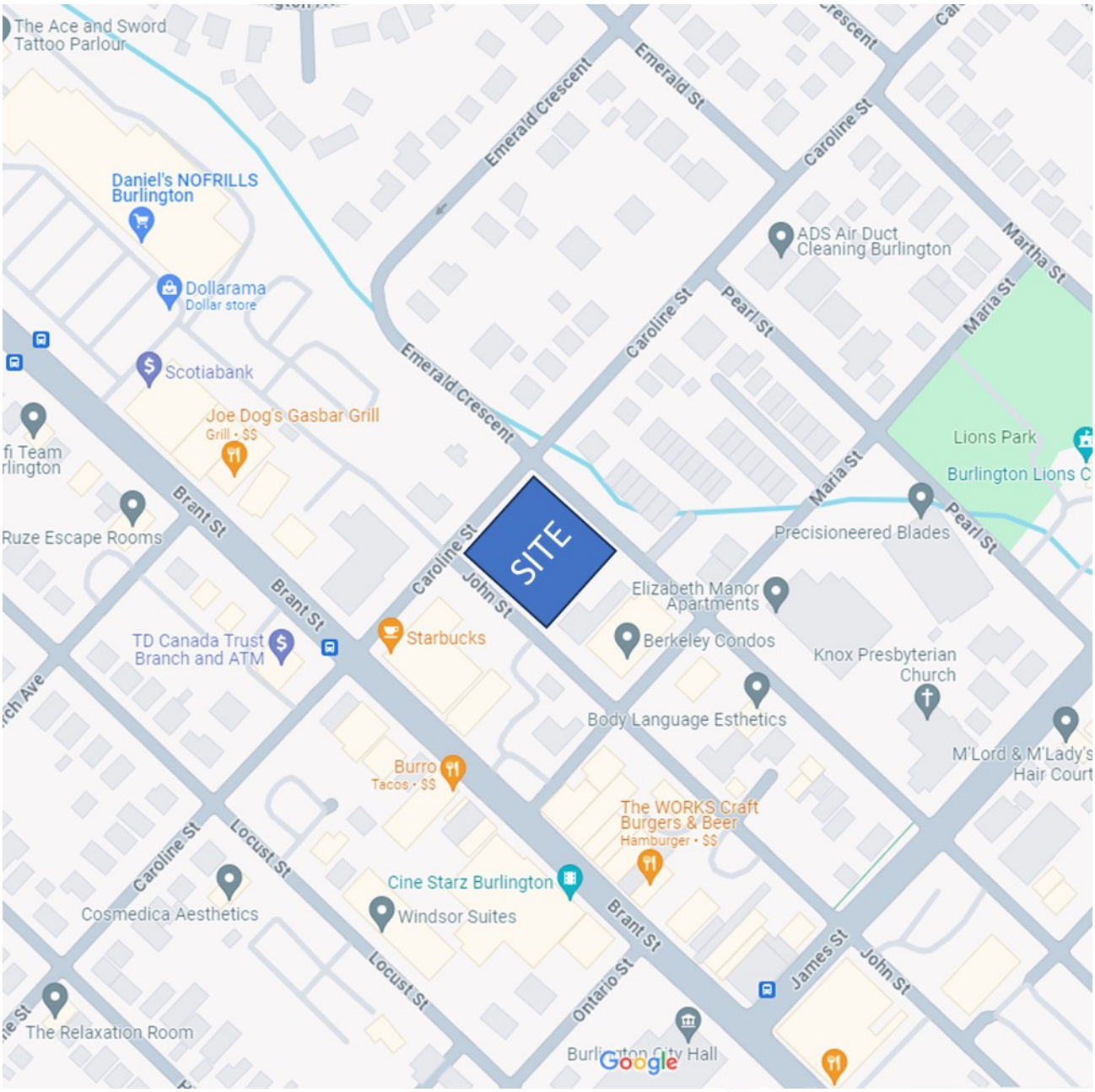
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Florin,

We have been retained to complete a Noise and Vibration Feasibility Study for a development to be located at 2030 Caroline St, at the southeast corner of Caroline St and John St, as shown in the figure at the end of this email. During the pre-consultation meeting, City Planning Staff have requested that the road traffic noise analysis “use capacity volume or volumes provided by the City Traffic Department”, which is the reason for this email.

Can you please let me know what additional information you may require? I can be reached by email or cell ay 519-362-3538.

Warmest regards,
Scott



Scott Penton P.Eng.
Principal Acoustics Engineer

O +1 226 706 8080
M +1 519 362 3538
E spenton@slrconsulting.com

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100 Stone Road West, Suite 201, Guelph ON Canada N1G 5L3

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200272-Brant @ Caroline

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Burlington
Site #: 2002720000
Intersection: Brant St & Caroline St
TFR File #: 1
Count date: 4-Oct-2022

Weather conditions:
Sunny

Person(s) who counted:
Lara

**** Signalized Intersection ****

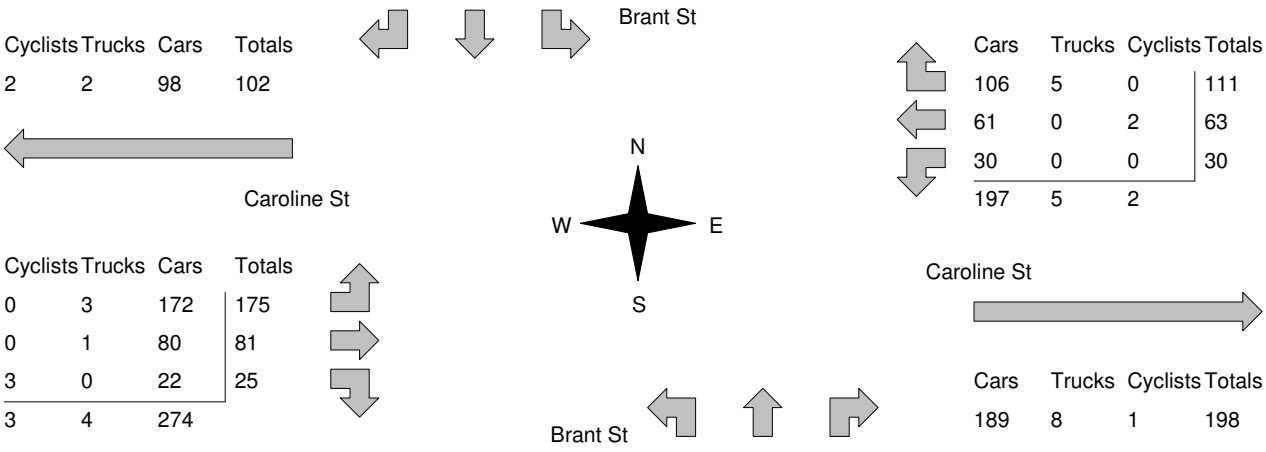
Major Road: Brant St runs N/S

North Leg Total: 785
North Entering: 315
North Peds: 13
Peds Cross: ⋈

Cyclists	0	5	0	5
Trucks	1	10	6	17
Cars	28	201	64	293
Totals	29	216	70	

Cyclists	0
Trucks	24
Cars	446
Totals	470

East Leg Total: 402
East Entering: 204
East Peds: 30
Peds Cross: ⧖



Cyclists	Trucks	Cars	Totals
2	2	98	102

Cars	Trucks	Cyclists	Totals
106	5	0	111
61	0	2	63
30	0	0	30
197	5	2	

Cyclists	Trucks	Cars	Totals
0	3	172	175
0	1	80	81
3	0	22	25
3	4	274	

Cars	Trucks	Cyclists	Totals
189	8	1	198

Peds Cross: ⧖
West Peds: 30
West Entering: 281
West Leg Total: 383

Cars	253			
Trucks	10			
Cyclists	8			
Totals	271			

Cars	9	168	45	222
Trucks	1	16	1	18
Cyclists	0	0	1	1
Totals	10	184	47	

Peds Cross: ⋈
South Peds: 60
South Entering: 241
South Leg Total: 512

Comments

200272-Brant @ Caroline

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Burlington
Site #: 2002720000
Intersection: Brant St & Caroline St
TFR File #: 1
Count date: 4-Oct-2022

Weather conditions:
Sunny

Person(s) who counted:
Lara

**** Signalized Intersection ****

Major Road: Brant St runs N/S

North Leg Total:	1088
North Entering:	550
North Peds:	26
Peds Cross:	⋈

Cyclists	2	5	0	7
Trucks	2	14	2	18
Cars	54	396	75	525
Totals	58	415	77	

Cyclists	3
Trucks	15
Cars	520
Totals	538

East Leg Total:	416
East Entering:	259
East Peds:	87
Peds Cross:	⧖

Brant St

Cyclists	Trucks	Cars	Totals
4	2	136	142

Cars	Trucks	Cyclists	Totals
151	0	0	151
67	0	2	69
39	0	0	39
257	0	2	

Caroline St

N
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Cyclists	Trucks	Cars	Totals
0	2	123	125
1	1	52	54
1	1	13	15
2	4	188	

Caroline St

Cars	Trucks	Cyclists	Totals
149	5	3	157

Brant St

Peds Cross:	⧖
West Peds:	39
West Entering:	194
West Leg Total:	336

Cars	448			
Trucks	15			
Cyclists	6			
Totals	469			

Cars	15	246	22	283
Trucks	0	13	2	15
Cyclists	0	3	2	5
Totals	15	262	26	

Peds Cross:	⋈
South Peds:	45
South Entering:	303
South Leg Total:	772

Comments

200272-Brant @ Caroline

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:15:00
To: 17:15:00

Municipality: Burlington
Site #: 2002720000
Intersection: Brant St & Caroline St
TFR File #: 1
Count date: 4-Oct-2022

