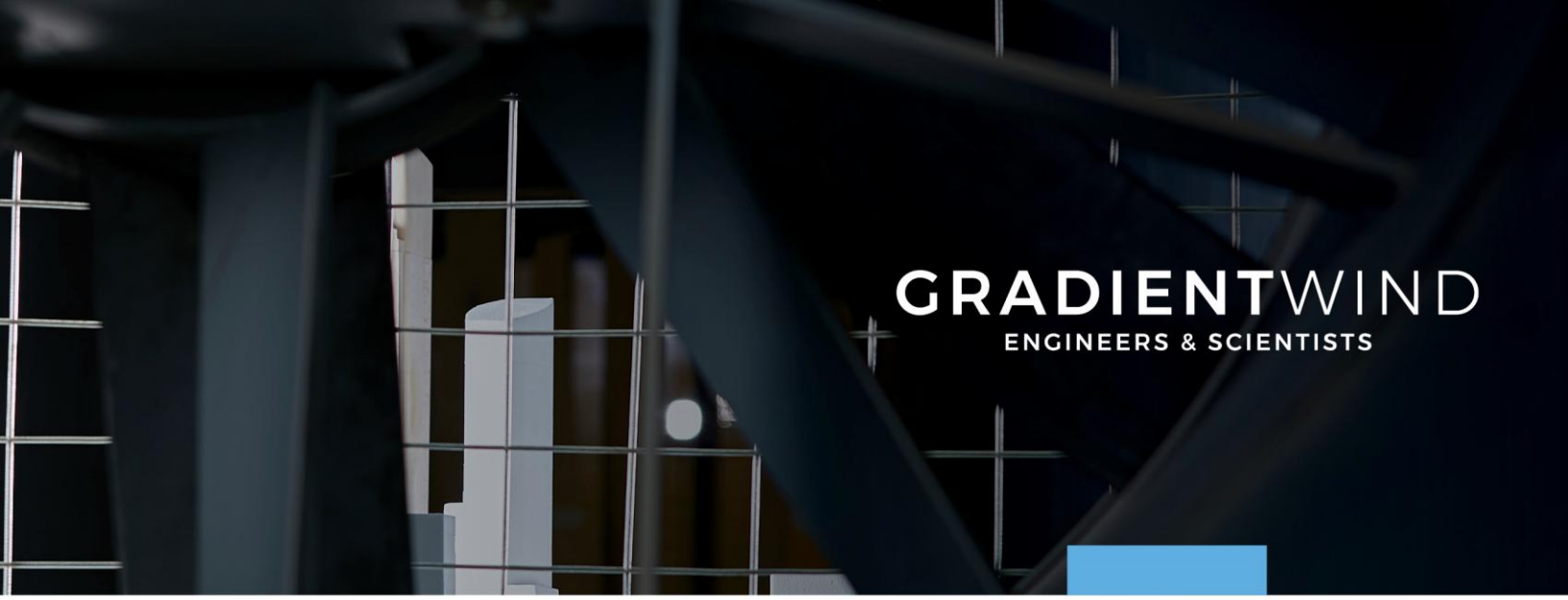

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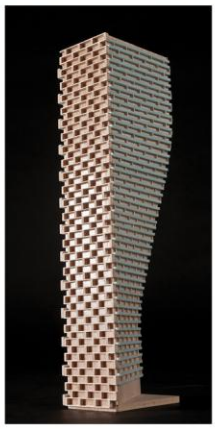
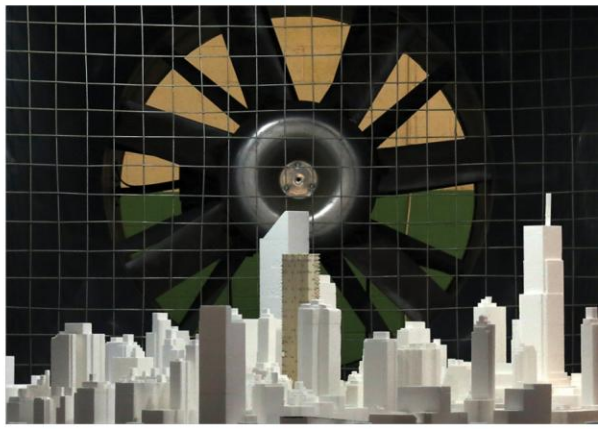
# TRANSPORTATION NOISE FEASIBILITY STUDY

4795 Bank Street
Ottawa, Ontario

Report: 26-082–Transportation Noise Feasibility





June 22, 2026

PREPARED FOR

**Caivan**
3713 Borrisokane Road,
Nepean, ON, K2J 4J4


PREPARED BY

Doryan Saavedra, B.Eng., Junior Acoustic Scientist
Joshua Foster, P.Eng., Lead Engineer



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## EXECUTIVE SUMMARY

This report describes a transportation noise feasibility study for the proposed residential subdivision located at 4795 Bank Street in Ottawa, Ontario. The proposed development comprises numerous lots and blocks, for which building massing has not been finalized. It is expected that the buildings will comprise single houses and townhouses with outdoor living areas in the rear yard of each dwelling. Furthermore, a condo block is proposed at the southwest corner of the subdivision. The major sources of roadway traffic noise are Bank Street to the west and Blais Road to the south. Figure 1 illustrates the site location with the surrounding context.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the mature state of development; and (iv) conceptual grading plan provided by DSEL in June 2026.

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 49 and 65 dBA during the nighttime period (23:00-07:00). The highest noise level (72 dBA) occurs at receptors 1-3 near Bank Street. Figures 4-6 illustrate daytime and nighttime noise contours throughout the site at a height of 1.5 m and 4.5 m above grade.

Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA during the daytime or 60 dBA during the nighttime period. Detailed outdoor to indoor noise calculations will be required once plans and elevations are finalized to determine appropriate STC ratings for windows and walls. Based on Gradient Wind's experience, window ratings of up to STC 35 may be required, which are readily available. Results of the calculations indicate that parts of the development will require upgraded ventilation including forced air heating, central air conditioning, or a similar mechanical system, which will allow occupants to keep windows closed and maintain a comfortable living environment. Type C and D Warning Clauses[1] will also be required on all Lease, Purchase and Sale Agreements, as summarized in Section 6. The Lots and Blocks where the ventilation and Warning Clauses are required can be seen in Figure 3.

[1] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 8

Results of the roadway traffic noise calculations also indicate that the outdoor living areas having direct exposure to traffic noise may require noise control measures. If these areas are to be designed as OLA's, mitigation measures are described in Section 5.2, with the aim to reduce the $L_{eq}$ to as close to 55 dBA as technically, economically, and administratively feasible.

