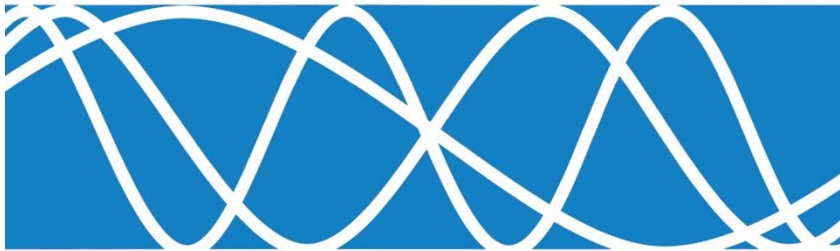


TOWN OF CALEDON  
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## Noise Feasibility Study

# **Motor Vehicle Repair Facility (Modified), Office and Outside Storage 10795 Highway 9 Caledon, Ontario**

February 5, 2025  
HGC Project #: 01800551



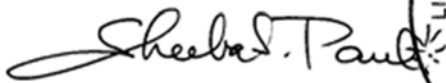
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# 1 INTRODUCTION & SUMMARY

HGC Noise Vibration Acoustics (HGC) was retained by Lions Group to investigate the environmental noise impact of a Motor Vehicle Repair Facility (Modified), office and outside storage located on Highway 9, west of Tottenham Road in Caledon, Ontario, on existing adjacent residences. This report summarizes the investigation.

This report has been updated to reflect the latest site plan prepared by GSAI dated January 21, 2025.

The analysis is based on a review of the aerial context plan, existing conditions map, facility operational information, site visits, and sound level data from HGC Engineering project files. The analysis includes an assessment of the noise impact including trucking, movements accessing/exiting the property, movement of equipment, and repair activities anticipated at the closest existing residences, in accordance with Ministry of the Environment, Conservation and Parks (MECP) guidelines.

A computer model of the area was created, using acoustic modelling software, in order to predict the sound levels at the adjacent nearby residences. The results indicate that the sound emissions of the facility are within noise guideline limits of the MECP at the nearby residential receptors. Noise mitigation is not required for the subject site. The results are summarized in this report.

# 2 SITE DESCRIPTION & NOISE SOURCES

The site is located on the south side of Highway 9, west of Tottenham Road in Caledon, Ontario. Figure 1 represents an aerial context plan of the approximate area. Figure 2 shows an existing conditions plan prepared by GSAI dated January 21, 2025. The subject site consists of a two-storey office associated with the Motor Vehicle Repair Facility, an access-controlled gate, one-storey Motor Vehicle Repair Facility, and an outside storage area associated with Lion's Demolition Excavation. The outdoor storage yard is used to store Equipment



being repaired associated with the Motor Vehicle Repair Facility. The activities at the subject site include movement of large trucks on the site for short distances to the on-site repair building, entry/exit of large trucks on the site for short distances to the on-site repair building and repair work. There are no demolition or excavation activities at the subject site. Demolition and excavation are performed off site. The hours of operation of the business in the facility is from 6 am to 6 pm. There are existing 2-storey residences located to the east and west of the site.

Lands to the east of the subject site, specifically at 10819 Highway 9, currently includes one automotive repair garage (Tiger Automotive) and a 2-storey dwelling. There is a development proposal to remove these buildings and include a gas station and convenience store. Nevertheless, the existing house has been included as a sensitive receptor.

Highway 9 has five lanes including a centre turning lane in the area of the site. The acoustic environment of the site and surrounding area is best categorized as Class 2 (semi-urban) under MECP noise assessment guidelines. Road traffic on Highway 9 is the dominant noise source in the area as observed during site visits in June and August 2019. There are existing residential land uses surrounding the site.

## 2.1 Noise Source Description

The primary sources of sound associated with the existing motor vehicle repair facility are the service bays for vehicle repairs and the movement of trucks within the property. Typical sound levels associated with these sources were obtained from HGC Engineering's project files for similar past projects. These sound levels are included in Section 4. Sensitive receptor locations were taken at the most impacted residences (R1 to R4) as shown in Figure 3. Each receptor location was assessed at the residence's closest top floor window as these represent the most impacted locations.



