aercoustics

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October 18, 2024 Aercoustics Project #: 20085.02

Inverness Homes
1518-1524-1526 Stittsville Main Street
Stittsville, Ontario
K2S 1N9

ATTN: Joshua Laginski, Inverness Homes

CC: Kyle MacHutchon, Inverness Homes
Derek Flake, Aercoustics
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Subject: 1518-1524-1526 Stittsville Main Street
Mechanical Noise Addendum Letter
Stittsville Main Street NIS Update

1 Introduction

Aercoustics Engineering Limited (Aercoustics) has been retained by Inverness Homes to prepare a Noise Impact Study (NIS) update to support an application for a proposed building complex composed of a two-storey mixed-use commercial building and a four-storey residential-use building in Stittsville, Ontario.

The purpose of this study is to assess the noise impact of proposed mechanical equipment on the noise sensitive receptors in the area, and to outline noise mitigation measures as required to satisfy the MECP sound level limits.

These limits are described in the MECP publication entitled “Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning”, dated August 2013 (NPC-300).

This assessment was based on the following information:

- Issued for Permit Mechanical Drawings prepared by Engineering Wisdom and dated May 30, 2024;
- Issued for Permit Architectural Drawings prepared by Vandenberg & Wildeboer Architects and dated May 30, 2024; and
- Manufacturer noise data received July 2024.

2 Guidelines and Criteria

There are several existing single family and mid-rise residential dwellings, identified as Receptors R01 to R07 in Table 1, surrounding the proposed development.

Table 1: Summary of Points of Reception

Receptor	Description	Height	Distance
R01	Existing 1-storey dwelling	1.5 m	70 m NW
R02	Existing Daycare Classroom	3.0 m	80 m SW
R02g	Outdoor point of reception associated with R02	1.5 m	80 m SW
R03	Existing private school classroom	3.0 m	50 m SW
R03g	Outdoor point of reception associated with R03	1.5 m	30 m S
R04	Existing 2-storey dwelling	4.5 m	55 m S
R05	Existing 2-storey dwelling	4.5 m	30 m SE
R06	Existing 4-storey dwelling	11 m	65 m E
R07	Existing 2-storey dwelling	4.5 m	35 m E

An area location map is provided in Figure 1, indicating the locations of the site and the surrounding receptors. These receptors were considered to be located in a Class 2 area, with daytime (07:00 – 23:00) sound levels dominated by noise associated with human activity such as road traffic, and with evening and nighttime (19:00 – 23:00) dominated by natural sounds.

The noise level limits pertaining to the stationary sources under review have been established based on the MECP publication NPC-300. For sound from a stationary source, the sound level limit at a point of reception, expressed in terms of the one-hour equivalent sound level (Leq-1hr) is the higher of the applicable exclusion limit values given in Table 2 or the minimum hourly background sound level in the area.

Table 2: Noise Exclusion Limits – Class 2

Time of Day	Sound Level Exclusion Limit* Plane of Window	Sound Level Exclusion Limit* Outdoors
Day (07:00 to 19:00)	50 dBA	50 dBA
Evening (19:00 to 23:00)	50 dBA	45 dBA
Night (23:00 to 07:00)	45 dBA	- -

*or the minimum existing hourly background sound level Leq, whichever is higher

The background sound level may increase the sound level limit for some of the receptors in this study, particularly those near busy roads. For conservatism and simplicity, the exclusion limit was used for all receptors in this study.

3 Stationary Noise Predictions

Stationary noise impacts were modelled based on manufacturer noise data or Aercoustics' own measurement library of similar equipment as detailed in Section 3.1. Sound levels were predicted at the nearest noise-sensitive points of reception as detailed in Sections 3.2 and 0.

Noise modelling was carried out using DataKustik's *CadnaA* version 2023 MR 2, which implements the ISO 9613-2 outdoor sound propagation standard. For simplicity and conservatism, hard ground (G=0) was assumed for all areas. The contribution from potential acoustical reflections was determined to be insignificant. Sample calculations are included in Appendix A.

3.1 Stationary Noise Sources

The dominant sources of noise associated with the proposed are detailed in the following sections and the modelled sound levels are detailed in Table 3. Stationary noise sources are illustrated in Figure 1.

Table 3: Mechanical Equipment Sound Power Levels

	1/1-Octave Band Sound Power Levels (dB)								Overall	
Source Description	63	125	250	500	1000	2000	4000	8000	dB	dBA
RTU-1 12.5 ton	79	81	81	79	77	73	73	68	**87**	**82**
RTU-2 10 ton	86	88	88	86	84	80	80	75	**94**	**89**
18SPV-HP (Heat Pump)	-	29	43	47	47	37	29	15	**63**	**59**
Restaurant Exhaust Fan	88	90	89	85	80	75	71	66	**95**	**86**

3.1.1 Residential Building Noise Sources

Based on review from mechanical drawings, the significant sources of mechanical noise associated with the residential building include 27 heat pumps distributed along the facades of the building. Noise data for the heat pumps was based on manufacturer specifications which have been appended to this document.