Where noise levels fall between 55 dBA and 60 dBA at the backyards, noise barriers can be avoided if a Type A Warning Clause is placed on all Lease, Purchase, and Sale Agreements as summarized in Section 6.

Noise barriers will be required on the outdoor living areas of lots/blocks where the sound levels exceed 60 dBA. A preliminary noise barrier investigation was conducted with receptors located at several rear yards. A 2.5-m or 3.0-m-tall noise barrier will be sufficient to reduce noise levels at or below 60 dBA. Where noise levels continue to exceed 55 dBA, a Type B Warning Clause will be required on all Lease, Purchase, and Sale Agreements, as summarized in Section 6. A detailed transportation noise study will be required to determine specific noise control measures for the development.

# TABLE OF CONTENTS

# 1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Caivan to undertake a transportation noise feasibility assessment for the proposed residential subdivision located at 4795 Bank Street in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior and interior noise levels generated by local roadway traffic.

This assessment is based on theoretical noise calculation methods conforming to the City of Ottawa[2] and the Ministry of the Environment, Conservation and Parks (MECP)[3] guidelines. Noise calculations were based on a conceptual grading plan provided by DSEL in June 2026, with future traffic volumes corresponding to the mature state of development. Figure 1 illustrates the site location with the surrounding context.

# 2. TERMS OF REFERENCE

The focus of this transportation noise feasibility study is the proposed residential subdivision located at 4795 Bank Street in Ottawa, Ontario. The proposed development comprises numerous lots and blocks, for which building massing has not been finalized. It is expected that the buildings will comprise single houses and townhouses with outdoor living areas in the rear yard of each dwelling. Furthermore, a condo block is proposed at the southwest corner of the subdivision. The individual properties are accessed by a series of internal roadways.

The primary sources of traffic noise include Bank Street to the west and Blais Road to the south. The study site is surrounded by existing residential and commercial developments to the north, a stormwater pond to the east, Blais Road to the south, and Bank Street to the west. Figure 1 illustrates the site location with the surrounding context.

[2] City of Ottawa Environmental Noise Control Guidelines, July 2017
[3] Ontario Ministry of the Environment, Conservation and Parks – Environmental Noise Guidelines, Publication NPC-300, Queens Printer for Ontario, Toronto, 2013

# 3. OBJECTIVES

The principal objectives of this study are to (i) calculate the future noise levels 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 ($2\times10^{-5}$ 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 surface roadway traffic noise, 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, 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. The City of Ottawa's Environmental Noise Control Guidelines (ENCG) specifies that the recommended indoor noise limit range (that is relevant to this study) is 45 and 40 dBA for living rooms and sleeping quarters respectively for roadway as listed in Table 1.

### TABLE 1: INDOOR SOUND LEVEL CRITERIA (ROAD) [4]

| 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 **residences**, 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 **residences**, 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[5]. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment[6]. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the need for having windows and doors closed, which triggers the need for forced air heating with provision for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, air conditioning will be required and building components will require higher levels of sound attenuation[7].

The sound level criterion for outdoor living areas is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA, mitigation must be provided to reduce noise levels where technically and administratively feasible to acceptable levels at or below the criterion. Furthermore, noise levels may not exceed 60 dBA.

[4] Adapted from ENCG 2017 – Tables 2.2b and 2.2c
[5] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[6] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8
[7] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

### 4.2.2 Theoretical Roadway Noise Predictions

The impact of transportation noise sources on the development was determined by computer modelling. Transportation noise source modelling is based on the software program *CadnaA,* which utilizes the United States Federal Highway Administration's Traffic Noise Model (TNM) to represent the roadway line sources. The TNM analysis model has been recognized by the Ministry of Transportation Ontario (MTO) as the recommended noise model for transportation projects (ref. Environmental Guide for Noise, 2022, by the Ministry of Transportation (MTO)[8]). The Ministry of Environment, Conservation and Parks has also adopted the TMN model as per their "Draft Guideline Noise Pollution Control Publications 306 (NPC-306)[9].

A set of comparative calculations were also performed for comparisons using STAMSON. The *CadnaA* computer program can represent three-dimensional surfaces and the one order of reflection of sound waves over a suitable spectrum for human hearing. The STAMSON model, however, is an older software and requires each receptor to be calculated separately. STAMSON also does not accurately account for building reflections, multiple screening elements, and curved road geometry. The result of the comparative calculations can be seen in Section 5, Table 4.

Transportation noise calculations were performed by treating each roadway segment as a separate line source of noise and by using existing building locations as noise barriers. In addition to the traffic volumes summarized in Table 2, theoretical noise predictions were based on the following parameters:

- Vehicle parameters such as truck traffic volume percentages, posted speed limit, and day/night split are summarized in Table 2 below.
- Default ground surfaces were taken to be reflective due to the presence of hard (paved) ground.
- The study site was treated as having flat or gently sloping topography.
- For select sources where appropriate, receptors considered the proposed and existing building as a barrier partially or fully obstructing exposure to the source.
- Sixteen (16) receptors were strategically placed throughout the study area, as seen in Figure 2A and Figure 2B.

[8] Ministry of Transportation, Environmental Guide for Noise, 2022. Retrieved from Environmental Guide for Noise 2022

[9] Ministry of Environment, Conservation and Parks, Ontario, "Methods to determine Sound Levels Due to Road and Rail Traffic", Draft February 12, 2020

### 4.2.3 Roadway Traffic Volumes

The ENCG dictates that noise calculations should consider future sound levels based on a roadway's classification at the mature state of development. Therefore, for exterior roadways, traffic volumes are based on the roadway classifications outlined in the City of Ottawa's Official Plan (OP) and Transportation Master Plan[10] which provide additional details on future roadway expansions. Average Annual Daily Traffic (AADT) volumes are then based on data in Table B1 of the ENCG for each roadway classification. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment.

**TABLE 2: ROADWAY SOURCE DATA**

| Source | Classification | Speed Limit (km/h) | AADT | Day/Night Split | Medium/Large Truck Pct. (%) |
|---|---|---|---|---|---|
| Bank Street | 4-Lane Urban Arterial Divided (4-UAD) | 80 | **35,000** | 92/8 | 7/5 |
| Blais Road | 2-Lane Major Collector (2-UMCU) | 60 | **12,000** | | |

[10] City of Ottawa Transportation Master Plan, November 2013

# 5. RESULTS

## 5.1 Roadway Traffic Noise Levels

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 49 and 65 dBA during the nighttime period (23:00-07:00). The highest noise level (72 dBA) occurs at receptors 1-3 near Bank Street. Figures 4-6 illustrate daytime and nighttime noise contours throughout the site at a height of 1.5 m and 4.5 m above grade.

