

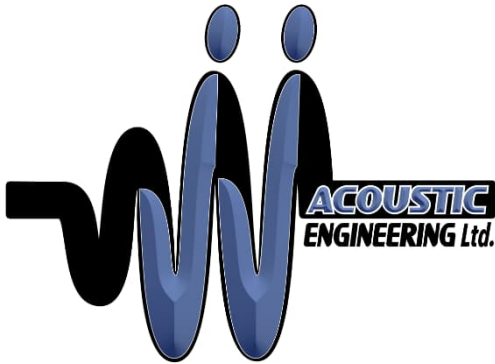


Road Traffic and Stationary Noise Impact Study

249 Sunview Street, Waterloo, Ontario

JJ-00446 NIS1





February 23rd, 2024,

Reference No. JJ-00446-NIS1

Betty White
IBI GROUP
410 Albert Street, Suite 101
Waterloo, ON N2L 3V3

Dear Betty White:

**Re: Road Traffic and Stationary Noise Impact Study
249 Sunview Street, Waterloo, Ontario**

1. Introduction

JJ Acoustic Engineering Ltd. (JJAЕ) was retained to complete a Road Traffic and Stationary Noise Impact Study (Study) for the residential development located at 249 Sunview Street in Waterloo, Ontario (Site). The Site will be developed into a 12-storey residential building. JJAЕ has provided a copy of the most up-to-date Site Plan in Attachment A.

The Study was prepared consistent with Ontario Ministry of the Environment, Conservation and Park (MOECP) NPC 300, "Environmental Noise Guideline, Stationary and Transportation Sources–Approval and Planning" dated August 2013 and The Regional Municipality of Waterloo Noise Policy Implementation Guideline (RMWNPIG) dated October 22, 2019.

This Study has determined that the potential environmental noise impact from road traffic is significant. The proposed development will need the following: a requirement for central air-conditioning and noise warning clause. Road traffic noise control requirements for the Site were determined based on road traffic volumes provided by the Region of Waterloo (Region) and forecasted to 10 years from the date of this study.

JJ Acoustic Engineering Ltd.
joey@jjae.ca
226-346-6473

The following attachments were included with this Study:

- Attachment A – Site Plan
- Attachment B – Traffic Data, Road Traffic Summary Table & Sample Stamson Traffic Model Outputs
- Attachment C – Stationary Noise Impact Figures
- Attachment D – Stationary Noise Impact Source Table
- Attachment E – Owners Statement
- Attachment F – Consultant's Declaration

2. Road Traffic Analysis

2.1 Road Traffic Noise Modeling Methodology

The road traffic noise impact was conducted using STAMSON, the MOECP's computerized model of ORNAMENT. The Application of the model for the site was consistent with the ORNAMENT technical documents. The computer model input parameters include, among other data, the number of road segments, number of house rows, the positional relationship of the receptor to a noise source or barrier in terms of distance, elevation and angle of exposure to the source, the basic site topography, the ground surface type, traffic volumes, traffic composition and speed limit.

The predicted sound level is based on the 1-hour equivalent sound level, designated as L_{eq} , and is adjusted by the STAMSON program to the 16-hour daytime and the 8-hour nighttime equivalent sound level. The applicable noise criteria for noise sensitive spaces are specified in terms of the 16-hour daytime period (7:00 a.m. to 11:00 p.m.) and 8-hour nighttime period (11:00 p.m. to 7:00 a.m.) enabling a direct comparison between the STAMSON model output and the noise limits.

2.2 Road Traffic Model Input Parameters

This section describes the STAMSON model input parameters used to predict road traffic noise impact for the Site.

The Site has two significant roadways in the vicinity of the development: University Avenue approximately 70 meters to the South and Albert Street approximately 115 meters to the East. It should be noted that Lester Street traffic volumes were provided by the Region but determine to be environmental insignificant. Where there are intervening and off-site structures that provide line-of-sight obstruction to the roads, JJAЕ did not include line-of-sight obstruction in our analysis as to calculate worst-case noise impact.

