

**ROADWAY TRAFFIC NOISE  
ASSESSMENT**

1166 Gordon Street  
Guelph, Ontario

REPORT: GW21-378-Traffic Noise Assessment Final R3



November 23, 2023

PREPARED FOR

**GSD Development & Management Inc.**

4 Gainsville Ave

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PREPARED BY

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## EXECUTIVE SUMMARY

This report describes a roadway traffic noise assessment in support of a Zoning By-Law Amendment application (ZBA) for a proposed development located at 1166 Gordon Street in Guelph, Ontario. Throughout this report, the Gordon Street elevation is referred to as the west elevation. The development comprises two 6-storey apartment buildings to the west portion of the site, and three blocks of 3-storey townhouses to the east portion of the site. The major sources of roadway traffic noise are Gordon Street and Edinburgh Avenue South. Figure 1 illustrates the site plan and surrounding context.

This assessment is based on: (i) theoretical noise calculation methods conforming to the Ministry of the Environment, Conservation and Parks (MECP)<sup>1</sup> NPC-300 guidelines and City of Guelph Noise Control Guidelines<sup>2</sup>; (ii) architectural drawings provided by Broadview Architect Inc. in November 2023; and (iii) traffic volumes obtained from the City of Guelph.

The results of the current analysis indicate that noise levels will range between 57 and 72 dBA during the daytime period (07:00-23:00) and between 51 and 65 dBA during the nighttime period (23:00-07:00). The highest noise level experienced by any façade of the buildings (i.e. 72 dBA) occurs along the West façade of the apartment buildings, which are nearest and most exposed to Gordon Street.

The noise levels predicted due to roadway traffic exceed the criteria listed in NPC-300 for building components and upgraded building components will be required. Results also indicate that the apartment buildings in the development will require central air conditioning, or a similar ventilation system, which will allow occupants to keep windows closed and maintain a comfortable living environment. The townhouse blocks of the development will require forced air heating with the provision for central air conditioning to be installed at the occupants' discretion. It is expected that all buildings within the development will be designed with central air conditioning, which meets these requirements. A Type D Warning Clause will also be required on all Lease, Purchase and Sale Agreements, as summarized in section 6.

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<sup>1</sup> Ontario Ministry of the Environment and Climate Change – Environmental Noise Guidelines, Publication NPC-300, Queens Printer for Ontario, Toronto, 2013

<sup>2</sup> Guelph Noise Control Guidelines – Engineering and Transportation Services, January 1, 2019



Additionally, noise levels predicted at the Outdoor Living Areas (OLA) of the development, exceed NPC-300 sound level limits. Therefore, noise control measures will be required to reduce the Leq to below 60 dBA where technical and administratively feasible. Investigation into a noise barrier indicated that noise levels at OLA can be reduced to 60 dBA with a 2 m, tall noise barrier around the perimeter of the ground-level amenity. The barrier must be constructed from materials having a minimum surface density of 20 kg/m<sup>2</sup> and contain no gaps. Additionally, a Type B Warning Clause will be required for both outdoor amenity areas, as noise level exceeds 55dBA but remains below 60 dBA, as summarized in section 6.

With regards to stationary noise impacts from the surroundings on the site, Gradient Wind conducted a survey of the site using area maps and satellite view. No significant sources of stationary noise which will impact the development were identified. With regards to stationary noise impacts from the proposed development on its surroundings, a stationary noise study will be performed once mechanical plans for the proposed building become available. This study would assess the impacts of stationary noise from rooftop mechanical units serving the proposed building on the surrounding noise-sensitive areas and on the proposed buildings themselves. Typically, noise levels can be controlled by judicious selection and placement of the equipment and the introduction of silencers or noise screens where needed. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below NPC-300 limits.

A detailed roadway traffic noise study will be required at the time of Site Plan Control (SPC) approval to determine specific noise control measures for the development.



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## **1. INTRODUCTION**

Gradient Wind Engineering Inc. (Gradient Wind) was retained by GSD Development & Management Inc. to undertake a roadway traffic noise assessment in support of a Zoning By-Law Amendment (ZBA) application for a proposed development located at 1166 Gordon Street in Guelph, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior noise levels generated by local roadway traffic.

This assessment is based on theoretical noise calculation methods conforming to the Ministry of the Environment, Conservation and Parks (MECP)<sup>3</sup> NPC-300 guidelines and the City of Guelph Noise Control Guidelines<sup>4</sup>. Noise calculations were based on architectural drawings provided by Broadview Architect Inc. in November 2023, with future traffic volumes corresponding to roadway classification and theoretical capacity.

## **2. TERMS OF REFERENCE**

The subject site is located at 1166-1204 Gordon Street in Guelph, situated on a parcel of land bordered by Gordon Street to the southwest, Landsdown Drive to the northeast, existing residential buildings to the northwest, and existing residential buildings and Valley Road to the southeast. Throughout this report, the Gordon Street elevation is referred to as the west elevation.

The proposed development comprises three three-storey rectangular townhouse blocks along the east of the subject site, hereinafter referred to as “Blocks 1, 2, and 3” from north to south, respectively, and two six-storey apartment buildings, each topped with a mechanical penthouse (MPH), referred to as “Apartment Building 1” and “Apartment Building 2”, at the northwest and southwest corners of the subject site, respectively. Apartment Buildings 1 and 2 share one below-grade parking level which is accessed by a ramp to the south of Apartment Building 2 via a driveway from Landsdown Drive. Central surface parking is located between the apartment buildings and the townhouses. Outdoor amenities are provided along the north and south elevations of the subject site and between the apartment buildings.

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<sup>3</sup> Ontario Ministry of the Environment and Climate Change – Environmental Noise Guidelines, Publication NPC-300, Queens Printer for Ontario, Toronto, 2013

<sup>4</sup> Guelph Noise Control Guidelines – Engineering and Transportation Services, January 1, 2019



The ground level of Apartment Building 1 includes a central lobby with entrances to the east and west, indoor amenities, a residential unit, a loading area, and shared building support spaces along the east elevation, and residential units along the west elevation. Levels 2-6 are reserved for residential occupancy. The building steps back from the north and south elevations at Level 6 to accommodate private terraces.

The ground level of Apartment Building 2 includes a central lobby with entrances to the east and west, an indoor amenity, residential units, a loading area, and shared building support spaces along the east elevation, and residential units and an office along the west elevation. Levels 2-6 are reserved for residential occupancy. The building steps back from the north and south elevations at Level 6 to accommodate private terraces.

The major sources of roadway traffic noise are Gordon Street and Edinburgh Avenue South. Roadways located more than 100 m from the site are considered to be insignificant sources of roadway traffic noise, as per NPC-300. Balconies and terraces that extend less than 4 meters from the building façade are not considered as Outdoor Living Areas in this assessment, per NPC-300 guidelines. Figure 1 illustrates the site location with the surrounding context.

### **3. OBJECTIVES**

The principal objectives of this study are to (i) calculate the future noise levels on the study buildings produced by local roadway traffic, and (ii) explore potential noise mitigation where required.

### **4. METHODOLOGY**

#### **4.1 Background**

Noise can be defined as any obtrusive sound. It is created at a source, transmitted through a medium, such as air, and intercepted by a receiver. Noise may be characterized in terms of the power of the source or the sound pressure at a specific distance. While the power of a source is characteristic of that particular source, the sound pressure depends on the location of the receiver and the path that the noise takes to reach the receiver. Measurement of noise is based on the decibel unit, dBA, which is a logarithmic ratio referenced to a standard noise level ( $2 \times 10^{-5}$  Pascals). The 'A' suffix refers to a weighting scale, which better represents how the noise is perceived by the human ear. With this scale, a doubling of power results in a

3 dBA increase in measured noise levels and is just perceptible to most people. An increase of 10 dBA is often perceived to be twice as loud.

## 4.2 Roadway Traffic Noise

### 4.2.1 Criteria for Roadway Traffic Noise

For vehicular traffic, the equivalent sound energy level,  $L_{eq}$ , provides a measure of the time varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time varying noise level over a period of time. For roadways and LRT, the  $L_{eq}$  is commonly calculated on the basis of a 16-hour ( $L_{eq16}$ ) daytime (07:00-23:00) / 8-hour ( $L_{eq8}$ ) nighttime (23:00-07:00) split to assess its impact on residential buildings. NPC-300 and the Guelph Noise Control Guidelines specify that the recommended indoor noise limit ranges (that are relevant to this study) are 45 and 40 dBA for living rooms and sleeping quarters, respectively, as listed in Table 1.

