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Noise Feasibility Study
Proposed Residential Development
7302 Kalar Road
Niagara Falls, ON

Prepared for:

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March 12, 2024

HGC Project No: 02300462

VERSION CONTROL

Proposed Residential Development, 7302 Kalar Road, Niagara Falls, Ontario

Ver.	Date	Version Description	Prepared By
1.0	March 12, 2024	Original Noise Feasibility Study for plannings and approvals process	H. Cai

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Table of Contents

1 Introduction and Summary

HGC Engineering was retained by 2131595 Ontario Inc. to conduct a noise feasibility study for a proposed residential development located at 7302 Kalar Road in Niagara Falls, Ontario. The residential development will consist of a 13-storey and 15-storey residential tower. The study is required by the Region of Niagara as part of the planning and approvals process, specifically for Zoning and Official Plan Amendment.

The primary sources of noise are road traffic noise on Kalar Road and McLeod Road. Road traffic data was obtained from the City of Niagara Falls, and was used to predict future traffic sound levels at the proposed building façades and outdoor living areas. The predicted sound levels were compared to the guidelines the Ministry of Environment, Conservation and Parks (MECP) to develop noise control recommendations.

The results of the study indicate that the proposed development is feasible with the noise control measures described in this report. Forced air ventilation systems with ductwork sized for the future installation of central air conditioning by the occupant are required for all residential units. The installation of central air conditioning will satisfy and exceed ventilation requirements. Building constructions meeting the minimum requirements of the Ontario Building Code will provide sufficient acoustical insulation for the indoor spaces. Noise warning clauses are also required for those units to inform future occupants of the traffic noise impacts and proximity to existing commercial and industrial uses.

A computational model was created using acoustical modelling software to assess the potential impact of sound emissions from nearby stationary sources of noise, due to existing commercial and industrial uses, on the proposed development. The modelling results show that the predicted sound levels from nearby stationary sources are expected to be within the MECP guideline levels and mitigation is not required.

2 Site Description and Noise Sources

Figure 1 is a key plan indicating the location of the proposed site. The site is located east of Kalar Road and south of McLeod Road in Niagara Falls, Ontario. Figure 2 shows the site plan by Peter J. Lesdow, dated February April 8, 2023. The proposed development will consist of a 13-storey and a 15-storey residential building, with the west portion of each building being 3-storeys in height.

HGC Engineering personnel visited the site on November 27, 2023 to make observations of the acoustical environment. During the site visit, it was noted that the primary sources of noise impacting the site are road traffic on Kalar Road and McLeod Road. The site is currently occupied a heavy equipment rental and crane operator dispatch facility, which will be demolished for the construction of the proposed residential buildings.

Nearby Area

The area around the site is mostly commercial and industrial. To the north of the site are a single storey commercial building housing various business, including a hair salon (Dona's Hair), restaurant (Jerk Hut Cuisine), deli store (B & R European Deli), convenience store (Afro Caribbean Variety Food Market), and a small parking/storage space for construction equipment/vehicles. To the northeast are two-storey multi-family dwellings, immediately adjacent to the construction vehicle parking/storage space. To the northwest is a dental office (Pinewood Dental Care).

To the south of the site is an outdoor parking/storage area for utility poles, owned by Niagara Pennisula Energy Inc. (NPEI). To the east of the site are vacant residential lands. To the west of the site and across Kalar Road are vacant institutionally-zoned lands, which is expected to contain a future District School Board of Niagara Elementary School.

Figure 3 shows the aerial imagery of the area surrounding the site and the nearby land uses. An assessment of stationary noise from the nearby commercial and industrial facilities, including the dental office, the commercial facilities to the north, and Niagara Pennisula Energy) is detailed in Section 6. In any case, it is recommended that a noise warning clause to identify that such commercial uses may be audible at times be included in the property and tenancy agreements.

Public Elementary School Block

The developer of the public school should perform a noise study when the sitting and building information are available to ensure any mechanical equipment associated with the school are in compliance with the MECP Guideline NPC-300.

3 Traffic Noise Criteria

Guidelines for acceptable levels of road traffic noise impacting residential developments are given in the MECP publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", release date October 21, 2013, and are listed in Table I below.

The values in Table I are energy equivalent (average) sound levels [L_{EQ}] in units of A-weighted decibels [dBA].

Table I: MECP Road Traffic Noise Criteria (dBA)

Area	Daytime $L_{EQ\ (16\ hour)}$ Road	Nighttime $L_{EQ(8\ hour)}$ Road
Outdoor Living Area	55 dBA	--
Inside Living/Dining Rooms	45 dBA	45 dBA
Inside Bedrooms	45 dBA	40 dBA

Daytime refers to the period between 07:00 and 23:00. Nighttime refers to the time period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace, or other area where passive recreation is expected to occur. Small balconies are not considered OLAs for the purposes of assessment. Terraces greater than 4 m in depth (measured perpendicular to the building façade) are considered to be OLAs.

The guidelines in the MECP publication allow the daytime sound levels in an Outdoor Living Area to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is required to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically, and administratively practical.

A central air conditioning system as an alternative means of ventilation to open windows is required

for dwellings where nighttime sound levels outside bedroom or living/dining room windows exceed 60 dBA or daytime sound levels exceed 65 dBA. Forced-air ventilation with ducts sized to accommodate the future installation of air conditioning is required when nighttime sound levels are in the range of 51 to 60 dBA or when daytime sound levels are in the range of 56 to 65 dBA.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of window nighttime sound level is greater than 60 dBA or the daytime sound level is greater than 65 dBA due to road traffic noise.

Warning clauses to notify future residents of possible noise excesses are also required when nighttime sound levels exceed 50 dBA at the plane of a bedroom/living/dining room window and when daytime sound levels exceed 55 dBA due to road traffic.

4 Traffic Noise Assessment

4.1 Road Traffic Data

Traffic data for Kalar Road and McLeod Road was obtained from the City of Niagara Falls in the form of turning movement count (TMC) volumes and is provided in Appendix A. The traffic volumes were projected to the year 2034 at an annual growth rate of 2.5 %. It is noted that these road segments are not under the jurisdiction of the Region of Niagara. For Kalar Road, a projected volume of 12 331 vehicles per day with a commercial vehicle percentage of 2.3 % was calculated from the TMC data and applied, further split into 0.9 % for medium trucks and 1.4 % for heavy truck as per Ministry of Transportation publication Environmental Guide for Noise. For McLeod Road, a projected volume of 26 214 vehicles per day with a commercial vehicle percentage of 4.5 % was calculated from the TMC data and applied, further split into 1.7% for medium trucks and 2.8 % for heavy truck. A day / night split of 90 % / 10 % and posted speed limits of 50 km/h was used for both roadways.

Table II summarizes the traffic volume data used in this study.

Table II: Projected Road Traffic Data to Year 2034

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Kalar Road	Daytime	10 843	100	155	11 098
	Nighttime	1 205	11	17	1 233
	Total	**12 047**	**111**	**174**	**12 331**
McLeod Road	Daytime	22 531	401	661	23 593
	Nighttime	2 503	45	73	2 621
	Total	**25 034**	**446**	**734**	**26 214**

4.2 Road Traffic Noise Predictions

To assess the levels of road traffic noise which will impact the study area in the future, sound level predictions were made using STAMSON version 5.04, a computer algorithm developed by the MECP. Sample STAMSON output is included in Appendix B.

Predictions of the traffic sound levels were chosen around the proposed residential buildings to obtain an appropriate representation of future sound levels at various façades. Sound levels were predicted at the plane of the top storey bedroom and/or living/dining room windows during daytime and nighttime hours to investigate ventilation and façade construction requirements. The top storey was chosen as a conservative approach, since it is most critically impacted by road traffic noise in this assessment. Sound levels were also predicted in possible OLA's to investigate the need for noise barriers. Figure 2 shows the site plan with prediction locations. The results of these predictions are summarized in Table III.

