

MEMO P22-176-M01v1

Project	Players 226-230 Wilmslow Road, Fallowfield
Date	17 May 2022
To	Mian Malik – KNM Foods Ltd
From	David Thurstan BSc MIOA, Senior Consultant
Subject	Assessment of Kitchen Extract Noise

This memo sets out the findings and recommendations of an assessment of noise from the kitchen extract ventilation equipment associated with the restaurant/take-away premises.

This assessment forms part of an application to discharge Condition 5 of the planning permission for application ref: 130271/FO/2021. Condition 5 states:

'5) a) 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 (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Prior to the installation of the equipment the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site.

b) Post installation a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.'

At the time of writing the premises are currently being fitted out and the kitchen extract has been installed on site. The kitchen extract fan and duct termination are located to the rear of the premises. The premises will trade until 22:30 hours seven days a week. The extract equipment will not operate later than 22:30 hours. The nearest dwelling to the equipment is 3 Cawdor Road which is approximately 6 metres away.

BS4142: 2014 +A1: 2019

Noise from the kitchen extract equipment has been assessed by reference to the rating methodology of BS 4142: 2014 +A1: 2019 "Methods for rating and assessing industrial and commercial sound". A BS 4142 assessment requires the sound from a specific source (in $L_{Aeq,T}$) to be compared with the existing background sound level ($L_{A90,T}$) outside residential locations. The standard also puts weight on the importance on the context in which the sound will occur.

A 'character correction' is added to the 'specific' sound level *"where certain acoustic features can increase the significance of impact"* at the residential locations to obtain the 'rating' level. Cumulative penalties ranging from 2 – 9 dB are added where the sound sources are considered tonal (up to 6 dB); impulsive (up to 9 dB); intermittent (3 dB) or 'otherwise are readily distinctive against the residual acoustic environment' (3 dB).

BS 4142 states that if the rating level exceeds the $L_{A90,T}$ background sound level by around 10 dB or more it 'is likely to be an indication of significant adverse impact'. An excess of around 5 dB over the background sound level is 'likely to be an indication of an adverse impact'.

The lower the rating level is relative to the measured background sound level, the less likely it *"will have an adverse impact or a significant 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'.

BS 4142 also states in respect of background sound levels that *"it is important to ensure that values are reliable and suitably represent the particular circumstances and periods of interest... the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods"*.

Background Noise Survey

The assessment of potential noise impact associated with the kitchen extract has been carried out for an evening period towards the end of trading when the background sound levels can be expected to be at their lowest during the proposed hours, and therefore potential noise impact would be at its highest.

The background noise survey was carried out between approximately 21:30 and 22:30 hours on Wednesday 11 May 2022 with the kitchen ventilation equipment switched off. The measurement location is indicated in the enclosed Figure 1 and is considered representative of the noise climate to the rear of the nearest dwelling on Cawdor Road.

The noise measurements were carried out using a Bruel & Kjaer 2260 'Type 1' Sound Level Meter (serial no. 02467016). Calibration checks were carried out both before and after the measurement periods with no variance in levels noted. The noise measurements were taken in 'free-field' conditions and at a microphone height of approximately 1.4 metres above the ground.

Weather conditions during the survey were dry, mild (10°C) with clear skies and an occasional light south-westerly breeze (<3m/s).

The results of the noise survey are summarised in Table 1.

Table 1: Summary of measured noise levels (dB)

Location	$L_{Aeq,15mins}$	$L_{A90,15mins}$
Rear of Dwellings on Beehive Road	52 – 53	51 – 52

Fallowfield is a busy, vibrant area with many pubs, bars, restaurants and take-aways. Despite, the measurement location being to the rear of the building away from Wilmslow Road the noise climate was moderate, some fixed plant associated with adjacent take-aways was operating it was noted that other items including kitchen extract units were not operating. Therefore, in terms of assessing noise impact, it is considered that the measured noise levels represent a worst case situation of the background sound level.

Condition 5 of the planning consent requires the noise rating level from external equipment to be controlled to 5 dB below the ‘typical’ background noise level. In order to establish a robust ‘typical’ noise background level, we have calculated the mode from the $L_{A90,15mins}$ values measured for the last hour of proposed operation of the equipment. This results in a ‘typical’ background noise level of 51 dB $L_{A90,T}$.

Assessment of Noise Impact

Some separate noise measurements with the kitchen extract equipment operating were carried out during the same evening visit. The equipment was switched on for the purpose of the noise measurements. The specific sound level has been determined from the ambient sound level measured with the equipment operating and corrected by subtraction of the residual sound level and any reflections. The specific sound level from the equipment operating was found to be 53 dB $L_{Aeq,T}$ at 1 metre.

Considering the existing noise climate includes some background noise from fixed plant associated with other premises, the noise associated with the kitchen extract is not distinct and therefore no acoustic penalty has been applied to the specific sound level.

The calculation of the resulting noise level outside the nearest dwelling is shown in Table 2 below. The likely resulting plant noise level outside the most exposed first-floor window of the dwelling has been calculated, with appropriate allowances for distance attenuation only.

Table 2: BS 4142 Plant Noise Assessment (dB)

Description	To rear of 3 Cawtor Road
Calculated Specific Sound Level outside dwelling	46
Acoustic Character Correction	+0
Rating Level (L_{Ar}) outside dwelling	46
Background Sound Level	51
Difference	-5
Likely Impact	No adverse impact

The results in Table 2 show that the noise rating level from the kitchen extract equipment is 5 dB below the representative background sound level outside the nearest dwelling. Therefore, the noise from the equipment will meet the requirements of planning condition 5. Furthermore, in terms of BS 4142:2014, this indicates that no adverse impact is likely.

We therefore conclude that noise from the equipment would not result in any unacceptable impact on residential amenity and will meet the requirements of Condition 5 (i.e. both parts a and b) without any specific noise mitigation measures.



Key:

Not to scale



- Noise Measurement
Position



- Building Location



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Title: Figure 1: Site Location &
Noise Measurement
Position

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