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Noise Feasibility Study
Proposed Residential Development
Louis St. Laurent Avenue and Ferguson Drive
Town of Milton, Ontario

Prepared for:

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VERSION CONTROL

Noise Feasibility Study,
Louis St. Laurent Avenue and Ferguson Drive,
Town of Milton, Ontario.

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1 Introduction & Summary

HGC Engineering was retained by Mattamy Homes Ltd. to conduct a noise feasibility study for a proposed residential development located south of Louis Saint Laurent and west of Ferguson Drive in Milton, Ontario. The surrounding lands are primarily existing and future residential lands and an existing elementary school to the northeast of the site. The study is required by the Municipality as part of the planning and approvals process.

The primary noise sources impacting the site were determined to be road traffic on Louis Saint Laurent, and Ferguson Drive. Relevant road traffic data was obtained from HGC project files and a road network assessment conducted by GHD and the Region of Halton. These were used to predict future traffic sound levels at the locations of the proposed residential buildings. The predicted sound levels were compared to the guidelines of the Ministry of Environment, Conservation and Parks (MECP) and the Municipality.

The sound level predictions indicate that the future road traffic sound levels will exceed MECP guidelines at the proposed buildings during the daytime and nighttime hours. Air conditioning is required for Building A. Forced air ventilation with ducts sized for the future installation of air conditioning by the occupant, or an alternative means of ventilation to open windows is required for Buildings B and C, and the townhouse units flanking onto Ferguson Drive. The installation of air conditioning would meet and exceed this requirement. There are no specific ventilation requirements for the remaining townhouse blocks. Upgraded glazing requirements are required for Building A. 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 remaining dwelling units.

As this project is at an early stage of development, an acoustical consultant should review the mechanical drawings and details of demising constructions, when available, to help ensure that the noise impact of the development on the environment, and of the development on itself, are maintained within acceptable levels.

A computer model of the area was created, using acoustic modelling software, in order to predict the sound levels at locations around the proposed development due to noise associated with the existing nearby elementary school. The analysis is based on a review of the latest site plan, site visits, aerial photos and experience with similar past projects.

The results indicate that the sound emissions from the activities associated with the school are expected to be within the applicable MECP criteria. Warning clauses are recommended to be included in the property and tenancy agreements to inform future tenants/owners of the road traffic noise excesses and presence of the school.

2 Site Description & Noise Sources

The proposed residential development is located south of Louis Saint Laurent and west of Ferguson Drive in the Town of Milton, Ontario. Figure 1 shows a key plan of the proposed site. A proposed site plan prepared by KNYMH dated October 17, 2024 is included in Figure 2, also indicating the sound level prediction locations. The proposed development will include mid-rise buildings 10-storeys and 8-storeys in height, townhouses, and back-to-back townhouses.

HGC Engineering personnel visited the site in March 2024. The acoustical environment surrounding the site is urban in nature. The primary sources of sound impacting the site are vehicular traffic on Louis Saint Laurent and Ferguson Drive. Lands to the south of the subject site are future residential lands. Lands to the north of Louis St. Laurent Avenue are existing residential lands. To the east of the site is Sainte-Anne Catholic Elementary School. There are no other significant sources of stationary noise within 500 m of the subject site. A preliminary stationary noise study has been conducted in Section 6.0 of the report.

3 Noise Level Criteria

3.1 Road Traffic Noise

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 1 below. The values in Table 1 are energy equivalent (average) sound levels [L_{EQ}] in units of A-weighted decibels [dBA].

Table 1: 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, while nighttime refers to the 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. Balconies that are less than 4 m in depth are not considered to be OLAs under MECP guidelines.

The MECP guidelines allow the daytime sound levels in an OLA 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 recommended to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible. The Town of Milton has a maximum fence height of 2.4 m along major roadways. The remainder of the required barrier height can be made up with an earth berm.

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 outside bedroom or living/dining room windows exceed 65 dBA. Forced-air ventilation with ducts sized to accommodate the future installation of air conditioning is required when nighttime sound levels at bedroom or living/dining room

windows are in the range of 51 to 60 dBA or when daytime sound levels at bedroom or living/dining room windows 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 excesses are also required when nighttime sound levels exceed 50 dBA at the plane of the bedroom or living/dining room window and daytime sound levels exceed 55 dBA in the outdoor living area and at the plane of the bedroom or living/dining room window due to road traffic.

3.2 Traffic Noise Predictions

3.2.1 Road Traffic

Road traffic volumes for Louis St Laurent Avenue were originally obtained from HGC Engineering project files for other projects in the area, in form of Average Annual Daily Traffic (AADT) values for the year 2031 and are included in Appendix A. The data was grown to the year 2034 using a 2.5%/year growth rate. A day/night split of 90%/10% was applied along with a speed limit of 60 km/h. A commercial vehicle percentage of 3.0% was used in the analysis, further split into 1.2% medium trucks and 1.8% heavy trucks.

Road traffic volumes for Ferguson Drive was obtained from a road network assessment conducted by GHD last revised September 2017 provided by the Town of Milton and the Region of Halton personnel, also included in Appendix A. The road traffic data was projected to the year 2034 with a 2.5%/year growth rate. AADTs provided were applied to the roadways in conjunction with a day/night split of 90%/10%.

For Ferguson Drive a posted speed limit of 50 km/h was used. A commercial vehicle percentage of 2% split into 1% medium trucks and 1% heavy trucks was assumed.

Table 2 summarizes the traffic volume data used in this study. Road traffic data is included in Appendix A. The internal roadways in the subdivision are low volume roadways and therefore were not considered in the analysis.

Table 2: Projected Road Traffic Data

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Louis St. Laurent Avenue *Projected to Year 2034*	Daytime	31 541	390	585	32 516
	Nighttime	3 505	43	65	3 613
	Total	**35 046**	**433**	**650**	**36 129**
Ferguson Drive *Projected to Year 2034*	Daytime	9 605	98	98	9 801
	Nighttime	1 067	11	11	1 089
	Total	**10 672**	**109**	**109**	**10 890**

3.2.2 Road Traffic Noise Predictions

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

Building setbacks indicated in the site plan were used in the analysis. Sound levels were predicted at the top storey windows during daytime and nighttime hours to investigate ventilation requirements.