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

| Receptor # / Type | Height (m) | Receptor Location | Roadway Noise Level (dBA) | |
|---|---|---|---|---|
| | | | Day | Night |
| R1 / POW | 4.5 | Level 2 – North near Bank Street | 72 | 64 |
| R2 / POW | | Level 2 – Central near Bank Street | 72 | 65 |
| R3 / POW | | Level 2 – South near Bank Street | 72 | 65 |
| R4 / POW | | Level 2 – South near Blais Road | 64 | 56 |
| R5 / POW | | Level 2 – Centre of Site | 62 | 55 |
| R6 / POW | | Level 2 – Centre-West of Site | 64 | 56 |
| R7 / POW | | Level 2 – Centre-East of Site | 59 | 51 |
| R8 / POW | | Level 2 – East of Site | 57 | 49 |
| R9 / OLA | 1.5 | Backyard – North near Bank Street | 72 | N/A* |
| R10 / OLA | | Backyard – Central near Bank Street | 72 | N/A* |
| R11 / OLA | | Backyard – South near Bank Street | 72 | N/A* |
| R12 / OLA | | Backyard – South near Blais Road | 64 | N/A* |
| R13 / OLA | | Backyard – Centre of Site | 63 | N/A |
| R14 / OLA | | Backyard – Centre-West of Site | 64 | N/A* |
| R15 / OLA | | Backyard – Centre-East of Site | 59 | N/A* |
| R16 / OLA | | Backyard – East of Site | 57 | N/A* |

*Noise levels during the nighttime are not considered for OLAs

Table 4 below provides a comparison between CadnaA and STAMSON. Noise levels calculated in STAMSON were found to have a good correlation with CadnaA, and variability between the two programs was within an acceptable level of ±0-2 dBA.

**TABLE 4: RESULT CORRELATION WITH STAMSON**

| Receptor Number | Receptor Location | Receptor Height (m) | CADNAA Noise Level (dBA) | | STAMSON 5.04 Noise Level (dBA) | |
|---|---|---|---|---|---|---|
| | | | Day | Night | Day | Night |
| R1 | Level 2 – North near Bank Street | 4.5 | 72 | 64 | 74 | 66 |
| R11 | Backyard – South near Bank Street | 1.5 | 72 | 65 | 74 | 66 |

## 5.2 Noise Control Measures

The noise levels predicted due to roadway traffic exceed the criteria listed in the NPC-300 for potential outdoor living areas (OLA). Therefore, noise control measures as described below may be required to reduce the $L_{eq}$ below 60 dBA at some receptors:

- Distance setback with soft ground
- Insertion of noise-insensitive land uses between the source and sensitive points of reception
- Orientation of buildings to provide sheltered zones
- Acoustic barriers

It should be noted that outdoor living areas should be designed for the quiet enjoyment of the outdoors. The best way to mitigate excessive noise levels at OLAs is to shield the area from exposure to the roadways by using building massing. However, where necessary, noise screens may be required.

Where noise levels fall between 55 dBA and 60 dBA at the backyards, noise barriers can be avoided if a Type A Warning Clause is placed on all Lease, Purchase, and Sale Agreements as summarized in Section 6.

Noise barriers will be required on the outdoor living areas of lots/blocks where noise levels exceed 60 dBA. A preliminary noise barrier investigation was conducted with several receptors located at the rear yards and summarized in Table 5. A 2.5-m or 3.0-m-tall noise barrier will be sufficient to reduce noise levels at or below 60 dBA. Where noise levels continue to exceed 55 dBA, a Type B Warning Clause will be required on all Lease, Purchase, and Sale Agreements, as summarized in Section 6. Specific noise control measures will be explored for each building during the subdivision registration stage.

## TABLE 5: RESULTS OF PRELIMINARY NOISE BARRIER INVESTIGATION

| Receptor Number | Receptor Height Above Grade (m) | Receptor Location | Daytime $L_{eq}$ Noise Levels (dBA) | | |
|---|---|---|---|---|---|
| | | | No Barrier | With 2.5 m Barrier* | With 3.0 m Barrier* |
| R9 | 1.5 | Backyard – North near Bank Street | 72 | 61 | **60** |
| R10 | | Backyard – Central near Bank Street | 72 | 61 | **60** |
| R11 | | Backyard – South near Bank Street | 72 | 61 | **60** |
| R12 | | Backyard – South near Blais Road | 64 | **55** | - |
| R13 | | Backyard – Centre of Site | 63 | **57** | - |
| R14 | | Backyard – Centre-West of Site | 64 | **58** | - |
| R15 | | Backyard – Centre-East of Site | **59**** | 54 | - |
| R16 | | Backyard – East of Site | **57**** | 53 | - |

*Conceptual massing was inserted into the model to account for noise blockage due to the massing of the proposed homes.

**Noise barrier is not required if a Type A Warning Clause is applied to the property.

## 6. CONCLUSIONS AND RECOMMENDATIONS

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 49 and 65 dBA during the nighttime period (23:00-07:00). The highest noise level (72 dBA) occurs at receptors 1-3 near Bank Street. Figures 4-6 illustrate daytime and nighttime noise contours throughout the site at a height of 1.5 m and 4.5 m above grade.

Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA during the daytime or 60 dBA during the nighttime period. Detailed outdoor-to-indoor noise calculations will be required once plans and elevations are finalized to determine appropriate STC ratings for windows and walls. Based on Gradient Wind's experience, window ratings of up to STC 35 may be required, which are readily available. Results of the calculations indicate that parts of the development will require upgraded ventilation such as forced air heating, central air conditioning, or a similar mechanical system, which will allow occupants to keep windows closed and maintain a comfortable living environment. The following Type C and D Warning Clauses[11] will also be required on all Lease, Purchase and Sale Agreements, as summarized below. The Lots and Blocks where the ventilation and Warning Clauses are required can be seen in Figure 3.

**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."*

**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."*

[11] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 8

Results of the roadway traffic noise calculations also indicate that the outdoor living areas having direct exposure to traffic noise may require noise control measures. If these areas are to be designed as OLA's, mitigation measures are described in Section 5.2, with the aim to reduce the $L_{eq}$ to as close to 55 dBA as technically, economically, and administratively feasible.

Where noise levels fall between 55 dBA and 60 dBA at the backyards, noise barriers can be avoided if a Type A Warning Clause is placed on all Lease, Purchase, and Sale Agreements as summarized below.

**Type A:**

> *"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally 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."*

Noise barriers will be required on the outdoor living areas of lots/blocks where the sound levels exceed 60 dBA. A preliminary noise barrier investigation was conducted with receptors located at several rear yards. A 2.5 m or 3.0 m-tall-noise barrier will be sufficient to reduce noise levels at or below 60 dBA. Where noise levels continue to exceed 55 dBA, a Type B Warning Clause will be required on all Lease, Purchase, and Sale Agreements, as summarized below. A detailed transportation noise study will be required to determine specific noise control measures for the development.

