

August 1, 2024

Aercoustics Project #: 20085.02

Inverness Homes

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

ATTN: Joshua Laginski, Inverness Homes

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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 R06 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 private school classroom	3.0 m	50 m SE
R03	Existing 2-storey dwelling	4.5 m	55 m S
R04	Existing 2-storey dwelling	4.5 m	30 m SE
R05	Existing 4-storey dwelling	11 m	65 m E
R06	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 3.3.

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

Source Description	1/1-Octave Band Sound Power Levels (dB)								Overall	
	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.

Table 4: Noise Impact Summary – Development on Surroundings

Receptor	Predicted Noise Impact (dBA)		MECP Sound Level Limit (dBA)	
	Daytime	Nighttime	Daytime	Nighttime
R01	42	34	50	45
R02	40	-	50	-
R03	41	37	50	45
R04	45	40	50	45
R05	47	42	50	45
R06	44	39	50	45

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. 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	Daytime	Nighttime
IR01	50	39	50	45
IR02	50	40	50	45
IR03	48	44	50	45

Per Table 5, noise impacts at dwelling units 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 determined 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.

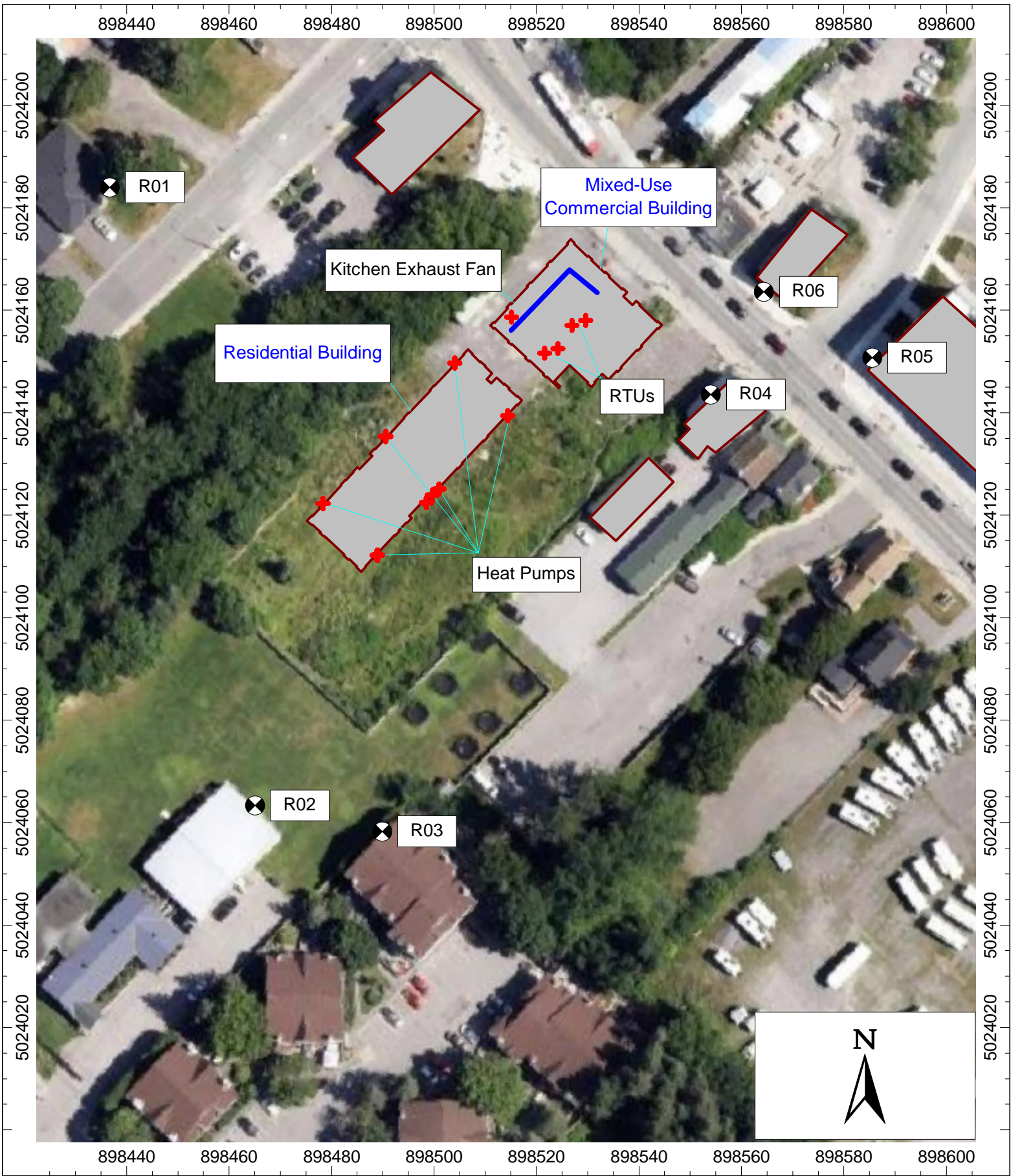
Please do not hesitate to ask should there be any questions.