Weather conditions:
Sunny

Person(s) who counted:
Lara

**** Signalized Intersection ****

Major Road: Brant St runs N/S

North Leg Total: 1074
North Entering: 557
North Peds: 29
Peds Cross: ⋈

Cyclists	0	5	0	5
Trucks	0	5	3	8
Cars	46	393	105	544
Totals	46	403	108	

Cyclists	0
Trucks	8
Cars	509
Totals	517

East Leg Total: 485
East Entering: 277
East Peds: 78
Peds Cross: ⧖

Brant St

Cyclists	Trucks	Cars	Totals
0	2	173	175

Caroline St

Cyclists	Trucks	Cars	Totals
0	0	155	155
1	1	76	78
1	1	13	15
2	2	244	

Cars	Trucks	Cyclists	Totals
134	3	0	137
103	1	0	104
35	0	1	36
272	4	1	

N
W E
S

Caroline St

Cars	Trucks	Cyclists	Totals
203	4	1	208

Brant St

Peds Cross: ⧖
West Peds: 40
West Entering: 248
West Leg Total: 423

Cars	441
Trucks	6
Cyclists	7
Totals	454

Cars	24	220	22	266
Trucks	1	5	0	6
Cyclists	0	0	0	0
Totals	25	225	22	

Peds Cross: ⋈
South Peds: 29
South Entering: 272
South Leg Total: 726

Comments

200272-Brant @ Caroline

Total Count Diagram

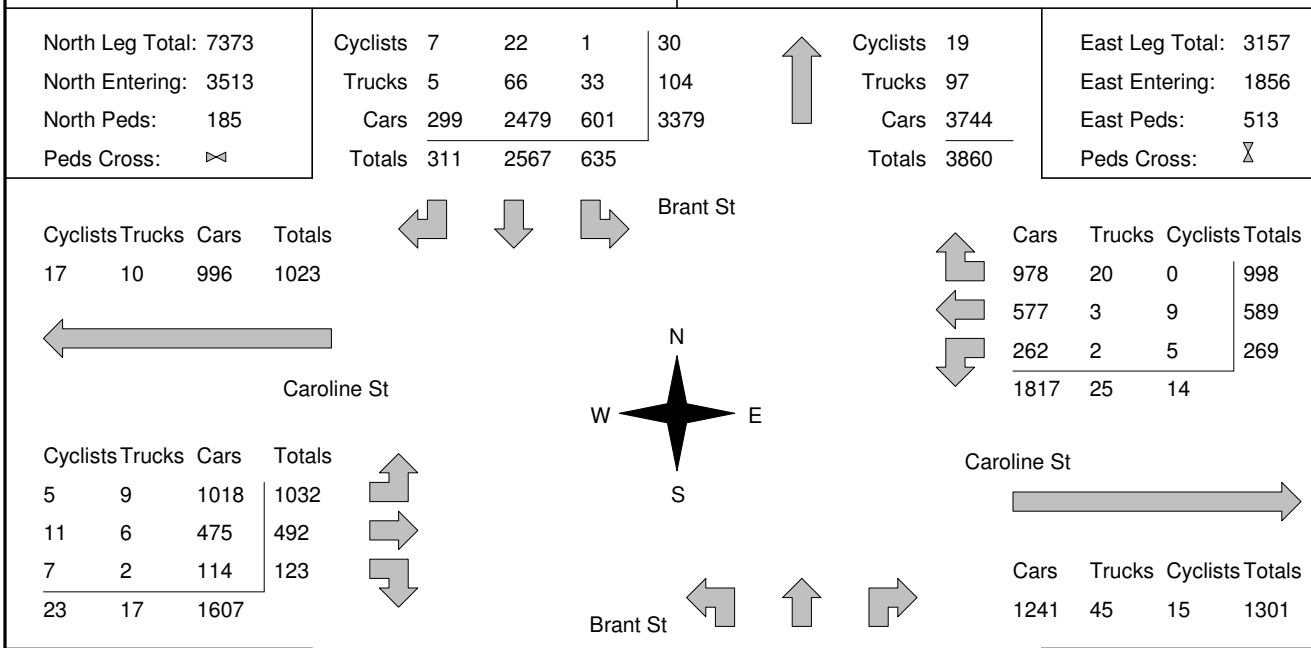
Municipality: Burlington
Site #: 2002720000
Intersection: Brant St & Caroline St
TFR File #: 1
Count date: 4-Oct-2022

Weather conditions:
Sunny

Person(s) who counted:
Lara

**** Signalized Intersection ****

Major Road: Brant St runs N/S



Comments

200272-Brant @ Caroline
Traffic Count Summary

Intersection: Brant St & Caroline St | **Count Date:** 4-Oct-2022 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	50	156	18	224	3	401
9:00:00	70	216	29	315	13	556
11:00:00	0	0	0	0	0	0
12:00:00	77	307	32	416	24	687
13:00:00	97	340	44	481	23	809
14:00:00	77	415	58	550	26	853
15:00:00	0	0	0	0	0	0
16:00:00	85	353	51	489	35	781
17:00:00	96	401	37	534	31	817
18:00:00	83	379	42	504	30	736
Totals:	635	2567	311	3513	185	5640

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	5	151	21	177	8
9:00:00	10	184	47	241	60
11:00:00	0	0	0	0	0
12:00:00	11	242	18	271	43
13:00:00	23	289	16	328	52
14:00:00	15	262	26	303	45
15:00:00	0	0	0	0	0
16:00:00	18	261	13	292	40
17:00:00	28	232	23	283	33
18:00:00	13	209	10	232	31
Totals:	123	1830	174	2127	312

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	17	22	77	116	22	236
9:00:00	30	63	111	204	30	485
11:00:00	0	0	0	0	0	0
12:00:00	20	69	128	217	98	374
13:00:00	57	57	151	265	67	444
14:00:00	39	69	151	259	87	453
15:00:00	0	0	0	0	0	0
16:00:00	35	97	122	254	77	479
17:00:00	34	98	122	254	77	510
18:00:00	37	114	136	287	55	522
Totals:	269	589	998	1856	513	3503

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	81	29	10	120	15
9:00:00	175	81	25	281	30
11:00:00	0	0	0	0	0
12:00:00	98	49	10	157	62
13:00:00	98	63	18	179	44
14:00:00	125	54	15	194	39
15:00:00	0	0	0	0	0
16:00:00	146	63	16	225	46
17:00:00	164	79	13	256	34
18:00:00	145	74	16	235	53
Totals:	1032	492	123	1647	323

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	138	359	254	293	304	353	360	357

John St @ Caroline St

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

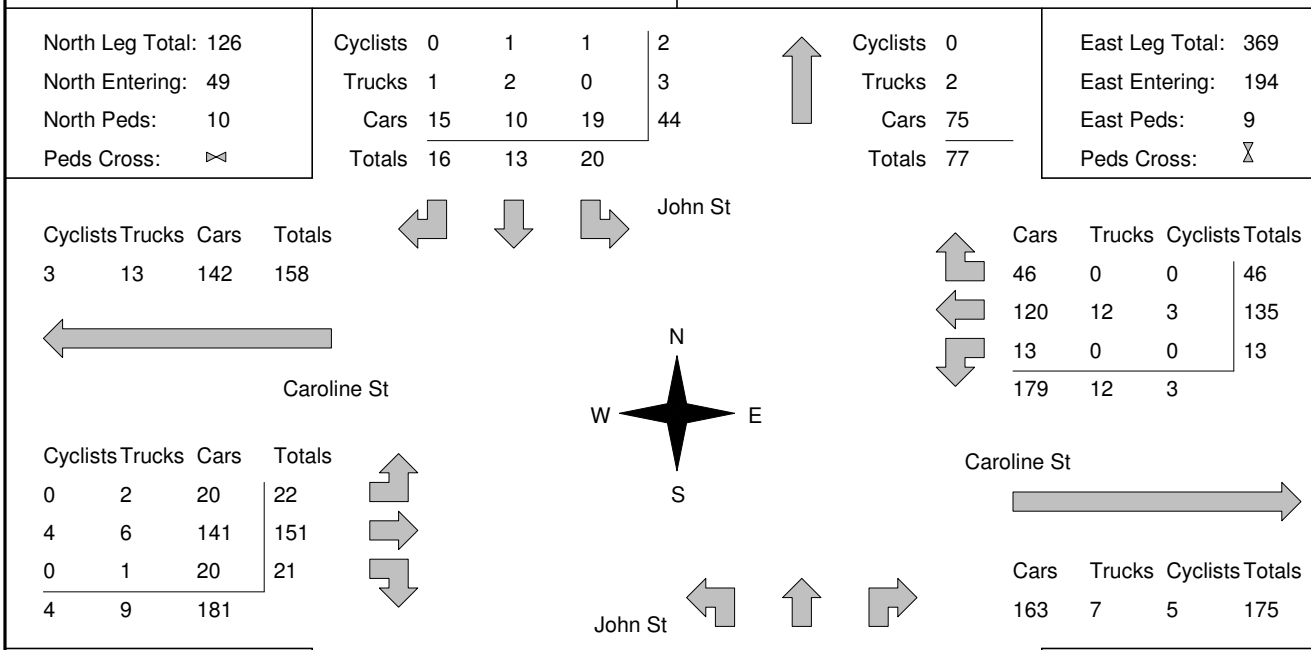
Municipality: Burlington
Site #: 0000200398
Intersection: John St & Caroline St
TFR File #: 1
Count date: 19-Jun-2018

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Non-Signalized Intersection ****

Major Road: John St runs N/S



Comments

John St @ Caroline St

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Burlington
Site #: 0000200398
Intersection: John St & Caroline St
TFR File #: 1
Count date: 19-Jun-2018

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Non-Signalized Intersection ****

Major Road: John St runs N/S

North Leg Total: 235
North Entering: 116
North Peds: 22
Peds Cross: ⋈

Cyclists	0	2	0	2
Trucks	3	1	6	10
Cars	43	22	39	104
Totals	46	25	45	

Cyclists	7
Trucks	10
Cars	102
Totals	119

East Leg Total: 480
East Entering: 268
East Peds: 3
Peds Cross: ⋈

John St

Cyclists	Trucks	Cars	Totals
1	20	218	239

Cars	Trucks	Cyclists	Totals
71	5	3	79
158	14	1	173
14	2	0	16
243	21	4	

Caroline St

N
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S

Cyclists	Trucks	Cars	Totals
1	5	16	22
6	9	131	146
2	5	20	27
9	19	167	

Caroline St

Cars	Trucks	Cyclists	Totals
189	17	6	212

John St

Peds Cross: ⋈
West Peds: 16
West Entering: 195
West Leg Total: 434

Cars	56
Trucks	8
Cyclists	4
Totals	68

Cars	17	15	19	51
Trucks	3	0	2	5
Cyclists	0	3	0	3
Totals	20	18	21	

Peds Cross: ⋈
South Peds: 14
South Entering: 59
South Leg Total: 127

Comments

John St @ Caroline St

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Burlington
Site #: 0000200398
Intersection: John St & Caroline St
TFR File #: 1
Count date: 19-Jun-2018

