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June 27, 2024

Attention: Mr. Mark Bales
Inaria Burlington Inc.
c/o Carriage Gate Homes Inc.
2119 Old Lakeshore Road
Burlington, Ontario L7R 1C8

SLR Project No.: 241.031144.00001

Revision: 0

RE: Environmental Noise Assessment, 2030 Caroline Street – Burlington Addendum, Noise from Rooftop Outdoor Amenity Area Activities

SLR Consulting (Canada) Ltd. (SLR) was retained by Inaria Burlington Inc. to prepare an environmental noise assessment for their proposed residential development located at 2030 Caroline Street in Burlington, Ontario ("development"). Our assessment in documented in the following report:

- SLR Report "Environmental Noise Assessment, 2030 Caroline Street – Burlington", Revision 0, dated June 21, 2024 (the "Noise Report").

The Noise Report addresses the noise assessment requirements of City of Burlington and the Ontario Ministry of the Environment, Conservation and Parks ("MECP") for new residential developments of this type, including MECP Publication NPC-300 noise guidelines.

The proposed development will consist of a 27-storey residential tower located atop a 6-storey mixed-use podium, with commercial, and underground parking access at grade. Communal outdoor amenity areas will be located on the roof of the podium and penthouse.

The Development site is adjacent to the existing "Berkeley Condos" residential tower at 510 Elizabeth Street and 2025 Maria Street, on the same property lot.

In the course of public consultations for the project, questions have been raised concerning the effects of noise from the proposed 7th floor outdoor amenity area on the existing Berkeley Condos residences. See attached **Figure 1**. The purpose of this addendum letter is to address this concern.

Noise Criteria Considered In the Assessment

There are no strictly applicable guideline limits for noise from outdoor amenity spaces. Noise from such activities are controlled by the Noise By-law.

City of Burlington Noise By-Law

The City of Burlington By-Law 19-2003, the "Nuisance and Noise Control By-law", applies to activities within the city. The following provisions of the By-law apply:

Nuisances

4. No person shall cause a nuisance within the City of Burlington without limiting the generality of the foregoing:

…

(2) No noise or vibrations shall be made, caused or created so as to be heard or felt or otherwise perceived outside the property and which are, in the view of all the circumstances including the nature of the neighbourhood and the use to which adjoining properties are put and the time of day during which such noise or vibrations are made, caused or created excessive or which are, or may cause a nuisance to the public generally or to others residing or carrying on a manufacture, trade or business in the vicinity.

Under this section, noises which are "excessive" and "which are, or may cause a nuisance to the public" are prohibited. No specific sound level limit is provided. However, the determination of "excessive" is to include the nature of the use and the time of day during which the activity takes place.

Prohibitions

5. No person shall emit or cause or permit the emission of sound resulting:

(1) from any act listed in Schedule 1 - General Prohibitions, and which sound is clearly audible at a point of reception;

(2) from any act listed in Schedule 2 - Time and Place Prohibitions, if clearly audible at a point of reception located in an area of the municipality specified within a prohibited time shown for such an area.

None of the Schedule 1 "General Prohibitions" are applicable. The applicable Schedule 2 "Prohibitions by Time and Place" include the following:

Activity	Prohibited Times
3. The operation of any electronic device or group of connected electronic devices, incorporating one or more loudspeakers or other electro-mechanical transducers, and intended for the production, reproduction, or amplification of sound.	11:00 pm –7:00 am* * (9:00 am Sundays)
12. Persistent yelling, shouting, screaming, hooting, whistling, or singing.	At any time

A permanent speaker system is not proposed for the rooftop amenity area. The use of small portable "Bluetooth" by individual occupants would not be allowed during the overnight period (after 11 pm).

MECP Publication NPC-300 Guidelines

MECP Publication NPC-300 provides guidelines and procedures for addressing noise impacts on proposed residential developments. Guideline limits are provided for:

- Transportation noise sources, such as roads, rail lines, and airports; and
- "Stationary" noise sources, such as industrial and commercial facilities.