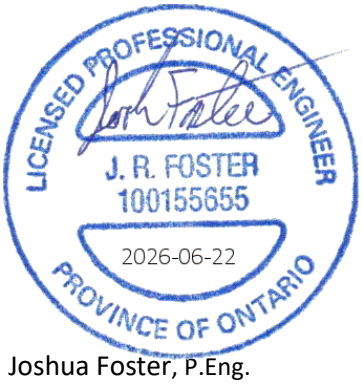
**Type B:**

> *"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 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."*

This concludes our transportation noise feasibility 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.***

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Junior Acoustic Scientist

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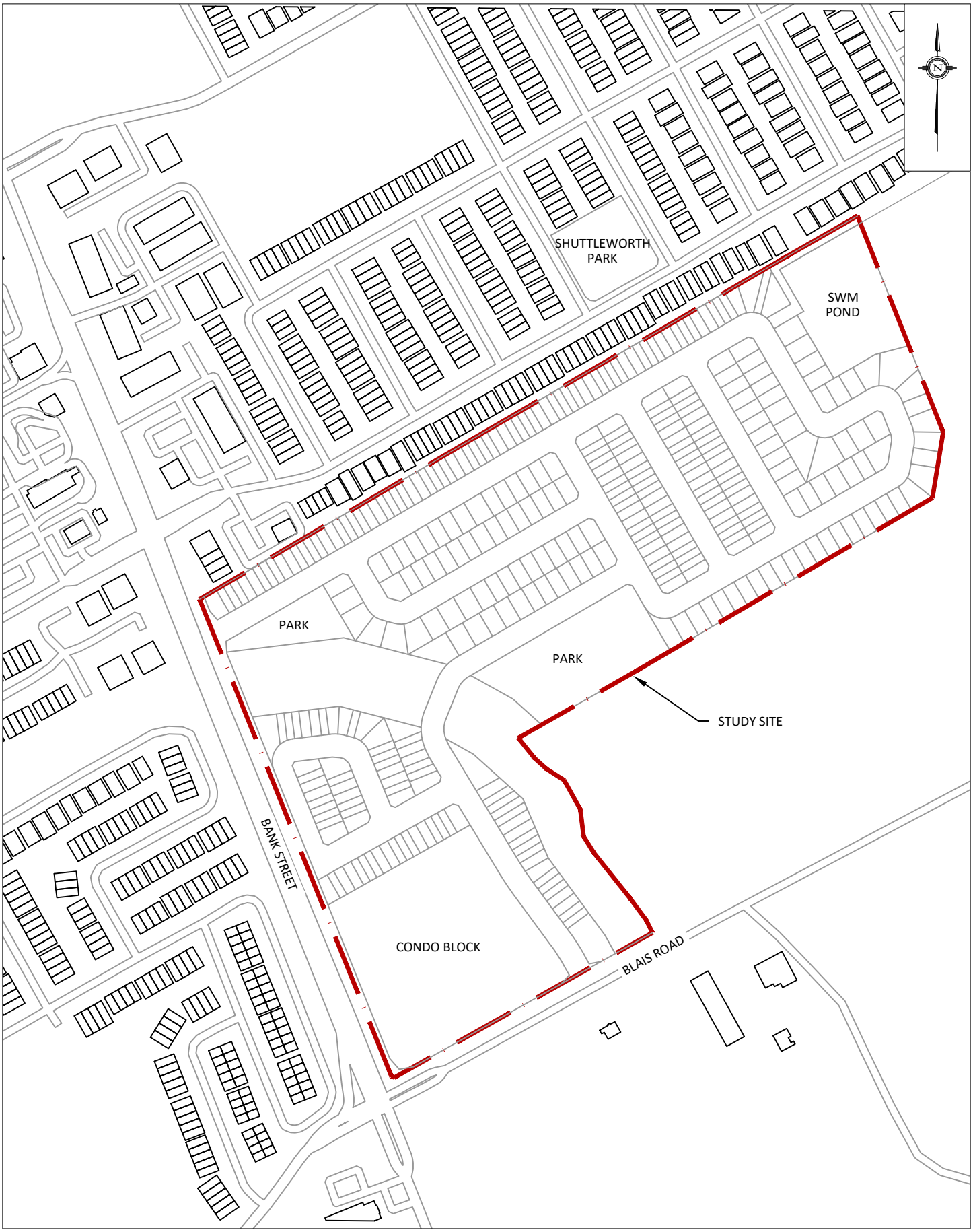
Lead Engineer

Gradient Wind File #26-082 – Transportation Noise Feasibility

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| | |
|---|---|
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| SCALE | 1:4000 (APPROX.) |
| DRAWING NO. | GW26-082-1 |
| DATE | JUNE 17, 2026 |
| DRAWN BY | D.S. |

