

July 30, 2021

Via email to: Andrew Pascuzzo andrew@pascuzzoinc.ca

Andrew Pascuzzo MCIP RPP
Pascuzzo Planning Inc.
173 Ste Marie Street,
Collingwood, Ontario, L9Y 3K4
Tel: (705)444-1830

Re: Transportation Noise Study, Proposed Mixed-Use/Residential Development,
31 Huron Street,
Collingwood, Ontario

Introduction and Summary

HGC Engineering was retained by 31 Huron Street Inc. to conduct a transportation noise study for a proposed 6-storey mixed-use/residential building located at 31 Huron Street in Collingwood, Ontario. The site is located to the north of Huron Street, west of Heritage Drive and south of Side Launch Way. The noise study is required by the municipality as part of the planning and approvals process.

This report has been prepared to address the Town's planning comments indicating an assessment of traffic noise along Huron Street and/or Heritage Drive is required to provide ventilation requirements for the residential units and purchase and sale warning clauses for inclusion in the site plan agreement. A separate noise study/letter regarding "Impact of Stationary Noise Sources, Proposed Mixed-Use/Residential Development, 31 Huron Street, Collingwood, Ontario" dated July 30, 2020 was also prepared.

The primary source of traffic noise is road traffic on Huron Street/Highway 26. A secondary source of traffic noise may include Hurontario Street. Traffic information was obtained from the Ministry of Transportation (MTO) and a Traffic Opinion Letter prepared by Crozier Consulting Engineers dated July 31, 2020. The more conservative traffic volumes for the year 2041 from Crozier were used in the analysis. This data was used to predict future traffic sound levels at the locations of the proposed dwelling facades and in the outdoor living areas. The predicted sound levels were compared to the guidelines of the Ministry of Environment, Conservation and Parks (MECP).

Typical daytime and nighttime noise levels from the surrounding traffic sources require that the building envelope components have reasonable sound insulation properties to limit traffic noise transmitted into the residential suites to acceptable levels. Preliminary acoustical specifications for the building envelope are outlined herein.

The results of this study indicate that the expected noise impacts can be addressed by including standard design features within the development, as summarized conceptually herein. Details can be further specified as the building design is developed for tender and construction. Warning clauses for noise are required, and recommended wording for those clauses is provided herein.

Site Description and Noise Sources

Figure 1 is a key plan indicating the location of the site. The site is located north of Huron Street, west of Heritage Drive, south of Side Launch Way and east of existing commercial buildings. Figure shows the proposed ground floor of the building and shows the prediction locations.

A site visit was performed in the month of July 2021. The lands to the north are proposed to include a mixed-use development (Perfect World) approximately 6-storeys in height. To the east of the site are existing 2-storey townhouses. To the southeast is a 3-storey office building. To the south is the Collingwood Museum (1-storey). To the south is an existing facility (The Oil Shop) that performs express lube, oil changes, auto detailing, and oil changes including two service bays facing east/west. To the southwest are existing 2-storey and 3-storey buildings with commercial uses on the ground floor and residences above. To the west of the site is a Bank of Montreal (BMO) building (1-storey) with a drive-thru on the west side of the building and a Rexall building to the further west with a medical lab (3-storeys). To the northwest of the subject site are 2-storey townhouses.

Side Launch Way is a two-lane roadway (one lane in each direction). Heritage Drive is a two-lane roadway (one lane in each direction) with a centre turning lane and is considered to be a low volume roadway. Huron Street is a four-lane roadway (two lanes in each direction) with a centre turning lane and a median in some areas. Hurontario Street is located approximately 155 m to the southwest and includes one lane in each direction and parking areas on either side.

The subject site is located in a Class 1 (urban) acoustical environment where the background sound is primarily made up of the sounds of road traffic and human activity (the urban hum) in the daytime and nighttime hours.

