Detailed Noise Study

Proposed Mixed-Use/Residential Development
Guelph Innovation Lands – Block 3
Guelph, Ontario

November 28, 2025
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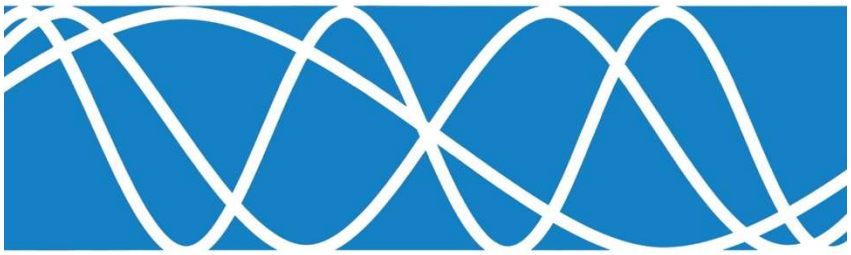

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1 INTRODUCTION AND SUMMARY

HGC Engineering was retained by 2694893 Ontario Inc. O/A Fusion Homes to conduct a detailed noise study for a proposed mixed-use/residential development located in Block 3 of the Guelph Innovation Lands, located at the southeast corner of Victoria Road and Stone Road in the City of Guelph, Ontario. The proposed development includes mixed-use, high-density residential, low density residential blocks, parks and a stormwater management pond. This study is required by the City of Guelph as part of the Block Plan application.

This report has been updated to reflect the latest draft plan prepared by MHBC dated November 25, 2025 and the latest concept plan for Block 3.

The primary sources of transportation noise are road traffic on Victoria Road and Stone Road. A secondary source of noise is rail traffic on the Guelph Junction Railway (GJR) to the east of the subject site. Traffic data obtained from the City of Guelph and GJR personnel were used to predict future sound levels at the residential facades. The predicted sound levels were compared to the guidelines of the Ministry of Environment, Conservation and Parks (MECP) and the Municipality.

The predictions indicate that future traffic sound levels will exceed MECP guidelines at the proposed development. Central air conditioning and upgraded building constructions will be required for the proposed buildings in the high-density residential and mixed-use corridor blocks (if sensitive uses such as residences are proposed). Dwellings further from the roadways and in the medium density blocks should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clauses are required in order to inform future occupants of the sound level excesses and the proximity to commercial/office/retail uses.

The mixed-use corridor may include commercial/retail/office uses. The sound emissions from the potential rooftop mechanical equipment associated with these uses have been evaluated to determine impact at potential sensitive uses

such as future residences. A computer model of the area was created using acoustic modelling software in order to predict the sound levels from these commercial/retail/office uses at the closest façades of the proposed residential buildings. The results indicate that the sound emissions from these commercial noise sources are expected to be within MECP limits at the proposed residential buildings. A preliminary analysis indicates that physical mitigation measures are not required with regard to sound emissions from the proposed commercial/retail/office uses. When details of the mixed-use corridor buildings and building envelopes for all the blocks are available, the analysis should be refined based on actual rooftop units, roof plans and the noise impact should be refined on a phase by phase basis.

2 SITE DESCRIPTION AND NOISE SOURCES

A key plan showing the location of the proposed mixed-use development and a north arrow is included in Figure 1. The subject site is located in Block 3 of the Guelph Innovation Lands, specifically at the southeast corner of Victoria Road and Stone Road, in the City of Guelph, Ontario. The block plan prepared by MHBC dated November 25, 2025 is included as Figure 2a. The development will include mixed-use, high-density residential, low-density residential blocks, parks and a stormwater management pond. A preliminary concept plan indicating the building layouts is included in Appendix A.

A site visit was made by HGC Engineering personnel in December 2023 and November 2025 to make observations of the acoustic environment and identify the significant noise sources in the vicinity. The primary sources of transportation noise are road traffic on Victoria Road and Stone Road. Secondary sources of noise include rail traffic on the GJR line to east. The railway line is located approximately 340 m from the closest proposed residential building. A natural area separates the railway and the proposed development. The site is currently occupied by several commercial and residential buildings as well as an excavation pit, which will be demolished to make way for the commercial/retail/residential buildings. The surrounding areas

include predominantly agricultural uses. The lands to the north will be developed to become Blocks 1, 2 and 4 of the Guelph Innovation Lands.

As per the Official Plan Amendment Number 54: Guelph Innovation District Secondary Plan, some of the permitted uses in the mixed-use corridor block include: *commercial, retail/service, office, live/work, hotels, medium and high-density multiple unit residential buildings and apartments*. The relevant pages are included in Appendix A. With the exception of commercial/retail/service uses, the above uses are considered to be sensitive points of reception and will require noise analysis. In the event that commercial/office/retail uses are proposed in the mixed-use corridor block, the impact of the associated potential stationary noise sources have been included in the noise assessment in Section 5.

The site is considered to be in a Class 2, semi urban acoustical environment area as per the requirements of the Municipality.

3 SOUND LEVEL CRITERIA

3.1 Road and Rail Traffic Noise Criteria

Guidelines for acceptable levels of road and rail traffic noise impacting residential developments are given in the MECP publication NPC-300 "Environment Noise Guideline Stationary and Transportation sources – Approval and Planning", release date October 21, 2013, and are listed in Table 1 below. The City of Guelph Noise Control Guidelines (GNCG) version 1.0 effective January 1, 2019 were also used in conjunction with NPC-300. The Federation of Canadian Municipalities (FCM) and Railway Association of Canada (RAC) "Guidelines for New Development in Proximity to Railway Operations", dated May 2013 (RAC/FCM guidelines were also reviewed dated November 2006). The values in Table 1 are energy equivalent (average) sound levels [L_{EQ}] in units of A-weighted decibels [dBA].

Table 1: Road and Rail Traffic Noise Criteria

Space	Daytime $L_{EQ(16\ hour)}$ Road	Nighttime $L_{EQ(8\ hour)}$ Road
Outdoor Living Areas	55 dBA	--
Inside Living/Dining Rooms	45 dBA / 40 dBA	45 dBA / 40 dBA
Inside Bedrooms	45 dBA / 40 dBA	40 dBA / 35 dBA

Daytime refers to the time period from 07:00 to 23:00 and nighttime refers to 23:00 to 07:00. The term "Outdoor Living Area" (OLA) is a noise sensitive space intended for the quiet enjoyment of the outdoor environment and is readily accessible from the building. OLA's include backyards areas of single family, semi-detached and townhouse dwellings, gardens, patios, balconies and elevated terraces (e.g. Rooftops) that are not enclosed with a minimum depth of 4 meters, common outdoor amenity areas associated with high-rise and other multi-unit buildings and passive recreational areas such as parks if identified by the City. Front yards are not considered OLA's.

The target sound level in an OLA is 55 dBA. The guidelines in the MECP publication allow the sound level in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in property and rental agreements. Where OLA sound levels exceed 60 dBA, physical mitigation is required to reduce the OLA sound level to 55 dBA. Where mitigation is not technically, economically and administratively feasible, a minor excess above 55 dBA is acceptable with the use of a noise warning clause with some justification.

Indoor guidelines are 5 dBA more stringent for rail noise than for road noise, to account for the low frequency (rumbling) character of locomotive sound, and its greater potential to transmit through exterior wall/window assemblies.

A central air conditioning system as an alternative means of ventilation to open windows is required 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. If the sound level in the plane of a bedroom or living/dining room window is greater than 55 dBA and

less than or equal to 65 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion.

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, or when the nighttime sound level is greater than 55 dBA or greater than 60 dBA during the daytime due to rail traffic noise.

In addition, the exterior walls of the first row of dwellings next to railway tracks are to be built to a minimum of brick veneer or masonry equivalent construction, from the foundation to the rafters when the rail traffic Leq (24-hour), estimated at a location of a nighttime receptor, is greater than 60 dBA and if the first row of dwellings is within 100 metres of the tracks.

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

The reader is referred to a copy of GJR requirements respectively for a new development adjacent to a principal main line, which are included in Appendix A.

4 TRAFFIC NOISE ASSESSMENT

4.1 Road Traffic Data

As per the GNCG, traffic data is to be projected ten years beyond the expected completion date. Forecasted road traffic data to year 2041 for Victoria Road and Stone Road was obtained from the Traffic Impact Study (TIS) for the subject site prepared by GHD, the traffic consultant for this development. Road traffic data was also obtained from City of Guelph personnel and volumes were found

to be lower than the TIS data, the latter of which was therefore conservatively used in the analysis. Commercial vehicle percentages were calculated from the information obtained and a day/night split of 90%/10% was used. Table 2 below summarizes the road traffic data used in the analysis. Road traffic information and calculations are included in Appendix B.

Table 2: Road Traffic Data Projected to 2041

Roadway	AADT	Day / Night Split [%]	Trucks Percentage (%)		Speed Limit [km/h]
			Medium	Heavy	
Victoria Road	37 120	90 / 10	2.5	2.5	70
Stone Road	27 050	90 / 10	2.5	2.5	60

4.2 Rail Traffic Data

Rail traffic volumes for the GJR rail line located to the east were obtained from City of Guelph personnel and are attached in Appendix C. The GJR line is used for freight trains and is classified as a principal branch line. Trains pass-bys occur during the daytime hours only (9am to 6pm). The maximum permissible train speed in the area of the site is 40 km/h (25 mi/h).

In conformance with railway assessment requirements, the maximum speeds, maximum number of cars and locomotives per train were used in the traffic noise analysis to yield a worst-case estimate of train noise. The existing data was projected to the year 2039 (ten years from estimated completion date) using a conservative annual growth rate of 2.5% and is shown in Table 3.

