



March 1, 2022

The Blue Meadows Inc.
24 Marydale Avenue
Markham, ON, L3S 3N4

E-mail: [REDACTED]

Attention: Mr. Shekhar Dalal

Re: Noise Impact Study of the Proposed Commercial/Residential Development
125 Arthur Street West & 123 Louisa Street West, Thornbury ON
Pinchin File: 290802

Pinchin Ltd. (Pinchin) was retained by The Blue Meadows Inc. (Client) to prepare a noise impact study report of its proposed commercial/residential development (Development) at 125 Arthur Street West & 123 Louisa Street West, Thornbury ON. This report has been prepared to evaluate the noise impacts from external sources on the Development and the Development on nearby noise sensitive receptors. The purpose of the report is to satisfy the Town of The Blue Mountains site plan control submission and/or zoning by-law amendment requirements.

The proposed Development is located at 125 Arthur Street West & 123 Louisa Street West, Thornbury ON. The Development will include the construction of two (2) blocks of combined commercial/residential buildings along Highway 26, three (3) blocks of combined commercial/residential townhouses and seventeen (17) blocks of various residential 2 or 3 storey row houses. A concept plan drawing of the Development is included in Appendix C.

Figure 1, Appendix B shows the locations of the proposed Development and nearby roads and stationary sources.

1.0 NOISE CRITERIA

The Town of The Blue Mountains Noise Bylaw No. 2002-9 [1] does not provide specific noise criteria for new Development. Therefore, Pinchin adopted the noise criteria outlined in the Ministry of Environment, Conservation and Parks (MECP) Publication NPC-300 [2] for new residential development. The applicable noise criteria for this proposed Development are described as follows:

1.1 Outdoor Noise Criteria

The outdoor living areas (OLAs) typically include backyards, front yards, gardens, terraces or patios, and common outdoor living areas associated with high-rise multi-unit buildings. It should be noted that typically, balconies in residential condominium buildings are not considered OLAs unless both of the



following conditions exist: they are at least 4 m in depth and there is no provision for protected amenities within the development.

The daytime noise criterion for outdoor living areas (OLAs) is 55 dBA for road and rail noise sources. Where it is not technically, economically, or administratively feasible to meet the 55 dBA limit, up to 60 dBA is permissible with warning clauses. Where the daytime sound level is greater than 60 dBA, control measures are required to reduce the sound level to 60 dBA or less.

1.2 External Building Façade Criteria

Where the sound levels at the exterior of the building facades exceed 55 dBA at living/dining room windows during daytime hours and 50 dBA at bedroom windows during nighttime periods, the unit must be provided with forced air heating with provision for central air conditioning. Where the sound levels exceed by more than 10 dB (i.e. 65 dBA at living/dining room windows and 60 dBA at bedroom windows), central air conditioning must be incorporated into the building design prior to occupancy. Upgraded window glazing construction may be required and warning clauses are applicable as well.

1.3 Noise Criteria for Stationary Sources

The applicable MECP noise criteria at a point of reception (POR) are dictated by MECP Publication NPC-300 [2] for Class 1 Areas. These guidelines state that the one-hour sound exposures (Leq, 1 hour) from stationary noise sources in Class 1 areas shall not exceed:

- the higher of 50 dBA or background noise between 0700h and 1900h;
- the higher of 50 dBA or background noise between 1900h and 2300h; and
- the higher of 45 dBA or background noise between 2300h and 0700h (excluding outdoor PORs).

2.0 POINT OF RECEPTION DESCRIPTION

To evaluate the noise impact from road traffic on the Development, three (3) onsite noise sensitive receptors (POR1 to POR3) were selected from the Development's most affected locations. Receptor POR1 represents the third-floor north façade window of the commercial/residential building (Block 22) directly adjacent to Arthur Street West. Receptor POR2 represents the third-floor west façade window of the commercial/residential building (Block 22) directly adjacent to Arthur Street West. Receptor POR3 represents the third-floor north façade window of the second row of commercial/residential buildings (Block 19). It was confirmed by the Client that all residential unit balconies are less than 4 metres deep and there are no roof-top terraces. As such there were no outdoor living areas (OLAs) considered in this model.



To evaluate the noise impact from nearby stationary sources, two receptor locations (R1 and R2) were selected from the Development's most affected locations. Receptor R1 represents the third-floor east façade window of the commercial/residential building (Block 18) directly adjacent to Arthur Street West. Receptor R2 represents the third-floor east façade window of the second row commercial/residential building (Block 19) along Lansdowne Street.