Table III: Predicted Road Traffic Sound Levels [dBA], Without Mitigation

Prediction Location	Description	Daytime – at the Façade $L_{EQ\text{-}16\ hr}$	Nighttime – at the Facade $L_{EQ\text{-}8\ hr}$
[A]	West façade facing Kalar Rd, 3-storey	63	56
[B]	West façade facing Kalar Rd, 13-storey	62	55
[C]	North façade facing McLeod Rd, 13-storey	62	56
[D]	East façade flanking Kalar Rd, 15-storey	56	50

5 Traffic Noise Recommendations

The sound level predictions indicate that the future traffic sound levels will exceed MECP guidelines at the proposed development. The following discussion outlines the recommendations for acoustic barrier requirements, ventilation requirements, upgraded building façade construction, and warning clauses to achieve the noise criteria stated in Table I.

5.1 Outdoor Living Areas

The dwelling units in the proposed residential buildings have balconies that are less than 4 m in depth. These areas are not considered to be outdoor living areas under the MECP guidelines, and therefore are exempt from traffic noise assessment.

There are no other common outdoor amenity areas indicated on the conceptual site plan.

5.2 Indoor Living Areas and Ventilation Requirements

Provision for Air Conditioning

The predicted future sound levels outside the top storey windows will be between 56 and 65 dBA during the daytime hours and/or between 51 to 60 dBA during the nighttime hours. To address these excesses, these dwelling units require provisions for the future installation of central air conditioning systems so that windows may be kept closed. This requirement is typically satisfied through the installation of forced air ventilation systems with ductwork sized for the future installation of central air conditioning by the occupant. Inclusion of air conditioning will meet and exceed the requirement. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300.

5.3 Building Façade Constructions

The predicted sound levels at all units in the development will not exceed 65 dBA daytime and 60 dBA nighttime, thus will not require detailed building envelope design to conform to noise criteria. Any exterior wall and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for the interior spaces.

6 Stationary Source Assessment

As discussed in Section 2, there are commercial and light industrial facilities north and south of the subject site that are potential sources of noise, specifically equipment and activities from the small strip retail building to the north, the dental facility to the northwest, and the lands to the south associated with Niagara Peninsula Energy Inc.

Noise sources associated with industrial and commercial facilities are assessed separately from traffic sources under MECP guidelines. These facilities are considered to be Stationary Sources of Sound and criteria for their assessment are contained in the following section.

6.1 Criteria Governing Stationary (Industrial) Noise Sources

An industrial or commercial facility is classified in MECP guidelines as a stationary source of sound (as opposed to sources such as traffic or construction, for example) for noise assessment purposes. The proposed development is located in an urban acoustical environment classified as Class I according to MECP guidelines, which can be characterized by the background sound level being dominated by traffic and human activity.

The façade of a residence, or any associated usable outdoor area, is considered a sensitive point of reception. NPC-300 stipulates that the exclusionary minimum sound level limit for a stationary noise source in an urban Class 1 area is 50 dBA during daytime (07:00 to 19:00) and evening (19:00 to 23:00) hours, and 45 dBA during nighttime hours (23:00 to 07:00). If the background sound levels due to road traffic exceed the exclusionary minimum limits, then the background sound level becomes the criterion. The background sound level is defined as the sound level that is present when the stationary source under consideration is not operating, and may include traffic noise and natural sounds.

Based on site visit observations, sound levels at the site area that are further from Kalar Road can fall as low as the exclusionary minimum sound levels. As such, the exclusionary minimum criteria at all receptors will be adopted to ensure a conservative analysis,

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. Accordingly, these sources have not been considered in this study. Noise from safety equipment (e.g. back-up beepers) is also exempt from consideration.

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.

6.2 Stationary Source Noise Predictions

Predictive noise modelling was used to assess the sound impact of the nearby stationary sources at the most critically impacted façades of the proposed development in accordance with MECP guidelines. The noise prediction model was constructed based on site visit observations, correspondence with NPEI personnel, satellite aerial photos, and estimates of sound emission levels of stationary sources taken from similar past HGC Engineering project files.

Table IV: 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	
Rooftop 5-ton HVAC	--	83	81	80	76	72	67	62	81
Rooftop Kitchen Exhaust Fan	84	85	84	80	76	73	64	57	82
Idling Trailer Truck	96	91	88	88	91	90	81	70	95
Trailer Truck Movement	101	100	94	96	97	95	91	86	101
Aggregate/Flatbed Truck Movement	104	101	101	99	97	94	89	81	102
Skid Steer Movement	104	105	98	93	94	98	90	83	102
Outdoor Forklift	99	95	91	91	91	88	82	76	95
Open Vehicle Repair Bay Door	80	79	82	84	87	85	85	88	93

The above data were inputted into a predictive computer model. The software used for this purpose (*Cadna-A version 2023, build: 197.5343*) 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 buildings and barriers. Details of the Cadna/A model are provided in Appendix C, along with correspondence with NPEI personnel.

The following information and assumptions were used in the analysis.

- The small parking space for construction vehicles to the north was assumed to be active, with a rock truck and a skid-steer accessing the area, despite no activities being observed on-site.
- Restaurants, retail stores, and dental office to the north operate during daytime/evening hours only, based on listed business hours.
- While no activities were observed at the NPEI outdoor storage area during the site visit, it is assumed that the storage area can accommodate moving trucks, forklifts, and idling trucks.
- Digger derrick trucks were seen to be parked on the facility. A direct sound measurement of these trucks was not possible. As a conservative estimate, the sound emissions of bigger tractor trailer trucks were assumed to represent the sound emissions of digger derrick trucks in their movement and idling.
- The eastern portion of the NPEI lands feature storage hangars and overhead bay doors, which are assumed to be all capable of being open and carrying out minor vehicle repairs as a conservative case.
- Based on information from NPEI personnel, the NPEI facility primarily operates during daytime hours only, with exception of emergency repairs due to storm or weather-related events. Trucking movements were noted to be most active in the morning, where trucks leave the facility in the morning and return in the afternoon.
- Location of the stationary sources of noise are shown in Figure 4, with green crosses showing the locations of rooftop mechanical equipment and idling trucks and green lines showing truck movement and vehicle repair bay doors.

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

Assumed daytime/evening worst-case scenario:

- All rooftop HVAC units operating continuously at 100% capacity.
- Rooftop kitchen exhaust fans operating continuously at 100% capacity.
- One rock truck and one skid-steer accessing the small parking space to the north.
- Three forklifts operating for 20 minutes at the NPEI outdoor storage areas.
- One aggregate/flatbed truck moving accessing the storage areas.

- 20 trucks leaving/entering the NPEI facility, with three trucks idling for 20 minutes.
- All overhead bay doors open and active for minor vehicle repairs for 20 minutes.

Assumed nighttime worst-case scenario:

- All rooftop HVAC units operating continuously at 33% capacity for cooler nighttime ambient temperatures and lack of occupancy for these commercial buildings.
- Rooftop kitchen exhaust fans not operating (outside of business hours).
- No construction vehicles accessing the small parking space to the north.
- No forklifts operating at the NPEI outdoor storage areas (outside of operating hours).
- 10 trucks accessing the NPEI facility. While nighttime trucking movement associated with emergency overtime repairs are exempt from the noise assessment as per MECP guidelines, some nighttime trucking activities are assessed as a conservative approach.
- All overhead bay doors closed and inactive.

6.3 Results

The unmitigated sound levels due to nearby stationary sources of noise at the façades of the proposed buildings are summarized in Table V, and presented graphically in Figures 5a and 5b.

