

Our ref: P4969/L02/NRS
Your ref: -

2 August 2023

Mr V Patel
Hungamaa
575 Barlow Moor Road
Chorlton-cum-Hardy
Manchester
M21 8AE



Dear Vipul

Hungamaa, Manchester – Noise From Kitchen Extract System

Acoustic & Engineering Consultants Ltd (AEC) has been instructed by Hungamaa to assess the noise emitted by the kitchen extract system serving the restaurant at 575 Barlow Moor Road, Chorlton, Manchester.

Post mitigation works to the kitchen extract system, AEC undertook noise measurements on 25 July 2023 and the results are presented below.

Acoustic terminology used in this report is provided in Appendix A.

1.0 Introduction

1.1 Further to AEC's initial noise assessment of the kitchen extract system P4969/L01/NRS dated 26 June 2023, it is understood that mitigation measures to the kitchen extract system has now been completed.

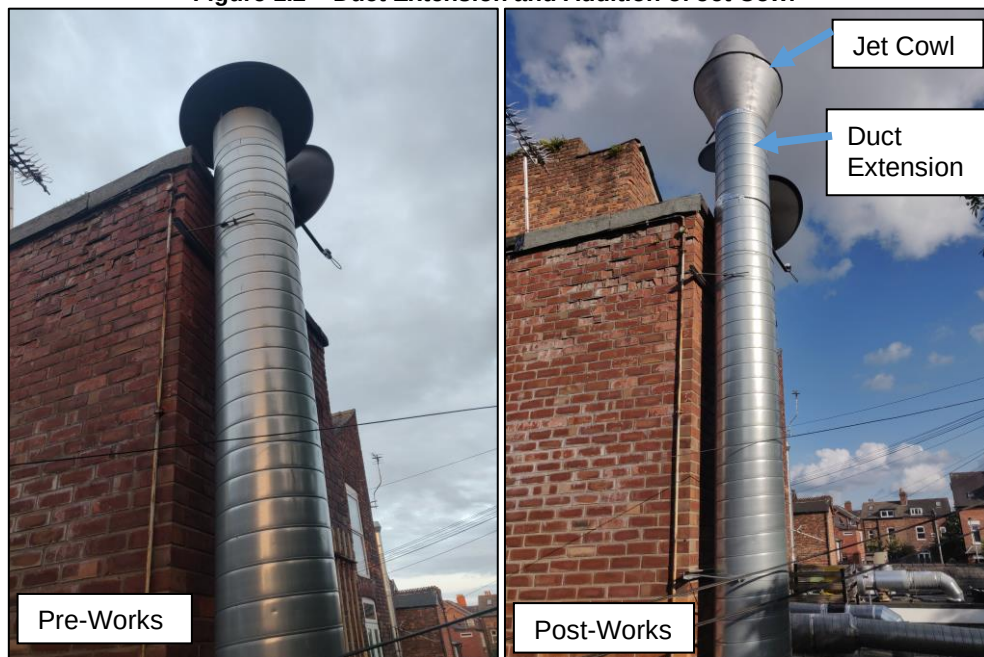
1.2 The list of works undertaken is presented, below:

- Resilient fixings to the duct has been upgraded where possible, as seen in Figure 1.1, below; and
- The extract duct had been extended (at the highest point) and the traditional cowl has been replaced with a jet cowl, as seen in Figure 1.2, below.

Figure 1.1 – Resilient Fixings to the Duct



Figure 1.2 – Duct Extension and Addition of Jet Cowl



- 1.3 Please note that the results of this assessment supplements the initial noise assessment P4969/L01/NRS.

2.0 Basis of Assessment

- 2.1 Manchester City Council (MCC) outline their requirements in relation to noise from building services plant in their document 'Planning and Noise Technical Guidance' (PNTG) – October 2022. PNTG states that:

"Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location".

- 2.2 However, it is assumed that the requirement presented in PNTG relates to new items of plant. As the plant has been operating for a number of years, noise emitted has been assessed using the methodology presented in in British Standard 4142: 2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BS4142).

- 2.3 When assessing the potential noise impacts, the lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. BS4142 states that:

- A difference of around +10dB or more is likely to be indicative of a significant adverse impact, depending on context.
- A difference of around +5dB or more is likely to be indicative of an adverse impact, depending on context.
- The lower the rating level relative to the background level, the less likely it is that the specific sound source will have an adverse impact.
- **Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context**

- 2.4 A 'rating' noise level ($dB_{L_{Ar,Tr}}$) is obtained by applying a character correction to the 'specific' noise level ($dB_{Aeq,Tr}$) of a noise source (e.g. plant noise). The correction is applied if the noise has a defined acoustic character such as being tonal, impulsive, distinctive or intermittent in nature.
- 2.5 The magnitude of the correction is dependent on the character of the noise source and its level of perceptibility at the receiver. A correction of between 0 to +6dB and 0 to +9dB can be applied if the noise source is tonal or impulsive, respectively. Where the specific sound has characteristics, which are neither tonal nor impulsive but are distinctive against the residual sound climate, a +3dB penalty can be applied. A +3dB penalty can also be applied if the specific sound is intermittent in nature.

