



June 13, 2017

**50 University Avenue East (Waterloo) Limited
C/o: Vive Development Corporation
242 Main Street East
Hamilton, Ontario
L8N 1H5**

Our File NO: 2017-1040

Attn: Stephen Litt

RE: Stationary Noise Compliance Letter for 50 University Ave East Waterloo ON

As per your request dBA Acoustical Consultants Inc. has prepared a letter to address the stationary noise of E-TAC II units proposed for the Zoning By-Law Amendment located at 50 University Avenue East, Waterloo ON.

The proposed development is to reconfigure the existing six-storey apartment building consisting of 52 units to a 108-unit apartment building consisting of one-bedroom units. Bridget Coady, Principal Planner, Region of Waterloo has noted that in lieu of a transportation noise study, that a warning clause will suffice. A warning clause will be addressed later in this report.

The email also recommends that PTAC units which are considered as stationary noise sources facing 40 University Ave abutting the proposed site be addressed to ensure compliance with MOE Publication NPC 300 - Stationary and Transportation Source guidelines, while satisfying the planning requirements of the Region of Waterloo.

The PTAC units are small heating/cooling units that are installed inside the rooms and has the vents or intact vents located at the outside building face for each unit. These PTAC units are proposed to be E-TACII units and are considered extremely quiet as noise control measures have been added to the walls of the units to ensure quiet sounds during full mode operations. The units are insulated with Polymer Wall Sleeves which will have superior outdoor noise absorption and shall be corrosion free for the life of the product.

Included in this letter are the dBA noise levels for the units and calculated at the nearest residential property at 40 University Ave East, Waterloo.

The MOE Publication NPC 300 - Stationary and Transportation Source Guidelines defines a point of reception/receptor as *“any point on the premises of a person where the sound or vibration originating from other than those premises is received.”*

The point of reception may be located on any of the following, or zoned for future use, premises including but not limited to the following: residential homes, hospitals, nursing/retirement homes, etc.

The areas surrounding the “50 University Ave East” is indicative of a “Class 2 Area” (Urban) as defined in MOE Publication 300, Stationary & Transportation Sources-Approval & Planning.

The applicable sound limits are the higher of:

- The existing ambient sound level; or
- The minimum values of Table 1.

No restrictions apply to stationary sources if the one-hour equivalent sound exposure (Leq) is lower than the levels in the following Table 1A and Table 1B.

Table 1A
Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA)
Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00-19:00	50	50	45	55
19:00-23:00	50	45	40	55

Table 1B
Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA)
Plane of Window of Noise Sensitive Spaces

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00-19:00	50	50	45	60
19:00-23:00	50	50	40	60
23:00-07:00	45	45	40	55

The following is the manufactures Outdoor Sound Pressure Data specifications which are converted into dBA sound levels noted over a one hour period for compliance of MOE Publication NPC 300 - Stationary and Transportation Source guidelines.

E-TACII HVAC Units

Noise Levels for a typical balcony E-TACII HVAC unit was calculated from the manufactures Outdoor Sound Pressure Data sheet attached then converted into dBA sound levels at the property of 40 University Ave East with exposure to 3 E-TACII units at receptor. The calculations for these units are noted below as if they were to operate 24 hr/day.

Source Summary Table

Source ID	Description	Sound Power Level (dBA)	Source Location ¹	Sound Characteristics ²	Noise Control Measures ³
E-TACII	3 - HVAC Units	65.7 @ 0.5m	O	S	U

1- Source Location (O-Outside; I – Inside)

2- Sound Characteristics (S – Steady; Q – Quasi-steady impulsive; I – Impulsive; B – Buzzing; T- Tonal; C – Cyclic)

3-Noise Control Measures (S -Silencer; A – Acoustic Lining/Plenum; B – Barrier/Berm/Screening; L – Lagging; E – Acoustic Enclosure; O – Other; U- Uncontrolled)

Sound Power Level Summary Table

Source Location	Source ID	Source Description	Number of Source Type Onsite	Source Sound Power Level Spectrum, dBA								Overall dBA	
				7000 Hz	9000 Hz	12000 Hz	15000 Hz						
Balcony	High Heat	E-TACII HVAC	3	64.9	64.5	69.5	67.9						66.4

Point of Reception Noise Impact Table – Daytime/Evening

Source ID	Source Description	40 University AVE East Residential Receptor	
		Distance (m)	Leq Level (dBA)
E-TACII HVAC	(3 Units)	20	34.7
TOTAL:		--	34.7
Source ID	Source Description	40 University AVE East Residential Receptor	
		Distance (m)	Leq Level (dBA)
E-TACII HVAC	(6 Units)	20	40.7
TOTAL:		--	40.7

Point of Reception Noise Impact Table – Night-time

Source ID	Source Description	40 University AVE East Residential Receptor	
		Distance (m)	Leq Level (dBA)
E-TACII HVAC	(3 Unit)	20	31.5
TOTAL:		--	31.5
Source ID	Source Description	40 University AVE East Residential Receptor	
		Distance (m)	Leq Level (dBA)
E-TACII HVAC	(6 Unit)	20	37.5
TOTAL:		--	37.5