Prediction locations were chosen around the residential site, as shown in Figure 2, to obtain a good representation of the future sound levels at various blocks with exposure to the roadways. The results of these predictions are summarized in Table 3.

Table 3: Predicted Future Sound Levels [dBA], Without Mitigation

Prediction Location	Description	Daytime - in OLA $L_{EQ(16)}$	Daytime - at Façade $L_{EQ(16)}$	Nighttime - at Façade $L_{EQ(8)}$
A	North façade of 10-storey condo building	<55	69	63
B	West façade of 8-storey condo building	<55	61	54
C	East façade of 8-storey condo building	<55	61	55
D	East façade of 2-storey townhouse	57	62	55

3.3 Traffic Noise Recommendations

With no mitigation, there will be sound level excesses at some of the proposed dwellings near Louis St. Laurent Avenue or Ferguson Drive. The following discussion outlines recommendations

for ventilation requirements, building façade constructions, and warning clauses to achieve the noise criteria stated in Table 1.

3.3.1 Outdoor Living Areas

Balconies and terraces may be provided for the proposed development which are less than 4 m in depth are proposed for the buildings which are not considered OLAs by the MECP and do not require further mitigation.

Lots with flanking to Ferguson Drive

The predicted daytime sound levels in the OLAs of the fronting onto Ferguson Drive (prediction location [D]) will be 57 dBA, 2 dBA in excess of the MECP limit of 55 dBA. The 2 dBA sound level excess is acceptable to the MECP if it is acceptable to the municipality. No further mitigation is required.

Back-to-back and lane-based townhouses

Back-to-back townhouse units do not include rear yards and physical mitigation is not required.

Remainder of the Lots

The predicted daytime sound levels in the OLA's of the remainder of the lots are less than 55 dBA, thus physical mitigation will not be required.

3.3.2 Indoor Living Areas and Ventilation Requirements

Central Air Conditioning

The predicted sound levels outside the windows of Building A will be greater than 65 dBA during the daytime hours and/or greater than 60 dBA during the nighttime hours. To address these excesses, the MECP guidelines recommend that the dwelling units be equipped with air conditioning systems, so that the windows can be closed.

Provision for the Future Installation of Air Conditioning

The predicted sound levels at the top windows of the future dwellings with exposure to Ferguson Drive or further from Louis St. Laurent Avenue, will be between 56 and 65 dBA during the

daytime hours and between 51 and 60 dBA during the nighttime hours. To address these excesses, the MECP guidelines recommend that these dwelling units be equipped with forced air ventilation systems with ducts sized to accommodate the future installation of air conditioning by the occupant.

For the remainder of lots further into the subdivision, there are no specific ventilation requirements.

Figure 3 shows the ventilation requirements for the development. Window or through-the-wall air conditioning units are not recommended for any commercial or residential units because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall noise insulating properties of the envelope. Acceptable units are those housed in their own closet with an access door for maintenance. 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, as applicable. The guidelines also recommend warning clauses for all dwelling units with ventilation requirements.

3.3.3 Building Facade Constructions

Predicted sound levels at the building facades were used to determine sound insulation requirements of the building envelope. The required acoustic insulation of the wall and window components was determined using methods developed by the National Research Council (NRC).

Exterior Wall Constructions

The exterior walls of the buildings may include precast/masonry panel portions, as well as spandrel glass panels within an aluminum window system for the midrise buildings. In this analysis, it has been assumed that sound transmitted through elements other than the glazing elements is negligible in comparison. For this assumption to be true, spandrel or metal panel sections must have an insulated drywall partition on separate framing behind.

For townhouse blocks, it has been assumed that the minimum required construction as required by the Ontario Building Code (OBC) is proposed to be provided as a conservative assessment.

Exterior Doors

There may be swing doors and some glazed sliding patio doors for entry onto the balconies from living/dining/bedrooms and some bedrooms. The glazing areas on the doors are to be counted as part of the total window glazing area. If exterior swing doors are to be used, they shall be insulated metal doors equipped with head, jamb and threshold weather seals.

Acoustical Requirements for Glazing

At the time of this report, detailed floor plans and elevations are not available. Assuming a typical window to floor area of 60% (40% fixed and 20% operable) for the living/dining rooms and bedrooms, the minimum acoustical requirement for the basic window glazing, including glass in fixed sections, swing or sliding doors, and operable windows, is provided in Table 4.

Table 4: Required Minimum Glazing STC for Specific Facades

Prediction Locations	Description	Glazing STC[1, 2,3]
[A]	North façade of Building 1	STC-31
[B]	East façade of Building 1	OBC
[C]	West façade of Building 1	OBC
[D]	West façade of Building 5	OBC

Note:
[1] Based on assumed window to floor area ratios of 60% (40% fixed and 20% operable).
[2] STC requirement refers to fixed glazing. Small leaks through operable doors and windows are assumed, however, tight weather seals should be provided to reduce such leakage to the extent feasible.
[3] Sound entering through windows and walls comprised of precast/masonry panels, and spandrel glass panels
OBC – Ontario Building Code

Note that acoustic performance varies with manufacturer's construction details, and these are only guidelines to provide some indication of the type of glazing likely to be required. Acoustical test data for the selected assemblies should be requested from the suppliers, to ensure that the stated acoustic performance levels will be achieved by their assemblies.

Further Review

When detailed floor plans and building elevations are available for the building closest to Louis St. Laurent Avenue, the glazing requirements should be refined based on actual window to floor area ratios.

3.3.4 Warning Clauses

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements for all the dwellings with anticipated traffic sound level excesses. The following noise warning clauses are required for specific units as indicated in Table 4.

A suggested wording for future dwellings with sound level excesses of the MECP criteria but do not require physical mitigation measures is given below.

Type A:

> Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks.

Suggested wording for future dwellings requiring central air conditioning systems is given below.

Type B:

> This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks.

