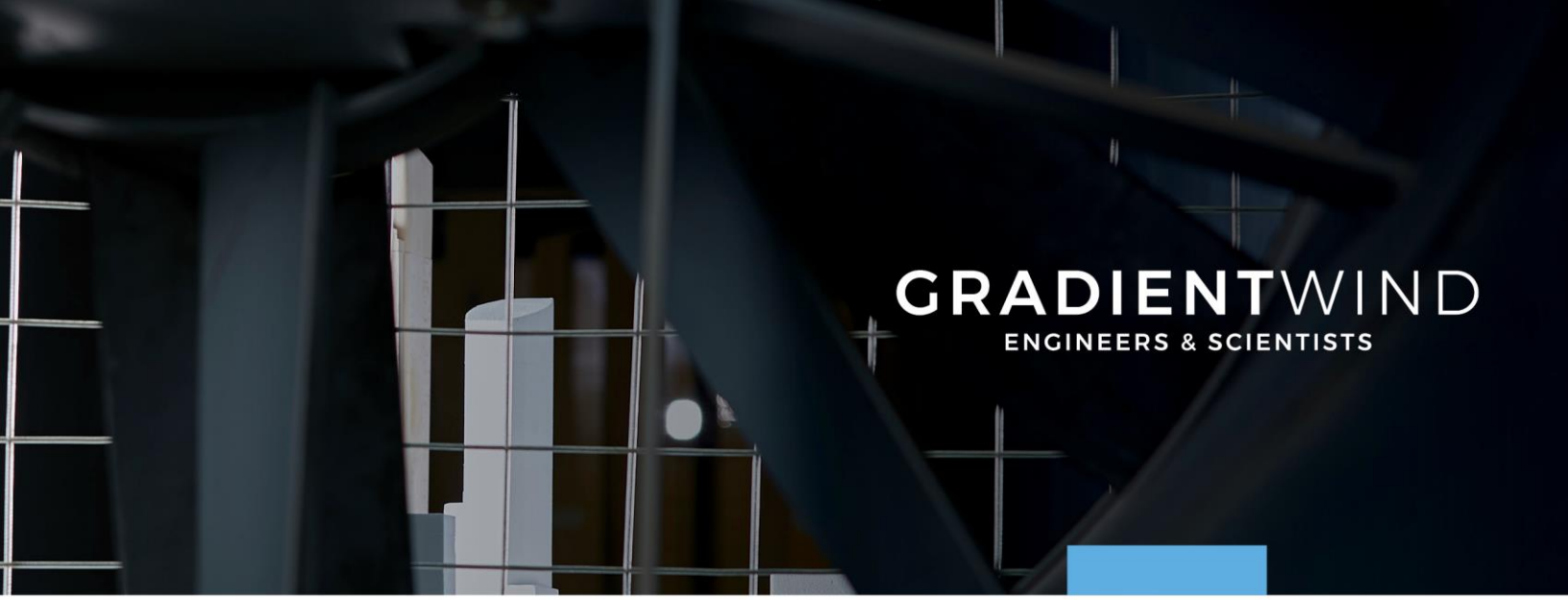

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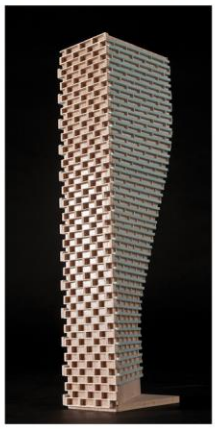
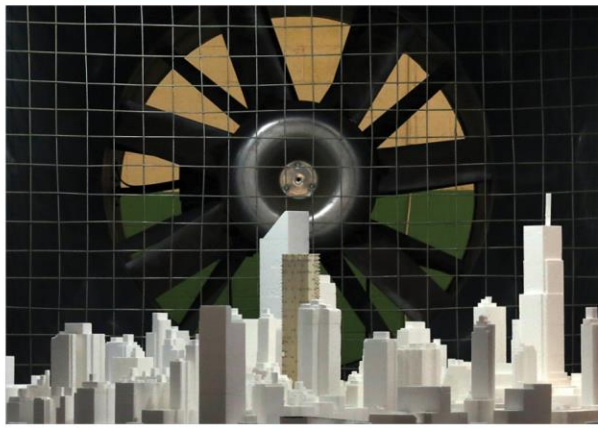
STATIONARY NOISE ASSESSMENT

3145 Conroy Road
Ottawa, Ontario

REPORT: 25-089– Stationary Noise Study





August 21st , 2025

PREPARED FOR

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PREPARED BY

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EXECUTIVE SUMMARY

This report describes a stationary noise assessment performed for the proposed industrial development located at 3145 Conroy Road in Ottawa, Ontario. The proposed development is a trucking facility comprises a two-storey office / maintenance building with a rectangular planform, employee parking spaces to the west outdoor truck parking spaces to the east, and storage bin area to the far east of the site. Sources of stationary noise include 1 rooftop make-up unit, 1 compressor, maintenance bays inside the building, up to 94 idling and moving trucks. Figure 1 illustrates a site plan with the surrounding context.