Noise Level Criteria

Guidelines for acceptable levels of sound from road traffic noise impacting residential developments are given in the MECP publication NPC-300, “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”, release date October 21, 2013, and are listed in Table I below. The values in Table I are energy equivalent (average) sound levels [L_{EQ}] in units of A weighted decibels [dBA].

Table I: MECP Road Traffic Noise Criteria [dBA]

Space	Daytime L_{EQ} (16 hour) Road	Nighttime L_{EQ} (8 hour) Road
Outdoor Living Areas	55 dBA	--
Inside Living/Dining Rooms	45 dBA	45 dBA
Inside Bedrooms	45 dBA	40 dBA

Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other area where passive recreation is expected to occur.

The guidelines in the MECP publication allow the sound level in an Outdoor Living Area to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels will exceed 60 dBA, physical mitigation will be required to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

A central air conditioning system as an alternative means of ventilation to open windows will be required for dwellings where nighttime sound levels outside bedroom/living/dining room windows are greater than 60 dBA and where daytime sound levels outside bedroom/living/dining room windows are 65 dBA or greater. Forced-air ventilation with ducts sized to accommodate the future installation of central air conditioning is required when nighttime sound levels at bedroom/living/dining room windows are in the range of 51 to 60 dBA or when daytime sound levels at bedroom/living/dining room windows are in the range of 56 to 65 dBA.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of window nighttime sound level is greater than 60 dBA or the daytime sound level is greater than 65 dBA. The use of warning clauses to notify future residents of possible excesses is also required.

Traffic Noise Predictions

Road Traffic Data

Road traffic data for Huron Street and Hurontario Street were obtained from the Ministry of Transportation (MTO) and from a Traffic Opinion Letter titled, "Harbour House Development, Traffic Opinion Letter, Town of Collingwood, County of Simcoe" prepared by Crozier Consulting Engineers dated July 31, 2020. The more conservative traffic data for the year 2041 from the Crozier letter was used in the analysis. The relevant page of the traffic opinion letter are attached for reference. A day/night split of 90%/10% was used in the analysis. A commercial vehicle percentage of 6% was used, split into 2.3% medium trucks and 3.7% heavy trucks. A posted speed limit of 50 km/h was used. Table II summarizes the traffic volume data used in this study.

Table II: Ultimate (2041) Road Traffic Data

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Huron Street	Daytime	22 793	559	948	24 300
	Nighttime	2 533	62	105	2 700
	Total	25 326	621	1 053	27 000
Hurontario Street	Daytime	12 868	315	506	13 689
	Nighttime	1 430	4	7	190
	Total	14 297	350	563	15 210

Road Traffic Noise Predictions

To assess the levels of road traffic noise which will impact the site in the future, predictions were made using STAMSON version 5.04, a computer algorithm developed by the MECP. Selected sample Stamson printouts are attached for reference.

Predictions of the traffic sound levels were made at the facades around the proposed building. Sound levels were also predicted in the plane of the living/dining room/bedroom windows during the daytime and nighttime hours at the top storey to investigate ventilation requirements. Sound levels were predicted at the ground level outdoor amenity space during daytime hours to investigate the need for noise barriers. The predicted sound levels during the daytime and nighttime hours are shown in Table III. The acoustic recommendations may be subject to modifications if the orientation of the site is changed significantly.

Table III: Predicted Sound Levels at Representative Locations, Without Mitigation [dBA]

Prediction Location	Description	Daytime – at Façade LEQ-16 hr	Night-time – at Façade LEQ-8 hr
[A]	South façade with exposure to Huron Street and Hurontario Street	68	62
[B]	West façade with exposure to Huron Street and Hurontario Street	62	56
[C]	North façade with some exposure to Hurontario Street	<55	<50
[D]	East façade with some exposure to Huron Street	64	57
[E]	Ground level outdoor area	55	NA

Discussion and Recommendations

The sound levels for the facades toward the north of the development, away from the major roadways are within MECP guidelines. With no mitigation, there are sound level excesses at the facades with exposure to Huron Street and Hurontario Street. Recommendations to address these excesses are discussed below.