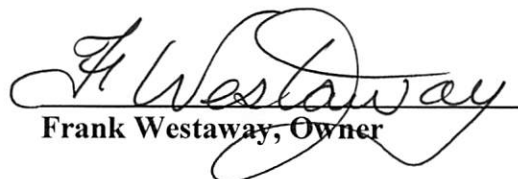
The balconies have extended walls separating each unit. These walls will provide shielding from the sound of each E-TACII unit operating from 3 units as well as we have calculated 6 units operating at same time. The noise levels are well below MOE Publication NPC 300 - Stationary and Transportation Source Guidelines Tables 1A & 1B. It should also be noted that the area traffic noise during an on-site visit of the development was the predominant sound in the area and may exceed the overall noise levels of the E-TACII units. We have considered the above noise calculations as the worst-case-scenario.

As previously noted the warning clause that should be considered for this development is as follows:

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 Municipality’s and the Ministry of the Environment’s noise criteria.”

Respectfully submitted,
dBA Acoustical Consultants Inc.


Frank Westaway, Owner

OUTDOOR SOUND PRESSURE DATA

Outdoor Sound Estimating Table (dBA and BELS)

Operating Mode	Volts	NOMINAL SIZES (dBA)								NOMINAL SIZES (BELS)							
		HEAT PUMP				HEAT / COOL				HEAT PUMP				HEAT / COOL			
		7000	9000	12000	15000	7000	9000	12000	15000	7000	9000	12000	15000	7000	9000	12000	15000
Low Cool	208	61.9	61.0	64.5	65.4	61.5	60.4	64.8	65.1	6.7	6.9	7.0	7.2	6.8	6.9	7.0	7.2
	230	63.3	62.7	65.7	66.4	62.9	63.0	65.7	66.1	6.9	7.1	7.2	7.3	7.0	7.1	7.2	7.3
	265	59.9	60.7	62.9	63.0	59.4	62.2	62.5	63.3	7.0	7.1	7.3	7.3	6.9	7.2	7.3	7.3
Medium Cool	208	61.7	61.2	64.7	65.2	61.6	60.4	64.7	65.1	6.7	6.9	7.0	7.1	6.8	6.9	7.0	7.2
	230	63.5	63.0	65.7	66.4	63.2	63.2	65.9	66.0	6.9	7.1	7.2	7.3	7.0	7.1	7.2	7.3
	265	59.9	60.7	62.9	63.0	59.4	62.2	62.5	63.3	7.0	7.1	7.3	7.3	6.9	7.2	7.3	7.3
High Cool	208	61.8	61.1	65.2	65.6	61.7	60.4	64.6	65.1	6.7	6.9	7.1	7.2	6.8	6.9	7.0	7.2
	230	63.3	62.9	66.0	66.4	63.5	63.0	66.0	65.8	6.9	7.1	7.2	7.3	7.0	7.1	7.2	7.3
	265	59.9	60.7	62.9	63.0	59.4	62.2	62.5	63.3	7.0	7.1	7.3	7.3	6.9	7.2	7.3	7.3
Low Heat	208	62.7	62.3	68.1	66.6	-----	-----	-----	-----	6.8	7.0	7.1	7.2	-----	-----	-----	-----
	230	64.6	64.5	70.0	67.6	-----	-----	-----	-----	7.0	7.2	7.3	7.4	-----	-----	-----	-----
	265	50.6	61.7	63.2	64.0	-----	-----	-----	-----	7.1	7.2	7.3	7.4	-----	-----	-----	-----
Medium Heat	208	62.8	62.3	68.0	66.8	-----	-----	-----	-----	6.8	7.0	7.1	7.2	-----	-----	-----	-----
	230	64.9	64.5	69.5	67.6	-----	-----	-----	-----	7.0	7.2	7.3	7.4	-----	-----	-----	-----
	265	60.6	61.7	63.2	64.0	-----	-----	-----	-----	7.1	7.2	7.3	7.4	-----	-----	-----	-----
High Heat	208	62.8	62.3	68.0	66.8	-----	-----	-----	-----	6.8	7.0	7.2	7.3	-----	-----	-----	-----
	230	64.8	64.5	69.5	67.9	-----	-----	-----	-----	7.0	7.2	7.3	7.4	-----	-----	-----	-----
	265	60.6	61.7	63.2	64.0	-----	-----	-----	-----	7.1	7.2	7.3	7.4	-----	-----	-----	-----

Sound Transmission Coefficient (STC) = 23

NOTES:

1. The tables above indicate the approximate indoor and outdoor sound levels of an ETAC unit.

Tests were conducted in the Gree Sound Testing Laboratory according to AHRI (Air Conditioning, Heating and Refrigeration Institute) Noise Rating Standard 300 for non-ducted indoor air conditioning equipment.