The locations of the selected receptors are shown in Figure 1, Appendix B.

3.0 NOISE IMPACT ASSESSMENT

3.1 Noise Impact from External Sources on the Development

A review of aerial photos of the area shows that the major stationary sources include a Foodland. It was confirmed during the site visit that the Foodland roof-top equipment potentially operates 24 hours per day, seven days per week. The Foodland noise sources are shown in Figure 2, Appendix B and include:

- Two (2) oven exhaust (sources EX1 and EX2)
- One (1) compressor exhaust (source COMP1);
- Two (2) roof-top units (sources RTU1 and RTU2); and
- Two (2) roof-top condenser units (sources COND1 to COND2).

To evaluate the noise impact from the nearby stationary sources, site visits were conducted by Pinchin on July 30th and August 21st, 2021.

An acoustic model of the stationary sources was prepared using CadnaA (Version 2021). CadnaA calculates sound levels surrounding the facility according to the ISO standard 9613-2 [3], "Acoustics – Attenuation of Sound during Propagation Outdoors." The ISO calculation method, considered conservative, accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation, and acoustical shielding. Calculation parameters were set in accordance with the ISO standard, and detailed protocols can be provided upon request.

In the model, all rooftop HVAC, chiller and condenser units were modelled operating at 60 minutes, 60 minutes, and 30 minutes during daytime, evening and nighttime hours, respectively. The selected duty cycles are in line with operations of typical comfort heating equipment used at commercial facilities.

The acoustic modeling results indicate that steady-state external noise sources impact on the Development meet NPC-300 criteria for Class 1 areas.

The significant external sources sound power levels are provided in Table 1, Appendix A. The noise impact levels and noise contour maps from the external noise sources are predicted in Table 2, Appendix A, and Figures 3 and 4, Appendix B, respectively.



3.2 Noise Impact from Transportation Sources on the Development

A review of aerial photos shows that there is one major roadway in proximity to the Development: Arthur Street West (Highway 26) to the north. The recent Annual Average Daily Traffic (AADT) volumes were obtained from the Ontario Ministry of Transportation. The AADT volumes were projected to year 2032 using an annual growth rate of 1.0% based on the previously calculated growth over the past ten (10) years. Day and night vehicles were split in accordance with the MECP protocol. Percentages of commercial trucks were determined based on the MTO Environmental Guide to Noise [4].

Traffic noise impact was predicted using the MECP computer program STAMSON (Version 5.04) [5]. STAMSON uses the traffic volumes for the road and basic topographical information for the site in its calculations. The program accounts for adjustments in sound levels with vehicle volume, distance, finite segment, pavement surface, and acoustical shielding. Details of traffic data and STAMSON calculations are included in Appendix D.

The traffic noise impact prediction results are provided in Table 3, Appendix A.

In summary, the predicted traffic noise impacts range from 48 dBA to 65 dBA at the selected onsite receptors. The predicted levels indicate that the north, west and east facades of the two (2) proposed commercial/residential buildings located in Blocks 18 and 22 should be designed with provisions for the installation of central air conditioning systems in the future, at the occupants' discretion. Warning clause type C is also required. Details of the warning clause is included in Appendix E. It was confirmed by the Client that the Development will be equipped with central air conditioning systems. As such the building design will exceed the above MECP ventilation requirements.

For all other proposed residential buildings on the Development, noise control measures and warning clauses are not required.

The predicted traffic noise impact indicates that no special noise control measures are required on the building components. Construction of all building components meeting the Ontario Building Code (OBC) requirements will be sufficient to provide the required noise attenuation so that the indoor noise levels will meet the applicable MECP guideline limits.

Consequently, it is our opinion that the traffic noise impacts will be in compliance with the MECP noise guidelines.



3.3 Noise Impact from the Development on Nearby Sensitive Receptors

At the time this report was prepared, it was confirmed by the Client that the Development will have residential type HVAC furnace and condensing units. It is our opinion that these units are not significant noise sources. There were also no other significant noise sources (i.e. emergency generators, cooling towers) identified by the client for the Development. Consequently, it is our opinion that the noise impact from the Development on the nearby sensitive receptors will be in compliance with the MECP noise guidelines.