## 3 CRITERIA FOR NOISE FROM COMMERCIAL FACILITIES

### 3.1 Stationary Noise Criteria

MECP Guideline NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning" is the MECP guideline for use in investigating Land Use Compatibility issues with regard to noise. An industrial or commercial facility is classified in MECP guidelines as a stationary source of sound (as compared to sources such as traffic or construction, for example) for noise assessment purposes. Noise from the existing facility may impact neighbouring noise sensitive land uses.

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.

Typical ambient sound levels can be determined through prediction of road traffic volumes in areas where traffic sound is dominant. Where it can be demonstrated that the hourly ambient sound levels are greater than the exclusionary minimum limits listed above, the criterion becomes the lowest predicted one-hour LEQ sound level during each respective period. NPC-300 stipulates that the exclusionary sound level limit for a stationary noise source in a semi-urban Class 2 areas are taken to be 50 dBA during daytime and evening hours (07:00 to 19:00 and 19:00 to 23:00), and 45 dBA during nighttime hours (23:00 to 07:00) at the plane of the windows of noise sensitive spaces.

Using the traffic volumes from 2016 provided by the Ministry of Transportation of Ontario (MTO), the traffic data for Highway 9 was applied to a generic 24 hour traffic pattern developed by the US Department of Transportation, Federal Highways Administration contained in the report titled "Summary of National and Regional Travel Trends 1970 – 1995" dated May 1996. Commercial vehicles



percentages of 15% for this section of roadway was also obtained from the MTO and split into medium and heavy trucks using the standard MTO split. The traffic volumes were then used to predict sound levels at the dwelling units during the day/nighttime hours to determine the hourly background sound levels at those locations due to the traffic on the public roadways.

To assess the levels of background road traffic noise which will impact the existing sensitive receptors, noise predictions were made using a numerical computer modelling package (*Cadna/A version 2024 MR1 (64 bit) (build: 205.5427)*). The model is based on the methods from ISO Standard 9613-2.2, "Acoustics – Attenuation of Sound During Propagation Outdoors", which account for reduction in sound level with distance due to geometrical spreading, air absorption attenuation and acoustical shielding by intervening structures. The recommended criteria during the daytime and nighttime at each receptor are shown in Table I.

**Table I: Predicted Minimum Hourly Sound Levels and Noise Level Criteria at Existing Sensitive Receptors [dBA]**

Receptor	Daytime (07:00 – 23:00)	Nighttime (23:00-07:00)
R1*	50	45
R2	50	45
R3	50	45
R4	50	45

Note: \* R1 is proposed to be redeveloped into a gas station and convenience store.

Commercial activities such as the occasional movement of customer vehicles, occasional deliveries, and garbage collection are not of themselves considered to be significant noise sources in the MECP guidelines. Noise from safety equipment (e.g. back-up beepers) is also exempt from consideration and may be audible on occasion. The decision to include the sound from trucks in an assessment under MECP noise guidelines depends on the volume of trucking, and the nature of the facility. Occasional deliveries to retail stores and convenience stores are exempt, for example, but heavy trucking at a

warehouse or busy shipping/receiving docks at an industry must generally be assessed. Truck traffic associated with the existing motor vehicle repair facility and movement in the property have been included in the analysis.

The MECP guidelines stipulate that the sound level impact during a “predicable worst-case hour” be considered. This is defined to be an hour when a typically busy “planned and predictable mode of operation” occurs at the subject facility, coincident with a period of minimal background sound. Compliance with MECP criteria generally results in acceptable levels of sound at residential receptors although there may still be residual audibility during periods of low background sound.

## 4 STATIONARY SOURCE ASSESSMENT

Predictive noise modelling was used to assess the sound impact of the existing motor vehicle repair facility at the most impacted residential receptors. The noise prediction model was based on measured sound emission levels for noise sources, assumed operational profiles, and established engineering methods for the prediction of outdoor sound propagation. These methods include the effects of distance, air absorption, and acoustical screening by barrier obstacles.

The analysis considers the repair service bay doors located along the north, south and west façades of the existing motor vehicle repair facility and the movement of trucks on the subject site. Table II below summarizes the sound data used in the analysis.

