

# **Noise Feasibility Study**

## **Proposed Residential Development**

### **63 and 63A Trafalgar Road**

### **Hillsburgh, Erin, Ontario**

Prepared for:

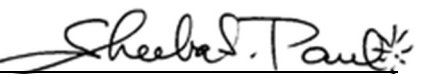
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March 9, 2023

HGC Project No. 02200379

# VERSION CONTROL

Noise Feasibility Study,  
63 and 63A Trafalgar Road,  
Hillsburgh, Erin, Ontario.

Ver.	Date	Version Description / Changelog	Prepared By
0	March 9, 2023	Noise Feasibility Study in support of the Local Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision approvals process.	A. Rogers/ S. Paul

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**Appendix A – Road Traffic Data**

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# 1 INTRODUCTION AND SUMMARY

HGC Engineering was retained by Beachcroft Investments Inc. to conduct a Noise Feasibility Study for a proposed residential development to be located at 63 and 63A Trafalgar Road, in Hillsburgh, Erin, Ontario. The analysis includes an assessment of road traffic noise on the proposed residential development in accordance with the Ministry of the Environment, Conservation and Parks (MECP) guidelines. The site is proposed to include 799 dwelling units (445 single detached dwellings, 353 townhouse dwellings, and one existing heritage home), parks, woodlots, and stormwater management facilities with associated roadways. The study is required as part of the approvals process for Local Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision by the Town of Erin.

Traffic on Trafalgar Road was determined to be the dominant source of sound, with secondary contributions from Regional Road 22. Road traffic volume data from the County of Wellington was used in conjunction with the draft plan to predict future traffic sound levels at the proposed dwelling façades and in outdoor living areas. 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.

There are no specific acoustic requirements. Any building construction meeting the requirements of the Ontario Building Code (OBC) will provide sufficient acoustical insulation for the façades of the proposed residential buildings in the development. Warning clauses are also recommended to inform future occupants of the presence of the nearby retail/commercial facilities.



## 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 on the east side of Main Street (also known as Trafalgar Road) and north of Wellington Street in Erin, Ontario. Figure 2 shows the draft plan prepared by KLM Planning Partners Inc. dated February 9, 2023. The site is proposed to include 799 dwelling units (445 single detached dwellings, 353 townhouse dwellings, and one existing heritage home), parks, woodlots, and stormwater management facilities with associated roadways. Noise prediction locations are indicated on Figure 2 for reference.

HGC Engineering personnel visited the site during the month of July 2022 to observe the acoustical environment and note the significant noise sources. The acoustical environment surrounding the site is considered to be Class 2. Road traffic on Trafalgar Road was confirmed to be the dominant noise source.

There are existing residences surrounding the site in all directions. There are various retail and commercial buildings along Main Street. Sounds from the nearby retail and commercial uses were not discernible. Nevertheless, due to the proximity of the site to retail and commercial facilities, it is recommended that a noise warning clause to identify that such facilities may be audible at times be included in the tenancy agreements, as described in Section 4.

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

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the 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 Trafalgar Road and Regional Road 22 was obtained from the County of Wellington and is provided in Appendix A. The Trafalgar Road and Regional Road 22 data was presented as hourly total volumes for the year 2019 and 2017, respectively. The data was projected to the year 2033 using a conservative estimate of 2.5% growth per year. Day/night splits for the roadways were determined from the hourly traffic data. A posted speed limit of 50 km/h was used in the analysis for Trafalgar Road, and a posted speed limit of 80 km/h was used in the analysis for Regional Road 22. Table II summarizes the traffic volume data used in this study.

**Table II: Projected Road Traffic Data**

Street	Time	Cars	Medium Trucks	Heavy Trucks	Total
<b>Trafalgar Road</b>	Daytime (07:00 – 22:59)	7 538	502	469	<b>8 509</b>
	Night-time (23:00 – 06:59)	666	44	41	<b>751</b>
	<b>Total</b>	<b>8 204</b>	<b>546</b>	<b>510</b>	<b>9 260</b>
<b>Regional Road 22</b>	Daytime (07:00 – 22:59)	4 962	353	255	<b>5 570</b>
	Night-time (23:00 – 06:59)	610	43	31	<b>684</b>
	<b>Total</b>	<b>5 572</b>	<b>396</b>	<b>286</b>	<b>6 254</b>