The guideline states that the stationary noise guideline limits do not apply to noises "that are normally addressed in a qualitative manner in municipal noise by-laws", such as:

- "activities associated with domestic situations such as … noisy parties, etc.;
- noise resulting from gathering of people at facilities such as restaurants, fairs and parks."

Therefore, occupant noise from the rooftop amenity area would not be considered under the guidelines.

Regardless, the NPC-300 noise guideline limits can be used to indicate sound levels which would normally be considered acceptable. The amenity area will only be used during daytime and evening hours (between 7am and 11pm). **Table 1** below sets out the exclusion limits from the NPC-300 guidelines.

Table 1: MECP Publication NPC-300 Noise Guidelines

Noise Source Type	Assessment Location	Time Period	Criteria
Road Traffic Noise	Outdoor Amenity Area, Objective	Daytime (7am to 11pm)	55 dBA L_{eq} Day
	Outdoor Amenity Area, Mitigation Required	Daytime (7am to 11pm)	60 dBA L_{eq} Day
	Façade, Upgrades Required, Air Conditioning Required	Daytime (7am to 11pm)	65 dBA L_{eq} Day
	Indoors (Living Rooms, Bedrooms, Dens, Kitchens)	Daytime (7am to 11pm)	45 dBA L_{eq} Day
Stationary Noise	Outdoor Amenity Area	Daytime and Evening (7am to 11pm)	50 dBA L_{eq} (1-hr)
	Façade (Plane of Window)	Daytime and Evening (7am to 11pm)	50 dBA L_{eq} (1-hr)

Human Perception of Ranges of Sound

People will experience a wide range of sound levels in their daily activities. The table on the following page presents a graphical comparison of "typical" noise levels which might be encountered, and the general human perception of the level.

Sound levels from 0 to 65 dB are in the low to moderate range. The vast majority of the outdoor noise environment, even within the busiest city cores, will lie within this area. Sound levels from 65 to 90 are perceived as loud. This area includes very noisy commercial and industrial spaces. Sound levels greater than 90 dB are very loud to deafening, and may result in hearing damage.

Table 2: Ranges of Sound Levels

Sound Levels		Sources of Noise
Human Perception	Sound Pressure Level, in dBA	
Deafening	125	Sonic booms
	120	Threshold of Feeling / Pain
	115	Maximum level, hard rock band concert
	110	Accelerating Motorcycle at a few feet away
Very Loud	105	Loud auto horn at 3 m (10 ft) away
	100	Dance club / maximum human vocal output at 1 m (3 ft) distance
	95	Jack hammer at 15 m (50 ft) distance
	90	Indoors in a noisy factory
Loud	85	Heavy truck pass-by at 15 m (50 ft) distance
	80	School cafeteria / noisy bar; Vacuum Cleaner at 1.5 m (5 ft)
	75	Near edge of major Highway
	70	Inside automobile at 60 km/h
	65	Normal human speech (unraised voice) at 1 m (3 ft) distance
Moderate	60	Typical background noise levels in a large department store
	55	General objective for outdoor sound levels
	50	
	45	Typical background noise levels in an office (due to HVAC)
Faint	40	Typical background noise levels in a library
	35	
	30	Broadcast Studio
	25	Average whisper
Very Faint	20	Deep woods on a very calm day
	15	
	10	
	5	Human breathing
	0	Quietest sound that can be heard

Guideline Summary and Interpretation

The City's Nuisance and Noise Control By-law prohibits excessive noise which is likely to disturb people, given the time of day in which the activity takes place. The by-law however does not provide any numerical limits on noise.

As discussed above, The MECP NPC0-300 noise guidelines can be used to indicate sound levels that would normally be acceptable. From **Table 1**, outdoor sound levels equal to or below 55 dBA would be reasonable.

- This is the general objective for outdoor sound levels from the NPC-300 noise guidelines.
- Such a sound level would be described as “moderate”.
- Open windows generally provide an outdoor-to indoor noise reduction of 15 dB. Therefore, sound levels meeting 55 dBA outdoors would result in indoor sound levels of 40 dBA, which meets the indoor noise criteria of 45 dBA. A 40 dBA sound level would be described as “faint”.

