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Noise Feasibility Study
Proposed Industrial Development
James Snow Parkway and No. 5 Sideroad
Milton, Ontario

Prepared for:

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VERSION CONTROL

Noise Feasibility Study,
James Snow Parkway and No. 5 Sideroad,
Milton, Ontario.

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1 Introduction and Summary

Howe Gastmeier Chapnik Limited (HGC Engineering) was retained by E. Manson Investments Ltd. to undertake a noise assessment for a proposed industrial development located at James Snow Parkway and No. 5 Sideroad in Milton, Ontario. The noise study is required by the municipality as part of the approvals process, specifically for a Zoning By-law Amendment. The study has been completed in accordance with the guidelines of the Municipality and the Ministry of Environment, Conservation and Parks (MECP).

An investigation of the potential noise impact from the proposed industrial buildings onto the existing sensitive receptors was conducted. The analysis is based on information obtained from discussion with E. Manson Investments Ltd. personnel, site visits, and HGC Engineering's past experience with similar facilities. The results indicate that the sound emissions from the proposed development are expected to be within the limits of the MECP under a worst case assumed operational scenario at the existing noise sensitive receptors. Noise control measures are not required. The reader is referred to the main body of the report for assumptions and results of the analysis.

2 Site Description

The site is located on the north side of James Snow Parkway, to the west of No. 5 Sideroad in Milton, Ontario. Figure 1 shows a key plan of the area. Two industrial buildings with parking areas, trucking routes, and loading areas are indicated on the site plan prepared by Riepma Consultants Inc. dated October 13, 2022, and is attached as Figure 2. The occupancy of the buildings is not yet known but will likely accommodate offices, distribution type activities, but no major manufacturing or processing.

A site visit was conducted in August 2022 to confirm the locations of the existing residences and sensitive receptors and the acoustical environment. The most potentially impacted residences are located to the north of the site. There is another commercial building being constructed to the east of the site. The lands are essentially flat.

2.1 Noise Source Description

The primary sources of sound associated with the proposed buildings will be arriving, departing, and idling trucks, and rooftop air conditioning condenser equipment.

3 Noise Level Criteria

3.1 D1 – D6 Guidelines for Land Use Compatibility

The requirements for this study requested by the Municipality refers to determining if the proposed development is feasible and compatible with adjacent existing residential uses. The MECP D1 [1] and D6 [2] Guidelines address issues of compatibility between industrial and noise sensitive land uses in relation to land use changes.

For planning purposes for greenfield sites, the potential zone of influence of a Class I industrial use is 75 m and the minimum recommended distance setback is 20 m. The potential zone of influence of a Class II industry is 300 m and the minimum recommended distance setback is 75 m. For infill projects or projects located in transitional areas the recommended minimum distance setbacks can be reduced, based on the results of technical studies such as this study.

For the size of the industrial building and tenant spaces, the proposed development can be considered a Class I industrial use. Typically, the recommended minimum distance setbacks apply between the property lines of the facilities, but exceptions can be made if the property lines are adjoined and portions of the residential or industrial lands are reserved for non- noise related uses, such as driveways, parking lots or earth berms. In this case, there is a minimum 20 m distance separation between the proposed site and the existing residences to the north provided by the No. 5 Sideroad right-of-way. Therefore, the minimum setback distance for a Class I industry is met. Further, the results from the noise assessment, provided in Section 5, indicate that the MECP sound level limits can be met at all sensitive noise receptors.

3.2 Criteria Governing Stationary Noise Sources

MECP Guideline NPC-300 [3] is the MECP guideline for use in investigating Land Use Compatibility issues with regard to noise. An industrial or commercial facility is classified in the MECP Guideline NPC-300 as a stationary source of sound (as compared to sources such as traffic or construction, for example) for noise assessment purposes. A stationary noise source encompasses the noise from all the activities and equipment within the property boundary of a facility including regular on-site truck traffic, material handling and mechanical equipment. Noise from these sources may potentially impact the existing sensitive receptors. In terms of background sound, the development is located in an urban Class 1 acoustical environment which is characterized by an acoustical environment dominated by road traffic and human activity during the daytime and nighttime hours.

