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Noise Feasibility Study
Proposed Residential Development
DeMarchi Subdivision
Northwest of Derry Road and Fourth Line
Milton, Ontario

Prepared for:

Branthaven Fourth Line Inc.
720 Oval Court
Burlington, ON L7L 6A9

Prepared by

Andrew Rogers, BASc

Reviewed by

Sheeba Paul, M.Eng, P.Eng

October 11, 2024

HGC Project No. 02400647

VERSION CONTROL

Noise Feasibility Study,
DeMarchi Subdivision,
Milton, Ontario.

Ver.	Date	Version Description / Changelog	Prepared By
0	October 11, 2024	Noise Feasibility Study in support of the approvals process.	A. Rogers/ S. Paul

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1 INTRODUCTION AND SUMMARY

HGC Engineering was retained by Branthaven Fourth Line Inc. to conduct a Noise Feasibility Study for a proposed residential development (DeMarchi Subdivision) to be located northwest of the intersection of Derry Road and Fourth Line in Milton, Ontario. The analysis includes an assessment of road traffic noise on the proposed development in accordance with the Ministry of the Environment, Conservation and Parks (MECP) guidelines. The site proposes 30 blocks of 2-storey standard and 3-storey back-to-back and rear lane townhomes, as well as an 8-storey mid-rise building. The study is required as part of the approvals process.

Traffic on Derry Road was determined to be the dominant source of sound. Road traffic volume data from the Region of Halton was used in conjunction with the site plan to predict future traffic sound levels at the proposed building façades. The predictions were evaluated with respect to the guidelines of the Ministry of Environment, Conservation and Parks (MECP), and used to develop noise control recommendations.

The sound level predictions indicate that with suitable noise control measures integrated into the design of the buildings, it is feasible to achieve MECP guideline sound levels. Acoustic barriers are required for the flanking rear yards directly adjacent to Derry Road. Central air conditioning systems and upgraded glazing constructions will be required for the 8-storey building and the first row of townhomes adjacent to Derry Road. The second row of townhomes from Derry Road will be required to be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Associated acoustical requirements are specified in this report. Noise warning clauses are also required to inform future occupants of the sound level excesses and the proximity to institutional uses.

2 SITE DESCRIPTION AND NOISE SOURCES

A key plan showing the location of the proposed residential development is attached as Figure 1. The development will be located northwest of the intersection of Derry Road and Fourth Line in Milton, Ontario. Figure 2 shows the development concept plan prepared by Glen Schnarr & Associates Inc. dated October 7, 2024. The site proposes 30 blocks of 2-storey standard and 3-storey back-to-back and rear lane townhomes, as well as an 8-storey mid-rise building. Noise prediction locations are indicated on Figure 2 for reference.

HGC Engineering personnel visited the site during the month of August 2024 to observe the acoustical environment and note the significant noise sources. The acoustical environment surrounding the site is considered to be Class 1. Road traffic on Derry Road was confirmed to be the dominant noise source. There are existing residences northeast, southwest and southeast of the site area. North and south of the site are schools. East of the site, across Derry Road, there is a daycare that is currently under construction. Sounds from these nearby facilities were not audible at the site at the time of the site visit and are not expected to be a significant concern. Nevertheless, a noise warning clause has been included in Section 4 to address the presence of this nearby institutional uses.

3 ROAD TRAFFIC NOISE ASSESSMENT

3.1 Traffic Noise Criteria

Guidelines for acceptable levels of road traffic noise impacting residential developments are given in the MECP publication NPC-300, “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”, Part C release date October 21, 2013, and are listed in Table I below. The values in Table I are energy equivalent (average) sound levels [L_{EQ}] in units of A-weighted decibels [dBA].

Table I: MECP Road Traffic Noise Criteria (dBA)

Area	Daytime L_{EQ} (16 hour) Road	Nighttime L_{EQ} (8 hour) Road
Outdoor Living Area	55 dBA	--
Inside Living/Dining Room	45 dBA	45 dBA
Inside Bedroom	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 and terraces that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines, and accordingly the noise criteria are not applicable there. Large private terraces require consideration only if they are the only OLA for the occupant. In general, common outdoor amenity terraces associated with high-rise buildings are the only OLA that require consideration.

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

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where nighttime sound levels outside bedroom or living/dining room windows exceed 60 dBA or daytime sound levels 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 nighttime sound level at the plane of window 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 Road Traffic Data

Road traffic data for Derry Road was obtained from the Region of Halton and is provided in Appendix A. The traffic data was provided in terms of ultimate Average Annual Daily Traffic volumes (AADT). A day/night split of 90/10 and a posted speed limit of 60 km/h were applied. A commercial vehicle percentage of 6.0%, split into 3.0% medium trucks and 3.0% heavy trucks was applied. Table II summarizes the traffic volume data used in this study.

Table II: Ultimate Road Traffic Data

Street	Time	Cars	Medium Trucks	Heavy Trucks	Total
Derry Road	Daytime (07:00 – 22:59)	43 146	1 377	1 377	**45 900**
	Night-time (23:00 – 06:59)	4 794	153	153	**5 100**
	Total	**47 940**	**1 530**	**1 530**	**51 000**

Note that the traffic volumes for Fourth Line were found to be insignificant compared to Derry Road and therefore Fourth Line was not included in the analysis.

3.3 Traffic Noise Predictions

To assess the levels of 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. This modeling software was used to predict the future road traffic sound levels (L_{EQ}) at various locations. The STAMSON outputs are provided in Appendix B. The results of these predictions, without mitigation, are summarized in Table III.

Table III: Predicted Traffic Sound Levels [dBA]

Prediction Location	Description	Daytime $L_{EQ-16\ hr}$	Nighttime $L_{EQ-8\ hr}$
A	First Row Townhome, fronting onto Derry Road	71	65
B	Second Row Townhome	61	54
C	Third Row Townhome	55	48
D	8-Storey Building	71	65
E	Village Square OLA	<55	--
F	Rear Yard OLA (west), flanking Derry Road	65	--
G	Rear Yard OLA (central), flanking Derry Road	67	--
H	Rear Yard OLA (east), flanking Derry Road	66	--

3.4 Traffic Noise Recommendations

The predictions indicate that the traffic sound levels will be in excess of the MECP guidelines listed in Table I. The following sections outline preliminary recommendations.