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT


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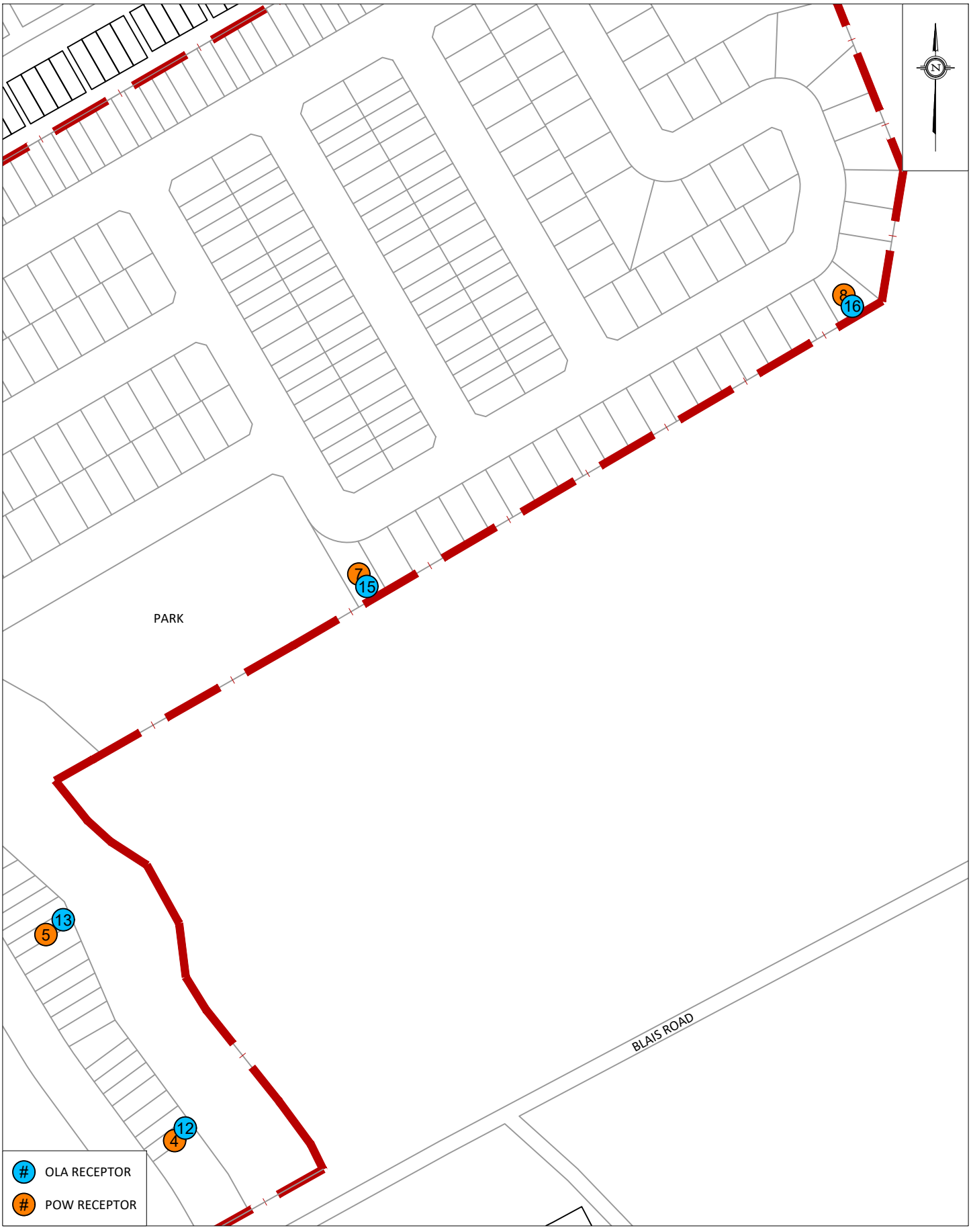
| PROJECT | 4795 BANK STREET, OTTAWA<br>TRANSPORTATION NOISE FEASIBILITY ASSESSMENT |
| SCALE | 1:2000 (APPROX.) |
| DRAWING NO. | GW26-082-2A |
| DATE | JUNE 17, 2026 |
| DRAWN BY | D.S. |
| DESCRIPTION | FIGURE 2A:<br>RECEPTOR LOCATIONS |

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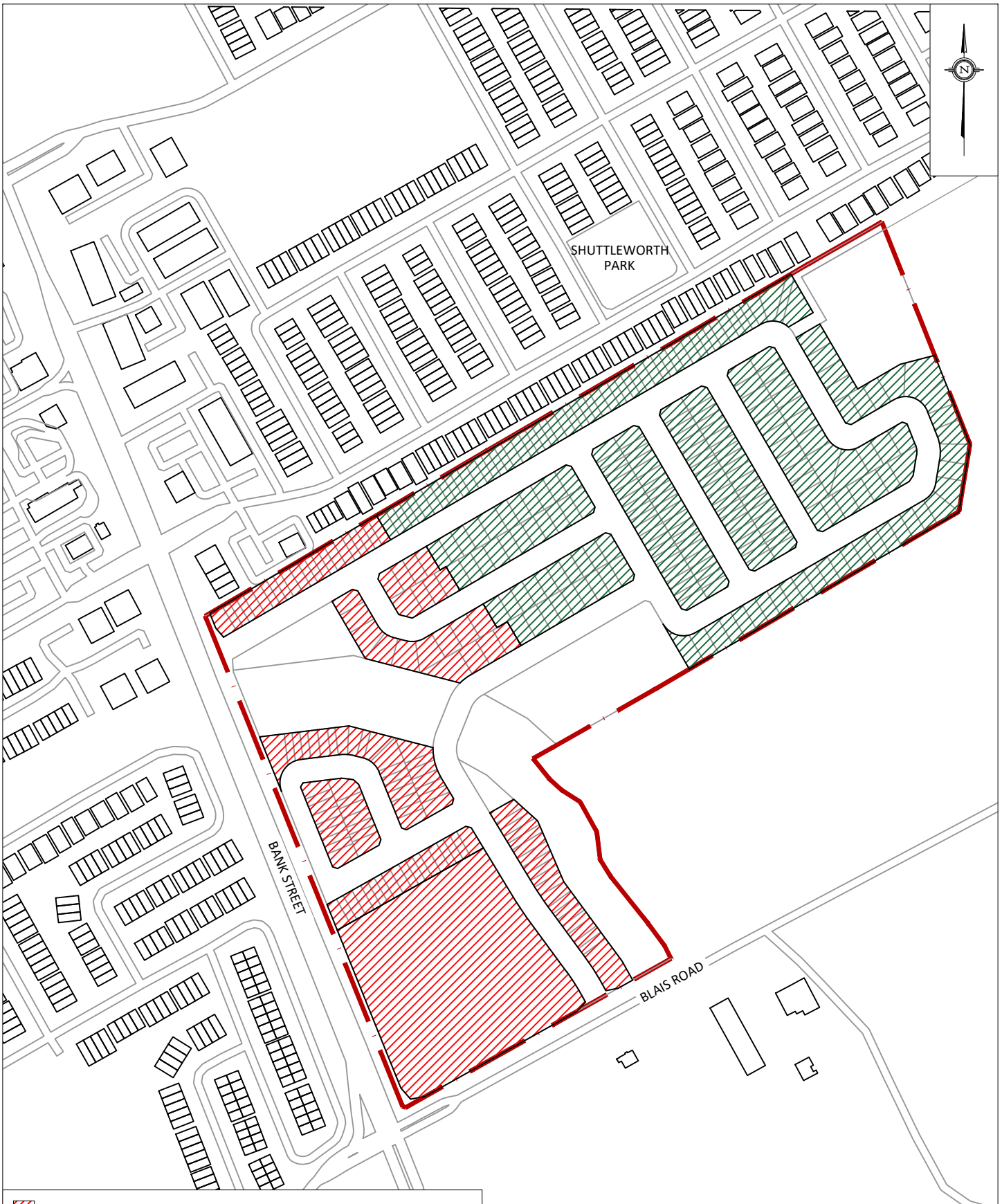
| | | | |
|---|---|---|---|
| PROJECT | 4795 BANK STREET, OTTAWA<br>TRANSPORTATION NOISE FEASIBILITY ASSESSMENT | | DESCRIPTION |
| SCALE | 1:2000 (APPROX.) | DRAWING NO. | GW26-082-2B |
| DATE | JUNE 17, 2026 | DRAWN BY | D.S. |