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Non-Signalized Intersection ****

Major Road: John St runs N/S

North Leg Total:	283			
North Entering:	145			
North Peds:	17			
Peds Cross:	⋈			
Cyclists	2	4	1	7
Trucks	2	2	2	6
Cars	52	20	60	132
Totals	56	26	63	
Cyclists	4			
Trucks	5			
Cars	129			
Totals	138			
East Leg Total:	672			
East Entering:	430			
East Peds:	14			
Peds Cross:	⧖			

John St

Cyclists	Trucks	Cars	Totals
7	30	373	410

Cars	Trucks	Cyclists	Totals
79	3	2	84
304	26	5	335
9	1	1	11
392	30	8	

Caroline St

N
W E
S

Cyclists	Trucks	Cars	Totals
0	0	26	26
6	3	158	167
2	0	14	16
8	3	198	

Caroline St

Cars	Trucks	Cyclists	Totals
227	5	10	242

John St

Peds Cross:	⧖			
West Peds:	11			
West Entering:	209			
West Leg Total:	619			
Cars	43			
Trucks	3			
Cyclists	7			
Totals	53			
Cars	17	24	9	50
Trucks	2	2	0	4
Cyclists	0	2	3	5
Totals	19	28	12	
Peds Cross:	⋈			
South Peds:	6			
South Entering:	59			
South Leg Total:	112			

Comments

John St @ Caroline St

Total Count Diagram

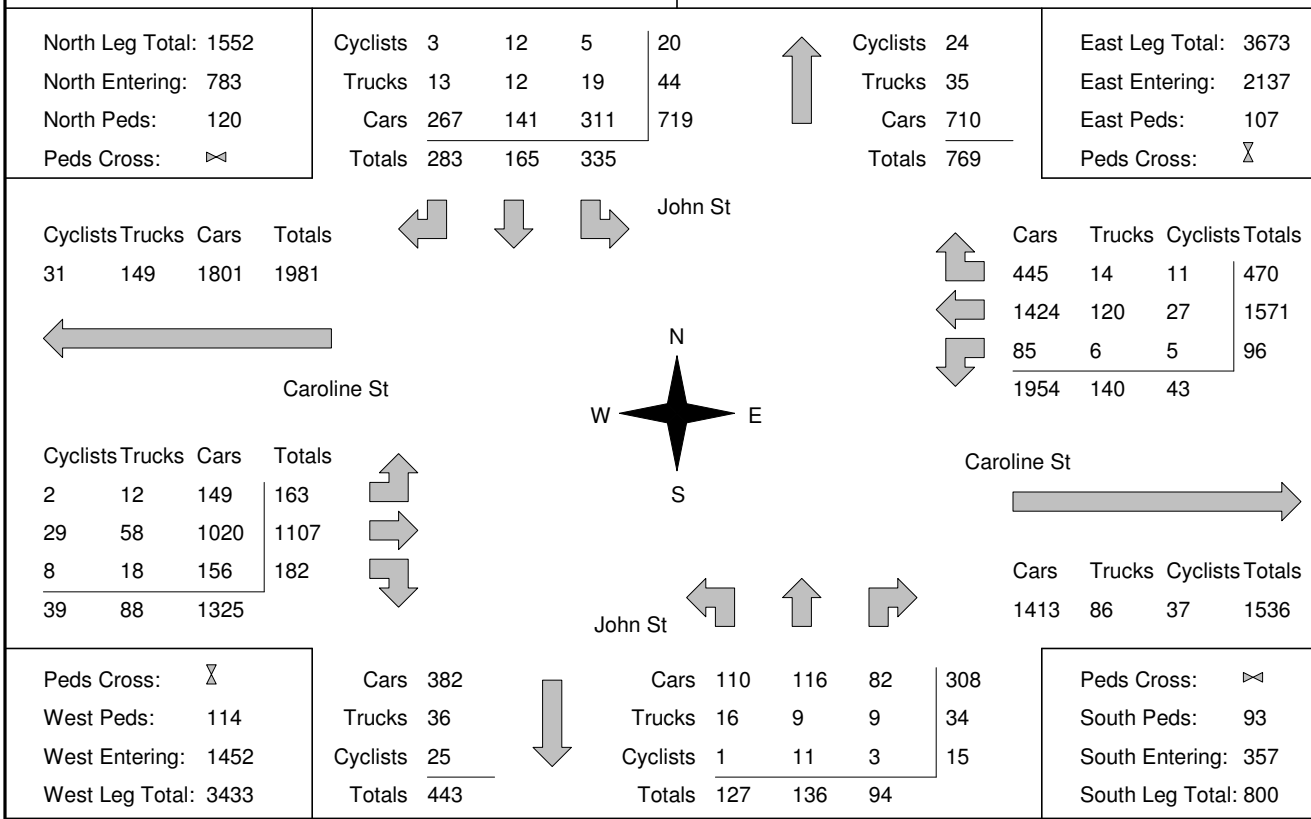
Municipality: Burlington
Site #: 0000200398
Intersection: John St & Caroline St
TFR File #: 1
Count date: 19-Jun-2018

Weather conditions:
Sunny

Person(s) who counted:
Tanya

**** Non-Signalized Intersection ****

Major Road: John St runs N/S



Comments

John St @ Caroline St
Traffic Count Summary

Intersection: John St & Caroline St | **Count Date:** 19-Jun-2018 | **Municipality:** Burlington

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	12	5	9	26	3	33
9:00:00	20	13	16	49	10	69
11:00:00	0	0	0	0	0	0
12:00:00	46	19	41	106	22	161
13:00:00	54	27	41	122	19	172
14:00:00	45	25	46	116	22	175
15:00:00	0	0	0	0	0	0
16:00:00	34	28	39	101	8	156
17:00:00	61	27	55	143	22	211
18:00:00	63	21	36	120	14	163
Totals:	335	165	283	783	120	1140

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	4	2	1	7	8
9:00:00	7	9	4	20	10
11:00:00	0	0	0	0	0
12:00:00	17	23	15	55	7
13:00:00	20	16	14	50	26
14:00:00	20	18	21	59	14
15:00:00	0	0	0	0	0
16:00:00	18	21	16	55	15
17:00:00	24	34	10	68	7
18:00:00	17	13	13	43	6
Totals:	127	136	94	357	93

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	5	96	22	123	11	238
9:00:00	13	135	46	194	9	388
11:00:00	0	0	0	0	0	0
12:00:00	11	168	51	230	11	411
13:00:00	16	165	54	235	22	439
14:00:00	16	173	79	268	3	463
15:00:00	0	0	0	0	0	0
16:00:00	11	224	62	297	25	481
17:00:00	14	302	78	394	20	577
18:00:00	10	308	78	396	6	592
Totals:	96	1571	470	2137	107	3589

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Cyclists: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	13	81	21	115	5
9:00:00	22	151	21	194	25
11:00:00	0	0	0	0	0
12:00:00	21	132	28	181	12
13:00:00	16	158	30	204	15
14:00:00	22	146	27	195	16
15:00:00	0	0	0	0	0
16:00:00	22	141	21	184	23
17:00:00	25	143	15	183	9
18:00:00	22	155	19	196	9
Totals:	163	1107	182	1452	114

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	14:00	16:00	17:00	18:00
Crossing Values:	125	206	229	242	247	280	370	360

Caroline St @ Elizabeth St

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

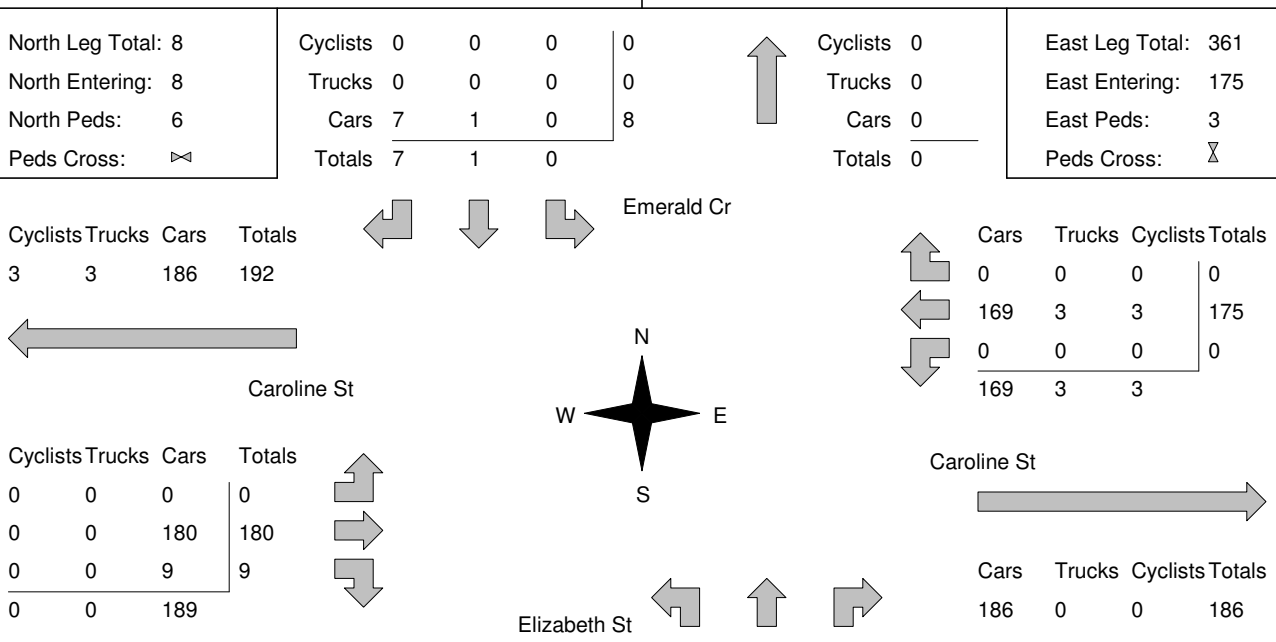
Municipality: Burlington
Site #: 0000200399
Intersection: Caroline St & Elizabeth St
TFR File #: 2
Count date: 20-Oct-2015