Table V: Predicted Sound Levels from Nearby Stationary Sources on the Proposed Residential Buildings [dBA]

	Daytime (07:00 – 23:00)	Nighttime (23:00 – 07:00)	Criteria (Daytime / Nighttime)
South Facades	50	41	50 / 45
East Façades	47	40	
West Façades	42	37	
North Façades	44	36	

The results of the calculations indicate that the predicted sound levels due to the operation of the nearby stationary sources of noise are within MECP limits at the façades of the proposed buildings during a worst-case operational scenario. Mitigation is not required.

7 Warning Clauses

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements and offers of purchase and sale for all units with anticipated traffic sound level excesses. The following noise warning clauses are required for all dwelling units.

- 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, Conservation and Parks.
- 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, Conservation and Parks.
- Purchasers are advised that due to the proximity of the existing commercial buildings and light industrial facilities, sound levels from the facilities may be at times audible.

These sample clauses are provided by the MECP as examples, and can be modified by the Municipality as required.

8 Impact of the Development on Itself

Section 5.8.1.1 of the Ontario Building Code (OBC), released on January 1, 2020, specifies the minimum required sound insulation characteristics for demising partitions, in terms of Sound Transmission Class (STC) or Apparent Sound Transmission Class (ASTC) values. In order to maintain adequate acoustical privacy between separate suites in a multi-tenant building, inter-suite walls must meet or exceed STC-50 or ASTC-47. Suite separation from a refuse chute or elevator shaft must meet or exceed STC-55. In addition, it is recommended that the floor/ceiling constructions separating suites from any amenity or commercial spaces also meet or exceed STC-55. Tables 1 and 2 in Section SB-3 of the Supplementary Guideline to the OBC provide a comprehensive list of constructions that will meet the above requirements.

Tarion's Builder Bulletin B19R requires the internal design of condominium projects to integrate suitable acoustic features to insulate the suites from noise from each other and amenities in

accordance with the OBC, and limit the potential intrusions of mechanical and electrical services of the buildings on its residents. If B19R certification is needed, an acoustical consultant is required to review the mechanical and electrical drawings and details of demising constructions and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself is maintained within acceptable levels.

9 Impact of the Development on the Environment

Sound levels from stationary (non-traffic) sources of noise such as rooftop air-conditioners, cooling towers, exhaust fans, etc. should not exceed the minimum one-hour L_{EQ} ambient (background) sound level from road traffic, at any potentially impacted residential point of reception, to avoid noise complaints. Based on the levels observed during our site visit, the typical minimum ambient sound levels in the area are expected to be in the range of 50 dBA or more during the day and 45 dBA or more at night. Thus any electro-mechanical equipment associated with this development (e.g. emergency generator testing, fresh-air handling equipment, etc.) should be designed with these targets in mind such that they do not result in noise impact beyond these ranges.

10 Summary and Recommendations

The following list summarizes the recommendations made in this report. The reader is referred to the previous sections of the report where these recommendations are applied and discussed in more detail.

For Transportation Noise:

1. Forced air ventilation systems with ductwork sized for future installation of central air conditioning systems will be required for all units. The installation of central air conditioning will satisfy and exceed ventilation requirements.

2. Building construction meeting the minimum requirements of the Ontario Building Code is sufficient for acoustical insulation for indoor spaces.

3. The use of warning clauses in the property and tenancy agreements is recommended to inform future residents of traffic noise issues.

For Stationary Noise:

1. The use of a warning clause in the property and tenancy agreement is recommended to inform future residents of proximity to existing commercial and industrial uses.

10.1 Implementation

To ensure that the noise control recommendations outlined above are properly implemented, it is recommended that:

1. Prior to the issuance of occupancy permits for this development, the Municipality's building inspector or a Professional Engineer qualified to perform acoustical engineering services in the Province of Ontario should certify that the noise control measures have been properly installed and constructed.

2. The developer of the future DSBN school to the west should perform a noise study when the sitting and building information are available to ensure any mechanical equipment associated with the school are in compliance with the MECP Guideline NPC-300.

Figure 1: Key Plan

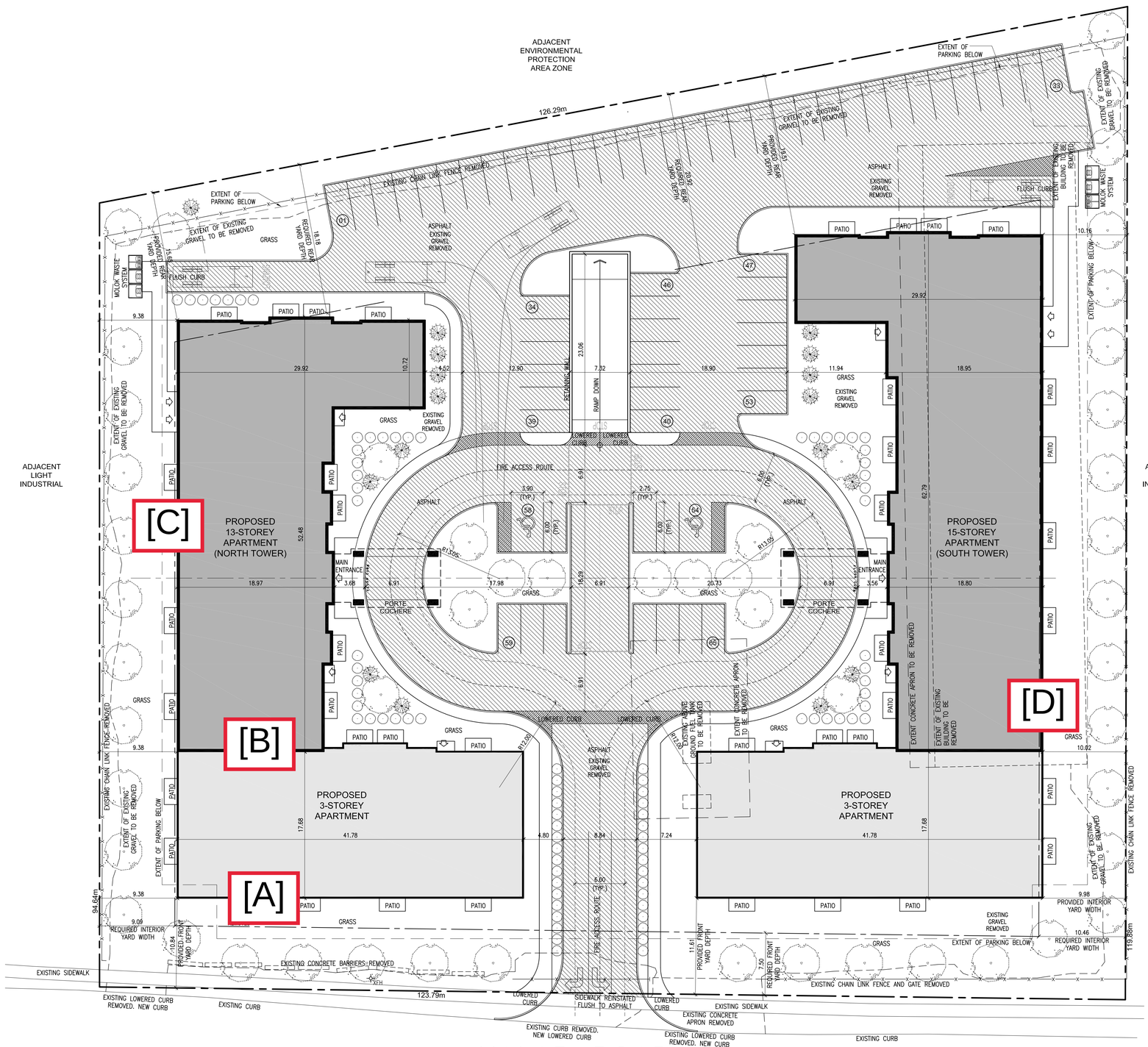

Figure 2: Site Plan Showing Prediction Locations for Traffic Noise Assessment

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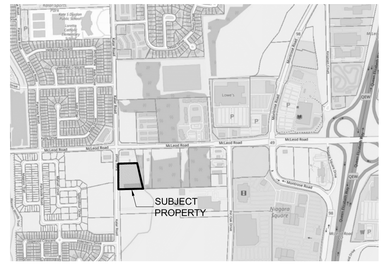