Table 3: Projected GJR Rail Traffic Data to 2039

Type of Train	Number of Trains Day / Night	Number of Locomotives	Number of Cars	Max Speed (KPH)
Feight	7.9 / 0	2	35	40

4.3 Traffic Noise Predictions

To assess the levels of road and rail 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. All STAMSON outputs are included in Appendix D.

Predictions of the traffic sound levels were made at the top-storey building façades. As the block plans are still at a conceptual stage, detailed information regarding the siting and lotting information for the medium density and high density residential blocks are not currently available. A preliminary concept building layout plan was used for an assessment of stationary noise but it is understood that the layout of the buildings may change. According to the secondary plan attached in Appendix E, the height of the buildings in the residential blocks are a maximum of 10-storeys and the receptor height is taken as such as a conservative measure. The City of Guelph By-Law No. (1983) - 11280 and the Canadian Transport Commission Order No. R - 36160 dated January 30, 1984, prohibits train whistles within City of Guelph limits. The noise of whistles is therefore not included in the analysis.

Prediction locations are indicated in Figure 2a. The results of the maximum predicted sound levels at the top storey of the proposed dwelling units are summarized in Table 4.

Table 4: Maximum Predicted Future Traffic Sound Levels Projected to 2039, [dBA], Without Mitigation

Prediction Location	Description	Daytime at Façade Road/Rail/Total L_{EQ}(16 hour)*	Nighttime at Façade Road/Rail/Total L_{EQ}(8 hour)*
[A]	North Façade of High Density Residential Block	67 / 49 / 67	61 / -- / 61
[B]	West Façade of High Density Residential Block	71 / -- / 71	64 / -- / 64
[C]	West Façade of High Density Residential Block	71 / -- / 71	64 / -- / 64
[D]	West Façade of Medium Density Residential Block	65 / -- / 65	58 / -- / 58
[E]	West Façade of Medium Density Residential Block	60 / -- / 60	53 / -- / 53
[F]*	West Façade of Mixed-Use Corridor Block	71 / -- / 71	64 / -- / 64

* Note that the proposed uses in the mixed-use corridor have not been confirmed. Uses such as residential, office and hotels (considered sensitive points of reception) are permitted within this block and is therefore subject to noise assessment. Retail/commercial uses are not typically considered sensitive points of reception and will therefore not require traffic noise assessment.

4.4 Recommendations for Road and Rail Traffic Noise

The predictions indicate that the traffic sound levels are expected to exceed MECP limits during daytime hours and nighttime hours at the proposed blocks. The following discussion and recommendations are provided.

4.4.1 Outdoor Living Areas

As a general note, any common amenity area associated with the high density and rear yards associated with medium density residential buildings, should be placed on the shielded side of the buildings to reduce the need for high noise barriers.

When siting, lotting and grading information is available, detailed noise studies should be conducted for individual blocks with exposure to the roadways and railway to determine the specific barrier requirements, heights and extents, requirements for ventilation and building envelope construction.

4.4.2 Indoor Living Areas

Central Air Conditioning

The predicted sound levels at the façades of the proposed buildings in the high density residential blocks and the potential residential uses in the mixed-use corridor block (prediction locations [A], [B], [C] and [F]) will exceed 65 dBA during the daytime. These dwelling units will require central air conditioning systems.

Provision for the Future Installation of Air Conditioning by Occupant

The predicted sound levels at the façades of the proposed buildings in the medium density residential blocks (prediction location [D] and [E]) will be between 56 and 65 dBA during the daytime and between 51 and 60 dBA during the nighttime. To address these excesses, the MECP guidelines recommend that these units be equipped with forced air ventilation systems, with ducts large enough to allow future instalment of air conditioning at the occupant's discretion.

These units are indicated in Figure 2b. In addition to ventilation requirements, the guidelines also recommend warning clauses for the dwelling units. 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 a result, noise from the proposed development is also expected to be insignificant at existing sensitive uses located further away.

4.4.3 Building Façade Constructions

Future road and rail traffic sound levels outside the façades of the proposed buildings in the high density residential blocks and the potential residential uses in the mixed-use corridor (prediction locations [A], [B], [C] and [F]) will exceed 65 dBA or 60 dBA during the daytime and nighttime, respectively. MECP guidelines recommend that the windows, walls and doors be designed so that the indoor sound levels comply with the noise criteria.

The minimum sound transmission class ("STC") rating of window glazing required to achieve the target indoor sound level criteria considers the highest predicted sound levels on the façades of the proposed dwelling units. Detailed floor plans and building elevations have not yet been developed.

A typical window to floor area of 50% for the living/dining rooms (40% fixed and 10% operable) and 25% for the bedrooms (20% fixed and 5% operable) was assumed in the analysis. The minimum acoustical requirement for the glazing is STC-33 or lower for the façades of all proposed buildings. In any case, we recommend a minimum of STC-33 given the urban nature of the site, to address spurious environmental noises that have not been specifically modelled. Operable elements should have tight seals sufficient to achieve acoustical performance ratings no more than 2 points less. Preliminary STC calculations are included in Appendix F.

Further Analysis

When siting information, lotting information, detailed floor plans and building elevations are available for the proposed blocks, the glazing requirements should be refined based on actual window to floor area ratios.

5 STATIONARY NOISE ASSESSMENT

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. The rooftop mechanical equipment associated with the proposed commercial/office/retail buildings in the mixed-use corridor are considered stationary sources of noise which may impact the proposed residential buildings in the remaining blocks. The proposed noise source locations are shown in green in Figure 3. Note that the proposed uses in the mixed-use corridor have not been confirmed. The location, model and type of mechanical units may differ and will require further analysis when details are available.

5.1 Criteria Governing Stationary Noise Sources

The Ministry of the Environment, Conservation and Parks (MECP) provides guidelines for the assessment of stationary noise sources. NPC-300 "Environment Noise Guideline Stationary and Transportation sources – Approval and Planning" referenced with regard to traffic noise is also intended for use in the planning of noise sensitive land uses adjacent to residential buildings.

The criteria is based on the background sound level at sensitive points of reception in the quietest hour that the source can be in operation. 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. For relatively quiet areas where background sound may fall to low levels during some hours, NPC-300 stipulates various minimum limits. As discussed in Section 2, the subject site is located in a Class 2 area. In Class 2 areas, the limits are 50 dBA during the day (07:00 to 23:00) and 45 dBA at night (23:00 to 07:00) at the façades. For OLA's, the limit is 50 dBA during the day (07:00 to 19:00) and 45 dBA during the evening (19:00 to 23:00). If the background sound levels due to road traffic exceed the exclusionary minimum limits, then the background sound level becomes the criterion. To ensure a conservative analysis, the exclusionary minimum criteria at all receptors will be adopted.

Generators and Pumping Station

In general, the criteria for assessment of the testing of an emergency generator are 5 dB greater than the sound level limits otherwise applicable to stationary source in that area, in accordance with NPC-300. For example, if the daytime limit in a Class 2 area is 50 dBA, then the criteria for testing of a generator is 55 dBA. The emergency nature of the generators is not considered as a stationary noise source.

Further, under O. Reg. 346/12: REGISTRATIONS UNDER PART II.2 OF THE ACT - HEATING SYSTEMS AND STANDBY POWER SYSTEMS, when a generator

(associated with a pumping station) is tested, the sound level should be 75 decibels (A-weighted) at a distance of seven metres from the generator unit, if the generator unit has a rated capacity of more than 150 kilowatts including the sound enclosure. When the details of the sound enclosure and the rating of the generator is known, the sound level may be verified.

5.2 Stationary Noise Source Analysis

The potentially significant noise sources associated with the proposed commercial/office/retail uses are assumed to be rooftop mechanical equipment. Rooftop mechanical equipment was assumed to be make-up air units, with locations indicated on the aerial image. From experience, make-up air units typically have significant noise emissions and have been conservatively included in the model in the absence of detailed information.

The source levels associated with the equipment are listed in Table 5 below in terms of sound power level.

Table 5: Source Sound Power Levels [dB re 10-12 W]

Source	ID	Octave Band Centre Frequency [Hz]								
		63	125	250	500	1k	2k	4k	8k	dBA
Make-up Air Unit	MUA	85	90	85	82	87	83	78	77	90

The above sound levels were used as input to a predictive computer model. The software used for this purpose (*Cadna-A version 2025 64 Bit (build 209.5501*) 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 commercial/office/retail buildings in the mixed-use corridor block were assumed to be 30 m in height (or 10-storeys).
- The noise sources and noise sensitive receptors are indicated in Figure 3. The green crosses represent noise sources such as rooftop HVAC equipment. The rooftop equipment were assumed to be make-up air units at 1.5 m in height. Sound data was obtained from HGC project files and manufacturer's information.

We have considered typical worst-case (busiest hour) scenarios for each time period to be as follows:

Assumed daytime worst-case hour scenario:

- All rooftop equipment operating continuously at full capacity,

Assumed nighttime worst-case hour scenario:

- All rooftop equipment operating on a 50% duty cycle.

5.3 Predicted Sound Levels from the Mixed-Use Corridor at Proposed Residential Buildings

The sound levels due to the rooftop mechanical equipment in the mixed-use corridor block and their impact at the proposed buildings are summarized in the following table. Maximum resultant sound levels at the proposed buildings are shown graphically in Figures 4 and 5.

Table 6: Predicted Sound Levels from Proposed Commercial/Office/Retail Uses at the Proposed Dwelling Units [dBA]

Receptor	Criteria (Day /Night)	Day	Night
R1	50 / 45	43	40
R2		45	42
R3		47	44
R4		46	43
R5		46	42
R6		45	42
R7		43	40
R8		47	44

The results of the calculations indicate that the predicted sound levels due to the rooftop mechanical equipment associated with the proposed commercial/office/retail uses in the mixed-use corridor block are expected to meet MECP limits at the façades of the proposed residential buildings during a worst-case operational scenario. Noise mitigation for these commercial/office/retail uses is not required.