### 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 and in outdoor living areas. Sample 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 – at the Façade L <sub>EQ-16 hr</sub>	Nighttime – at the Façade L <sub>EQ-8 hr</sub>	Daytime – Rear Yard OLA L <sub>EQ-16 hr</sub>
A	Single Detached Dwelling (Lot 1), Southwest Façades	55	<50	<55
B	Townhouses (Block 458), Southwest Façades	<55	<50	<55
C	Townhouses (Block 441), Southwest Façades	<55	<50	<55

### 3.4 Traffic Noise Recommendations

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

#### 3.4.1 Outdoor Living Areas

The predicted daytime sound level in the rear yard outdoor living area of all proposed dwelling units will be 55 dBA or less. No additional noise abatement is required for these outdoor living spaces to comply with the MECP criteria outlined in Section 3.1.

#### 3.4.2 Indoor Living Areas and Ventilation Requirements

All proposed dwellings have predicted sound levels within 55 dBA during the day and 50 dBA during the night. There are no specific ventilation requirements.

#### 3.4.3 Building Façade Constructions

Since the future road traffic sound levels outside all the façades of the proposed dwellings in the development will be less than 60 dBA at night and less than 65 dBA during the daytime, any exterior wall, insulated metal exterior door and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation.

## 4 Warning Clauses

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements. An example is provided below.

Suitable wording to inform future residents of the adjacent retail/commercial facilities and that sounds from these facilities may at times be audible.

Type A:

Purchasers/tenants are advised that due to the proximity of this development to nearby retail/commercial facilities, sound levels from the facilities may at times be audible.

This sample clause is provided by the MECP as an example and can be modified by the Municipality as required.

## 5 SUMMARY OF RECOMMENDATIONS

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

1. Any glazing constructions meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for the proposed dwellings in the development.
2. The use of warning clauses in the property and tenancy agreements is recommended to inform future residents of the proximity to retail/commercial facilities.

**Table IV: Summary of Noise Control Requirements and Noise Warning Clauses**

Location	Acoustic Barrier	Ventilation Requirements *	Type of Warning Clause	Exterior Walls & Glazing Constructions <sup>+</sup>
All Dwelling Units	--	--	A	OBC
All Rear Yard OLAs	--	--	--	--

Notes:

-- no specific requirement

OBC – meeting the minimum requirements of the Ontario Building Code



Figure 1: Key Plan



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NOISE



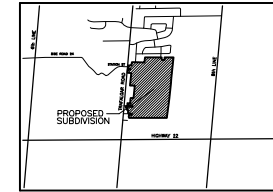
VIBRATION

DRAFT PLAN OF SUBDIVISION  
 PART OF LOTS 23 AND 24, CONCESSION 8  
 (GEOGRAPHICAL TOWNSHIP OF ERIN)  
 PART OF LOTS 11 & 12 EAST OF MARKET STREET, PART OF LOT 14  
 ALL OF LOTS 15 & 16 WEST OF MARKET STREET, PART OF LOTS 4  
 AND 17, ALL OF LOTS 18, 19 AND 20, EAST OF GUELPH STREET,  
 PART OF LOTS 21 & 22, ALL OF LOTS 23 & 24, WEST OF  
 GUELPH STREET, REGISTERED PLAN 95  
 (FORMERLY VILLAGE OF HILLSBURGH)  
 NOW IN THE TOWN OF ERIN  
 COUNTY OF WELLINGTON  
 SCALE 1:2000



Figure 2: Proposed Site Plan Showing Prediction Locations

DRAFT PLAN 23T-



KEY PLAN

SECTION 51, PLANNING ACT,  
 ADDITIONAL INFORMATION

- A. AS SHOWN ON DRAFT PLAN
- B. AS SHOWN ON DRAFT PLAN
- C. AS SHOWN ON DRAFT PLAN
- D. USE SCHEDULE OF LAND USE
- E. AS SHOWN ON DRAFT PLAN
- F. AS SHOWN ON DRAFT PLAN
- G. AS SHOWN ON DRAFT PLAN
- H. MUNICIPAL PIPED WATER AVAILABLE AT TIME OF DEVELOPMENT
- I. CLAY-LOAM
- J. AS SHOWN ON DRAFT PLAN
- K. SANITARY AND STORM SEWERS, GARBAGE COLLECTION, FIRE PROTECTION
- L. AS SHOWN ON DRAFT PLAN