3.4.1 Outdoor Living Areas

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

The predicted daytime sound level in the Village Square outdoor amenity area is less than the MECP limit of 55 dBA. No additional mitigation is required for this area.

There are dwellings on the south side of the development with rear yards that flank Derry Road. The maximum predicted daytime sound level in these rear yard areas (Prediction Locations [F], [G] and [H]) is 67 dBA, 12 dBA in excess of the MECP limit of 55 dBA. Physical mitigation in the form of an acoustic barrier is required.

For the west flanking rear yard (Prediction Location [F]), a 1.9 m high acoustic barrier along the south and west sides of the rear yard will reduce the sound level in the area to within 59 dBA. For the central flanking rear yard (Prediction Location [G]), a 2.6 m high acoustic barrier along the east, south and west sides of the rear yard will reduce the sound level in the area to within 59 dBA. For the

east flanking rear yard (Prediction Location [H]), a 2.3 m high acoustic barrier along the south and west sides of the rear yard will reduce the sound level in the area to within 59 dBA. According to MECP guidelines, these excesses may be addressed by including a warning clause in sale and lease agreements for the development.

Table IV below indicates the acoustic barrier heights that would be required to further reduce the sound levels in the flanking rear yard OLAs down to 55 dBA, in 1 dBA increments.

Table IV: Acoustic Barrier Heights Required to Achieve Various Sound Levels, [m]

Location	55 dBA	56 dBA	57 dBA	58 dBA	59 dBA
West Flanking Rear Yard (Prediction Location [F])	2.9	2.7	2.4	2.2	1.9
Central Flanking Rear Yard (Prediction Location [G])	4.1	3.6	3.2	2.9	2.6
East Flanking Rear Yard (Prediction Location [H])	3.4	3.1	2.8	2.5	2.3

The preliminary locations of the required acoustic barriers are shown in Figure 3. Note that the acoustic barriers will be required to extend to protect the flanking rear yards of the first two dwellings adjacent to Derry Road. For the west flanking rear yards, there is an existing acoustic barrier for the neighbouring development. The proposed noise barrier should connect to the existing noise barrier to the west such that there are no gaps in between.

An acoustic barrier may be any combination of an acoustic wall and an earth berm. The wall component of the barrier should be of a solid construction with a surface density of no less than 20 kg/m^2. The walls may be constructed from a variety of materials such as glass, wood, brick, pre-cast concrete or other concrete/wood composite systems provided that it is free of gaps or cracks. The heights and extents of the barriers should be chosen to reduce the sound levels in the OLA's to below 60 dBA and as close to 55 dBA as is technically, administratively and economically feasible, subject to the approval of the municipality respecting any applicable fence height by-laws. The Town of Milton has accepted noise barriers achieving 59 dBA in the rear yards in the past.

The preliminary development plans do not indicate outdoor amenity areas for the 8-storey building. Once an outdoor amenity area location has been chosen for the 8-storey building, the analysis should be updated.

3.4.2 Indoor Living Areas and Ventilation Requirements

Air Conditioning

The predicted future sound levels at the façades of the 8-storey building and the first row of townhomes adjacent to Derry Road will be greater than 65 dBA during the daytime and/or 60 dBA during the nighttime hours. To address these excesses, the MECP guidelines recommend that these buildings be equipped with central air conditioning systems, so that the windows can be closed.

Provision for Air Conditioning by the Occupant

For the second row of townhomes from Derry Road, the predicted future sound level at the building facades will be between 56 and 65 dBA during the daytime hours and/or between 51 and 60 dBA during the nighttime hours. To address these excesses, the MECP guidelines recommend that these dwellings be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Associated warning clauses are also recommended. The installation of central air conditioning will meet this requirement.

For all other townhomes further from Derry Road there are no specific ventilation requirements. Figure 4 indicates the dwelling unit ventilation requirements for the development.

Window or through-the-wall air conditioning units are not recommended because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall sound insulating properties of the envelope. For mid-rise buildings, acceptable units are those housed in their own insulated closet with an access door for maintenance. For outdoor air conditioning units for the townhomes, the location, installation and sound ratings should minimize noise impacts and comply with criteria of MECP publication NPC-300. Associated warning clauses are also recommended.

3.4.3 Building Façade Constructions

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

Detailed glazing requirements for different facades and spaces could be considered in value engineering, when detailed floor plans and building elevations are available.

Exterior Wall Constructions

Any exterior wall construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for all townhomes in the development.

For the 8-storey building, the exterior walls of the proposed building may include precast/masonry panel portions, as well as spandrel glass panels within an aluminum window system. 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.

Exterior Doors

There may be swing doors and some glazed sliding patio doors for entry onto the balconies from living/dining/bedrooms for the mid-rise building. 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 under development. Assuming a typical window to floor area of 50% (30% fixed and 20% operable) for the living/dining rooms and 40% (30% fixed and 10% operable) for the bedrooms in the development, 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 IV.

Table V: Required Minimum Glazing STC for Specific Building Façades

Building	Façade	Space	Minimum Glazing STC[1, 2]
8-Storey Building and First Row of Townhomes	North Façade	Living/Dining	OBC
		Bedroom	
	East/West Façade	Living/Dining	STC-30
		Bedroom	OBC
	South Façade	Living/Dining	STC-33
		Bedroom	STC-30
All Other Townhomes	All Facades	Living/Dining	OBC
		Bedroom	

Note:
OBC – meeting the minimum requirements of the Ontario Building Code
[1] Based on 50% window to floor area ratio for living/dining rooms and 40% for the bedrooms.
[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.

Note that acoustic performance varies with manufacture's construction details, and the STC requirements in Table IV are provided as a guideline based on the preliminary drawings. Acoustical test data for the selected assemblies should be requested from the supplier, 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, an acoustical consultant shall review the architectural plans to determine the required glazing and building façade constructions based on actual window to floor area ratios.

4 WARNING CLAUSES

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements. Examples are provided below. The noise warning clauses are numbered according to NPC-300.

Suggested wording for future dwellings with sound level excesses.

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.

Suggested wording for future dwellings with mitigation.

Type B:

> Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may on occasions 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.

Suggested wording for future dwellings requiring the provision for adding air conditioning 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.