The mechanical drawings additionally show exhaust fans along the residential building, but these are acoustically insignificant, and are therefore not included in the model.

3.1.2 Mixed-Use Building Noise Sources

The proposed mixed-use Building includes two rooftop HVAC units, one 10-ton unit (RTU-1), and one 12.5-ton unit (RTU-2). Sound power spectrum data was not included in the received unit specifications, hence data for these units were based on data from other sites using similar equipment. The commercial rooftop units were assumed to operate at a 33% duty cycle during the nighttime hours (23:00 – 07:00).

The proposed mixed-use building also includes provision for future installation of a restaurant kitchen exhaust fan at the tenant's discretion. The specific make and model of the exhaust fan is not known at present. To account for this future noise source, an exhaust stack source was modelled based on Aercoustics' measurement library as detailed in Table 3. The modelled sound power level of 86 dBA is expected to be a conservative estimate for typical restaurant exhaust fans.

3.2 Noise Impact of Development on Surroundings

Per Table 4, the noise impact of the proposed development on surrounding land uses has been assessed and is expected to meet the MECP exclusion limits without the need for additional noise controls. Noise impacts at surrounding receptors are illustrated in Figure 2. A sample stationary noise calculation has been included in Appendix A.

Table 4: Noise Impact Summary – Development on Surroundings

Receptor	Predicted Noise Impact (dBA)		MECP Sound Level Limit (dBA)	
	Daytime	Nighttime[1]	Daytime	Nighttime[1]
R01	42	34	50	45
R02	30	25	50	45
R02g	28	-	50	-
R03	40	35	50	45
R03g	40	-	50	-
R04	41	36	50	45
R05	44	39	50	45
R06	46	41	50	45
R07	44	39	50	45

[1] – Sound level limits do not apply outdoor points of reception during the nighttime.

3.3 Noise Impact of Development on Itself

It is understood that there are no sensitive spaces having operable windows on the top two floors of the northeast façade of the proposed residential building. Accordingly, the sensitive spaces most affected by the development mechanical equipment are 4th floor bedroom windows on the northwest and southeast facades as well as 2nd floor bedroom windows on the northeast façade.

Per NPC-300, balconies less than 4 m in depth do not constitute outdoor points of reception. For multi-tenanted buildings such as this, the appropriate assessment location is the centre of the common outdoor amenity area, as represented by IR01g.

Predicted noise impacts are presented in Table 5 and illustrated in Figure 3.

Table 5: Noise Impact Summary – Development on Self

Receptor	Predicted Noise Impact (dBA)		MECP Sound Level Limit (dBA)	
	Daytime	Nighttime[1]	Daytime	Nighttime[1]
IR01	50	39	50	45
IR01g	40	-	50	-
IR02	50	40	50	45
IR03	48	44	50	45

[1] – Sound level limits do not apply outdoor points of reception during the nighttime.

Per Table 5, noise impacts at dwelling units and amenity areas within the development are predicted to fall below the MECP sound level limits.

4 Closure

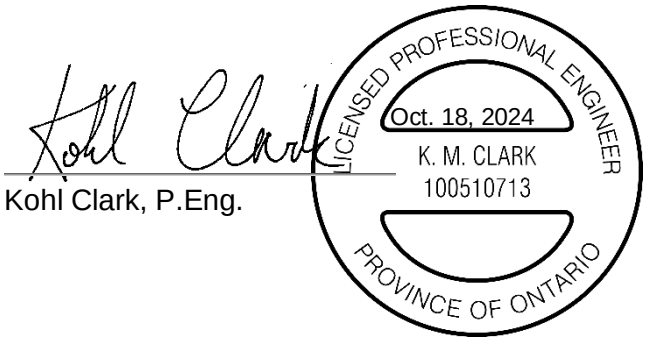
Aercoustics Engineering Limited was retained by Inverness Homes to prepare an addendum to the Noise and Vibration Impact Study for a proposed mixed-use development at 1518-1524-1526 Stittsville Main Street, in the City of Ottawa.

It was determine that noise from the proposed building mechanical equipment is predicted to be less than the applicable sound level limits set out in the MECP Publication NPC-300 for sensitive locations in the neighbouring community as well as within the development itself.