FIGURE 2B:
RECEPTOR LOCATIONS

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| | |
|---|---|
| PROJECT | 4795 BANK STREET, OTTAWA<br>TRANSPORTATION NOISE FEASIBILITY ASSESSMENT |
| SCALE | 1:4000 (APPROX.) |
| DRAWING NO. | GW26-082-3 |
| DATE | JUNE 17, 2026 |
| DRAWN BY | D.S. |

DESCRIPTION

FIGURE 3:
VENTILATION AND WARNING CLAUSE REQUIREMENTS

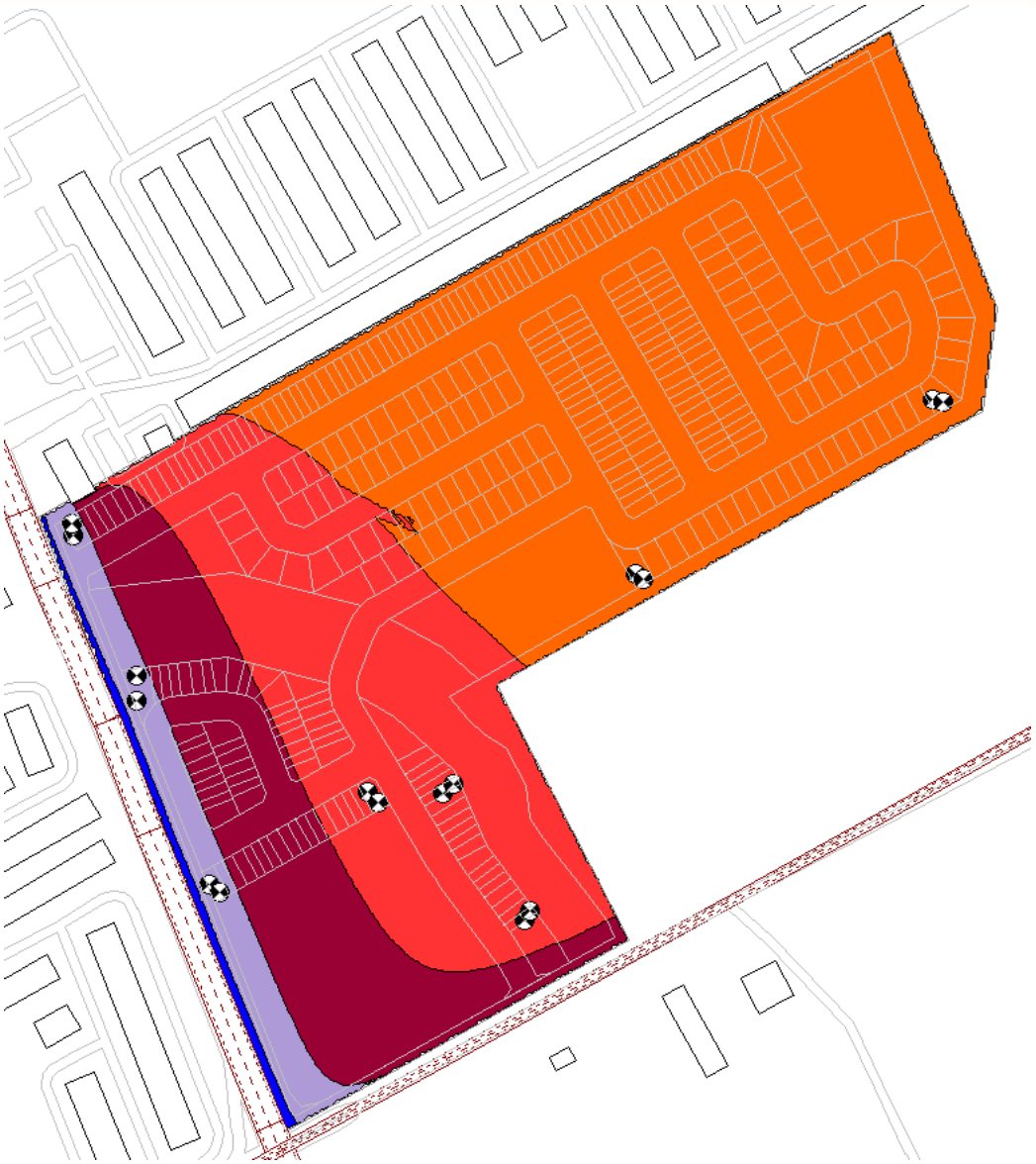
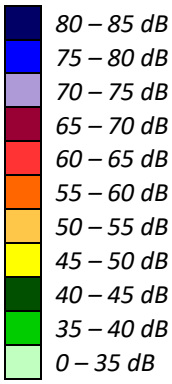