The focus of this study are the exterior noise levels generated by the stationary noise sources. The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP); (ii) the site plan prepared by Deimling Architecture & Interior Design, dated July 9, 2025; and (iii) sound power data for idling and moving trucks and mechanical equipment based on Gradient Wind's past experience with similar projects and measurements taken at a similar facilities owned by the proponent.

Our stationary noise assessment indicates that noise levels at nearby points of reception are expected to fall below the Environmental Noise Control Guidelines (ENCG) noise criteria provided that the assumptions outlined in Section 2.1 and the mitigation measures as indicated in Section 5 are followed. In order to achieve compliance, the following mitigation measures will be implemented into the design:

A 3.5 m tall noise screen will be constructed along the southern edge of the truck parking area, located in the southeast corner of the stie as illustrated in Figure 4. The barrier must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guardrail will conform to the requirements outlined in Part 5 of the ENCG and summarized in Section 6.

TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by WO MW Reality Limited to undertake a stationary noise assessment for the proposed industrial development located at 3145 Conroy Road in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to a stationary noise assessment.

The present scope of work involves assessing the impact of the stationary noise sources of the proposed development on the surrounding noise sensitive areas to the south of the proposed development. The assessment was performed based on theoretical noise calculation methods conforming to the City of Ottawa and Ministry of the Environment, Conservation and Parks (MECP) NPC-300[1] guidelines, based on the site plan prepared by Deimling Architecture & Interior Design, dated July 9, 2025, and surrounding street layouts obtained from recent site imagery. sound power data for idling and moving trucks and mechanical equipment based on Gradient Wind's experience with similar projects and measurements taken at a similar facility owned by the proponent.

2. TERMS OF REFERENCE

The proposed development is a trucking facility comprises a two-storey office / maintenance building with a rectangular planform, employee parking spaces to the west outdoor truck parking spaces to the east, and storage bin area to the far east of the site. Sources of stationary noise include 1 rooftop make-up unit, 1 compressor, 2 maintenance bays inside the building and 94 idling and moving trucks.

The site is situated on a parcel of land that is bounded by the Canadian National Railway to the north with and industrial park beyond, industrial lands to the east and south, and Conroy Road to the west. The closest noise sensitive land is located 90 m to the south, which compares a residential subdivision with a mix of bungalows and two storey single family homes. A long the north edge of the subdivision is an existing 3.0 m tall noise barrier constructed of precast materials. Between the subject site and the residences there is a wooded area, on a parcel of land which is zoned industrial. Figure 1 illustrates the site plan and the surrounding context.

[1] Ministry of the Environment, Conservation and Parks (MECP), Environmental Noise Guideline – Publication NPC-300, August 2013

2.1 Assumptions

The sound power levels of the rooftop air handling units are based on Gradient Wind's past experience with similar projects. A review of the equipment selections and locations that will form the requirements of the construction documents/contract has been made by a qualified acoustical engineer; final equipment selections will be verified to meet or exceed the performance requirements prior to the installation of the equipment.

The following assumptions have been made in the analysis:

(i) The sound power levels of the rooftop air handling units, compressor and truck bays are based on Gradient Wind's past experience with similar projects.

(ii) The Make-Up units are assumed to operate continuously over a 1-hour period during the daytime periods and at 50% during the nighttime periods.

(iii) Truck activity is assumed to include 10 minutes of idling per vehicle within a one-hour period, with a total of 94 truck preparing to leave on their morning routes while they complete their safety checks.

(iv) The truck bays are assumed to be active during the full daytime period (07:00 to 19:00), with no operations during the evening (19:00 to 23:00) nighttime hours (23:00 to 07:00)

(v) The compressor is assumed to be operating for 60 minutes over a one-hour period.

(vi) The ground region was modelled as absorptive ground due to the presence of vegetation on the intervening site (soft ground). The ground was also assumed to be generally flat.

(vii) All mechanical equipment was modelled as point sources, and the mechanical equipment was modeled at a height of 1.5 metre (m) above the roof.

(viii) The wooded lot was measured as a foliage area with a tree height of 5 m tall.

(ix) A total of 11 receptors were strategically placed on the closest noise-sensitive buildings in the surrounding area. The location of the receptors can be seen in Figure 2.

3. OBJECTIVES

The main goals of this work are to (i) calculate the future noise levels on the neighbouring noise-sensitive buildings produced by stationary sources of the proposed development and (ii) ensure that exterior noise levels do not exceed the allowable limits specified by the ENCG, as outlined in Section 4 of this report.

4. METHODOLOGY

The impact of the external stationary noise sources on the nearby noise-sensitive areas was determined by computer modelling. Stationary noise source modelling is based on the software program *Cadna*A which uses an algorithm based on International Standards Organization (ISO) standard 9613 Parts 1 and 2. This computer program simulates three-dimensional surfaces and first reflections of sound waves over a suitable spectrum for human hearing. This methodology has been used on numerous assignments and has been accepted by the MECP as part of Environmental Compliance Approvals applications.

4.1 Perception of Noise

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 source, the sound pressure depends on the location of the receiver and the path that the noise takes to reach the receiver. Its measurement is based on the decibel unit, dBA, which is a logarithmic ratio referenced to a standard noise level (2×10^{-5} Pascals). The 'A' suffix refers to a weighting scale, which represents the noise perceived by the human ear. With this scale, a doubling of sound power at the source results in a 3 dBA increase in measured noise levels at the receiver and is just perceptible to most people. An increase of 10 dBA is often perceived to be twice as loud.