Weather conditions:
Cloudy, Rain

Person(s) who counted:
Ela K

**** Non-Signalized Intersection ****

Major Road: Caroline St runs W/E



Comments

Caroline St @ Elizabeth St

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:45:00
To: 13:45:00

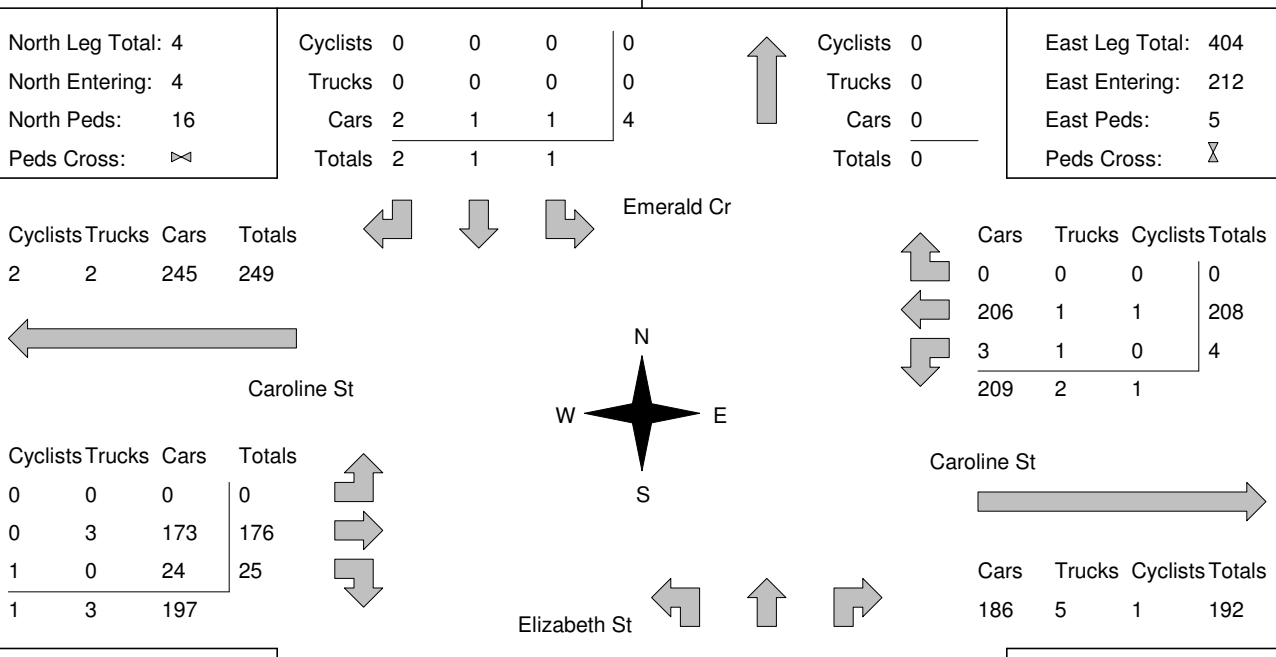
Municipality: Burlington
Site #: 0000200399
Intersection: Caroline St & Elizabeth St
TFR File #: 2
Count date: 20-Oct-2015

Weather conditions:
Cloudy, Rain

Person(s) who counted:
Ela K

**** Non-Signalized Intersection ****

Major Road: Caroline St runs W/E



Comments

Caroline St @ Elizabeth St

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 15:15:00
To: 16:15:00

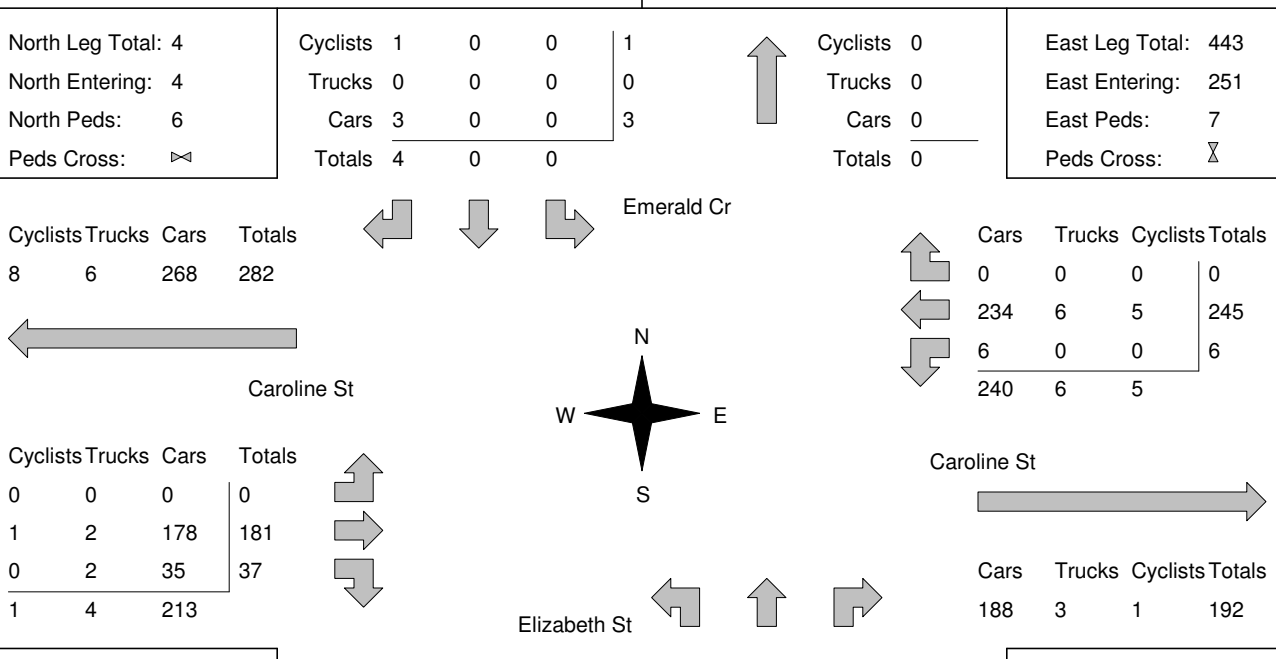
Municipality: Burlington
Site #: 0000200399
Intersection: Caroline St & Elizabeth St
TFR File #: 2
Count date: 20-Oct-2015

Weather conditions:
Cloudy, Rain

Person(s) who counted:
Ela K

**** Non-Signalized Intersection ****

Major Road: Caroline St runs W/E



Comments

Caroline St @ Elizabeth St

Total Count Diagram

Municipality: Burlington
Site #: 0000200399
Intersection: Caroline St & Elizabeth St
TFR File #: 2
Count date: 20-Oct-2015

Weather conditions:
Cloudy, Rain

Person(s) who counted:
Ela K

**** Non-Signalized Intersection ****

Major Road: Caroline St runs W/E

North Leg Total:	44
North Entering:	44
North Peds:	62
Peds Cross:	⋈

Cyclists	1	3	0	4
Trucks	0	0	0	0
Cars	32	3	5	40
Totals	33	6	5	

Cyclists	0
Trucks	0
Cars	0
Totals	0

East Leg Total:	2889
East Entering:	1583
East Peds:	26
Peds Cross:	⧖

Emerald Cr

Cyclists	Trucks	Cars	Totals
19	27	1746	1792

Cars	Trucks	Cyclists	Totals
0	0	0	0
1518	22	15	1555
26	1	1	28
1544	23	16	

Caroline St

N
W E
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Cyclists	Trucks	Cars	Totals
0	0	0	0
13	14	1205	1232
1	3	168	172
14	17	1373	

Caroline St

Cars	Trucks	Cyclists	Totals
1275	17	14	1306

Elizabeth St

Peds Cross:	⧖
West Peds:	18
West Entering:	1404
West Leg Total:	3196

Cars	197			
Trucks	4			
Cyclists	5			
Totals	206			

Cars	196	0	65	261
Trucks	5	0	3	8
Cyclists	3	0	1	4
Totals	204	0	69	

Peds Cross:	⋈
South Peds:	40
South Entering:	273
South Leg Total:	479

Comments

Caroline St @ Elizabeth St

Annual Average Daily Traffic Diagram

Total Factor = Monthly Factor(0.95) x Daily Factor(0.93) x 24 Hour Factor(1.85) = 1.634475

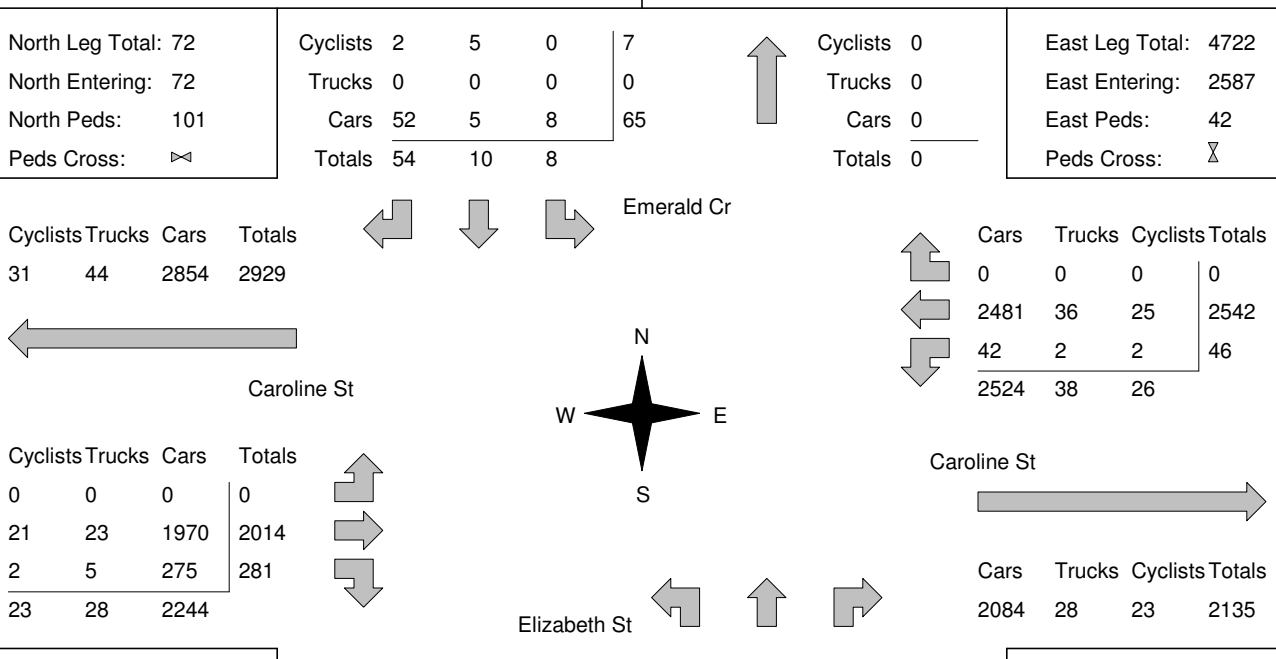
Municipality: Burlington
Site #: 0000200399
Intersection: Caroline St & Elizabeth St
TFR File #: 2
Count date: 20-Oct-2015