Further Analysis

When details of the commercial/retail/office uses in the mixed-use corridor are known, the impact of noise should be refined based on siting information.

6 WARNING CLAUSES

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements for all units. Wording from the City of Guelph Noise Control Guidelines is included in Appendix G and provided below.

High-Density Residential Blocks & Mixed-Use Corridor Block (if noise-sensitive uses are proposed)

The Transferee covenants with the Transferor that the below clause, verbatim, will be included in all subsequent Agreements of Purchase of sale or lease and Sale and Deeds conveying the lands described herein, which covenant shall run with the said lands and is for the benefit of the subsequent owners and renters of the said lands and the owner of the adjacent road.

The Transferee of Units [XX] for himself, his heirs, executors, administrators, successors, and assigns acknowledge being advised that despite the inclusion of noise control features in the development and/or within the building unit sound levels due to increasing road and rail traffic may occasionally interfere with some indoor and/or outdoor activities of the dwelling occupants as the sound levels may at times exceed the sound level limits of the municipal and provincial noise criteria.

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 municipal and provincial sound level limits.

The building components of the dwelling unit (walls, windows, and exterior doors) have been designed to provide acoustic insulation so that, when windows and exterior doors are closed, the indoor sound levels are within the municipal and provincial sound level limits. The details of this building component design are available by contacting the builder of this unit.

The Transferee, for himself, his heirs, executors, administrators, successors, and assigns acknowledge being additionally advised that due to the proximity of the adjacent commercial and institutional facilities, sound levels from these facilities may at times be audible.

Medium-Density Residential Blocks

The Transferee covenants with the Transferor that the below clause, verbatim, will be included in all subsequent Agreements of Purchase of sale or lease and Sale and Deeds conveying the lands described herein, which covenant shall run with the said lands and is for the benefit of the subsequent owners and renters of the said lands and the owner of the adjacent road.

The Transferee of Units [XX] for himself, his heirs, executors, administrators, successors, and assigns acknowledge being advised that despite the inclusion of noise control features in the development and/or within the building unit sound levels due to increasing road and rail traffic may occasionally interfere with some indoor and/or outdoor activities of the dwelling occupants as the sound levels may at times exceed the sound level limits of the municipal and provincial noise criteria.

The development includes a number of measures to help reduce noise impacts, listed below. To ensure that provincial and municipal sound level limits are not exceeded and/or to keep sound levels as low as possible it is important to maintain the sound attenuation features provided.

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 will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the municipality and provincial sound level limits.

The Transferee, for himself, his heirs, executors, administrators, successors, and assigns acknowledge being additionally advised that due to the proximity of the adjacent commercial facilities, sound levels from these facilities may at times be audible.

7 SUMMARY AND RECOMMENDATIONS

The following list and Table 7 summarize the recommendations made in this report. The reader is referred to the previous sections of the report where these recommendations are discussed in more detail.

1. Central air conditioning systems will be required for the proposed high-density residential block and mixed-use corridor block. The proposed medium-density residential blocks further from the roadway should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. The location, installation and sound ratings of the air conditioning devices should comply with NPC 300.. The location, installation and sound ratings of the outdoor air conditioning devices should comply with NPC-300, as applicable.

2. Upgraded glazing constructions are required for the proposed high-density residential block and mixed-use corridor blocks, as indicated in Section

4.4.3. When detailed architectural floor plans and exterior elevation drawings are available, an acoustical engineer shall review the plans to provide recommendations for glazing elements based on actual window to floor area ratios.

3. Warning clauses, as included in the City of Guelph Noise Control Guidelines, should be included in the property and tenancy agreements and offers of purchase or sale to inform future owners/occupants of the potential noise excesses and proximity to proposed commercial uses, as indicated in Section 6 and as provided in Appendix G.
4. When details of the commercial/retail/office uses in the mixed-use corridor and other blocks are known including building envelopes, the impact of noise should be refined based on siting information on a phase by phase basis.

The reader is referred to previous sections of this report where these recommendations are discussed in more detail.

Table 7: Summary of Noise Control Requirements

Location	Acoustic Barrier	Ventilation Requirements*	Warning Clauses	Window Requirements +
Mixed-Use Corridor **	--	Central Air Conditioning	See Section 6	STC-33
High-Density Residential Block	--	Central Air Conditioning		STC-33
Medium-Density Residential Block	--	Forced Air		STC-33

Note:
-- no specific requirement
*The location, installation and sound rating of the air conditioning condensers must be compliant with MECP Guideline NPC-300, as applicable.
** Proposed uses are not confirmed. The noise control requirements are based on the presence of proposed sensitive uses in the block.
+ When floor plans and building elevations are available, an acoustical consultant should refine glazing constructions based on actual window to floor area ratios and verify the exterior wall construction.

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 occupancy permits for this development, a Professional Engineer qualified to provide acoustical engineering services in the Province of Ontario should certify that the suggested noise control measures have been properly incorporated, installed and constructed.

2) A detailed noise study should be conducted when siting, lotting, grading information, floor plans and exterior elevation drawings are available to refine ventilation requirements and building constructions on a phase by phase basis.

8 CONCLUSIONS

Acoustic modelling has been undertaken to assess the noise impact of surrounding transportation and stationary sources on the proposed development. The results of this study indicate that the proposed development in Block 3 of the Guelph Innovation Lands is feasible on this site from a noise impact perspective, with the inclusion of upgraded acoustical features including central air conditioning systems and upgraded window constructions. Warning clauses are recommended to advise residents of road and rail traffic noise and the proximity to commercial uses.

9 REFERENCES

1. Google Maps Aerial Imagery, Internet application: 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.

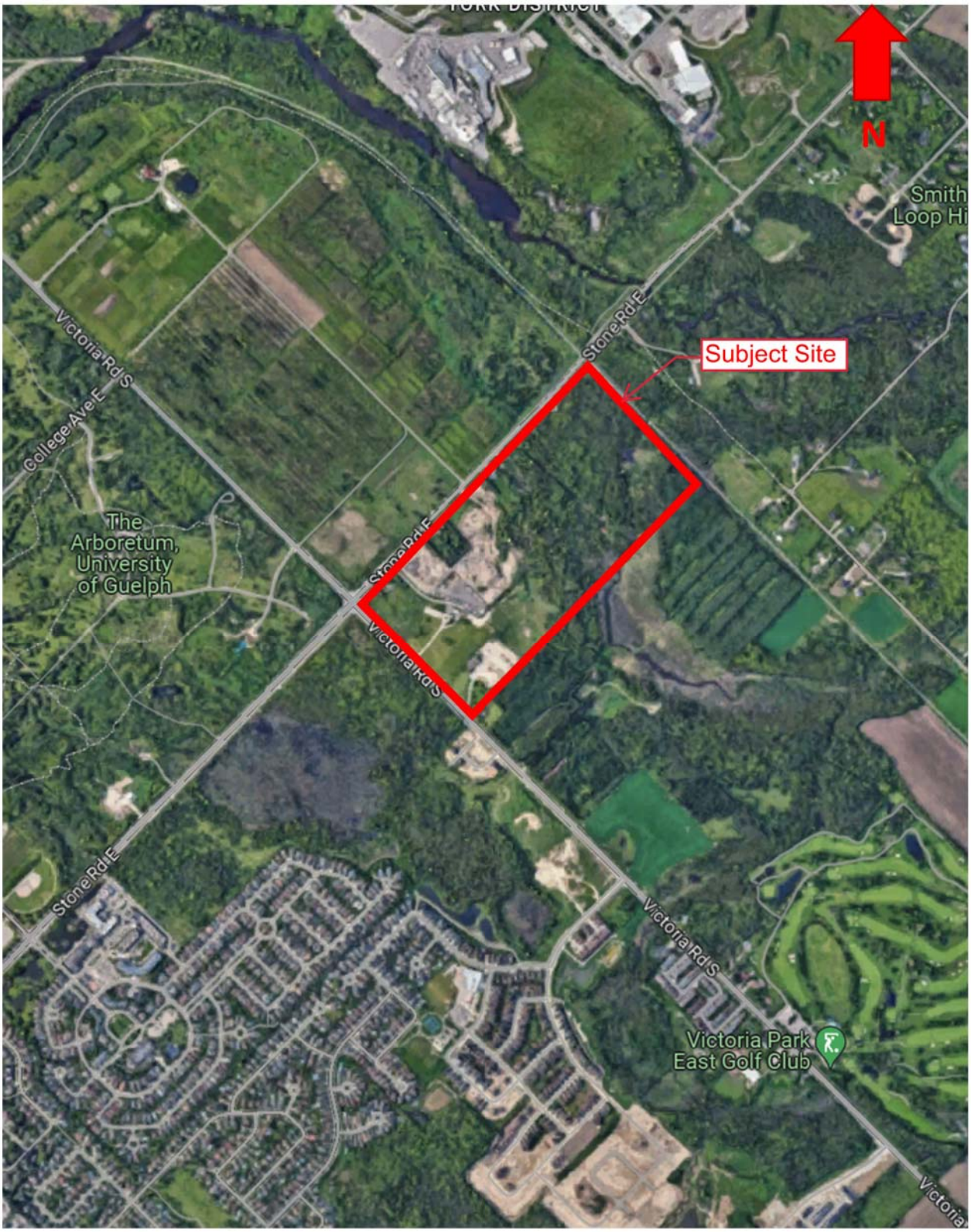
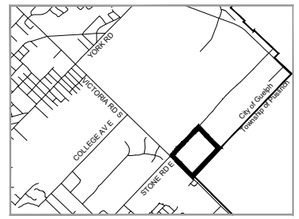