4.0 CONCLUSIONS

A detailed noise assessment of the proposed Development was completed by modelling the noise impacts of the significant noise sources at selected receptor locations on the Development. The assessment shows that the noise impacts from external steady-state stationary sources on the Development meet the NPC-300 criteria for Class 1 Areas.

The potential traffic noise impacts from Arthur Street West (Highway 26) were also assessed. The predicted levels indicate that the north, west and east facades of the two (2) proposed commercial/residential buildings located in Blocks 18 and 22 should be designed with provisions for the installation of central air conditioning systems in the future, at the occupants' discretion. Warning clause type C is also required. It was confirmed by the Client that all buildings will be equipped with central air conditioning systems. As such the building design will exceed the above MECP ventilation requirements. For all other proposed residential buildings on the Development, noise control measures and warning clauses are not required.

It was also confirmed by the Client that the Development will have residential type HVAC furnace and condensing units. It is our opinion that these units are not significant noise sources. There were also no other significant noise sources (i.e. emergency generators, cooling towers) identified by the client for the Development.

5.0 TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.



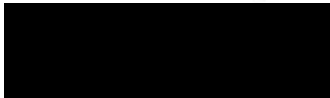
6.0 CLOSURE

Should you have any questions or concerns regarding the contents of this study, please contact the undersigned.

Sincerely,

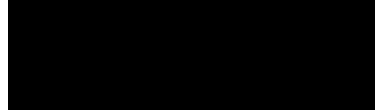
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7.0 REFERENCES

1. Town of The Blue Mountains, Noise Bylaw No. 2002-9, January 28, 2002.
2. Ministry of the Environment Publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", August 2013.
3. ISO 9613-2: 1996, Acoustics –Attenuation of Sound During Propagation outdoors. Part 2 – General Method of Calculation.
4. Ministry of Transportation, "Environmental Guide for Noise", October 2006.
5. Ministry of the Environment's STAMSON/STEAM Computer Programme, (Version 5.04), 1989.

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Template: Master Noise Impact Study Letter, ERC, March 5, 2020

APPENDIX A
Tables
(3 Pages)

Table 1: Stationary Noise Source Summary Table

Source ID ^[1]	Source Description	Lw(A) ^[2]	Source Location ^[3]	Sound Characteristics ^[4]	Noise Control Measures ^[5]	Source of Data ^[6]
EX1	Oven Hood Exhaust	71	O	S	U	Mea
EX2	Oven Exhaust	72	O	S	U	Mea
COMP1	Compressor Exhaust	74	O	S	U	Mea
RTU1	Roof-Top Unit	93	O	S	B	Mea
RTU2	Roof-Top Unit	87	O	S	B	Man
COND1	Condenser Unit	84	O	S	B	Mea
COND2	Condenser Unit	81	O	S	B	Mea

Notes:

- [1] Wherever possible, the Source ID is identical with that used in the ESDM report.
- [2] Sound Power Levels of continuous noise sources, in dBA, do not include sound characteristic adjustments per NPC-104.
Sound Power Levels of impulsive noise sources, in dBA₁, are A-weighted incorporating an impulsive time weighting.
- [3] Source Location:
O - located/installed outside the building, including on the roof
I - located/installed inside the building
- [4] Sound Characteristic
S = Steady
Q = Quasi-Steady Impulsive
Noise Control Measures
S = Silencer/Muffler
A = Acoustic lining, plenum
B = Barrier, berm, screening
- [6] Mea - Measured
Cal = Engineering Calculations

Table 2: Acoustic Assessment Summary Table - From External Stationary Sources on Development

Point of Reception ID	Point of Reception Description	Time Period ^[1]	Total Level at POR (L _{eq} , 1-hr) ^[2]	Verified by Acoustic Audit (Yes/No)	Performance Limit (L _{eq} 1-hr) ^[3]	Compliance with Performance Limit (Yes/No)
R1	Residential Third-Floor East Facade Window	Daytime	44	No	50	Yes
		Evening	44	No	50	Yes
		Nighttime	41	No	45	Yes
R2	Residential Third-Floor East Facade Window	Daytime	44	No	50	Yes
		Evening	44	No	50	Yes
		Nighttime	41	No	45	Yes

Notes:

- [1] The predictable worst-case one (1) hour period was considered in the study.
- [2] Worst-case one hour equivalent sound level from all applicable sources operating in dBA.
- [3] NPC-300 exclusionary sound level limits of one hour L_{eq} for Class 1 Areas.

