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Mr L Tomlinson
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Dear Luke

Grindsmith, Bridge Street, Manchester – Post-Mitigation Noise Assessment for Planning

AEC attended Grindsmiths' premises at Bridge Street, Manchester on Thursday 30 July 2020 to inspect and assess the noise mitigation applied to the kitchen extract fan and associated ductwork, and supply plant.

MITIGATION MEASURES

The kitchen extract fan and associated ductwork, located external to the kitchen, has been encased in 50mm Muftilag (10kg/m²), as shown in Figure 1, below. An atmosphere side silencer has been fitted to the supply fan as shown in Figure 2, below. Based on observations on-site, AEC can confirm the mitigation appears to have been installed satisfactorily.

Figure 1 – Kitchen Extract Fan and Ductwork**Figure 2 – Supply**

CHANGES IN NOISE CLIMATE

The nearest noise sensitive receptors are the newly constructed apartments, approximately 3 meters away from the rear of the Grindsmiths' premises.

The pre-mitigation noise measurements were undertaken in a free-field position, in the window opening of the apartments which were under construction, approximately 3 metres from the building services plant. As the apartments are completed, post-mitigation measurements were undertaken in a façade position, 1 metre in front of the window, approximately 2 metres from the building services plant.

Another key difference in the environment between the pre and post mitigation measurements is that the construction hording provided a significant amount of screening from other noise sources in the area during the pre-mitigation measurements. During the post-mitigation measurements, the hording had been removed and significant and constant noise from the kitchen extract plant of The Bridge Tavern public house is now audible.

POST MITIGATION ASSESSMENT FINDINGS

Noise measurements were undertaken with a Class 1 integrating sound level meter (Cirrus CR:171B), which was calibrated before and after the measurements.

As mentioned earlier, it should be noted that both sets of measurements were dominated by plant from The Bridge Tavern public house. Therefore, it was not possible to measure the noise level due to plant from Grindsmiths only. In order to determine the noise level of the items of plant associated with Grindsmiths, AEC undertook ambient noise levels with and without the Grindsmiths plant operating at 'typical' duty. The measured ambient noise levels are presented in Table 1, below.

Table 1, below, presents the measured ambient noise levels with and without the plant serving Grindsmiths operating.

Table 1 – Ambient Noise Levels with and without Plant Operational

	Extract Fan & Ductwork	Supply Fan
Plant on 'typical' setting, dBL _{Aeq,T}	55	56
Plant off, dBL _{Aeq,T}	52	55

Using the noise levels presented in Table 1, the noise level emitted from the extract fan and ductwork, and the supply fan have been calculated and these are presented in Table 2, below.

The free-field ambient noise level of each item of plant is presented in Table 2 and compared with the background noise level measured on-site with the hoardings removed.

Table 2 – Assessment of Plant Noise and Comparison with Background Noise Level

	Extract Fan & Ductwork	Supply Fan
Corrected Plant on 'typical' setting, $dB_{LAeq,T}$	52	51
Façade Correction, dB	-3	-3
Resultant Level, dB_{LAeq}	49	48
Background noise level, $dB_{LA90,T}$	50	53
Exceedances, dB	-1	-5

Based on pre-mitigation free-field plant noise levels of $56dB_{LAeq,T}$, the measured post-mitigation noise levels have reduced by approximately 7 to 8dB(A). Based on the above assessment, noise levels from each item of plant does not exceed the background noise level.

AEC are satisfied that the noise mitigations measures, applied to the extract fan and associated ductwork and supply fan, have reduced noise emissions to an acceptable level, and the relevant planning condition has been complied with, subject to approval of Manchester City Council.

Regards



David Terry

Checked by: 

APPENDIX A – Acoustic Terminology in Brief

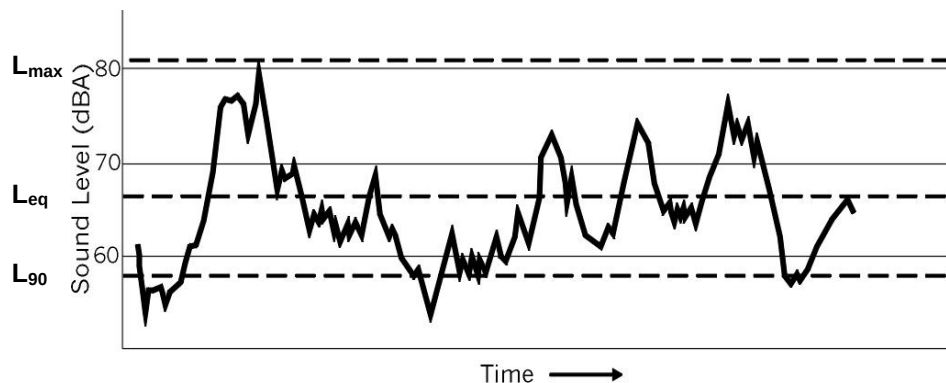
Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air. The rate at which the pressure fluctuations occur determines the pitch or *frequency* of the sound. The frequency is expressed in Hertz (*Hz*), that is, cycles per second. The human ear is sensitive to sounds from about 20 Hertz to 20,000 Hertz. Although sound can be of one discrete frequency - a 'pure tone' - most sound is made up of many different frequencies.

The human ear is more sensitive to some frequencies than others, and modern instruments can measure sound in the same subjective way. This is the basis of the A-weighted sound pressure level *dBA*, normally used to assess the effect of noise on people. The dBA weighting emphasises or reduces the importance of certain frequencies within the audible range.

Sound Units

In order to assess environmental noise, measurements are carried out by sampling over specific periods of time, such as fifteen minutes or one hour, the statistically determined results being used to quantify various aspects of the sound.

The figure below shows an example of sound level varying with time. Because of this time variation the same period of sound can be described by several different levels. The most common of these are described below. It should be noted that in many instances in the main body of text, the unit will be preceded by a dB descriptor in the report e.g. $L_{Aeq,T}$ could be written $dB L_{Aeq,T}$.



Example of Sound Level Varying With Time

$L_{Aeq,T}$	The equivalent continuous (A-weighted) sound level. It may be thought of as the "average" sound level over a given time, T. It is used for assessing noise from various sources: industrial and commercial premises, construction sites, railways and other intermittent noises and can be considered as the " ambient " noise level.
$L_{A90,T}$	The (A-weighted) sound level exceeded for 90% of a measurement period. It is the value often used to describe background noise.
L_{Amax}	The maximum (A-weighted) sound level measured during a given time. 'Fast' or 'Slow' meter response should be cited.
Free-field Level	This refers to the sound level measured outside, away from reflecting surfaces.