Outdoor Amenity Area

The predicted sound level in the ground level common outdoor amenity area (prediction location [E]) is 55 dBA. This area is accessible to all residents and mitigation is not required.

There is an outdoor amenity area associated with the indoor amenity space at the west of the building at ground level. There are portions of the space that are larger than 4 m in depth. The area is partially shielded from road traffic noise and sound levels are predicted to be less than 60 dBA. Mitigation is not recommended.

Many of the dwelling units in the building are proposed to include balconies that are less than 4 m in depth. These balconies are not considered to be outdoor living areas as per the definition in the MECP guidelines, and therefore a road traffic assessment is not required.

Indoor Living Areas

Air Conditioning

The predicted sound levels at the south façade of the proposed building are greater than 65 dBA during the daytime and greater than 60 dBA during the nighttime. In accordance with the MECP noise guideline, the building requires air conditioning. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-216, Residential Air Conditioning Devices. Acceptable units are those housed in their own closet with an access door for maintenance.

Building Facade Constructions

Given the projected future sound levels at the most impacted building facades, MECP guidelines recommend that the building envelope be designed so that indoor sound levels comply with the MECP noise criteria.

Preliminary calculations have been performed to determine the building envelope constructions likely to be required to maintain indoor sound levels within MECP guidelines. The calculation methods were developed by the National Research Council (NRC). They are based on the maximum predicted future sound levels at the building façades, and the anticipated areas of the façade components (walls, doors and windows) relative to the floor area of the adjacent room.

For the purposes of this preliminary analysis, typical window-to-floor areas were conservatively assumed to be 80% (i.e. 60% fixed, 20% operable elements relative to floor area). Based upon these assumptions, and the maximum predicted sound levels at each facade, the fixed glazing along the east façade must achieve a sound transmission class (STC) rating of at least STC-28 to achieve the target indoor sound level criteria. Note that in an urban environment such as this, to help account for noises that are not specifically modelled (e.g. noise from human activities such as music from passing cars, revving of engines, etc.) we do not typically recommend less than STC-33, which can be achieved using standard fixed glazing assemblies. Operable patio doors and windows can be up to two points lower. The highest performance requirements are generally set by night-time impacts at bedroom windows; lower requirements would apply to living rooms, and this can be determined through a more detailed analysis conducted during design development, when floor plans and elevations have been finalized.

It is assumed that exterior wall assemblies have sufficient sound insulation such that sound transmitted through them is negligible in comparison to the glazing. Precast or masonry exterior walls should meet these requirements, as should spandrel or metal panels backed by an independent drywall assembly.

Impact of the Development on the Environment

Sound levels from stationary (non-traffic) sources of noise such as rooftop air-conditioners, cooling towers, exhaust fans, etc. should not exceed the minimum one-hour L_{EQ} ambient (background) sound



ACOUSTICS



NOISE



VIBRATION

level from road traffic, at any potentially impacted residential point of reception (on or off site), to comply with municipal by-laws. Typical minimum ambient sound levels in the area are expected to be up to 50-55 dBA during the day and about 5 dB less at night, at nearby residential receptors. Thus, any electro-mechanical equipment associated with this development (e.g. cooling towers, fresh-air handling equipment, etc.) should be designed such that they do not result in noise impact beyond these ranges. The proposed building will be higher than the existing neighbouring buildings, thus noise from the mechanical equipment on the roof of this building are not expected to substantially impact the neighbouring buildings, provided that reasonable typical control measures are included.

Impact of the Development on Itself

Section 5.8.1.1 of the Ontario Building Code (OBC), released on January 1, 2020, specifies the minimum required sound insulation characteristics for demising partitions of dwelling units, in terms of Sound Transmission Class (STC) or Apparent Sound Transmission Class (ASTC) values. In order to maintain adequate acoustical privacy between separate suites in a multi-tenant building, inter-suite walls must meet or exceed STC-50 or ASTC-47. Suite separation from a refuse chute, or elevator shaft, must meet or exceed STC-55. In addition, it is recommended that the floor/ceiling constructions separating suites from any amenity, commercial or other mechanical spaces also meet or exceed STC-55. Tables 1 and 2 in Section SB-3 of the Supplementary Guideline to the OBC provide a comprehensive list of constructions that will meet the above requirements.