Table 3 - STAMSON Calculation Results

Point of Reception ID	POR1	POR2	POR3
Point of Reception Description	North Facade, 3rd Floor Windows	West Facade, 3rd Floor Windows	North Facade, 3rd Floor Windows
Road	Arthur Street West (Highway 26)	Arthur Street West (Highway 26)	Arthur Street West (Highway 26)
Daytime Level (Leq (16hr))	65	60	54
Nighttime Level (Leq (8hr))	58	53	48
Noise Control Measures	Provision for A/C	Provision for A/C	None
Warning Clause	Type C	Type C	N/A

APPENDIX B
Figures
(4 Pages)

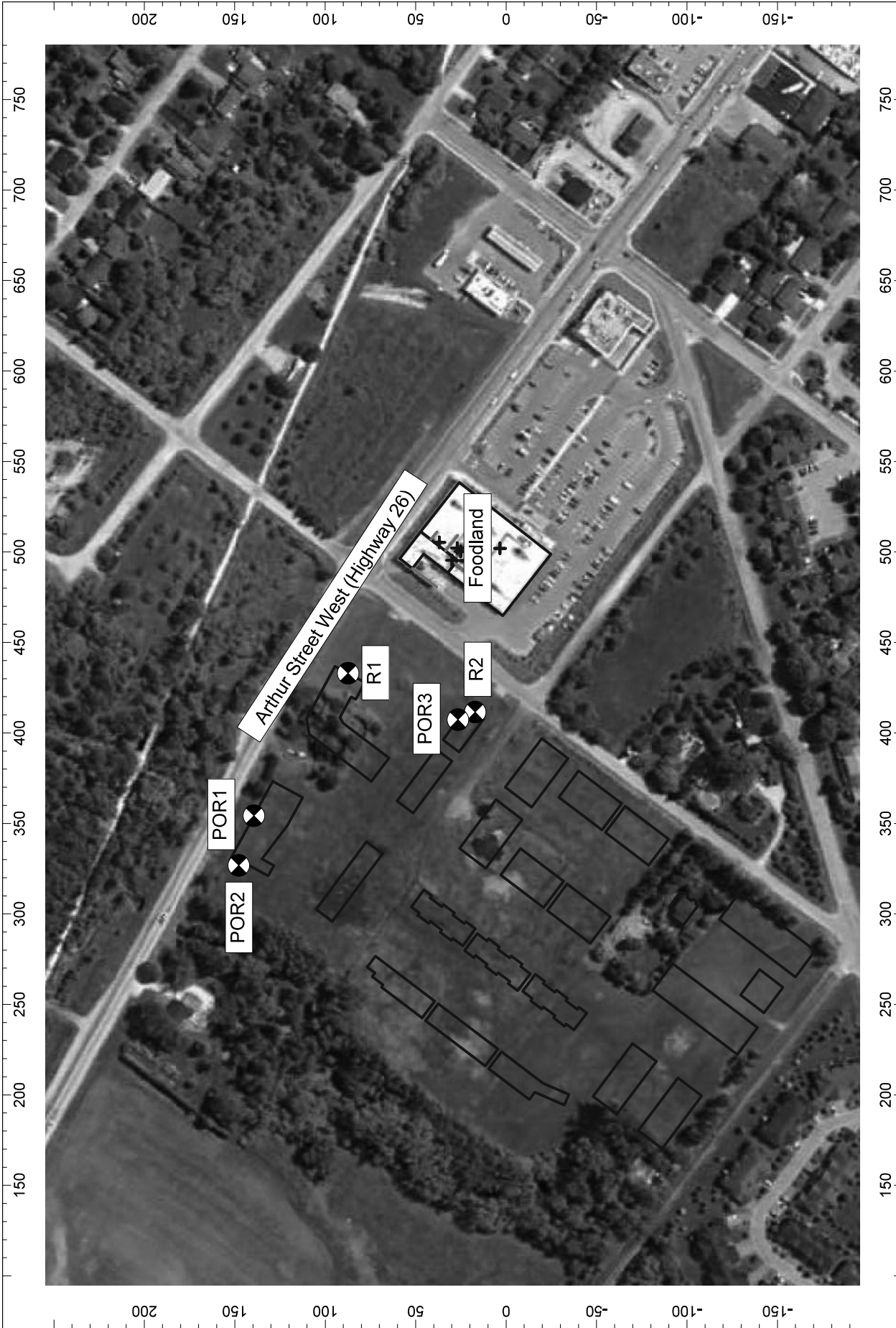


Figure 1 - Scaled Area Plan, Showing the Development, Foodland and Surrounding Receptor Locations