Suggested wording for future dwellings requiring forced air ventilation systems is given below.

Type C:

> This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks.

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

4 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 construction and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself is maintained within acceptable levels.

5 Impact of the Development on the Environment

Sound levels from noise sources 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. Based on the levels observed during our site visit, the typical minimum ambient sound levels in the area are expected to exceed 50 dBA during the day and 45 dBA at night. Thus, any electro-mechanical equipment associated with this development (e.g. emergency generator testing, air handling or air conditioning equipment, etc.) should be designed such that they do not result in noise impact beyond the minimum background sound levels.

6 Stationary (Commercial) Noise Assessment

6.1 Noise Source Description

During our site visit, it was observed that the Sainte-Anne Catholic Elementary School includes rooftop mechanical equipment which are stationary sources of noise. The remaining surrounding lands are existing residential lands. The school operates during daytime hours only (07:00 to 23:00).

6.2 Criteria for Acceptable Sound Levels

6.2.1 Stationary Noise Criteria

An industrial facility is classified 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 for deliveries, material handling and mechanical equipment. In terms of background sound, the development is located in an urban (Class 1) acoustical environment which is dominated by sound from road traffic and human activity.

NPC-300 is intended for use when considering both residential and commercial/institutional land uses under the Planning Act. It provides 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 urban Class 1 and 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. 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 retail facilities 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. The sound level limits as summarized in Table 5 are used in the following sections of this report as the applicable criteria for each façade of the proposed residential buildings.

Table 5: Applicable Sound Level Limits, L_{EQ} (dBA) for Class I Areas

Building	Façade	Sound Level Limits	
		Daytime & Evening (07:00 to 23:00)	Nighttime (23:00 to 07:00)
Building A	All	50	45
Building B	All	50	45
Building C	All	50	45
3-Storey Townhouses	All	50	45

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

6.3 Stationary Source Assessment

Predictive noise modelling was used to assess the potential impact of sound from the nearby institutional use at the closest residential façades. The noise prediction model was based on sound emission levels for the nearby noise sources, assumed operational profiles (during the day and night), 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 potentially significant noise sources and hours of operation are described in Section 6.1 above.

A site visit was conducted to observe the operations of the school. Assumptions based on HGC Engineering past projects for similar facilities have been used in conjunction with aerial photography in the analysis. Conservative data obtained from HGC Engineering project files was used in the analysis for the equipment operating on site. The source levels used in the analysis are listed in Table 6 below.

Table 6: Source Sound Power Levels [dB re 10-12 W]

Source	Octave Band Centre Frequency [Hz]								
	63	125	250	500	1k	2k	4k	8k	dBA
Lennox 060 (5-ton)	--	86	82	80	76	72	66	60	82

The above outlined sound levels and site features were used as input to a predictive computer model. The software used for this purpose (*Cadna-A Version 2023 MR1 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 barriers.

The following information and assumptions were used in the analysis.

Sainte-Anne Catholic Elementary School

- The rooftop units associated with the school were assumed to be located as shown in Figure 4 and assumed to be 1.2 m high. The building was assumed to have: nine Lennox 060 units; one Lennox 180 unit on the rooftop.
- The hours of operation for the school include daytime hours only (07:00 to 23:00).

Receptors

- Proposed residential buildings in proposed development.

Assumed daytime worst-case scenario:

- All rooftop HVAC equipment operating for 40 minutes in an hour;

Assumed night-time worst-case scenario:

- All rooftop HVAC equipment operating for 15 minutes in an hour;

6.4 Results

The calculations consider the acoustical effects of distance and shielding by the buildings. The predicted sound level from these sources at the proposed development are included in the following table.

Table 7: Predicted Stationary Source Sound Levels at the Proposed Residential Buildings [dBA]

Building	Façade	Criteria (OLA/Day/ Night)	OLA	Day	Night
Building A	Most Impacted Façade	50 / 45	48	49	45
Building B	Most Impacted Façade	50 / 45	40	42	38
Building C	Most Impacted Façade	50 / 45	--	40	36
3-Storey Townhouses	Most Impacted Façade	50 / 45	--	39	35

The results of this analysis indicate that the predicted sound levels due to operations of the existing school are expected to be within the applicable criteria. Figures 5 and 6 show the daytime and nighttime sound levels at the façades of the proposed residential buildings from the noise sources associated with the school.

The presence of the school should be addressed through the implementation of an additional warning clause in the tenancy and property agreements and offers of purchase and sale. A typical wording is:

Type D:

> Purchasers are advised that due to the proximity of the existing school, sound from the school may at times be audible and the operations may change in the future.

7 Summary of Recommendations

The following list as well as Table 8 summarize the recommendations made in this report. The reader is referred to Figure 3, as well as previous sections of the report where these recommendations are applied and discussed in more detail.

1. Air conditioning is required for Building A. Forced air ventilation with ducts sized for the future installation of air conditioning by the occupant or an alternative means of ventilation to open windows is required for Buildings B and C and the townhouse units closest to Ferguson Drive.

2. Upgraded building constructions are required for Building A. Any building constructions meeting the minimum requirements of the Ontario Building Code will provide sufficient acoustical insulation for the remaining buildings. When detailed drawings are available for Building A, the drawings should be reviewed to refine window glazing requirements based on actual window to floor area ratios.

3. Noise warning clauses are required for dwellings with sound level excesses and to notify future occupants of the nearby school block.

4. Tarion Builders Bulletin B19R requires that the internal design of condominium projects integrates 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 to be sought, 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 are maintained within acceptable levels.