Figure 1: Key Plan

BLOCK PLAN

Block 3 - Guelph Innovation District, City of Guelph, Ontario 1405F

KEY PLAN



Subject Lands

NOT TO SCALE

LEGEND

- Subject Lands
- Property Boundaries
- Floodplain (GRCA)
- Woodland (NRSI Dec. 5, 2023)
- 5-15 m Woodland Buffer (NRSI Dec. 5, 2023)
- Wetland (NRSI May 9, 2024)
- 15 m & 30 m Wetland Buffers (NRSI May 9, 2024)
- Significant Valleyland (NRSI Dec. 5, 2023)

LAND USES

- Low Density Residential: 0.888 ha
- Medium Density Residential: 2.789 ha
- High Density Residential: 5.463 ha
- Mixed-use Corridor (GID): 3.449 ha
- Park & Walkway : 0.880 ha
- Pumping Station : 0.088 ha
- Stormwater Management: 1.105 ha
- Significant Natural Areas & Natural Areas: 6.209 ha

SITE STATISTICS

Total Site Area: ±22.607 ha
Net Site Area: ±16.398 ha *(net of natural areas and buffers)*

NOTES

1. All dimensions are in metres unless otherwise shown.
2. Boundary and topographic information provided by Van Harten Surveying Inc, Aapril 21, 2023
3. Wetland and dripline information provided by NRSI, December 5, 2023
4. ESRI satellite imagery
5. Contains information licensed under the Open Government Licence – City of Guelph
6. Contains information made available under Grand River Conservation Authority's open data license v2.0

DATE: November 25, 2025

0 10 25 50 100m

SCALE: 1:2,500

K:\1405F - GID Block 3\CP\Block Plan - Block 3_25Nov2025.dwg

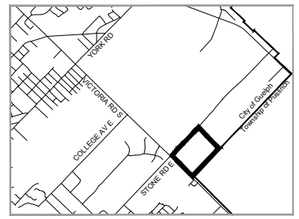
MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE

Figure 2a: Proposed Block Plan Showing Prediction Locations

BLOCK PLAN

Block 3 - Guelph Innovation District, City of Guelph, Ontario 1405F

KEY PLAN



Subject Lands

NOT TO SCALE

LEGEND

- Subject Lands
- Property Boundaries
- Floodplain (GRCA)
- Woodland (NRSI Dec. 5, 2023)
- 5-15 m Woodland Buffer (NRSI Dec. 5, 2023)
- Wetland (NRSI May 9, 2024)
- 15 m & 30 m Wetland Buffers (NRSI May 9, 2024)
- Significant Valleyland (NRSI Dec. 5, 2023)

LAND USES

- Low Density Residential: 0.888 ha
- Medium Density Residential: 2.789 ha
- High Density Residential: 5.463 ha
- Mixed-use Corridor (GID): 3.449 ha
- Park & Walkway : 0.880 ha
- Pumping Station : 0.088 ha
- Stormwater Management: 1.105 ha
- Significant Natural Areas & Natural Areas: 6.209 ha

SITE STATISTICS

Total Site Area: ±22.607 ha
Net Site Area: ±16.398 ha *(net of natural areas and buffers)*

Central AC

Provision for AC at occupant's discretion

NOTES

1. All dimensions are in metres unless otherwise shown.
2. Boundary and topographic information provided by Van Harten Surveying Inc, Aapril 21, 2023
3. Wetland and dripline information provided by NRSI, December 5, 2023
4. ESRI satellite imagery
5. Contains information licensed under the Open Government Licence – City of Guelph
6. Contains information made available under Grand River Conservation Authority's open data license v2.0