2.2.1 Road Traffic Parameters

The traffic data provided by the Region has been summarized below:

Albert Street:

- Current AADT (2022): 6,500
- Forecast AADT (2032): 7,000
- Commercial Vehicle Rates: 1% medium trucks and 1% heavy trucks
- Posted Speed Limit: 50 km/h
- Day Night Splits: 90% day and 10% night

University Avenue:

- Current AADT (2022): 16,600
- Forecast AADT (2032): 18,300
- Commercial Vehicle Rates: 2% medium trucks and 5% heavy trucks
- Posted Speed Limit: 50 km/h
- Day Night Splits: 90% day and 10% night

The traffic data is the foundation of this analysis, and the Study will be updated if the values change. Traffic data was supplied by the Region. The Region's AADT report for this Noise Studies report has been supplied in Attachment B.

2.3 Road Traffic Noise Modeling Results

JJAE calculated the Plane of Window (POW) noise exposure for each floor at the Site for the separate daytime and nighttime periods.

The STAMSON road traffic model outputs are provided in Attachment B.

2.4 Road Traffic Modeling Discussion

Noise control requirements will be defined based on NPC 300.

Daytime Outdoor Living Area Assessment (NPC 300, Section C7.1.1)

NPC 300 section A5 (pages 13-14) defines an Outdoor Living Area (OLA). As part of this definition, a balcony or terrace is considered an OLA if it has a minimum depth of 4 meters. All balconies are less than 4 m in depth and therefore will not be considered as OLAs.

JJAE has used the following criteria, which is a summary of NPC 300, Section C3.2.2 and Section C7.1.1. Daytime sound level limits for road traffic noise:

Daytime Level (dBA)	Warning Clauses
55	Not Required
55 – 60	Type A
60+	Type B

JJAE has identified two locations for an OLA. OLA #1 is located on the north façade 6th floor. OLA #2 is located approximately 10 meters from the west façade. JJAE has calculated the OLA #1 and OLA #2 to be 40 dBA and 50 dBA, respectfully. These levels of transportation noise fall under the noise limits of 55 dBA for an OLA. OLA locations are indicated in Attachment A.

Plane of a Window – Ventilation Requirements (NPC 300, Section C7.1.2)

The predicted daytime and nighttime Plane of Window (POW) noise impact assumes a worst-case and direct line of sight noise exposure to both roads, unless the building itself blocks line-of-sight (full or partial).

JJAE has used the following criteria, which is a summary of NPC 300 requirements, to evaluate the Site noise impacts from road traffic noise:

Daytime Level (dBA)	Nighttime Level (dBA)	Ventilation Requirements and Warning Clauses	Special Building Components
55	50	Not Required	Not Required
55 – 65	50 – 60	Yes, with Type C Warning Clause	Not Required
66 or more	60 or more	Yes, with Type D Warning Clause	Yes

Table B.1 summarizes the predicted worst-case sound levels and the requirements for the units. The following warning clause is required:

Warning Clause D: "This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

Indoor Living Areas – Building Components (NPC 300, Section C7.1.3)

At minimum, the building must be constructed to standard Ontario Building Code requirements.

3. Stationary Noise Impact Analysis

3.1 Stationary Noise Impact Sound Level Criteria

The general criteria for stationary noise sources are defined by NPC 300. The criteria defined in Table C-5 and C-6, "Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA) Outdoor Points of Reception" and "Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA) Plane of Window of Noise Sensitive Spaces" are used to evaluate the noise impact at the proposed development. The Site is in what would generally be considered a Class 1 acoustic environment as defined by NPC-300, a Class 1 Area as "an area with an acoustical environment typical of a major population center, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as 'urban hum'."

The criteria for a Class 1 area have been summarized below:

Receiver Category	Time Period	Stationary Noise Criteria
Outdoor Living Area (OLA)	Day = 7:00 to 23:00	Leq = 55 dBA
Plane of Window (POW)	Day = 7:00 to 23:00	Leq = 50 dBA
	Night = 23:00 to 7:00	Leq = 45 dBA

3.2 Modelling Methodology

The stationary noise impact was evaluated using the CADNA A acoustic modelling software that is based on the ISO 9613-2 standard. The data for all potential stationary noise sources was summarized in Attachment D.

JJAE used the following assumptions in our Cadna A model:

- **Ground Absorption:** Default ground absorption coefficient of 0 was used.
- **Temperature:** 10°C
- **Humidity:** 70%
- **Building Reflection Coefficient:** Absorption Coefficient Alpha of 0.37 (Reflection Loss of 2dB, Structured Façade) was used. Absorption Coefficient Alpha of 0.21 (Reflection Loss of 1dB, Smooth Façade) was used for the large tower.
- **Time-Weighted Adjustment:** where sources operate non-continuously JJAE has provided operating times and as shown in Sections 4 and 5.
- **Tonality:** A 5 dbA tonal penalty was applied to all tonal sources, where applicable. JJAE has provided a (T) for sources identified as tonal in Sections 4 and 5.
- **Reflection Order:** A maximum reflection order of 1 was used to evaluate indirect noise impact.