Tarion's Builder Bulletin B19R requires the internal design of condominium projects to integrate suitable acoustic features to insulate the suites from noise from each other and amenities in accordance with the OBC, and limit the potential intrusions of mechanical and electrical services in the development on its residents. If B19R certification is needed, an acoustical consultant is required to review the mechanical and electrical drawings and details of demising constructions and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself is maintained within acceptable levels.

Warning Clauses

MECP guidelines recommend that appropriate warning clauses be used in the Development Agreements and in purchase, sale and lease agreements (typically by reference to the Development Agreements), to inform future owners and occupants about potential noise concerns from sources in the area. The following clauses are recommended:

- (a) Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road and streetcar traffic, may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Ministry of the Environment, Conservation and Parks.
- (b) 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 Ministry of Environment, Conservation and Parks.

- (c) Purchasers/tenants are advised that due to the proximity of this development to nearby retail/commercial facilities, sound levels from these facilities may at times be audible.

These sample clauses are provided only as examples, and can be modified by the owner's legal representative, in consultation with the Municipality, in order to suit site-specific requirements.

Summary of Recommendations

The results from the analysis indicate that the development is feasible. The predicted sound levels at most of the dwelling units are within MECP Guidelines limits. There are sound level excesses at the facades closest to Huron Street. The following list summarizes the recommendations made in this report.

1. Standard glazing elements for the building envelope are required, to ensure adequate indoor sound levels from transportation sources and other noises in the surrounding environment.
2. Central air conditioning systems are recommended, and assumed to be provided in any event.
3. Demising assemblies must be selected to meet the minimum requirements of the Ontario Building Code (OBC). Where B19R certification is needed, an acoustical consultant is required to review details of demising constructions and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself are maintained within acceptable levels. Outdoor sound emissions should also be checked to ensure that any potential impacts on adjacent properties are suitably minimized and comply with the requirements of the City by-laws.

CONCLUSIONS

The results of this study indicate that the proposed development at 31 Huron Street is feasible on this site from a noise impact perspective, with the inclusion of standard acoustical features.

Acoustic modelling has been undertaken to assess the noise impact of surrounding transportation sources on the proposed development. Preliminary recommendations for appropriate building envelope sound insulation values are provided. Noise warning clauses are recommended to advise occupants of road traffic noise, and of the proximity to existing commercial uses.

We trust this is sufficient for your present purposes, if you have any questions or concerns, please contact us.

Yours truly,

HOWE GASTMEIER CHAPNIK LIMITED



Ms. Sheeba Paul, MEng, PEng



Limitations

This document was prepared solely for the addressed party and titled project or named part thereof, and should not be relied upon or used for any other project without obtaining prior written authorization from HGC Engineering. HGC Engineering accepts no responsibility or liability for any consequence of this document being used for a purpose other than for which it was commissioned. Any person or party using or relying on the document for such other purpose agrees, and will by such use or reliance be taken to confirm their agreement to indemnify HGC Engineering for all loss or damage resulting therefrom. HGC Engineering accepts no responsibility or liability for this document to any person or party other than the party by whom it was commissioned.

Any conclusions and/or recommendations herein reflect the judgment of HGC Engineering based on information available at the time of preparation, and were developed in good faith on information provided by others, as noted in the report, which has been assumed to be factual and accurate. Changed conditions or information occurring or becoming known after the date of this report could affect the results and conclusions presented.