Stationary sources are defined in the ENCG as "all sources of sound and vibration, whether fixed or mobile, that exist or operate on a premises, property or facility, the combined sound and vibration levels of which are emitted beyond the property boundary of the premises, property or facility, unless the source(s) is (are) due to construction" [2].

4.2 Stationary Noise Criteria

The equivalent sound energy level, L_{eq}, provides a weighted 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 selected period of time. For stationary sources,

[2] City of Ottawa Environmental Noise Control Guidelines, page 10

the L_{eq} is commonly calculated on an hourly interval, while for roadways, the L_{eq} is calculated on the basis of a 16-hour daytime/8-hour nighttime split.

Noise criteria taken from NPC-300 apply to points of reception (POR). A POR is defined under the ENCG as "any location on a noise-sensitive land use where noise from a stationary source is received"[3]. A POR can be located on an existing or zoned for future use premises of permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, campgrounds, and noise-sensitive buildings such as schools and daycares. As the site is bordered by two arterial roads, the area is considered as a Class 1 area as per the ENCG. The recommended maximum noise levels for a Class 1 area at a POR are outlined in Table 1 below.

TABLE 1: EXCLUSIONARY LIMITS FOR CLASS 1 AREA

Time of Day	Point of Reception (POR)	
	Outdoor Points of Reception (OPOR)	Plane of Window (POW)
07:00 – 19:00	50	50
19:00 – 23:00	50	50
23:00 – 07:00	N/A	45

[3] City of Ottawa Environmental Noise Guidelines, page 9

4.3 Determination of Noise Source Power Levels

Table 2 summarizes the sound power of each source used in the analysis, as per NPC-300. The stationary noise source locations can be seen in Figure 3.

TABLE 2: EQUIPMENT SOUND POWER LEVELS (DBA)

Source ID	Description	Height Above Grade or Roof (m)	Sound Power Levels (dBA)
			Total
S1	Roof Units	1.5	**85**
S2	Diesel Trucks - Idling	2.4	**101**
S3	CNG Trucks - Idling	2.4	**90**
S4	Moving Source (Trucks)	2.4	**97**
S5	Compressor	1	**95**
S6	Truck Bays	2.7	**95**

4.4 Stationary Source Noise Predictions

A total of 11 receptor locations were chosen on the surrounding noise-sensitive buildings to measure the noise impact at the outdoor point of reception (OPOR) and plane of window (POW) receptors during the daytime/evening period (07:00 – 23:00), as well as during the nighttime period (23:00 – 07:00). Receptor locations are described in Table 4 and illustrated in Figure 2. At some POW receptor location, the noise was assessed at 2 different heights. All mechanical units were represented as point sources in the CadnaA model. Table 3 below contains CadnaA calculation settings. These are typical settings that have been based on ISO 9613 standards and guidance from the MECP.

Ground absorption over the study area was determined based on topographical features (such as water, concrete, grassland, etc.). An absorption value of 0 is representative of hard ground, while a value of 1 represents grass and similar soft surface conditions. Existing and proposed buildings were added to the model to account for screening and reflection effects from building façades. A CadnaA sample output is available upon request.

TABLE 3: CALCULATION SETTINGS

Parameter	Setting
Meteorological correction method	Single value for C0
Value C0	2.0
Ground attenuation factor for roadways and paved areas	0
Ground attenuation factor for grass and vegetative areas	1
Temperature (K)	283.15
Pressure (kPa)	101.33
Air humidity (%)	70

5. RESULTS AND MITIGATION MEASURES

The preliminary calculations showed that the impact of the proposed equipment on the closest residential buildings could exceed the ENCG required criteria, therefore noise mitigation will be required. In order to control noise levels, mitigation measures were investigated. The results of the calculations with mitigation measures can be seen in Table . 46.5 meters long and 3.5 meters high Barrier will be effective at reducing the impact on to existing residential receivers, the noise screen should have a minimum surface mass of 20 kg/m². The location of the barrier is illustrated in Figure 4.

TABLE 4: NOISE LEVELS AT THE POINTS OF RECEPTION (MITTIGATED)

Receptor Number	Receptor Type	Height Above Grade (m)	Noise Level (dBA)		Sound Level Limits		Meets ENCG Class 1 Criteria	
			Day*	Night	Day*	Night	Day*	Night
R1	POW	4.5	27	27	50	45	Yes	Yes
R2	POW	4.5	40	40	50	45	Yes	Yes
R3	POW	4.5	42	42	50	45	Yes	Yes
R4	POW	1.5	38	38	50	45	Yes	Yes
R5	POW	1.5	39	38	50	45	Yes	Yes
R6	POW	4.5	37	36	50	45	Yes	Yes
R7	POW	1.5	36	36	50	45	Yes	Yes
R8	POW	1.5	42	42	50	45	Yes	Yes
R9	POW	1.5	35	35	50	45	Yes	Yes
R10	POW	4.5	45	45	50	45	Yes	Yes
R11	POW	4.5	40	40	50	45	Yes	Yes

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current study indicate that noise levels at nearby points of reception are expected to fall below the noise criteria provided that the assumptions outlined in Section 2.1 and the mitigation measures as indicated below.