Stationary Source (Steady Sound)

NPC-300 is intended for use in the planning of both residential and commercial/industrial land uses and provides the acceptability limits for sound due to commercial operations in that regard. The facade of a residence (i.e., in the plane of a window), or any associated usable outdoor area is considered a sensitive point of reception. NPC-300 stipulates that the exclusionary sound level limit for a stationary noise source in an urban Class 1 area is taken to be 50 dBA during daytime hours (07:00 to 23:00), and 45 dBA during nighttime hours (23:00 to 07:00). If the background sound levels due to road traffic exceed the exclusionary limits, then that background sound level becomes the criterion. The background sound level is defined as the sound level that occurs when the source under consideration is not operating, and may include traffic noise and natural sounds.

Commercial activities such as the occasional movement of customer/employee vehicles, deliveries to conveniences stores and restaurants and garbage collection are not of themselves considered to be significant noise sources in the MECP guidelines. Accordingly, these sources have not been considered in this study.

Residences to the north: 7101 No. 5 Sideroad (R1), 7129 No. 5 Sideroad (R2), 7201 No. 5 Sideroad (R3), 7257 No. 5 Sideroad (R4), and 7329 No. 5 Sideroad (R5) are considered the representative noise sensitive receptors in this assessment and are shown in Figure 3. The Class 1 sound level limits included in NPC-300 are applicable for the surrounding receptors. The sound level limits are summarized in Table 1 and are used in the following sections of this report as the applicable criteria for each façade of the existing residential buildings and in any outdoor living areas (OLA).

Table 1: Applicable Sound Level Limits, L_{EQ} (dBA) for Class I Areas

Receptor	Sound Level Limits		
	Daytime in the OLA (07:00 to 23:00)	Daytime at the Façade (07:00 to 23:00)	Nighttime (23:00 to 07:00)
R1	50	50	45
R2	50	50	45
R3	50	50	45
R4	50	50	45
R5	50	50	45

Compliance with MECP criteria generally results in acceptable levels of sound at the sensitive receptors although there may be residual audibility during periods of low background sound.

4 Assessment Methodology

Predictive noise modelling was used to assess the potential noise impact of mechanical equipment and trucking activities at the receptors. Assumed operational information outlined below and surrounding building locations obtained from aerial photography were used as input to a predictive computer model (Cadna/A 2022 build: 189.5221), in order to estimate the sound levels from the proposed buildings at the existing receptors. Cadna/A is a computer implementation of ISO Standard 9613-2 [4] which considers attenuation due to distance (geometrical spreading), shielding by

intervening structures (such as buildings and bush), air attenuation and ground absorption. Additional information is provided in Appendix A.

Tenant information for the industrial buildings is currently unknown. However, it is understood that the buildings are likely to be used for offices and distribution type activities, but no manufacturing or processing. The proposed loading spaces are intended for small to medium size trucks only, as such, significant impulsive noise is not expected.

The buildings are assumed to operate 24 hours per day. In this impact assessment, we have considered the following worst-case (busiest hour) scenarios for each time period. It has been assumed delivery truck engines will idle for 5 minutes out of each hour as outlined in the Milton by-law No. 133-2012. Figure 3 shows the location of the steady noise source locations. Truck idling and rooftop HVAC units are shown as green crosses, and truck pass-bys are shown as a green line.

Assumed daytime worst-case hour scenario:

- 4 medium sized trucks arrive and depart the site (8 total truck trips);
- All rooftop equipment operates at full capacity for the full hour.

Assumed nighttime worst-case hour scenario:

- 4 medium sized trucks arrive and depart the site (8 total truck trips);
- All rooftop equipment operates 30 minutes out of each hour at full capacity.

Additional information and assumptions used in the analysis:

- The height of the proposed buildings is 20 ft. (6.1 m);
- One 5-ton HVAC unit is located on the roof of each 1500 sq.ft. unit;
- One 10-ton HVAC unit is located on the roof of each larger unit (north and south units of Building 1, and west unit of Building 2);
- Rooftop HVAC units are assumed to be 1.5 m tall.

Sound emission data for the trucking activities and rooftop equipment was obtained from HGC Engineering project files which were measured from past similar projects. The sound power levels for non-impulsive sources measured from similar facilities were used in our analysis and are summarized in Table 2.