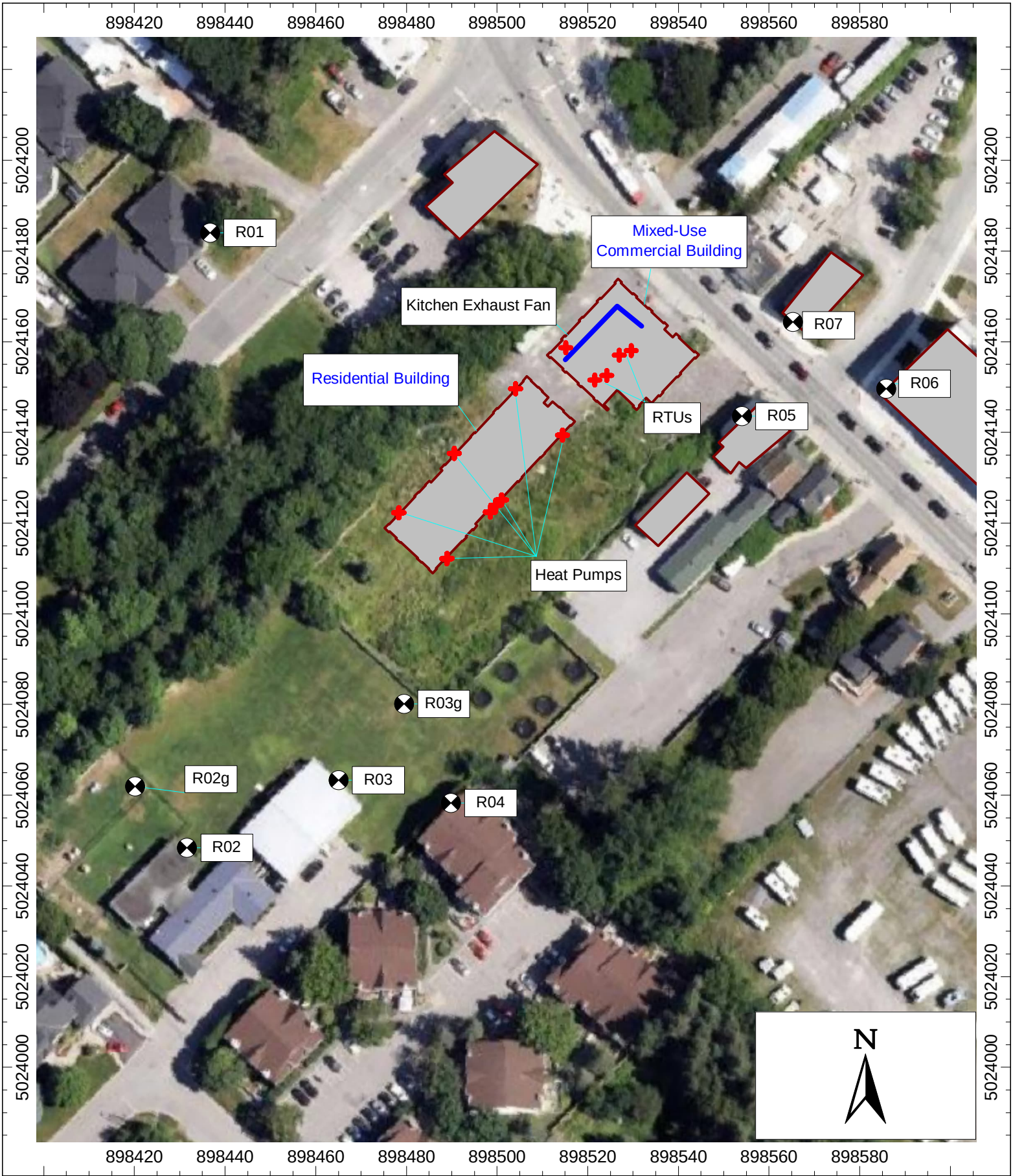
Please do not hesitate to ask should there be any questions.

Sincerely,

AERCOUSTICS ENGINEERING LIMITED



Kohl Clark, P.Eng.



aercoustics	Project ID: 20085.02	**Project Name** Stittsville Main Street NIS Update - Iverness Homes
	Scale: NTS Drawn by: NP Reviewed by: KC Date: July 25, 2024 Revision: 1	**Figure Title** Site Plan with Noise Sources and Receptors
		Figure 1

