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Noise Feasibility Study
Proposed Residential Development
14 Agnes Street
Caledon, Ontario

Prepared for:

The Alton Development Inc.
54 Fulton Avenue
Toronto, Ontario, M4K 1X5

Prepared by

Victor Garcia, PEng

February 15, 2023

HGC Project Number: 02200667

updated August 17, 2023

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1 Introduction and Summary

HGC Engineering was retained by The Alton Development Inc. to conduct a noise feasibility study for a proposed residential development located along 14 Agnes Street in Caledon, Ontario. The surrounding area is primarily existing residential. A noise study is required by the municipality as part of the planning and approvals process.

The proposed development is feasible; sound level predictions indicate there are no specific ventilation requirements due to transportation noise for the proposed development. Any exterior wall, and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for all the dwelling units in this development.

2 Site Description and Noise Sources

Figure 1 is a key plan of the site. Figure 2 is a proposed concept plan prepared by Orchard Design Studio dated July 2022. The proposed residential development will consist of 14 blocks of 2-storey townhouse blocks along with associated roadways.

The immediate surrounding lands are existing residential lands. The primary sources of noise in the area are Queen Street West and Agens Street. Davis Drive and Emeline Street carry local traffic and are low volume roadways. Noise from these roadways is not expected to be significant. On the north side of Queen Street West is the Alton Mill Arts Centre. There are dwellings between the subject site and the Alton Mills Arts Centre and it has not been considered further. There are no significant sources of stationary noise within 500 m of the subject site.

3 Criteria for Acceptable Sound Levels

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

Table 1: Road Traffic Noise Criteria

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

Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other area where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines.

The guidelines in the MECP publication allow the sound level 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 and offers of purchase and sale for the property. When 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 feasible.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where nighttime sound levels outside bedroom/living/dining room windows exceed 60 dBA or daytime sound levels exceed 65 dBA outside living/dining room windows. A forced air ventilation system with ducts sized for the future provision of air conditioning by the occupant, or some other alternative form of mechanical ventilation, is required where nighttime sound levels at bedroom/living/dining room windows are in the range of 51 – 60 dBA or daytime sound levels are in the range of 56 – 65 dBA.

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

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

3.2 Traffic Sound Level Assessment

3.2.1 Road Traffic Data

Road traffic data for Queen Street West and Agnes Street were obtained from Paradigm Transportation Solutions Limited projected peak hour volumes for the year 2027 and is provided in Appendix A. This data was converted to Average Annual Daily Traffic (AADT) in order to be used in the analysis. A commercial vehicle percentage of 10% was assumed and split into 5.0% medium trucks and 5.0% heavy trucks for Queen Street West; and 4.0% was assumed, split into 2.0% medium trucks and 2.0% heavy trucks for Agnes Street, along with an assumed day/night split of 90%/10%. Queen Street West and Agnes Street have a posted speed limit of 40 km/h; therefore

50 km/h was used in the analysis in accordance with the Town of Caledon requirements. The data was projected to the year 2043 using a 2.5%/year growth rate as required by the Town of Caledon. Table 2 summarizes the traffic data.

Table 2: Future Road Traffic Data to Year 2043

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Queen Street West	Daytime	1 383	77	77	1 537
	Nighttime	154	9	9	172
	Total	**1 537**	**86**	**86**	**1 709**
Agnes Street	Daytime	628	13	13	654
	Nighttime	70	1	1	72
	Total	**698**	**14**	**14**	**726**

3.2.2 Road Traffic Noise Predictions

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

Prediction locations were chosen around the site to obtain a good representation of the future sound levels at the proposed development with exposure to the surrounding roadways. The worst-case prediction locations were chosen at the top storey of the proposed dwellings, as indicated in Figure 2. The results of these predictions are summarized in Table 3.

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

Prediction Location	Description	Daytime in OLA $L_{EQ-16\ hr}$	Daytime at Façade $L_{EQ-16\ hr}$	Nighttime at Façade $L_{EQ-8\ hr}$
[A]	Townhouse in second row from Queen Street West, flanking exposure to Anges Street	<55	<55	<50

4 Traffic Noise Recommendations

The predictions indicate that the future traffic sound levels will be within MECP guidelines at the proposed dwellings.

4.1 Outdoor Living Areas

The predicted sound level in the rear yards of the proposed townhouses (prediction location [A]) and in the common amenity spaces will be less than 55 dBA. No further mitigation is required.