Drawn by: ARM

Scale: 1:3000

Date: February 28, 2022



Pinchin Project: 290802

The Blue Meadows Inc., 125 Arthur Street West & 123 Louisa Street West, Thornbury Ontario

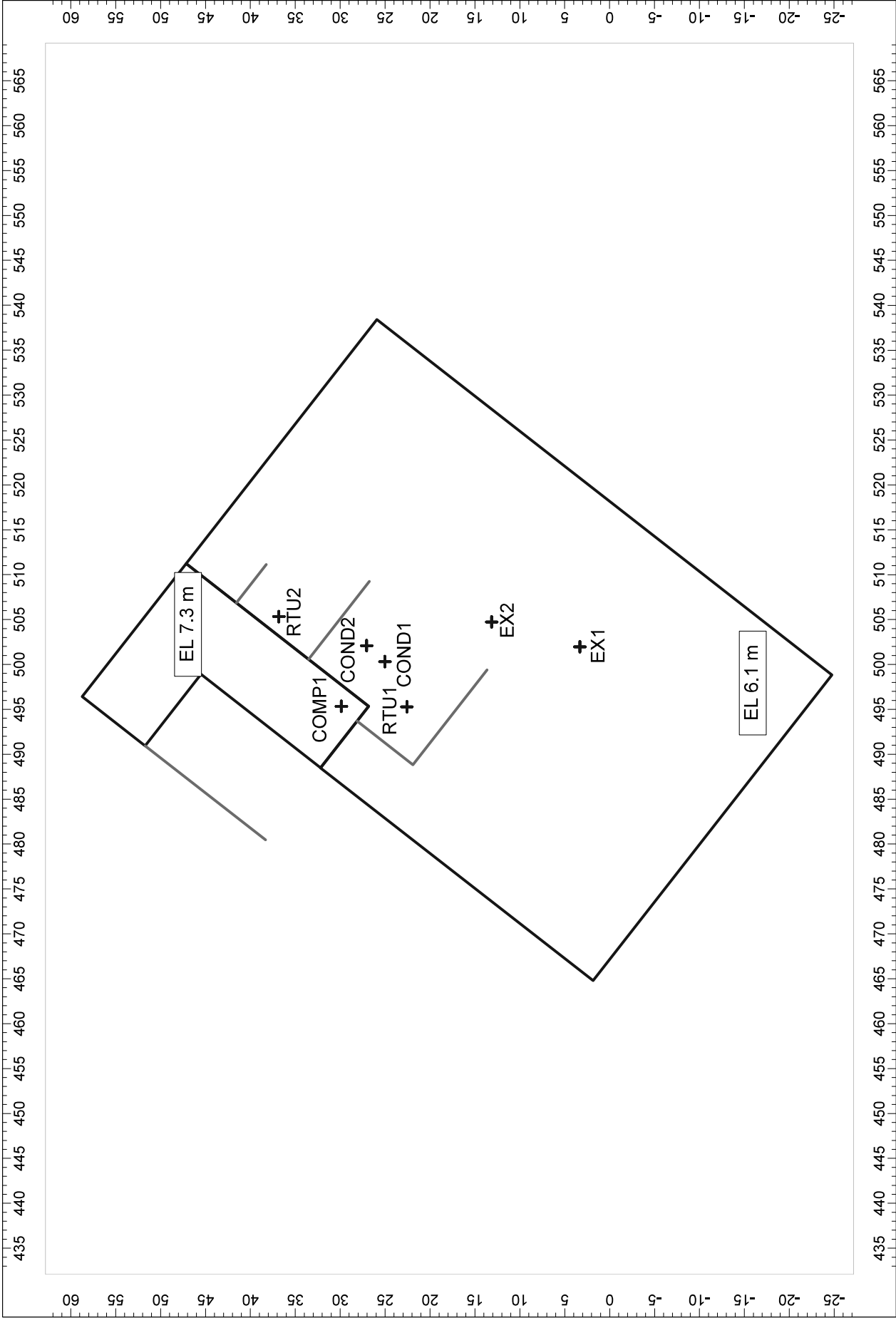


Figure 2 - Site Plan, Showing Foodland Significant Noise Sources



Drawn by: ARM

Scale: 1:600

Date: February 28, 2022

Pinchin Project: 290802

The Blue Meadows Inc., 125 Arthur Street West & 123 Louisa Street West, Thornbury Ontario