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AS SHOWN ON THIS PLAN, AND THEIR RELATIONSHIP TO THE ADJACENT LAND ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: March 6, 2023

*Raymond J. Sethorp*  
 RAYMOND J. SETHORP  
 O.C.S. 008 836

OWNER'S CERTIFICATE

I AUTHORIZE KLM PLANNING PARTNERS INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE TOWN OF ERIN FOR APPROVAL.

OWNER  
**BEACHCROFT INVESTMENTS INC.**  
 C/O  
 BALLANTRY HOMES  
 20 CACKET RIDGE COURT  
 SUITE 6, MARKHAM ONTARIO  
 L3C 3G1  
 DAVID HELL  
 PRESIDENT

TOTAL AREA OF LAND TO BE SUBDIVIDED = 52.2722Ha. (129.1665Acres)

SCHEDULE OF LAND USE

BLOCKED DWELLINGS	BLOCKS	LOTS	UNITS	2Hc.	5Acres	
LOTS 23-25, 28-35, 83-99, 141-159, 189-198, 244-251, 285-290, 323-332, 359-366, 413-421 and 429-431 <small>sq. ft. of residential use as of 01/01/2023</small>		116	116	6.485	16.025	
LOTS 3-4, 12-21, 36-37, 59-67, 80-81, 87-92, 100, 128-129, 139-140, 160, 164-167, 171, 177-180, 199-216, 230-243, 252-258, 277-282, 291-298, 311-322, 333-342, 349-358, 369-381, 388-393, 397-412, 477-478, 486-491 and 494 <small>sq. ft. of residential use as of 01/01/2023</small>		174	174	6.627	16.376	
LOTS 1-2, 5-11, 56-58, 68-79, 82-83, 101-107, 119-127, 130-138, 161-163, 168-170, 172-176, 181-188, 212-229, 269-276, 299-305, 308-310, 343-348, 382-387, 394, 454-467, 461-463, 470-478, 479-484, 492-493 and 495-503 <small>sq. ft. of residential use as of 01/01/2023</small>		155	155	5.118	12.841	
<b>STREET TOWNHOUSE DWELLINGS</b> BLOCKS 84-86, 108-109, 116-118, 308-307, 395-396, 422-428, 432-447, 452-453, 459-460, 464-469 and 485 <small>sq. ft. of residential use</small>		47	245	5.567	13.758	
<b>BACK TO BACK TOWNHOUSE DWELLINGS</b> BLOCKS 110-115 and 448-451 <small>sq. ft. of residential use</small>		10	108	1.029	2.543	
<b>EXISTING HERITAGE HOUSE</b> LOT 504 <small>sq. ft. of residential use</small>		1	1	0.276	0.682	
<b>SUBTOTAL</b>		537	446	799	25.100	62.023
BLOCK 505 - FUTURE DEV. MIXED USE / SENIORS HOUSING	1			2.588	6.395	
BLOCKS 506-508 - MIX / SENIORS HOUSING	3			2.436	6.020	
BLOCKS 509-515 - FUTURE MIX	7			0.200	0.494	
BLOCKS 516-517 - WOODLOT	2			7.887	19.488	
BLOCKS 518-519 - BUFFER	2			1.702	4.258	
BLOCK 520 - FUTURE WATER TOWER	1			0.160	0.395	
BLOCKS 521-525 - OPEN SPACE	5			0.107	0.264	
BLOCK 526 - ENVIRONMENTAL PROTECTION	1			0.074	0.184	
<b>STREETS</b> 23.0m. WIDE TOTAL LENGTH=1080m. AREA= 2.276Ha. 20.0m. WIDE TOTAL LENGTH=1080m. AREA= 2.160Ha. <small>sq. ft. of residential use as of 01/01/2023</small>				12.018	29.697	
<b>TOTAL</b>		79	446	790	52.272	129.166

NOTE - ELEVATIONS RELATED TO CANADIAN GEODETIC DATUM  
 NOTE - \*SPECIAL DESIGN UNITS

PROJECT No. P-3304  
 SCALE 1:2000 FEB 9, 2023  
 (3304-GES11) X-REF: (3304MAS & 3304MTOPO)