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

Type 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 sound level limits of the Municipality and the Ministry of the Environment. (Note: the location and installation of the outdoor air conditioning device should be done so as to minimize the noise impacts and comply with criteria of MECP publication NPC-300.)

Suitable wording to inform future residents of the nearby institutional facilities and that sounds from these facilities may at times be audible.

Type E:

> Purchasers/tenants are advised that due to the proximity of the nearby institutional facilities, noise from the facilities may at times be audible.

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

5 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 such as

proposed the mid-rise 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.

6 IMPACT OF THE DEVELOPMENT ON THE ENVIRONMENT

Sound levels from noise sources such as rooftop air-conditioners, cooling towers, exhaust fans, etc. for the mid-rise building should not exceed the minimum one-hour L_{EQ} ambient (background) sound level from 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 be above the minimum exclusionary limits of 50 dBA or more during the day and 45 dBA or more at night. Thus, any electro-mechanical equipment associated with the mid-rise building (e.g., emergency generator testing, fresh-air handling equipment, etc.) should be designed such that they do not result in noise impact beyond these ranges. At the time of this study, the design of the mid-rise building was in its initial stages, and the mechanical systems had not yet been developed.

The details of the mechanical equipment for the mid-rise building will be reviewed at a later stage when that information is available. Any rooftop equipment not housed in the penthouse of the mid-rise building should be assessed and sufficiently shielded from neighbouring residences, as needed.

It is also HGC Engineering's experience with numerous developments, that typical HVAC equipment and parking garage exhaust fans for the mid-rise building can meet the applicable MECP noise criteria at neighbouring residential uses, either with low noise emission fans or relocation of the fans or through mitigation in the form of duct silencers or acoustic lining. Prior to building permit, an acoustical consultant should review the mechanical drawings and details of potential exhaust vents/fans for the mid-rise building, 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. This is typically completed at the detailed noise study stage.

7 SUMMARY OF RECOMMENDATIONS

The following list and Table V summarize the recommendations made in this report.

1. Acoustic barriers have been recommended in Section 3.4.1. The heights of the noise barriers shall be selected subject to the approval of the Town but noise barriers achieving 59 dBA have been accepted in the past.

2. Central air conditioning systems are required for the 8-storey building and the first row of townhomes adjacent to Derry Road. The location, installation and sound ratings of the air conditioning devices should comply with NPC-300.

3. Dwelling units in townhomes further from Derry Road are required to be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. The initial installation of central air conditioning will meet this requirement.

4. Upgraded building constructions will be required for façades of the proposed buildings. Minimum STC requirements for glazing are included in Section 3.4.3.

5. When lotting information is available, the acoustic requirements should be refined for inclusion in the subdivision agreement.

6. Warning clauses are required in the property and tenancy agreements and offers of purchase and sale in order to inform future owners/tenants of the sound level excesses and the proximity to the retail/commercial uses.

Table VI: Summary of Noise Control Requirements and Noise Warning Clauses

Building	Location	Acoustic Barrier	Ventilation Requirements*	Type of Warning Clause	Minimum Glazing STC+
8-Storey Building and First Row of Townhomes	North Façade	--	Central A/C	A, D, E	OBC
	East/West Façade	--			LRDR: STC-30 BR: OBC
	South Façade	--			LRDR: STC-33 BR: STC-30
Second Row of Townhomes	All Facades	--	Provision for Central A/C	A, C, E	OBC
All Other Townhomes	All Facades	--	--	E	OBC
N/A	Village Square OLA	--	--	--	--
N/A	Rear Yards Flanking Derry Road	✓	--	B	--

Notes:
-- no specific requirement
LRDR – Living Room/Dining Room
BR – Bedroom
OBC – meeting the minimum requirements of the Ontario Building Code
* The location, installation and sound rating of the air conditioning condensers must be compliant with MECP Guideline NPC-300, as applicable.
+ With assumed window to floor area ratios of 50% for living rooms/dining rooms and 40% for bedrooms. When detailed floor plans and building elevations are available, an acoustical consultant should review the drawings to refine the window glazing constructions based on actual window to floor area ratios.
✓ Noise barrier recommendations are outlined in Section 3.4.1, the height of the barrier shall be selected subject to the approval of the City of Milton.