N
W
E
S

KEY PLAN

SCALE : Not to Scale

SITE STATISTICS

LOT AREA		13,289.54 m²
BUILDING GROUND COVER		
North Tower	13.8% of Lot Area	1,834.09 m²
South Tower	15.2% of Lot Area	2,015.73 m²
TOTAL	29.0% of Lot Area	3,849.82 m²
ASPHALT AREA	28.9% of Lot Area	3,835.66 m²
LANDSCAPED AREA	42.2% of Lot Area	5,604.06 m²

DWELLING UNITS

BUILDING	FLOORS	ONE BEDROOM	TWO BEDROOM
NORTH TOWER (13 Storeys)	1	10	9
	2-3	6	14
	4-13	3	9
SOUTH TOWER (15 Storeys)	1	10	11
	2-3	16	16
	4-15	11	11

TOTAL DWELLING UNITS	APARTMENTS	ONE BEDROOM	TWO BEDROOM
NORTH TOWER	179	52	127
SOUTH TOWER	233	58	175
DEVELOPMENT	412	110	302

PARKING REQUIREMENTS (As Per City of Niagara Falls By-Law 79-200)

DWELLING containing more than 3 Dwelling units		
1.4 Parking Spaces per Dwelling Unit (1.4 x 412)	=	576.8 Spaces
TOTAL PARKING REQUIRED		577 Spaces

PARKING REQUIREMENTS (Acceptable Variance of 1.2 Spaces per Dwelling Unit)

DWELLING containing more than 3 Dwelling units		
1.2 Parking Spaces per Dwelling Unit (1.2 x 412)	=	494.4 Spaces
TOTAL PARKING REQUIRED		494 Spaces
REQUIRED DESIGNATED ACCESSIBLE PARKING		5 Spaces
STANDARD SPACES		489 Spaces

PARKING PROVIDED

STANDARD PARKING SPACES (2.75m x 6.00m TYPICAL)	
AT GRADE	65 Spaces
FIRST BASEMENT	321 Spaces
SECOND BASEMENT	132 Spaces
TOTAL PARKING PROVIDED	518 Spaces
PROVIDED STANDARD SPACES	512 Spaces
PROVIDED DESIGNATED ACCESSIBLE PARKING	6 Spaces

BUILDING AREA SUMMARY

Floor	North Tower	South Tower	Shared
Second Basement			4,927.12 m²
First Basement			10,674.32 m²
Ground	1,834.09 m²	2,015.73 m²	
Two	1,863.14 m²	2,018.92 m²	
Three	1,863.14 m²	2,018.92 m²	
Four	1,086.61 m²	1,265.27 m²	
Five	1,086.61 m²	1,265.27 m²	
Six	1,086.61 m²	1,265.27 m²	
Seven	1,086.61 m²	1,265.27 m²	
Eight	1,086.61 m²	1,265.27 m²	
Nine	1,086.61 m²	1,265.27 m²	
Ten	1,086.61 m²	1,265.27 m²	
Eleven	1,086.61 m²	1,265.27 m²	
Twelve	1,086.61 m²	1,265.27 m²	
Thirteen	1,086.61 m²	1,265.27 m²	
Fourteen	-	1,265.27 m²	
Fifteen	-	1,265.27 m²	
Sub-Total	16,426.47 m²	21,236.81 m²	15,601.44 m²
Total Construction Area			53,264.72 m²

ZONING CHANGE

Change Zoning from Light Industrial to an R5F Zone

R5F ZONING RELIEF TABLE

BY-LAW 7.15.2.	BY-LAW REQUIREMENT	PROVIDED	BY-LAW VAR. REQ'D
a) Minimum Lot Area	412 x 57 m² (per Dwelling Unit) = 23,484 m²	13,289.54 m² / 412 = 32.26 m² per Dwelling Unit	32 m² per Dwelling Unit
b) Minimum Lot Frontage	45 m	123.79 m	None
c) Minimum Front Yard Depth	7.5 m plus any applicable distance specified in section 4.27.1	10.84 m	None
d) Minimum Rear Yard Depth	one-half building height or 10 metres whichever is greater plus any applicable distance specified in section 4.27.1		
North Tower = 18.18 m		15.65 m	3.5 m
South Tower = 20.92 m		19.51 m	2.5 m
e) Minimum Interior Yard Depth	One-Quarter the height of the building		
North Tower = 9.09 m		9.38 m	None
South Tower = 10.46 m		10.02 m	1.5 m
g) Maximum Lot Coverage	30% or 3,986.86 m²	29.2% or 3,879.79 m²	None
h) Maximum Building Height	28.0 m subject to section 4.7	North Tower 36.35 m South Tower 41.85 m	9.0 m 14.5 m
i) Number of Apartment Dwellings on One Lot	One Only	Two Buildings	Two Buildings
j) Parking and Access Requirements	In Accordance with Section 4.19.1	See Above	None
k) Accessory Buildings and Accessory Structures	In Accordance with Sections 4.13 and 4.14	None	None
l) Minimum Landscaped Open Space	55% of Lot Area = 7,309.25 m²	42.2 % or 5,604.06 m²	41.5% or 5,515.16 m²