**KLM** DWG. No. - 23:1  
 PLANNING PARTNERS INC. 64 JARDIN DRIVE - UNIT 18, CONCORD ONTARIO L4K 9P5  
 TEL: (905)881-4155 FAX: (905)881-0097 [www.klmpartners.com](http://www.klmpartners.com)

Planning • Design • Development

# Appendix A

Road Traffic Data



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Report-1.3 Classes ----->	Location : 2403NS WR24 - 1.0km North of Hillsburgh (at Pumphouse), Erin														
	Direction : North + South Road :														
Dates : 10/11/2019															
	Class-1	Class-2	Class-3	Class-4	Class-5	Class-6	Class-7	Class-8	Class-9	Class-10	Class-11	Class-12	Class-13	Total	
00:00 0:15		3	1											4 0.1%	
0:15 0:30		2	1			1								4 0.1%	
0:30 0:45		4							1					5 0.1%	
0:45 1:00		4												4 0.1%	
00:00 1:00		13	2			1			1					17 0.3%	
1:00 1:15		2	1											3 0.0%	
1:15 1:30		2											1	3 0.0%	
1:30 1:45		2												2 0.0%	
1:45 2:00		2	1						1					4 0.1%	
1:00 2:00		8	2						1				1	12 0.2%	
2:00 2:15		1			1								1	3 0.0%	
2:15 2:30				1										1 0.0%	
2:30 2:45															
2:45 3:00		3	1											4 0.1%	
2:00 3:00		4	1	1	1								1	8 0.1%	
3:00 3:15		1												1 0.0%	
3:15 3:30		1							2					3 0.0%	
3:30 3:45		2	1			1								4 0.1%	
3:45 4:00			1							3				4 0.1%	
3:00 4:00		4	2			1			2	3				12 0.2%	
4:00 4:15		4												4 0.1%	
4:15 4:30		3	2					1						6 0.1%	
4:30 4:45		2	2		1			1						6 0.1%	
4:45 5:00		6	6		2			1		1				16 0.2%	
4:00 5:00		15	10		3			3		1				32 0.5%	
5:00 5:15		9	11		1	1				2				24 0.4%	
5:15 5:30		15	8	1	2	1				2				29 0.4%	
5:30 5:45		14	13	2	1				1					31 0.5%	
5:45 6:00		23	18	1	6									48 0.7%	
5:00 6:00		61	50	4	10	2			1	4				132 2.0%	
6:00 6:15		26	9		5		1		1	2				44 0.7%	
6:15 6:30	1	18	12		3	2		1	1	2				40 0.6%	
6:30 6:45		36	14	1	4	1				6				62 0.9%	
6:45 7:00	1	30	14	4	4	2				1				56 0.9%	
6:00 7:00	2	110	49	5	16	5	1	1	2	11				202 3.1%	
7:00 7:15		43	15		2		1	1					1	63 1.0%	
7:15 7:30		57	20		4			1	1	1			1	86 1.3%	
7:30 7:45	1	50	15	3	1	1				1			1	73 1.1%	
7:45 8:00	2	67	30		6	1		3	3	4			1	117 1.8%	
7:00 8:00	3	217	80	3	13	2	2	5	4	6			4	339 5.2%	
8:00 8:15		50	18	1	4	5		1	2	1				82 1.3%	
8:15 8:30	1	43	32	3	7	2		1	1	2				92 1.4%	
8:30 8:45	1	59	22	1	5	4	2	4	2					100 1.5%	
8:45 9:00		44	24	2	14	3	1	2		1				91 1.4%	
8:00 9:00	2	196	96	7	30	14	3	8	5	4				365 5.6%	
9:00 9:15		45	14		6	2	2		1	2				72 1.1%	
9:15 9:30		41	16	1	6	3				3			1	71 1.1%	
9:30 9:45		40	15	1	4	2		1	2	3			1	69 1.1%	
9:45 10:00		48	16		5	2			1	2			2	76 1.2%	
9:00 10:00		174	61	2	21	9	2	1	4	10			4	288 4.4%	
10:00 10:15		50	20	3	6	2	1	2		3			2	89 1.4%	
10:15 10:30	2	55	19	2	5	1	1		1	1				87 1.3%	
10:30 10:45	1	51	18	2	6	2		1	1				2	84 1.3%	
10:45 11:00	2	44	17	3	4	4		1		2				77 1.2%	
10:00 11:00	5	200	74	10	21	9	2	4	2	6			4	337 5.1%	
11:00 11:15	4	51	30		6	1	1	4	3	5			1	106 1.6%	
11:15 11:30		45	21		1	2	1	1	2	1				74 1.1%	
11:30 11:45	2	63	23	1	3				3	1				96 1.5%	
11:45 12:00	1	37	14		5	3				7			1	68 1.0%	
11:00 12:00	7	196	88	1	15	6	2	5	8	14			2	344 5.2%	