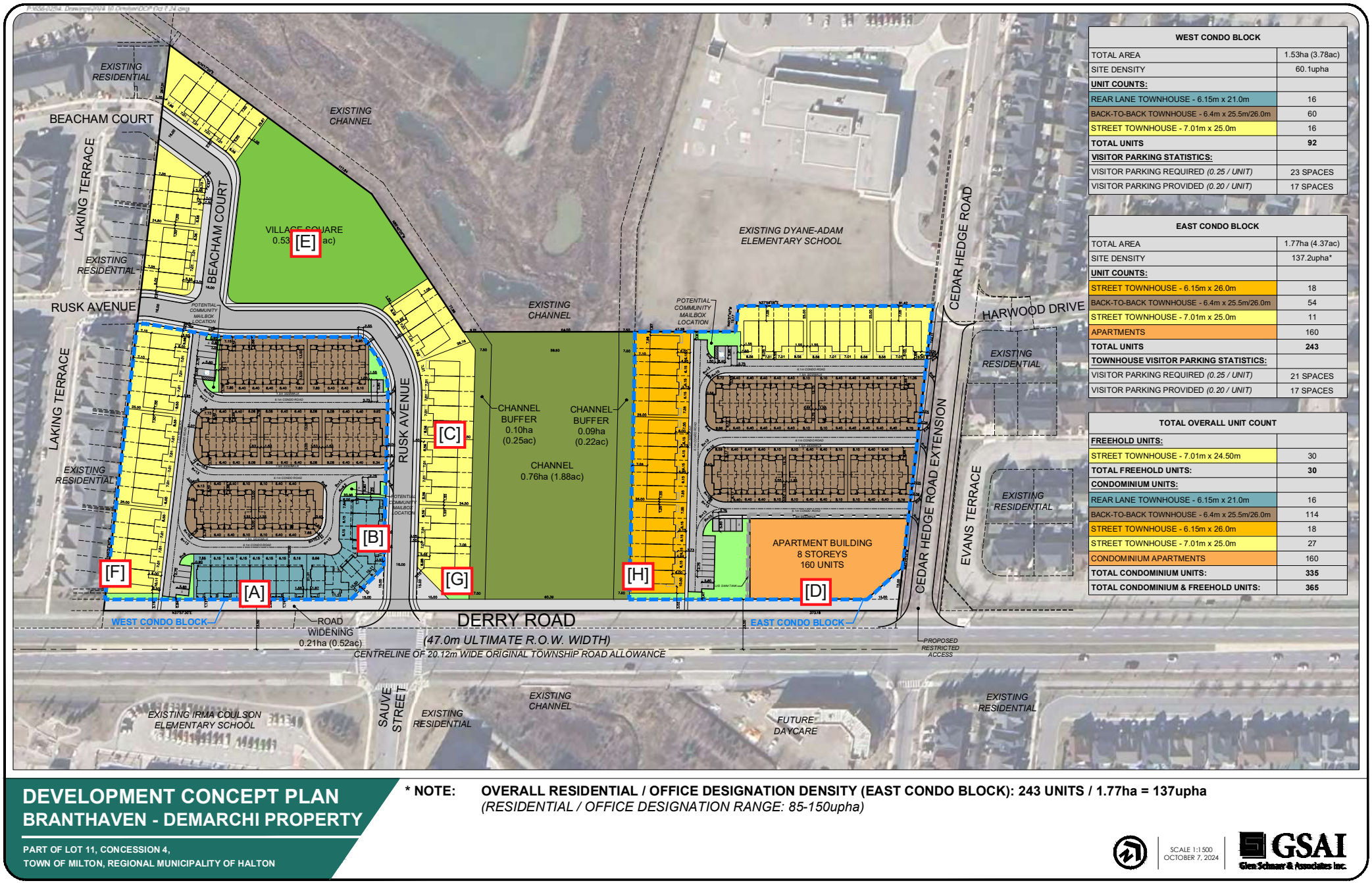
7.1 Implementation

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

1. When detailed floor plans and building elevations are available, the exterior wall and glazing construction should be verified and refined based on actual window to floor area ratios.

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

Figure 1: Key Plan



WEST CONDO BLOCK	
TOTAL AREA	1.53ha (3.78ac)
SITE DENSITY	60.1upha
UNIT COUNTS:	
REAR LANE TOWNHOUSE - 6.15m x 21.0m	16
BACK-TO-BACK TOWNHOUSE - 6.4m x 25.5m/26.0m	60
STREET TOWNHOUSE - 7.01m x 25.0m	16
TOTAL UNITS	**92**
VISITOR PARKING STATISTICS:	
VISITOR PARKING REQUIRED *(0.25 / UNIT)*	23 SPACES
VISITOR PARKING PROVIDED *(0.20 / UNIT)*	17 SPACES

EAST CONDO BLOCK	
TOTAL AREA	1.77ha (4.37ac)
SITE DENSITY	137.2upha*
UNIT COUNTS:	
STREET TOWNHOUSE - 6.15m x 26.0m	18
BACK-TO-BACK TOWNHOUSE - 6.4m x 25.5m/26.0m	54
STREET TOWNHOUSE - 7.01m x 25.0m	11
APARTMENTS	160
TOTAL UNITS	**243**
TOWNHOUSE VISITOR PARKING STATISTICS:	
VISITOR PARKING REQUIRED *(0.25 / UNIT)*	21 SPACES
VISITOR PARKING PROVIDED *(0.20 / UNIT)*	17 SPACES

TOTAL OVERALL UNIT COUNT	
FREEHOLD UNITS:	
STREET TOWNHOUSE - 7.01m x 24.50m	30
TOTAL FREEHOLD UNITS:	**30**
CONDOMINIUM UNITS:	
REAR LANE TOWNHOUSE - 6.15m x 21.0m	16
BACK-TO-BACK TOWNHOUSE - 6.4m x 25.5m/26.0m	114
STREET TOWNHOUSE - 6.15m x 26.0m	18
STREET TOWNHOUSE - 7.01m x 25.0m	27
CONDOMINIUM APARTMENTS	160
TOTAL CONDOMINIUM UNITS:	**335**
TOTAL CONDOMINIUM & FREEHOLD UNITS:	**365**