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ONTARIO ASSOCIATION OF ARCHITECTS
PETER J. LESDOW
LICENCE
3745

SITE PLAN

REVISIONS	
DATE	
Apr. 06/ 23	PRE-CONSULTATION APPLICATION

KALAR ROAD APARTMENTS
7302 Kalar Road
Niagara Falls,ON

DATE:	Mar. 23/ 23
SCALE:	AS NOTED
DRAWN BY:	MRW
CHECK BY:	PJL

23 – 05

A-1

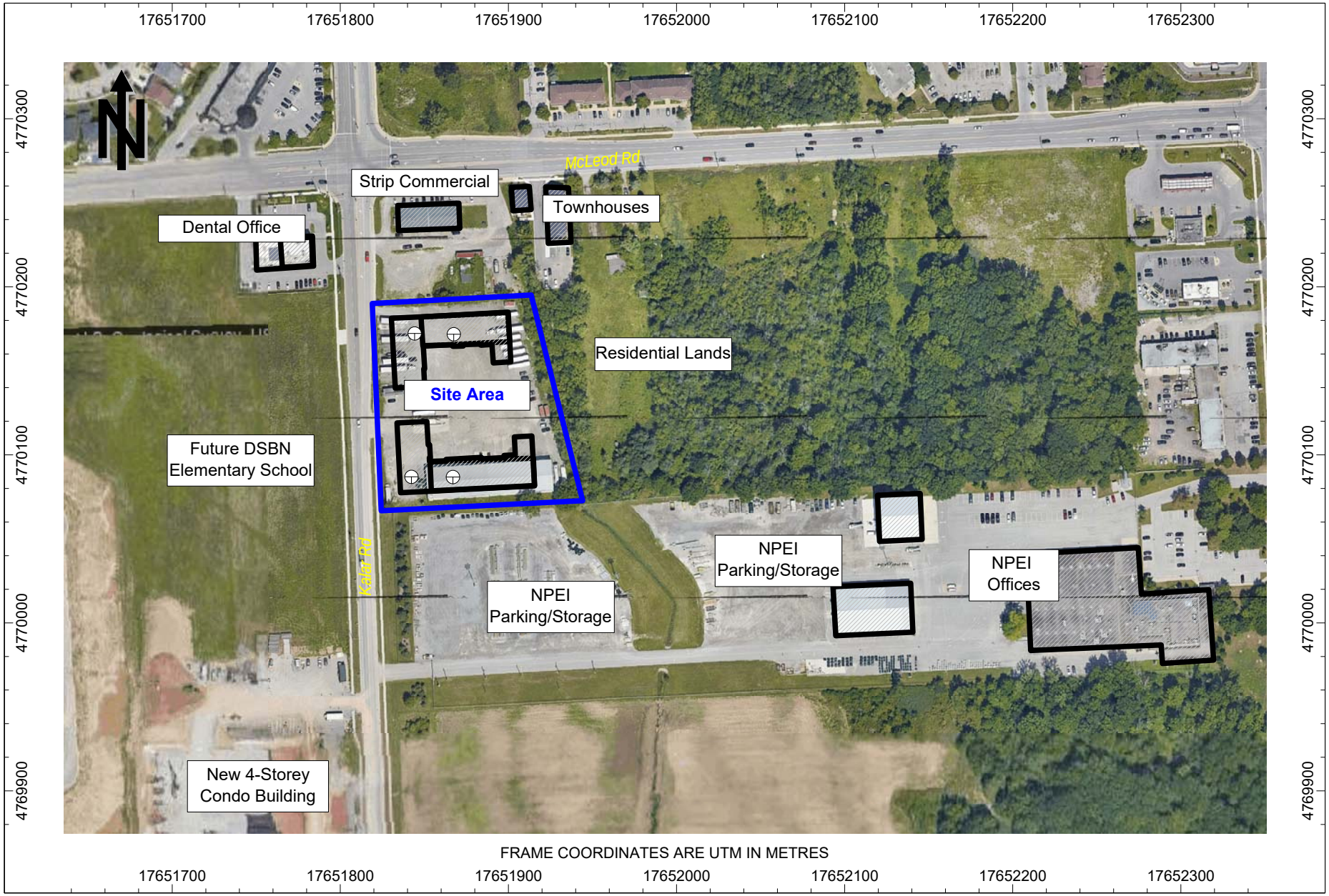


Figure 3: Aerial Imagery Showing Adjacent Land Uses

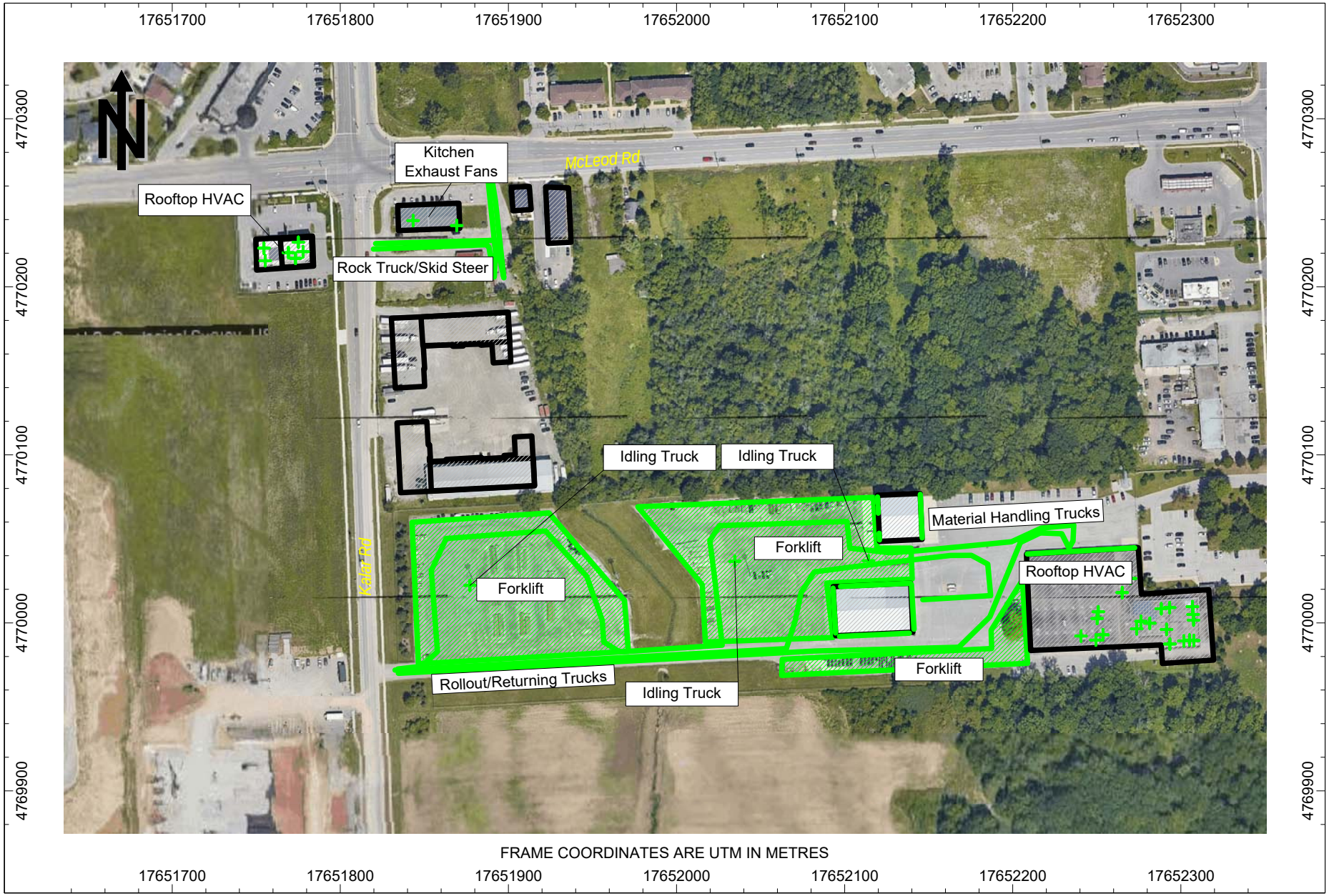


Figure 4: Locations of Stationary Sources of Noise
(Green lines around NPEI buildings show overhead bay doors)

Figure 5a: Stationary Source Noise Impact
Daytime (07:00 - 23:00), Leq [dBA]