12:00	12:15	3	66	24	2	2	1	1	3	4	3	109	1.7%	
12:15	12:30		43	26	3	6	2		1	6	1	88	1.3%	
12:30	12:45		64	28	2	3	2	2	2	2		105	1.6%	
12:45	13:00		56	20		7	3		1	1	8	97	1.5%	
12:00	13:00	3	229	98	7	18	8	2	4	5	20	5	399	6.1%
13:00	13:15	4	72	25	6	9	1	1	2		2		122	1.9%
13:15	13:30	1	35	13	1	1	3		5	1	3		63	1.0%
13:30	13:45	1	76	32	4	4	1			1	2	1	122	1.9%
13:45	14:00		67	24	2	4	2		1		2		102	1.6%
13:00	14:00	6	250	94	13	18	7	1	8	2	9	1	409	6.2%
14:00	14:15	2	69	23	1	4	1		1	2	2	1	106	1.6%
14:15	14:30	4	61	32	2	5	2	1		2	2		111	1.7%
14:30	14:45	3	70	29	3	4	2	1		2	5		119	1.8%
14:45	15:00	2	63	32	5	3	3	1	5	2	1		117	1.8%
14:00	15:00	11	263	116	11	16	8	3	6	8	10	1	453	6.9%
15:00	15:15		75	20	3	4	2				1	2	107	1.6%
15:15	15:30		79	30	2	8	2	1		1	3	1	127	1.9%
15:30	15:45	2	81	32	3	6	6		2	2	1	1	130	2.0%
15:45	16:00	4	91	31	3	5	1		2	1	2	1	141	2.2%
15:00	16:00	6	326	113	11	23	5	1	4	4	7	5	505	7.7%
16:00	16:15	3	90	36	2	7	1		2		1	1	143	2.2%
16:15	16:30	2	106	38	1	6	6		3	3	1	2	162	2.5%
16:30	16:45	2	134	35	2	4	2		3	1			183	2.8%
16:45	17:00	3	112	35		5	1	1	4	1		1	163	2.5%
16:00	17:00	10	442	144	5	22	4	1	12	5	2	4	651	9.9%
17:00	17:15		125	44		4				1	1	1	176	2.7%
17:15	17:30	1	111	31	2	5			1				151	2.3%
17:30	17:45	4	115	40		6			1				166	2.5%
17:45	18:00	1	91	29		7			3				131	2.0%
17:00	18:00	6	442	144	2	22			5	1	1	1	624	9.5%
18:00	18:15	1	91	26		2			2		1		124	1.9%
18:15	18:30		100	28		4				1			133	2.0%
18:30	18:45		100	33		4							137	2.1%
18:45	19:00		73	19		1			1				94	1.4%
18:00	19:00	1	364	106		11			3	1	1	1	488	7.4%
19:00	19:15	2	67	12		6			1			2	90	1.4%
19:15	19:30		56	19		2			1				78	1.2%
19:30	19:45		49	15		3			1				68	1.0%
19:45	20:00	1	46	15		3				1			66	1.0%
19:00	20:00	3	218	61		14			3	1		2	302	4.6%
20:00	20:15		41	12		4			2				59	0.9%
20:15	20:30		44	13		3			1				61	0.9%
20:30	20:45		40	9		1			3	1			54	0.8%
20:45	21:00		35	7	1	2			1				46	0.7%
20:00	21:00		160	41	1	10			7	1			220	3.4%
21:00	21:15		41	20		1				1	1		64	1.0%
21:15	21:30		22	13		2							37	0.6%
21:30	21:45		31	9		2			2				44	0.7%
21:45	22:00		19	16		3			1	1			40	0.6%
21:00	22:00		113	58		8			3	2	1		185	2.8%
22:00	22:15		14	10		1							25	0.4%
22:15	22:30		15	8		1			1	1			26	0.4%
22:30	22:45		23	7		1			1				32	0.5%
22:45	23:00		21	7		1			1				30	0.5%
22:00	23:00		73	32		4			3	1			113	1.7%
23:00	23:15		20	14		1							35	0.5%
23:15	23:30		19	15		4			2				40	0.6%
23:30	23:45		16	4		1	1						22	0.3%
23:45	00:00		10	6		2				1		1	20	0.3%
23:00	00:00		65	39		8	1		2		1	1	117	1.8%
<b>Total</b>		<b>65</b>	<b>4143</b>	<b>1561</b>	<b>83</b>	<b>304</b>	<b>82</b>	<b>20</b>	<b>87</b>	<b>61</b>	<b>111</b>	<b>37</b>	<b>6554</b>	
		1.0%	63.2%	23.8%	1.3%	4.6%	1.3%	0.3%	1.3%	0.9%	1.7%	0.6%		
<b>AM PEAK</b>		<b>4</b>	<b>67</b>	<b>32</b>	<b>4</b>	<b>14</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>7</b>	<b>2</b>	<b>117</b>	
period		11:00	7:45	8:15	6:45	8:45	8:00	8:30	8:30	7:45	11:45	9:45	7:45	
% of class		6.2%	1.6%	2.0%	4.8%	4.6%	6.1%	10.0%	4.6%	4.9%	6.3%	5.4%	1.8%	
<b>PM PEAK</b>		<b>4</b>	<b>134</b>	<b>44</b>	<b>6</b>	<b>9</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>3</b>	<b>8</b>	<b>3</b>	<b>183</b>	
period		13:00	16:30	17:00	13:00	13:00	12:45	12:30	13:15	12:00	12:45	12:00	16:30	
% of class		6.2%	3.2%	2.8%	7.2%	3.0%	3.7%	10.0%	5.7%	4.9%	7.2%	8.1%	2.8%	