**TABLE 1: INDOOR SOUND LEVEL CRITERIA**

Type of Space	Time Period	$L_{eq}$ (dBA)
General offices, reception areas, retail stores, etc.	07:00 – 23:00	50
Living/dining/den areas of <b>residences</b> , hospitals, schools, nursing/retirement homes, day-care centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, etc.	07:00 – 23:00	45
Sleeping quarters of hotels/motels	23:00 – 07:00	45
Sleeping quarters of <b>residences</b> , hospitals, nursing/retirement homes, etc.	23:00 – 07:00	40

Predicted noise levels at the plane of window (POW) dictate the action required to achieve the recommended sound levels. An open window is considered to provide a 10 dBA reduction in noise, while a standard closed window is capable of providing a minimum 20 dBA noise reduction<sup>5</sup>. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment<sup>6</sup>. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation

<sup>5</sup> Burberry, P.B. (2014). Mitchell’s Environment and Services. Routledge, Page 125

<sup>6</sup> MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8

for the building should consider the need for having windows and doors closed, which normally triggers the need for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, building components will require higher levels of sound attenuation<sup>7</sup>.

For designated Outdoor Living Areas (OLAs), the sound level limit is 55 dBA during the daytime period. Where noise levels are in excess of the limit, noise control measures are required where feasible for technical, economic or administrative reasons. In all cases, noise levels should not exceed 60 dBA.

#### 4.2.2 Theoretical Roadway Noise Predictions

Noise predictions were performed with the aid of the MECP computerized noise assessment program, STAMSON 5.04, for road analysis. Appendix A includes the STAMSON 5.04 input and output data. Roadway traffic noise calculations were performed by treating each roadway segment as separate line sources of noise. In addition to the traffic volumes summarized in Table 2, theoretical noise predictions were based on the following parameters:

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks, as per NPC-300 requirements for noise level predictions.
- The day/night split for all streets was taken to be 90%/10%, respectively.
- Ground surfaces were modelled as absorptive where soft (landscaped) ground is present, and reflective where hard (paved) surfaces are present.
- Topography was assumed to be a flat/gentle slope surrounding the study site.
- Noise receptors were strategically placed at 10 locations around the study area (see Figure 2).

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<sup>7</sup> MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3



### 4.2.3 Indoor Noise Calculations

The difference between outdoor and indoor noise levels is the noise attenuation provided by the building envelope. According to common industry practice, complete walls and individual wall elements are rated according to the Sound Transmission Class (STC). The STC ratings of common residential walls built in conformance with the Ontario Building Code (2012) typically exceed STC 35, depending on exterior cladding, thickness, and interior finish details. For example, brick veneer walls can achieve STC 50 or more. Standard commercially-sided exterior metal stud walls have around STC 45. Standard good quality double-glazed non-operable windows can have STC ratings ranging from 25 to 40, depending on the window manufacturer, pane thickness and inter-pane spacing. As previously mentioned, the windows are the known weak point in a partition.

As per Section 4.2, when daytime noise levels from road sources at the plane of the window exceed 65 dBA, calculations must be performed to evaluate the sound transmission quality of the building components to ensure acceptable indoor noise levels. The calculation procedure<sup>8</sup> considers:

- Window type and total area as a percentage of total room floor area.
- Exterior wall type and total area as a percentage of the total room floor area.
- Acoustic absorption characteristics of the room.
- Outdoor noise source type and approach geometry.
- Indoor sound level criteria, which varies according to the intended use of a space.

Based on published research<sup>9</sup>, exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. The anticipated STC requirements for windows can be estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels + safety factor).

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<sup>8</sup> Building Practice Note: Controlling Sound Transmission into Buildings by J.D. Quirt, National Research Council of Canada, September 1985

<sup>9</sup> CMHC, Road & Rail Noise: Effects on Housing

#### 4.2.4 Roadway Traffic Volumes

NPC-300 and the Guelph Noise Control Guidelines dictate that noise calculations should consider future sound levels based on a roadway’s classification at the mature state of development. Therefore, traffic volumes are based on AADT data obtained from the City of Guelph. Volumes were then projected to 10 years in the future from the date of the project with a growth rate of 2% per year. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment.

**TABLE 2: ROADWAY TRAFFIC DATA**

Segment	Roadway Traffic Data	Speed Limit (km/h)	2019 Volume (AADT)	Projected 2033 Volume (AADT)
Gordon Street	4-Lane Arterial	60	24,118	<b>31,823</b>
Edinburgh Avenue South	2-Lane Collector	50	10,846	<b>14,311</b>

## 5. RESULTS AND DISCUSSION

### 5.1 Roadway Traffic Noise Levels

The results of the roadway traffic noise calculations are summarized in Table 3 below.

**TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROADWAY TRAFFIC SOURCES**

Receptor Number	Receptor height (m)	Receptor Location	STAMSON Noise Level (dBA)	
			Day	Night
1	20.5	POW / 6 <sup>th</sup> Floor West Façade	72	65
2	20.5	POW / 6 <sup>th</sup> Floor South Façade	65	59
3	5.1	OLA / 1 <sup>st</sup> Floor North Side Amenity	68	N/A*
4	5.1	OLA / 1 <sup>st</sup> Floor Central Amenity	69	N/A*
5	5.1	OLA / 1 <sup>st</sup> Floor South Side Amenity	68	N/A*
6	20.5	POW / 6 <sup>th</sup> Floor West Façade	72	65
7	20.5	POW / 6 <sup>th</sup> Floor South Façade	68	61
8	13	Block 1: POW / 3rd Floor North Façade	62	56
9	13	Block 2: POW / 3rd Floor West Façade	57	51
10	13	Block 3: POW / 3rd Floor South Façade	63	57

\* Nighttime noise levels are not considered at OLA receptors, per NPC-300 guidelines

The results of the current analysis indicate that noise levels will range between 57 and 72 dBA during the daytime period (07:00-23:00) and between 64 and 69 dBA during the nighttime period (23:00-07:00). The highest noise level experienced by any façade of the building (i.e. 72 dBA) occurs along the West façade of the apartment buildings, which are nearest and most exposed to Gordon Street.

## 5.2 Noise Control Measures

### 5.2.1 Upgraded Building Components

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4 for building components. At the time of this study, window schedules, wall assemblies, and room layouts have not been finalized. Therefore, detailed STC calculations could not be performed at this time. The anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels + safety factor). The estimated STC requirements for the windows are summarized below for various units within the development (see Figure 6):

**TABLE 6: NOISE CONTROL REQUIREMENTS**

Façade	Floor Number	Window STC (Bedroom/Living Room)	Exterior Wall STC	Warning Clauses	A/C
Apartment Building 1 - West	2-6	35/30	45	Yes	Yes
Apartment Building 2 West	2-6	35/30	45	Yes	Yes
Apartment Building 2 South	2-6	31/26	40	Yes	Yes

### 5.2.2 Noise Barrier Investigation

Results indicate that the noise levels at the OLA's can be reduced to 60 dBA with a 2 m, and 2.5 m high noise barrier (minimum surface density of 20 kg/m<sup>2</sup> and without any gaps), respectively. Additionally, a Type B Warning Clause will be required for both outdoor amenity areas, as noise level exceeds 55 dBA but remains below 60 dBA with mitigation, as summarized in Section 6.

**TABLE 5: NOISE BARRIER INVESTIGATION**

Receptor Number	Receptor Location	Daytime L <sub>eq</sub> Noise Levels (dBA)			
		No Barrier	With 1.5m Barrier	With 2.0m barrier	With 2.5m barrier
3	Level 1 North Side Outdoor Living Area	68	61	<b>59</b>	58
4	Level 1 Central Side Outdoor Living Area	69	62	<b>59</b>	57
5	Level 1 South Side Outdoor Living Area	68	62	<b>60</b>	59

## 6. CONCLUSIONS AND RECOMMENDATIONS

The noise levels predicted due to roadway traffic exceed the criteria listed in NPC-300 for building components and upgraded building components will be required. Results also indicate that the apartment buildings in the development will require central air conditioning, or a similar ventilation system, which will allow occupants to keep windows closed and maintain a comfortable living environment. The townhouse blocks of the development will require forced air heating with the provision for central air conditioning to be installed at the occupants' discretion. It is expected that all buildings within the development will be designed with central air conditioning, which meets these requirements. The following Type D Warning Clause will also be required on all Lease, Purchase and Sale Agreements, as summarized below:



**Type D:**

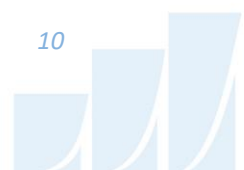
*"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."*

Additionally, noise levels predicted at the Outdoor Living Areas (OLA) of the development, exceed NPC-300 sound level limits. Therefore, noise control measures will be required to reduce the Leq to below 60 dBA where technical and administratively feasible. Investigation into a noise barrier indicated that noise levels at OLA can be reduced to 60 dBA with a 2 m, tall noise barrier around the perimeter of the ground-level amenity. The barrier must be constructed from materials having a minimum surface density of 20 kg/m<sup>2</sup> and contain no gaps. Additionally, a Type B Warning Clause will be required for both outdoor amenity areas, as noise level exceeds 55dBA but remains below 60 dBA, as summarized below:

**Type B:**

*"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 rail traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."*

With regards to stationary noise impacts from the surroundings on the site, Gradient Wind conducted a survey of the site using area maps and satellite view. No significant sources of stationary noise which will impact the development were identified. With regards to stationary noise impacts from the proposed development on its surroundings, a stationary noise study will be performed once mechanical plans for the proposed building become available. This study would assess the impacts of stationary noise from rooftop mechanical units serving the proposed building on the surrounding noise-sensitive areas and on the proposed buildings themselves. Typically, noise levels can be controlled by judicious selection and placement of the equipment and the introduction of silencers or noise screens where needed. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below NPC-300 limits.