4.2 Indoor Living Areas

The predicted future sound levels outside the top storey windows of the proposed residential dwellings (prediction location [A]) will be less than 55 dBA during the day and less than 50 dBA during the night. There are no specific ventilation requirements for the proposed dwellings.

Individual HVAC units may be used for each townhouse unit. As a general note, the location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300, as applicable.

4.3 Building Façade Constructions

Since the daytime and nighttime sound levels at the facades of the residential units will be less than 65 dBA during the day and less than 60 dBA during the night, any exterior wall, and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for all the dwelling units in this development.

5 Summary of Noise Control Recommendations

Analysis indicates that the predicted sound level will be within MECP guidelines limits at the proposed building. The following recommendations are provided.

1. There are no specific ventilation requirements or noise warning clauses for the proposed dwellings.

2. Any exterior wall, and double-glazed window construction meeting the minimum requirements of the OBC will provide adequate sound insulation for the proposed dwellings.

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

Limitations

This document was prepared solely for the addressed party and titled project or named part thereof, and should not be relied upon or used for any other project without obtaining prior written authorization from HGC Engineering. HGC Engineering accepts no responsibility or liability for any consequence of this document being used for a purpose other than for which it was commissioned. Any person or party using or relying on the document for such other purpose agrees, and will by such use or reliance be taken to confirm their agreement to indemnify HGC Engineering for all loss or damage resulting therefrom. HGC Engineering accepts no responsibility or liability for this document to any person or party other than the party by whom it was commissioned.

Any conclusions and/or recommendations herein reflect the judgment of HGC Engineering based on information available at the time of preparation, and were developed in good faith on information provided by others, as noted in the report, which has been assumed to be factual and accurate. Changed conditions or information occurring or becoming known after the date of this report could affect the results and conclusions presented.