A 3.5 m tall noise screen will be constructed along the southern edge of the truck parking area, located in the southeast corner of the stie as illustrated in Figure 4. The guard must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guardrail will conform to the requirements outlined in Part 5 of the ENCG. The following information will be required by the City for review prior to installation of the barrier:

1. Shop drawings, signed and sealed by a qualified Professional Engineer licenced by the Professional Engineers of Ontario, showing the details of the acoustic barrier systems components, including material specifications.

2. Structural drawing(s), signed by a qualified Professional Engineer licenced by the Professional Engineers of Ontario, showing foundation details, and specifying design criteria, climatic design loads, as well as applicable geotechnical data used in the design.

3. Layout plan, and wall elevations, showing proposed colours and patterns.

As such, the proposed development is expected to be compatible with the existing and future noise-sensitive land uses.

This concludes our 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.

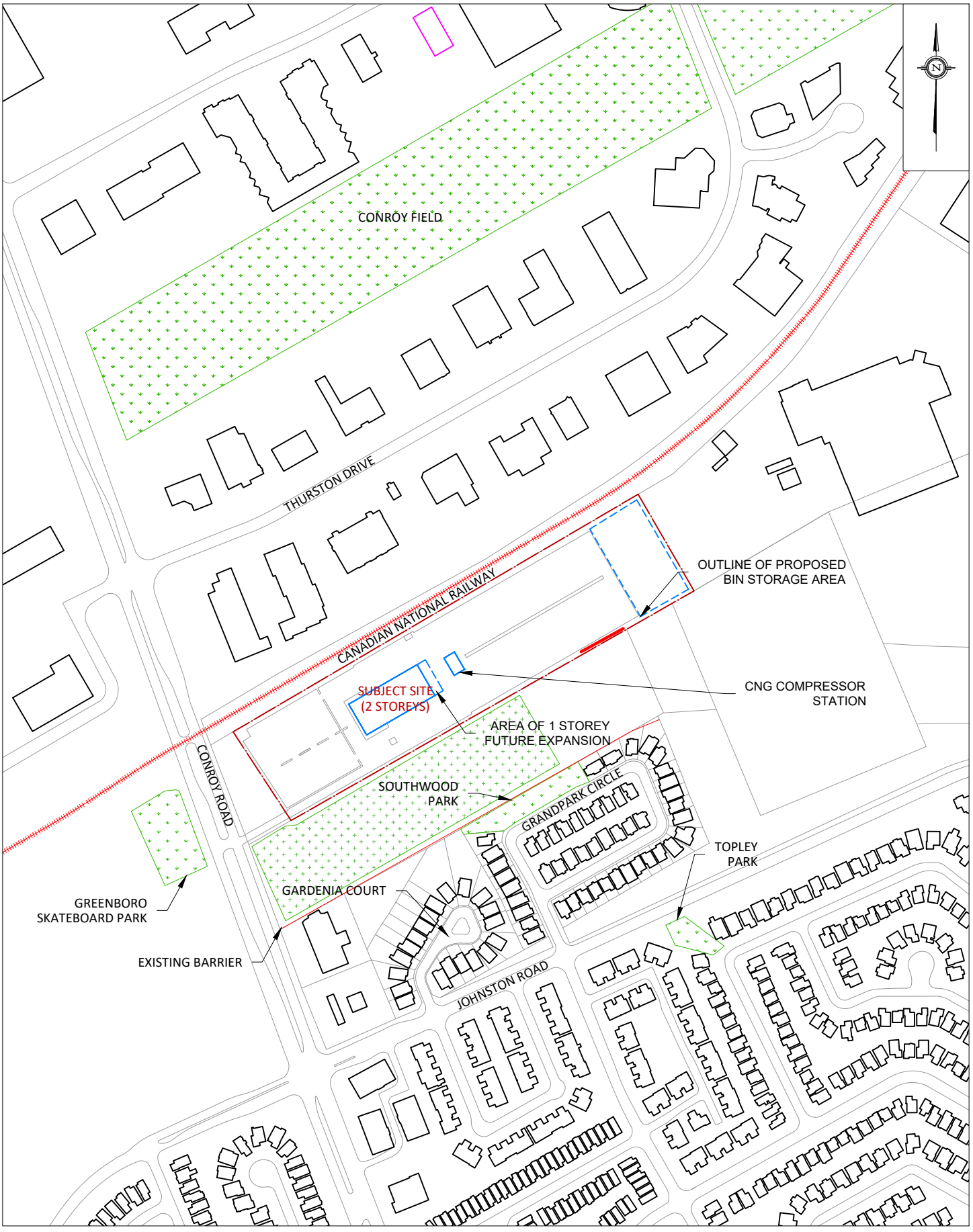
Sincerely,

Gradient Wind Engineering Inc.