Report-1.3	Location :		2206EW WR22 - 0.1 km NorthEast of Eighth Line ~ Conc. 8-9, Erin														
	Direction :		East + West											Road :			
Dates :		7/26/2017															
Classes ----->			Class-1	Class-2	Class-3	Class-4	Class-5	Class-6	Class-7	Class-8	Class-9	Class-10	Class-11	Class-12	Class-13	Total	
00:00 0:15			2	2												4	0.1%
0:15 0:30			6	3												9	0.2%
0:30 0:45			5	1		1										7	0.2%
0:45 1:00				1												1	0.0%
00:00 1:00			13	7		1										21	0.5%
1:00 1:15			3													3	0.1%
1:15 1:30			2													2	0.0%
1:30 1:45			2													2	0.0%
1:45 2:00																	
1:00 2:00			7													7	0.2%
2:00 2:15			1													1	0.0%
2:15 2:30			3	1												4	0.1%
2:30 2:45						1										1	0.0%
2:45 3:00			3						1							4	0.1%
2:00 3:00			7	1		1			1							10	0.2%
3:00 3:15			1						1							2	0.0%
3:15 3:30			1	1					1							3	0.1%
3:30 3:45			1	2												3	0.1%
3:45 4:00			1													1	0.0%
3:00 4:00			4	3					2							9	0.2%
4:00 4:15				1												1	0.0%
4:15 4:30			5	2												7	0.2%
4:30 4:45			9	1												10	0.2%
4:45 5:00			1	6	3						2					12	0.3%
4:00 5:00			1	20	7						2					30	0.7%
5:00 5:15			8	8			1				1					18	0.4%
5:15 5:30			13	3		1					1					18	0.4%
5:30 5:45			23	6		1	1				1					32	0.8%
5:45 6:00			2	31	9		5	2		1				1		51	1.2%
5:00 6:00			2	75	26		7	4		1	3			1		119	2.8%
6:00 6:15			1	31	4		4	1		2						43	1.0%
6:15 6:30				35	11		4	2	2							54	1.3%
6:30 6:45				45	16		3	2	2		1	1		1		71	1.7%
6:45 7:00				41	13			1	1			2				58	1.4%
6:00 7:00			1	152	44		11	6	5	2	1	3		1		226	5.4%
7:00 7:15				36	8		3					3				50	1.2%
7:15 7:30				38	19	1	2	2	1	2						65	1.5%
7:30 7:45				40	17	1	5					1				64	1.5%
7:45 8:00			1	61	19		8			1	1					91	2.2%
7:00 8:00			1	175	63	2	18	2	1	3	1	4				270	6.4%
8:00 8:15				57	18		2				1					78	1.9%
8:15 8:30			1	37	26		5			2		2				73	1.7%
8:30 8:45				44	15		8		1	1		4				73	1.7%
8:45 9:00				41	15		8	2		2	1	1				70	1.7%
8:00 9:00			1	179	74		23	2	1	5	2	7				294	7.0%
9:00 9:15				41	12	1	2	1	1	1	1	1		1		62	1.5%
9:15 9:30				35	20	3	3	2	1	1		2				67	1.6%
9:30 9:45				33	15		4			3		1				56	1.3%
9:45 10:00				32	19		3	1	1	2		1				59	1.4%
9:00 10:00				141	66	4	12	4	3	7	1	5		1		244	5.8%
10:00 10:15				29	12	1	4	5	1	2						54	1.3%
10:15 10:30			3	24	13		5			1		1				47	1.1%
10:30 10:45				28	13	1	6	1	1	1						51	1.2%
10:45 11:00				25	20	1	2				1	2				51	1.2%
10:00 11:00			3	106	58	3	17	6	2	4	1	3				203	4.8%
11:00 11:15			3	30	18		2			3		1				57	1.4%
11:15 11:30				26	15		2	2				3				48	1.1%
11:30 11:45			1	31	12		4	5	1	1	1	1				57	1.4%
11:45 12:00				41	15		5	4	4	1		1				71	1.7%
11:00 12:00			4	128	60		13	11	5	5	1	6				233	5.5%