Figure 1 - Key Plan

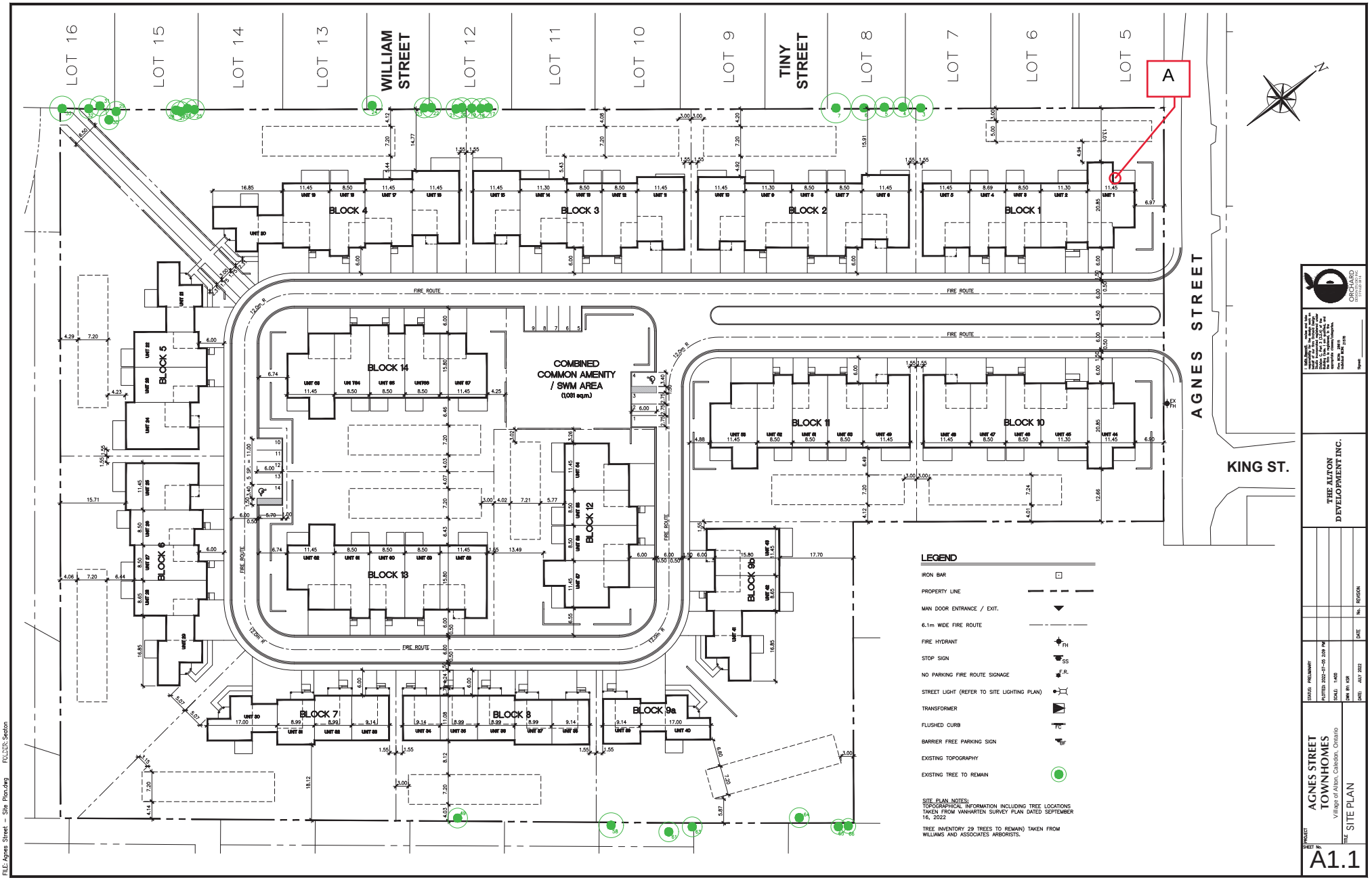
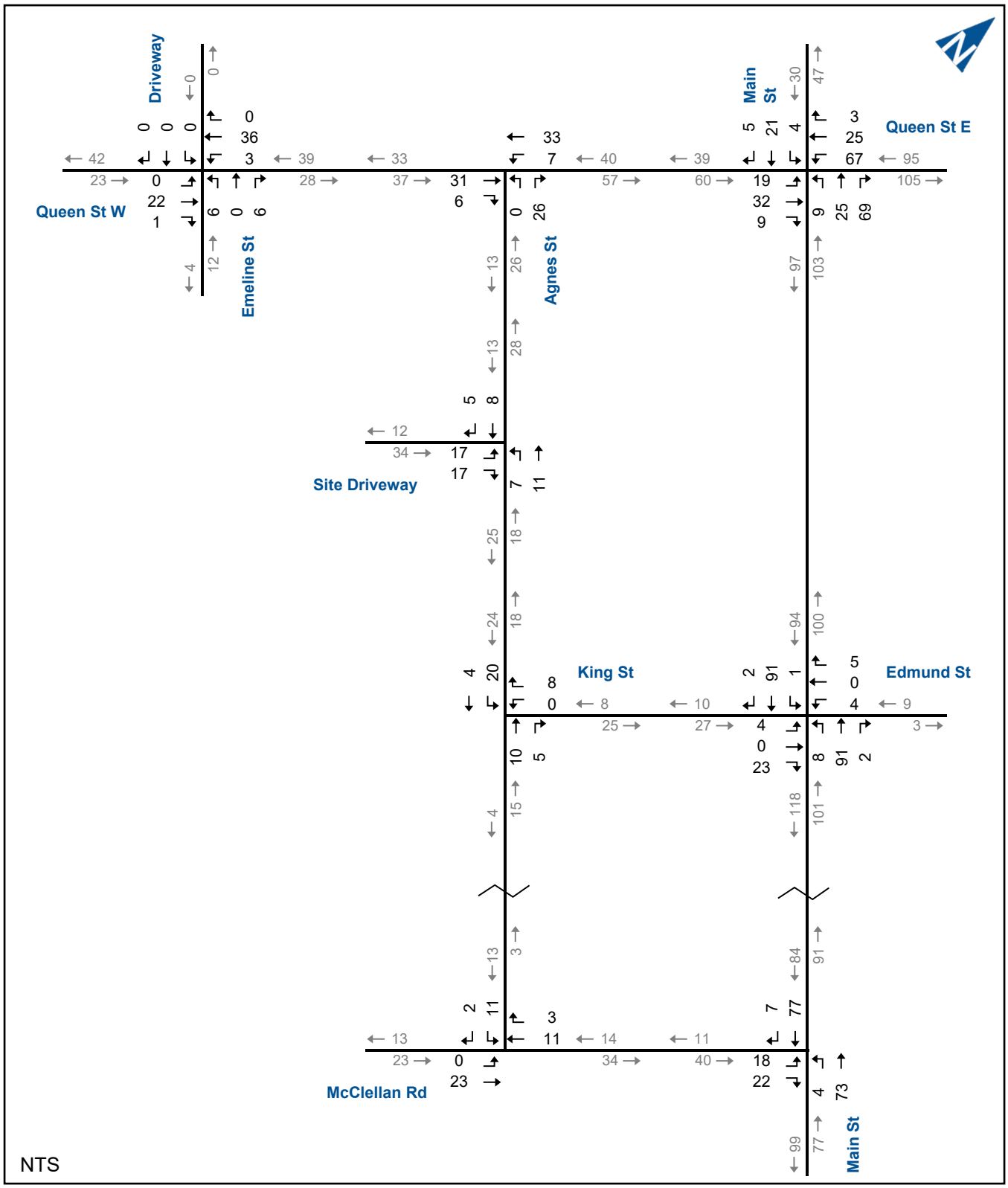