Sergio Nunez Andres, B.Eng,
Junior Environmental Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File #25-089 – Stationary Noise Assessment



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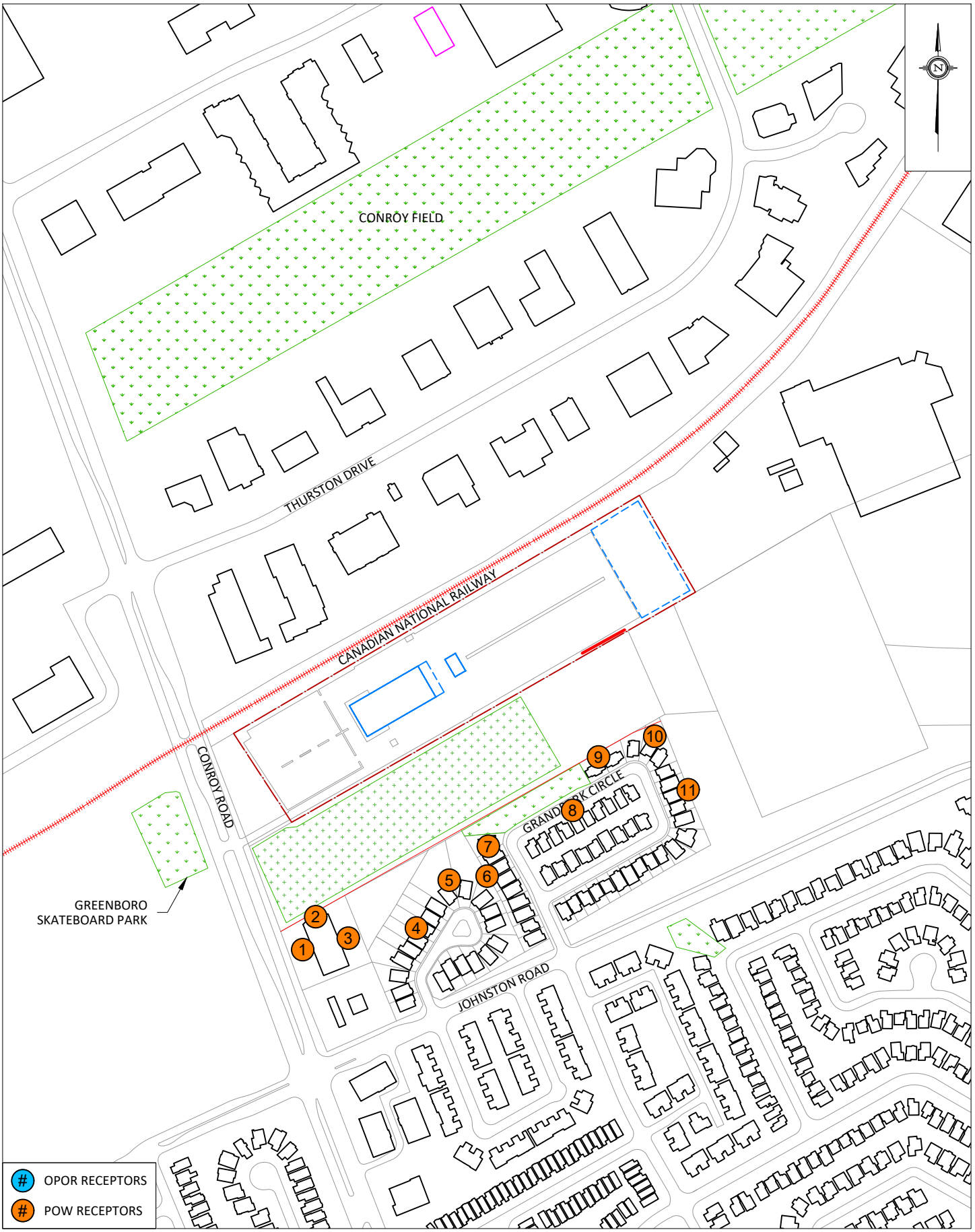
PROJECT	3145 CONROY ROAD, OTTAWA STATIONARY NOISE ASSESSMENT		DESCRIPTION
SCALE	1:5000 (APPROX.)	DRAWING NO.	25-089-ANV-1
DATE	MAY 30, 2025	DRAWN BY	N.M.P.