**Table II: Source Sound Power Levels [dB re 10-12 W]**

Source	Octave Band Centre Frequency [Hz]								Overall [dBA]
	63	125	250	500	1k	2k	4k	8k	
Dump Truck	106	104	102	100	98	96	90	82	103
Service Bay (i.e. Repair maintenance activities including, tire change and airtool)	80	79	82	84	87	85	85	88	93





The above outlined sound levels were used as input to a predictive computer model. The software used for this purpose (Cadna/A version 2024 MR1 (64 bit) (build: 205.5427) is a computer implementation of ISO Standard 9613-2.2 "Acoustics - Attenuation of Sound During Propagation Outdoors." The ISO method accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures such as barriers.

The following information and assumptions were used in the analysis.

- The height of the motor vehicle repair facility was assumed to be 6.0 to 8.0 m.
- The most impacted residences are two-storey buildings (R1 to R4). The second storey windows were assumed to be approximately 4.5 m above grade.
- The noise sources were assumed to be located as shown in Figure 3. The green lines represent noise sources such as the movement of trucking vehicles. Sound data was obtained from HGC project files originally measured at similar sites.

In this impact assessment, we have considered typical worst-case (busiest hour) scenarios for each time period to be as follows:

***Assumed day worst-case scenario:***

- All vehicle service bays are utilized for 30 minutes each;
- 4 trucks entering/exiting the site;

***Assumed night worst-case scenario: (occurring between 6 am and 7 am)***

- All vehicle service bays are utilized for 10 minutes each;
- 2 trucks entering/exiting the site.

## 4.1 Results

The calculations consider the acoustical effects of distance and shielding by the buildings. The calculated sound levels from the existing motor vehicle repair facility at the existing residences are summarized in Table III, and presented graphically in Figures 4 and 5.



**Table III: Predicted Steady Stationary Sound Levels ( $L_{EQ-1HR}$ ) from the Motor Vehicle Repair Facility [dBA]**

Location	Sound Levels		Criteria		Meet Criteria (Y/N)
	Day/Eve	Night	Day/Eve	Night	
R1* (Two-Storey Residence)	49	44	50	45	Y
R2 (Two-Storey Residence)	40	36	50	45	Y
R3 (Two-Storey Residence)	49	45	50	45	Y
R4 (Two-Storey Residence)	48	43	50	45	Y

Note: \* R1 is proposed to be redeveloped into a gas station and convenience store.

The results of the calculations indicate that the sound levels from the existing motor vehicle repair facility are less than the MECP's sound level criteria at the most impacted residential receptors during daytime and nighttime hours, indicating they will meet the sound level criteria at all existing neighbouring residential receptors.

## 5 CONCLUSION

Assuming typical worst-case equipment and operating scenarios as described in this report, the analysis indicates that the noise impact of the existing motor vehicle repair facility will comply with MECP criteria at the existing residential buildings without noise mitigation measures. The reader is referred to previous sections of this report where the recommendations are discussed in detail.



## 6 REFERENCES

1. *Google Maps Aerial Imagery, Internet application: [maps.google.com](https://maps.google.com).*
2. *Ontario Ministry of the Environment, Conservation and Parks, Publication NPC-300, Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning, August 2013.*
3. *International Organization for Standardization, Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation, ISO-9613-2, Switzerland, 1996.*