A detailed roadway traffic noise study will be required at the time of Site Plan Control (SPC) approval to determine specific noise control measures for the development.

This concludes our traffic noise assessment and report. If you have any questions or wish to discuss our findings, please advise us. In the interim, we thank you for the opportunity to be of service.

Sincerely,

***Gradient Wind Engineering Inc.***

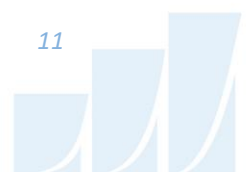


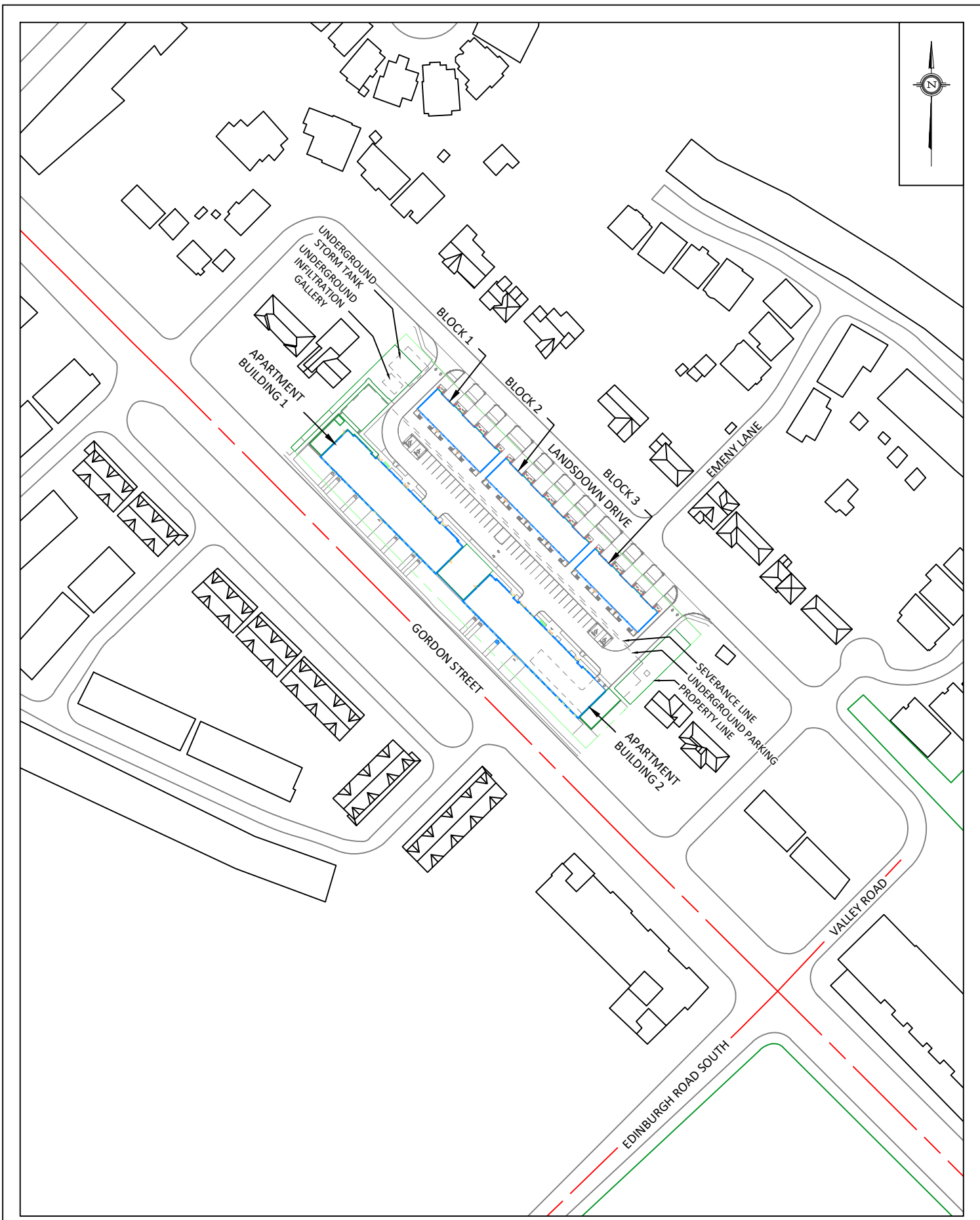
Ben Page, Adv.Dip.  
Jr. Environmental Scientist