3.0 Noise Measurements

- 3.1 Based on previous noise level measurements undertaken by AEC, it is understood that the background noise level, without the extract system operating, was typically around $43dB_{LA90,15 mins}$. This was due to plant noise from adjacent restaurants and distant road traffic.
- 3.2 A free-field noise level of around $56dB_{LAeq, T}$ was measured at 1m from the kitchen extract system post mitigation measures. This level has been used in the assessment below.
- 3.3 Please note that the operating duty of the extract fan was noted to be set at the maximum speed (10 on the dial) and this has not changed since the initial assessment.

4.0 Noise Assessment

- 4.1 The resultant noise level external to the nearest noise sensitive receptor (NNSR) has been calculated based on the measured noise level from the extract system, distance attenuation and angle of view correction.
- 4.2 Subjectively, as there is other plant noise in the area from adjacent restaurants, the noise from the extract system is perceived to not have any character that is distinct against the background sound climate. Therefore, no acoustic feature correction is considered in the assessment. The resultant rating noise level due to the extract system at the NNSR is presented in Table 4.1, below.

Table 4.1 – Plant Rating Level Calculation at 3 Silverwood Avenue (NNSR)

Reference	Overall dB(A)	Noise Level, dB at Octave Band Centre Frequencies, Hz							
		63	125	250	500	1000	2000	4000	8000
Extract System at 1m, $dB_{Leq,T}$	56	64	68	58	51	49	48	44	29
Distance Attenuation, dB (5 meters)	42	-14	-14	-14	-14	-14	-14	-14	-14
Additional Screening / Angle of View, dB (-3)	39	-3	-3	-3	-3	-3	-3	-3	-3
Rating Noise Level, $dB_{L_{Ar,Tr}}$	39	47	51	41	34	32	31	27	12

- 4.3 Based on the extract system rating levels above, a daytime BS4142 assessment in undertaken external to the NNSR in Tables 4.2, below.

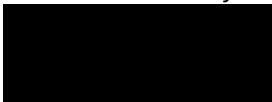
Table 4.2 – Daytime BS4142 Assessment – 3 Silverwood Avenue (NNSR)

Description	Daytime BS4142 Assessment
Rating noise level at NNSR	39dBL _{Ar,Tr}
Background	43dBL _{A90}
Excess of rating over background	-4
Significance of impact based on BS4142	'low impact' due to noise from the extract system – depending on context.

- 4.4 As seen in Table 4.2 above, the assessment external to the NNSR indicates a low impact from the extract system.
- 4.5 Please note that the rating level from the extract system was 49dBL_{Ar,Tr} external to the NNSR and 6dB over the measured background noise level pre-works, as indicated in P4969/L01/NRS.
- 4.6 Considering there is a significant decrease of 10dB in the rating level (39dBL_{Ar,Tr}) external to the NNSR and that the rating level is 4dB below the measured background noise level post-works, this should be acceptable.

I trust the above is clear and of assistance.

Yours sincerely



Naveen Simha

APPENDIX A – Acoustic Terminology in Brief

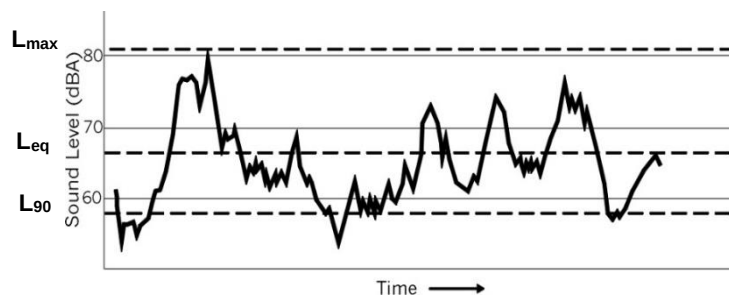
General

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 noise 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 emphasizes or reduces the importance of certain frequencies within the audible range

Sound / Noise Units

The figure below shows an example of sound level varying with time. Because of this variation over time the same period of noise can be described by several different levels. The most common of these are described below.



Commonly Used Descriptors for Sound / Noise

$L_{Amax,F/S}$	The maximum (A-weighted) sound level measured during a given time. 'Fast' or 'Slow' meter response should be cited.
$L_{Aeq,T}$	The equivalent continuous (A-weighted) sound level. It may be thought of as the "average" sound level over a given time, <i>T</i> . It is used for assessing noise from various sources: industrial and commercial premises, construction sites, railways and other intermittent noises. It 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 the "background" noise.
Ambient Sound Level, $L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, <i>T</i> .
Background Sound Level, L_{A90}	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, <i>T</i> , measured using time weighting, <i>F</i> , and quoted to the nearest whole number of decibels.
Rating Level, $L_{Ar,Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound
Residual Sound, $L_{Aeq,T}$	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.
Specific Sound Level, $L_{Aeq,Tr}$	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, <i>r</i> .