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT



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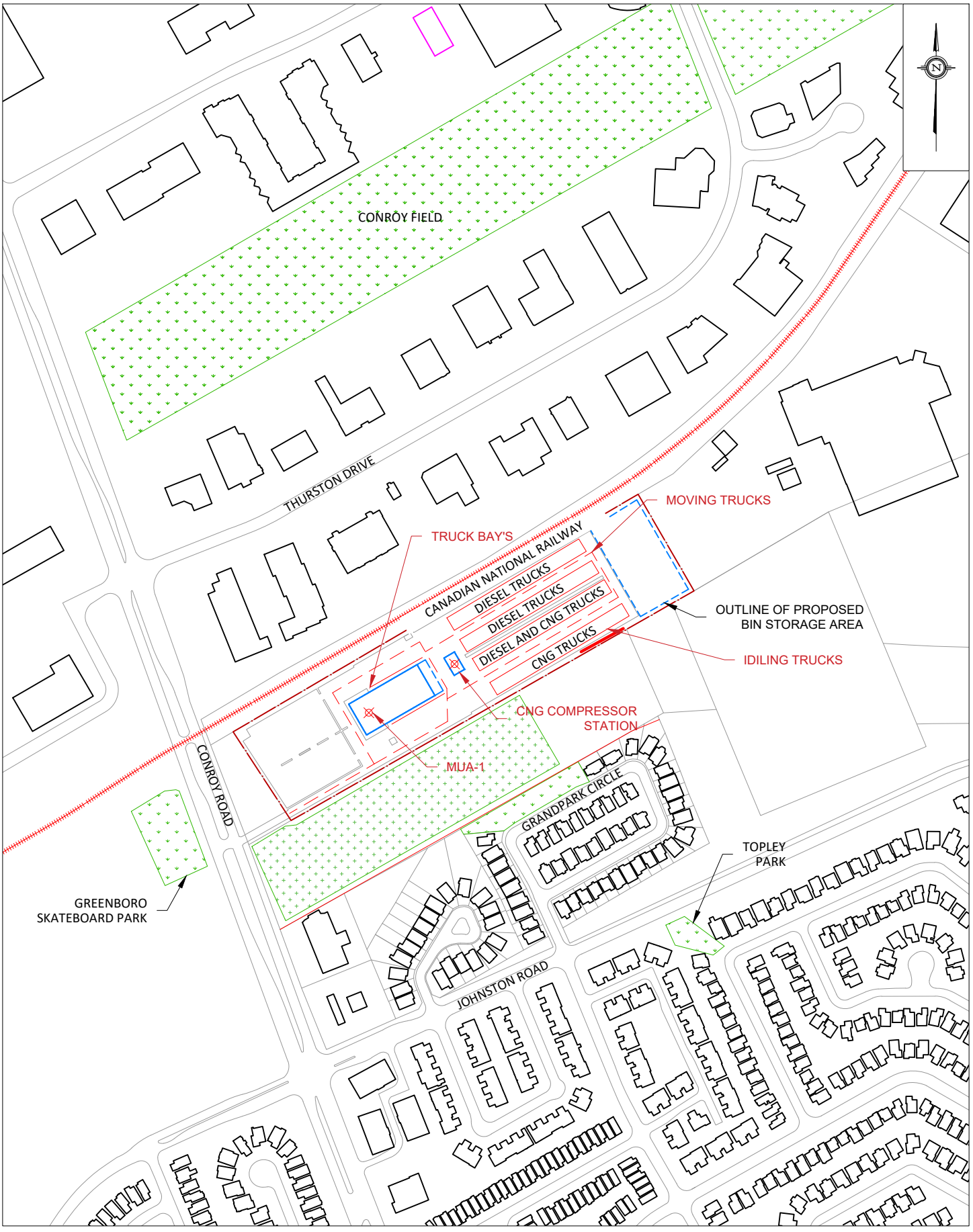
SCALE	1:5000 (APPROX.)
DRAWING NO.	25-089-ANV-2
DATE	MAY 30, 2025
DRAWN BY	N.M.P.
DESCRIPTION	FIGURE 2: RECEPTOR LOCATIONS



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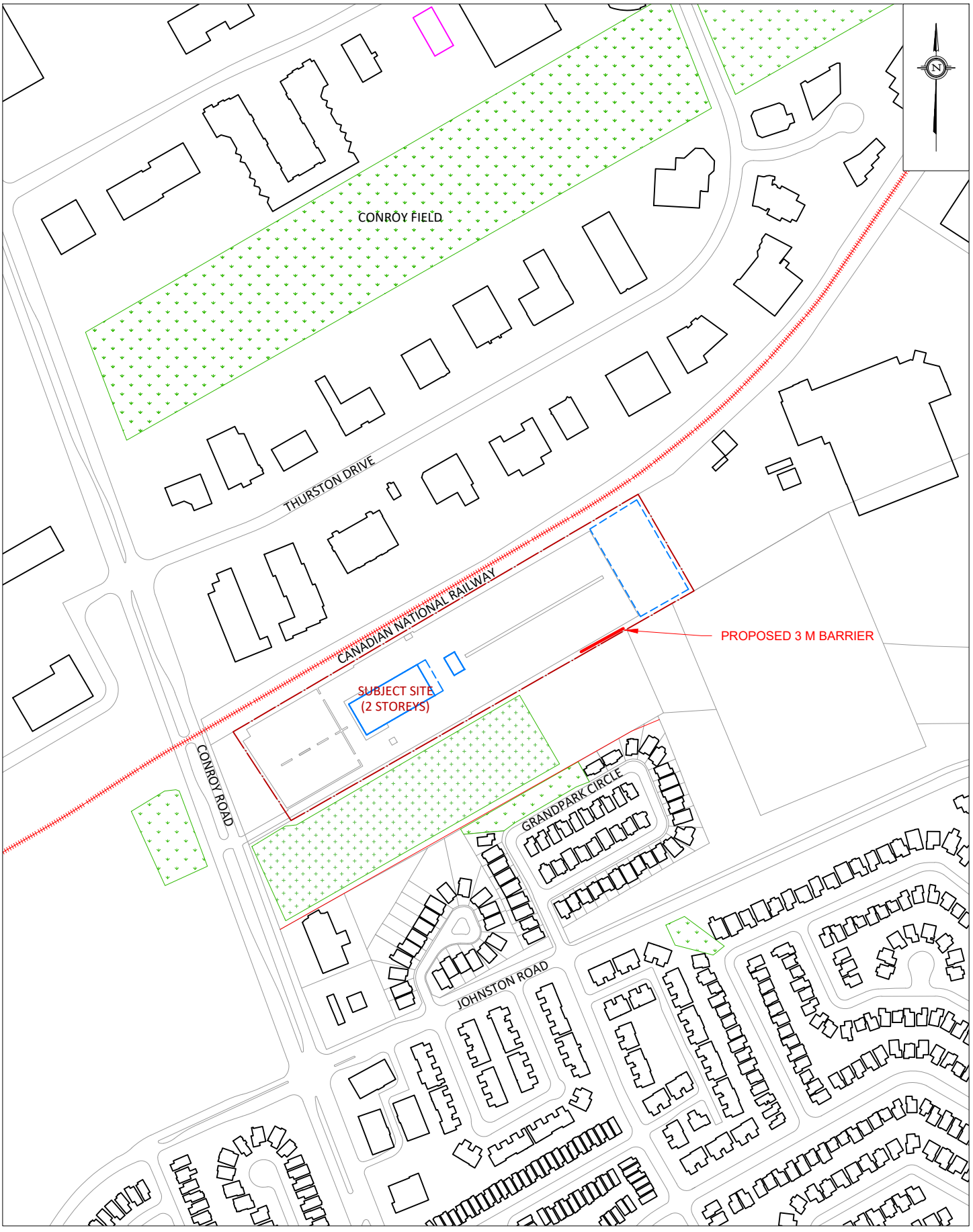
DRAWING NO.	25-089-ANV-3
DATE	MAY 30, 2025
DRAWN BY	N.M.P.
DESCRIPTION	FIGURE 3: NOISE SOURCES LOCATION