*Gradient Wind File #21-378-Traffic Noise R3*



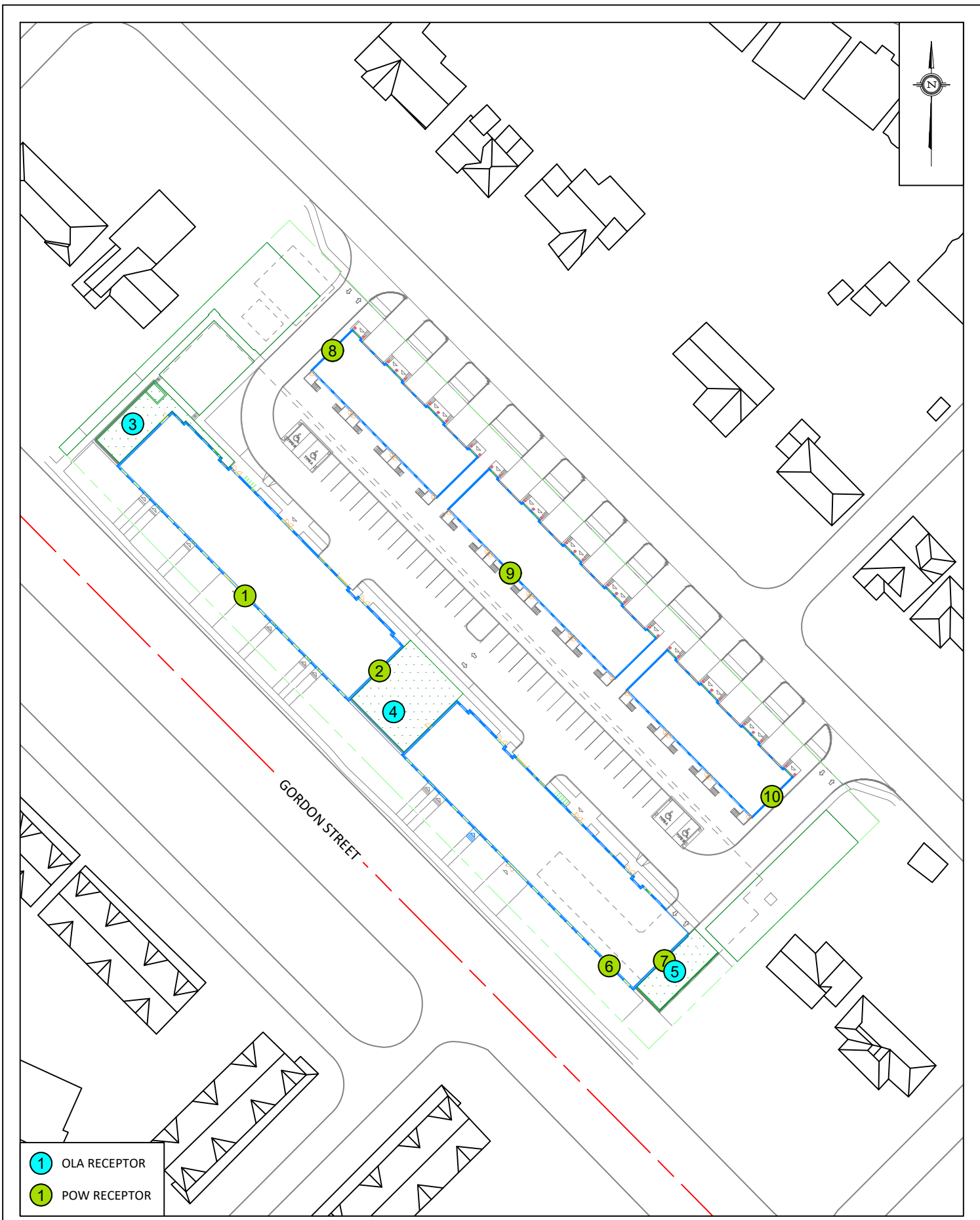
Joshua Foster, P.Eng.  
Lead Engineer





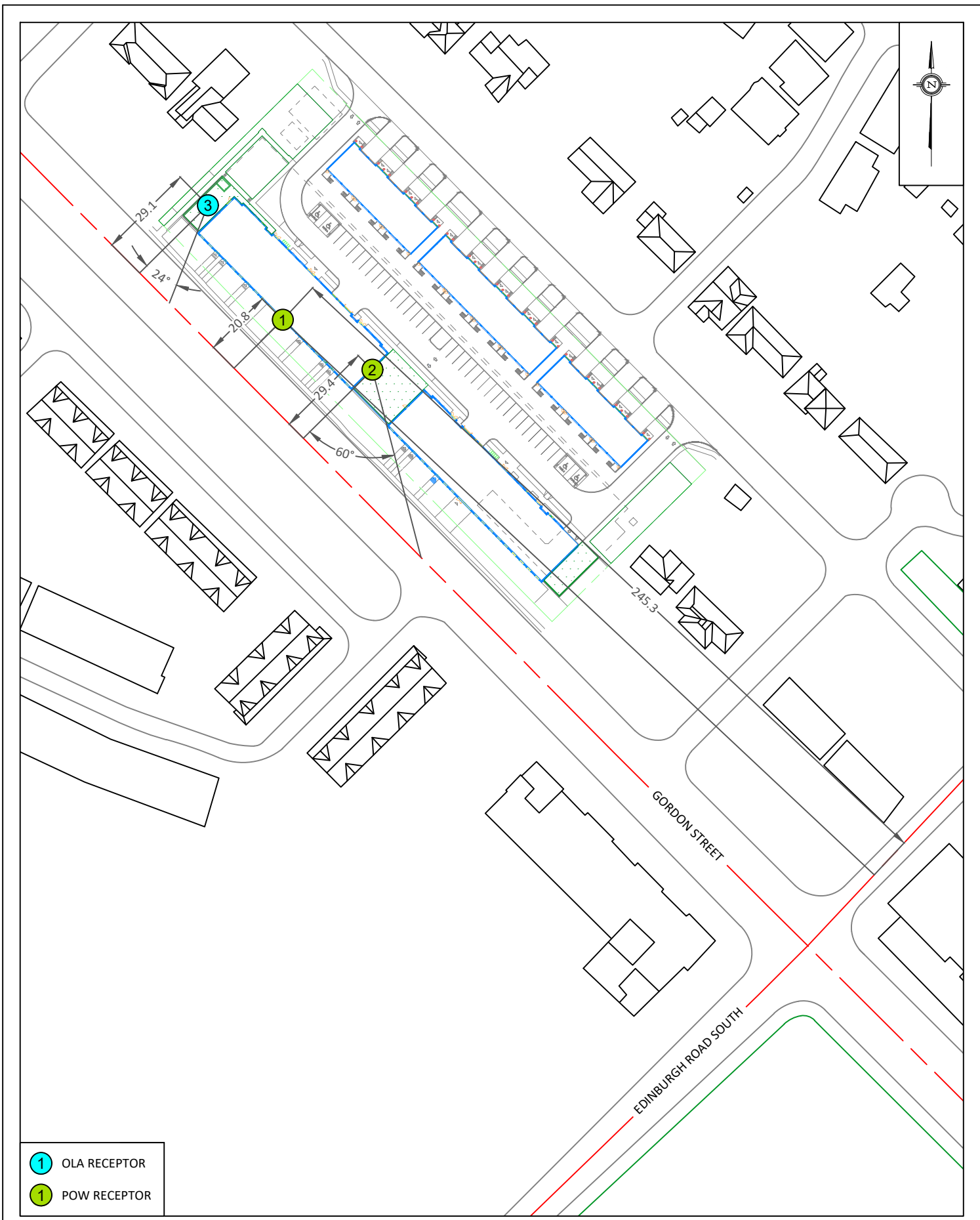
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DATE	NOVEMBER 23, 2023	DRAWN BY B.P.





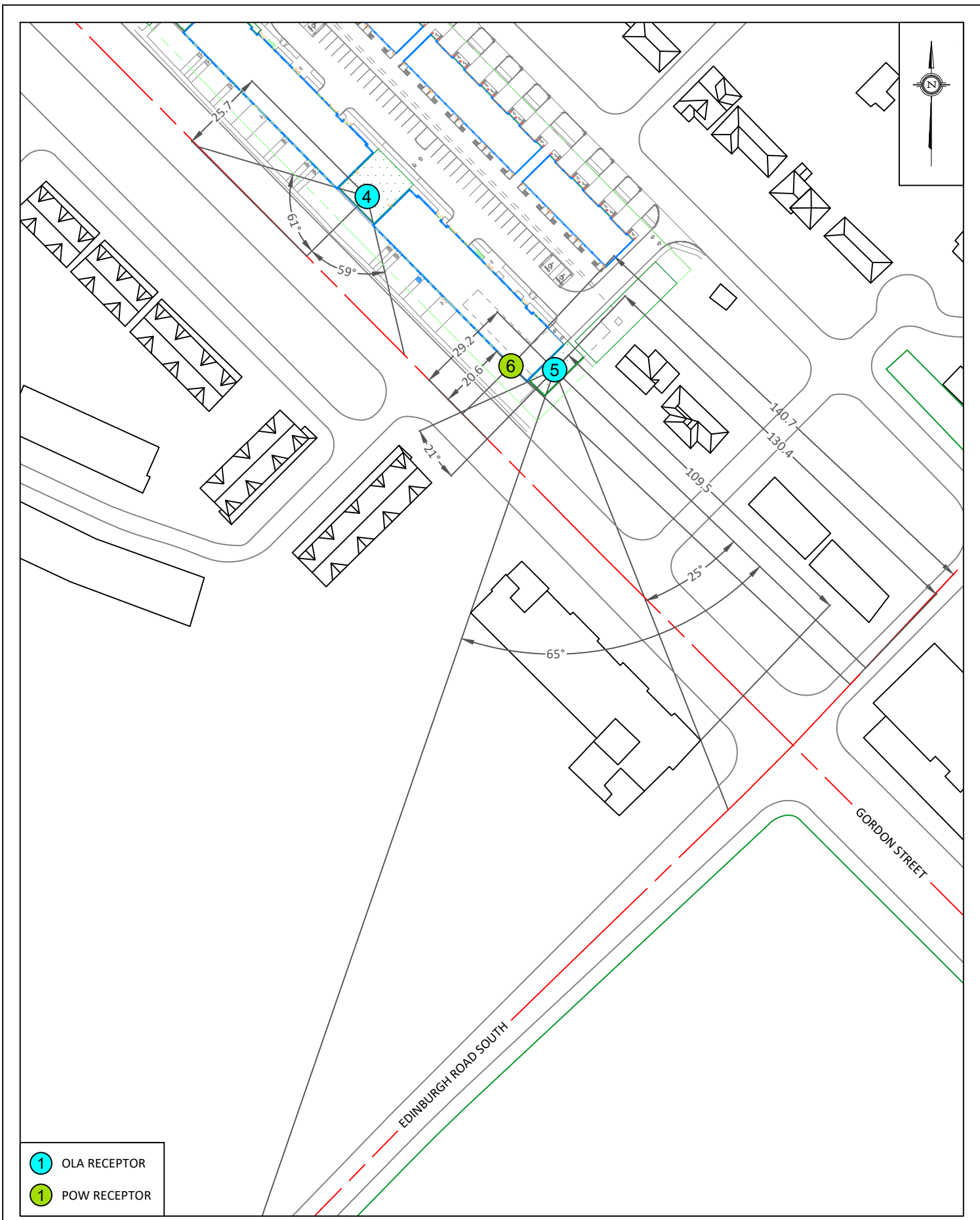
- 1 OLA RECEPTOR
- 1 POW RECEPTOR

<b>GRADIENTWIND</b> ENGINEERS & SCIENTISTS 127 WALGREEN ROAD, OTTAWA, ON 613 836 0934 • GRADIENTWIND.COM	PROJECT 1166 GORDON STREET, GUELPH ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION  <b>FIGURE 2:          RECEPTOR LOCATIONS</b>
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	DATE NOVEMBER 23, 2023	DRAWN BY B.P.	