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Project ID: 20085.02

Scale: NTS
Drawn by: NP
Reviewed by: KC
Date: July 25, 2024
Revision: 1

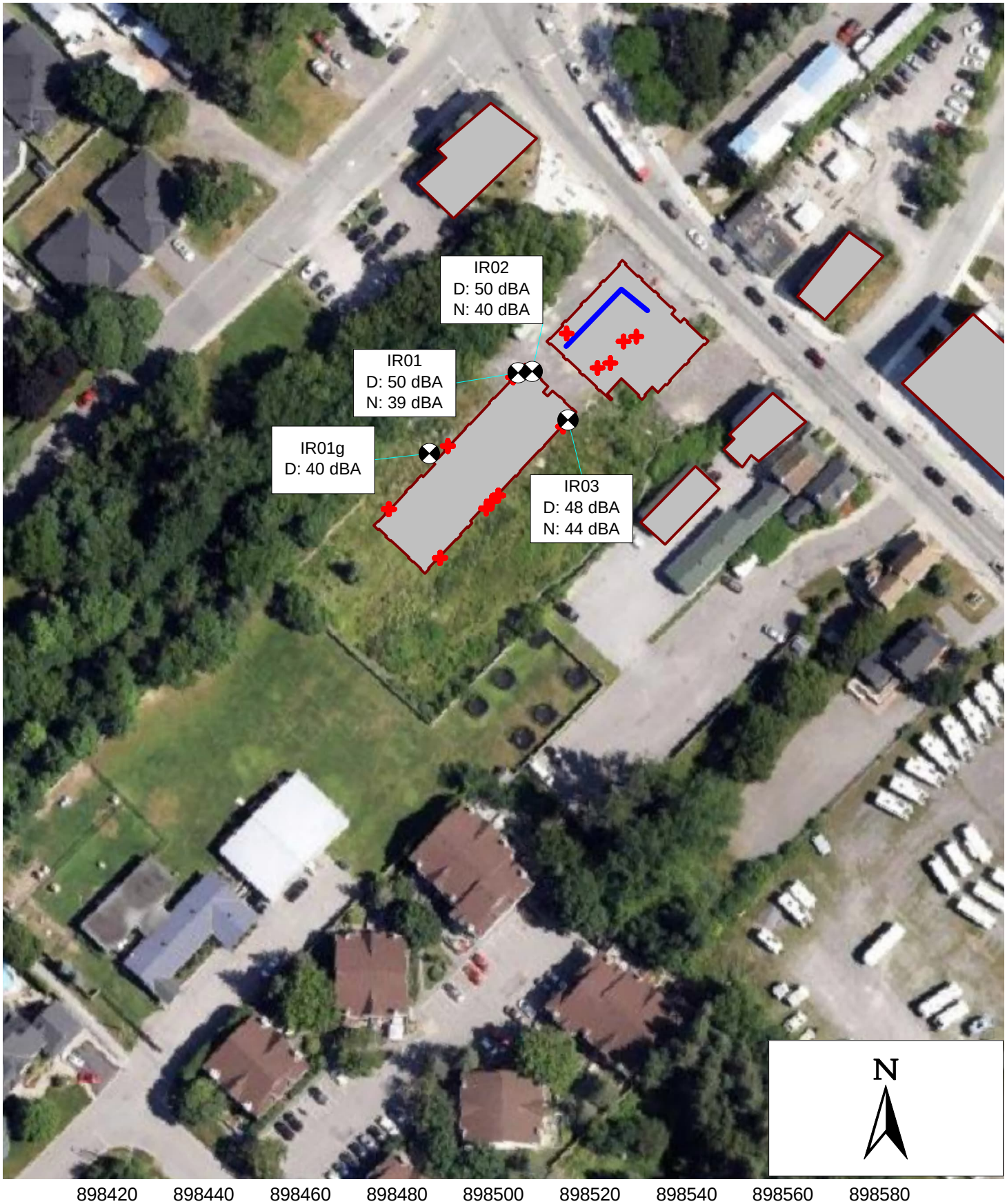
Project Name

Stittsville Main Street NIS Update - Iverness Homes

Figure Title

Predicted Noise Impact -
Development on Surroundings

Figure 2



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Project ID: 20085.02

Scale: NTS
Drawn by: NP
Reviewed by: KC
Date: July 25, 2024
Revision: 1

Project Name

Stittsville Main Street NIS Update - Iverness Homes

Figure Title

Predicted Noise Impact - Development on Self

Figure 3

Appendix A
Sample Calculations

Receiver: R01
Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	42

Receiver Name	Receiver ID	X	Y	Z
R01	R01	898437 m	5024184 m	4 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	49.3	0.0	-3.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	40
HP01	Heat Pump SPV-HP	898490.6	5024135.4	5.7	0	59	0.0	A	48.2	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	4.1	0.0	18
HP01	Heat Pump SPV-HP	898490.6	5024135.3	2.0	0	59	0.0	A	48.2	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	4.0	0.0	18
HP01	Heat Pump SPV-HP	898490.6	5024135.4	9.3	0	59	0.0	A	48.2	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	3.7	0.0	17
HP01	Heat Pump SPV-HP	898490.6	5024135.3	12.5	0	59	0.0	A	48.3	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	3.3	0.0	17
HP01	Heat Pump SPV-HP	898478.4	5024122.3	2.0	0	59	0.0	A	48.4	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	2.4	0.0	16
HP01	Heat Pump SPV-HP	898478.3	5024122.3	5.7	0	59	0.0	A	48.4	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	2.4	0.0	16
HP01	Heat Pump SPV-HP	898478.3	5024122.3	9.3	0	59	0.0	A	48.5	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	2.3	0.0	16
HP01	Heat Pump SPV-HP	898478.3	5024122.3	12.5	0	59	0.0	A	48.5	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	2.2	0.0	16
HP01	Heat Pump SPV-HP	898504.1	5024149.7	5.7	0	59	0.0	A	48.6	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	2.0	0.0	15
HP01	Heat Pump SPV-HP	898504.1	5024149.7	2.0	0	59	0.0	A	48.6	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	2.0	0.0	15
HP01	Heat Pump SPV-HP	898504.1	5024149.7	9.3	0	59	0.0	A	48.6	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	2.0	0.0	15
HP01	Heat Pump SPV-HP	898504.1	5024149.7	12.5	0	59	0.0	A	48.6	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	2.0	0.0	15
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	50.2	0.0	-3.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	31
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	50.4	0.0	-3.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	31
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	50.5	0.0	-3.0	6.2	0.8	0.0	0.0	0.0	0.0	0.0	32
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	50.7	0.0	-3.0	4.8	0.8	0.0	0.0	0.0	0.0	0.0	33

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R02

Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	30

Receiver Name	Receiver ID	X	Y	Z
R02	R02	898432 m	5024048 m	3 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	53.8	0.0	-3.0	16.2	0.5	0.0	0.0	0.0	0.0	0.0	19
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	53.7	0.0	-3.0	12.1	1.1	0.0	0.0	0.0	0.0	0.0	15
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	53.9	0.0	-3.0	8.5	1.1	0.0	0.0	0.0	0.0	0.0	19
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	54.2	0.0	-3.0	9.7	1.1	0.0	0.0	0.0	0.0	0.0	24
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	54.4	0.0	-3.0	6.7	1.1	0.0	0.0	0.0	0.0	0.0	27

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R02g

Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	29