DATE: November 25, 2025

0 10 25 50 100m

SCALE: 1:2,500

K:\1405F - GID Block 3\CP\Block Plan - Block 3_25Nov2025.dwg

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE

Figure 2b: Proposed Block Plan Showing Ventilation Requirements

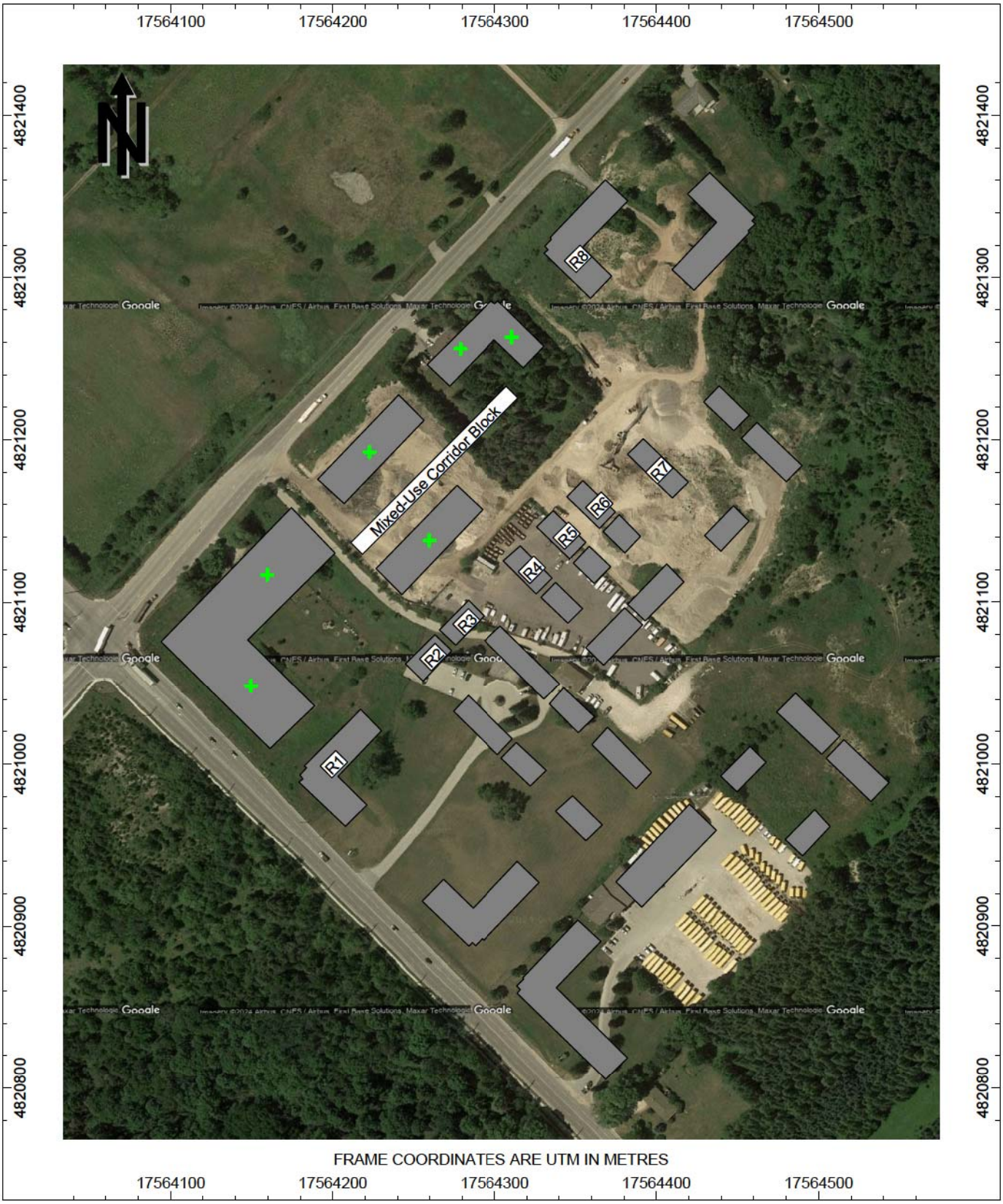


Figure 3: Proposed Noise Source Locations

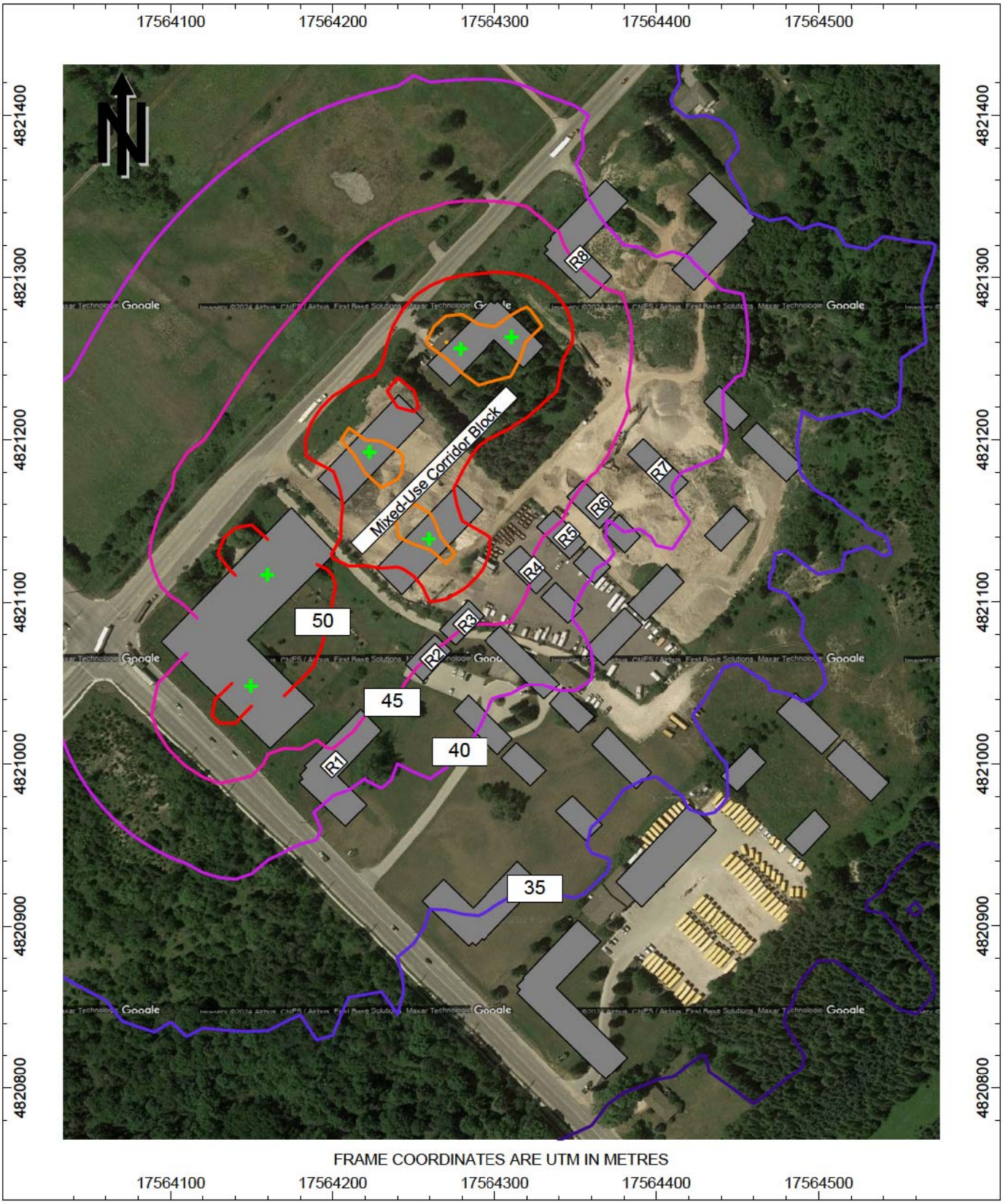


Figure 4: Predicted Daytime Sound Level Contours at 30 m in height at the Proposed Buildings, dBA (Without Mitigation)

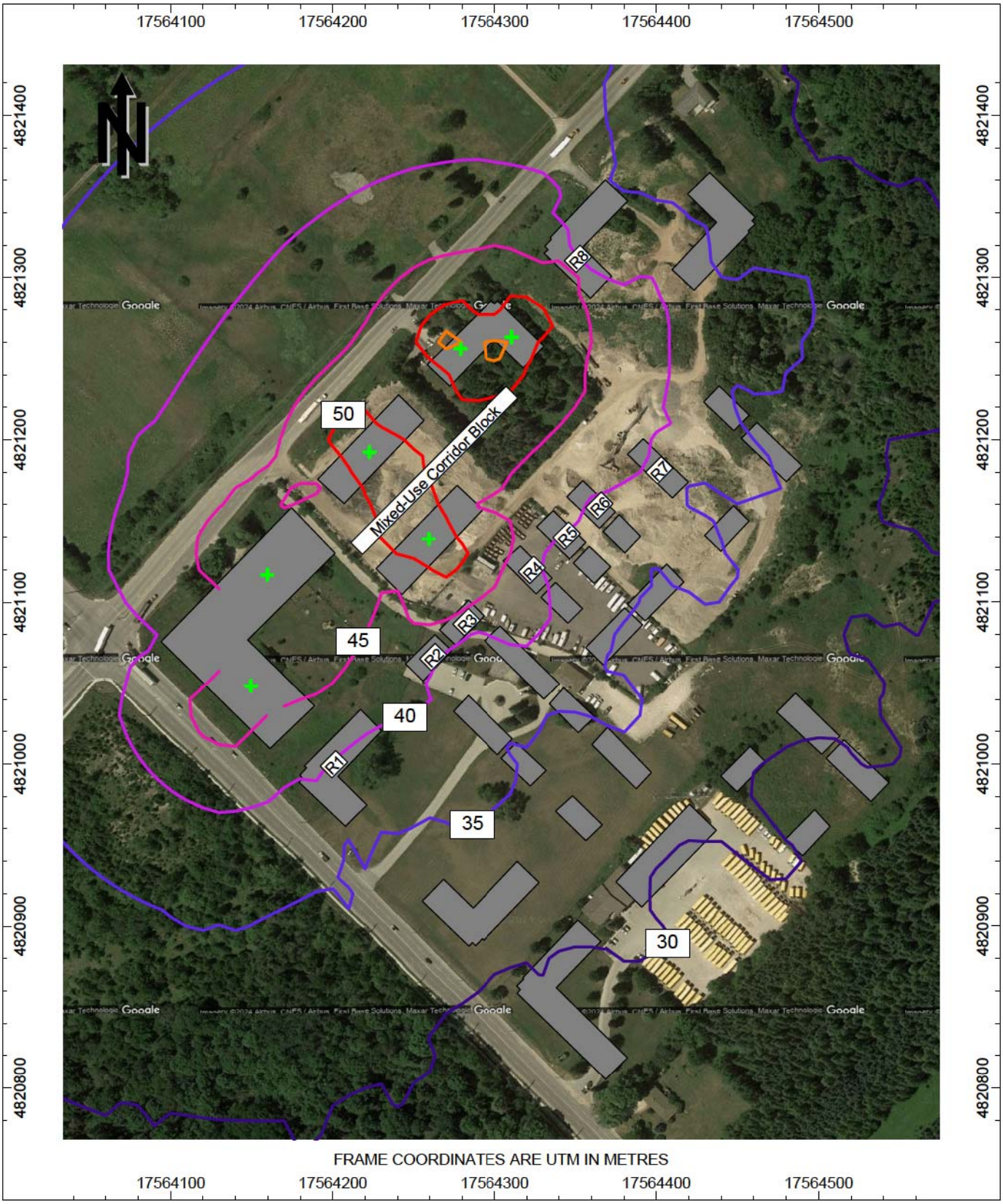


Figure 5: Predicted Nighttime Sound Level Contours at 30 m in height at the Proposed Buildings, dBA (Without Mitigation)

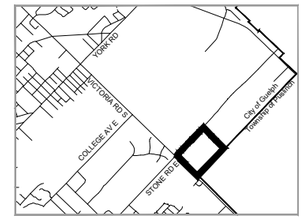
Appendix A
Road Traffic Data

CONCEPT PLAN

Block 3 - Guelph Innovation District, City of Guelph, Ontario

1405F

KEY PLAN



Subject Lands

NOT TO SCALE

LEGEND

- Subject Lands
- Property Boundaries
- Floodplain (GRCA)
- Woodland (NRSI Dec. 5, 2023)
- 5-15 m Woodland Buffer (NRSI Dec. 5, 2023)
- Wetland (NRSI May 9, 2024)
- 15 m & 30 m Wetland Buffers (NRSI May 9, 2024)
- Significant Valleyland (NRSI Dec. 5, 2023)

LAND USES

- Low Density Residential: 0.888 ha
- Medium Density Residential: 2.789 ha
- High Density Residential: 5.463 ha
- Mixed-use Corridor (GID): 3.449 ha
- Park & Walkway : 0.880 ha
- Pumping Station : 0.088 ha
- Stormwater Management: 1.105 ha
- Significant Natural Areas & Natural Areas: 6.209 ha

SITE STATISTICS

Total Site Area: ±22.607 ha
Net Site Area: ±16.398 ha *(net of natural areas and buffers)*

Units: 1,857
Potential Commercial GFA: 5,645 m² / 60,762 ft²

NOTES

1. All dimensions are in metres unless otherwise shown.
2. Boundary and topographic information provided by Van Harten Surveying Inc, Aapril 21, 2023
3. Wetland and dripline information provided by NRSI, December 5, 2023
4. ESRI satellite imagery
5. Contains information licensed under the Open Government Licence – City of Guelph
6. Contains information made available under Grand River Conservation Authority's open data license v2.0

DATE: November 26, 2025

0 10 25 50 100m

SCALE: 1:2,500

K:\1405F - GID Block 3\CP\Concept Plan - Block 3_25Nov2025.dwg

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE

Appendix B
Sample STAMSON 5.04 Output

Summary of Standards Regarding Development Adjacent to the Guelph Junction Railway Right of Way

Minimum Standards for Main Line Trackage Updated August 1, 2022 Track Designation - Principal Branch Line

- Less than 5 trains daily – Hours of operation vary pending freight volumes and planned capital tack projects. Track work may be planned during night shifts to avoid train schedules. (10 MPH) Class I within Guelph City Limits – (25 MPH) Class II York Rd to Campbellville / Milton
- Light or moderate weight usually with 2 or 3 locomotives but can include heavier units and up to 25 loaded cars per day

Noise Study

- Required within 150m of railway right of way main track or 1000m for railway yards, residential, institutional, commercial and office use. Does not apply to unoccupied buildings, manufacturing, sports fields and city parks.
- Ministry of Environment indoor sound level criteria to apply.

Vibration Study

- Required within 75m of railway right of way for residential, institutional, commercial and office use. Does not apply to unoccupied buildings, manufacturing, sports fields and city parks.
- Canadian National Railway vibration standards to be used.

Minimum Setback

- 15m for residential, institutional, commercial and office use.

Warning Clause Registered on Title

- Required for all development.

Safety Berm

- Required with a minimum height of 2m for all use except unoccupied buildings and manufacturing.

Site Specific Risk Assessment

- A site specific risk assessment may be undertaken by the proponent. This assessment may make recommendations for development using modified standards.
- Such acceptance will be the sole prerogative of the Guelph Junction Railway.

Acoustical Fence

- May be required to meet airborne noise standards.
- Canadian Pacific Railway and Canada Mortgage and Housing construction standards to be used.