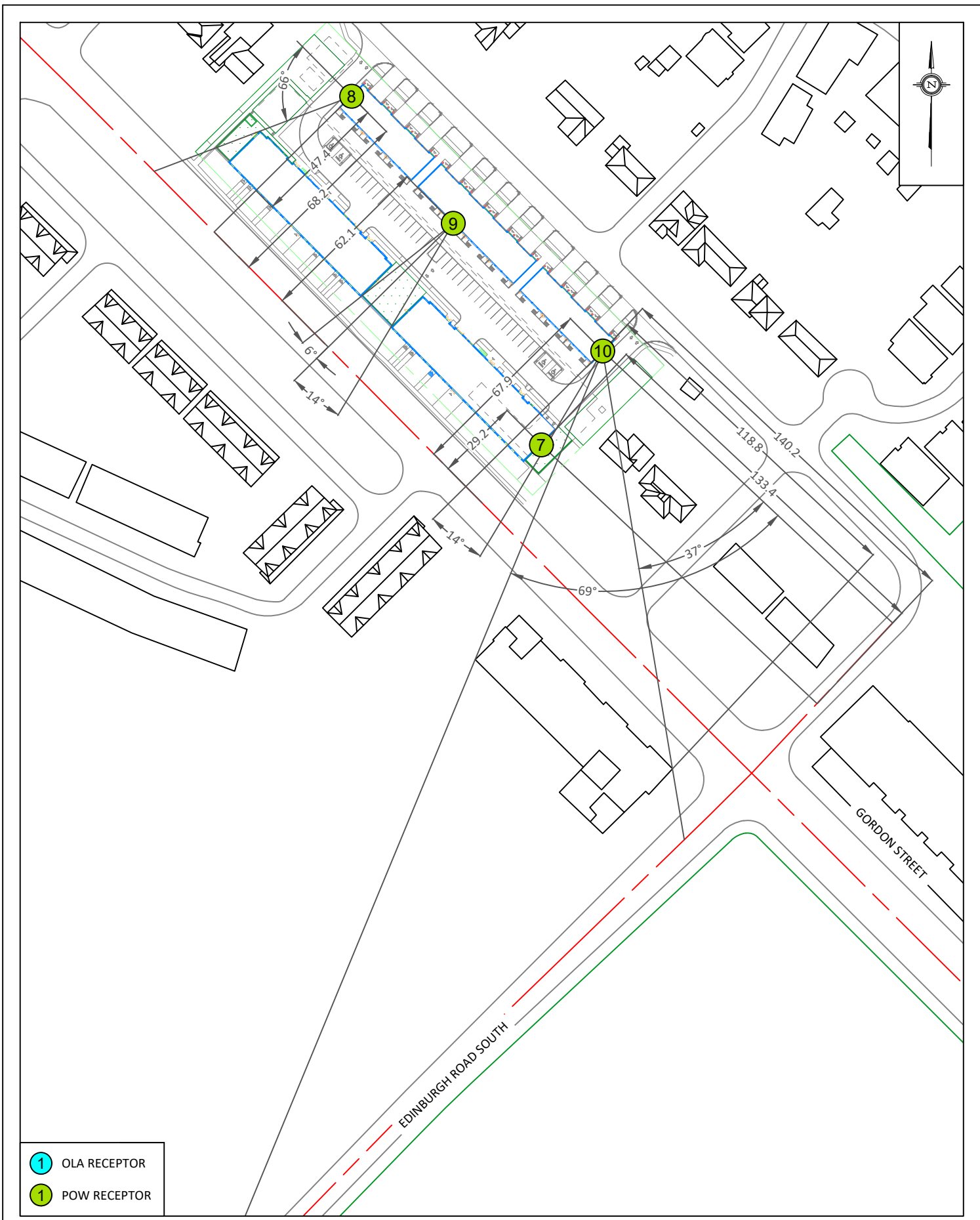
- 1 OLA RECEPTOR
- 1 POW RECEPTOR

<b>GRADIENTWIND</b> ENGINEERS & SCIENTISTS 127 WALGREEN ROAD, OTTAWA, ON 613 836 0934 • GRADIENTWIND.COM	PROJECT 1166 GORDON STREET, GUELPH ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION FIGURE 3: STAMSON INPUT FOR RECEPTORS: 1, 2, & 3
	SCALE 1:1500 (APPROX.)	DRAWING NO. GW21-378-T.NOISE-3	
	DATE NOVEMBER 23, 2023	DRAWN BY B.P.	



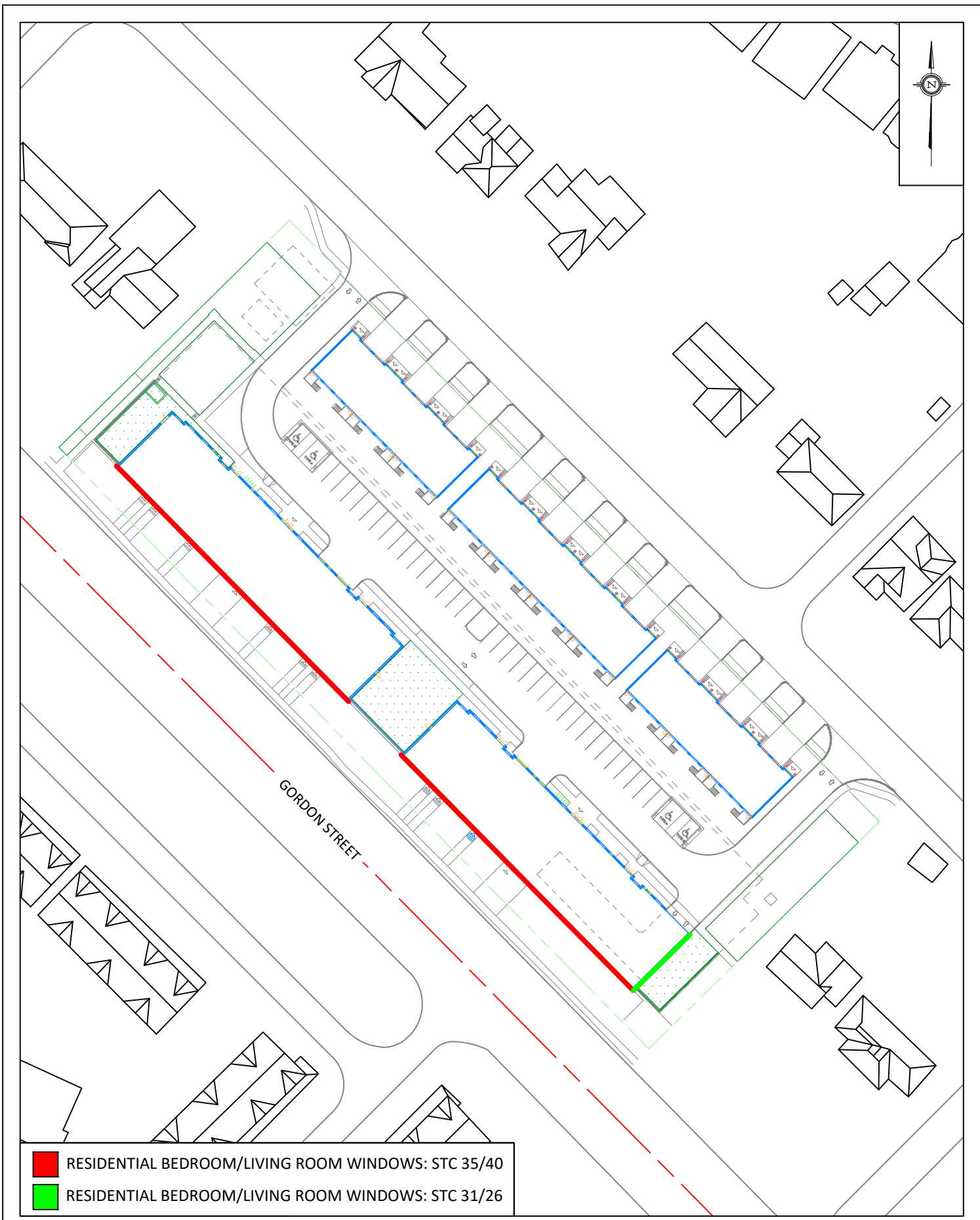
- 1 OLA RECEPTOR
- 1 POW RECEPTOR

<b>GRADIENTWIND</b> ENGINEERS & SCIENTISTS 127 WALGREEN ROAD, OTTAWA, ON 613 836 0934 • GRADIENTWIND.COM	PROJECT: 1166 GORDON STREET, GUELPH ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION: FIGURE 4: STAMSON INPUT FOR RECEPTORS: 4, 5, & 6
	SCALE: 1:1500 (APPROX.)	DRAWING NO.: GW21-378-T.NOISE-4	
	DATE: NOVEMBER 23, 2023	DRAWN BY: B.P.	