Sincerely,

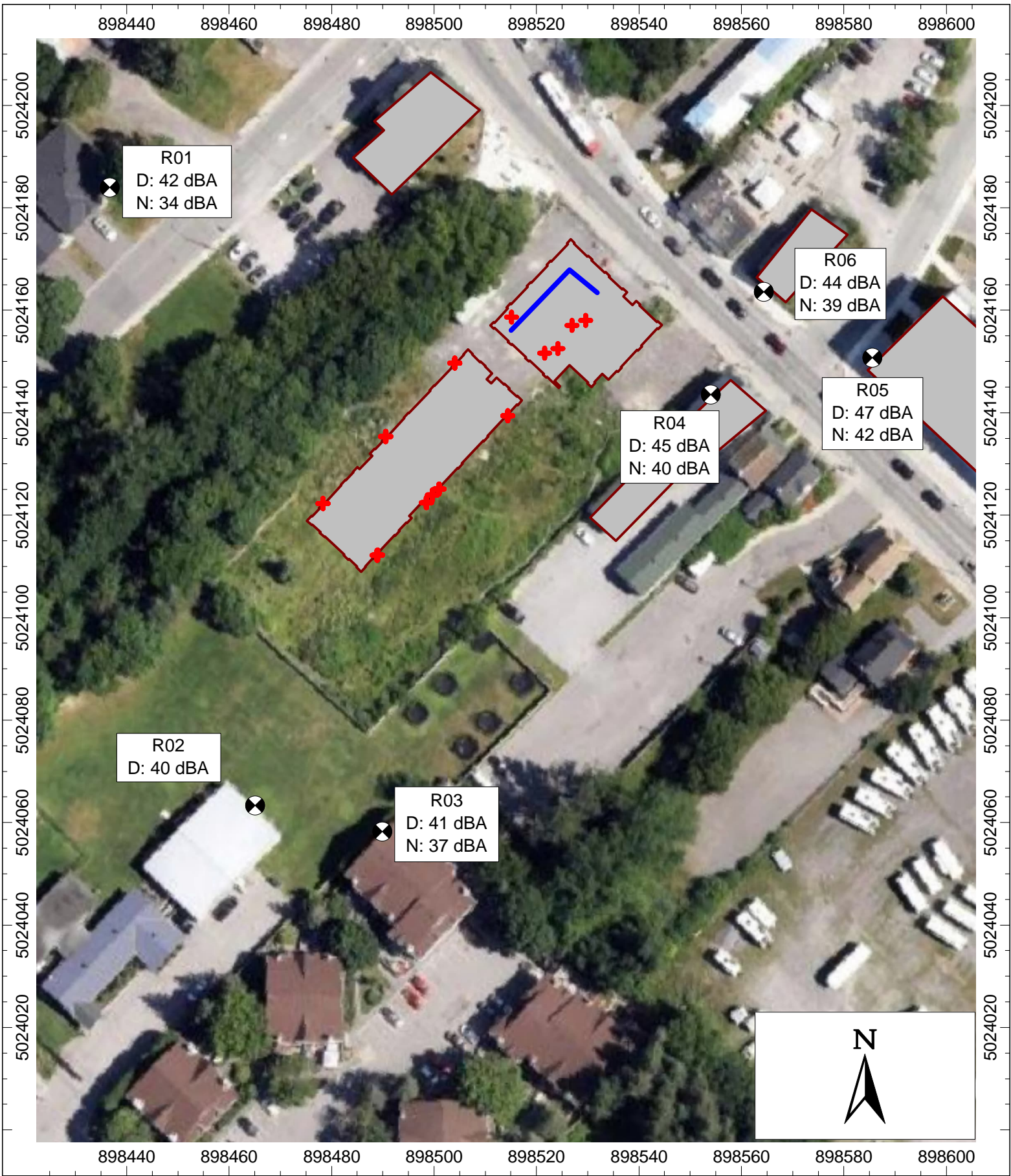
AERCOUSTICS ENGINEERING LIMITED



Kohli Clark, P.Eng.