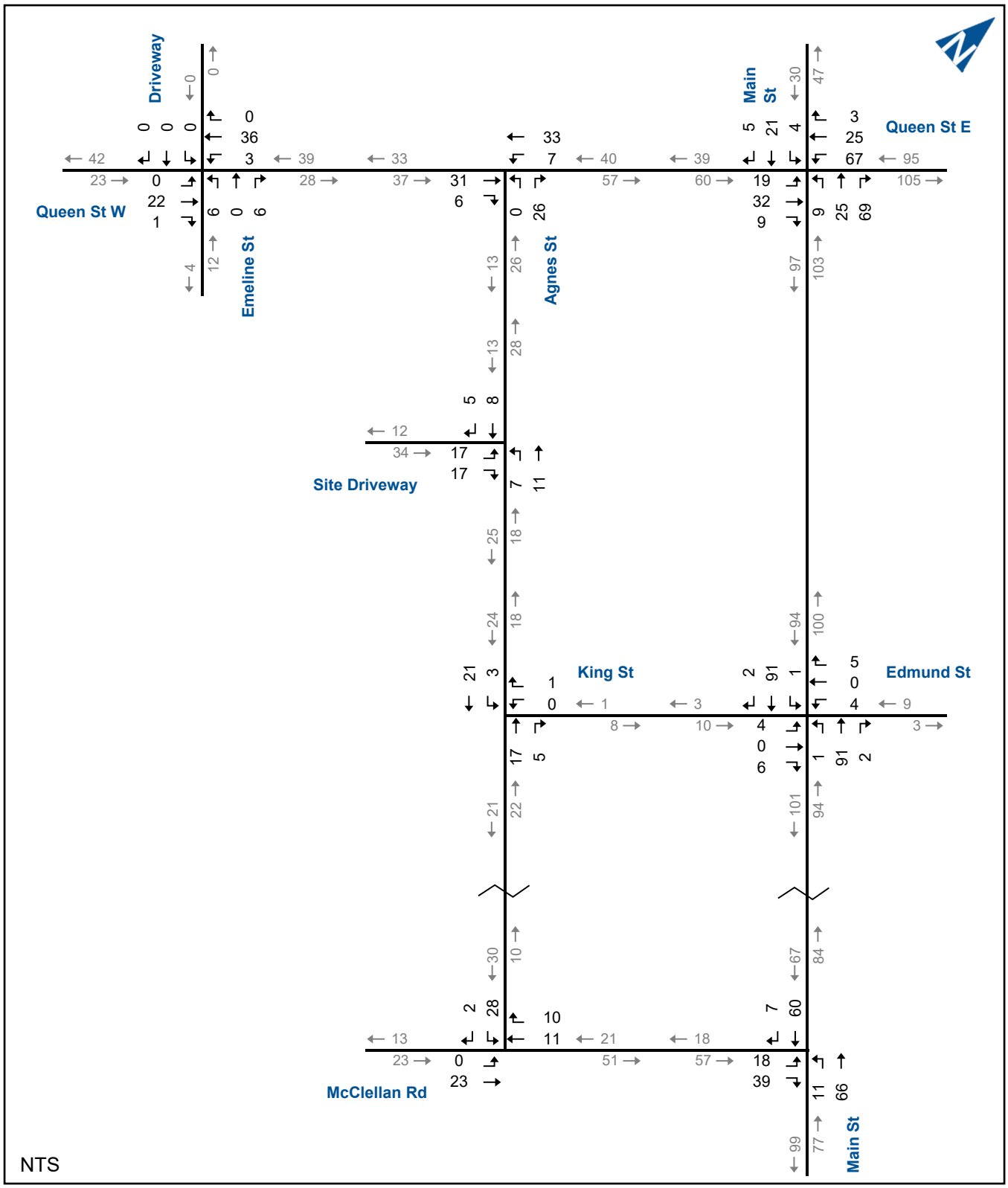
Figure 2 - Proposed Site Plan Showing Prediction Locations