- 1 OLA RECEPTOR
- 2 POW RECEPTOR

<b>GRADIENTWIND</b> ENGINEERS & SCIENTISTS 127 WALGREEN ROAD, OTTAWA, ON 613 836 0934 • GRADIENTWIND.COM	PROJECT <b>1166 GORDON STREET, GUELPH          ROADWAY TRAFFIC NOISE ASSESSMENT</b>	DESCRIPTION <b>FIGURE 5:          STAMSON INPUT FOR RECEPTORS:          7, 8, 9, &amp; 10</b>
	SCALE <b>1:1750 (APPROX.)</b>	DRAWING NO. <b>GW21-378-T.NOISE-5</b>
	DATE <b>NOVEMBER 23, 2023</b>	DRAWN BY <b>B.P.</b>



- RESIDENTIAL BEDROOM/LIVING ROOM WINDOWS: STC 35/40
- RESIDENTIAL BEDROOM/LIVING ROOM WINDOWS: STC 31/26

<p><b>GRADIENTWIND</b> ENGINEERS &amp; SCIENTISTS 127 WALGREEN ROAD, OTTAWA, ON 613 836 0934 • GRADIENTWIND.COM</p>	PROJECT	1166 GORDON STREET, GUELPH ROADWAY TRAFFIC NOISE ASSESSMENT	DESCRIPTION
	SCALE	1:1000 (APPROX.)	DRAWING NO.
	DATE	NOVEMBER 23, 2023	DRAWN BY
			<p><b>FIGURE 6:</b> WINDOW STC REQUIREMENTS</p>



## APPENDIX A

### STAMSON 5.04 – INPUT AND OUTPUT DATA

**STAMSON 5.0    NORMAL REPORT    Date: 22-11-2023 16:19:31**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R1.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON 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 : 20.76 / 20.76 m  
Receiver height : 20.50 / 20.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

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

-----  
Car traffic volume : 11334/1259 veh/TimePeriod \*  
Medium truck volume : 902/100 veh/TimePeriod \*  
Heavy truck volume : 644/72 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): 10846  
 Percentage of Annual Growth : 2.00  
 Number of Years of Growth : 14.00  
 Medium Truck % of Total Volume : 7.00  
 Heavy Truck % of Total Volume : 5.00  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: EDINBURGH RD (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 : 245.35 / 245.35 m  
 Receiver height : 20.50 / 20.50 m  
 Topography : 1 (Flat/gentle slope; no barrier)  
 Reference angle : 0.00

Results segment # 1: GORDON ST (day)

-----  
 Source height = 1.50 m

ROAD (0.00 + 71.76 + 0.00) = 71.76 dBA

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

-----  
 -90 90 0.00 73.17 0.00 -1.41 0.00 0.00 0.00 0.00 0.00 71.76  
 -----

Segment Leq : 71.76 dBA

Results segment # 2: EDINBURGH RD (day)

-----  
 Source height = 1.50 m

ROAD (0.00 + 53.03 + 0.00) = 53.03 dBA

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

-----  
 -90 0 0.00 68.18 0.00 -12.14 -3.01 0.00 0.00 0.00 0.00 53.03  
 -----

Segment Leq : 53.03 dBA

Total Leq All Segments: 71.82 dBA





Results segment # 1: GORDON ST (night)

Source height = 1.50 m

ROAD (0.00 + 65.22 + 0.00) = 65.22 dBA

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

-90 90 0.00 66.63 0.00 -1.41 0.00 0.00 0.00 0.00 65.22

Segment Leq : 65.22 dBA

Results segment # 2: EDINBURGH RD (night)

Source height = 1.50 m

ROAD (0.00 + 46.52 + 0.00) = 46.52 dBA

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

-90 0 0.00 61.66 0.00 -12.14 -3.01 0.00 0.00 0.00 46.52

Segment Leq : 46.52 dBA

Total Leq All Segments: 65.28 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 71.82  
(NIGHT): 65.28



**STAMSON 5.0    NORMAL REPORT    Date: 22-11-2023 16:20:12**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R2.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON ST (day/night)

-----  
Angle1 Angle2 : 0.00 deg 60.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 29.41 / 29.41 m  
Receiver height : 20.50 / 20.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Results segment # 1: GORDON ST (day)

-----  
Source height = 1.50 m

ROAD (0.00 + 65.47 + 0.00) = 65.47 dBA  
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq  
-----  
0 60 0.00 73.17 0.00 -2.92 -4.77 0.00 0.00 0.00 65.47  
-----

Segment Leq : 65.47 dBA

Total Leq All Segments: 65.47 dBA



Results segment # 1: GORDON ST (night)

Source height = 1.50 m

ROAD (0.00 + 58.94 + 0.00) = 58.94 dBA

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

0 60 0.00 66.63 0.00 -2.92 -4.77 0.00 0.00 0.00 58.94

Segment Leq : 58.94 dBA

Total Leq All Segments: 58.94 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.47  
(NIGHT): 58.94

**STAMSON 5.0    NORMAL REPORT    Date: 22-11-2023 16:20:50**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R3.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON ST (day/night)

-----  
Angle1 Angle2 : -90.00 deg 24.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 29.08 / 29.08 m  
Receiver height : 5.10 / 5.10 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Results segment # 1: GORDON ST (day)

-----  
Source height = 1.50 m

ROAD (0.00 + 68.31 + 0.00) = 68.31 dBA

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

-----  
-90 24 0.00 73.17 0.00 -2.88 -1.98 0.00 0.00 0.00 68.31  
-----

Segment Leq : 68.31 dBA

Total Leq All Segments: 68.31 dBA



Results segment # 1: GORDON ST (night)

Source height = 1.50 m

ROAD (0.00 + 61.78 + 0.00) = 61.78 dBA

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

-----  
-90 24 0.00 66.63 0.00 -2.88 -1.98 0.00 0.00 0.00 61.78  
-----

Segment Leq : 61.78 dBA

Total Leq All Segments: 61.78 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.31  
(NIGHT): 61.78

**STAMSON 5.0    NORMAL REPORT    Date: 22-11-2023 16:21:27**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R4.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON ST (day/night)

-----  
Angle1 Angle2 : -61.00 deg 59.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 25.69 / 25.69 m  
Receiver height : 5.10 / 5.10 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Results segment # 1: GORDON ST (day)

-----  
Source height = 1.50 m

ROAD (0.00 + 69.07 + 0.00) = 69.07 dBA  
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq  
-----  
-61 59 0.00 73.17 0.00 -2.34 -1.76 0.00 0.00 0.00 69.07  
-----

Segment Leq : 69.07 dBA

Total Leq All Segments: 69.07 dBA



Results segment # 1: GORDON ST (night)

Source height = 1.50 m

ROAD (0.00 + 62.54 + 0.00) = 62.54 dBA

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

-----  
-61 59 0.00 66.63 0.00 -2.34 -1.76 0.00 0.00 0.00 62.54  
-----

Segment Leq : 62.54 dBA

Total Leq All Segments: 62.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.07  
(NIGHT): 62.54



**STAMSON 5.0    NORMAL REPORT    Date: 22-11-2023 16:22:10**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R5.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON ST (day/night)

-----  
Angle1 Angle2 : -21.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 29.17 / 29.17 m  
Receiver height : 5.10 / 5.10 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

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

-----  
Car traffic volume : 11334/1259 veh/TimePeriod \*  
Medium truck volume : 902/100 veh/TimePeriod \*  
Heavy truck volume : 644/72 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): 10846  
 Percentage of Annual Growth : 2.00  
 Number of Years of Growth : 14.00  
 Medium Truck % of Total Volume : 7.00  
 Heavy Truck % of Total Volume : 5.00  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: EDINBURGH RD (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 : 130.36 / 130.36 m  
 Receiver height : 5.10 / 5.10 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : -65.00 deg Angle2 : -25.00 deg  
 Barrier height : 15.00 m  
 Barrier receiver distance : 109.46 / 109.46 m  
 Source elevation : 0.00 m  
 Receiver elevation : 0.00 m  
 Barrier elevation : 0.00 m  
 Reference angle : 0.00

Results segment # 1: GORDON ST (day)

-----  
 Source height = 1.50 m

ROAD (0.00 + 68.18 + 0.00) = 68.18 dBA

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

-----  
 -21 90 0.00 73.17 0.00 -2.89 -2.10 0.00 0.00 0.00 68.18  
 -----

Segment Leq : 68.18 dBA



Results segment # 2: EDINBURGH RD (day)

---

Source height = 1.50 m

Barrier height for grazing incidence

---

Source ! Receiver ! Barrier ! Elevation of  
 Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

---

1.50 !	5.10 !	2.07 !	2.07
--------	--------	--------	------

---

ROAD (50.22 + 32.26 + 50.22) = 53.26 dBA

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

---

-90	-65	0.00	68.18	0.00	-9.39	-8.57	0.00	0.00	0.00	0.00	50.22
<hr/>											
-65	-25	0.00	68.18	0.00	-9.39	-6.53	0.00	0.00	-20.00	32.26	
<hr/>											
-25	0	0.00	68.18	0.00	-9.39	-8.57	0.00	0.00	0.00	0.00	50.22

---

Segment Leq : 53.26 dBA

Total Leq All Segments: 68.32 dBA

Results segment # 1: GORDON ST (night)

---

Source height = 1.50 m

ROAD (0.00 + 61.65 + 0.00) = 61.65 dBA

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

---

-21	90	0.00	66.63	0.00	-2.89	-2.10	0.00	0.00	0.00	0.00	61.65
-----	----	------	-------	------	-------	-------	------	------	------	------	-------