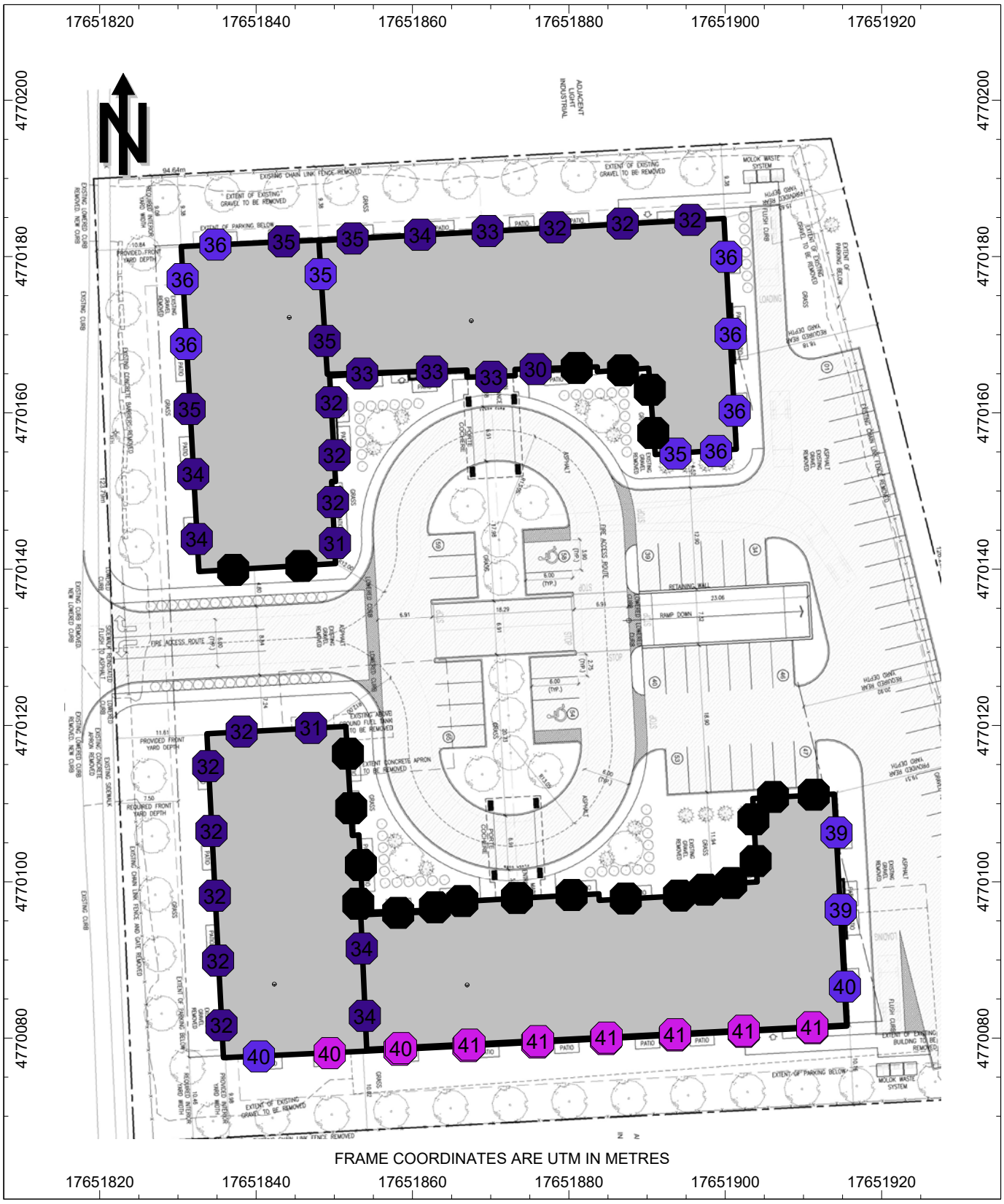


Figure 5b: Stationary Source Noise Impact
Nighttime (23:00 - 07:00), Leq [dBA]

Appendix A

Road Traffic Information

Kalar Rd @ McLeod Rd

Morning Peak Diagram

Specified Period
From: 8:00:00
To: 10:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

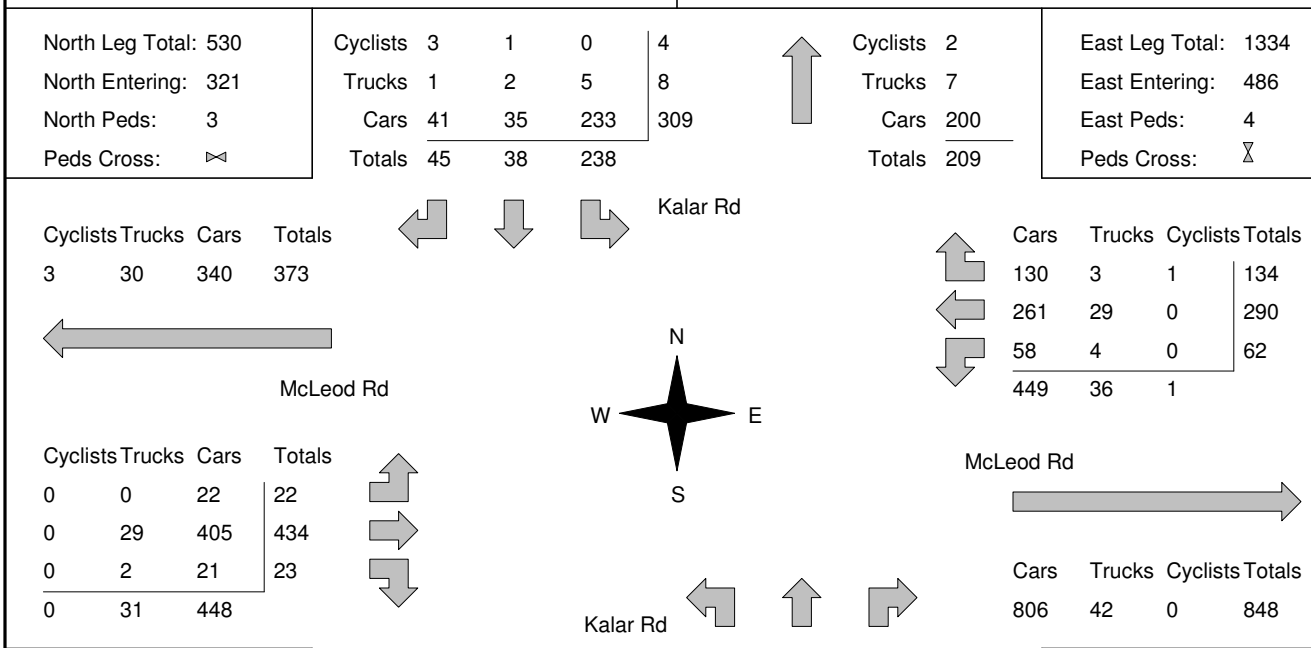
Municipality: Niagara Falls
Site #: 0000000019
Intersection: McLeod Rd & Kalar Rd
TFR File #: 19
Count date: 12-Jul-2023

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: McLeod Rd runs W/E



Comments

Kalar Rd @ McLeod Rd

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Niagara Falls
Site #: 0000000019
Intersection: McLeod Rd & Kalar Rd
TFR File #: 19
Count date: 12-Jul-2023

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: McLeod Rd runs W/E

North Leg Total:	768
North Entering:	424
North Peds:	10
Peds Cross:	⋈

Cyclists	0	3	0	3
Trucks	3	4	2	9
Cars	33	57	322	412
Totals	36	64	324	

Cyclists	1
Trucks	9
Cars	334
Totals	344

East Leg Total:	1583
East Entering:	779
East Peds:	6
Peds Cross:	⧖

Kalar Rd

Cyclists	Trucks	Cars	Totals
0	39	436	475

Cars	Trucks	Cyclists	Totals
255	5	1	261
383	35	0	418
92	8	0	100
730	48	1	

McLeod Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	1	20	21
1	25	331	357
2	2	29	33
3	28	380	

McLeod Rd

Cars	Trucks	Cyclists	Totals
770	32	2	804

Kalar Rd

Peds Cross:	⧖
West Peds:	0
West Entering:	411
West Leg Total:	886

Cars	178			
Trucks	14			
Cyclists	5			
Totals	197			

Cars	20	59	117	196
Trucks	1	3	5	9
Cyclists	0	0	1	1
Totals	21	62	123	

Peds Cross:	⋈
South Peds:	1
South Entering:	206
South Leg Total:	403

Comments

Kalar Rd @ McLeod Rd

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Municipality: Niagara Falls
Site #: 0000000019
Intersection: McLeod Rd & Kalar Rd
TFR File #: 19
Count date: 12-Jul-2023

