

February 22, 2022

City of Richmond Hill
225 East Beaver Creek Road
Richmond Hill, ON L4B 3P4
Attn: Mayor and Councillors
Cc: Clerk's Office, clerks@richmondhill.ca

**Re: Comments on Proposed Changes to Noise By-law No. 43-20 and Staff Report SRCS 22.02
February 23, 2022 Council Meeting, Agenda Item 13.3**

Mr. Mayor and Councillors of the City of Richmond Hill,

My name is Brian Chapnik, and I live at 110 Arnold Crescent. I have a PhD in Mechanical Engineering and am a licensed professional engineer with over 30 years of experience in the areas of acoustics, vibration, and noise control. In addition to my work with clients from various areas of the economy, I also teach a course in Noise Analysis & Control to 4th year mechanical engineering students at McMaster University.

I previously reviewed the proposed changes to the noise by-law put forward in November 2021, and had a telephone discussion about air-conditioner noise limits with Tracey Steele who authored the staff report. Despite my recommendation to revise this section of the proposal, it appears that Ms. Steele has proceeded to put forth the same set of proposed changes for your approval. Accordingly, I am submitting this letter for your consideration and better understanding of the relevant aspects.

Air-Conditioner Noise (Section 2.8 of the Noise By-law)

In the staff report, the stated goal of changing Section 2.8 of the noise by-law addressing residential air-conditioners, pumps, and filters, as stated, is “to better account for ambient sound and improve monitoring efficiency”. These are both valid and supportable goals. However, the changes being proposed are beyond what is needed to accomplish these aims, and are inconsistent with the general methodologies and limits used to assess noise sources in Ontario.

In general, equipment or facilities that emanate noise are referred to as “stationary sources” in the associated literature. Stationary sources are also defined in the noise by-law (with an amendment to the definition being introduced in the current proposal to address what was clearly an error in the previous version). The province provides guidance on noise limits for stationary sources, and enforces those limits for facilities which are under their jurisdiction, while recommending the same limits to municipalities for the purposes of their noise by-laws. The noise limits for stationary sources vary depending on the type of environment (urban versus rural, etc.), and also according to the ambient noise level. In an urban environment such as Richmond Hill, the noise level limit for a stationary source, measured at a noise-sensitive point of reception, is the *greater* of the ambient noise level (from road traffic and other sources in the environment) and the minimum exclusionary noise limits of 50 dBA during daytime hours, and 45 dBA at night, averaged over any hour in which the noise source may operate. This method of assessment allows for noise at a higher level *equal* to the ambient noise level if justified, while still allowing for certain absolute limits to recognize that some minimum noise threshold is still acceptable in any event. On the subject of noise limits, the Ontario.ca website states,

“Noises are considered to be at an acceptable level if they are between 40 and 60 decibels, or match the ambient background noise – whichever is higher. Any sound above acceptable levels is generally considered noise pollution.”

It is interesting to note that the Richmond Hill noise-by-law also includes a noise level limit on stationary sources (Section 2.9) of 50 dBA at a residential point of reception. This is inconsistent with the provincial direction on two accounts – it does not account for *higher* noise limits in areas already affected by higher ambient noise than 50 dBA, and it does not account for a potentially *lower* noise limit at night in areas where the ambient noise is low.

Residential air-conditioners are a certain type of stationary noise source which are not regulated by the province, and are addressed in various ways in the context of municipal by-laws. The current noise-by-law (Section 2.8) reads as follows:

“No Person shall emit or cause or permit the emission of Noise resulting from a residential air conditioner, pump, filter, or similar equipment that is clearly audible at a Point of Reception in a Residential Zone that exceeds an Leq (60 minutes) of 50 dB(A).”

There is currently no exception for areas or locations where the ambient noise is higher than 50 dBA (**NB:** the staff report *states erroneously* that there is currently an ambient noise exception). However, instead of seeking to include a standard exception for ambient noise such that the noise limit might be increased to that value, the proposal seeks to allow a limit equal to the **Ambient Sound Level plus 5 dB**. This would effectively allow the noise from air-conditioners and pumps to be *clearly greater* than the existing ambient noise from traffic, allowing the acoustical environment at a noise-sensitive point of reception on a residential property to be dominated by a neighbour’s air-conditioning unit.

As a resident of Richmond Hill, I strongly believe that this is not a direction consistent with expectations of the citizens of this City, nor of the goal to protect the “social and environmental well-being of the municipality”. Protecting our neighbourhoods from excessive and unreasonable noise should be a priority, to allow residents a restful environment and the full enjoyment of their properties. The City of Markham recognizes this and has implemented a noise-by-law that limits the noise from air-conditioners and pumps to the *greater* of 50 dBA or the ambient noise level (called the Background Sound Level in their by-law). **I strongly recommend to Council to follow this lead, and to require that the proposal be amended to remove the “plus 5 dB” clause.**

With respect to the assessment time period, as noise from an air-conditioning unit or pump is generally relatively steady, a shorter measurement time period should apply and would allow for greater efficiency by staff conducting the monitoring. However, ambient noise is variable, and must be measured over a representative time window in order to establish the corresponding limit. To improve monitoring efficiency further, the following should be considered:

- When measuring noise from the air-conditioner or pump under investigation, if the instantaneous sound pressure level does not vary substantially (2 dB or less), a much shorter period can be used (5 minutes or less).
- Ambient noise is inherently time-varying, and according to the relevant guidelines, should typically be monitored for at least 20 minutes to characterize properly, with any unusually loud sounds or events occurring during that period excluded from the measurement. **Therefore, it is recommended that the proposed 15-minute assessment period be revised to a minimum of 20 minutes when measuring the Ambient Sound Level.** The same protocol can be used if the sound level measured with the air-conditioning unit or pump operating does vary significantly over the measurement period.

In summary, it is agreed that the noise by-law should include an ambient noise level exception for points of reception already impacted by ambient sound above 50 dBA, and that the measurement periods used to conduct the assessment can be substantially shortened from the existing 60 minutes. However, **the proposed limit of 5 dB above the ambient sound level should not be allowed**, and further consideration should be given to the corresponding measurement periods for optimal efficiency and accuracy.

By-law Exemptions for Delivery Noise

The current proposal also includes a blanket exemption for noise made in connection with the delivery of goods to various types of facilities, including retail business establishments, restaurants, hotels/motels and goods distribution facilities. The staff report indicates that this exemption is to harmonize the by-law with changes to the Municipal Act. However, I am not aware of any revisions to the Municipal Act which exempt noise from such activities from being audible or to limit their level. Note that occasional deliveries to restaurants and hotels/motels would generally not be considered as “stationary sources”, but regular scheduled deliveries to large retail businesses having other sources of noise and to goods distribution facilities (where deliveries often comprise the greatest source of noise) would typically be included in the assessment of stationary noise from the facility as a whole.

Further, it is common in the context of a municipal noise by-law to prohibit any audible noise from loading/unloading activities at night, on Sundays and holidays, as is currently addressed in Section 2.6 of the noise by-law, and applies to all types of businesses. A survey of noise by-laws for several surrounding municipalities (Toronto, Markham, Vaughan) indicates that there are no comparable exemptions. **I strongly recommend that the proposed blanket exemptions to the noise by-law be disallowed.** If in fact there are valid reasons for providing certain exemptions to noise impacts from specific activities or businesses, they should be clarified and the exemption suitably limited to prevent potentially significant adverse effects on residents who may be exposed to such impacts.

Thank you for the opportunity to provide these comments.

Yours very truly,
Brian Chapnik, PhD, PEng
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