4. Noise Impact Summary – From Site to Environment

The noise from the Site to the neighboring buildings could not be accounted for because the site has not undergone mechanical design yet. An addendum to this report must be completed once a mechanical design is done to account for noise from the Site to the neighboring building.

5. Noise Impact Summary – From Environment to Site

There are several buildings near the site. JJAEE has identified several potential stationary noise sources including:

- Small HVAC Units
- Representative MUA
- Residential AC
- Representative Chiller
- Sage 10 Chiller
- Sage 10 MUA
- Sage 8 Chiller
- Sage 8 MUA
- Sage 6 Cooling Tower
- Sage 6 MUA
- Balsam Block MUA
- Balsam Block Condenser
- Balsam Block Chiller
- Representative Chiller
- 248 Lester MUA
- Kitchen Exhaust

A summary of the noise sources used in our modelling is provided in Attachment D.

JJAEE modelled the noise impact from all significant noise sources to the Site. The results are summarized in the table below and illustrated on Figure 1.

Facade	Worst Case Daytime Sound Level (dBA)	Daytime Noise Limit (dBA)	Worst Case Nighttime Sound Level (dBA)	Nighttime Noise Limit (dBA)	Limits met
North	46	50	43	45	Yes
East	45	50	41	45	Yes
South	48	50	45	45	Yes
West	46	50	44	45	Yes
OLA #1	40	50	N/A	N/A	Yes
OLA #2	37	50	N/A	N/A	Yes

From the table above it can be seen that all façades meet noise limits.

6. Recommendations

The road traffic noise impacts were above the NPC 300 requirements. Noise mitigation measures include:

- Warning Clause Type D should be registered on Title and/or included in all agreements of purchase and sale and/or leases and/or disclosure statements and declarations for the development for all units along the for the East, South and West façades.
- JJAЕ and the client will require mandatory air conditioning for the entire building.

These have been summarized in Attachment B under Table B1.

The stationary noise impacts from neighboring building to the site were evaluated and the sound level predictions were determined to be below the noise limits for all façades.

The noise from the Site to the neighboring buildings could not be accounted for because the site has not undergone mechanical design yet. An addendum to this report must be completed once a mechanical design is done to account for noise from the Site to the neighboring building.

7. Conclusions

The results of this Study indicate that the potential environmental impact from road traffic noise is significant. Mitigation measures will be required including ventilation requirements and noise warning clause for each unit. Therefore, this development is feasible with respect to RMWNPIG and NPC-300.

Should you have any questions on the above, please do not hesitate to contact us.

Yours truly,

Written by:

Reviewed by:

Feb. 23, 2024

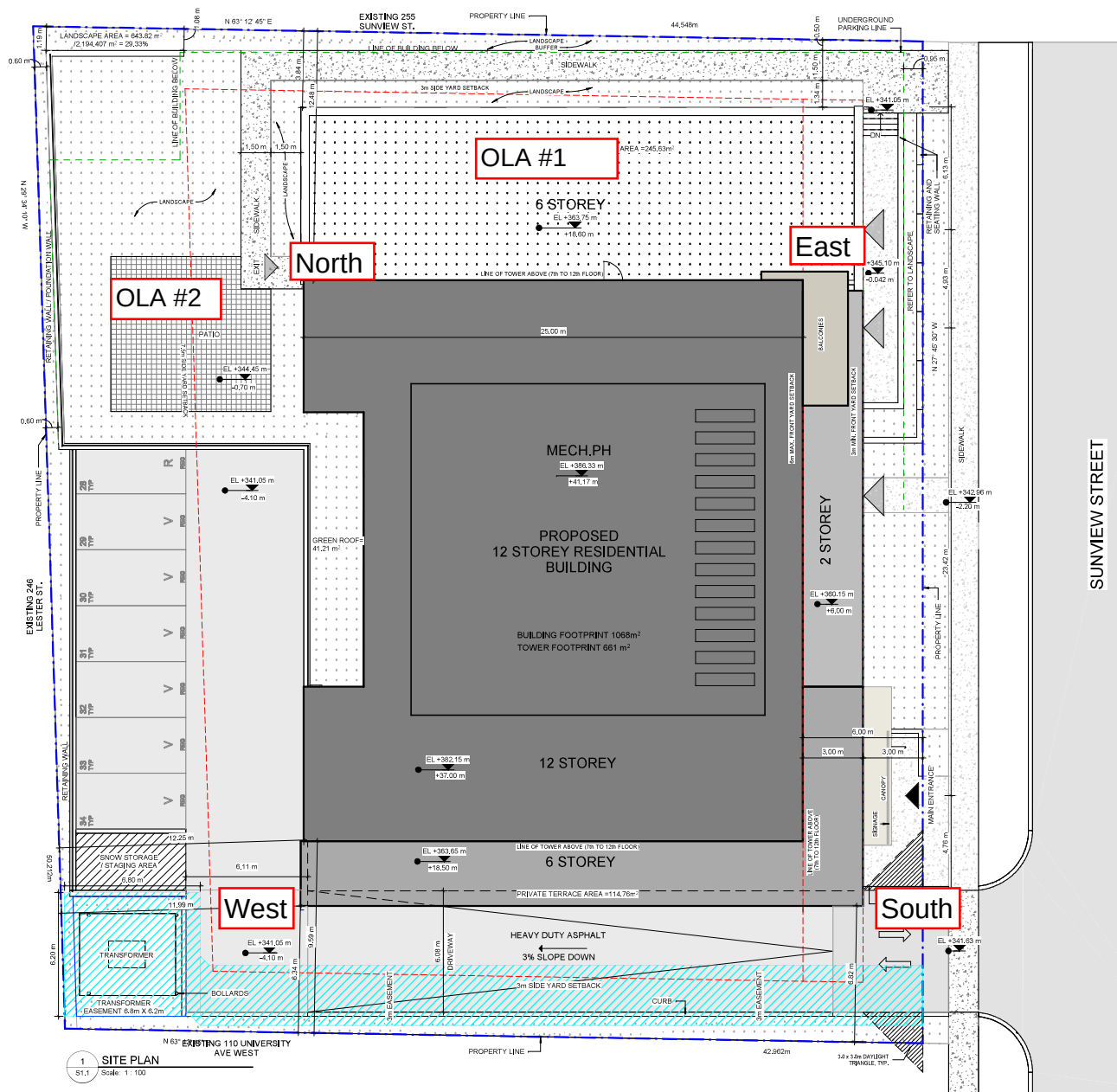


Emmanuel Ghiorghis,
Acoustic Technician



Joey Jraige, P.Eng., B.A.Sc.
President

ATTACHMENT A



GENERAL SITE PLAN NOTES:

1. ALL SITE PLAN DRAWINGS ARE FULLY COORDINATED WITH LANDSCAPE AND ENGINEERING DRAWINGS.
2. THE OWNER IS RESPONSIBLE FOR HIGHWAY REPLACEMENT OR REPAIR COSTS TO CITY STAMPS.
3. ALL SITE LIGHTING SHALL NOT RESULT IN ANY GLARE OR SPILL OVER TO SURROUNDING PROPERTIES OR PUBLIC LANDS.
4. SURPLUS SNOW SHALL BE REMOVED OFF SITE AT THE OWNER'S EXPENSE.
5. ALL BRACKERS SUBJECT TO THE DECK EPOCH.
6. TREE PROTECTION WILL REMAIN ON SITE FOR THE DURATION OF CONSTRUCTION.
7. PAINTING CEILING AND BEAR SHALL BE PAINTED LIGHT.
8. PATH OF TRAVEL FROM EMENT TO OPEN PUBLIC SPACE NOT TO BE INTERFERE WITH PROPOSED LANDSCAPE AND STABLES.
9. ALL EMERGENCY ACCESS ROUTES TO BE MAINTAINED FREE AND CLEAR ALL YEAR ROUND.
10. ALL MECHANICAL EQUIPMENT TO BE FULLY SCREENED FROM PUBLIC VIEW. ROOF TOP UNITS SHALL NOT BE VISIBLE FROM PUBLIC REALM OR RESIDENTIAL PROPERTIES AND ALL VENTING EQUIPMENT SHALL BE ARCHITECTURALLY INTEGRATED INTO BUILDING FACADE.
11. ALL AMENITY SPACES ARE INTENDED FOR BUILDING USE AND NOT BE CONVERTED TO RESIDENTIAL UNITS.
12. DEMO PROPOSED IN A UNITS SHOULD NOT BE USED AS AN ADDITIONAL BEDROOM.