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: McLeod Rd runs W/E

North Leg Total:	910
North Entering:	380
North Peds:	3
Peds Cross:	⋈

Cyclists	0	1	0	1
Trucks	3	1	1	5
Cars	38	57	279	374
Totals	41	59	280	

Cyclists	4
Trucks	2
Cars	524
Totals	530

East Leg Total:	1995
East Entering:	1050
East Peds:	0
Peds Cross:	⧖

Kalar Rd

Cyclists	Trucks	Cars	Totals
0	18	561	579

Cars	Trucks	Cyclists	Totals
394	0	1	395
490	14	0	504
148	3	0	151
1032	17	1	

McLeod Rd

N
W E
S

Cyclists	Trucks	Cars	Totals
0	0	46	46
1	19	476	496
0	0	28	28
1	19	550	

McLeod Rd

Cars	Trucks	Cyclists	Totals
917	26	2	945

Kalar Rd

Peds Cross:	⧖
West Peds:	6
West Entering:	570
West Leg Total:	1149

Cars	233			
Trucks	4			
Cyclists	1			
Totals	238			

Cars	33	84	162	279
Trucks	1	2	6	9
Cyclists	0	3	1	4
Totals	34	89	169	

Peds Cross:	⋈
South Peds:	1
South Entering:	292
South Leg Total:	530

Comments

Kalar Rd @ McLeod Rd

Total Count Diagram

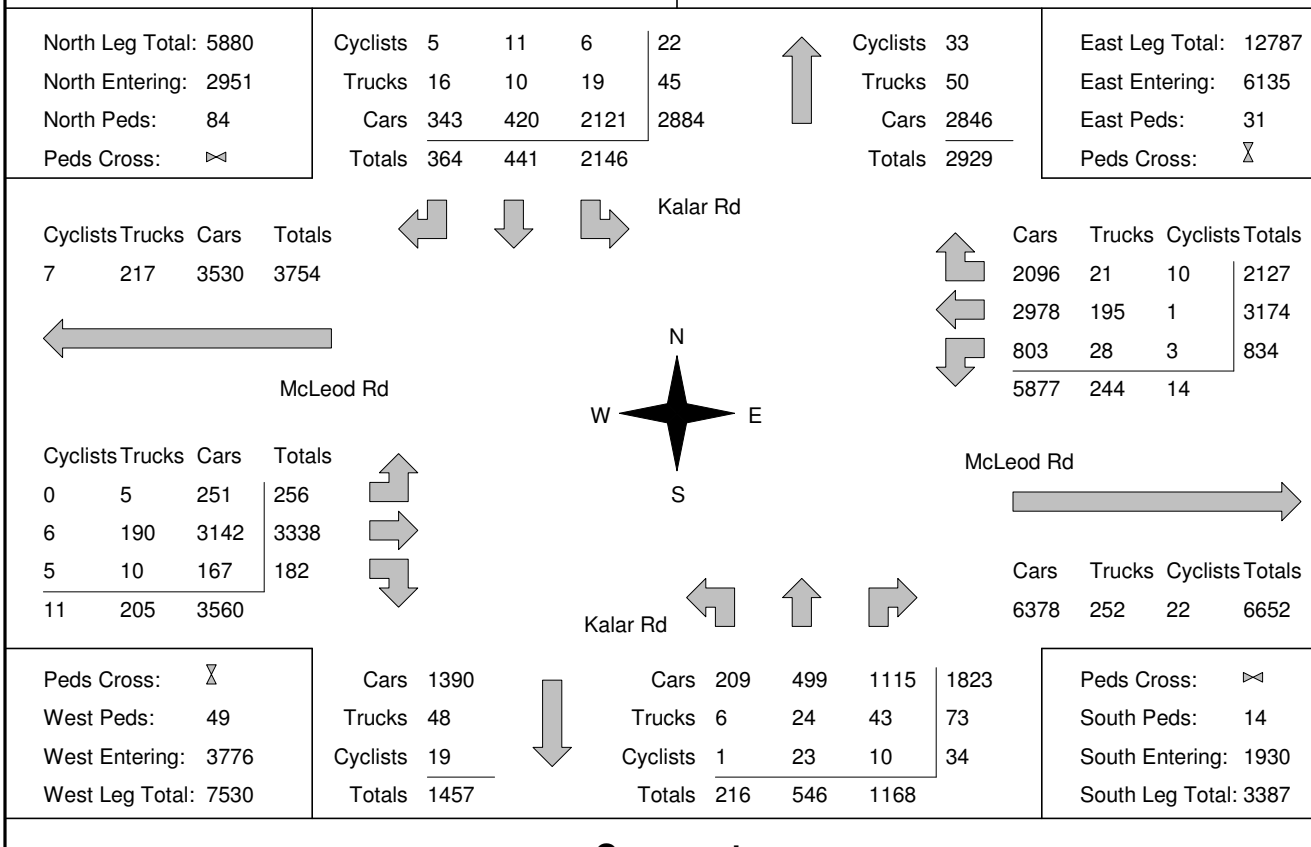
Municipality: Niagara Falls
Site #: 0000000019
Intersection: McLeod Rd & Kalar Rd
TFR File #: 19
Count date: 12-Jul-2023

Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Signalized Intersection ****

Major Road: McLeod Rd runs W/E



Comments

Appendix B

Sample STAMSON 5.04 Output

STAMSON 5.0 NORMAL REPORT Date: 12-03-2024 17:26:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te Time Period: Day/Night 16/8 hours
Description: Pred. Loc. [A], West facade facing Kalar Rd, 3-St

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

Car traffic volume : 10843/1205 veh/TimePeriod *
Medium truck volume : 100/11 veh/TimePeriod *
Heavy truck volume : 155/17 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): 12331
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 0.90
Heavy Truck % of Total Volume : 1.40
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Kalar (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 : 20.00 / 20.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 22531/2503 veh/TimePeriod *
Medium truck volume : 401/45 veh/TimePeriod *
Heavy truck volume : 661/73 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): 26214
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.70
Heavy Truck % of Total Volume : 2.80

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: McLeod (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 100.00 / 100.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Kalar (day)

Source height = 1.09 m

ROAD (0.00 + 62.24 + 0.00) = 62.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.49	0.00	-1.25	0.00	0.00	0.00	0.00	62.24

Segment Leq : 62.24 dBA

Results segment # 2: McLeod (day)

Source height = 1.29 m

ROAD (0.00 + 52.09 + 0.00) = 52.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.49	68.50	0.00	-12.24	-4.16	0.00	0.00	0.00	52.09

Segment Leq : 52.09 dBA

Total Leq All Segments: 62.64 dBA

Results segment # 1: Kalar (night)

Source height = 1.08 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	90	0.00	56.93	0.00	-1.25	0.00	0.00	0.00	0.00	55.68

Segment Leq : 55.68 dBA

Results segment # 2: McLeod (night)

Source height = 1.29 m

ROAD (0.00 + 45.55 + 0.00) = 45.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.49	61.95	0.00	-12.25	-4.16	0.00	0.00	0.00	45.55

Segment Leq : 45.55 dBA

Total Leq All Segments: 56.08 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.64
(NIGHT): 56.08

STAMSON 5.0 NORMAL REPORT Date: 12-03-2024 17:26:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b.te Time Period: Day/Night 16/8 hours
Description: Pred. Loc. [B], West facade facing Kalar Rd, 13-St

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

Car traffic volume : 10843/1205 veh/TimePeriod *
Medium truck volume : 100/11 veh/TimePeriod *
Heavy truck volume : 155/17 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): 12331
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 0.90
Heavy Truck % of Total Volume : 1.40
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Kalar (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 : 38.00 / 38.00 m
Receiver height : 37.50 / 37.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 22531/2503 veh/TimePeriod *
Medium truck volume : 401/45 veh/TimePeriod *
Heavy truck volume : 661/73 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): 26214
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.70
Heavy Truck % of Total Volume : 2.80