Table 2: Sound Power Levels Used in the Analysis [dB re 10-12 W]

Source	Octave Band Centre Frequency [Hz]								A
	63	125	250	500	1k	2k	4k	8k	
HVAC Unit, 5-ton	--	67	72	77	76	73	68	61	80
HVAC Unit, 10-ton	91	89	86	84	84	78	76	67	88
Delivery Truck, Maneuvering	108	90	92	90	94	91	84	77	97
Delivery Truck, Idling	91	87	89	84	91	88	79	71	94

5 Assessment Results and Recommendations

The predicted sound levels due to the trucking activities (arriving, idling and departing) and mechanical equipment at the closest neighbouring residences (R1 to R5) during a worst-case busiest hour operating scenario, are summarized in the following table and shown graphically in Figures 4 and 5.

Table 3: Predicted Non-Impulsive Source Sound Levels at Receptors during a Worst-case Operating Scenario hour, Leq (dBA)

Receptor	Description	In the OLA		At the Façade	
		Criteria - Day (dBA)	Predicted Sound Level - Day (dBA)	Criteria Day / Night (dBA)	Predicted Sound Level Day / Night (dBA)
R1	7101 No. 5 Sideroad	50	44	50 / 45	43 / 41
R2	7129 No. 5 Sideroad	50	47	50 / 45	45 / 43
R3	7201 No. 5 Sideroad	50	41	50 / 45	41 / 39
R4	7257 No. 5 Sideroad	50	48	50 / 45	47 / 45
R5	7329 No. 5 Sideroad	50	43	50 / 45	44 / 42

The results of this analysis indicate that the predicted non-impulsive sound levels due to activities at the proposed facility are expected to be within the applicable limits at the noise sensitive receptors during an assumed worst-case operational scenario. Noise control measures are not required.

6 Conclusions

The results of the analysis indicate that the predicted sound levels due to noise sources associated with the proposed industrial development are expected to be within the MECP's minimum exclusionary limits at the surrounding receptors. Details are provided in the previous sections of the report. The acoustic recommendations may be subject to modifications if the site plan is changed significantly, or the operations of the facility are significantly different than the assumptions used in the noise study.

7 References

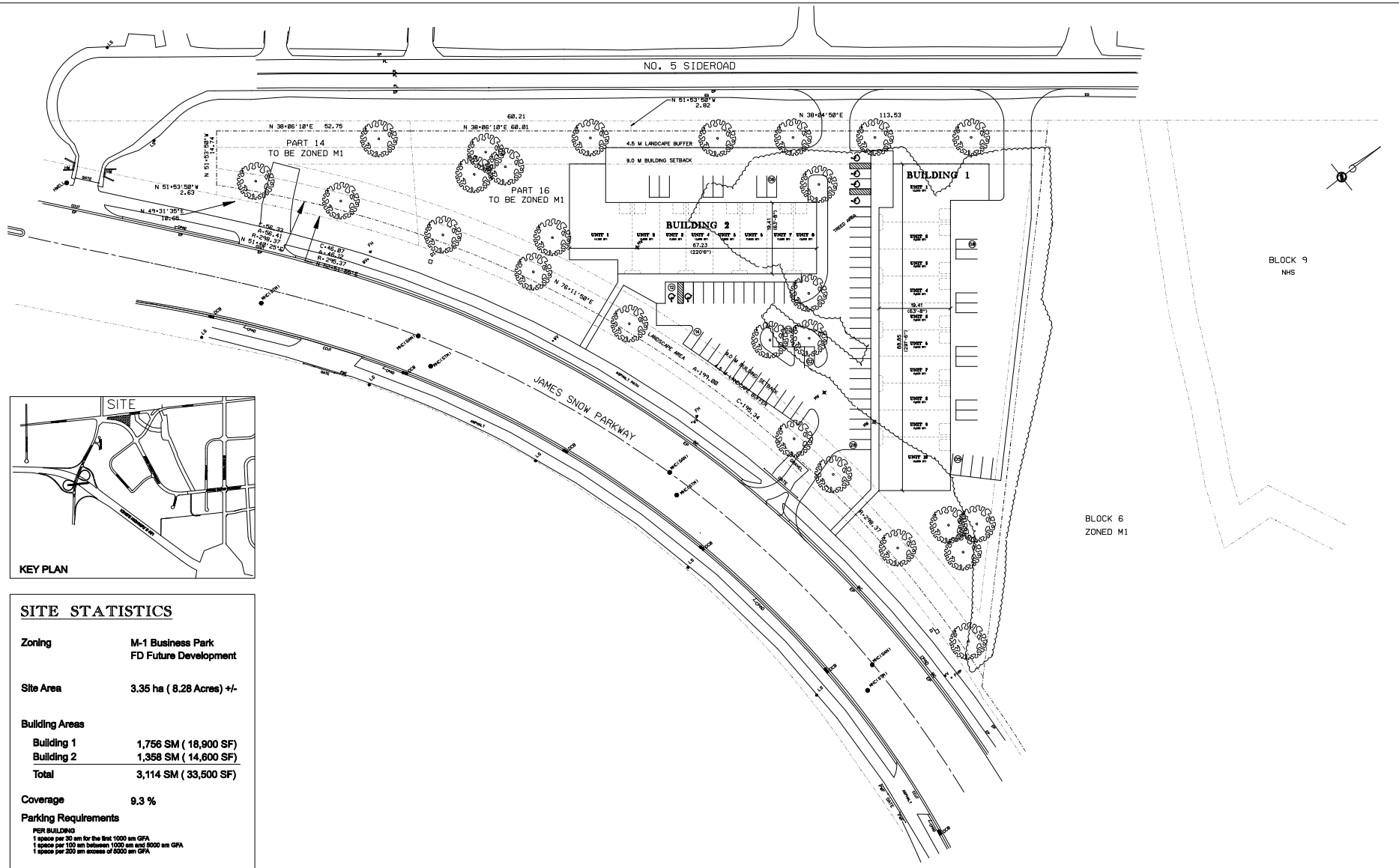
1. Ontario Ministry of the Environment Publication Guideline D1, *Land Use Compatibility, July 1995*