Fencing

- Required for all residential, institutional, commercial, office and outdoor play areas.
- Minimum standards to be most recent Transport Canada rail safety directives.

Industrial Park Trackage

- All above standards shall apply for any use other than manufacturing

Landscaping/Planting

- No trees to be planted within 25 feet of property line unless approved by GJR General Manager
- Landscaping to be kept to a minimum mature height of 1.2 meters and not to cross onto adjoining property at full maturity

APPENDIX C

Road Traffic Data

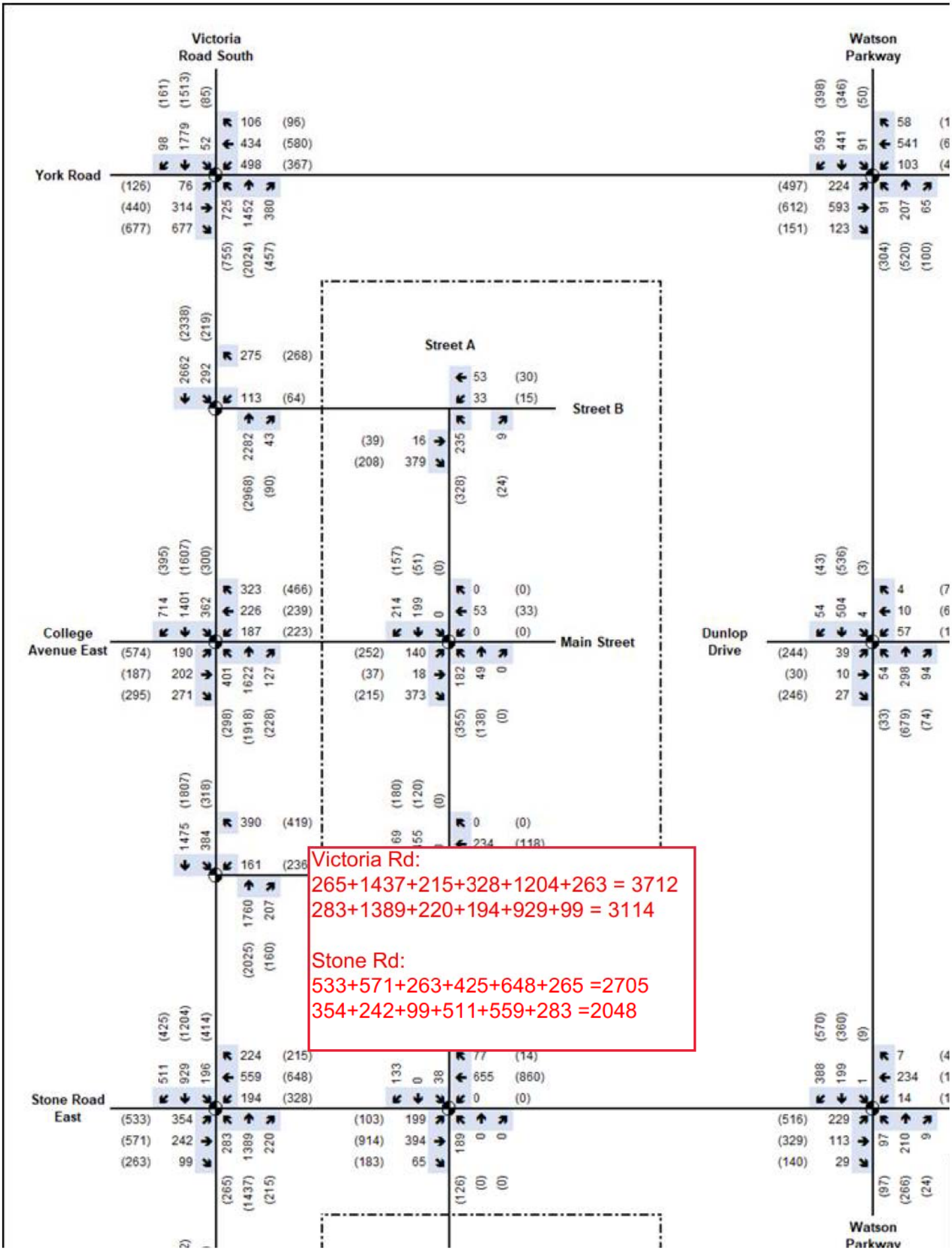
Yvonne Lo

From: Dominic Cho <Do-Hyun.Cho@ghd.com>
Sent: December 14, 2023 11:21 AM
To: Yvonne Lo
Cc: Will Maria; Daniel Doherty
Subject: RE: Block Plan 3

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Yvonne,

Please see below updated traffic volumes for future horizon year of 2041.


Victoria Road South
Watson Parkway
York Road
Street A
Street B
College Avenue East
Main Street
Dunlop Drive
Stone Road East
Watson Parkway
Victoria Rd:
265+1437+215+328+1204+263 = 3712
283+1389+220+194+929+99 = 3114
Stone Rd:
533+571+263+425+648+265 =2705
354+242+99+511+559+283 =2048

Future Total 2041 Traffic Volumes

The volumes received reduction recommended from the city and some redistributions.

In other words, the volumes are lower than what was provided in Monday.

Please let me know of any questions or concerns.

Dominic Cho, B.ASc., P.Eng.
Transportation Planner

GHD
Proudly employee owned | ghd.com
100 Milverton Drive Suite 404, Mississauga Ontario L5R 4H1 CANADA | www.ghd.com
D +1 905 752 4317 **V** 884317 **E** do-hyun.cho@ghd.com

The Power of Commitment

Connect

From: Yvonne Lo <ylo@hgcengineering.com>
Sent: Tuesday, December 12, 2023 9:43 AM
To: Dominic Cho <Do-Hyun.Cho@ghd.com>
Cc: Will Maria <William.Maria@ghd.com>
Subject: RE: Block Plan 3

Great, thank you Dominic!

Best,

Yvonne Lo, MEng, PEng
Project Engineer

HGC Engineering NOISE | VIBRATION | ACOUSTICS
Howe Gastmeier Chapnik Limited
2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044 ext.232 e: ylo@hgcengineering.com
Visit our website: www.hgcengineering.com **Follow Us** – LinkedIn | Twitter | YouTube

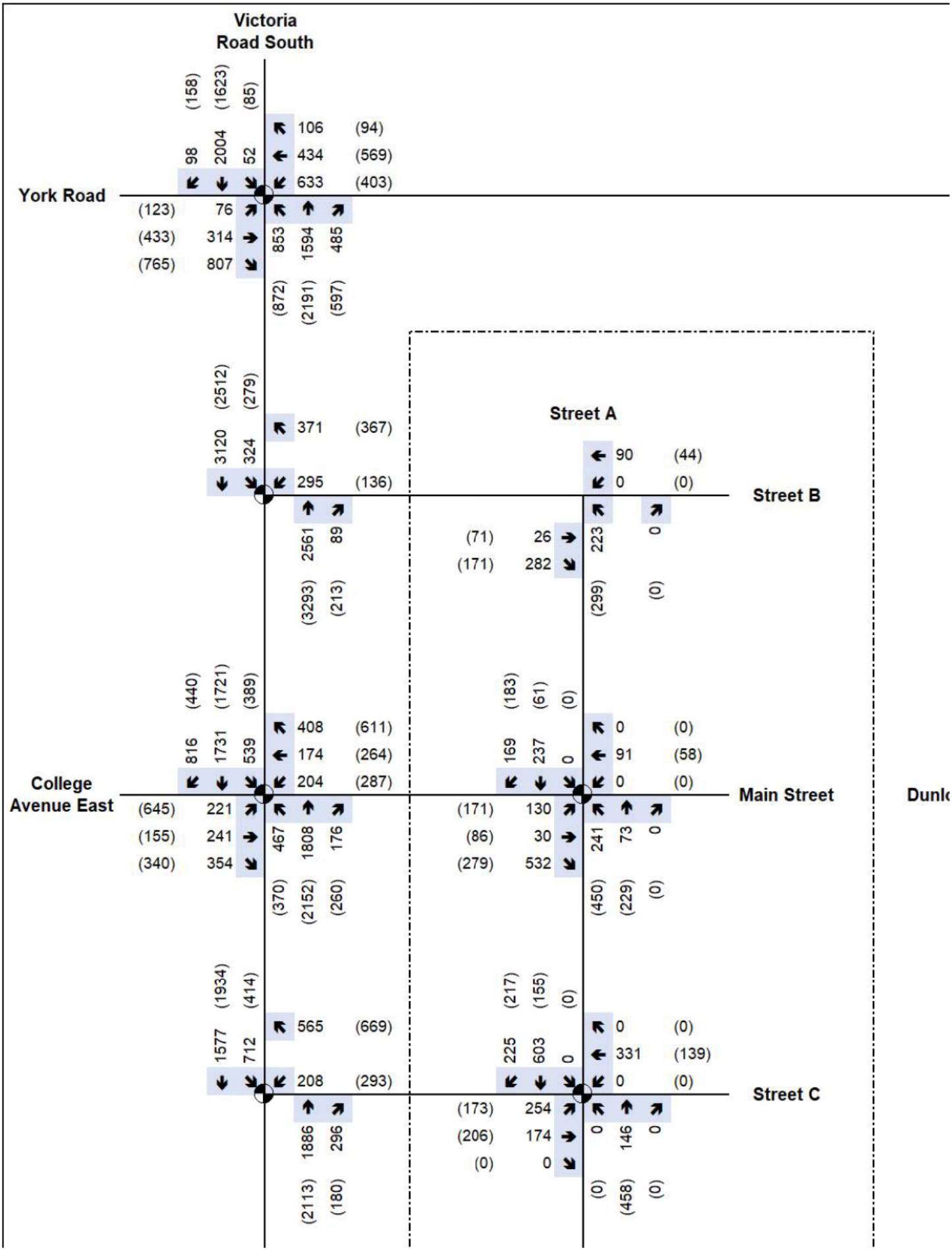
---

From: Dominic Cho <Do-Hyun.Cho@ghd.com>
Sent: Monday, December 11, 2023 5:38 PM
To: Yvonne Lo <ylo@hgcengineering.com>