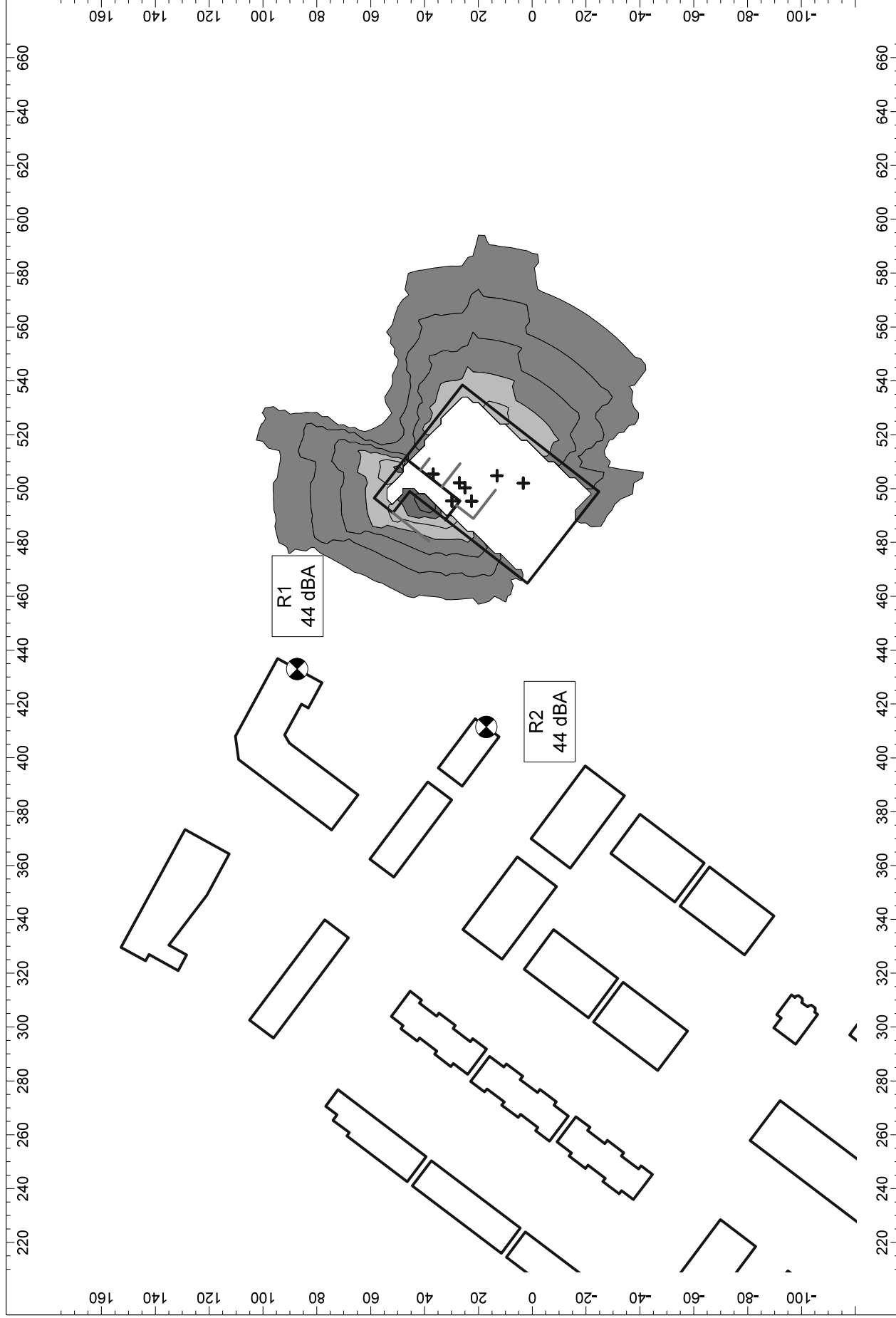


Figure 3 - Daytime and Evening Noise Impact Contour Map



Drawn by: ARM

Scale: 1:2000

Date: February 28, 2022



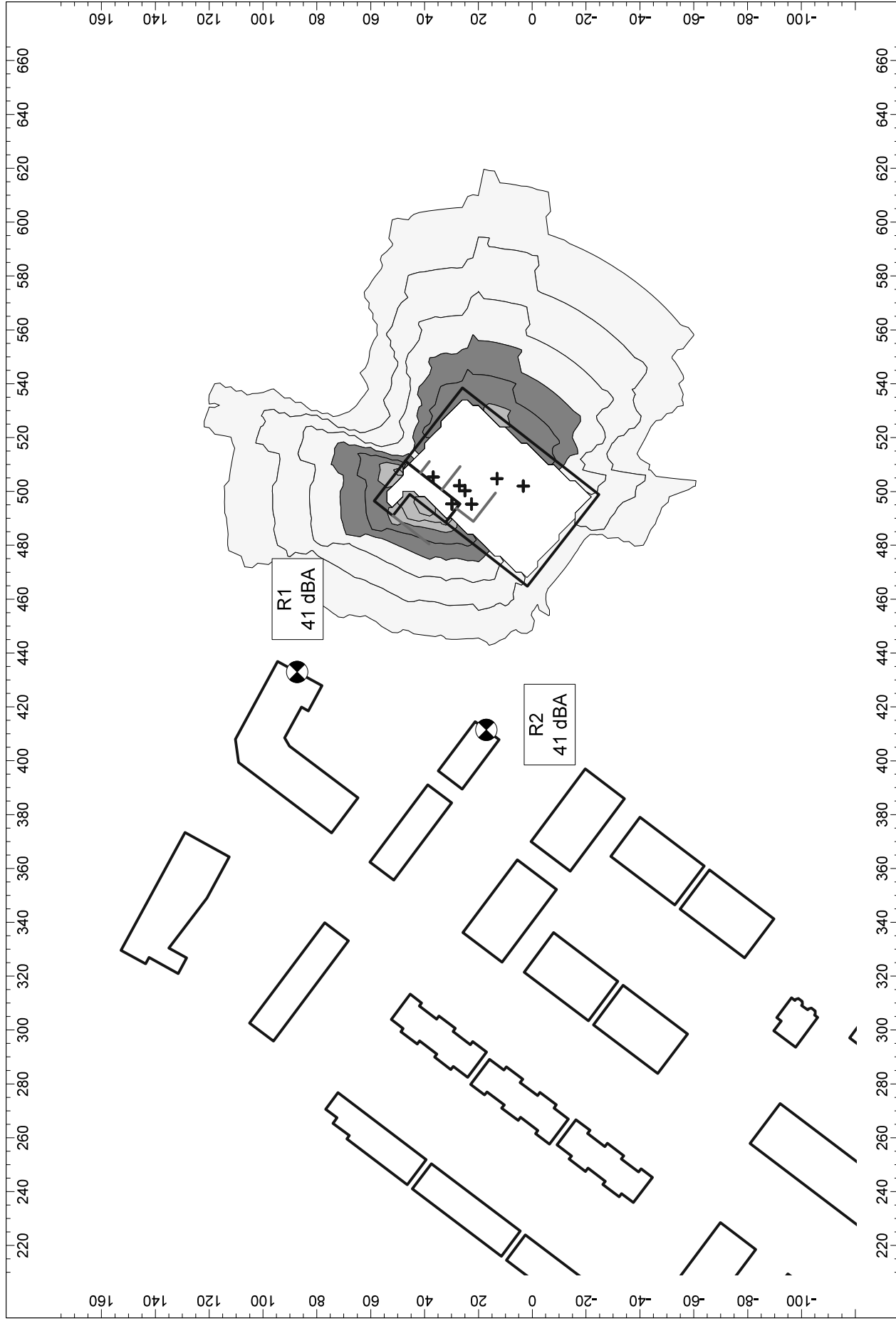


Figure 4 - Nighttime Noise Impact Contour Map



Drawn by: ARM

Scale: 1:2000

Date: February 28, 2022



APPENDIX C
Concept Plan Drawing
(1 Page)

APPENDIX D
Traffic Data and STAMSON Calculations
(7 Pages)