DEVELOPMENT CONCEPT PLAN
BRANTHAVEN - DEMARCHI PROPERTY

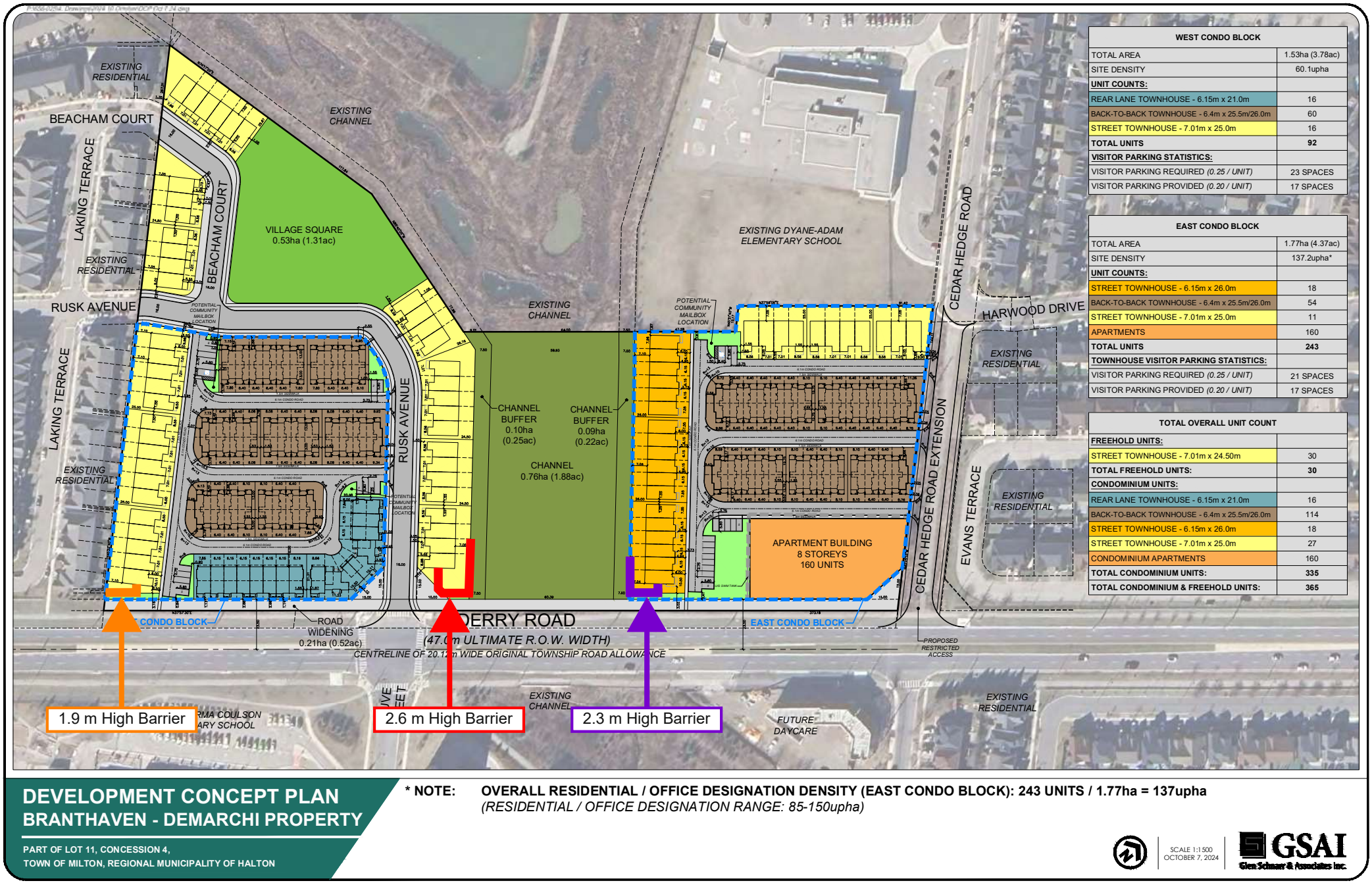
PART OF LOT 11, CONCESSION 4,
TOWN OF MILTON, REGIONAL MUNICIPALITY OF HALTON

*** NOTE:** **OVERALL RESIDENTIAL / OFFICE DESIGNATION DENSITY (EAST CONDO BLOCK): 243 UNITS / 1.77ha = 137upha**
(RESIDENTIAL / OFFICE DESIGNATION RANGE: 85-150upha)

SCALE 1:1500
OCTOBER 7, 2024

GSAI
Glen Schnarr & Associates Inc.

Figure 2 - Proposed Site Plan Showing Prediction Locations



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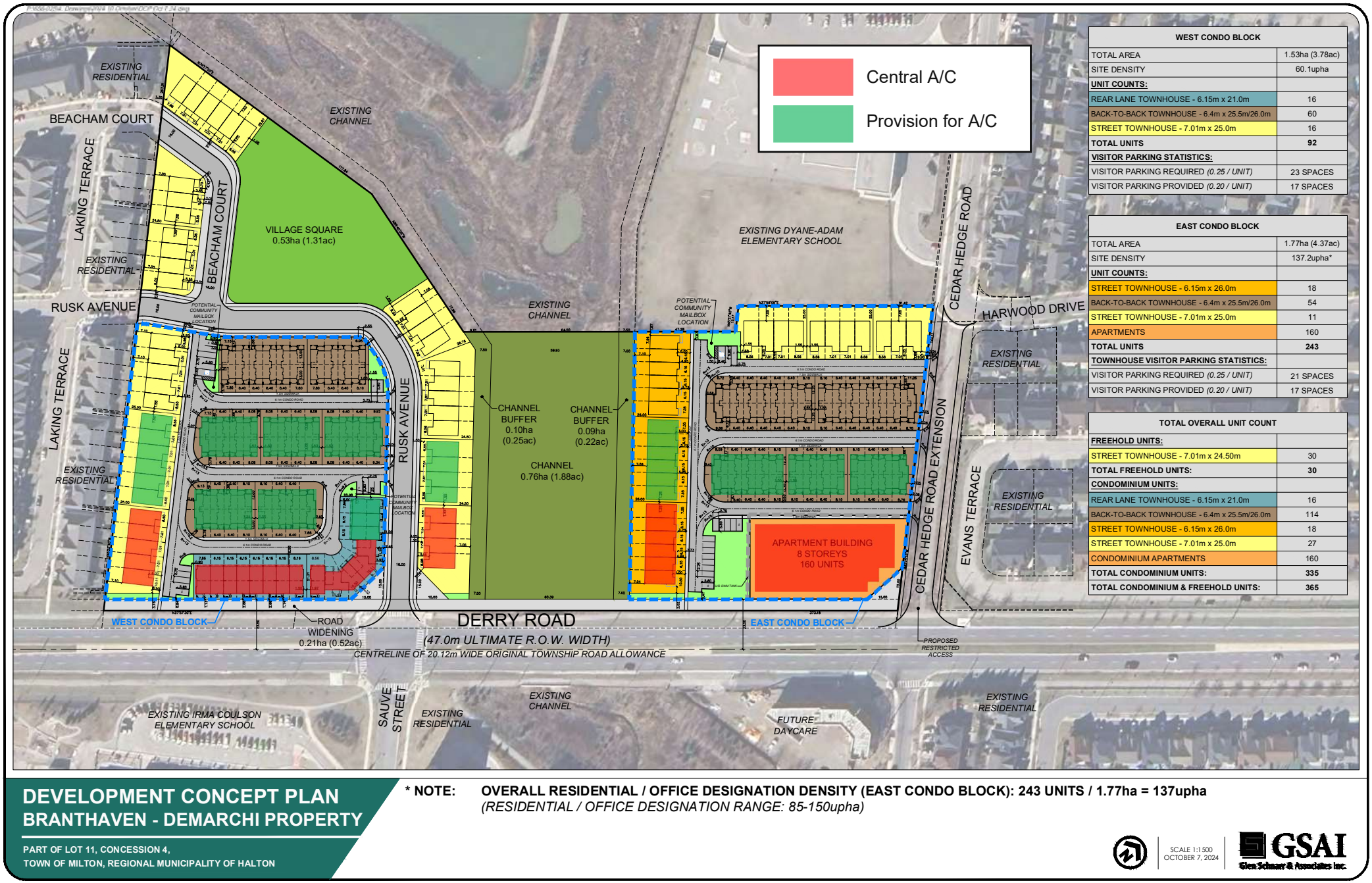
GSAI Glen Schnarr & Associates Inc.