APPENDIX A

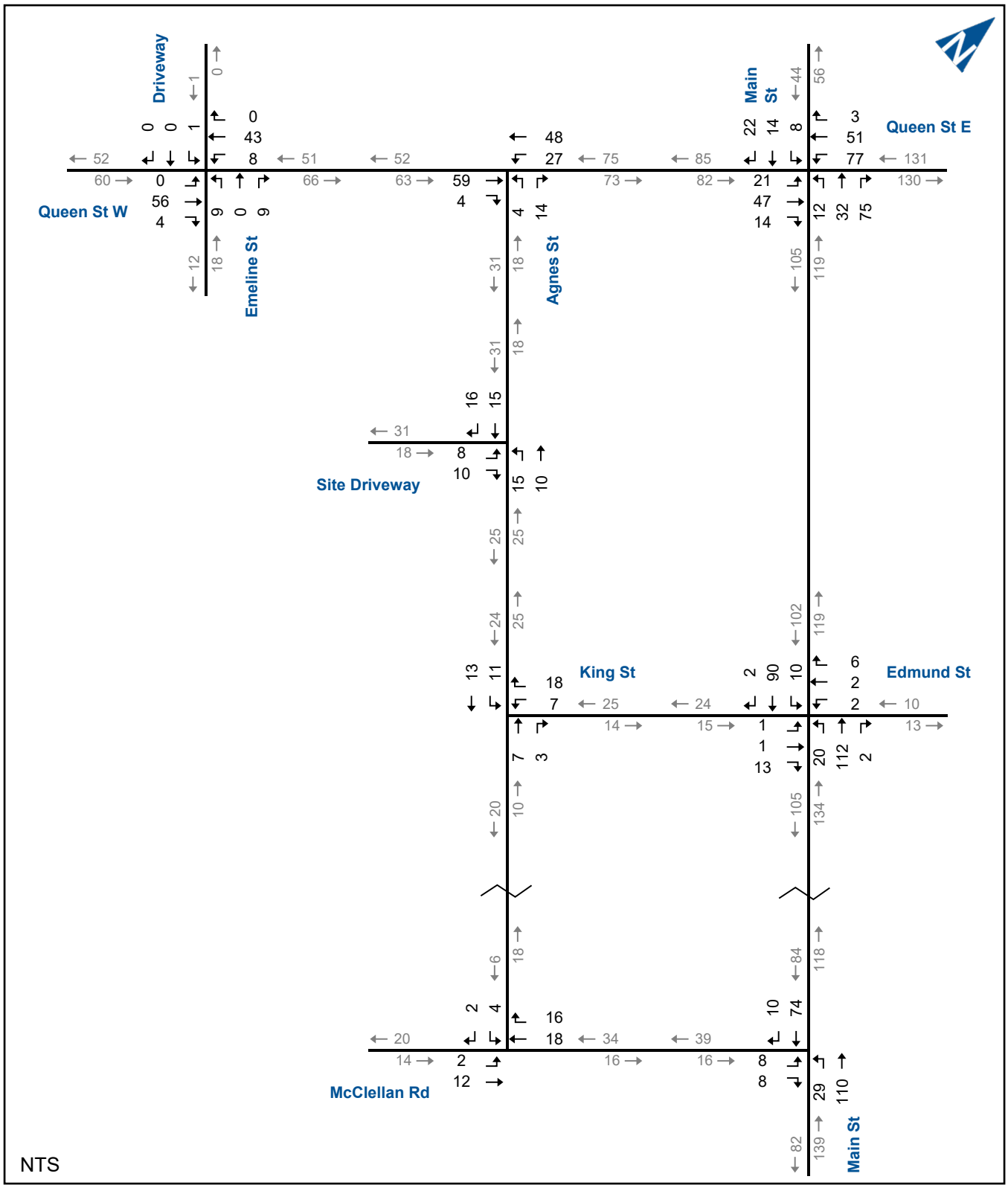
Road Traffic Information



2027 Total AM Peak Hour Traffic Volumes



2027 Total Sensitivity Analysis AM Peak Hour Traffic Volumes



2027 Total PM Peak Hour Traffic Volumes

APPENDIX B

Sample STAMSON 5.04 Output

STAMSON 5.0 NORMAL REPORT Date: 30-01-2023 13:30:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te Time Period: 16 hours

Description: Townhouse in second row from Queen Street West, flanking exposure to Agnes Street