---

Segment Leq : 61.65 dBA



Results segment # 2: EDINBURGH RD (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of  
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

-----+-----+-----+-----  
1.50 ! 5.10 ! 2.08 ! 2.08

ROAD (43.70 + 25.74 + 43.70) = 46.74 dBA

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

-----  
-90 -65 0.00 61.66 0.00 -9.39 -8.57 0.00 0.00 0.00 43.70

-----  
-65 -25 0.00 61.66 0.00 -9.39 -6.53 0.00 0.00 -20.00 25.74

-----  
-25 0 0.00 61.66 0.00 -9.39 -8.57 0.00 0.00 0.00 43.70  
-----

Segment Leq : 46.74 dBA

Total Leq All Segments: 61.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.32  
(NIGHT): 61.79



**STAMSON 5.0    NORMAL REPORT    Date: 22-11-2023 16:22:51**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R6.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON 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 : 20.57 / 20.57 m  
Receiver height : 20.50 / 20.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

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

-----  
Car traffic volume : 11334/1259 veh/TimePeriod \*  
Medium truck volume : 902/100 veh/TimePeriod \*  
Heavy truck volume : 644/72 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): 10846  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: EDINBURGH RD (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 : 140.74 / 140.74 m  
Receiver height : 20.50 / 20.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Results segment # 1: GORDON ST (day)

-----  
Source height = 1.50 m

ROAD (0.00 + 71.80 + 0.00) = 71.80 dBA

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

-----  
-90 90 0.00 73.17 0.00 -1.37 0.00 0.00 0.00 0.00 0.00 71.80  
-----

Segment Leq : 71.80 dBA

Results segment # 2: EDINBURGH RD (day)  
-----

Source height = 1.50 m

ROAD (0.00 + 55.45 + 0.00) = 55.45 dBA

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

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	68.18	0.00	-9.72	-3.01	0.00	0.00	0.00	55.45

Segment Leq : 55.45 dBA

Total Leq All Segments: 71.90 dBA

Results segment # 1: GORDON ST (night)  
-----

Source height = 1.50 m

ROAD (0.00 + 65.26 + 0.00) = 65.26 dBA

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

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	66.63	0.00	-1.37	0.00	0.00	0.00	0.00	65.26

Segment Leq : 65.26 dBA

Results segment # 2: EDINBURGH RD (night)  
-----

Source height = 1.50 m

ROAD (0.00 + 48.93 + 0.00) = 48.93 dBA

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

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	61.66	0.00	-9.72	-3.01	0.00	0.00	0.00	48.93

Segment Leq : 48.93 dBA

Total Leq All Segments: 65.36 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 71.90  
(NIGHT): 65.36

**STAMSON 5.0    NORMAL REPORT    Date: 22-11-2023 16:23:34**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R7.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON 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 : 29.22 / 29.22 m  
Receiver height : 20.50 / 20.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

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

-----  
Car traffic volume : 11334/1259 veh/TimePeriod \*  
Medium truck volume : 902/100 veh/TimePeriod \*  
Heavy truck volume : 644/72 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): 10846  
 Percentage of Annual Growth : 2.00  
 Number of Years of Growth : 14.00  
 Medium Truck % of Total Volume : 7.00  
 Heavy Truck % of Total Volume : 5.00  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: EDINBURGH RD (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 : 133.44 / 133.44 m  
 Receiver height : 20.50 / 20.50 m  
 Topography : 1 (Flat/gentle slope; no barrier)  
 Reference angle : 0.00

Results segment # 1: GORDON ST (day)

-----  
 Source height = 1.50 m

ROAD (0.00 + 67.26 + 0.00) = 67.26 dBA

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

-----  
 0 90 0.00 73.17 0.00 -2.90 -3.01 0.00 0.00 0.00 0.00 67.26  
 -----

Segment Leq : 67.26 dBA

Results segment # 2: EDINBURGH RD (day)

-----  
 Source height = 1.50 m

ROAD (0.00 + 55.68 + 0.00) = 55.68 dBA

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

-----  
 -90 0 0.00 68.18 0.00 -9.49 -3.01 0.00 0.00 0.00 0.00 55.68  
 -----

Segment Leq : 55.68 dBA

Total Leq All Segments: 67.55 dBA





Results segment # 1: GORDON ST (night)

Source height = 1.50 m

ROAD (0.00 + 60.73 + 0.00) = 60.73 dBA

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

0 90 0.00 66.63 0.00 -2.90 -3.01 0.00 0.00 0.00 60.73

Segment Leq : 60.73 dBA

Results segment # 2: EDINBURGH RD (night)

Source height = 1.50 m

ROAD (0.00 + 49.16 + 0.00) = 49.16 dBA

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

-90 0 0.00 61.66 0.00 -9.49 -3.01 0.00 0.00 0.00 49.16

Segment Leq : 49.16 dBA

Total Leq All Segments: 61.02 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.55  
(NIGHT): 61.02



**STAMSON 5.0    NORMAL REPORT    Date: 22-11-2023 16:24:43**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R8.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON ST (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 : 68.15 / 68.15 m  
Receiver height : 13.00 / 13.00 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -90.00 deg Angle2 : -66.00 deg  
Barrier height : 23.20 m  
Barrier receiver distance : 47.39 / 47.39 m  
Source elevation : 0.00 m  
Receiver elevation : 0.00 m  
Barrier elevation : 0.00 m  
Reference angle : 0.00



Results segment # 1: GORDON ST (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	13.00	5.00	5.00

ROAD (0.00 + 41.38 + 62.24) = 62.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-66	0.00	73.17	0.00	-6.57	-8.75	0.00	0.00	-16.46	41.38
-66	0	0.00	73.17	0.00	-6.57	-4.36	0.00	0.00	0.00	62.24

Segment Leq : 62.27 dBA

Total Leq All Segments: 62.27 dBA

Results segment # 1: GORDON ST (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	13.00	5.00	5.00

ROAD (0.00 + 34.85 + 55.70) = 55.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-66	0.00	66.63	0.00	-6.57	-8.75	0.00	0.00	-16.46	34.85
-66	0	0.00	66.63	0.00	-6.57	-4.36	0.00	0.00	0.00	55.70

Segment Leq : 55.74 dBA

Total Leq All Segments: 55.74 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.27  
(NIGHT): 55.74



**STAMSON 5.0    NORMAL REPORT    Date: 22-11-2023 16:25:23**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R9.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON ST (day/night)

-----  
Angle1 Angle2 : -6.00 deg 14.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 62.07 / 62.07 m  
Receiver height : 13.00 / 13.00 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Results segment # 1: GORDON ST (day)

-----  
Source height = 1.50 m

ROAD (0.00 + 57.46 + 0.00) = 57.46 dBA  
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq  
-----  
-6 14 0.00 73.17 0.00 -6.17 -9.54 0.00 0.00 0.00 57.46  
-----

Segment Leq : 57.46 dBA

Total Leq All Segments: 57.46 dBA



Results segment # 1: GORDON ST (night)

Source height = 1.50 m

ROAD (0.00 + 50.92 + 0.00) = 50.92 dBA

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

-----  
-6 14 0.00 66.63 0.00 -6.17 -9.54 0.00 0.00 0.00 50.92  
-----

Segment Leq : 50.92 dBA

Total Leq All Segments: 50.92 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.46  
(NIGHT): 50.92

**STAMSON 5.0    NORMAL REPORT    Date: 22-11-2023 16:25:56**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R10.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

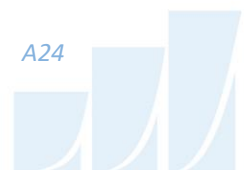
Data for Segment # 1: GORDON ST (day/night)

-----  
Angle1 Angle2 : 14.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 67.91 / 67.91 m  
Receiver height : 13.00 / 13.00 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

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

-----  
Car traffic volume : 11334/1259 veh/TimePeriod \*  
Medium truck volume : 902/100 veh/TimePeriod \*  
Heavy truck volume : 644/72 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): 10846  
 Percentage of Annual Growth : 2.00  
 Number of Years of Growth : 14.00  
 Medium Truck % of Total Volume : 7.00  
 Heavy Truck % of Total Volume : 5.00  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: EDINBURGH RD (day/night)

-----  
 Angle1 Angle2 : -78.00 deg 0.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 2 (Reflective ground surface)  
 Receiver source distance : 140.19 / 140.19 m  
 Receiver height : 13.00 / 13.00 m  
 Topography : 2 (Flat/gentle slope; with barrier)  
 Barrier angle1 : -69.00 deg Angle2 : -37.00 deg  
 Barrier height : 15.00 m  
 Barrier receiver distance : 118.76 / 118.76 m  
 Source elevation : 0.00 m  
 Receiver elevation : 0.00 m  
 Barrier elevation : 0.00 m  
 Reference angle : 0.00