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PROJECT	3145 CONROY ROAD, OTTAWA STATIONARY NOISE ASSESSMENT		DESCRIPTION
SCALE	1:5000 (APPROX.)	DRAWING NO.	25-089-ANV-4
DATE	MAY 30, 2025	DRAWN BY	N.M.P.

FIGURE 4:
PROPOSED NOISE SCREEN

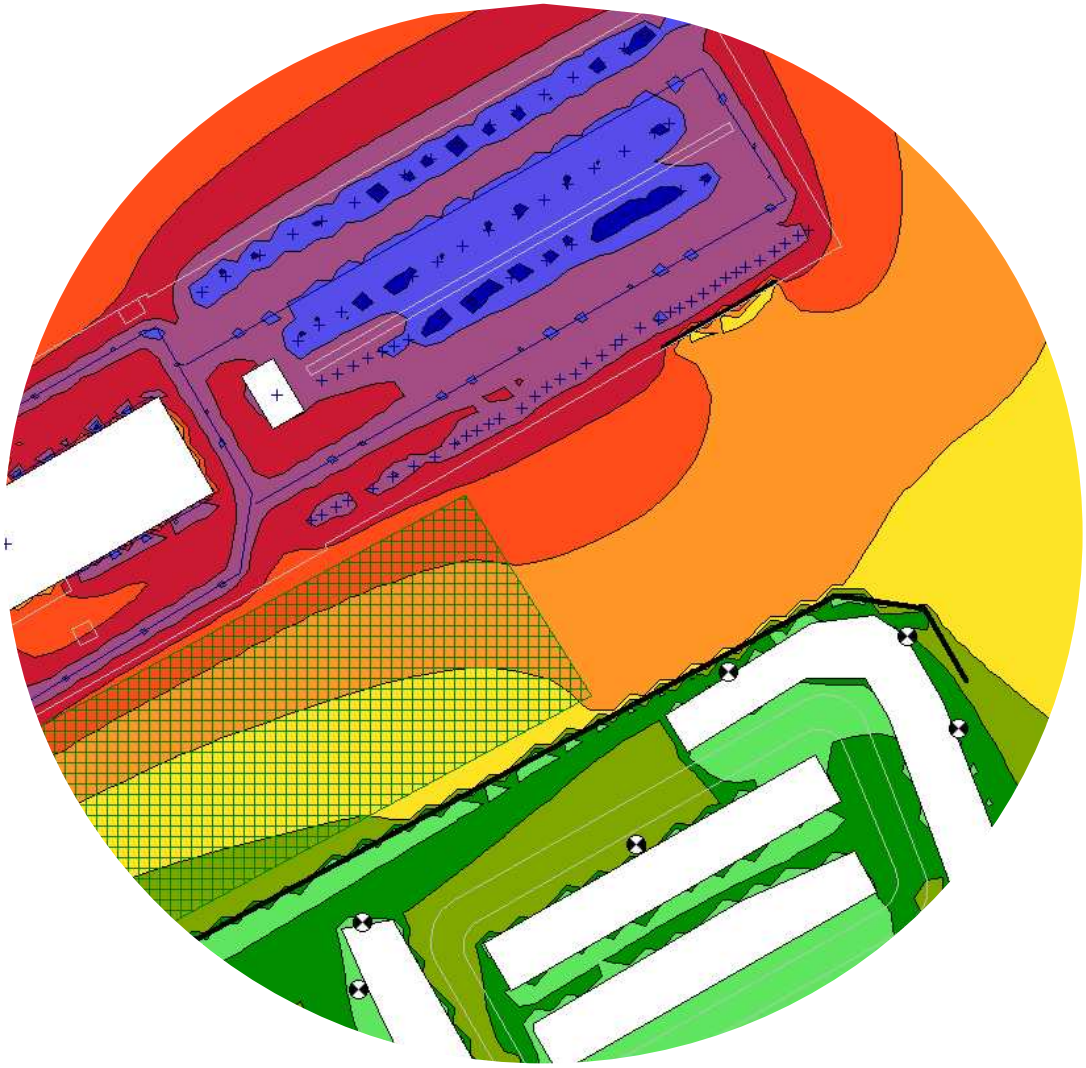

**FIGURE 5: DAYTIME NOISE CONTOURS
(1.5 M ABOVE GRADE)**

- *80 – 85 dB*
- *75 – 80 dB*
- *70 – 75 dB*