Road data, segment # 1: Queen

Car traffic volume : 1383 veh/TimePeriod *
Medium truck volume : 77 veh/TimePeriod *
Heavy truck volume : 77 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Queen

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1
House density : 60 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 72.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
Road data, segment # 2: Agnes

Car traffic volume : 628 veh/TimePeriod *
Medium truck volume : 13 veh/TimePeriod *
Heavy truck volume : 13 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Agnes

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 : 15.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Queen

Source height = 1.50 m

ROAD (0.00 + 40.14 + 0.00) = 40.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.57	58.71	0.00	-10.70	-4.31	0.00	-3.56	0.00	40.14

Segment Leq : 40.14 dBA

Results segment # 2: Agnes

Source height = 1.19 m

ROAD (0.00 + 50.87 + 0.00) = 50.87 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.58	52.19	0.00	0.00	-1.32	0.00	0.00	0.00	50.87

Segment Leq : 50.87 dBA

Total Leq All Segments: 51.22 dBA

TOTAL Leq FROM ALL SOURCES: 51.22 dBA

jeremy@seatongroup.com

Subject: FW: Agnes St project, Village of Alton, Caledon

From: Victor Garcia <vgarcia@hgcengineering.com>
Sent: Thursday, August 17, 2023 9:50 AM
To: jeremy@seatongroup.com
Subject: RE: Agnes St project, Village of Alton, Caledon

Hi Jeremy,

Thank you for providing the updated plan. I agree that the changes are minor and would not impact our recommendations. As a response to the comment, I would suggest:

HGC Engineering has reviewed the latest site plan dated March 13, 2023. As the location of the townhouse blocks have not changed from the site plan dated July 2022 included in our previous report. The recommendations included in the report February 15, 2023 remain valid.

Regards,

Victor Garcia, P.Eng
HGC Engineering **NOISE | VIBRATION | ACOUSTICS**
Howe Gastmeier Chapnik Limited
t: 905.826.4044

From: jeremy@seatongroup.com <jeremy@seatongroup.com>
Sent: Thursday, August 17, 2023 9:17 AM
To: Victor Garcia <vgarcia@hgcengineering.com>
Subject: RE: Agnes St project, Village of Alton, Caledon

Hi Victor;

As just discussed, attached is the site plan that was ultimately submitted with our application, dated March 13/23 by Orchard Design. The plan in your report was dated July 5/22 but no changes of substance were made to the road, building and block layout, so I think the changes to the plan have no bearing on the noise study conclusions. Please review and if you agree, please put that in writing, as at least a first step in our response to the Town.

Jeremy

From: jeremy@seatongroup.com <jeremy@seatongroup.com>
Sent: Thursday, August 17, 2023 8:41 AM
To: Victor Garcia <vgarcia@hgcengineering.com>
Subject: FW: Agnes St project, Village of Alton, Caledon

Hi Victor;

I hope you are well and having a good summer. I am wondering if you received the email below and if you've been able to review the Towns' comments related to the noise study. I did see you requested access to the response matrix document and I gave you access, using your HGC address. I hope you are able now to access it.

The nature of the Towns comments on the noise study are very basic:

1. They want/expect a peer review which I think is a waste of money. I'd would like to know from you if this is standard practice or not, and if it's worth pushing back on.

2. The site plan in the report isn't the same as the submitted site plan – this is a nit picky and irrelevant comment in my mind as the differences in the plan are very minor and have no bearing on your findings

The comments related to the noise study are on page 51 of response matrix and are copied below:

Noise Feasibility Study 50. The Noise Feasibility Study prepared by HGC Engineering dated February 15, 2023 is to be peer reviewed at the applicant's expense. Development Engineering is of the opinion that a number of comments contained within this memo, be address prior to sending the Noise Study out for Peer Review. Costs for the peer review will be submitted under a separate cover following a revised submission. Please note that payment for the costs of the peer review is required prior to initiation of the peer review.	Normaple
51. The site plan The utilized in Figure 2 does not appear to correlate with the Site Plan submitted with the application as there are some slight differences in the internal roadway. Please revise accordingly and ensure the latest Site Plan is utilized.	HGC

I'd appreciate a call or email with your thoughts on these comments.

Here's the link to save you some time looking for it:
https://docs.google.com/document/d/1YFjARp8P7caVAvyhmwzYiPsurrAUHl7o/edit?usp=sharing&ouid=104610824315621943951&rtpof=true&sd=true

Sincerely;

Jeremy Grant, OPPI, MCIP, RPP
Vice President, Planning & Development
Seaton Group

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