Table 8: Summary of Noise Control Requirements and Warning Clauses

Description	Acoustic Barrier	Ventilation Requirements*	Type of Warning Clause	#Preliminary STC Requirements
Building A	--	Air conditioning	A, B, D	STC-31
Building B	--	Forced Air+	A, C, D	OBC
Building C	--	Forced Air+	A, C, D	OBC
Townhouse Blocks with exposure to the school	--	--	D	OBC
Townhouse units flanking onto Ferguson Dr	--	Forced Air	A, C	OBC
Remaining townhouse blocks	--	--	--	OBC

Notes:
-- no specific requirement
* The location, installation and sound rating of the air conditioning condensers must be compliant with MECP Guideline NPC-300, as applicable.
+ An installation of air conditioning meets and exceed this requirement
# Based on assumed window to floor area ratios of 60% (40% fixed and 20% operable). When detailed drawings are available, the drawings should be reviewed to refine window requirements based on actual window to floor area ratios.
OBC – meeting the minimum requirements of the Ontario Building Code

7.1 Implementation

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

1. Prior to the issuance of building 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 incorporated.

2. Prior to assumption of the subdivision, 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.

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FIgure 1 - Key Plan

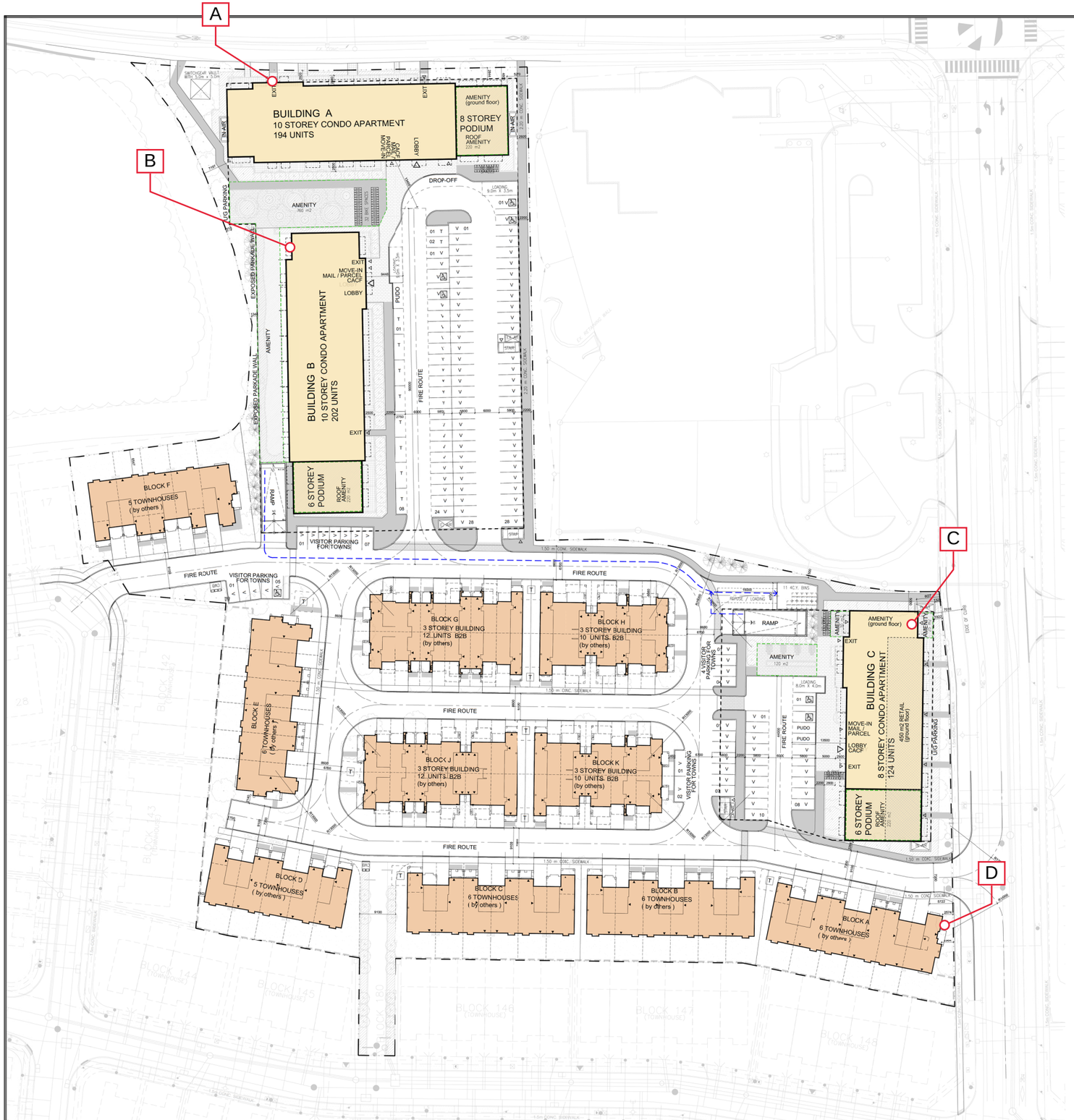

Figure 2 - Proposed Site Plan Showing Prediction Locations

BUILDING A +B
396 UNITS = 194 UNITS + 202 UNITS

PARKING REQUIRED :
1.0 Tenant PS / unit = 396 PS required
0.20 Visitor PS / unit = 80 VPS required
TOTAL = 476 PS

PARKING PROVIDED :

	VISITOR	*TENANT*	**TOTAL**
U/G LEVEL P1	0	191	191
U/G LEVEL P2	0	195	195
SURFACE PARKING	80	10	90
TOTAL	**80**	**396**	**476 PS**

LONG TERM BIKE STORAGE:
REQUIRED = 0.5 /UNIT = 198
PROVIDED = 198 STORAGE (1200x600)

SHORT TERM BIKE STORAGE:
REQUIRED = 0.05 /UNIT = 20
PROVIDED = 42 BIKE SPACES ON SITE

OUTDOOR AMENITY:
REQUIRED = $3m^2$ /UNIT = $1,188m^2$
PROVIDED = $760\ m^2$ on-ground + $440\ m^2$ rooftop
Total $1,200\ m^2$

BUILDING C
124 UNITS

PARKING REQUIRED :
1.0 Tenant PS / unit = 124 PS required
0.20 Visitor PS / unit = 25 VPS required
TOTAL = 149 PS

PARKING PROVIDED :

	VISITOR	*TENANT*	**TOTAL**
U/G LEVEL P1	0	59	59
U/G LEVEL P2	0	66	66
SURFACE PARKING	25	0	25
TOTAL	**25**	**125**	**150 PS**