Weather conditions:
Cloudy, Rain

Person(s) who counted:
Ela K

**** Non-Signalized Intersection ****

Major Road: Caroline St runs W/E



Comments

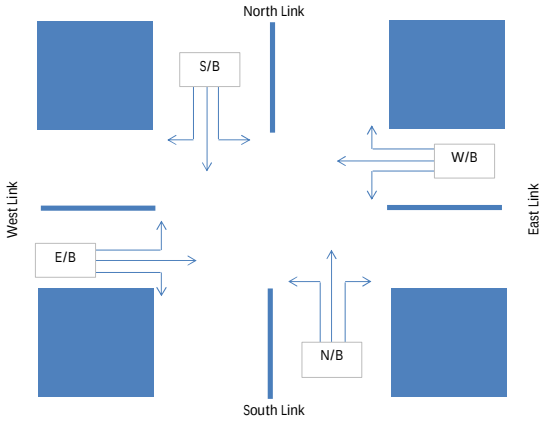
Caroline St & Elizabeth St
19/6/2018
8-Hour

	NORTHBOUND					EASTBOUND					SOUTHBOUND					WESTBOUND				
	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total
CAR	710	110	116	82	308	1413	149	1020	156	1325	382	311	141	267	719	1801	85	1424	445	1954
MED	0				0	0				0	0				0	0				0
HVY	35	16	9	9	34	86	12	58	18	88	36	19	12	13	44	149	6	120	14	140
TOTAL	745	126	125	91	342	1499	161	1078	174	1413	418	330	153	280	763	1950	91	1544	459	2094

AADT Conversion	
PM Peak to AADT	10
AM Peak to AADT	11
8-Hour to AADT	1.9

Traffic Distribution Types	Auto	Medium	Heavy
Provincial Highway	80.0%	5.0%	15.0%
Municipal	87.0%	5.0%	8.0%
ARTERIAL - Non-Industrial Areas	95.8%	2.3%	2.0%
ARTERIAL - Industrial Areas	88.8%	6.0%	5.2%
PROVINCIAL	89.7%	4.0%	6.3%
FREEWAY	85.0%	3.8%	11.3%
custom	88.0%	7.0%	5.0%

	medium	Heavy
Arterial No idustrial	0.534884	0.465116



AADT

North Link	John St				
	CAR	MED	HVY	TOTAL	% COMM
S/B North of Int.	719	0	44	763	5.8%
N/B North of Int.	710	0	35	745	4.7%
TOTAL	1429	0	79	1508	5.2%

South Link	John St				
	CAR	MED	HVY	TOTAL	% COMM
S/B South of Int.	382	0	36	418	8.6%
N/B South of Int.	308	0	34	342	9.9%
TOTAL	690	0	70	760	9.2%

West Link	Caroline St				
	CAR	MED	HVY	TOTAL	% COMM
E/B West of Int	1325	0	88	1413	6.2%
W/B West of Int	1801	0	149	1950	7.6%
TOTAL	3126	0	237	3363	7.0%

East Link	Caroline St				
	CAR	MED	HVY	TOTAL	% COMM
W/B East of Int.	1954	0	140	2094	6.7%
E/B East of Int	1413	0	86	1499	5.7%
TOTAL	3367	0	226	3593	6.3%

AADT (1:1 Calculation)

North Link	John St								
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy	
S/B North of Int.	1366	0	84	1450	0.0%	5.8%			
N/B North of Int.	1349	0	67	1416	0.0%	4.7%			
TOTAL	2715	0	151	2866	0.0%	5.3%	2.8%	2.5%	

South Link	John St								
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy	
S/B South of Int.	726	0	68	794	0.0%	8.6%			
N/B South of Int.	585	0	65	650	0.0%	10.0%			
TOTAL	1311	0	133	1444	0.0%	9.2%	4.9%	4.3%	

West Link	Caroline St								
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy	
E/B West of Int	2518	0	167	2685	0.0%	6.2%			
W/B West of Int	3422	0	283	3705	0.0%	7.6%			
TOTAL	5940	0	450	6390	0.0%	7.0%	3.8%	3.3%	

East Link	Caroline St								
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy	
W/B East of Int.	3713	0	266	3979	0.0%	6.7%			
E/B East of Int	2685	0	163	2848	0.0%	5.7%			
TOTAL	6398	0	429	6827	0.0%	6.3%	3.4%	2.9%	

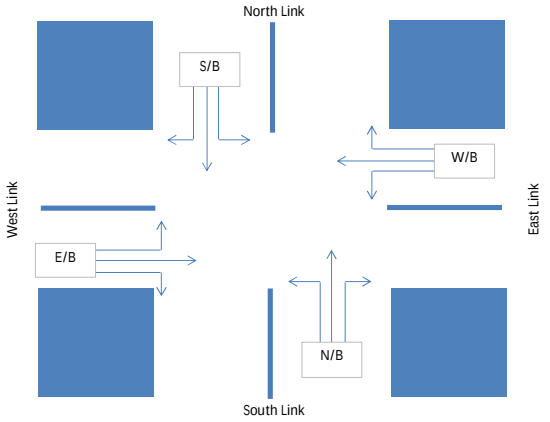
Caroline St & Elizabeth St
4/10/2022
8-Hour

	NORTHBOUND					EASTBOUND					SOUTHBOUND					WESTBOUND				
	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total
CAR	3744	120	1748	165	2033	1241	1018	475	114	1607	2855	601	2479	299	3379	996	262	577	978	1817
MED	0				0	0				0	0				0	0				0
HVY	43	1	14	3	18	42	9	6	2	17	70	33	66	5	104	9	2	3	20	25
TOTAL	3787	121	1762	168	2051	1283	1027	481	116	1624	2925	634	2545	304	3483	1005	264	580	998	1842

AADT Conversion	
PM Peak to AADT	10
AM Peak to AADT	11
8-Hour to AADT	1.9

Traffic Distribution Types	Auto	Medium	Heavy
Provincial Highway	80.0%	5.0%	15.0%
Municipal	87.0%	5.0%	8.0%
ARTERIAL - Non-Industrial Areas	95.8%	2.3%	2.0%
ARTERIAL - Industrial Areas	88.8%	6.0%	5.2%
PROVINCIAL	89.7%	4.0%	6.3%
FREEWAY	85.0%	3.8%	11.3%
custom	88.0%	7.0%	5.0%

	medium	Heavy
Arterial No idustrial	0.534884	0.465116



AADT

North Link	Brant St				
	CAR	MED	HVY	TOTAL	% COMM
S/B North of Int.	3379	0	104	3483	3.0%
N/B North of Int.	3744	0	43	3787	1.1%
TOTAL	7123	0	147	7270	2.0%

South Link	Brant St				
	CAR	MED	HVY	TOTAL	% COMM
S/B South of Int.	2855	0	70	2925	2.4%
N/B South of Int.	2033	0	18	2051	0.9%
TOTAL	4888	0	88	4976	1.8%

West Link	Caroline St				
	CAR	MED	HVY	TOTAL	% COMM
E/B West of Int	1607	0	17	1624	1.0%
W/B West of Int	996	0	9	1005	0.9%
TOTAL	2603	0	26	2629	1.0%

East Link	Caroline St				
	CAR	MED	HVY	TOTAL	% COMM
W/B East of Int.	1817	0	25	1842	1.4%
E/B East of Int	1241	0	42	1283	3.3%
TOTAL	3058	0	67	3125	2.1%

AADT (1:1 Calculation)

North Link	Brant St								
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy	
S/B North of Int.	6420	0	198	6618	0.0%	3.0%			
N/B North of Int.	7114	0	82	7196	0.0%	1.1%			
TOTAL	13534	0	280	13814	0.0%	2.0%	1.1%	0.9%	

South Link	Brant St								
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy	
S/B South of Int.	5425	0	133	5558	0.0%	2.4%			
N/B South of Int.	3863	0	34	3897	0.0%	0.9%			
TOTAL	9288	0	167	9455	0.0%	1.8%	0.9%	0.8%	

West Link	Caroline St								
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy	
E/B West of Int	3053	0	32	3085	0.0%	1.0%			
W/B West of Int	1892	0	17	1909	0.0%	0.9%			
TOTAL	4945	0	49	4994	0.0%	1.0%	0.5%	0.5%	

East Link	Caroline St								
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy	
W/B East of Int.	3452	0	48	3500	0.0%	1.4%			
E/B East of Int	2358	0	80	2438	0.0%	3.3%			
TOTAL	5810	0	128	5938	0.0%	2.2%	1.2%	1.0%	