# Appendix B

Sample STAMSON Output



ACOUSTICS



NOISE



VIBRATION

STAMSON 5.0 NORMAL REPORT Date: 09-03-2023 15:13:19  
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te Time Period: Day/Night 16/8 hours  
Description: **Prediction Location [A], facade sound level.**

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

-----  
Car traffic volume : 7538/666 veh/TimePeriod  
Medium truck volume : 502/44 veh/TimePeriod  
Heavy truck volume : 469/41 veh/TimePeriod  
Posted speed limit : 50 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

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

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 1 / 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 58.00 / 58.00 m  
Receiver height : 4.50 / 4.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Results segment # 1: Traflagar (day)

-----  
Source height = 1.53 m

ROAD (0.00 + 55.10 + 0.00) = 55.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	66.52	0.00	-9.22	-1.30	0.00	-0.90	0.00	55.10

-----

Segment Leq : 55.10 dBA

Total Leq All Segments: 55.10 dBA

Results segment # 1: Traflagar (night)

-----  
Source height = 1.53 m

ROAD (0.00 + 48.44 + 0.00) = 48.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.96	0.00	-9.22	-1.30	0.00	0.00	0.00	48.44

-----

Segment Leq : 48.44 dBA

Total Leq All Segments: 48.44 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.10  
(NIGHT): 48.44

STAMSON 5.0                    NORMAL REPORT                    Date: 09-03-2023 15:14:01  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a\_ola.te                    Time Period: 16 hours  
 Description: **Prediction Location [A], rear yard sound level.**

Road data, segment # 1: Traflagar

```
-----
Car traffic volume : 7538 veh/TimePeriod
Medium truck volume : 502 veh/TimePeriod
Heavy truck volume : 469 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)
```

Data for Segment # 1: Traflagar

```
-----
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 : 62.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Traflagar

Source height = 1.53 m

ROAD (0.00 + 54.84 + 0.00) = 54.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	66.52	0.00	-10.22	-1.45	0.00	0.00	0.00	54.84

Segment Leq : 54.84 dBA

Total Leq All Segments: 54.84 dBA

TOTAL Leq FROM ALL SOURCES: 54.84