Analysis and Results

In order to assess whether noise from the rooftop patio will meet the City’s Nuisance and Noise Control By-law requirements, an assessment of noise from “worst-case” rooftop patio activities was completed, as outlined below.

Sources of Interest

Access to the outdoor amenity area will be closed during the overnight period (after 11pm).

The most common source of noise from the outdoor amenity area is likely to be from chatter from people at a gathering or event. A study from the American Journal of Audiology tittle “Average Speech levels and Spectra in Various Speaking/Listening Conditions: A Summary of the Pearson, Bennett, & Fidell (1977) Report” by Wayne O. Olsen provides mean sound pressure levels of different vocal efforts by three types of talkers. Sound data from this study has been used in this assessment.

The worst-case occupant load of the rooftop amenity area is 60 occupants. As worst-case assumptions it was assumed that:

- half (30) of the occupants are talking at any given time;
- there are an equal number of adult females and adult males talking;
- Within each gender group, it is that approximately two-thirds would talk at a normal voice level, and one-third would talk with raised voices. Per the City of Burlington Noise By-Law yelling for any extended period is not permitted and therefore, has not been assessed.

If used, sound from personal portable/ Bluetooth speaker devices in the are likely to be localized (to not interfere with other patio patrons). Scenarios with and without personal portable speakers have been assessed.

Sound power levels for sources of noise included in this assessment can be seen below. Modelled source locations are shown in **Figure 2**.

Table 3: Modelled Source Sound Power Levels

Name	Sound Power Level (dBA)	Number of People/ Units	Total Sound Power Level (dBA)
Speaking, Normal Voice, Female	64	10	75
Speaking, Raised Voice, Female	73	5	80
Speaking, Normal Voice, Male	68	10	78
Speaking, Raised Voice, Male	75	5	82
Personal (Bluetooth) Speakers	80	4	86
Total (dBA)			**89**

Predicted Impacts on Berkeley Condos

Predicted impacts on Berkely Condos was done using the Cadna/A software program, 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. Specific acoustically absorptive areas such as vegetation were modelled with a Ground Absorption G = 1.0;
- 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.

Source sound Levels on Berkeley Condos were predicted using the “building evaluation” feature of Cadna/A. This feature allows for sound levels to be predicted across the entire building façade.

Predicted worst-case façade sound levels from the outdoor amenity area on Berkeley Condos are summarized in **Table 4** and show in **Figure 3**.

Table 4: Source Sound Power Levels

Scenario	Highest Predicted Sound Level (dBA)	Meets 55 dBA?
Voice Only (No Personal Portable Speakers	53	Yes
Voices and Personal Portable Speakers	49	Yes

Conclusions and Recommendation

Worst-case predicted sound levels from occupant activities on the 7th floor outdoor amenity area have been predicted. Sound levels at the façade of the adjacent Berkeley Condos are predicted to range from 49 to 53 dBA, depending on whether personal portable speakers are allowed.

The sound levels are below the limit of 55 dBA which has been adopted in this study. Indoor sound levels with windows open would be below 40 dBA.

Given the low predicted sound levels, adverse impacts from noise from patio occupant activity is not anticipated. Noise mitigation measures are not required.

Statement of Limitations

This report has been prepared by SLR Consulting (Canada) Ltd. (SLR) for Inaria Burlington Inc. (Client) in accordance with the scope of work and all other terms and conditions of the agreement between such parties. SLR acknowledges and agrees that the Client may provide this report to government agencies, interest holders, and/or Indigenous communities as part of project planning or regulatory approval processes. Copying or distribution of this report, in whole or in part, for any other purpose other than as aforementioned is not permitted without the prior written consent of SLR.

Any findings, conclusions, recommendations, or designs provided in this report are based on conditions and criteria that existed at the time work was completed and the assumptions and qualifications set forth herein.

This report may contain data or information provided by third party sources on which SLR is entitled to rely without verification and SLR does not warranty the accuracy of any such data or information.

Nothing in this report constitutes a legal opinion nor does SLR make any representation as to compliance with any laws, rules, regulations, or policies established by federal, provincial or local government bodies, other than as specifically set forth in this report. Revisions to legislative or regulatory standards referred to in this report may be expected over time and, as a result, modifications to the findings, conclusions, or recommendations may be necessary.