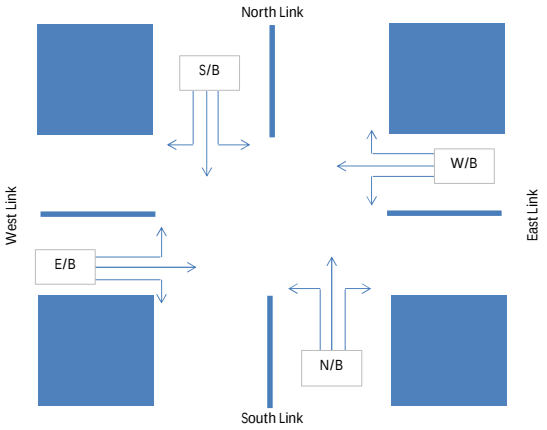
Caroline St & Elizabeth St
20/10/2015
AADT

	NORTHBOUND					EASTBOUND					SOUTHBOUND					WESTBOUND				
	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total
CAR	0	320	0	106	426	2084	0	1970	275	2245	322	8	5	52	65	2853	42	2481	0	2523
MED	0				0	0				0	0				0	0				0
HVY	0	8	0	5	13	28	0	23	5	28	7	0	0	0	0	44	2	36	0	38
TOTAL	0	328	0	111	439	2112	0	1993	280	2273	329	8	5	52	65	2897	44	2517	0	2561

AADT Conversion	
PM Peak to AADT	10
AM Peak to AADT	11
8-Hour to AADT	1.9

Traffic Distribution Types	Auto	Medium	Heavy
Provincial Highway	80.0%	5.0%	15.0%
Municipal	87.0%	5.0%	8.0%
ARTERIAL - Non-Industrial Areas	95.8%	2.3%	2.0%
ARTERIAL - Industrial Areas	88.8%	6.0%	5.2%
PROVINCIAL	89.7%	4.0%	6.3%
FREEWAY	85.0%	3.8%	11.3%
custom	88.0%	7.0%	5.0%

	medium	Heavy
Arterial No idustrial	0.534884	0.465116



AADT

North Link	Emerald Cr				
	CAR	MED	HVY	TOTAL	% COMM
S/B North of Int.	65	0	0	65	0.0%
N/B North of Int.	0	0	0	0	#DIV/0!
TOTAL	65	0	0	65	0.0%

South Link	Elizabeth St				
	CAR	MED	HVY	TOTAL	% COMM
S/B South of Int.	322	0	7	329	2.1%
N/B South of Int.	426	0	13	439	3.0%
TOTAL	748	0	20	768	2.6%

West Link	Caroline St				
	CAR	MED	HVY	TOTAL	% COMM
E/B West of Int	2245	0	28	2273	1.2%
W/B West of Int	2853	0	44	2897	1.5%
TOTAL	5098	0	72	5170	1.4%

East Link	Caroline St				
	CAR	MED	HVY	TOTAL	% COMM
W/B East of Int.	2523	0	38	2561	1.5%
E/B East of Int	2084	0	28	2112	1.3%
TOTAL	4607	0	66	4673	1.4%

AADT (1:1 Calculation)

North Link	Emerald Cr							
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy
S/B North of Int.	65	0	0	65	0.0%	0.0%		
N/B North of Int.	0	0	0	0	#DIV/0!	#DIV/0!		
TOTAL	65	0	0	65	0.0%	0.0%	0.0%	0.0%

South Link	Elizabeth St							
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy
S/B South of Int.	322	0	7	329	0.0%	2.1%		
N/B South of Int.	426	0	13	439	0.0%	3.0%		
TOTAL	748	0	20	768	0.0%	2.6%	1.4%	1.2%

West Link	Caroline St							
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy
E/B West of Int	2245	0	28	2273	0.0%	1.2%		
W/B West of Int	2853	0	44	2897	0.0%	1.5%		
TOTAL	5098	0	72	5170	0.0%	1.4%	0.7%	0.6%

East Link	Caroline St							
	CAR	MED	HVY	TOTAL	%MED	Trucks	Medium	Heavy
W/B East of Int.	2523	0	38	2561	0.0%	1.5%		
E/B East of Int	2084	0	28	2112	0.0%	1.3%		
TOTAL	4607	0	66	4673	0.0%	1.4%	0.8%	0.7%

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

Ontario Road Noise Analysis Method for Environment and Transportation

TRAFFIC GROWTH (1.05% PER ANNUM)

Street	Link	Date of recording	Future Year	Current Value	Future 2038	Medium	Heavy
Emerald cr	North	2015	2038	65	83	0.0%	0.0%
Elizabeth st	South	2015	2038	768	977	1.4%	1.2%
Caroline st	East	2015	2038	5170	6500	0.7%	0.6%
Caroline st	west	2015	2038	4673	5875	0.8%	0.7%
Brant St	North	2022	2038	13814	16327	1.1%	0.9%
Brant St	South	2022	2038	9455	11175	0.9%	0.8%
Caroline st	East	2022	2038	4994	5902	0.5%	0.5%
Caroline st	west	2022	2038	5938	7018	1.2%	1.0%
John St	North	2018	2038	2866	3532	2.8%	2.5%
John St	South	2018	2038	1444	1779	4.9%	4.3%
Caroline st	East	2018	2038	6390	7797	3.8%	3.3%
Caroline st	west	2018	2038	6827	8330	3.4%	2.9%

Road Segment ID	Roadway Name	Link	Link Description	Speed (kph)	Period (h)	Total Traffic Volumes	Auto %	Med %	Hvy %	Auto	Med	Heavy	Road Gradient (%)	Cadna/A Ground Absorption G	PWL (dBA)	Source Height, s (m)
2038 Traffic																
Day(7am to 11pm)																
Emerald_Cr_North_of_Caroline	Emerald Cr	North	Daytime	50	16	74	100.0%	0.0%	0.0%	74	0	0	0	0.00	53.8	0.5
Elizabeth_St_South_of_Caroline	Elizabeth St	South	Daytime	50	16	879	97.4%	1.4%	1.2%	856	12	11	0	0.00	67.4	1.0
Brant_St_North_of_Caroline	Brant St	North	Daytime	50	16	14694	98.0%	1.1%	0.9%	14396	159	139	0	0.00	79.2	1.0
Brant_St_South_of_Caroline	Brant St	South	Daytime	50	16	10057	98.2%	0.9%	0.8%	9880	95	83	0	0.00	77.3	1.0
Caroline__St_East_of_Brant	Caroline St	East	Daytime	40	16	5312	99.0%	0.5%	0.5%	5260	28	24	0	0.00	71.3	0.8
Caroline__St_west_of_Brant	Caroline St	west	Daytime	40	16	6316	97.8%	1.2%	1.0%	6180	73	63	0	0.00	73.4	1.0
John_St_North_of_Caroline	John St	North	Daytime	50	16	3179	94.7%	2.8%	2.5%	3011	90	78	0	0.00	74.8	1.3
John_St_South_of_Caroline	John St	South	Daytime	50	16	1602	90.8%	4.9%	4.3%	1454	79	69	0	0.00	73.5	1.4
Night (11pm to 7am)	_															
Emerald_Cr_North_of_Caroline	Emerald Cr	North	Nighttime	50	8	8	100.0%	0.0%	0.0%	8	0	0	0	0.00	47.3	0.5
Elizabeth_St_South_of_Caroline	Elizabeth St	South	Nighttime	50	8	98	97.4%	1.4%	1.2%	95	1	1	0	0.00	60.9	1.0
Brant_St_North_of_Caroline	Brant St	North	Nighttime	50	8	1633	98.0%	1.1%	0.9%	1600	18	15	0	0.00	72.6	1.0
Brant_St_South_of_Caroline	Brant St	South	Nighttime	50	8	1117	98.2%	0.9%	0.8%	1098	11	9	0	0.00	70.8	1.0
Caroline__St_East_of_Brant	Caroline St	East	Nighttime	40	8	590	99.0%	0.5%	0.5%	584	3	3	0	0.00	64.8	0.8
Caroline__St_west_of_Brant	Caroline St	west	Nighttime	40	8	702	97.8%	1.2%	1.0%	687	8	7	0	0.00	66.9	1.0
John_St_North_of_Caroline	John St	North	Nighttime	50	8	353	94.7%	2.8%	2.5%	335	10	9	0	0.00	68.2	1.3
John_St_South_of_Caroline	John St	South	Nighttime	50	8	178	90.8%	4.9%	4.3%	162	9	8	0	0.00	67.0	1.4