LONG TERM BIKE STORAGE:
REQUIRED = 0.5 /UNIT = 62
PROVIDED = 62 STORAGE (1200x600)

SHORT TERM BIKE STORAGE:
REQUIRED = 0.05 /UNIT = 7
PROVIDED = 18 BIKE SPACES ON SITE

OUTDOOR AMENITY:
REQUIRED = $3m^2$ /UNIT = $372\ m^2$
PROVIDED = $175m^2$ on-ground + $220m^2$ rooftop
Total $395m^2$

TOWNHOUSES

STREET TOWNHOUSES = 34 UNITS
BACK TO BACK TOWNS = 44 UNITS
TOTAL = 78 UNITS

PARKING REQUIRED :
2.0 Tenant PS / unit = 156 PS required
0.20 Visitor PS / unit = 16 VPS required
TOTAL = 172 PS

PARKING PROVIDED :
2.0 Tenant PS / unit = 156 PS
(one in garage + one on driveway)
18 Visitor PS - on site
TOTAL = 174 PS

KEY TO DETAIL LOCATION
No. DETAIL NUMBER
No. DRAWING SHEET NUMBER

DRAWING SETS ISSUED	No.	DATE (DD,MM,YY)	BY
COMMON AMENITY AREA	1.	08.07.2021	WH
TOWNHOUSE LOTTING	2.	12.04.2022	WH
CLIENT REVIEW	3.	16.02.2023	WH
CLIENT REVIEW	4.	15.11.2023	KO
ZBA	5.	05.04.2024	KO
ZBA #2	6.	18.10.2024	KO

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

REVISIONS TO DRAWING	No.	DATE (DD,MM,YY)	BY

NOT FOR CONSTRUCTION

BUILDING PERMIT NUMBER:
NOT FOR CONSTRUCTION WITHOUT PERMIT

KNYMH
ARCHITECTURE • SOLUTIONS
KNYMH INC.
1006 SKYVIEW DRIVE • SUITE 101
BURLINGTON, ONTARIO • L7P 0V1
T 905.639.6595
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PRELIMINARY

MATTAMY HOMES
MINOR SUB NODE
MILTON, ONTARIO

DRAWING SHEET TITLE:
SITE PLAN

DRAWING SCALE:	PROJECT NUMBER:
1:500	21407

DRAWN BY:	CHECKED BY:	DRAWING SHEET NUMBER:
--	--	SP1

DRAWING VERSION: 001
PLOT DATE: October 17, 2024

Figure 3 - Proposed Site Plan Showing Ventilation Requirements

BUILDING A +B
396 UNITS = 194 UNITS + 202 UNITS

PARKING REQUIRED :
1.0 Tenant PS / unit = 396 PS required
0.20 Visitor PS / unit = 80 VPS required
TOTAL = 476 PS

PARKING PROVIDED :

	VISITOR	*TENANT*	**TOTAL**
U/G LEVEL P1	0	191	191
U/G LEVEL P2	0	195	195
SURFACE PARKING	80	10	90
TOTAL	**80**	**396**	**476 PS**

LONG TERM BIKE STORAGE:
REQUIRED = 0.5 /UNIT = 198
PROVIDED = 198 STORAGE (1200x600)

SHORT TERM BIKE STORAGE:
REQUIRED = 0.05 /UNIT = 20
PROVIDED = 42 BIKE SPACES ON SITE

OUTDOOR AMENITY:
REQUIRED = $3m^2$ /UNIT = $1,188m^2$
PROVIDED = $760\ m^2$ on-ground + $440\ m^2$ rooftop
Total $1,200\ m^2$

BUILDING C
124 UNITS

PARKING REQUIRED :
1.0 Tenant PS / unit = 124 PS required
0.20 Visitor PS / unit = 25 VPS required
TOTAL = 149 PS

PARKING PROVIDED :

	VISITOR	*TENANT*	**TOTAL**
U/G LEVEL P1	0	59	59
U/G LEVEL P2	0	66	66
SURFACE PARKING	25	0	25
TOTAL	**25**	**125**	**150 PS**

LONG TERM BIKE STORAGE:
REQUIRED = 0.5 /UNIT = 62
PROVIDED = 62 STORAGE (1200x600)

SHORT TERM BIKE STORAGE:
REQUIRED = 0.05 /UNIT = 7
PROVIDED = 18 BIKE SPACES ON SITE

OUTDOOR AMENITY:
REQUIRED = $3m^2$ /UNIT = $372\ m^2$
PROVIDED = $175m^2$ on-ground + $220m^2$ rooftop
Total $395m^2$

TOWNHOUSES

STREET TOWNHOUSES = 34 UNITS
BACK TO BACK TOWNS = 44 UNITS
TOTAL = 78 UNITS

PARKING REQUIRED :
2.0 Tenant PS / unit = 156 PS required
0.20 Visitor PS / unit = 16 VPS required
TOTAL = 172 PS

PARKING PROVIDED :
2.0 Tenant PS / unit = 156 PS
(one in garage + one on driveway)
18 Visitor PS - on site
TOTAL = 174 PS

KEY TO DETAIL LOCATION
No. DETAIL NUMBER
No. DRAWING SHEET NUMBER

DRAWING SETS ISSUED	No.	DATE (DD,MM,YY)	BY
COMMON AMENITY AREA	1.	08.07.2021	WH
TOWNHOUSE LOTTING	2.	12.04.2022	WH
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CLIENT REVIEW	4.	15.11.2023	KO
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--	--	SP1