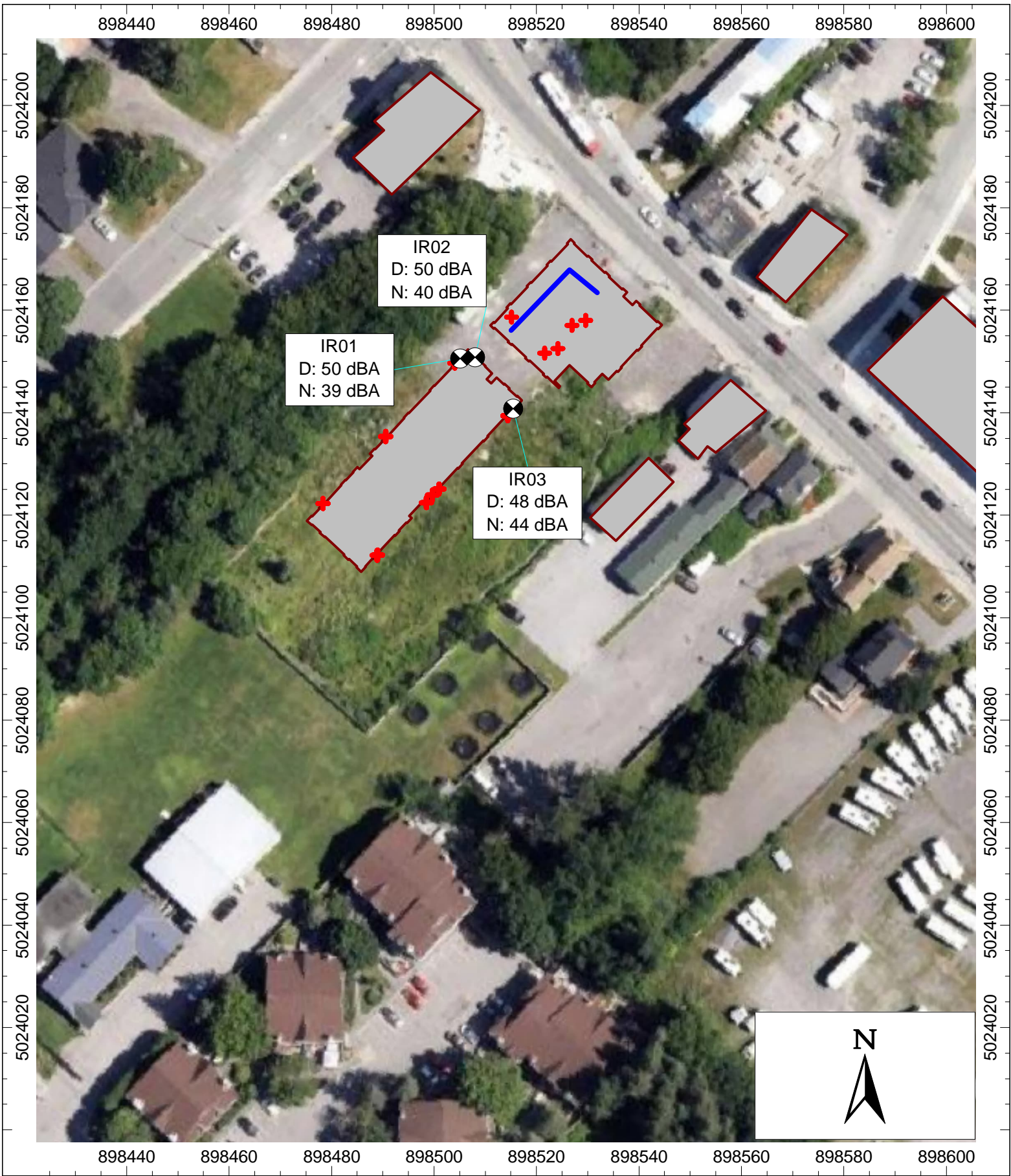





	Project ID: 20085.02	Project Name Stittsville Main Street NIS Update - Iverness Homes	
	Scale: NTS Drawn by: NP Reviewed by: KC Date: July 25, 2024 Revision: 1	Figure Title Site Plan with Noise Sources and Receptors	



	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 Predicted Noise Impact - Development on Surroundings	



	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 Predicted Noise Impact - Development on Self	Figure 3