Current Traffic (For Ambient Noise Calculations)																
Day (8am)	5.0 % of Total Traffic (USEPA Dist'n)															
Emerald_Cr_North_of_Caroline	Emerald Cr	North	Daytime Ambient	50	1	3	100.0%	0.0%	0.0%	3	0	0	0	0.00	52.3	0.5
Elizabeth_St_South_of_Caroline	Elizabeth St	South	Daytime Ambient	50	1	38	97.4%	1.4%	1.2%	37	1	0	0	0.00	65.9	1.0
Brant_St_North_of_Caroline	Brant St	North	Daytime Ambient	50	1	691	98.0%	1.1%	0.9%	677	7	7	0	0.00	77.9	1.0
Brant_St_South_of_Caroline	Brant St	South	Daytime Ambient	50	1	473	98.2%	0.9%	0.8%	464	4	4	0	0.00	76.1	1.0
Caroline__St_East_of_Brant	Caroline St	East	Daytime Ambient	40	1	250	99.0%	0.5%	0.5%	247	1	1	0	0.00	70.1	0.8
Caroline__St_west_of_Brant	Caroline St	west	Daytime Ambient	40	1	297	97.8%	1.2%	1.0%	291	3	3	0	0.00	72.2	1.0
John_St_North_of_Caroline	John St	North	Daytime Ambient	50	1	143	94.7%	2.8%	2.5%	136	4	4	0	0.00	73.3	1.3
John_St_South_of_Caroline	John St	South	Daytime Ambient	50	1	72	90.8%	4.9%	4.3%	66	4	3	0	0.00	72.1	1.4
Evening (10pm)	2.5 % of Total Traffic (USEPA Dist'n)															
Emerald_Cr_North_of_Caroline	Emerald Cr	North	Evening Ambient	50	1	2	100.0%	0.0%	0.0%	2	0	0	0	0.00	49.3	0.5
Elizabeth_St_South_of_Caroline	Elizabeth St	South	Evening Ambient	50	1	19	97.4%	1.4%	1.2%	19	0	0	0	0.00	62.9	1.0
Brant_St_North_of_Caroline	Brant St	North	Evening Ambient	50	1	345	98.0%	1.1%	0.9%	338	4	3	0	0.00	74.9	1.0
Brant_St_South_of_Caroline	Brant St	South	Evening Ambient	50	1	236	98.2%	0.9%	0.8%	232	2	2	0	0.00	73.0	1.0
Caroline__St_East_of_Brant	Caroline St	East	Evening Ambient	40	1	125	99.0%	0.5%	0.5%	124	1	1	0	0.00	67.1	0.8
Caroline__St_west_of_Brant	Caroline St	west	Evening Ambient	40	1	148	97.8%	1.2%	1.0%	145	2	1	0	0.00	69.2	1.0
John_St_North_of_Caroline	John St	North	Evening Ambient	50	1	72	94.7%	2.8%	2.5%	68	2	2	0	0.00	70.3	1.3
John_St_South_of_Caroline	John St	South	Evening Ambient	50	1	36	90.8%	4.9%	4.3%	33	2	2	0	0.00	69.1	1.4
Nighttime (3am)	0.4 % of Total Traffic (USEPA Dist'n)															
Emerald_Cr_North_of_Caroline	Emerald Cr	North	Nighttime Ambient	50	1	0	100.0%	0.0%	0.0%	0	0	0	0	0.00	41.3	0.5
Elizabeth_St_South_of_Caroline	Elizabeth St	South	Nighttime Ambient	50	1	3	97.4%	1.4%	1.2%	3	0	0	0	0.00	54.9	1.0
Brant_St_North_of_Caroline	Brant St	North	Nighttime Ambient	50	1	55	98.0%	1.1%	0.9%	54	1	1	0	0.00	67.0	1.0
Brant_St_South_of_Caroline	Brant St	South	Nighttime Ambient	50	1	38	98.2%	0.9%	0.8%	37	0	0	0	0.00	65.1	1.0
Caroline__St_East_of_Brant	Caroline St	East	Nighttime Ambient	40	1	20	99.0%	0.5%	0.5%	20	0	0	0	0.00	59.1	0.8
Caroline__St_west_of_Brant	Caroline St	west	Nighttime Ambient	40	1	24	97.8%	1.2%	1.0%	23	0	0	0	0.00	61.2	1.0
John_St_North_of_Caroline	John St	North	Nighttime Ambient	50	1	11	94.7%	2.8%	2.5%	11	0	0	0	0.00	62.4	1.3
John_St_South_of_Caroline	John St	South	Nighttime Ambient	50	1	6	90.8%	4.9%	4.3%	5	0	0	0	0.00	61.1	1.4

Appendix D Stationary Noise Source Modelling Data

Environmental Noise Assessment

2030 Caroline Street - Burlington

Inaria Burlington Inc.

SLR Project No.: 241.031144.00001

June 21, 2024

Sound Power Levels

Name	ID	Type	1/3 Oktave Spectrum (dB)											Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
BPN56 spectrum D (Roadway, Distant Aircraft)	roadway	Lw		-6	-5	-4	-6	-8	-9	-12	-20	-28	-4.6	2	BPN56
Cooling Tower Inlet	CT_Inlet	Lw			92	88	83	80	73	70	68	65	81.4	94.1	ASHRAE
Cooling Tower Outlet	CT_Outlet	Lw			92	88	83	80	73	70	68	65	81.4	94.1	ASHRAE
HVAC Unit (5 ton)	HVAC_5ton	Lw		77	80	81	81	80	78	74	70	64	82.5	87.8	H&K calc, adj against Man Data Avg
HVAC Unit (10 ton)	HVAC_10ton	Lw		80	83	84	84	83	81	77	73	67	85.5	90.8	H&K calc, adj against Man Data Avg
HVAC Unit (20 ton)	HVAC_20ton	Lw		89	92	93	93	92	90	86	82	76	94.5	99.8	H&K calc, adj against Man Data Avg
Kitchen Exhaust Fan	EF_Kitchen	Lw		0	83	93	88	82	77	75	69	66	85	94.9	historical data (SQUad, 12-0101)
Air Cooled Condenser, High speed op	CVX3_high	Lw			82	83	84	81	83	83	79	72	88.3	90.9	Refplus datasheet, shaped spectrum
Air Cooled Condenser, Low speed op	CVX3_low	Lw			74	75	76	73	75	75	71	64	80.3	82.9	Refplus datasheet, shaped spectrum

Sound Reduction

Name	ID										Source
		31.5	63	125	250	500	1000	2000	4000	8000	Rw	
CT_Plenum	CT_Plenum	14	14	4	29	11	15	16	18	20	15	ASHRAE

Point Sources

Name	Sel.	M.	ID	Result. PWL			Lw / Li		Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
				Day (dBA)	Evening (dBA)	Night (dBA)	Type	Value	norm. dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)	R	Area (m²)		Day (min)	Special (min)	Night (min)	(dB)	(Hz)				X (m)	Y (m)	Z (m)
Bell ACC - high speed op		~	SS_Bell	91.3	91.3	91.3	Lw	CVX3_high	91.3	0	0	0				30	30	15	0		(none)	1.2	g	597243.88	4797964.43	6.2
Bell ACC - Low speed op		~	SS_Bell	83.3	83.3	83.3	Lw	CVX3_low	83.3	0	0	0				30	30	45	0		(none)	1.2	g	597243.99	4797964.26	6.2
Bell ACC - high speed op		~	SS_Bell	89.3	89.3	89.3	Lw	CVX3_high	89.3	0	0	0				30	30	15	0		(none)	1.2	g	597239.2	4797961.68	6.2
Bell ACC - Low speed op		~	SS_Bell	81.3	81.3	81.3	Lw	CVX3_low	81.3	0	0	0				30	30	45	0		(none)	1.2	g	597239.31	4797961.59	6.2
Bell ACC - high speed op		~	SS_Bell	85.3	88.3	88.3	Lw	CVX3_high		-3	0	0				30	30	15	0		(none)	1.2	g	597236.94	4797940.31	6.2
Bell ACC - Low speed op		~	SS_Bell	80.3	80.3	80.3	Lw	CVX3_low		0	0	0				30	30	45	0		(none)	1.2	g	597237.07	4797940.2	6.2
Bell ACC - high speed op		~	SS_Bell	86.6	86.6	86.6	Lw	CVX3_high	86.6	0	0	0				30	30	15	0		(none)	1.2	g	597234.16	4797938.01	6.2
Bell ACC - Low speed op		~	SS_Bell	78.6	78.6	78.6	Lw	CVX3_low	78.6	0	0	0				30	30	45	0		(none)	1.2	g	597234.26	4797937.9	6.2
Bell ACC - high speed op		~	SS_Bell	86.6	86.6	86.6	Lw	CVX3_high	86.6	0	0	0				30	30	15	0		(none)	1.2	g	597241.47	4797932.2	6.2
Bell ACC - Low speed op		~	SS_Bell	78.6	78.6	78.6	Lw	CVX3_low	78.6	0	0	0				30	30	45	0		(none)	1.2	g	597241.56	4797932.31	6.2
HVAC		~	SS_Bell	85.5	85.5	85.5	Lw	HVAC_10ton		0	0	0				60	60	15	0		(none)	0.1	g	597241.79	4797952.87	7.1
HVAC		~	SS_Bell	85.5	85.5	85.5	Lw	HVAC_10ton		0	0	0				60	60	15	0		(none)	0.1	g	597245.82	4797957.78	7.1
HVAC		~	SS_BrantComm	85.5	85.5	85.5	Lw	HVAC_10ton		0	0	0				60	60	30	0		(none)	0.75	g	597268.06	4797905.6	5.75
HVAC		~	SS_BrantComm	76	76	76	Lw	HVAC_5ton	76	0	0	0				60	60	30	0		(none)	0.75	g	597268.78	4797903.77	5.75
HVAC		~	SS_BrantComm	76	76	76	Lw	HVAC_5ton	76	0	0	0				60	60	30	0		(none)	0.75	g	597269.75	4797902.72	5.75
HVAC		~	SS_BrantComm	76	76	76	Lw	HVAC_5ton	76	0	0	0				60	60	30	0		(none)	3	r	597348.44	4797837.14	3
HVAC		~	SS_BrantComm	82.5	82.5	82.5	Lw	HVAC_5ton		0	0	0				60	60	30	0		(none)	0.75	g	597362.06	4797847.16	5.75
HVAC		~	SS_BrantComm	82.5	82.5	82.5	Lw	HVAC_5ton		0	0	0				60	60	30	0		(none)	0.75	g	597355.5	4797842.53	5.75
HVAC		~	SS_BrantComm	82.5	82.5	82.5	Lw	HVAC_5ton		0	0	0				60	60	30	0		(none)	0.75	g	597364.48	4797841.98	5.75
HVAC		~	SS_BrantComm	76	76	76	Lw	HVAC_5ton	76	0	0	0				60	60	30	0		(none)	0.75	g	597258.03	4797903.63	5.75
HVAC		~	SS_BrantComm	76	76	76	Lw	HVAC_5ton	76	0	0	0				60	60	30	3		(none)	2	r	597282.94	4797906.89	2
HVAC		~	SS_BrantComm	76	76	76	Lw	HVAC_5ton	76	0	0	0				60	60	30	3		(none)	3	r	597293.95	4797896.86	3
HVAC		~	SS_BrantComm	76	76	76	Lw	HVAC_5ton	76	0	0	0				60	60	30	3		(none)	3	r	597296.59	4797894.45	3
HVAC		~	SS_BrantComm	76	76	76	Lw	HVAC_5ton	76	0	0	0				60	60	30	3		(none)	3	r	597288.36	4797901.95	3
HVAC		~	SS_BrantComm	76	76	76	Lw	HVAC_5ton	76	0	0	0				60	60	30	0		(none)	3	r	597348.97	4797837.72	3
HVAC		~	SS_BrantComm	76	76	76	Lw	HVAC_5ton	76	0	0	0				60	60	30	0		(none)	3	r	597349.47	4797838.28	3
Kitchen		~	SS_BrantComm	85	85	85	Lw	EF_Kitchen		0	0	0				60	60	0	0		(none)	2.5	g	597296.47	4797889.76	7.5
Kitchen		~	SS_BrantComm	85	85	85	Lw	EF_Kitchen		0	0	0				60	60	0	0		(none)	2.5	g	597294.57	4797891.3	7.5
Kitchen		~	SS_BrantComm	85	85	85	Lw	EF_Kitchen		0	0	0				60	60	0	0		(none)	2.5	g	597287.56	4797896.77	7.5
Existing Tower Make Up Air Unit		~	SS_Berkeley	85.5	85.5	85.5	Lw	HVAC_10ton		0	0	0				60	60	30	0		(none)	2	g	597371.78	4797924.82	55.87
Existing Tower Generator		~	GEN_Berkeley	99.9	99.9	99.9	Lw	99.9		0	0	0				30	0	0	0	500	(none)	2	g	597361.38	4797904.02	55.87
Development Make Up Air Unit		~	SS_Dev	94.5	94.5	94.5	Lw	HVAC_20ton		0	0	0				60	60	30	0		(none)	1	g	597316.02	4797949.33	95.55
Development Generator		~	GEN_Dev	99.9	99.9	99.9	Lw	99.9		0	0	0				30	0	0	0	500	(none)	2	g	597325.2	4797959.68	96.55