ACOUSTICS



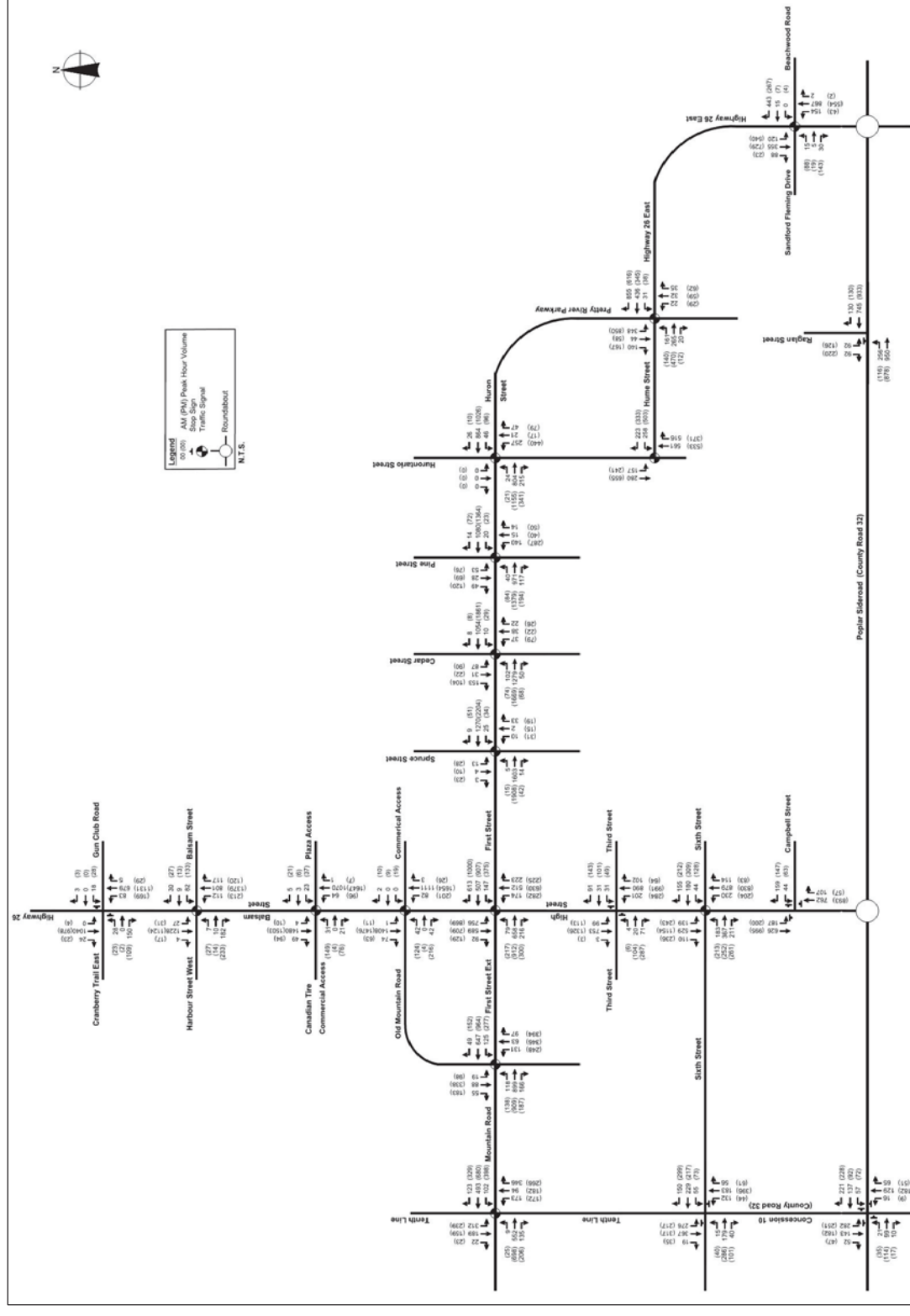
NOISE



VIBRATION

www.hgcengineering.com

Figure 14: 2041 Total Traffic Volumes



STAMSON 5.0 NORMAL REPORT Date: 30-07-2021 13:57:12
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: south.te Time Period: Day/Night 16/8 hours
 Description: **Daytime and nighttime sound levels at prediction location [A], South façade with exposure to Huron Street and Hurontario Street**