2. Ontario Ministry of the Environment Publication Guideline D6, *Compatibility Between Industrial Facilities and Sensitive Land Uses, July 1995*

3. Ontario Ministry of the Environment Publication NPC-300, *Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning*, August 2013.

4. International Organization for Standardization, *Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation*, ISO-9613-2, Switzerland, 1996.

Figure 1: Key Plan



SITE STATISTICS

Zoning	**M-1 Business Park** **FD Future Development**
Site Area	**3.35 ha (8.28 Acres) +/-**
Building Areas	
Building 1	**1,756 SM (18,900 SF)**
Building 2	**1,358 SM (14,600 SF)**
Total	**3,114 SM (33,500 SF)**
Coverage	**9.3 %**
Parking Requirements	
PER BUILDING 1 space per 30 sm for the first 1000 sm GFA 1 space per 100 sm between 1000 sm and 5000 sm GFA 1 space per 200 sm excess of 5000 sm GFA	
Building 1	**41.9 spaces**
Building 2	**35.1 spaces**
Total	**77.0 spaces**
Parking Provided	**77 spaces**

Figure 2 - Proposed Site Plan

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LATEST APPROVED DRAWINGS ONLY TO BE USED FOR CONSTRUCTION.

PRINTS ARE NOT TO BE SCALED.

No	Date Plotted	Revisions	Date Plotted	Issued for:

Industrial Development
James Snow Parkway North
James Snow Parkway — Milton, Ontario
Parts 14 and 16, RP 20R20039, Town of Milton, Regional Municipality of Halton

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Conceptual Site Plan-Scheme 1

CONSTRUCTION NORTH

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DRAWN BY	: J. DeCicco
DATE	: October 13, 2022
SCALE	: 1:400
PROJECT NO.:	22-15
DRAWING NO.:	A-1