CLIENT

LESTER SUNVIEW
DEVELOPMENT INC.11 PAULTIEL DRIVE,
TORONTO, ON M2M 3P4

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Arcadis Professional Services (Canada) Inc.
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ISSUES	DESCRIPTION	DATE
1	Issued For Site Plan Pre-Consultation	2022-05-08
2	Issued For SPA	2022-10-19
3	Issued For Pre-Zoning	2023-11-27

CONSULTANTS

SEAL

PRIME CONSULTANT

ARCADIS

410 Albert St.
Waterloo, ON N2L 3V3, Canada
tel 519 585 2255
www.arcadis.com

PROJECT

249 SUNVIEW STREET
WATERLOO, ON, N2L 3V8PROJECT NO:
139419DRAWN BY:
SJAPROJECT MGR:
DJH

SHEET TITLE

SITE PLAN

SHEET NUMBER

S1.1

ISSUE

3



ATTACHMENT B

Table B1

Road Traffic Noise Levels and Mitigation Measures Summary
249 Sunview Street, Waterloo, Ontario

Point of Reception	Road Sound Level Daytime (dBA)	Road Sound Level Nighttime (dBA)	Ventilation Requirements NPC 300	Warning Clauses From NPC 300	Special Building Components
North Façade					
Plane of Window Level 1	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 2	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 3	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 4	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 5	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 6	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 7	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 8	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 9	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 10	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 11	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 12	50 (dBA)	44 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
East Façade					
Plane of Window Level 1	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 2	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 3	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 4	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 5	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 6	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 7	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 8	60 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 9	59 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 10	59 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 11	59 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 12	59 (dBA)	53 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code

South Façade

Plane of Window Level 1	62 (dBA)	56 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 2	62 (dBA)	56 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 3	62 (dBA)	56 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 4	62 (dBA)	56 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 5	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 6	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 7	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 8	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 9	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 10	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 11	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 12	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code

West Façade

Plane of Window Level 1	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 2	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 3	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 4	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 5	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 6	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 7	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 8	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 9	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 10	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 11	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code
Plane of Window Level 12	59 (dBA)	52 (dBA)	Requirement for Air Conditioning	Type D	Compliance with Ontario Building Code

Outdoor Living Area (1)

OLA #1	40 (dBA)	N/A	N/A	N/A	N/A
OLA #2	50 (dBA)	N/A	N/A	N/A	N/A

Note

`(1) The OLA #1 is shielded by the building. JJAЕ has assumed a conservative 10 dBA reduction in sound level from the North Façade for the OLA.

`(2) The OLA #2 is shielded by the building. JJAЕ has assumed a conservative 10 dBA reduction in sound level from the East Façade for the OLA.

STAMSON 5.0 NORMAL REPORT Date: 07-07-2022 19:43:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: northf1.te Time Period: Day/Night 16/8 hours
Description: North Facade Floor 1

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

Car traffic volume : 6174/686 veh/TimePeriod *
Medium truck volume : 63/7 veh/TimePeriod *
Heavy truck volume : 63/7 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 7000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 1.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Albert St (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 75.00 / 75.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Albert St (day)

Source height = 1.00 m

ROAD (0.00 + 50.49 + 0.00) = 50.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	60.49	0.00	-6.99	-3.01	0.00	0.00	0.00	50.49

Segment Leq : 50.49 dBA

Total Leq All Segments: 50.49 dBA

Results segment # 1: Albert St (night)

Source height = 1.00 m

ROAD (0.00 + 43.96 + 0.00) = 43.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
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0	90	0.00	53.96	0.00	-6.99	-3.01	0.00	0.00	0.00	43.96
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Segment Leq : 43.96 dBA

Total Leq All Segments: 43.96 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.49
(NIGHT): 43.96

STAMSON 5.0 NORMAL REPORT Date: 07-07-2022 19:43:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: eastf1.te Time Period: Day/Night 16/8 hours
Description: East Facade Floor 1