Receiver Name	Receiver ID	X	Y	Z
R02g	R02g	898420 m	5024062 m	3 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	53.7	0.0	-3.0	8.1	0.5	0.0	0.0	0.0	0.0	0.0	27
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	54.1	0.0	-3.0	16.0	1.1	0.0	0.0	0.0	0.0	0.0	18
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	54.3	0.0	-3.0	15.4	1.1	0.0	0.0	0.0	0.0	0.0	18

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R03

Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	40

Receiver Name	Receiver ID	X	Y	Z
R03	R03	898465 m	5024063 m	3 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	51.7	0.0	-3.0	19.0	0.4	0.0	0.0	0.0	0.0	0.0	18
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	51.4	0.0	-3.0	8.2	0.9	0.0	0.0	0.0	0.0	0.0	22
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	51.6	0.0	-3.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	30
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	52.0	0.0	-3.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	36
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	52.2	0.0	-3.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	36

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R03g
Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	40

Receiver Name	Receiver ID	X	Y	Z
R03g	R03g	898479 m	5024080 m	1.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	49.8	0.0	-3.0	19.7	0.3	0.0	0.0	0.0	0.0	0.0	20
HP01	Heat Pump SPV-HP	898488.9	5024112.2	2.0	0	59	0.0	A	41.5	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-4.1	0.0	17
HP01	Heat Pump SPV-HP	898489.0	5024112.3	5.7	0	59	0.0	A	41.6	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-4.2	0.0	16
HP01	Heat Pump SPV-HP	898489.0	5024112.2	9.3	0	59	0.0	A	41.7	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-4.2	0.0	16
HP01	Heat Pump SPV-HP	898488.9	5024112.2	12.5	0	59	0.0	A	41.9	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-4.3	0.0	16
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	49.4	0.0	-3.0	7.1	0.7	0.0	0.0	0.0	0.0	0.0	25
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	49.6	0.0	-3.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	32
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	50.2	0.0	-3.0	4.8	0.8	0.0	0.0	0.0	0.0	0.0	33
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	50.4	0.0	-3.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	38

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R04
Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	41

Receiver Name	Receiver ID	X	Y	Z
R04	R04	898490 m	5024058 m	4.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	51.3	0.0	-3.0	18.2	0.4	0.0	0.0	0.0	0.0	0.0	20
HP01	Heat Pump SPV-HP	898488.9	5024112.2	2.0	0	59	0.0	A	45.6	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	0.4	0.0	17
HP01	Heat Pump SPV-HP	898489.0	5024112.3	5.7	0	59	0.0	A	45.6	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	0.4	0.0	17
HP01	Heat Pump SPV-HP	898489.0	5024112.2	9.3	0	59	0.0	A	45.7	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	0.3	0.0	17
HP01	Heat Pump SPV-HP	898488.9	5024112.2	12.5	0	59	0.0	A	45.7	0.0	-3.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	17
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	50.9	0.0	-3.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	31
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	51.0	0.0	-3.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	31
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	51.5	0.0	-3.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	37
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	51.6	0.0	-3.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	37