Figure 1 - Aerial Context Plan



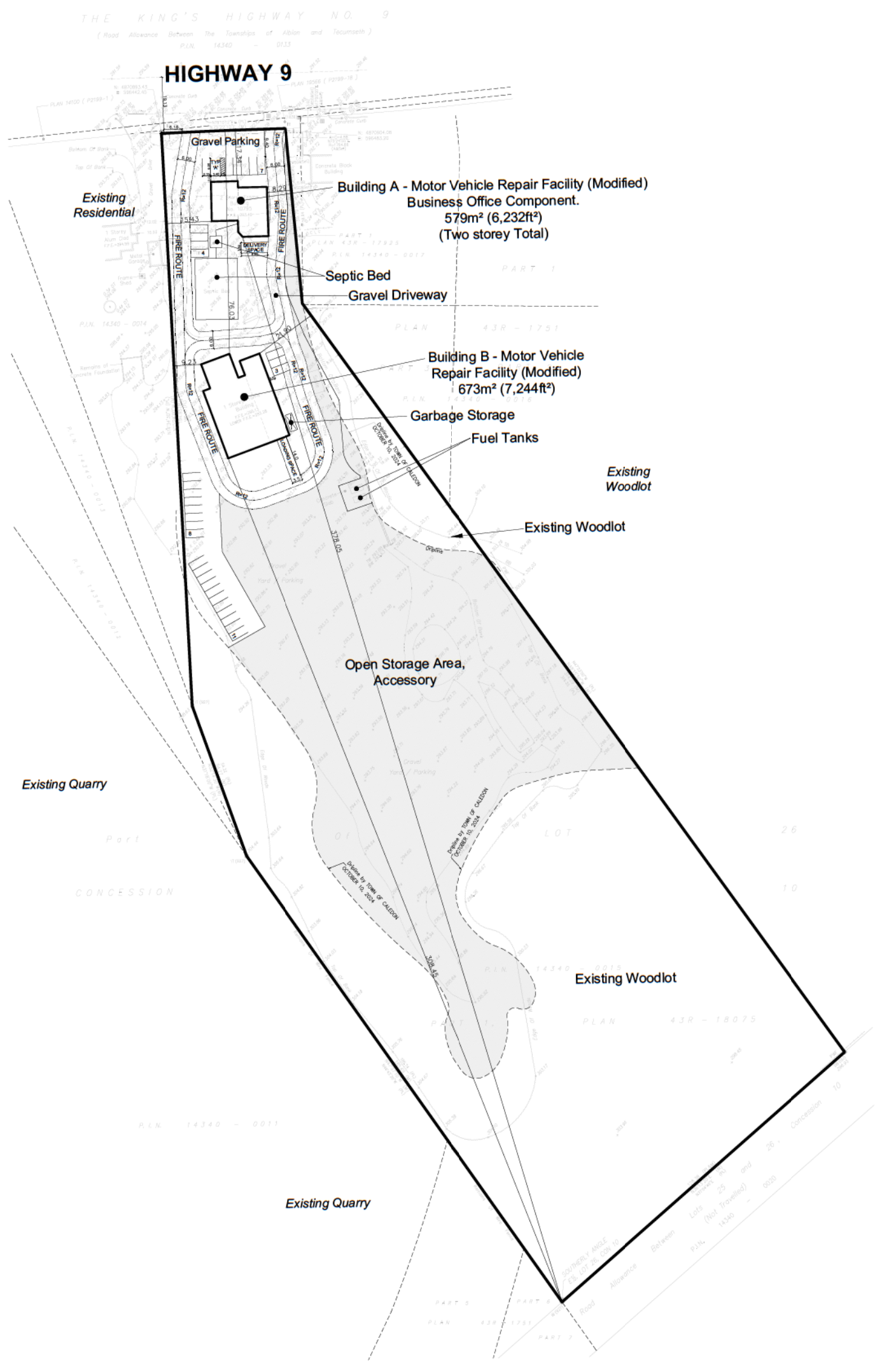
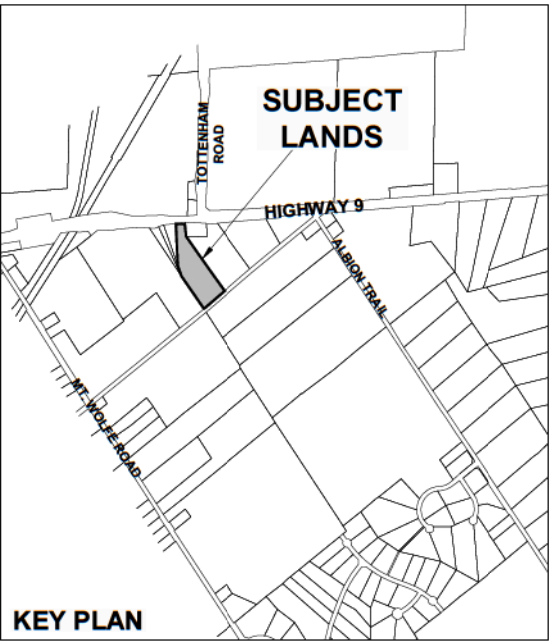


Figure 2 - Existing Conditions Plan



## EXISTING CONDITIONS PLAN

10795 HIGHWAY 9  
PART OF LOT 26, CONCESSION 10  
GEOGRAPHIC TOWNSHIP OF ALBION  
TOWN OF CALEDON  
REGIONAL MUNICIPALITY OF PEEL