Cc: Will Maria <William.Maria@ghd.com>
Subject: RE: Block Plan 3

Hi Yvonne,

Below figure shows the Future Total Traffic Volumes in horizon year 2041:


Victoria
Road South
York Road
College
Avenue East
Street A
Street B
Street C
Main Street
Dunl
(158) (1623) (85)
98 2004 52
106 (94)
434 (569)
633 (403)
(123) 76
(433) 314
(765) 807
853 1594 485
(872) (2191) (597)
(2512) (279)
3120 324
371 (367)
295 (136)
2561 89
(3293) (213)
90 (44)
0 (0)
(71) 26
(171) 282
223 0
(299) (0)
(440) (1721) (389)
816 1731 539
408 (611)
174 (264)
204 (287)
(645) 221
(155) 241
(340) 354
467 1808 176
(370) (2152) (260)
(183) (61) (0)
169 237 0
0 (0)
91 (58)
0 (0)
(171) 130
(86) 30
(279) 532
241 73 0
(450) (229) (0)
(1934) (414)
1577 712
565 (669)
208 (293)
1886 296
(2113) (180)
(217) (155) (0)
225 603 0
0 (0)
331 (139)
0 (0)
(173) 254
(206) 174
(0) 0
0 146 0
(0) (458) (0)

Please let me know if you need any more information.

Regards,

Dominic Cho, B.ASc., P.Eng.
Transportation Planner

GHD
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100 Milverton Drive Suite 404, Mississauga Ontario L5R 4H1 CANADA | www.ghd.com
D +1 905 752 4317 **V** 884317 **E** do-hyun.cho@ghd.com

The Power of Commitment

Connect

From: Yvonne Lo <ylo@hgcengineering.com>
Sent: Wednesday, December 6, 2023 8:00 AM
To: Dominic Cho <Do-Hyun.Cho@ghd.com>; Will Maria <William.Maria@ghd.com>
Subject: RE: Block Plan 3

Hi Dominic and Will,

Nice meeting you both. We are looking for forecasted traffic volumes for Victoria Road and Stone Road to predict road traffic noise in our noise study. Please let me know if this available. Thank you!

Best,

Yvonne Lo, MEng, PEng
Project Engineer

HGC Engineering **NOISE | VIBRATION | ACOUSTICS**
Howe Gastmeier Chapnik Limited
2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044 ext.232 e: ylo@hgcengineering.com
Visit our website: www.hgcengineering.com **Follow Us –** LinkedIn | Twitter | YouTube

---

From: Daniel Doherty <ddoherty@fusionhomes.com>
Sent: Thursday, November 30, 2023 4:44 PM
To: Yvonne Lo <ylo@hgcengineering.com>; Dominic Cho <Do-Hyun.Cho@ghd.com>; Will Maria

<William.Maria@ghd.com>
Subject: Block Plan 3

Hi Yvonne,

Dominic & Will copied here are from GHD and are the traffic consultants on this file. Please connect with Dominic as he will provide you the information you need for noise study.

I have also included the latest concept in both PDF & CAD.

Thanks,
Dan

FUSION HOMES

Daniel Doherty, P.Eng.
Land Development Manager
519-826-6700, ext. 242 | 519-710-3705
ddoherty@fusionhomes.com

KINCENTRIC
Best Employer
CANADA 2023

APPENDIX D

Rail Traffic Data

Yvonne Lo

From: Les Petroczi <Les.Petroczi@guelph.ca>
Sent: January 16, 2024 4:34 PM
To: Yvonne Lo
Subject: Re: Rail Traffic Data Request - Victoria/Stone

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Yvonne

GJR operates 2-3 trains per day Monday through Friday. Time of movements 09:00-18:00.
Cars on trains vary from 35 to 4. Up to two engines per train. These three trains move in both directions during their shifts.

Thank you
Les

Les Petroczi (he/him)
General Manager
Guelph Junction Railway
Office of the Chief Administrative Officer
City of Guelph
519-822-1260 extension 2825
Mobile 519-766-7121
les.petroczi@guelph.ca

From: Yvonne Lo <ylo@hgcengineering.com>
Sent: Tuesday, January 16, 2024 2:18:23 PM
To: Les Petroczi <Les.Petroczi@guelph.ca>
Subject: Rail Traffic Data Request - Victoria/Stone

Hi Les,

Hope you had a happy new year! We are currently working on a noise study located at the southeast corner of Victoria Road and Stone Road.

https://maps.app.goo.gl/duvpd2xJhGrRkSfPA

Can you please provide rail traffic data for the GJR rail line to the east of the subject site?

Thank you!

Best,

Yvonne Lo, MEng, PEng

Project Engineer

HGC Engineering NOISE | VIBRATION | ACOUSTICS
Howe Gastmeier Chapnik Limited
2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044 ext.232 e: ylo@hgcengineering.com
Visit our website: www.hgcengineering.com **Follow Us** – LinkedIn | Twitter | YouTube

APPENDIX E

Sample STAMSON 5.04 Output

STAMSON 5.0 NORMAL REPORT Date: 03-04-2024 15:12:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b.te Time Period: Day/Night 16/8 hours
Description: ***Daytime and nighttime sound levels at [B] West Façade of High Density Residential Block***

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

Car traffic volume : 31738/3526 veh/TimePeriod *
Medium truck volume : 835/93 veh/TimePeriod *
Heavy truck volume : 835/93 veh/TimePeriod *
Posted speed limit : 70 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): 37120
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.50
Heavy Truck % of Total Volume : 2.50
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Victoria (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 : 25.00 / 26.00 m
Receiver height : 30.00 / 30.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 23128/2570 veh/TimePeriod *
Medium truck volume : 609/68 veh/TimePeriod *
Heavy truck volume : 609/68 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): 27050
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.50
Heavy Truck % of Total Volume : 2.50
Day (16 hrs) % of Total Volume : 90.00

```
Data for Segment # 2: Stone (day/night)
--------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 150.00 / 150.00 m
Receiver height           :  30.00 / 30.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Victoria (day)
-----------------------------------

Source height = 1.26 m

ROAD (0.00 + 70.73 + 0.00) = 70.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  72.95   0.00  -2.22   0.00   0.00   0.00   0.00
70.73
-------------------------------------------------------------------------
---

Segment Leq : 70.73 dBA

Results segment # 2: Stone (day)
--------------------------------

Source height = 1.26 m

ROAD (0.00 + 57.14 + 0.00) = 57.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.00  70.15   0.00 -10.00  -3.01   0.00   0.00   0.00
57.14
-------------------------------------------------------------------------
---

Segment Leq : 57.14 dBA

Total Leq All Segments: 70.92 dBA

Results segment # 1: Victoria (night)
-------------------------------------

Source height = 1.26 m

ROAD (0.00 + 64.03 + 0.00) = 64.03 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  66.42   0.00  -2.39   0.00   0.00   0.00   0.00
64.03
-------------------------------------------------------------------------
---

Segment Leq : 64.03 dBA

Results segment # 2: Stone (night)
----------------------------------

Source height = 1.26 m

ROAD (0.00 + 50.62 + 0.00) = 50.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.00  63.63   0.00 -10.00  -3.01   0.00   0.00   0.00
50.62
-------------------------------------------------------------------------
---

Segment Leq : 50.62 dBA

Total Leq All Segments: 64.22 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.92
                           (NIGHT): 64.22
```

STAMSON 5.0 NORMAL REPORT Date: 03-04-2024 15:12:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te Time Period: Day/Night 16/8 hours
Description: ***Daytime and nighttime sound levels at prediction location [A], North Façade of High Density Residential Block***

Rail data, segment # 1: GJR (day/night)

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
* 1.	7.9/0.0	40.0	2.0	35.0	Diesel	No

* The identified number of trains have been adjusted for future growth using the following parameters:

Train type: No	Name	Unadj. Trains	Annual % Increase	Years of Growth
1.		6.0/0.0	2.50	11.00

Data for Segment # 1: GJR (day/night)

Angle1 Angle2	: 0.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 2	(Reflective ground surface)
Receiver source distance	: 210.00 / 210.00 m	
Receiver height	: 30.00 / 30.00 m	
Topography	: 1	(Flat/gentle slope; no barrier)
No Whistle		
Reference angle	: 0.00	

Results segment # 1: GJR (day)

LOCOMOTIVE (0.00 + 47.73 + 0.00) = 47.73 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	62.20	-11.46	-3.01	0.00	0.00	0.00	47.73

WHEEL (0.00 + 43.20 + 0.00) = 43.20 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	57.67	-11.46	-3.01	0.00	0.00	0.00	43.20