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

Car traffic volume : 15317/1702 veh/TimePeriod *
Medium truck volume : 329/37 veh/TimePeriod *
Heavy truck volume : 824/92 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18300
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

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

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 70.00 / 70.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Albert St (day/night)

Car traffic volume : 6174/686 veh/TimePeriod *
Medium truck volume : 63/7 veh/TimePeriod *
Heavy truck volume : 63/7 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 7000
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 1.00
 Heavy Truck % of Total Volume : 1.00
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Albert St (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 115.00 / 115.00 m
 Receiver height : 2.00 / 2.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: University (day)

 Source height = 1.50 m

ROAD (0.00 + 58.92 + 0.00) = 58.92 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.62	0.00	-6.69	-3.01	0.00	0.00	0.00	58.92

Segment Leq : 58.92 dBA

Results segment # 2: Albert St (day)

 Source height = 1.00 m

ROAD (0.00 + 51.64 + 0.00) = 51.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	60.49	0.00	-8.85	0.00	0.00	0.00	0.00	51.64

Segment Leq : 51.64 dBA

Total Leq All Segments: 59.66 dBA

Results segment # 1: University (night)

Source height = 1.50 m

ROAD (0.00 + 52.40 + 0.00) = 52.40 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	62.10	0.00	-6.69	-3.01	0.00	0.00	0.00	52.40

Segment Leq : 52.40 dBA

Results segment # 2: Albert St (night)

Source height = 1.00 m

ROAD (0.00 + 45.11 + 0.00) = 45.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	53.96	0.00	-8.85	0.00	0.00	0.00	0.00	45.11

Segment Leq : 45.11 dBA

Total Leq All Segments: 53.14 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.66
(NIGHT): 53.14

STAMSON 5.0 NORMAL REPORT Date: 07-07-2022 19:44:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: southf1.te Time Period: Day/Night 16/8 hours
Description: South Facade Floor 1

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

Car traffic volume : 15317/1702 veh/TimePeriod *
Medium truck volume : 329/37 veh/TimePeriod *
Heavy truck volume : 824/92 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18300
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 70.00 / 70.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Albert St (day/night)

Car traffic volume : 6174/686 veh/TimePeriod *
Medium truck volume : 63/7 veh/TimePeriod *
Heavy truck volume : 63/7 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 7000
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 1.00
 Heavy Truck % of Total Volume : 1.00
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Albert St (day/night)

 Angle1 Angle2 : 0.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 125.00 / 125.00 m
 Receiver height : 2.00 / 2.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: University (day)

 Source height = 1.50 m

ROAD (0.00 + 61.93 + 0.00) = 61.93 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.62	0.00	-6.69	0.00	0.00	0.00	0.00	61.93

Segment Leq : 61.93 dBA

Results segment # 2: Albert St (day)

 Source height = 1.00 m

ROAD (0.00 + 48.27 + 0.00) = 48.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	60.49	0.00	-9.21	-3.01	0.00	0.00	0.00	48.27

Segment Leq : 48.27 dBA

Total Leq All Segments: 62.11 dBA

Results segment # 1: University (night)

Source height = 1.50 m

ROAD (0.00 + 55.41 + 0.00) = 55.41 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	62.10	0.00	-6.69	0.00	0.00	0.00	0.00	55.41

Segment Leq : 55.41 dBA

Results segment # 2: Albert St (night)

Source height = 1.00 m

ROAD (0.00 + 41.74 + 0.00) = 41.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	53.96	0.00	-9.21	-3.01	0.00	0.00	0.00	41.74

Segment Leq : 41.74 dBA

Total Leq All Segments: 55.59 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.11
(NIGHT): 55.59

STAMSON 5.0 NORMAL REPORT Date: 07-07-2022 19:44:15
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: westf1.te Time Period: Day/Night 16/8 hours
Description: West Facade Floor 1

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

Car traffic volume : 15317/1702 veh/TimePeriod *
Medium truck volume : 329/37 veh/TimePeriod *
Heavy truck volume : 824/92 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 18300
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 90.00

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

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 70.00 / 70.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: University (day)

Source height = 1.50 m

ROAD (0.00 + 58.92 + 0.00) = 58.92 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	68.62	0.00	-6.69	-3.01	0.00	0.00	0.00	58.92

Segment Leq : 58.92 dBA

Total Leq All Segments: 58.92 dBA

Results segment # 1: University (night)