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

```
-----
Car traffic volume : 22793/2533 veh/TimePeriod *
Medium truck volume : 559/62 veh/TimePeriod *
Heavy truck volume : 948/105 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): 27000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.30
Heavy Truck % of Total Volume : 3.90
Day (16 hrs) % of Total Volume : 90.00
```

Data for Segment # 1: Huron (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 : 22.00 / 22.00 m
Receiver height : 1.50 / 4.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 17.40 m
Reference angle : 0.00
```

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

```
-----
Car traffic volume : 12868/1430 veh/TimePeriod *
Medium truck volume : 315/35 veh/TimePeriod *
Heavy truck volume : 506/56 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): 15210
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.30
Heavy Truck % of Total Volume : 3.70
Day (16 hrs) % of Total Volume : 90.00
```



Data for Segment # 2: Hurontario (day/night)

```

-----
Angle1   Angle2           : -90.00 deg   10.00 deg
Wood depth           :           0       (No woods.)
No of house rows     :           0 / 0
Surface              :           2       (Reflective ground surface)
Receiver source distance : 158.00 / 158.00 m
Receiver height       :    1.50 / 1.50 m
Topography           :           3       (Elevated; no barrier)
Elevation             :    17.40 m
Reference angle       :    0.00

```

Results segment # 1: Huron (day)

Source height = 1.41 m

ROAD (0.00 + 67.95 + 0.00) = 67.95 dBA

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

```

-----
---
-90      90      0.00  69.62    0.00  -1.66    0.00    0.00    0.00    0.00
67.95
-----
---
```

Segment Leq : 67.95 dBA

Results segment # 2: Hurontario (day)

Source height = 1.39 m

ROAD (0.00 + 54.20 + 0.00) = 54.20 dBA

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

```

-----
---
-90      10      0.00  66.98    0.00 -10.23   -2.55    0.00    0.00    0.00
54.20
-----
---
```

Segment Leq : 54.20 dBA

Total Leq All Segments: 68.13 dBA



Results segment # 1: Huron (night)

Source height = 1.40 m

ROAD (0.00 + 61.41 + 0.00) = 61.41 dBA

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

-90	90	0.00	63.08	0.00	-1.66	0.00	0.00	0.00	0.00
-----	----	------	-------	------	-------	------	------	------	------

61.41

Segment Leq : 61.41 dBA

Results segment # 2: Hurontario (night)

Source height = 1.39 m

ROAD (0.00 + 47.65 + 0.00) = 47.65 dBA

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

-90	10	0.00	60.43	0.00	-10.23	-2.55	0.00	0.00	0.00
-----	----	------	-------	------	--------	-------	------	------	------

47.65

Segment Leq : 47.65 dBA

Total Leq All Segments: 61.59 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.13
 (NIGHT): 61.59



STAMSON 5.0 NORMAL REPORT Date: 30-07-2021 13:57:31
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: eola.te Time Period: 16 hours
 Description: **Daytime sound level at prediction location [E], Ground level outdoor area**

Road data, segment # 1: Huron

```
-----
Car traffic volume : 22793 veh/TimePeriod *
Medium truck volume : 559 veh/TimePeriod *
Heavy truck volume : 948 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)
```

Data for Segment # 1: Huron

```
-----
Angle1 Angle2 : -45.00 deg -15.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 70.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Huron

Source height = 1.41 m

ROAD (0.00 + 55.15 + 0.00) = 55.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-45	-15	0.00	69.62	0.00	-6.69	-7.78	0.00	0.00	0.00

SubLeq

```
-----
55.15
-----
```

Segment Leq : 55.15 dBA

Total Leq All Segments: 55.15 dBA

TOTAL Leq FROM ALL SOURCES: 55.15