**FIGURE 4: DAYTIME ROADWAY TRAFFIC NOISE CONTOURS (4.5m ABOVE GRADE)**



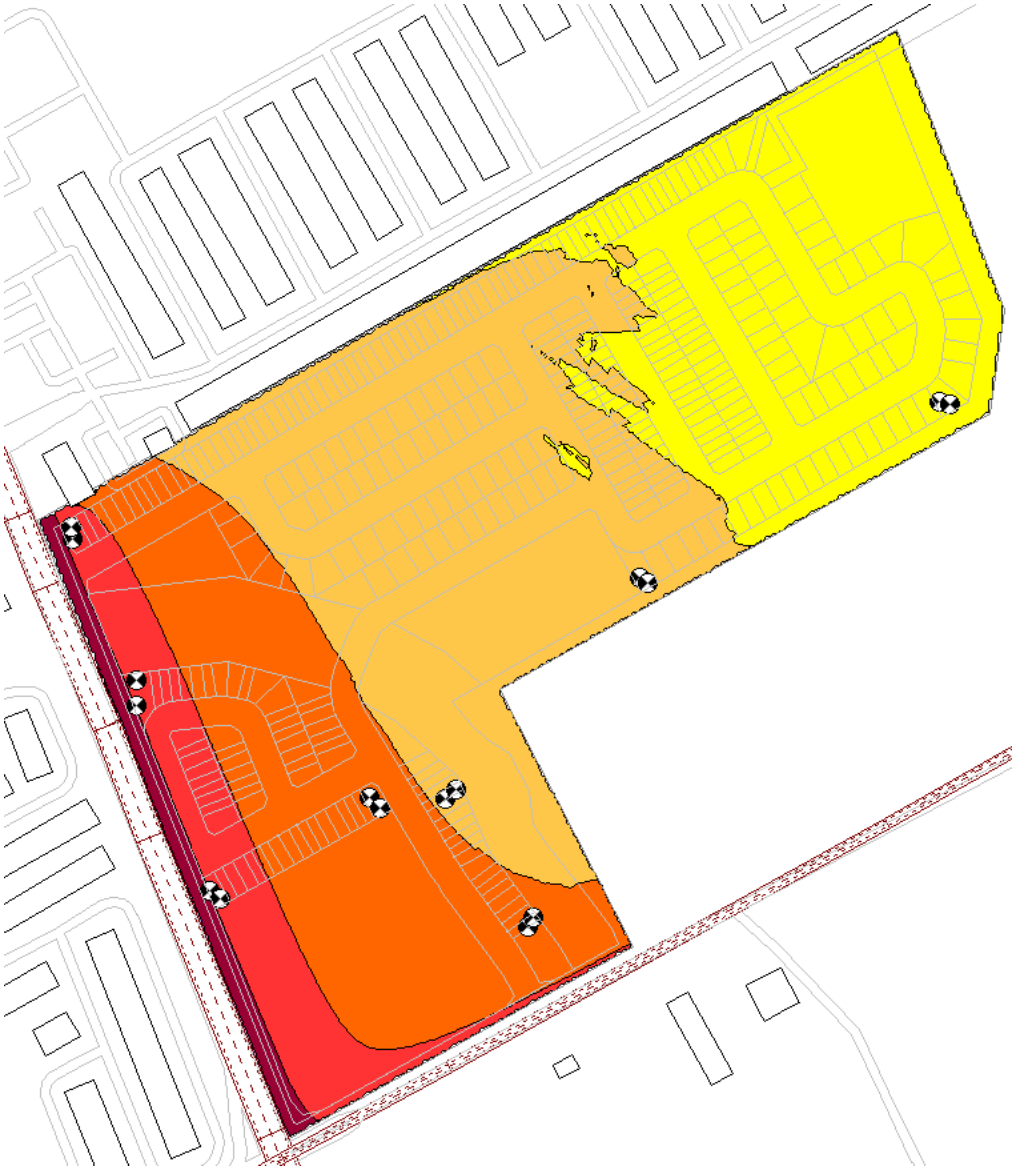



**FIGURE 5: NIGHTTIME ROADWAY TRAFFIC NOISE CONTOURS (4.5m ABOVE GRADE)**

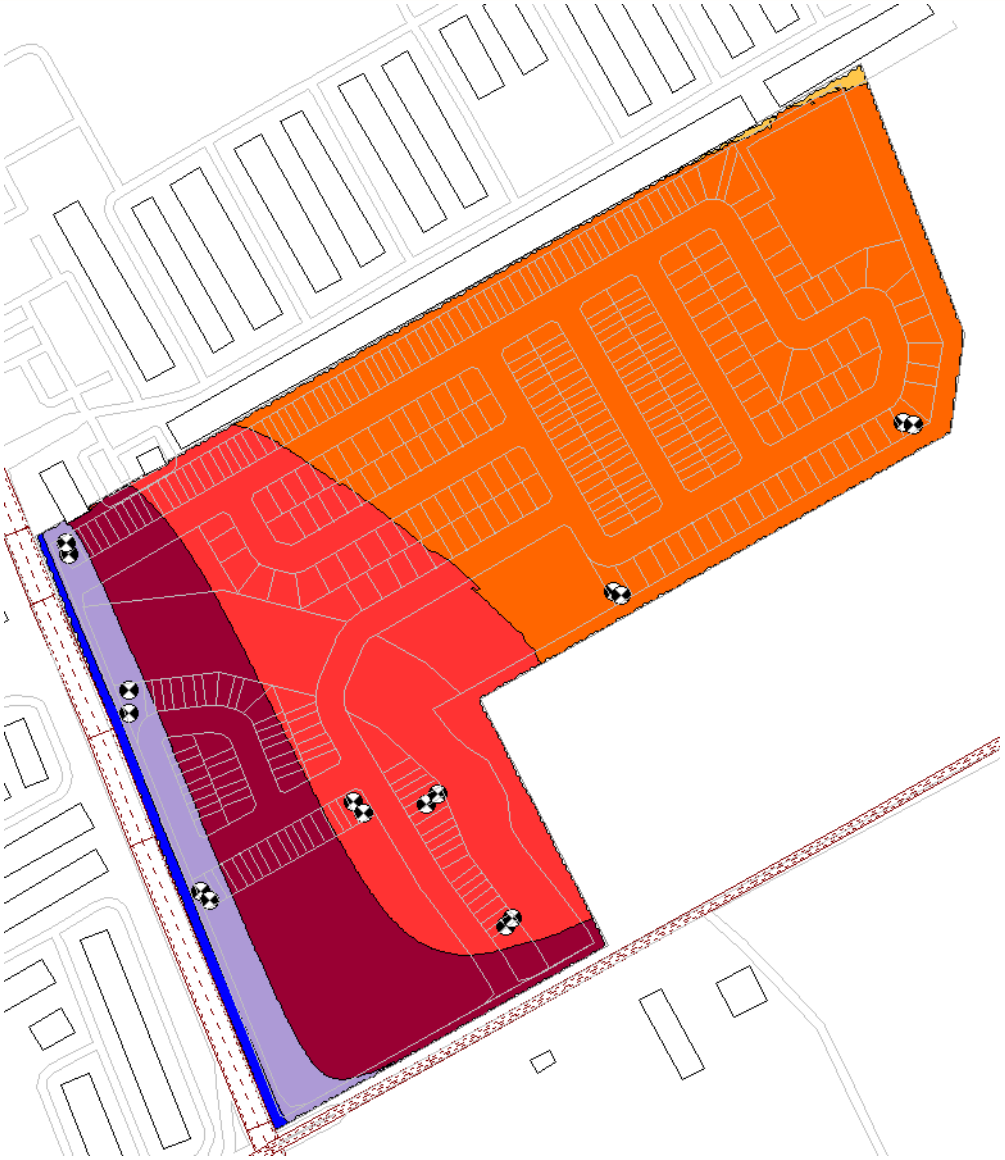
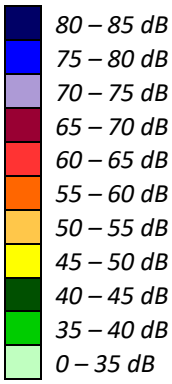