Figure 3 - Proposed Site Plan Showing Preliminary Acoustic Barrier Locations



WEST CONDO BLOCK	
TOTAL AREA	1.53ha (3.78ac)
SITE DENSITY	60.1upha
UNIT COUNTS:	
REAR LANE TOWNHOUSE - 6.15m x 21.0m	16
BACK-TO-BACK TOWNHOUSE - 6.4m x 25.5m/26.0m	60
STREET TOWNHOUSE - 7.01m x 25.0m	16
TOTAL UNITS	**92**
VISITOR PARKING STATISTICS:	
VISITOR PARKING REQUIRED *(0.25 / UNIT)*	23 SPACES
VISITOR PARKING PROVIDED *(0.20 / UNIT)*	17 SPACES

EAST CONDO BLOCK	
TOTAL AREA	1.77ha (4.37ac)
SITE DENSITY	137.2upha*
UNIT COUNTS:	
STREET TOWNHOUSE - 6.15m x 26.0m	18
BACK-TO-BACK TOWNHOUSE - 6.4m x 25.5m/26.0m	54
STREET TOWNHOUSE - 7.01m x 25.0m	11
APARTMENTS	160
TOTAL UNITS	**243**
TOWNHOUSE VISITOR PARKING STATISTICS:	
VISITOR PARKING REQUIRED *(0.25 / UNIT)*	21 SPACES
VISITOR PARKING PROVIDED *(0.20 / UNIT)*	17 SPACES

TOTAL OVERALL UNIT COUNT	
FREEHOLD UNITS:	
STREET TOWNHOUSE - 7.01m x 24.50m	30
TOTAL FREEHOLD UNITS:	**30**
CONDOMINIUM UNITS:	
REAR LANE TOWNHOUSE - 6.15m x 21.0m	16
BACK-TO-BACK TOWNHOUSE - 6.4m x 25.5m/26.0m	114
STREET TOWNHOUSE - 6.15m x 26.0m	18
STREET TOWNHOUSE - 7.01m x 25.0m	27
CONDOMINIUM APARTMENTS	160
TOTAL CONDOMINIUM UNITS:	**335**
TOTAL CONDOMINIUM & FREEHOLD UNITS:	**365**

DEVELOPMENT CONCEPT PLAN
BRANTHAVEN - DEMARCHI PROPERTY

PART OF LOT 11, CONCESSION 4,
TOWN OF MILTON, REGIONAL MUNICIPALITY OF HALTON

*** NOTE:** **OVERALL RESIDENTIAL / OFFICE DESIGNATION DENSITY (EAST CONDO BLOCK): 243 UNITS / 1.77ha = 137upha**
(RESIDENTIAL / OFFICE DESIGNATION RANGE: 85-150upha)

SCALE 1:1500
OCTOBER 7, 2024

GSAI
Glen Schnarr & Associates Inc.

Figure 4 - Proposed Site Plan Showing Ventilation Requirements

Appendix A

Road Traffic Data

Andrew Rogers

From: Loro, Darren <Darren.Loro@halton.ca>
Sent: August 22, 2024 4:05 PM
To: Andrew Rogers
Subject: RE: Road Traffic Data Request - Derry Road and Fourth Line, Milton

Hi Andrew,

Thanks for confirming.

Derry Road west of Fourth Line is under the Region's jurisdiction and thus the following future traffic data inputs should be applied in the Noise Study analysis:

Derry Road (2034)

Ultimate AADT:	51,000 veh/day
Day/Night Split:	90%/10%
Truck Proportions:	3% medium/3% heavy
Number of Lanes:	6

Fourth Line south of Derry Road is under the Town's jurisdiction and thus existing and future traffic data for this roadway would have to be requested from Town staff.

Hope this helps!

Cheers,
Darren

From: Andrew Rogers <arogers@hgcengineering.com>
Sent: Thursday, August 22, 2024 2:32 PM
To: Loro, Darren <Darren.Loro@halton.ca>
Subject: RE: Road Traffic Data Request - Derry Road and Fourth Line, Milton

Hi Darren,

Yes, this is for a Noise Study. The proposed development is located on the empty lots west of the intersection. Attached is a figure showing the development area.

Thank you,
Andrew Rogers
Project Consultant

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 x277 **e**: arogers@hgcengineering.com
Visit our website: www.hgcengineering.com **Follow Us** – LinkedIn | Twitter | YouTube

Appendix B

STAMSON Output

```
STAMSON 5.0        NORMAL REPORT        Date: 10-10-2024 14:58:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te                 Time Period: Day/Night 16/8 hours
Description: First row of townhomes, fronting onto Derry Road.


Road data, segment # 1: Derry W (day/night)
-------------------------------------------
Car traffic volume  : 21573/2397  veh/TimePeriod
Medium truck volume :   688/76    veh/TimePeriod
Heavy truck volume  :   689/77    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Derry W (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 / 20.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Derry E (day/night)
-------------------------------------------
Car traffic volume  : 21573/2397  veh/TimePeriod
Medium truck volume :   688/76    veh/TimePeriod
Heavy truck volume  :   689/77    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Derry E (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           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Derry W (day)
----------------------------------

Source height = 1.32 m

ROAD (0.00 + 69.14 + 0.00) = 69.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  70.39   0.00  -1.25   0.00   0.00   0.00   0.00  69.14
-------------------------------------------------------------------------------

Segment Leq : 69.14 dBA

Results segment # 2: Derry E (day)
----------------------------------

Source height = 1.32 m

ROAD (0.00 + 67.10 + 0.00) = 67.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  70.39   0.00  -3.29   0.00   0.00   0.00   0.00  67.10
-------------------------------------------------------------------------------
```

Segment Leq : 67.10 dBA

Total Leq All Segments: 71.25 dBA

Results segment # 1: Derry W (night)

Source height = 1.32 m

ROAD (0.00 + 62.62 + 0.00) = 62.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.87	0.00	-1.25	0.00	0.00	0.00	0.00	62.62