- *65 – 70 dB*
- *60 – 65 dB*
- *55 – 60 dB*
- *50 – 55 dB*
- *45 – 50 dB*
- *40 – 45 dB*
- *35 – 40 dB*
- *0 – 35 dB*

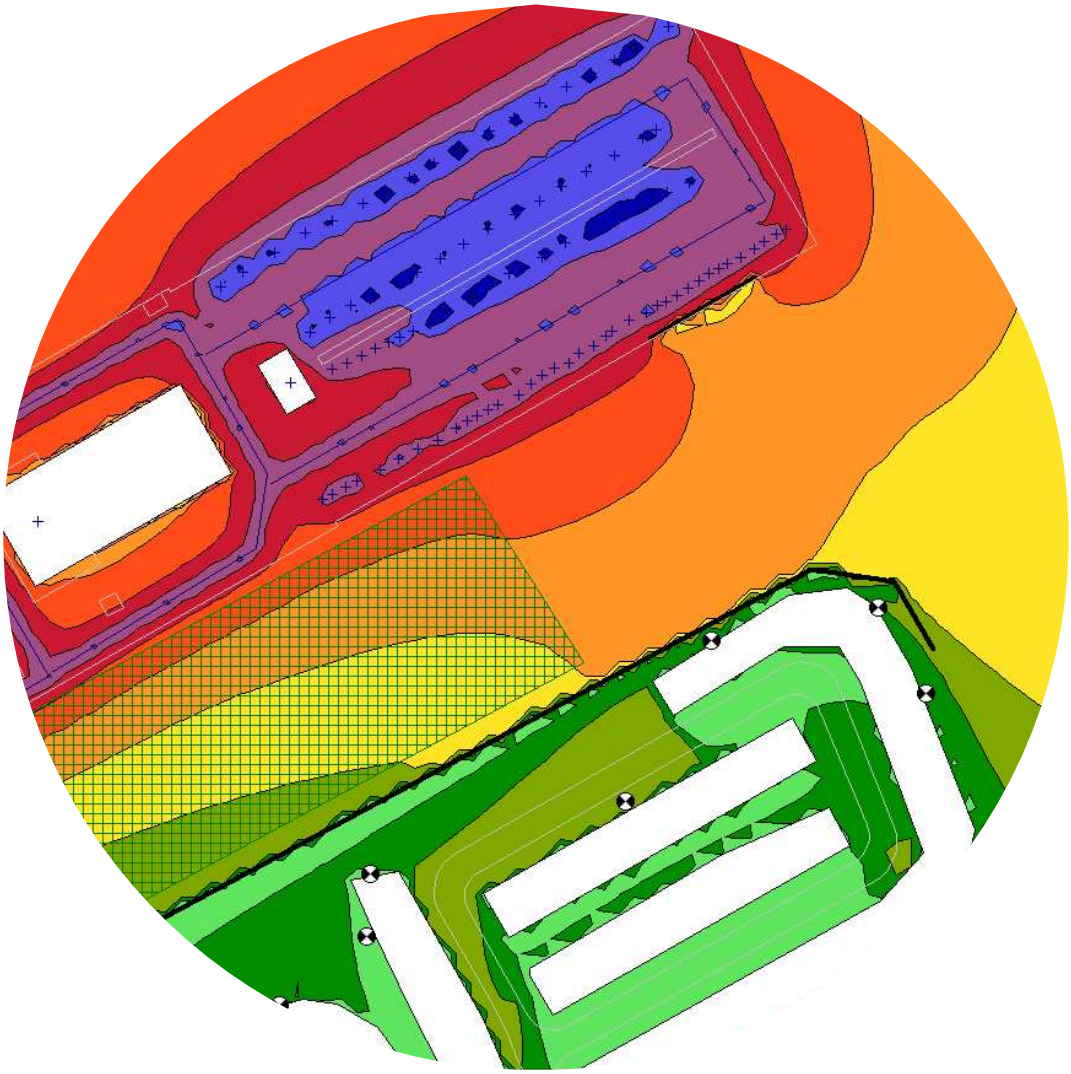

FIGURE 6: NIGHTTIME NOISE CONTOURS (1.5 M ABOVE GRADE)

- *80 – 85 dB*
- *75 – 80 dB*
- *70 – 75 dB*
- *65 – 70 dB*
- *60 – 65 dB*
- *55 – 60 dB*
- *50 – 55 dB*
- *45 – 50 dB*
- *40 – 45 dB*
- *35 – 40 dB*
- *0 – 35 dB*