Figure 3: Aerial Photo Showing Steady Noise Source and Receptor Locations

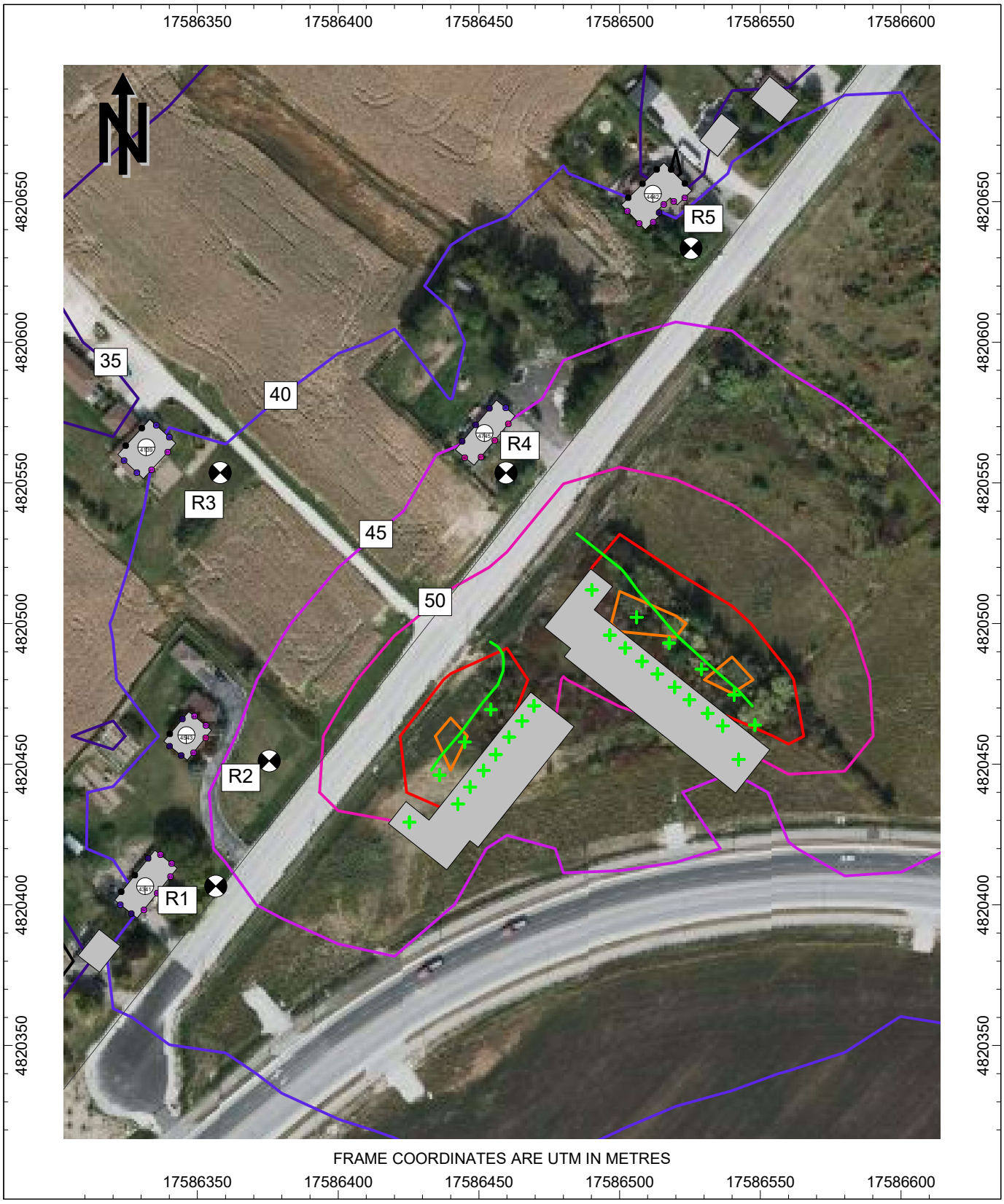

Figure 4: Daytime Sound Level Contours from Steady Noise Sources (dBA)