Segment Leq : 62.62 dBA

Results segment # 2: Derry E (night)

Source height = 1.32 m

ROAD (0.00 + 60.58 + 0.00) = 60.58 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.87	0.00	-3.29	0.00	0.00	0.00	0.00	60.58

Segment Leq : 60.58 dBA

Total Leq All Segments: 64.73 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 71.25
(NIGHT): 64.73

```
STAMSON 5.0        NORMAL REPORT        Date: 10-10-2024 14:59:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b.te                 Time Period: Day/Night 16/8 hours
Description: Second row of townhomes from Derry Road.


Road data, segment # 1: Derry W (day/night)
-------------------------------------------
Car traffic volume  : 21573/2397  veh/TimePeriod
Medium truck volume :   688/76    veh/TimePeriod
Heavy truck volume  :   689/77    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Derry W (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :   4.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Derry E (day/night)
-------------------------------------------
Car traffic volume  : 21573/2397  veh/TimePeriod
Medium truck volume :   688/76    veh/TimePeriod
Heavy truck volume  :   689/77    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Derry E (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  60.00 / 60.00  m
Receiver height           :   4.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Derry W (day)
----------------------------------

Source height = 1.32 m

ROAD (0.00 + 58.38 + 0.00) = 58.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.58  70.39   0.00  -7.96  -1.31   0.00  -2.74   0.00  58.38
-------------------------------------------------------------------------------

Segment Leq : 58.38 dBA

Results segment # 2: Derry E (day)
----------------------------------

Source height = 1.32 m

ROAD (0.00 + 56.89 + 0.00) = 56.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.58  70.39   0.00  -9.49  -1.31   0.00  -2.70   0.00  56.89
```

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

Segment Leq : 56.89 dBA

Total Leq All Segments: 60.71 dBA

Results segment # 1: Derry W (night)
-----------------------------------

Source height = 1.32 m

ROAD (0.00 + 51.86 + 0.00) = 51.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.58  63.87   0.00  -7.96  -1.31   0.00  -2.74   0.00  51.86
-------------------------------------------------------------------------------

Segment Leq : 51.86 dBA

Results segment # 2: Derry E (night)
-----------------------------------

Source height = 1.32 m

ROAD (0.00 + 50.37 + 0.00) = 50.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.58  63.87   0.00  -9.49  -1.31   0.00  -2.70   0.00  50.37
-------------------------------------------------------------------------------

Segment Leq : 50.37 dBA

Total Leq All Segments: 54.19 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 60.71
                           (NIGHT): 54.19
```

```
STAMSON 5.0        NORMAL REPORT        Date: 10-10-2024 15:03:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: g.te                 Time Period: Day/Night 16/8 hours
Description: Third row of townhomes from Derry Road.


Road data, segment # 1: Derry W (day/night)
-------------------------------------------
Car traffic volume  : 21573/2397  veh/TimePeriod
Medium truck volume :   688/76    veh/TimePeriod
Heavy truck volume  :   689/77    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Derry W (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 2
House density             :     50 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  97.00 / 97.00  m
Receiver height           :   4.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Derry E (day/night)
-------------------------------------------
Car traffic volume  : 21573/2397  veh/TimePeriod
Medium truck volume :   688/76    veh/TimePeriod
Heavy truck volume  :   689/77    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Derry E (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 2
House density             :     50 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           :   4.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Derry W (day)
----------------------------------

Source height = 1.32 m

ROAD (0.00 + 52.17 + 0.00) = 52.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.58  70.39   0.00 -12.77  -1.31   0.00  -4.14   0.00  52.17
-------------------------------------------------------------------------------

Segment Leq : 52.17 dBA

Results segment # 2: Derry E (day)
----------------------------------

Source height = 1.32 m

ROAD (0.00 + 51.39 + 0.00) = 51.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.58  70.39   0.00 -13.57  -1.31   0.00  -4.12   0.00  51.39
```

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

Segment Leq : 51.39 dBA

Total Leq All Segments: 54.81 dBA

Results segment # 1: Derry W (night)
-----------------------------------

Source height = 1.32 m

ROAD (0.00 + 45.65 + 0.00) = 45.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.58  63.87   0.00 -12.77  -1.31   0.00  -4.14   0.00  45.65
-------------------------------------------------------------------------------

Segment Leq : 45.65 dBA

Results segment # 2: Derry E (night)
-----------------------------------

Source height = 1.32 m

ROAD (0.00 + 44.87 + 0.00) = 44.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.58  63.87   0.00 -13.57  -1.31   0.00  -4.12   0.00  44.87
-------------------------------------------------------------------------------

Segment Leq : 44.87 dBA

Total Leq All Segments: 48.29 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 54.81
                           (NIGHT): 48.29
```

```
STAMSON 5.0        NORMAL REPORT        Date: 10-10-2024 15:04:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: d.te                 Time Period: Day/Night 16/8 hours
Description: South facade of 8-storey building.


Road data, segment # 1: Derry W (day/night)
-------------------------------------------
Car traffic volume  : 21573/2397  veh/TimePeriod
Medium truck volume :   688/76    veh/TimePeriod
Heavy truck volume  :   689/77    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Derry W (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  :  21.00 / 21.00  m
Receiver height           :  22.50 / 22.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Derry E (day/night)
-------------------------------------------
Car traffic volume  : 21573/2397  veh/TimePeriod
Medium truck volume :   688/76    veh/TimePeriod
Heavy truck volume  :   689/77    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Derry E (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  :  33.00 / 33.00  m
Receiver height           :  22.50 / 22.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Derry W (day)
----------------------------------

Source height = 1.32 m

ROAD (0.00 + 68.93 + 0.00) = 68.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  70.39   0.00  -1.46   0.00   0.00   0.00   0.00  68.93
-------------------------------------------------------------------------------

Segment Leq : 68.93 dBA

Results segment # 2: Derry E (day)
----------------------------------

Source height = 1.32 m

ROAD (0.00 + 66.97 + 0.00) = 66.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  70.39   0.00  -3.42   0.00   0.00   0.00   0.00  66.97
-------------------------------------------------------------------------------
```

Segment Leq : 66.97 dBA

Total Leq All Segments: 71.07 dBA

Results segment # 1: Derry W (night)