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: McLeod (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 100.00 / 100.00 m
Receiver height : 37.50 / 37.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Kalar (day)

Source height = 1.09 m

ROAD (0.00 + 59.45 + 0.00) = 59.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.49	0.00	-4.04	0.00	0.00	0.00	0.00	59.45

Segment Leq : 59.45 dBA

Results segment # 2: McLeod (day)

Source height = 1.29 m

ROAD (0.00 + 57.25 + 0.00) = 57.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	68.50	0.00	-8.24	-3.01	0.00	0.00	0.00	57.25

Segment Leq : 57.25 dBA

Total Leq All Segments: 61.50 dBA

Results segment # 1: Kalar (night)

Source height = 1.08 m

ROAD (0.00 + 52.89 + 0.00) = 52.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	56.93	0.00	-4.04	0.00	0.00	0.00	0.00	52.89

Segment Leq : 52.89 dBA

Results segment # 2: McLeod (night)

Source height = 1.29 m

ROAD (0.00 + 50.70 + 0.00) = 50.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	61.95	0.00	-8.24	-3.01	0.00	0.00	0.00	50.70

Segment Leq : 50.70 dBA

Total Leq All Segments: 54.94 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.50
(NIGHT): 54.94

Appendix C

Cadna/A Model Details and Sample Calculation

The source sound power levels were used as input to a computational acoustical model (*Cadna-A*, Version 2023, build *197.5343*). The model is based on the 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 (or by topography and foliage where applicable). This modelling technique is acceptable to the MECP.

The subject site and surrounding area were modelled with flat topography. Ground attenuation was assumed to be spectral for all sources, with the ground factor (G) assumed to be 0.25 for paved areas, 0.5 for gravel/sand surfaces, 1.0 for grassy areas. The temperature and relative humidity were assumed to be 10° C and 70%, respectively.

The predictive modelling considered one order of reflection with shielding/reflections afforded by buildings which were assigned spectral absorptive characteristics representative of concrete block, sheet steel, and wood fence, as appropriate.

Harry Cai

From: Eric Smith <eric.smith@npei.ca>
Sent: December 7, 2023 4:19 PM
To: Harry Cai
Subject: RE: Seeking Information - Environmental Noise Study for Regional Municipality of Niagara/City of Niagara Falls

Hi Harry,

When we leave in the morning its more than likely the most activity on a regular basis. I have put numbers down below of what a crew rollout would look like.

Thanks,

Eric

From: Harry Cai <hcai@hgcengineering.com>
Sent: December 7, 2023 4:11 PM
To: Eric Smith <eric.smith@npei.ca>
Subject: RE: Seeking Information - Environmental Noise Study for Regional Municipality of Niagara/City of Niagara Falls

Hi Eric,

Appreciate the info. Could you provide the number of trucks that could visit/operate at the facility for each of these vehicle types in a typical busy hour?

- bucket trucks: 8
- RBD vehicles: 8
- track machines: 0
- cranes, forklifts: 1
- palfinger trucks: 1
- generators: 0
- trailers: 2

Thanks,

Harry Cai, PEng
HGC Engineering **NOISE | VIBRATION | ACOUSTICS**
Howe Gastmeier Chapnik Limited
t: 905.826.4044 x297

From: Eric Smith <eric.smith@npei.ca>
Sent: Thursday, December 7, 2023 2:47 PM
To: Harry Cai <hcai@hgcengineering.com>
Subject: RE: Seeking Information - Environmental Noise Study for Regional Municipality of Niagara/City of Niagara Falls

Hi Harry,

See my answers below. Let me know if you need anything else.

Thanks,

Eric

From: Harry Cai <hcai@hgcengineering.com>
Sent: December 7, 2023 2:31 PM
To: Eric Smith <eric.smith@npei.ca>
Subject: RE: Seeking Information - Environmental Noise Study for Regional Municipality of Niagara/City of Niagara Falls

Hi Eric,

Thanks for getting back. Due to deadline constraints, we actually conducted a short site visit off-property in the area for our draft report.

Nevertheless, it would be very helpful for us to get a better understanding of the NPEI facility. To that end, could you advise on the following:

- Could you describe in your words what types of activities/operations occur at the NPEI facilities (such as outdoor storage, vehicle/truck repairs, forklifts/material handling)? NPEI is an electrical utility. We have vehicle traffic from dispatching our crews, there is vehicle repair onsite, material handling and material delivery. The types of equipment that operate on our property are personal vehicles, bucket trucks, RBD vehicles, track machines, cranes, forklifts, palfinger trucks, generators and trailers.
- What are the outdoor storage yards at the central/west portion of the NPEI site used for? From aerial imagery and site observations, I saw mainly utility poles and underground utility boxes.
    - Specifically, if there are forklifts and trucks that frequently move around on-site, and if so, how many forklifts and how many trucks can move around in an hour? Its difficult to pick an average hour as some days there may not be much activity and other days there can be a lot depending if material is being delivered or if crews are sourcing material from storage. Weather can also play an important factor. I would say on average a forklift will be outside for an hour. Our vehicles, it can be constant traffic. But more vehicle traffic at the starting and end of day which those hours are listed below.
- What are the facility's operating hours? Are there typically vehicle repair, material handling, or trucking activities during the nighttime (between 11pm and 7am)? Our normal operating hours are 8 AM to 4:30PM from September to May. The summer we are 7AM to 4:30PM. There is not typically afterhours activity however that is dependent upon certain work demands. We can have afterhours work to catch up with work load or to complete work at a suitable time for our crews and or customers. We also will have afterhours work due to storm or weather activity that requires repair.

Please let us know if you have any questions, or if you'd like a phone call to discuss.

Thank you.

Harry Cai, PEng
HGC Engineering **NOISE | VIBRATION | ACOUSTICS**
Howe Gastmeier Chapnik Limited
t: 905.826.4044 x297

From: Eric Smith <eric.smith@npei.ca>
Sent: Thursday, December 7, 2023 9:56 AM
To: Harry Cai <hcai@hgcengineering.com>
Subject: RE: Seeking Information - Environmental Noise Study for Regional Municipality of Niagara/City of Niagara Falls

Hi Harry,

Just following up on this now. Let me know what we can help you with.

Thanks,

Eric

From: Harry Cai <hcai@hgcengineering.com>
Sent: November 6, 2023 3:54 PM
To: INFO <info@npei.ca>
Subject: Seeking Information - Environmental Noise Study for Regional Municipality of Niagara/City of Niagara Falls

Hello,

I reached out earlier on the phone and was directed to this email.

My name is Harry Cai and I'm a project engineer at HGC Engineering, an independent acoustical engineering firm based in Mississauga. We have been retained to conduct an environmental noise study for the Regional Municipality of Niagara and City of Niagara Falls of nearby developments at McLeod Road and Kalar Road.

As part of the noise study, we're looking at various sources of environmental noise such as traffic noise and industrial noise. The aim of the study is to identify and address any potential noise impacts early on, prior to the development of any noise-sensitive uses in the area. As such, we'd like to know a bit more about the NPEI facility on Pin Oak Drive, to get a better understanding the type of operations or equipment that could emit sounds to the outdoors.

Please let us know if you can point us to the right direction for this information. We're also planning on a site visit in the area to make some general observations and acoustical measurements near the end of this week or the next, and would greatly appreciate the opportunity to visit the facility if possible.

Feel free to reach out by phone or email for any questions or concerns.

Looking forward to hearing from you.

Thank you.

Harry Cai, PEng
Project Consultant

HGC Engineering **NOISE | VIBRATION | ACOUSTICS**
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