Segment Leq : 49.04 dBA

Total Leq All Segments: 49.04 dBA

Results segment # 1: GJR (night)

```
---------------------------------

LOCOMOTIVE (0.00 + -14.47 + 0.00) = 0.00 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
     0     90   0.00   0.00 -11.46  -3.01   0.00   0.00   0.00 -14.47
-------------------------------------------------------------------

WHEEL (0.00 + -14.47 + 0.00) = 0.00 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
     0     90   0.00   0.00 -11.46  -3.01   0.00   0.00   0.00 -14.47
-------------------------------------------------------------------

Segment Leq : 0.00 dBA

Total Leq All Segments: 0.00 dBA

Road data, segment # 1: Victoria (day/night)
-------------------------------------------
Car traffic volume  : 31738/3526  veh/TimePeriod  *
Medium truck volume :   835/93    veh/TimePeriod  *
Heavy truck volume  :   835/93    veh/TimePeriod  *
Posted speed limit  :    70 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):  37120
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   2.50
    Heavy Truck  % of Total Volume      :   2.50
    Day (16 hrs) % of Total Volume      :  90.00

Data for Segment # 1: Victoria (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 360.00 / 360.00 m
Receiver height           :  30.00 / 30.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Stone (day/night)
-------------------------------------------
Car traffic volume  : 23128/2570  veh/TimePeriod  *
Medium truck volume :   609/68    veh/TimePeriod  *
Heavy truck volume  :   609/68    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):  27050
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   2.50
    Heavy Truck  % of Total Volume     :   2.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Stone (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  :  32.00 / 32.00  m
Receiver height           :  30.00 / 30.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Victoria (day)
-----------------------------------

Source height = 1.26 m

ROAD (0.00 + 56.14 + 0.00) = 56.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.00  72.95   0.00 -13.80  -3.01   0.00   0.00   0.00
56.14
-------------------------------------------------------------------------
---

Segment Leq : 56.14 dBA

Results segment # 2: Stone (day)
--------------------------------

Source height = 1.26 m

ROAD (0.00 + 66.86 + 0.00) = 66.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  70.15   0.00  -3.29   0.00   0.00   0.00   0.00
66.86
-------------------------------------------------------------------------
---
```

```
Segment Leq : 66.86 dBA

Total Leq All Segments: 67.21 dBA

Results segment # 1: Victoria (night)
------------------------------------

Source height = 1.26 m

ROAD (0.00 + 49.61 + 0.00) = 49.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.00  66.42   0.00 -13.80  -3.01   0.00   0.00   0.00
49.61
-------------------------------------------------------------------------
---

Segment Leq : 49.61 dBA

Results segment # 2: Stone (night)
---------------------------------

Source height = 1.26 m

ROAD (0.00 + 60.34 + 0.00) = 60.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  63.63   0.00  -3.29   0.00   0.00   0.00   0.00
60.34
-------------------------------------------------------------------------
---

Segment Leq : 60.34 dBA

Total Leq All Segments: 60.69 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.28
                           (NIGHT): 60.69
```

```
STAMSON 5.0        NORMAL REPORT        Date: 03-04-2024 15:13:04
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: c.te                 Time Period: Day/Night 16/8 hours
Description:  Daytime and nighttime sound levels at location [C], West
Façade of High Density Residential Block

Road data, segment # 1: Victoria (day/night)
-----------------------------------------------
Car traffic volume  : 31738/3526  veh/TimePeriod  *
Medium truck volume :   835/93    veh/TimePeriod  *
Heavy truck volume  :   835/93    veh/TimePeriod  *
Posted speed limit  :    70 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):  37120
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   2.50
    Heavy Truck  % of Total Volume     :   2.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Victoria (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  :  25.00 / 25.00  m
Receiver height           :  30.00 / 30.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Stone (day/night)
-----------------------------------------------
Car traffic volume  : 23128/2570  veh/TimePeriod  *
Medium truck volume :   609/68    veh/TimePeriod  *
Heavy truck volume  :   609/68    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):  27050
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   2.50
    Heavy Truck  % of Total Volume     :   2.50
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: Stone (day/night)
--------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 335.00 / 335.00 m
Receiver height           :  30.00 / 30.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Victoria (day)
-----------------------------------

Source height = 1.26 m

ROAD (0.00 + 70.73 + 0.00) = 70.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  72.95   0.00  -2.22   0.00   0.00   0.00   0.00
70.73
-------------------------------------------------------------------------
---

Segment Leq : 70.73 dBA

Results segment # 2: Stone (day)
--------------------------------

Source height = 1.26 m

ROAD (0.00 + 53.65 + 0.00) = 53.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.00  70.15   0.00 -13.49  -3.01   0.00   0.00   0.00
53.65
-------------------------------------------------------------------------
---

Segment Leq : 53.65 dBA

Total Leq All Segments: 70.81 dBA

Results segment # 1: Victoria (night)
-------------------------------------

Source height = 1.26 m

ROAD (0.00 + 64.20 + 0.00) = 64.20 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  66.42   0.00  -2.22   0.00   0.00   0.00   0.00
64.20
-------------------------------------------------------------------------
---

Segment Leq : 64.20 dBA

Results segment # 2: Stone (night)
----------------------------------

Source height = 1.26 m

ROAD (0.00 + 47.13 + 0.00) = 47.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.00  63.63   0.00 -13.49  -3.01   0.00   0.00   0.00
47.13
-------------------------------------------------------------------------
---

Segment Leq : 47.13 dBA

Total Leq All Segments: 64.28 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.81
                           (NIGHT): 64.28
```

APPENDIX F

STC Calculations

PRELIMINARY GLAZING AIF/STC REQUIREMENTS

	Road	Rail	
Indoor Criterion Day	45	40	dBA
Indoor Criterion Night	40	35	dBA

South Façade, Podium

Location (A)	**Predicted Road Traffic Sound Level (Leq)**	**AIF[1]**	**Predicted Rail Traffic Sound Level (Leq)**	**AIF[1]**	**Combined AIF (Road + Rail)**	**Calculated Envelope to Floor Area Ratios (Glazing/Floor)**		**Preliminary Minimum Glazing STC Requirement**	**Resulting Room SPL**
						Fixed	Operable		
Bedroom Nighttime	61	26		-30	26	20%	5%	33	31
Living/Dining Room Daytime	67	27	49	14	27	40%	10%	33	40

Note:

1 - AIF Calculated based on Information Contained in National Research Council, "Acoustic Insulation Factor: A Rating for the Insulation of Buildings Against Outdoor Noise", June 1990

AIF = Predicted Leq - Indoor Criterion Leq + 2 + 10*log (N) where N = 2

SPL = 10*log (10^(A/10) + 10^(B/10))

A = Indoor Criterion Leq + Combined AIF - STC + 10*log (Fixed / 0.25) - 10*log (2)

B = Indoor Criterion Leq + Combined AIF - STC + 3 + 10*log (Operable / 0.25) - 10*log (2)

APPENDIX G

City of Guelph Noise Control Guideline Warning Clauses

Appendix A: Warning Clauses and Standard Conditions

The following warning clauses and standard conditions are to be considered when finalizing a noise study, and for inclusion in a Development Agreement, registered on title and be included in Offers of Purchase and Sale for designated residential lots, blocks or units. Only those appropriate for the development shall be chosen from the below list, and some minor adjustment of wording or inclusion of additional clauses and conditions may be necessary for site-specific applications.

Warning Clauses

This clause shall be included in all cases:

"The Transferee covenants with the Transferor that the below clause, verbatim, will be included in all subsequent Agreements of Purchase of sale or lease and Sale and Deeds conveying the lands described herein, which covenant shall run with the said lands and is for the benefit of the subsequent owners and renters of the said lands and the owner of the adjacent road."

Select from the following clauses, as is appropriate for the site:

A.

"The Transferee of [insert lots/blocks/units], for himself, his heirs, executors, administrators, successors and assigns acknowledge being advised that despite the inclusion of noise control features in the development and/or within the building unit sound levels due to increasing road traffic may occasionally interfere with some indoor and/or outdoor activities of the dwelling occupants as the sound levels may at times exceed the sound level limits of the municipal and provincial noise criteria."

"This development includes a number of measures to help reduce noise impacts, listed below. To ensure that provincial and municipal sound level limits are not exceeded and/or to keep sound levels as low as possible it is important to maintain the sound attenuation features provided."

"This development includes building and street orientation to help increase setback distances to major noise sources and shield some rear yards from excessive noise levels."

B.

"This development includes an acoustic barrier to help reduce the sound levels within the rear yard of this and other nearby units."

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 will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the municipal and provincial sound level limits."

"The building components of this dwelling unit (walls, windows and exterior doors) have been designed to provide acoustic insulation so that, when windows and exterior doors are closed, the indoor sound levels are within the municipal and provincial sound level limits. The details of this building component design are available by contacting the builder of this unit."

D.

"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 municipal and provincial sound level limits."

"The building components of this dwelling unit (walls, windows and exterior doors) have been designed to provide acoustic insulation so that, when windows and exterior doors are closed, the indoor sound levels are within the municipal and provincial sound level limits. The details of this building component design are available by contacting the builder of this unit."

E.

"The Transferee, for himself, his heirs, executors, administrators, successors and assigns acknowledge being additionally advised that due to the proximity of the adjacent school, sound levels from the school may at times be audible"

F.

"The Transferee, for himself, his heirs, executors, administrators, successors and assigns acknowledge being additionally advised that the installed acoustic barrier is on private property and must be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the property owner and shall be the same material or to the same standards, having the same colour, appearance and function of the original."

G.

"Warning: Canadian National Railway Company or its assigns or successors in interest has or have a right-of-way within 300 metres from the land the subject hereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). CN will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."

H.

"Purchasers/tenants are advised that due to the proximity of the adjacent industry (facility) (utility), noise from the industry (facility) (utility) may at times interfere with outdoor activities."

"To address potential impacts of noise from the adjacent industry (facility) (utility) this development has been designed to provide for specific outdoor amenity areas and a quieter indoor environment."

"Purchasers/tenants are further advised that sound levels due to the adjacent industry (facility) (utility) are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed."

I.

"Purchasers/tenants are advised that due to the proximity of the Guelph Airpark, noise from the airport and individual aircraft may at times interfere with outdoor or indoor activities. Guelph Airpark and the City of Guelph are not responsible if the purchaser/occupant of this dwelling finds that the noise levels due to aircraft operations continue to be of concern or are offensive."