DRAWING VERSION: 001
PLOT DATE: October 17, 2024

Figure 4: Aerial Photo Showing Noise Source and Receptor Locations

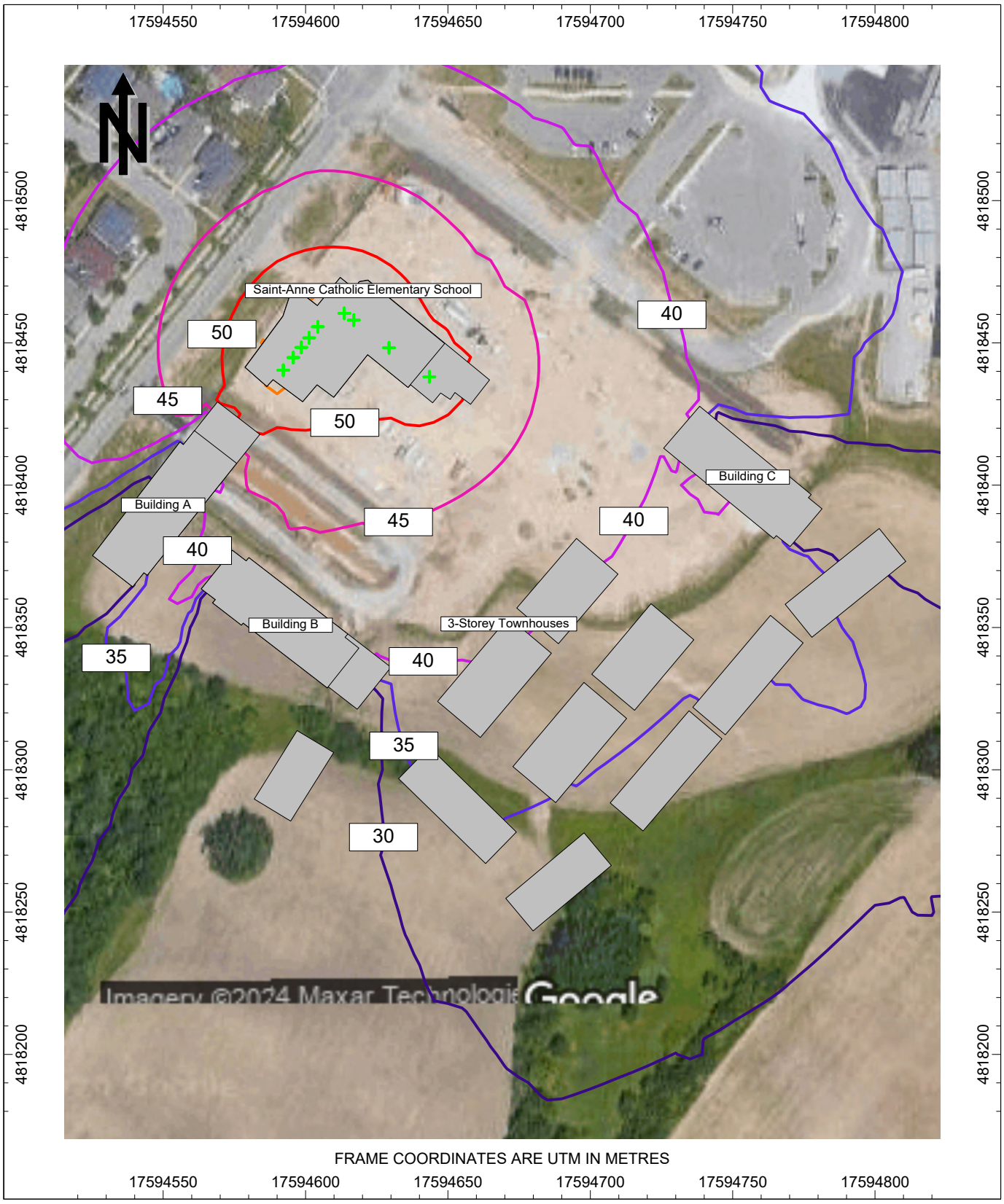


Figure 5: Daytime Sound Level Contours, dBA, at 16.5 m in Height

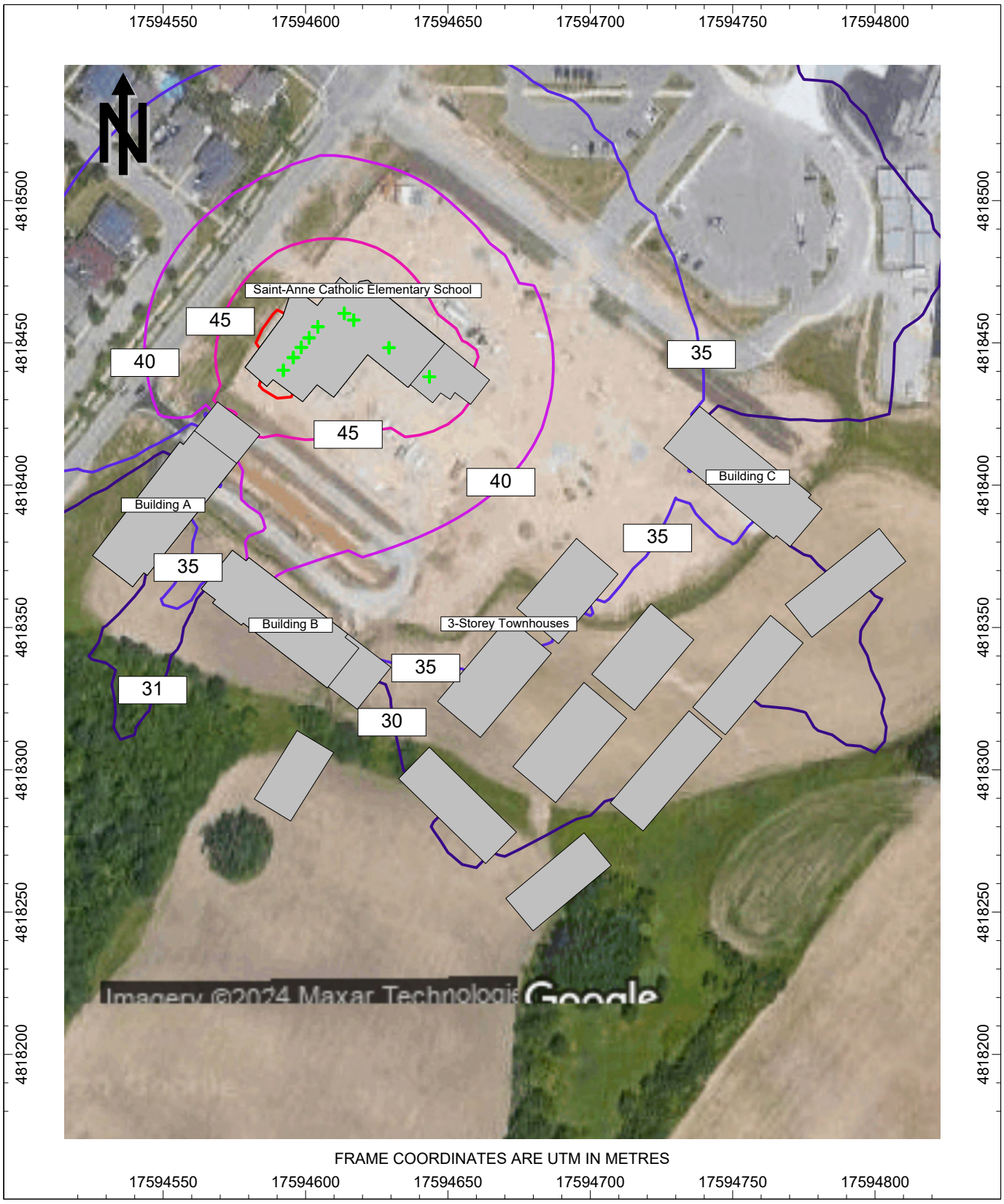
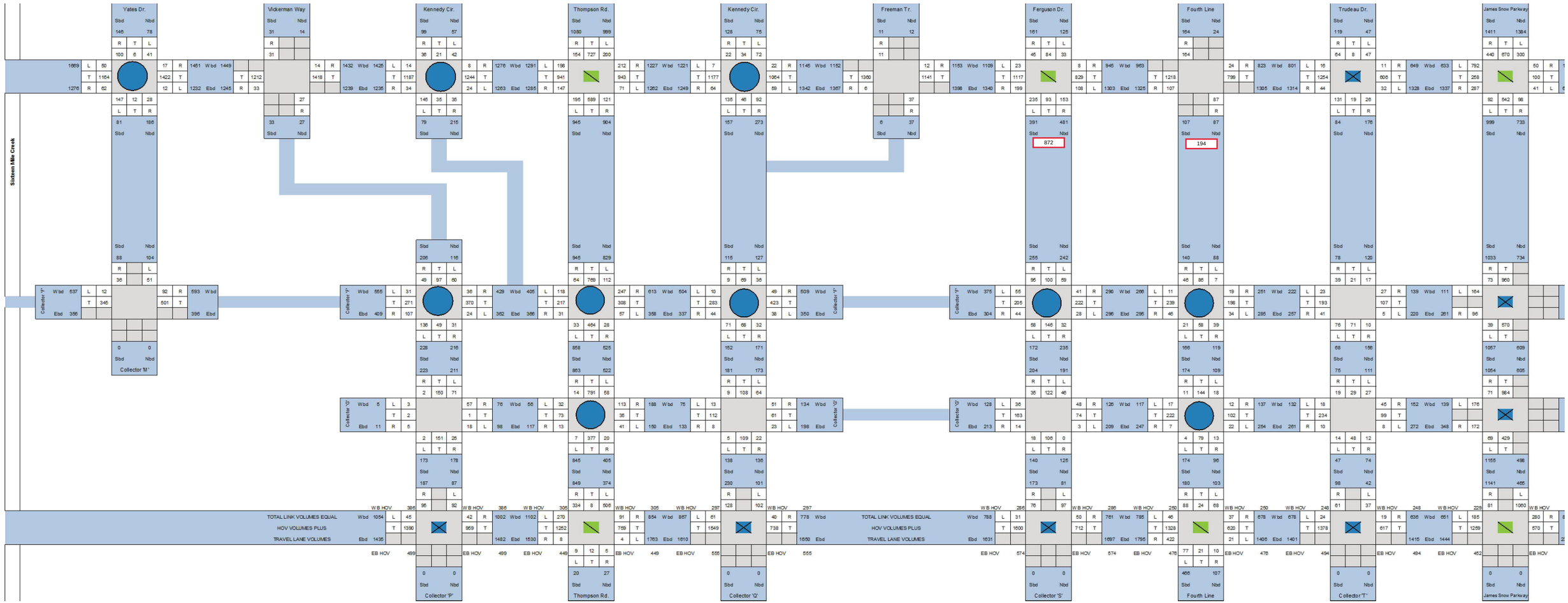


Figure 6: Nighttime Sound Level Contours, dBA, at 16.5 m in Height

APPENDIX A

Road Traffic Information



Legend

- Existing Traffic Signal
- Proposed Traffic Signal
- 2015 Roundabout
- Proposed Roundabout

Future draft plans will confirm a final recommended design criteria.