Results segment # 1: GORDON ST (day)

-----  
 Source height = 1.50 m

ROAD (0.00 + 62.86 + 0.00) = 62.86 dBA

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

-----  
 14 90 0.00 73.17 0.00 -6.56 -3.74 0.00 0.00 0.00 62.86  
 -----

Segment Leq : 62.86 dBA

Results segment # 2: EDINBURGH RD (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of  
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

-----+-----+-----+-----  
1.50 ! 13.00 ! 3.25 ! 3.25

ROAD (45.46 + 31.18 + 51.60) = 52.58 dBA

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

-----  
-78 -69 0.00 68.18 0.00 -9.71 -13.01 0.00 0.00 0.00 45.46

-----  
-69 -37 0.00 68.18 0.00 -9.71 -7.50 0.00 0.00 -19.79 31.18

-----  
-37 0 0.00 68.18 0.00 -9.71 -6.87 0.00 0.00 0.00 51.60  
-----

Segment Leq : 52.58 dBA

Total Leq All Segments: 63.25 dBA

Results segment # 1: GORDON ST (night)

Source height = 1.50 m

ROAD (0.00 + 56.33 + 0.00) = 56.33 dBA

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

-----  
14 90 0.00 66.63 0.00 -6.56 -3.74 0.00 0.00 0.00 56.33  
-----

Segment Leq : 56.33 dBA





Results segment # 2: EDINBURGH RD (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of  
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

-----+-----+-----+-----  
1.50 ! 13.00 ! 3.26 ! 3.26

ROAD (38.95 + 24.67 + 45.09) = 46.06 dBA

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

-----  
-78 -69 0.00 61.66 0.00 -9.71 -13.01 0.00 0.00 0.00 38.95

-----  
-69 -37 0.00 61.66 0.00 -9.71 -7.50 0.00 0.00 -19.79 24.67

-----  
-37 0 0.00 61.66 0.00 -9.71 -6.87 0.00 0.00 0.00 45.09

Segment Leq : 46.06 dBA

Total Leq All Segments: 56.72 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.25  
(NIGHT): 56.72



**STAMSON 5.0    NORMAL REPORT    Date: 24-11-2023 10:22:10**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R3B2.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON ST (day/night)

-----  
Angle1 Angle2 : -90.00 deg 24.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 29.08 / 29.08 m  
Receiver height : 5.10 / 5.10 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -90.00 deg Angle2 : 24.00 deg  
Barrier height : 5.60 m  
Barrier receiver distance : 7.65 / 7.65 m  
Source elevation : 0.00 m  
Receiver elevation : 0.00 m  
Barrier elevation : 0.00 m  
Reference angle : 0.00



Results segment # 1: GORDON ST (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.50 !	5.10 !	4.15 !	4.15

ROAD (0.00 + 59.29 + 0.00) = 59.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	24	0.00	73.17	0.00	-2.88	-1.98	0.00	0.00	-9.02	59.29

Segment Leq : 59.29 dBA

Segment Leq : 59.29 dBA

Total Leq All Segments: 59.29 dBA

Results segment # 1: GORDON ST (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.50 !	5.10 !	4.15 !	4.15

ROAD (0.00 + 52.76 + 0.00) = 52.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	24	0.00	66.63	0.00	-2.88	-1.98	0.00	0.00	-9.02	52.76

Segment Leq : 52.76 dBA

Segment Leq : 52.76 dBA

Total Leq All Segments: 52.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.29  
(NIGHT): 52.76

**STAMSON 5.0    NORMAL REPORT    Date: 24-11-2023 10:32:06**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R4B2.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON ST (day/night)

-----  
Angle1 Angle2 : -61.00 deg 59.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 25.69 / 25.69 m  
Receiver height : 5.10 / 5.10 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -61.00 deg Angle2 : 59.00 deg  
Barrier height : 5.60 m  
Barrier receiver distance : 4.56 / 4.56 m  
Source elevation : 0.00 m  
Receiver elevation : 0.00 m  
Barrier elevation : 0.00 m  
Reference angle : 0.00



Results segment # 1: GORDON ST (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	5.10	4.46	4.46

1.50	5.10	4.46	4.46
------	------	------	------

ROAD (0.00 + 59.33 + 0.00) = 59.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-61	59	0.00	73.17	0.00	-2.34	-1.76	0.00	0.00	-9.74	59.33

-61	59	0.00	73.17	0.00	-2.34	-1.76	0.00	0.00	-9.74	59.33
-----	----	------	-------	------	-------	-------	------	------	-------	-------

Segment Leq : 59.33 dBA

Total Leq All Segments: 59.33 dBA

Results segment # 1: GORDON ST (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	5.10	4.46	4.46

1.50	5.10	4.46	4.46
------	------	------	------

ROAD (0.00 + 52.79 + 0.00) = 52.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-61	59	0.00	66.63	0.00	-2.34	-1.76	0.00	0.00	-9.74	52.79

-61	59	0.00	66.63	0.00	-2.34	-1.76	0.00	0.00	-9.74	52.79
-----	----	------	-------	------	-------	-------	------	------	-------	-------

Segment Leq : 52.79 dBA

Total Leq All Segments: 52.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.33  
(NIGHT): 52.79



**STAMSON 5.0    NORMAL REPORT    Date: 24-11-2023 10:36:48**  
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: R5B2.te**      Time Period: Day/Night 16/8 hours  
Description:

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

-----  
Car traffic volume : 25204/2800 veh/TimePeriod \*  
Medium truck volume : 2005/223 veh/TimePeriod \*  
Heavy truck volume : 1432/159 veh/TimePeriod \*  
Posted speed limit : 60 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): 24118  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: GORDON ST (day/night)

-----  
Angle1 Angle2 : -21.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 29.17 / 29.17 m  
Receiver height : 5.10 / 5.10 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -21.00 deg Angle2 : 90.00 deg  
Barrier height : 5.60 m  
Barrier receiver distance : 8.00 / 8.00 m  
Source elevation : 0.00 m  
Receiver elevation : 0.00 m  
Barrier elevation : 0.00 m  
Reference angle : 0.00



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

-----  
Car traffic volume : 11334/1259 veh/TimePeriod \*  
Medium truck volume : 902/100 veh/TimePeriod \*  
Heavy truck volume : 644/72 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): 10846  
Percentage of Annual Growth : 2.00  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: EDINBURGH RD (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 : 130.36 / 130.36 m  
Receiver height : 5.10 / 5.10 m  
Topography : 2 (Flat/gentle slope; with barrier)  
Barrier angle1 : -65.00 deg Angle2 : -25.00 deg  
Barrier height : 5.60 m  
Barrier receiver distance : 8.00 / 8.00 m  
Source elevation : 0.00 m  
Receiver elevation : 0.00 m  
Barrier elevation : 0.00 m  
Reference angle : 0.00



Results segment # 1: GORDON ST (day)

-----

Source height = 1.50 m

Barrier height for grazing incidence

-----

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	! Barrier Top (m)
-----+-----+-----+-----			
1.50 !	5.10 !	4.11 !	4.11

ROAD (0.00 + 59.13 + 0.00) = 59.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-----										
-21	90	0.00	73.17	0.00	-2.89	-2.10	0.00	0.00	-9.05	59.13

-----

Segment Leq : 59.13 dBA

Results segment # 2: EDINBURGH RD (day)

-----

Source height = 1.50 m

Barrier height for grazing incidence

-----

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	! Barrier Top (m)
-----+-----+-----+-----			
1.50 !	5.10 !	4.88 !	4.88

ROAD (50.22 + 46.11 + 50.22) = 54.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-----										
-90	-65	0.00	68.18	0.00	-9.39	-8.57	0.00	0.00	0.00	50.22
-----										
-65	-25	0.00	68.18	0.00	-9.39	-6.53	0.00	0.00	-6.15	46.11
-----										
-25	0	0.00	68.18	0.00	-9.39	-8.57	0.00	0.00	0.00	50.22

-----

Segment Leq : 54.00 dBA

Total Leq All Segments: 60.29 dBA





Results segment # 1: GORDON ST (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	5.10	4.11	4.11

ROAD (0.00 + 52.60 + 0.00) = 52.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-21	90	0.00	66.63	0.00	-2.89	-2.10	0.00	0.00	-9.05	52.60

Segment Leq : 52.60 dBA

Results segment # 2: EDINBURGH RD (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	5.10	4.88	4.88

ROAD (43.70 + 39.59 + 43.70) = 47.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-65	0.00	61.66	0.00	-9.39	-8.57	0.00	0.00	0.00	43.70
-65	-25	0.00	61.66	0.00	-9.39	-6.53	0.00	0.00	-6.15	39.59
-25	0	0.00	61.66	0.00	-9.39	-8.57	0.00	0.00	0.00	43.70

Segment Leq : 47.48 dBA

Total Leq All Segments: 53.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.29  
(NIGHT): 53.76