Table C1 - Summary of Traffic Data and Projections

	Arthur Street West (Highway 26)	Notes
AADT - Year 2016	6800	Provided by the Ontario Ministry of Transportation
Annual Growth	1.0%	Calculated Based on Historic AADTs
Years of Growth	16	Projected to year 2032
AADT - 2032	7974	Projected to year 2032
Day Split	90%	ORNAMENT Manual
Cars	6937	87% for cars, MTO Environmental Guide for Noise
Medium Trucks	399	5% for Medium Trucks, MTO Environmental Guide for Noise
Heavy Trucks	638	8% for Heavy Trucks, MTO Environmental Guide for Noise
Speed Limit, km/hr	50	Posted Speed Limit

STAMSON 5.0 NORMAL REPORT Date: 25-02-2022 14:12:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 290802r1.te Time Period: Day/Night 16/8 hours
Description: Traffic Noise Impact, POR1 North Facade Window

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

Car traffic volume : 6243/694 veh/TimePeriod *
Medium truck volume : 359/40 veh/TimePeriod *
Heavy truck volume : 574/64 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): 6800
Percentage of Annual Growth : 1.00
Number of Years of Growth : 16.00
Medium Truck % of Total Volume : 5.00
Heavy Truck % of Total Volume : 8.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 18.00 / 18.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: (day)

Source height = 1.68 m

ROAD (0.00 + 64.53 + 0.00) = 64.53 dBA

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

-90 90 0.47 66.82 0.00 -1.17 -1.13 0.00 0.00 0.00
64.53

Segment Leq : 64.53 dBA

Total Leq All Segments: 64.53 dBA

Results segment # 1: (night)

Source height = 1.68 m

ROAD (0.00 + 58.01 + 0.00) = 58.01 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									
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-90	90	0.47	60.30	0.00	-1.17	-1.13	0.00	0.00	0.00
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58.01

Segment Leq : 58.01 dBA

Total Leq All Segments: 58.01 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.53
(NIGHT): 58.01

STAMSON 5.0 NORMAL REPORT Date: 25-02-2022 14:20:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 290802r2.te Time Period: Day/Night 16/8 hours
Description: Traffic Noise Impact, POR2 West Facade Window

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

Car traffic volume : 6243/694 veh/TimePeriod *
Medium truck volume : 359/40 veh/TimePeriod *
Heavy truck volume : 574/64 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): 6800
Percentage of Annual Growth : 1.00
Number of Years of Growth : 16.00
Medium Truck % of Total Volume : 5.00
Heavy Truck % of Total Volume : 8.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 23.00 / 23.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: (day)

Source height = 1.68 m

ROAD (0.00 + 59.95 + 0.00) = 59.95 dBA

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

0 90 0.47 66.82 0.00 -2.74 -4.14 0.00 0.00 0.00
59.95

Segment Leq : 59.95 dBA

Total Leq All Segments: 59.95 dBA

Results segment # 1: (night)

Source height = 1.68 m

ROAD (0.00 + 53.43 + 0.00) = 53.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									
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0	90	0.47	60.30	0.00	-2.74	-4.14	0.00	0.00	0.00
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53.43

Segment Leq : 53.43 dBA

Total Leq All Segments: 53.43 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.95

(NIGHT): 53.43

STAMSON 5.0 NORMAL REPORT Date: 25-02-2022 14:23:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 290802r3.te Time Period: Day/Night 16/8 hours
Description: Traffic Noise Impact, POR3 North Facade Window

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

Car traffic volume : 6243/694 veh/TimePeriod *
Medium truck volume : 359/40 veh/TimePeriod *
Heavy truck volume : 574/64 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): 6800
Percentage of Annual Growth : 1.00
Number of Years of Growth : 16.00
Medium Truck % of Total Volume : 5.00
Heavy Truck % of Total Volume : 8.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 90.00 / 90.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: (day)

Source height = 1.68 m

ROAD (0.00 + 54.22 + 0.00) = 54.22 dBA

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

-90 90 0.47 66.82 0.00 -11.47 -1.13 0.00 0.00 0.00
54.22

Segment Leq : 54.22 dBA

Total Leq All Segments: 54.22 dBA

Results segment # 1: (night)

Source height = 1.68 m

ROAD (0.00 + 47.70 + 0.00) = 47.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									
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-90	90	0.47	60.30	0.00	-11.47	-1.13	0.00	0.00	0.00
47.70									

Segment Leq : 47.70 dBA

Total Leq All Segments: 47.70 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.22
(NIGHT): 47.70

APPENDIX E
Warning Clause
(1 Page)

Warning Clause Type C

"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in 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."