Closure

Should you have any questions or comments regarding these findings, please feel free to contact us.

Regards,

SLR Consulting (Canada) Ltd.

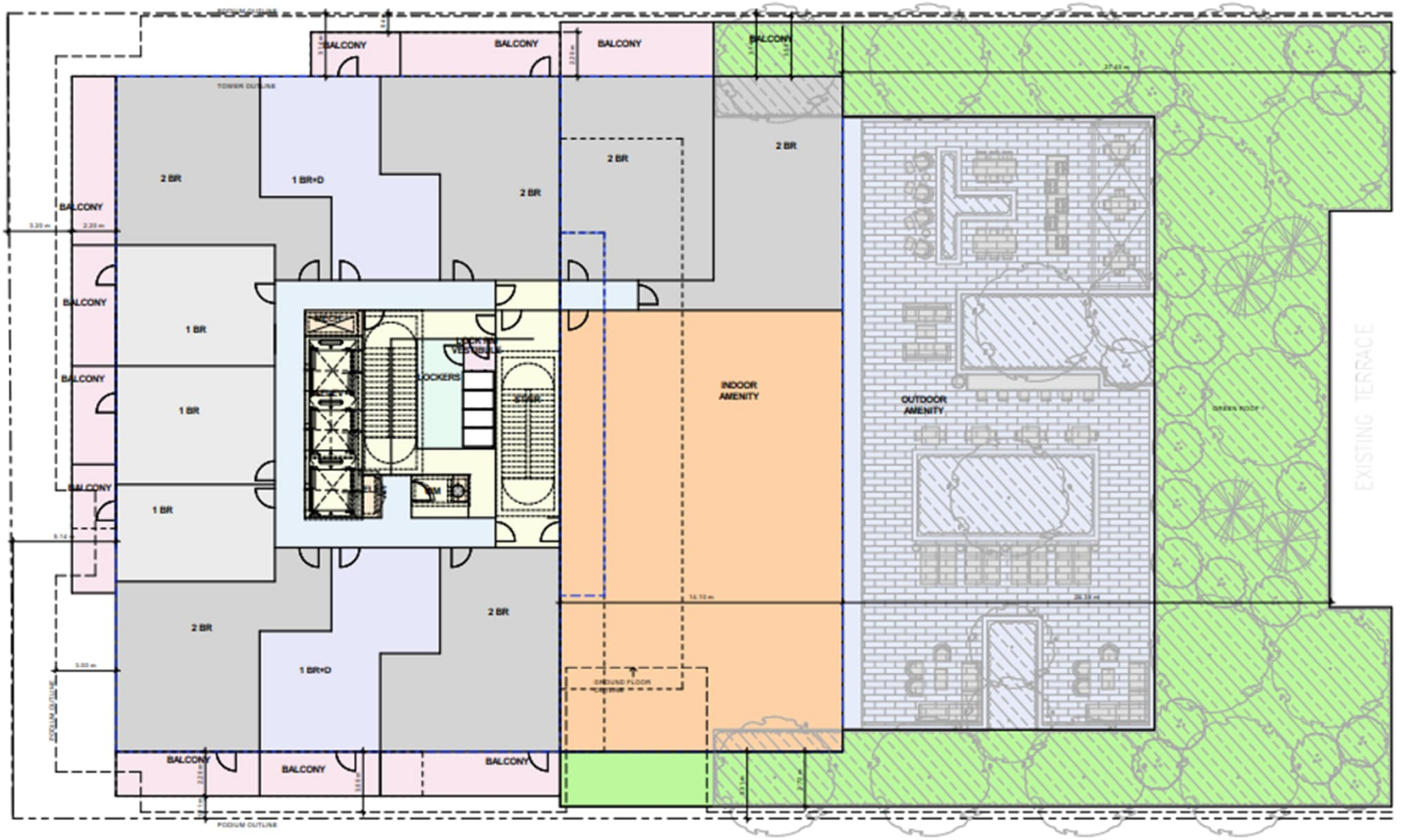




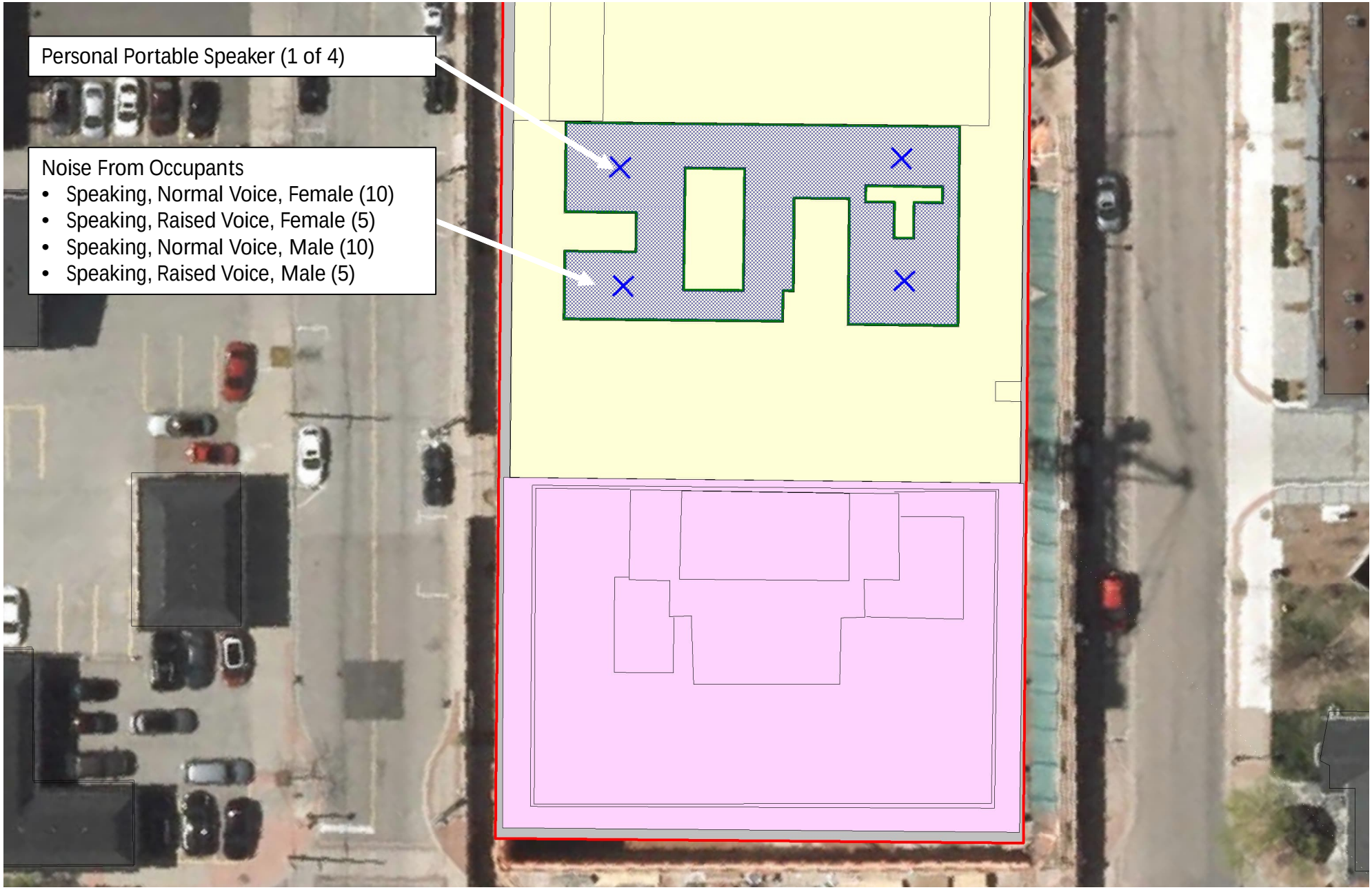
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Attach. Figures



CARRIAGE GATE HOMES INC.	True North	Scale: N.T.S.	METRES	SLR
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 18, 2024 Rev 0.0	Figure No. 1	
EXCERPT FROM SITE PLANS – FLOOR 7 PLAN		Project No. 241.031144.00001		



CARRIAGE GATE HOMES INC.