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R05

Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	44

Receiver Name	Receiver ID	X	Y	Z
R05	R05	898554 m	5024144 m	4.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	43.5	0.0	-3.0	12.3	0.2	0.0	0.0	0.0	0.0	0.0	33
HP01	Heat Pump SPV-HP	898514.4	5024139.4	5.7	0	59	0.0	A	43.0	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-0.6	0.0	18
HP01	Heat Pump SPV-HP	898514.4	5024139.4	2.0	0	59	0.0	A	43.0	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-0.7	0.0	18
HP01	Heat Pump SPV-HP	898514.4	5024139.4	9.3	0	59	0.0	A	43.1	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-0.7	0.0	18
HP01	Heat Pump SPV-HP	898514.4	5024139.4	12.5	0	59	0.0	A	43.2	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-0.9	0.0	18
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	41.6	0.0	-3.0	8.8	0.3	0.0	0.0	0.0	0.0	0.0	32
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	41.0	0.0	-3.0	7.2	0.3	0.0	0.0	0.0	0.0	0.0	34
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	40.7	0.0	-3.0	9.2	0.3	0.0	0.0	0.0	0.0	0.0	39
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	40.2	0.0	-3.0	7.5	0.3	0.0	0.0	0.0	0.0	0.0	41

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R06
Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	46

Receiver Name	Receiver ID	X	Y	Z
R06	R06	898586 m	5024150 m	11 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	48.1	0.0	-3.0	4.9	0.3	0.0	0.0	0.0	0.0	0.0	36
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	47.2	0.0	-3.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	35
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	46.8	0.0	-3.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	35
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	46.5	0.0	-3.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	42
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	46.1	0.0	-3.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	43

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: R07
Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	44

Receiver Name	Receiver ID	X	Y	Z
R07	R07	898565 m	5024164 m	4.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	45.1	0.0	-3.0	10.5	0.2	0.0	0.0	0.0	0.0	0.0	34
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	44.2	0.0	-3.0	8.9	0.4	0.0	0.0	0.0	0.0	0.0	29
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	43.7	0.0	-3.0	7.4	0.4	0.0	0.0	0.0	0.0	0.0	31
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	42.9	0.0	-3.0	7.8	0.4	0.0	0.0	0.0	0.0	0.0	38
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	42.3	0.0	-3.0	4.7	0.4	0.0	0.0	0.0	0.0	0.0	42

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: IR01
Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	50

Receiver Name	Receiver ID	X	Y	Z
IR01	IR01	898505 m	5024151 m	10.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	33.3	0.0	-3.0	6.9	0.1	0.0	0.0	0.0	0.0	0.0	49
HP01	Heat Pump SPV-HP	898504.1	5024149.7	9.3	0	59	0.0	A	16.1	0.0	-3.0	4.7	0.0	0.0	0.0	0.0	-8.4	0.0	33
HP01	Heat Pump SPV-HP	898504.1	5024149.7	12.5	0	59	0.0	A	18.6	0.0	-3.0	4.6	0.0	0.0	0.0	0.0	-8.4	0.0	31
HP01	Heat Pump SPV-HP	898504.1	5024149.7	5.7	0	59	0.0	A	24.9	0.0	-3.0	4.6	0.0	0.0	0.0	0.0	-8.4	0.0	24
HP01	Heat Pump SPV-HP	898504.1	5024149.7	2.0	0	59	0.0	A	29.7	0.0	-3.0	4.6	0.0	0.0	0.0	0.0	-8.4	0.0	19
HP01	Heat Pump SPV-HP	898490.6	5024135.4	9.3	0	59	0.0	A	37.5	0.0	-3.0	5.0	0.1	0.0	0.0	0.0	-8.3	0.0	11
HP01	Heat Pump SPV-HP	898490.6	5024135.3	12.5	0	59	0.0	A	37.5	0.0	-3.0	5.0	0.1	0.0	0.0	0.0	-8.3	0.0	11
HP01	Heat Pump SPV-HP	898490.6	5024135.4	5.7	0	59	0.0	A	37.7	0.0	-3.0	5.0	0.1	0.0	0.0	0.0	-8.3	0.0	11
HP01	Heat Pump SPV-HP	898490.6	5024135.3	2.0	0	59	0.0	A	38.1	0.0	-3.0	5.0	0.1	0.0	0.0	0.0	-8.3	0.0	11
HP01	Heat Pump SPV-HP	898478.3	5024122.3	9.3	0	59	0.0	A	42.8	0.0	-3.0	5.0	0.1	0.0	0.0	0.0	-8.3	0.0	6
HP01	Heat Pump SPV-HP	898478.3	5024122.3	12.5	0	59	0.0	A	42.8	0.0	-3.0	5.0	0.1	0.0	0.0	0.0	-8.3	0.0	6
HP01	Heat Pump SPV-HP	898478.3	5024122.3	5.7	0	59	0.0	A	42.9	0.0	-3.0	5.0	0.1	0.0	0.0	0.0	-8.3	0.0	6
HP01	Heat Pump SPV-HP	898478.4	5024122.3	2.0	0	59	0.0	A	43.0	0.0	-3.0	5.0	0.1	0.0	0.0	0.0	-8.3	0.0	6
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	35.4	0.0	-3.0	15.4	0.2	0.0	0.0	0.0	0.0	0.0	31
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	36.7	0.0	-3.0	15.0	0.2	0.0	0.0	0.0	0.0	0.0	31
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	38.2	0.0	-3.0	13.3	0.2	0.0	0.0	0.0	0.0	0.0	37
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	39.2	0.0	-3.0	13.2	0.3	0.0	0.0	0.0	0.0	0.0	37