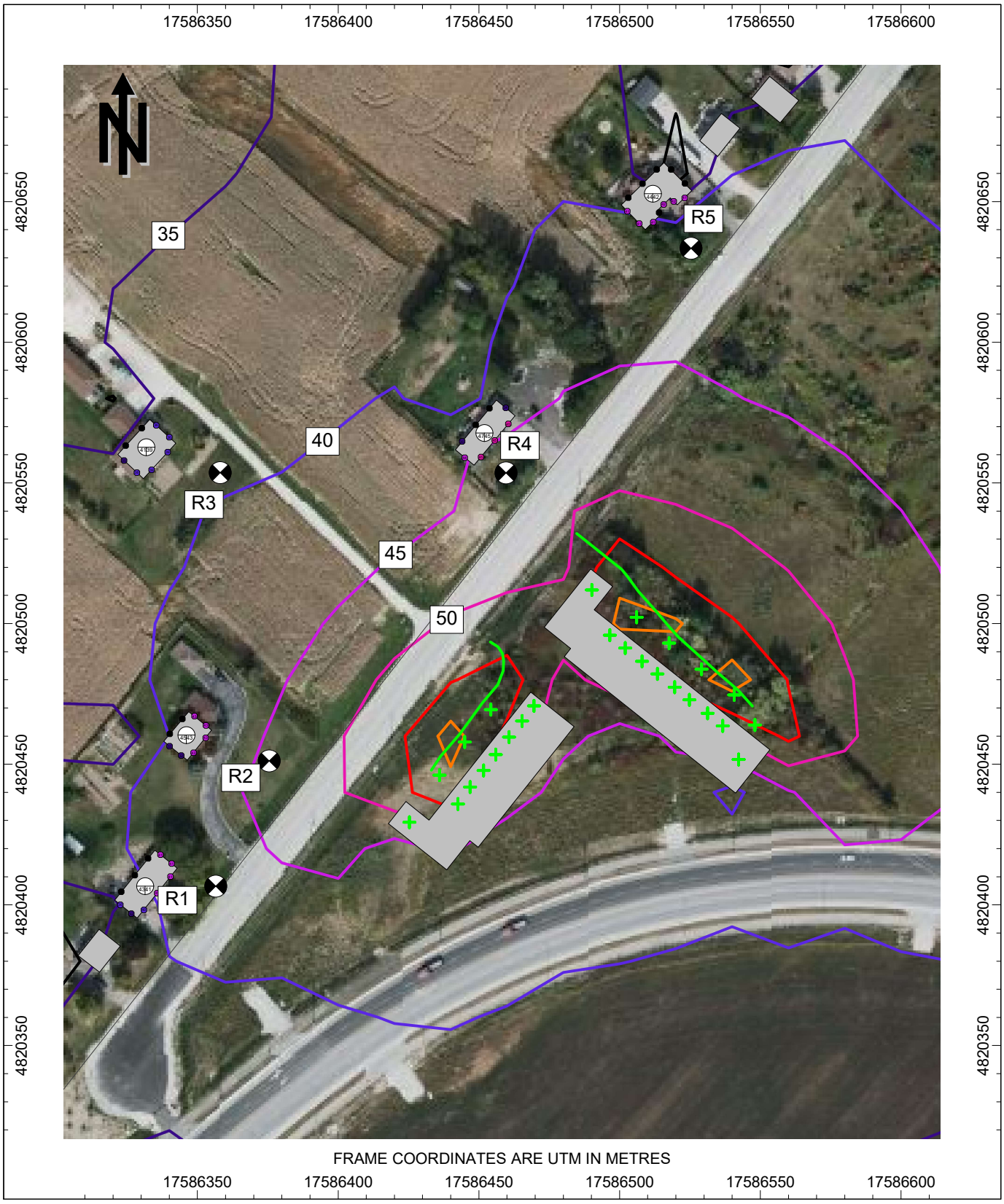

Figure 5: Nighttime Sound Level Contours from Steady Noise Sources (dBA)

APPENDIX A

Acoustical Modelling Assumptions

The predictive model used for this Assessment (*Cadna-A version 2022 Build 189.5221*) is based on methods from ISO Standard 9613-2.2 "Acoustics - Attenuation of Sound During Propagation Outdoors", which accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures such as buildings. This modeling technique is acceptable to the MECP.

The subject site and surrounding area were modelled based on observations during the site visit. Foliage was not included in the modelling. Ground attenuation was assumed to be spectral for all sources, with a ground factor (G) of 0.25 in paved areas and 0.9 for soft-ground areas. The temperature and relative humidity were assumed to be 10° C and 70%, respectively.

The predictive modelling considered one order of reflection, the sufficiency of which was verified through an iterative convergence analysis, using successively increasing orders of reflection.

All mechanical sources, with the exception of on-site truck movements, were modeled as point sources of sound, shown as crosses in Figures 3 through 5. On-site truck movements were modeled as a line source that are shown as green lines in the appropriate figures.