Source height = 1.50 m

ROAD (0.00 + 52.40 + 0.00) = 52.40 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------	--------

-90	0	0.00	62.10	0.00	-6.69	-3.01	0.00	0.00	0.00	52.40
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Segment Leq : 52.40 dBA

Total Leq All Segments: 52.40 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.92
(NIGHT): 52.40

Region of Waterloo AADT Forecast for Noise Studies

1. Development/Location

249 Sunview St, Waterloo, ON

2. Current AADT (2022)

University Ave	Albert St	Lester St
16,600	6,600	1,200

3. Forecast AADT (2032)

University Ave	Albert St	Lester St
18,300	7,000	1,300

4. Commercial Vehicle Rates

	University Ave	Albert St	Lester St
% Medium Trucks	2%	1%	2%
% Heavy Trucks	5%	1%	1%

5. Posted Speed Limit

University Ave	Albert St	Lester St
50 km/h	50 km/h	50 km/h

6. Day/Night Splits

Regional Standard 90/10 Day/Night Split

7. Expiry

Dec 31 2023

8. Notes

This forecast is intended for the purpose of carrying out a noise study for **249 Sunview St** only. The above AADT represents the traffic volumes on the north and west legs of the intersection of Albert St and University Ave and at the north leg of the intersection of Lester St and University Ave, assuming University Ave runs in an east-west direction.

As Albert St and Lester St are under the jurisdiction of the City of Waterloo, the City of Waterloo should be contacted to verify the forecast.

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

ATTACHMENT C



ATTACHMENT D

Table C1
Stationary Noise Impact Source Data
249 Sunview Street, Waterloo, Ontario

Noise Source Description	Cadna ID	Total SWL	Data Source or Representative Data	Height Absolute (m)	Above Roof (m)	x	y
		(dBA)					
Chiller_Sage10	OS_Chiller_Sage10	92.8	Chiller_Sage10	2	2	17537822	4813778
Chiller_Sage8	OS_Chiller_Sage8	91.1	Chiller_Sage8	18.8	2	17537810	4813711
Lester_MUA	OS_Lester_MUA	82.3	Lester_MUA	40.25	1.25	17537668	4813517
MUA	OS_Sunview_MUA	81	Sunview_MUA	19.25	1.25	17537649	4813676
MUA_Sage8	OS_MUA_Sage8	77	MUA_Sage8	18.8	2	17537818	4813698
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	38.4	2	17537838	4813675
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	37	2	17537855	4813643
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	38.4	2	17537877	4813578
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	39	2	17537692	4813615
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	31.9	1.9	17537669	4813553
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	38	2	17537744	4813628
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	38	2	17537773	4813576
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	9	2	17537558	4813737
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	59	2	17537518	4813575
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	35	2	17537530	4813511
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	42	2	17537840	4813463
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	47	2	17537700	4813394
Rep_Chiller	OS_Rep_Chiller	92.8	Rep_Chiller	39	2	17537759	4813398
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	19.25	1.25	17537724	4813487
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	37	2	17537860	4813634
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	38.4	2	17537873	4813587
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	39	2	17537683	4813611
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	38	2	17537737	4813643
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	38	2	17537766	4813590
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	23	2	17537716	4813671
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	23	2	17537604	4813654
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	9	2	17537552	4813745
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	18.8	2	17537833	4813544
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	38.4	2	17537841	4813671
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	35	2	17537517	4813504
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	51	2	17537715	4813387
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	35	2	17537754	4813405
Rep_MUA	OS_Rep_MUA	86	Rep_MUA	35	2	17537765	4813391
Sage10	OS_Sage10	80.8	MUA_Sage10	2	2	17537813	4813798
SageVI_CT	OS_SageVI_CT	92.1	SageVI_CT	21.6	2	17537870	4813706
SageVI_MUA	OS_SageVI_MUA	88.1	SageVI_MUA	24.6	2	17537874	4813699
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	19.25	1.25	17537738	4813493
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	18.05	1.25	17537838	4813542
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537568	4813448
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537572	4813451
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537578	4813453
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537583	4813455
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537586	4813457
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537592	4813460
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537597	4813453
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537599	4813448
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537601	4813445
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537603	4813441
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537627	4813438
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537629	4813440
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537632	4813441
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537633	4813442
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537641	4813446
Small_HVAC	OS_Small_HVAC	81.9	Small_HVAC	8.25	1.25	17537652	4813451
Kitchen_Exhaust	OS_Kitchen_Exhaust	70.9	Kitchener_Exhaust	8.25	1.25	17537562	4813446
Kitchen_Exhaust	OS_Kitchen_Exhaust	70.9	Kitchener_Exhaust	8.25	1.25	17537560	4813449
Kitchen_Exhaust	OS_Kitchen_Exhaust	70.9	Kitchener_Exhaust	8.25	1.25	17537616	4813442
Kitchen_Exhaust	OS_Kitchen_Exhaust	70.9	Kitchener_Exhaust	8.25	1.25	17537650	4813452