### Site Statistics

Subject Lands: 3.95ha (9.76ac)  
Total Building GFA: 1,252m<sup>2</sup> (13,476ft<sup>2</sup>)  
Open Storage Area: 1.33ha (3.29ac)

### Parking Statistics

Parking Spaces Provided: 32  
Barrier Free Space Provided: 1  
Loading Space Provided: 1  
Delivery Space Provided: 1

### Notes:

Typical Perpendicular Parking Space: 2.75m x 6.0m  
Typical Barrier Free Space: 3.4m x 6.0m + 1.5m Aisle  
Typical Loading Space: 3.5m x 14.0m  
Typical Delivery Space: 3.5m x 9.0m



SCALE 1:750  
JANUARY 21, 2025

**GSAI**  
Glen Schnarr & Associates Inc.

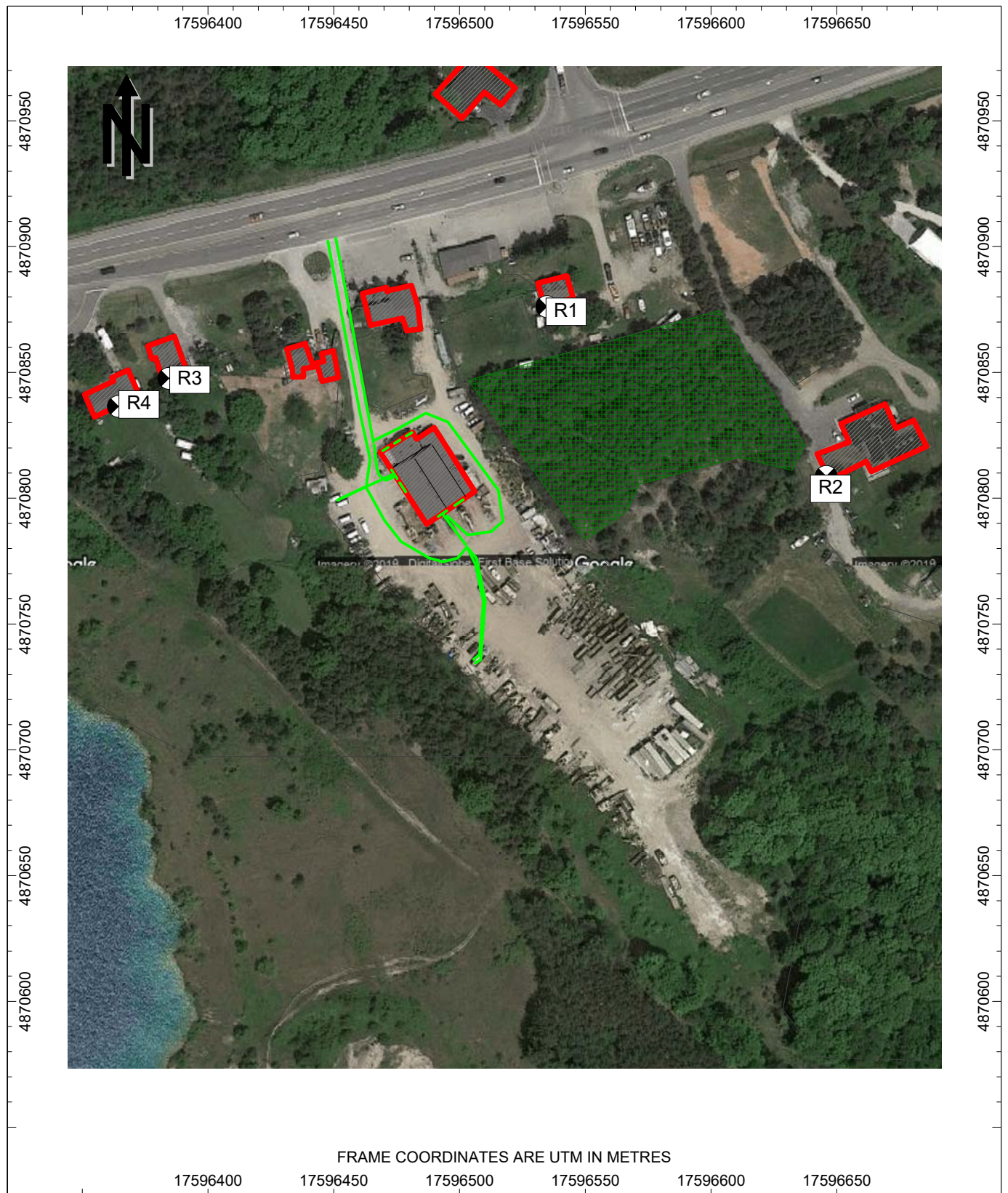