Source height = 1.32 m

ROAD (0.00 + 62.41 + 0.00) = 62.41 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.87	0.00	-1.46	0.00	0.00	0.00	0.00	62.41

Segment Leq : 62.41 dBA

Results segment # 2: Derry E (night)

Source height = 1.32 m

ROAD (0.00 + 60.44 + 0.00) = 60.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.87	0.00	-3.42	0.00	0.00	0.00	0.00	60.44

Segment Leq : 60.44 dBA

Total Leq All Segments: 64.55 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 71.07
(NIGHT): 64.55

```
STAMSON 5.0        NORMAL REPORT        Date: 10-10-2024 15:05:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: h.te                 Time Period: 16 hours
Description: Village square OLA.


Road data, segment # 1: Derry W
-------------------------------
Car traffic volume  : 21573 veh/TimePeriod
Medium truck volume :   688 veh/TimePeriod
Heavy truck volume  :   689 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Derry W
-----------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3
House density             :     50 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 188.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Derry E
-------------------------------
Car traffic volume  : 21573 veh/TimePeriod
Medium truck volume :   688 veh/TimePeriod
Heavy truck volume  :   689 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Derry E
-----------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      3
House density             :     50 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 200.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Derry W
----------------------------

Source height = 1.32 m

ROAD (0.00 + 45.16 + 0.00) = 45.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  70.39   0.00 -18.23  -1.46   0.00  -5.54   0.00  45.16
-------------------------------------------------------------------------------

Segment Leq : 45.16 dBA

Results segment # 2: Derry E
----------------------------

Source height = 1.32 m

ROAD (0.00 + 44.73 + 0.00) = 44.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  70.39   0.00 -18.67  -1.46   0.00  -5.53   0.00  44.73
```

Segment Leq : 44.73 dBA

Total Leq All Segments: 47.96 dBA

TOTAL Leq FROM ALL SOURCES: 47.96

```
STAMSON 5.0        NORMAL REPORT        Date: 10-10-2024 15:08:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola_w.te             Time Period: 16 hours
Description: West rear yard OLA flanking Derry Road.


Road data, segment # 1: Derry W_S
---------------------------------
Car traffic volume  : 21573 veh/TimePeriod
Medium truck volume :   688 veh/TimePeriod
Heavy truck volume  :   689 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Derry W_S
-------------------------------
Angle1   Angle2           : -40.00 deg   60.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  29.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Derry E_S
---------------------------------
Car traffic volume  : 21573 veh/TimePeriod
Medium truck volume :   688 veh/TimePeriod
Heavy truck volume  :   689 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Derry E_S
-------------------------------
Angle1   Angle2           : -40.00 deg   60.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  42.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Derry W_S
------------------------------

Source height = 1.32 m

ROAD (0.00 + 62.65 + 0.00) = 62.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -40     60   0.66  70.39   0.00  -4.75  -2.98   0.00   0.00   0.00  62.65
-------------------------------------------------------------------------------

Segment Leq : 62.65 dBA

Results segment # 2: Derry E_S
------------------------------

Source height = 1.32 m

ROAD (0.00 + 59.98 + 0.00) = 59.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -40     60   0.66  70.39   0.00  -7.42  -2.98   0.00   0.00   0.00  59.98
-------------------------------------------------------------------------------
```

Segment Leq : 59.98 dBA

Total Leq All Segments: 64.53 dBA

TOTAL Leq FROM ALL SOURCES: 64.53

```
STAMSON 5.0        NORMAL REPORT        Date: 10-10-2024 15:09:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola_s.te             Time Period: 16 hours
Description: Central rear yard OLA flanking Derry Road.


Road data, segment # 1: Derry W_S
----------------------------------
Car traffic volume  : 21573 veh/TimePeriod
Medium truck volume :   688 veh/TimePeriod
Heavy truck volume  :   689 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Derry W_S
--------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  26.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Derry E_S
----------------------------------
Car traffic volume  : 21573 veh/TimePeriod
Medium truck volume :   688 veh/TimePeriod
Heavy truck volume  :   689 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Derry E_S
--------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  39.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Derry W_S
--------------------------------

Source height = 1.32 m

ROAD (0.00 + 64.97 + 0.00) = 64.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  70.39   0.00  -3.97  -1.46   0.00   0.00   0.00  64.97
-------------------------------------------------------------------------------

Segment Leq : 64.97 dBA

Results segment # 2: Derry E_S
--------------------------------

Source height = 1.32 m

ROAD (0.00 + 62.04 + 0.00) = 62.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  70.39   0.00  -6.89  -1.46   0.00   0.00   0.00  62.04
-------------------------------------------------------------------------------
```

Segment Leq : 62.04 dBA

Total Leq All Segments: 66.76 dBA

TOTAL Leq FROM ALL SOURCES: 66.76

```
STAMSON 5.0        NORMAL REPORT        Date: 10-10-2024 15:11:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola_e.te             Time Period: 16 hours
Description: East rear yard OLA flanking Derry Road.


Road data, segment # 1: Derry W_S
---------------------------------
Car traffic volume  : 21573 veh/TimePeriod
Medium truck volume :   688 veh/TimePeriod
Heavy truck volume  :   689 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Derry W_S
-------------------------------
Angle1   Angle2           : -50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  28.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Derry E_S
---------------------------------
Car traffic volume  : 21573 veh/TimePeriod
Medium truck volume :   688 veh/TimePeriod
Heavy truck volume  :   689 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Derry E_S
-------------------------------
Angle1   Angle2           : -50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  41.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Derry W_S
------------------------------

Source height = 1.32 m

ROAD (0.00 + 63.76 + 0.00) = 63.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50     90   0.66  70.39   0.00  -4.50  -2.13   0.00   0.00   0.00  63.76
-------------------------------------------------------------------------------

Segment Leq : 63.76 dBA

Results segment # 2: Derry E_S
------------------------------

Source height = 1.32 m

ROAD (0.00 + 61.01 + 0.00) = 61.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50     90   0.66  70.39   0.00  -7.25  -2.13   0.00   0.00   0.00  61.01
-------------------------------------------------------------------------------
```

Segment Leq : 61.01 dBA

Total Leq All Segments: 65.61 dBA

TOTAL Leq FROM ALL SOURCES: 65.61