Milton Phase 3 Landowners Group
Boyne Survey
Road Network Assessment

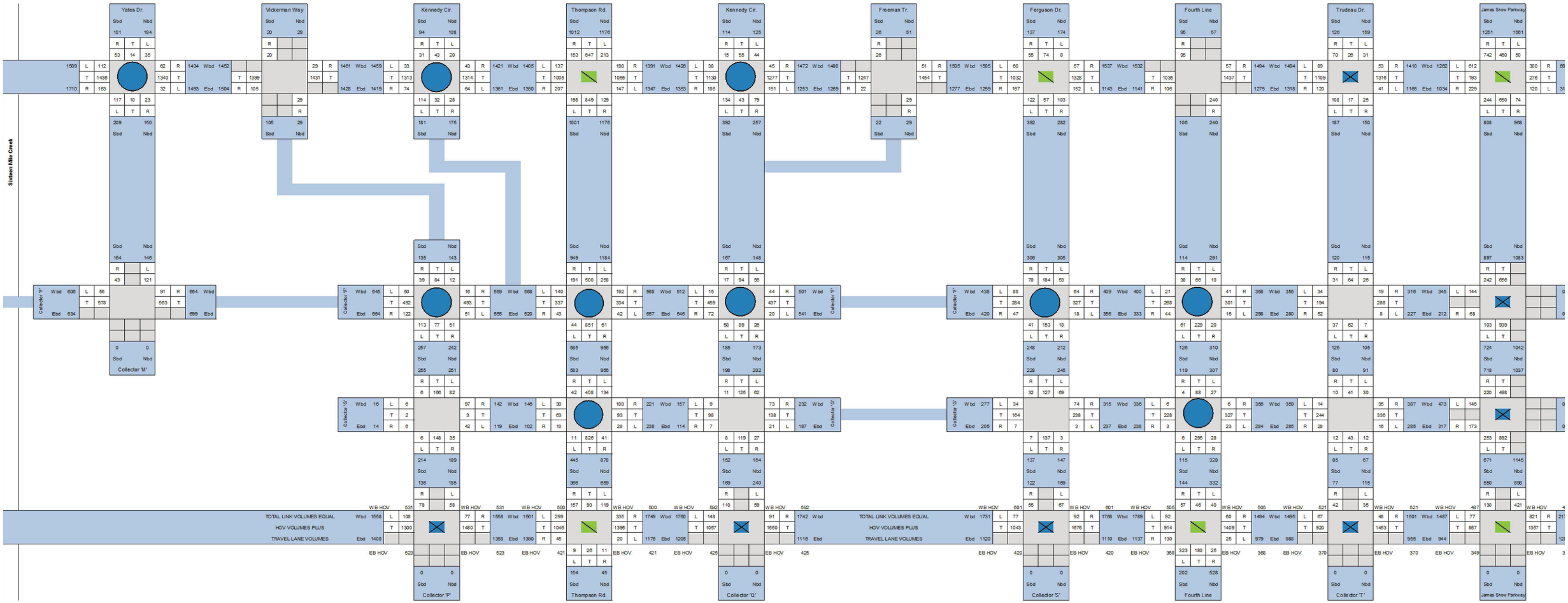
AM Peak Hour
Total 2026 East Block Traffic

Job Number 28-21522
Revision C
Date July 2016

Figure 11B

6705 Millcreek Drive, Unit 1, Mississauga Ontario L5N 5M4 **T** 1 416 213 7121 **F** 1 416 890 8499 **E** info@ghdcanada.com **W** www.ghd.com

Plot Date: 23 November 2016 - 3:57 PM Plotted by: Adam Mildenberger Cad File No: G:\Legacy\SernasTransTech\Projects\2013\13221 BOYNE RD NEEDS ASSESSMENT\OCTOBER 2015 UPDATE - USE!!!!!!!!!!\13221 Boyne Figures (July 2016).dwg



Legend

- Existing Traffic Signal
- Proposed Traffic Signal
- 2015 Roundabout
- Proposed Roundabout

Future draft plans will confirm a final recommended design criteria.

Milton Phase 3 Landowners Group
Boyne Survey
Road Network Assessment

PM Peak Hour
Total 2026 East Block Traffic

Job Number 28-21522
Revision C
Date July 2016

Figure 12B

6705 Millcreek Drive, Unit 1, Mississauga Ontario L5N 5M4 **T** 1 416 213 7121 **F** 1 416 890 8499 **E** info@ghdcanada.com **W** www.ghd.com

Plot Date: 23 November 2016 - 4:28 PM Plotted by: Adam Mildenberger Cad File No: G:\Legacy\SernasTransTech\Projects\2013\13221 BOYNE RD NEEDS ASSESSMENT\OCTOBER 2015 UPDATE - USE!!!!!!!!!!\13221 Boyne Figures (July 2016).dwg

APPENDIX B

Sample STAMSON 5.04 Output

STAMSON 5.0 NORMAL REPORT Date: 04-11-2024 10:06:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te Time Period: Day/Night 16/8 hours

Description: North facade of 10-storey condo building

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

Car traffic volume : 31541/3505 veh/TimePeriod *
Medium truck volume : 390/43 veh/TimePeriod *
Heavy truck volume : 585/65 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 34388
Percentage of Annual Growth : 2.50
Number of Years of Growth : 2.00
Medium Truck % of Total Volume : 1.20
Heavy Truck % of Total Volume : 1.80
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: LSL (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 : 20.50 / 20.50 m
Receiver height : 28.50 / 28.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: LSL (day)

Source height = 1.16 m

ROAD (0.00 + 69.09 + 0.00) = 69.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	70.45	0.00	-1.36	0.00	0.00	0.00	0.00	69.09

Segment Leq : 69.09 dBA

Total Leq All Segments: 69.09 dBA

Results segment # 1: LSL (night)

Source height = 1.16 m

ROAD (0.00 + 62.55 + 0.00) = 62.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.91	0.00	-1.36	0.00	0.00	0.00	0.00	62.55

Segment Leq : 62.55 dBA

Total Leq All Segments: 62.55 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.09 dBA
(NIGHT): 62.55 dBA

STAMSON 5.0 NORMAL REPORT Date: 04-11-2024 10:07:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: aola.te Time Period: 16 hours

Description: OLA on 8-storey podium

Road data, segment # 1: LSL

Car traffic volume : 31541 veh/TimePeriod *
Medium truck volume : 390 veh/TimePeriod *
Heavy truck volume : 585 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: LSL

Angle1 Angle2 : -60.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 35.00 m
Receiver height : 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -60.00 deg Angle2 : 90.00 deg
Barrier height : 0.00 m
Elevation : 0.00 m
Barrier receiver distance : 9.00 m
Source elevation : 0.00 m
Receiver elevation : 24.00 m
Barrier elevation : 24.00 m
Reference angle : 0.00

Results segment # 1: LSL

Source height = 1.16 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.16	1.50	-4.76	19.24

ROAD (0.00 + 51.08 + 0.00) = 51.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-60	90	0.00	70.45	0.00	-3.68	-0.79	0.00	0.00	-14.90	51.08

Segment Leq : 51.08 dBA

Total Leq All Segments: 51.08 dBA

TOTAL Leq FROM ALL SOURCES: 51.08 dBA