**FIGURE 6: DAYTIME ROADWAY TRAFFIC NOISE CONTOURS (1.5m ABOVE GRADE)**




# APPENDIX A

## STAMSON 5.04 – INPUT AND OUTPUT DATA

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
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**STAMSON 5.0 NORMAL REPORT Date: 02-06-2026 10:27:02**
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: r1.te Time Period: Day/Night 16/8 hours**
**Description:**

```
Road data, segment # 1: Bank St (day/night)
-------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    80 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):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Bank 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  :  27.00 / 27.00  m
Receiver height           :   4.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Bank St (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 73.61 + 0.00) = 73.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  76.17   0.00  -2.55   0.00   0.00   0.00   0.00  73.61
-------------------------------------------------------------------------------

Segment Leq : 73.61 dBA

Total Leq All Segments: 73.61 dBA

Results segment # 1: Bank St (night)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 66.02 + 0.00) = 66.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.57   0.00  -2.55   0.00   0.00   0.00   0.00  66.02
-------------------------------------------------------------------------------

Segment Leq : 66.02 dBA

Total Leq All Segments: 66.02 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 73.61
                           (NIGHT): 66.02
```

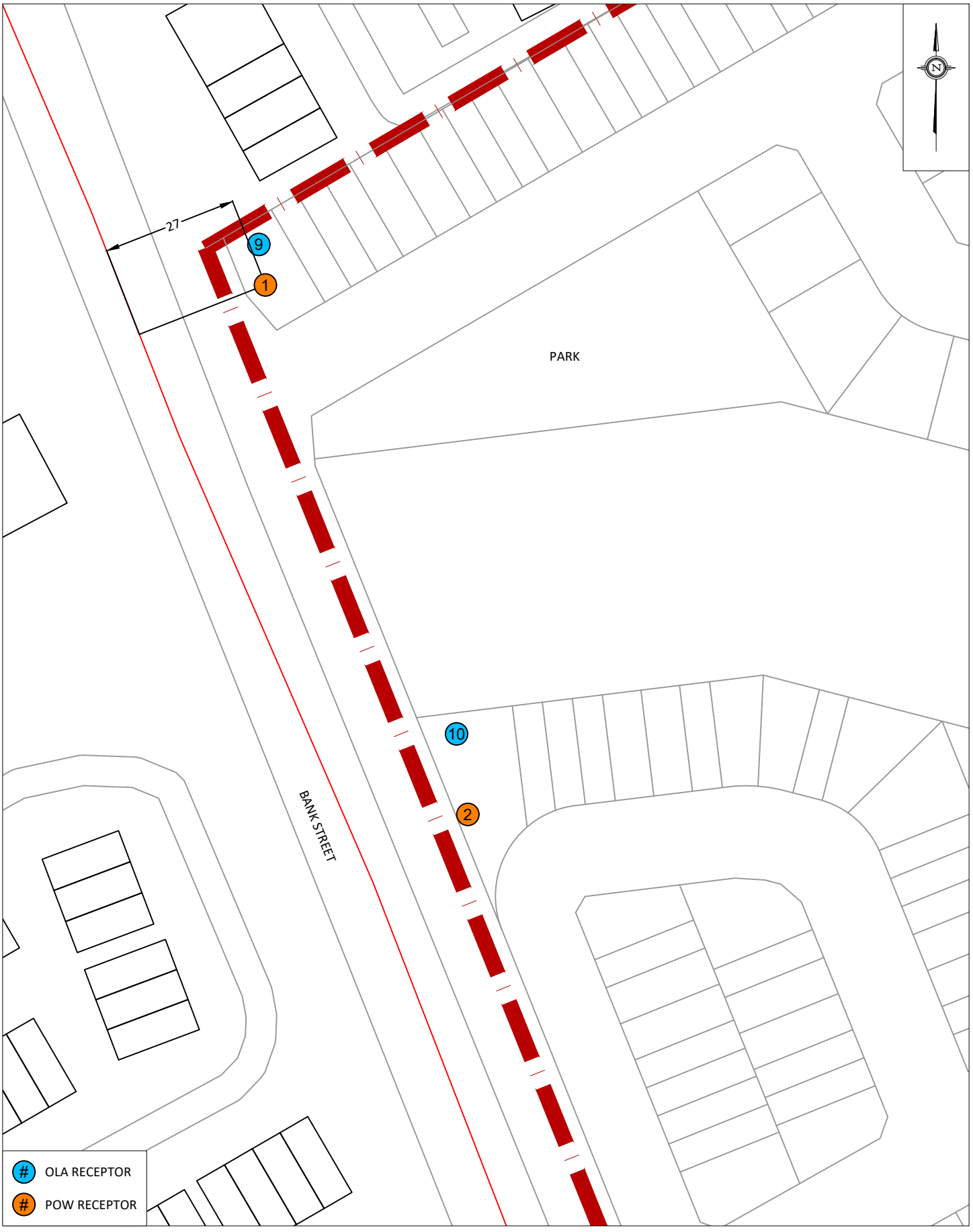
**STAMSON 5.0 NORMAL REPORT Date: 02-06-2026 10:29:06**
**MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT**

**Filename: r11.te Time Period: Day/Night 16/8 hours**
**Description:**

```
Road data, segment # 1: Bank St (day/night)
-------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    80 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):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Bank 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  :  26.00 / 26.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Blais Rd (day/night)
---------------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    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):  12000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Blais Rd (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  : 163.00 / 163.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Bank St (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 73.78 + 0.00) = 73.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  76.17   0.00  -2.39   0.00   0.00   0.00   0.00  73.78
-------------------------------------------------------------------------------

Segment Leq : 73.78 dBA

Results segment # 2: Blais Rd (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.67 + 0.00) = 58.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  69.03   0.00 -10.36   0.00   0.00   0.00   0.00  58.67
-------------------------------------------------------------------------------

Segment Leq : 58.67 dBA

Total Leq All Segments: 73.91 dBA

Results segment # 1: Bank St (night)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 66.18 + 0.00) = 66.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.57   0.00  -2.39   0.00   0.00   0.00   0.00  66.18
-------------------------------------------------------------------------------

Segment Leq : 66.18 dBA

Results segment # 2: Blais Rd (night)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.07 + 0.00) = 51.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  61.43   0.00 -10.36   0.00   0.00   0.00   0.00  51.07
-------------------------------------------------------------------------------

Segment Leq : 51.07 dBA

Total Leq All Segments: 66.31 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 73.91
                           (NIGHT): 66.31
```

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| SCALE | 1:1000 (APPROX.) | DRAWING NO. | GW26-082-A1 |
| DATE | JUNE 17, 2026 | DRAWN BY | D.S. |

DESCRIPTION

FIGURE A1:
STAMSON INPUT PARAMETERS
RECEPTOR #1


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| SCALE | 1:1000 (APPROX.) | DRAWING NO. | GW26-082-A2 |
| DATE | JUNE 17, 2026 | DRAWN BY | D.S. |

DESCRIPTION

FIGURE A2:
STAMSON INPUT PARAMETERS
RECEPTOR #11