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: IR03

Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	48

Receiver Name	Receiver ID	X	Y	Z
IR03	IR03	898515 m	5024141 m	10.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	36.1	0.0	-3.0	21.1	0.1	0.0	0.0	0.0	0.0	0.0	32
HP01	Heat Pump SPV-HP	898514.4	5024139.4	9.3	0	59	0.0	A	17.5	0.0	-3.0	4.8	0.0	0.0	0.0	0.0	-8.4	0.0	32
HP01	Heat Pump SPV-HP	898514.4	5024139.4	12.5	0	59	0.0	A	19.5	0.0	-3.0	4.8	0.0	0.0	0.0	0.0	-8.3	0.0	30
HP01	Heat Pump SPV-HP	898514.4	5024139.4	5.7	0	59	0.0	A	25.2	0.0	-3.0	4.8	0.0	0.0	0.0	0.0	-8.4	0.0	24
HP01	Heat Pump SPV-HP	898514.4	5024139.4	2.0	0	59	0.0	A	29.8	0.0	-3.0	4.7	0.0	0.0	0.0	0.0	-8.3	0.0	19
HP01	Heat Pump SPV-HP	898501.0	5024125.1	9.3	0	59	0.0	A	37.6	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.2	0.0	11
HP01	Heat Pump SPV-HP	898501.0	5024125.1	12.5	0	59	0.0	A	37.6	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.2	0.0	11
HP01	Heat Pump SPV-HP	898501.0	5024125.1	5.7	0	59	0.0	A	37.8	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.2	0.0	11
HP01	Heat Pump SPV-HP	898501.0	5024125.1	2.0	0	59	0.0	A	38.2	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.3	0.0	11
HP01	Heat Pump SPV-HP	898499.7	5024123.9	12.5	0	59	0.0	A	38.3	0.0	-3.0	6.6	0.1	0.0	0.0	0.0	-7.9	0.0	9
HP01	Heat Pump SPV-HP	898499.7	5024123.9	5.7	0	59	0.0	A	38.5	0.0	-3.0	6.6	0.1	0.0	0.0	0.0	-8.0	0.0	9
HP01	Heat Pump SPV-HP	898498.5	5024122.4	9.3	0	59	0.0	A	39.0	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.2	0.0	10
HP01	Heat Pump SPV-HP	898498.5	5024122.4	12.5	0	59	0.0	A	39.0	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.2	0.0	10
HP01	Heat Pump SPV-HP	898498.5	5024122.4	5.7	0	59	0.0	A	39.1	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.2	0.0	10
HP01	Heat Pump SPV-HP	898489.0	5024112.2	9.3	0	59	0.0	A	42.8	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.2	0.0	6
HP01	Heat Pump SPV-HP	898488.9	5024112.2	12.5	0	59	0.0	A	42.8	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.2	0.0	6
HP01	Heat Pump SPV-HP	898489.0	5024112.3	5.7	0	59	0.0	A	42.9	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.2	0.0	6
HP01	Heat Pump SPV-HP	898488.9	5024112.2	2.0	0	59	0.0	A	43.0	0.0	-3.0	5.2	0.1	0.0	0.0	0.0	-8.2	0.0	6
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	32.9	0.0	-3.0	10.3	0.1	0.0	0.0	0.0	0.0	0.0	39
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	34.3	0.0	-3.0	8.1	0.2	0.0	0.0	0.0	0.0	0.0	40
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	37.0	0.0	-3.0	8.4	0.2	0.0	0.0	0.0	0.0	0.0	44
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	38.0	0.0	-3.0	7.1	0.2	0.0	0.0	0.0	0.0	0.0	44

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: IR02
Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	50