Area Sources

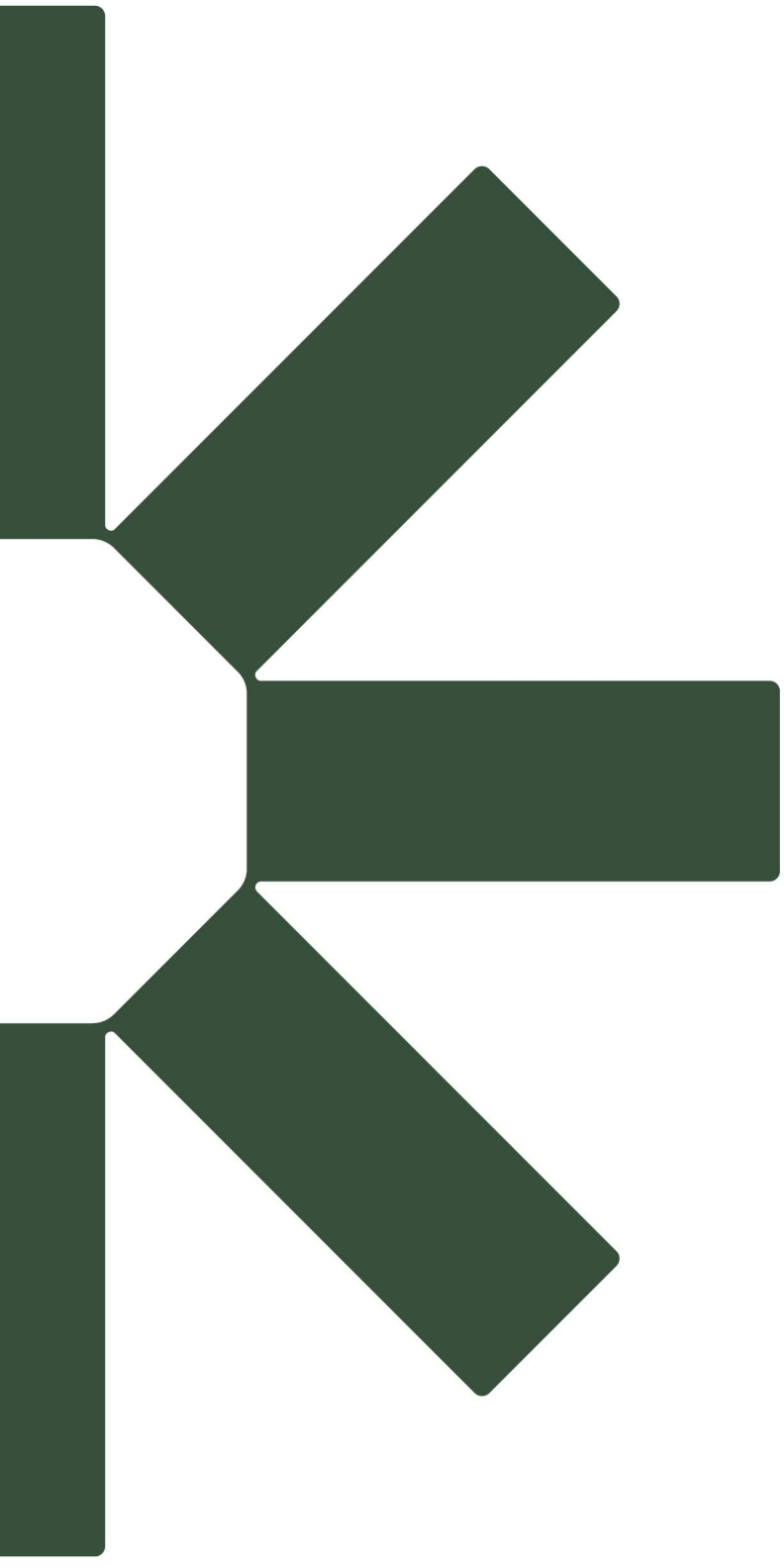
Name	Sel.	M.	ID	Result. PWL Day (dBA)	Evening (dBA)	Night (dBA)	Result. PWL'' Day (dBA)	Evening (dBA)	Night (dBA)	Lw / Li Type	Value	norm. dB(A)	Correction Day dB(A)	Evening dB(A)	Night dB(A)	Sound Reduction R	Area (m²)	Attenuation	Operating Time Day (min)	Special (min)	Night (min)	K0 (dB)	Freq. (Hz)	Direct.	Moving Pt. Src Number Day	Evening	Night
CT Outlet		~	SS_Berkeley	81.4	81.4	81.4	74.6	74.6	74.6	Lw	CT_Outlet		0	0	0				60	60	30	0		Opening (ÖAL28)			
CT Outlet		~	SS_Dev	81.4	81.4	81.4	74.6	74.6	74.6	Lw	CT_Outlet		0	0	0				60	60	30	0		Opening (ÖAL28)			

Vertical Area Sources

Name	Sel.	M.	ID	Result. PWL Day (dBA)	Evening (dBA)	Night (dBA)	Result. PWL'' Day (dBA)	Evening (dBA)	Night (dBA)	Lw / Li Type	Value	norm. dB(A)	Correction Day dB(A)	Evening dB(A)	Night dB(A)	Sound Reduction R	Area (m²)	Attenuation	Operating Time Day (min)	Special (min)	Night (min)	K0 (dB)	Freq. (Hz)	Direct.
CT Intake		~	SS_Berkeley	70.5	70.5	70.5	56.2	56.2	56.2	Lw	CT_Inlet		0	0	0			CT_Plenum	60	60	30	0		Opening (ÖAL28)
CT Intake		~	SS_Dev	70.5	70.5	70.5	56.2	56.2	56.2	Lw	CT_Inlet		0	0	0			CT_Plenum	60	60	30	0		Opening (ÖAL28)

Line Sources

Name	M.	ID	Result. PWL Day (dBA)	Evening (dBA)	Night (dBA)	Result. PWL' Day (dBA)	Evening (dBA)	Night (dBA)	Lw / Li Type	Value	norm. dB(A)	Correction Day dB(A)	Evening dB(A)	Night dB(A)	Height HA	Sound Reduction R	Area (m²)	Attenuation	Operating Time Day (min)	Special (min)	Night (min)	K0 (dB)	Freq. (Hz)	Direct.	Moving Pt. Src Number Day	Evening	Night	Speed (km/h)
Transportation Noise																												
Emerald Cr		Transpo	74.8	21	68.3	53.8	0	47.3	Lw'	roadway	0	53.8	0	47.3	0.5							0		(none)				
Elizabeth St		Transpo	91.5	24.1	85	67.4	0	60.9	Lw'	roadway	0	67.4	0	60.9	1							0		(none)				
Brant St North of Caroline		Transpo	101.3	22.1	94.7	79.2	0	72.6	Lw'	roadway	0	79.2	0	72.6	1							0		(none)				
Brant St South of Caroline		Transpo	101.4	24.1	94.9	77.3	0	70.8	Lw'	roadway	0	77.3	0	70.8	1							0		(none)				
Caroline Street E East of Brant		Transpo	94	22.7	87.5	71.3	0	64.8	Lw'	roadway	0	71.3	0	64.8	0.8							0		(none)				
Caroline Street E West of Brant		Transpo	93	19.6	86.5	73.4	0	66.9	Lw'	roadway	0	73.4	0	66.9	1							0		(none)				
John St North of Caroline		Transpo	96.8	22	90.2	74.8	0	68.2	Lw'	roadway	0	74.8	0	68.2	1.3							0		(none)				
John St South of Caroline		Transpo	97.5	24	91	73.5	0	67	Lw'	roadway	0	73.5	0	67	1.4							0		(none)				
Ambient Noise																												
Emerald Cr	~	_amb	73.3	70.3	62.3	52.3	49.3	41.3	Lw'	roadway	0	52.3	49.3	41.3	0.5							0		(none)				
Elizabeth St	~	_amb	90	87	79	65.9	62.9	54.9	Lw'	roadway	0	65.9	62.9	54.9	1							0		(none)				
Brant St North of Caroline	~	_amb	100	97	89.1	77.9	74.9	67	Lw'	roadway	0	77.9	74.9	67	1							0		(none)				
Brant St South of Caroline	~	_amb	100.2	97.1	89.2	76.1	73	65.1	Lw'	roadway	0	76.1	73	65.1	1							0		(none)				
Caroline Street E East of Brant	~	_amb	92.8	89.8	81.8	70.1	67.1	59.1	Lw'	roadway	0	70.1	67.1	59.1	0.8							0		(none)				
Caroline Street E West of Brant	~	_amb	91.8	88.8	80.8	72.2	69.2	61.2	Lw'	roadway	0	72.2	69.2	61.2	1							0		(none)				
John St North of Caroline	~	_amb	95.3	92.3	84.4	73.3	70.3	62.4	Lw'	roadway	0	73.3	70.3	62.4	1.3							0		(none)				
John St South of Caroline	~	_amb	96.1	93.1	85.1	72.1	69.1	61.1	Lw'	roadway	0	72.1	69.1	61.1	1.4							0		(none)				



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