Figure 3 – Assumed Noise Source Locations and Key Residential Receptors



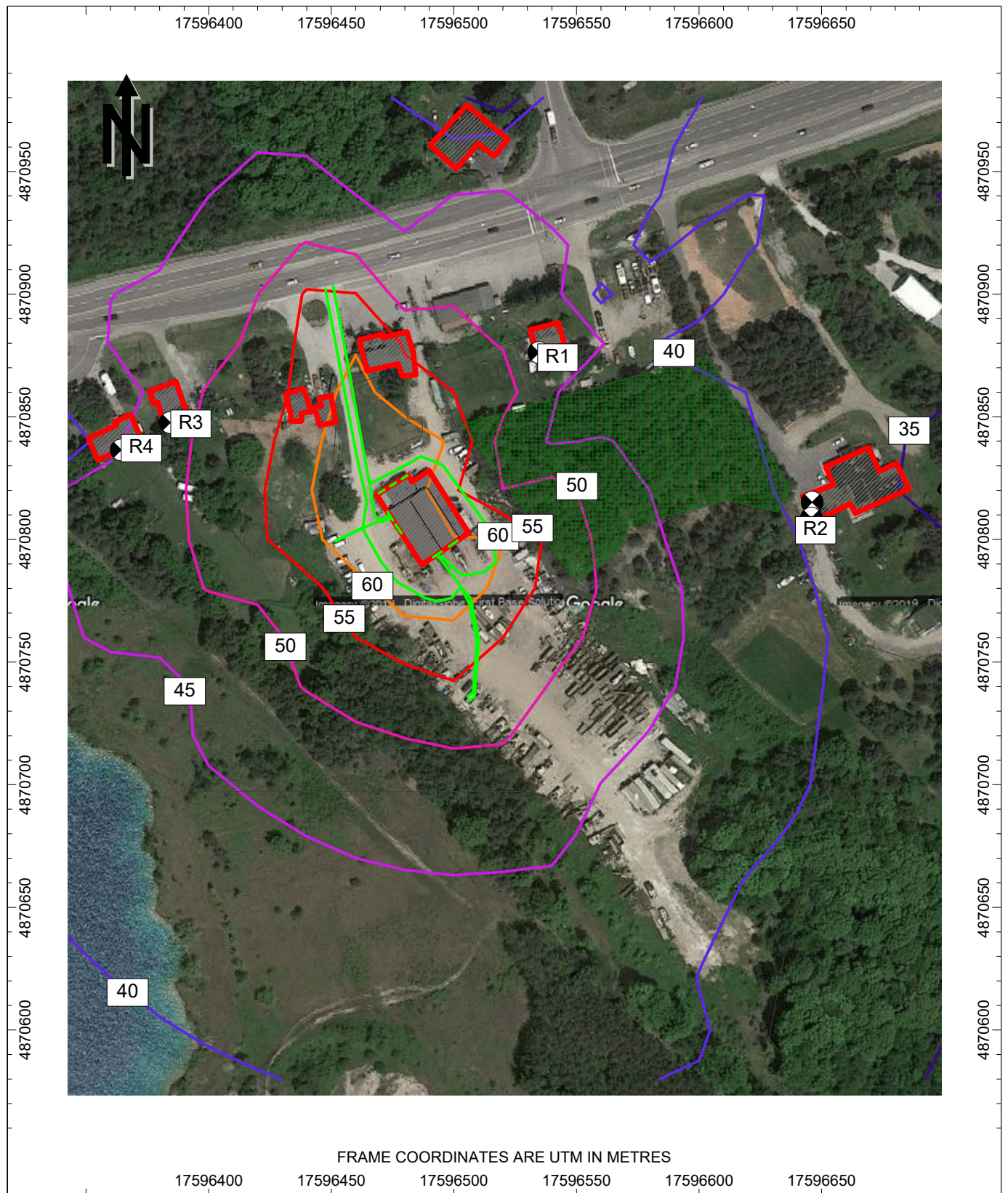


Figure 4 – Predicted Daytime Sound Level Contours at 4.5 m Height, dBA



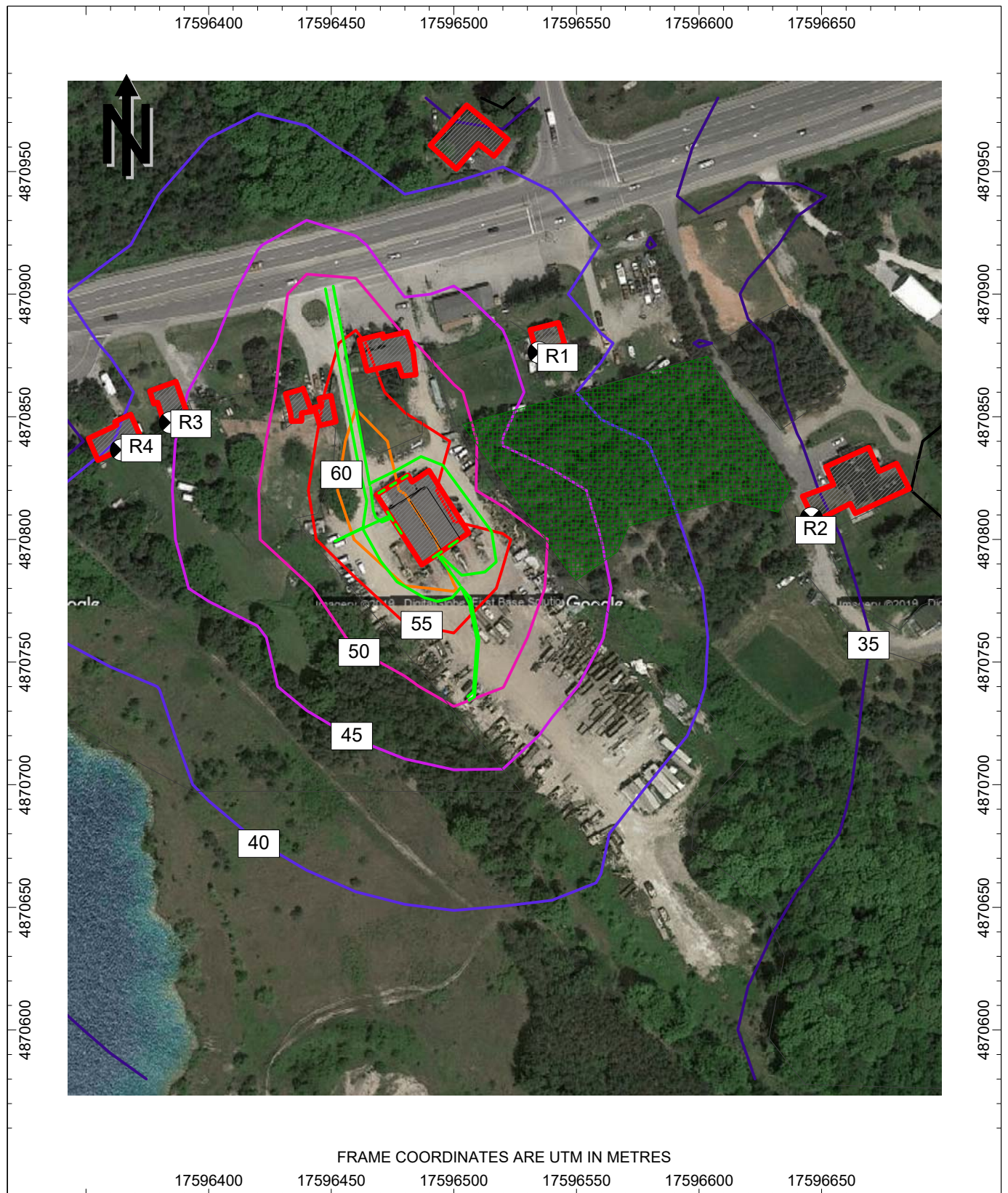


Figure 5 – Predicted Nighttime Sound Level Contours at 4.5 m Height, dBA