ATTACHMENT E

Owner's Name: Lester Sunview development Inc
Owner's Address: 300-2900 John St
Waterloo ON L3R5G3

Re: Road Traffic and Stationary Noise Impact Study, 249 Sunview Street, Waterloo, Ontario

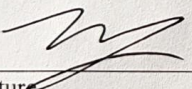
OWNER'S STATEMENT

I am the owner of the property, or the owner's agent, and that I understand and agree with the noise assessment and potential attenuation measures detailed in the study entitled Stationary Noise Impact Study, 249 Sunview Street, Waterloo, Ontario, dated February 23, 2024.

The application has been designed to avoid the use of berms or walls as noise attenuation features where feasible. Where berms or walls are recommended, the Noise Study provides economic, planning and engineering justification.

If the application is changed in a way that may affect the noise level calculations, I will have a revised noise study submitted to the Region of Waterloo.

Xiang Zhang
Name


Signature

April 4th 2024
Date

ATTACHMENT F

CANADA

PROVINCE OF ONTARIO

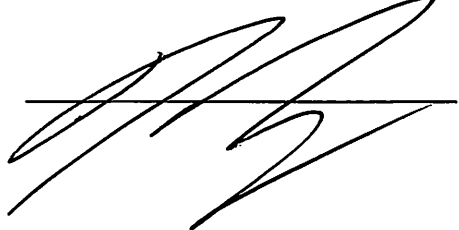
) In the Matter of the
) Environmental Protection
) Act and the Planning Act
)
)
) And in the Matter of
) 249 Sunview Street, Waterloo,
Ontario in the Regional
Municipality of Waterloo

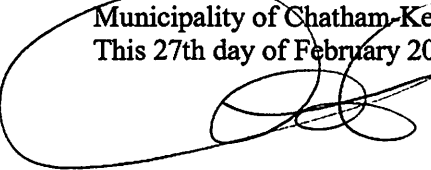
I, Joey Jraige, of JJ Acoustic Engineering Ltd., in the Town of Tilbury,
SOLEMNLY DECLARE THAT:

1. I am a Professional Engineer employed by JJ Acoustic Engineering Ltd. which holds a Certificate of Authorization and have personal knowledge of the matters set out below.
2. I was retained or employed as the principal consultant to undertake the assessment of noise impacts and recommendation of noise mitigation measures for the property described as 249 Sunview Street, Waterloo, Ontario.
3. I have the expertise required to perform these services. Any assessment activities or recommendations requiring the application of engineering principles have been undertaken or supervised by an engineer qualified to perform such services.
4. The information used in the letter report entitled "Road Traffic and Stationary Noise Impact Study" dated February 23, 2024, is the best available information as of the date of the study.
5. The noise level calculations, the interpretation of noise attenuation requirements and the recommended measures are in accordance with Ministry of Environment and Climate Change Guidelines, Region of Waterloo policies, and any applicable policy or guidelines of the Area Municipality, and any other applicable policy or guideline.
6. The physical noise attenuation measures proposed in this study are feasible to implement and will provide the level of attenuation indicated in the study.
7. I acknowledge that this study may be subject to a peer review conducted at my cost.
8. I acknowledge that public authorities and future owners, occupants and others may rely on this statement.

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

DECLARED before me in the Town
of Tilbury, in the Regional
Municipality of Chatham-Kent
This 27th day of February 2024

)
)
)
)



LOUIS ELTERS
TAYLOR DELRUE
BARRISTER, SOLICITOR & NOTARY PUBLIC
40 QUEEN ST. S., P.O. BOX 459
TILBURY, ONTARIO N0P 2L0
MY COMMISSION DOES NOT EXPIRE