

MEMO P21-355-M02v1

Project: Youles Motorcycles, Manchester

Date: 9 November 2021

To: Philip Youles – Youles Motorcycles

From: David Thurstan, Senior Consultant MIOA

Subject: Exhaust Extract Plant Noise Assessment

This memo sets out the findings and recommendations of our assessment of noise from the proposed extract equipment associated with the new showroom and workshop. The equipment is required for the extraction of exhaust fumes from the workshop area. The Environmental Health Department are concerned the potential noise impact from the extract equipment and require an assessment.

The nearest dwellings to the proposed showroom and workshop are 126/128 Fairy Lane adjoining the site to east. Further to the west is Bury New Road a busy transport route into Manchester City centre.

The extract fan will be located within the building with the outlet on the western elevation of the building (i.e. away from the dwellings) approximately 25 metres from the nearest dwelling. The workshop will operate 09:00 to 18:00 hours Monday to Friday and 09:00 to 17:00 hours Saturday. It will not operate on Sundays. The extract equipment will not operate outside these hours.

BS 4142: 2014 +A1: 2019

Noise from the proposed 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 noise rating level exceeds the L_{A90} 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’.

Background Noise Survey

A background noise survey was carried out previously by Hepworth Acoustics in connection with the planning application for the development as described in our report ref P21-355-R01v2 dated August 2021. Background noise measurements were carried out on Saturday 31 July 2021.

Noise from external equipment is to be controlled to 5 dB below the 'typical' background noise level, as required by the Local Authority. For the purposes of the assessment we have adopted the value of 48 $L_{A90,T}$ as the representative Saturday morning background sound level at the nearest dwellings.

Therefore, the noise level from the external plant must be controlled so as not to exceed 43 dB $L_{Ar,1hr}$ during trading hours outside the dwellings.

Assessment of External Equipment Noise Impact

RS Workshop Equipment Ltd have confirmed that the noise output from the proposed fan would be 82 dB at 1 metre. It is understood that a 2D silencer is to be installed on the outlet side of the ductwork. The equipment will only operate during the trading hours of the workshop

The character of the noise from the new equipment is considered to be generally steady/continuous in nature when it is operating with no tonal characteristics. However, due to the potential difference in the nature of the noise compared to the existing noise climate a 3 dB acoustic character penalty has been applied in our BS 4142 assessment.

We have calculated the likely resulting specific sound level outside the nearest dwelling on Fairy Lane, considering corrections for attenuation of sound over distance and acoustic screening from the building itself. The BS 4142 assessment for the equipment is therefore as follows:

Table 1: BS 4142 Assessment (dB)

Description	126/128 Fairy Lane
Specific Sound Level (outside nearest/most exposed apartment)	30
Acoustic Character Correction	+3
Rating Level at the nearest/most exposed dwelling	33
Background Sound Level	48
Difference	-15
At least 5dB below Background Sound Level?	Yes

The results of Table 1 show that the rating level of noise from the equipment is calculated to be 15 dB below the prevailing daytime background sound level of the area.

We therefore conclude that, subject to the installation of a 2D silencer as is proposed and use of the extract equipment only during trading hours of the store/workshop, there will be no unacceptable noise impact from the operation of the extract equipment.