2030 CAROLINE STREET - BURLINGTON, ONTARIO

SOURCE LOCATIONS

True North

Scale: 1:400

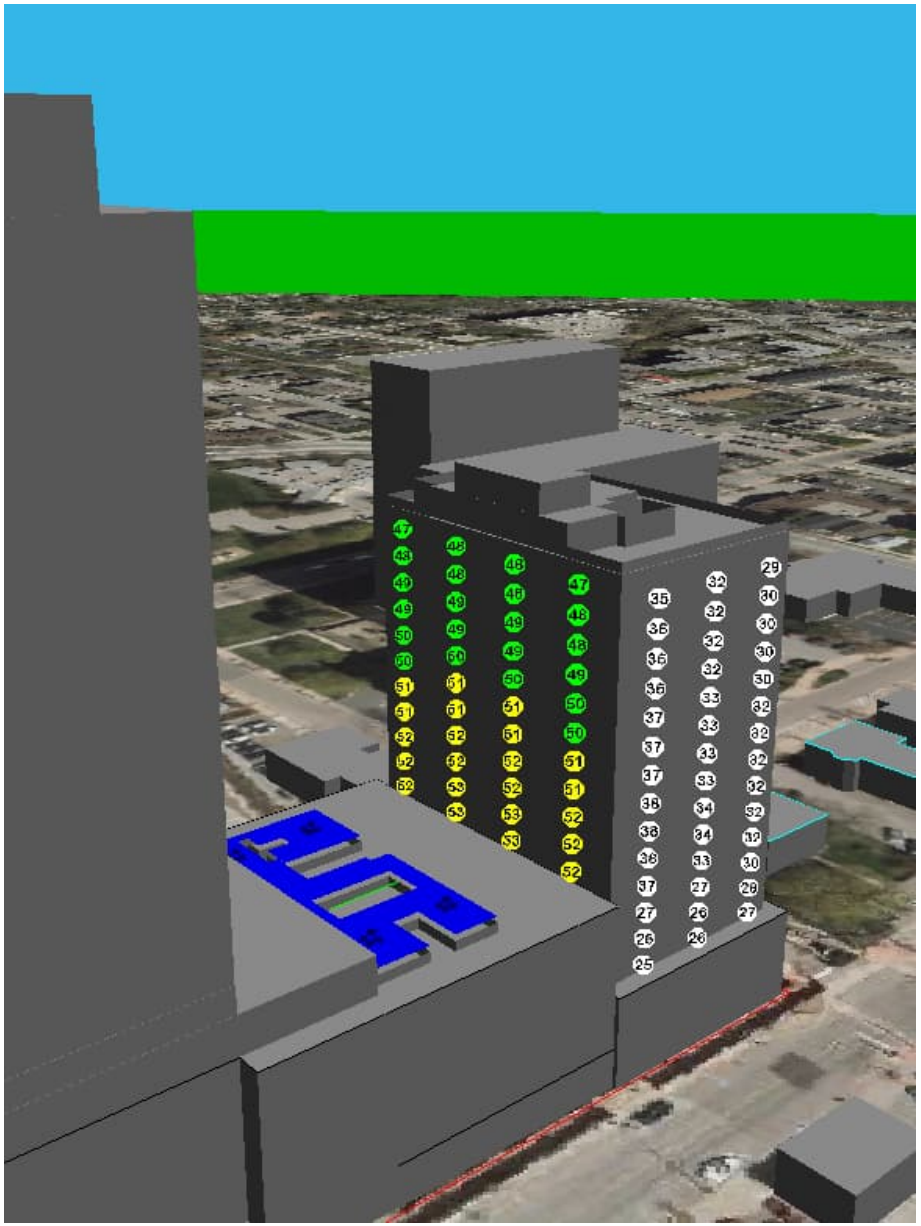
METRES

Date: June 18, 2024 | Rev 0.0

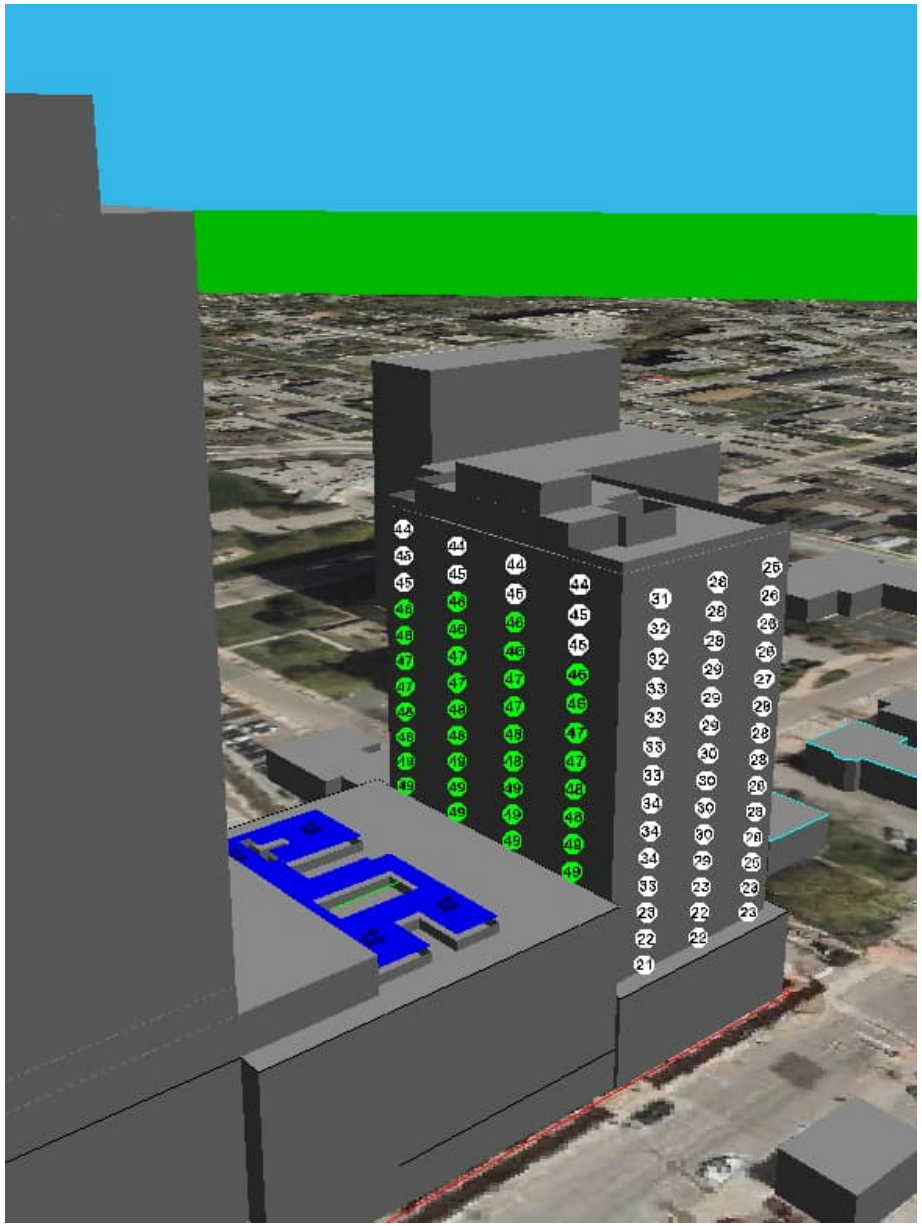
Project No. 241.031144.00001

Figure No. **2**

SLR



Voices and Personal Portable Speakers



Voices Only (No Portable Speakers)

CARRIAGE GATE HOMES INC.	True North	Scale: 1:600	METRES	SLR
2030 CAROLINE STREET - BURLINGTON, ONTARIO		Date: June 18, 2024 Rev 0.0	Figure No. **3**	
PREDICTED SOUND LEVELS – 7TH FLOOR OUTDOOR AMENITY AREA ACTIVITY ON BERKELEY CONDOS VIEW FROM NORTHWEST		Project No. 241.031144.00001		