Receiver Name	Receiver ID	X	Y	Z
IR02	IR02	898508 m	5024151 m	4.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	32.3	0.0	-3.0	7.9	0.1	0.0	0.0	0.0	0.0	0.0	49
HP01	Heat Pump SPV-HP	898504.1	5024149.7	5.7	0	59	0.0	A	23.7	0.0	-3.0	17.1	0.0	0.0	0.0	0.0	-7.3	0.0	14
HP01	Heat Pump SPV-HP	898504.1	5024149.7	2.0	0	59	0.0	A	24.7	0.0	-3.0	16.9	0.0	0.0	0.0	0.0	-7.2	0.0	13
HP01	Heat Pump SPV-HP	898504.1	5024149.7	9.3	0	59	0.0	A	27.0	0.0	-3.0	16.3	0.0	0.0	0.0	0.0	-7.1	0.0	12
HP01	Heat Pump SPV-HP	898504.1	5024149.7	12.5	0	59	0.0	A	30.1	0.0	-3.0	15.5	0.0	0.0	0.0	0.0	-7.0	0.0	10
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	34.1	0.0	-3.0	8.3	0.2	0.0	0.0	0.0	0.0	0.0	40
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	35.7	0.0	-3.0	9.1	0.2	0.0	0.0	0.0	0.0	0.0	37
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	37.2	0.0	-3.0	13.2	0.2	0.0	0.0	0.0	0.0	0.0	39
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	38.4	0.0	-3.0	12.9	0.2	0.0	0.0	0.0	0.0	0.0	38

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above

Receiver: IR01g

Project: Stittsville Main St NIS Update
Project Number: 20085.02

Time Period	Total (dBA)*
Day	40

Receiver Name	Receiver ID	X	Y	Z
IR01g	IR01g	898487 m	5024134 m	1.5 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
EF_08	Exhaust Fan Kitchen	898515.1	5024158.7	9.2	0	86	0.0	A	42.7	0.0	-3.0	10.7	0.2	0.0	0.0	0.0	0.0	0.0	36
HP01	Heat Pump SPV-HP	898490.6	5024135.3	2.0	0	59	0.0	A	23.4	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-4.4	0.0	34
HP01	Heat Pump SPV-HP	898490.6	5024135.4	5.7	0	59	0.0	A	26.5	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-5.7	0.0	30
HP01	Heat Pump SPV-HP	898490.6	5024135.4	9.3	0	59	0.0	A	29.9	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-6.6	0.0	26
HP01	Heat Pump SPV-HP	898490.6	5024135.3	12.5	0	59	0.0	A	32.4	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-7.1	0.0	23
HP01	Heat Pump SPV-HP	898478.4	5024122.3	2.0	0	59	0.0	A	34.1	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-7.3	0.0	21
HP01	Heat Pump SPV-HP	898478.3	5024122.3	5.7	0	59	0.0	A	34.5	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-7.3	0.0	20
HP01	Heat Pump SPV-HP	898478.3	5024122.3	9.3	0	59	0.0	A	35.2	0.0	-3.0	0.0	0.0	0.0	0.0	0.0	-7.4	0.0	20
HP01	Heat Pump SPV-HP	898478.3	5024122.3	12.5	0	59	0.0	A	36.1	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-7.5	0.0	19
HP01	Heat Pump SPV-HP	898504.1	5024149.7	2.0	0	59	0.0	A	38.4	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-7.7	0.0	16
HP01	Heat Pump SPV-HP	898504.1	5024149.7	5.7	0	59	0.0	A	38.6	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-7.7	0.0	16
HP01	Heat Pump SPV-HP	898504.1	5024149.7	9.3	0	59	0.0	A	38.9	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-7.7	0.0	16
HP01	Heat Pump SPV-HP	898504.1	5024149.7	12.5	0	59	0.0	A	39.3	0.0	-3.0	0.0	0.1	0.0	0.0	0.0	-7.7	0.0	15
RTU_COMP_1	York RTU-1 Compressor	898521.6	5024151.6	9.2	0	79	0.0	A	43.0	0.0	-3.0	23.4	0.4	0.0	0.0	0.0	0.0	0.0	16
RTU_01	York RTU-1 Fan	898524.2	5024152.6	9.8	0	79	0.0	A	43.6	0.0	-3.0	23.0	0.4	0.0	0.0	0.0	0.0	0.0	15
RTU_2_COMP	York RTU-2 Compressor	898526.9	5024157.1	9.2	0	86	0.0	A	44.5	0.0	-3.0	23.4	0.5	0.0	0.0	0.0	0.0	0.0	21
RTU_02	York RTU-2 Fan	898529.6	5024158.0	9.8	0	86	0.0	A	45.0	0.0	-3.0	23.0	0.5	0.0	0.0	0.0	0.0	0.0	21

*The total value shown accounts for all modelled sources and may include small contributions from sources not described in the table above