



Ref: P4362/R01/RDC (email attachment)

19 April 2021

To:	Nick Muir	of:	Cottonopolis
Cc:		of:	

Dear Nick

Cottonopolis, Manchester – Noise Impact Assessment of Kitchen External Plant

Acoustic & Engineering Consultants Limited (AEC) has been appointed by Nick Muir to undertake a noise impact assessment of the proposed kitchen external plant to be installed at Cottonopolis, Newton Street, Manchester.

Due to the Government enforced restrictions as a result of the Covid-19 pandemic, it has not been possible to undertake representative baseline noise levels on-site. Therefore, this report presents the determined noise levels in the area, the proposed plant is to be installed and provide an assessment of the potential impact of the noise source considering relevant guidance and the Local Authority requirements.

It is understood that following submission of the planning application, two planning conditions relating to noise have been placed on the scheme and these are reproduced below:

“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 commencement of the use hereby approved 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) Prior to occupation of the development 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.”

Introduction

Cottonopolis is a Japanese inspired restaurant and bar located within Manchester's Northern Quarter district. The location of the development is identified in Figure 1 and acoustic terminology is presented in brief in Appendix A.

It is understood that Cottonopolis operates between 1100 and 0200h, Sunday to Saturday and the kitchen is open until 2200h daily. Any plant serving the development has operating times in line with the kitchen. As the plant will only operate during daytime hours, no consideration has been given to controlling noise levels to a night-time limit.

Currently, the kitchen extract exhausts via a rooftop flue and as part of this application, this would be removed and a system that extracts onto Mangle Street to the south would be installed. Mangle Street is a small through road connecting Dale Street to the east and Back Piccadilly to the west.

Following a review of the site, it is not clear whether or not the rooms overlooking the proposed plant are offices or residential apartments. Therefore, as a worst-case scenario, AEC has assumed that these are the nearest noise sensitive receptors to the proposed plant.

Existing Noise Climate

As previously stated, it has not been possible to undertake representative baseline noise level measurements within close proximity to the nearest noise sensitive receptors. Therefore, in order to understand the existing noise climate within the area, AEC has reviewed noise assessments on the Manchester City Council (MCC) planning portal.

Following a review of planning applications in the immediate vicinity of the site, a noise survey was undertaken in 2017 by Azymuth Acoustics to support the planning application 115529/FO/2017. The location of the survey is identified on the attached Figure 1 and its location is considered representative for the nearest noise sensitive receptors in this assessment.

Based on the noise measurements undertaken for planning application 115529/FO/2017, free-field daytime background noise levels were around 62dBL_{A90,T} during the daytime period. The background noise levels were affected by pedestrians, road traffic and distant external plant.

Proposed Plant Location and Unit

Details of the proposed plant locations are provided in Appendix B, Images B1 and B2. Please note that the 'Supply Air Grill' is already operational and to provide a worst-case scenario, has been excluded from this assessment.

It is understood that a JM Aerofoil fan (Model: Kitchen Extract 4pole Option 3ph) manufactured by Northern Fan Supplies Ltd will be installed at the development.

Based on manufacturer tested data, the sound power level (at the outlet) of a single unit operating at its typical rate is 89dB.

Basis of Assessment

Based on the planning conditions stated above, noise from the kitchen extract plant should be controlled such that the rating noise level is 5dB below the background noise level at the nearest noise sensitive receptor.

The term 'rating level' is defined in BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BS4142) paragraph 9.1, which states:

"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level. This can be approached in three ways:

- a) Subjective method;*
- b) Objective method for tonality;*
- c) Reference method."*

Based on the previously measured noise level in the area, and the requirements of MCC, the rating noise level due to the proposed plant should not exceed 57dBL_{Ar,Tr}.

Assessment

Calculations based on the provided octave band centre frequency sound power levels for the kitchen extract fan indicate that the ambient noise level external to the nearest noise sensitive receptor would be around 69dB_{L_{Aeq,T}}. A comparison between this level and the noise level limit indicates that mitigation measures are required.

In order to control noise levels from the kitchen extract plant to meet MCC's requirements, a silencer with the insertion losses presented in Table 1, below, would be required. Due to the operational nature of the plant and attenuation provided by the silencer, it is not expected that the plant would have an acoustic character.

Table 1 – Silencer Attenuation

Noise Level @ Octave Band Centre Frequency							
63	125	250	500	1k	2k	4k	8k
-8	-11	-16	-24	-23	-22	-21	-17

Based on this, the calculated rating noise level would be 1dB below the proposed noise level limit, and would, therefore, be an indication that the specific sound source would have a low adverse impact on nearby receptors. As such, this would be in line with the requirements of MCC and that would confirm that noise should not be a limiting factor in granting any planning permission.

I trust the above is clear and of assistance at this stage, however, if you have any queries, please give me a call.

Yours sincerely



Ross Chamberlain

Checked by: PJK

FIGURE 1 – Existing Site Showing Monitoring Locations



APPENDIX A – Acoustic Terminology in Brief

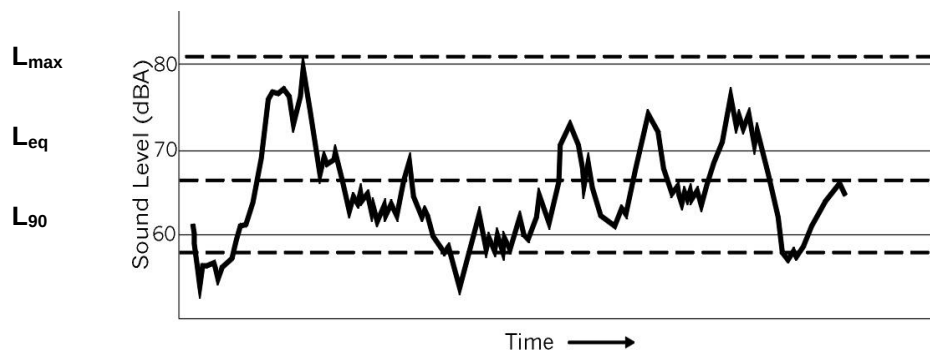
Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air. The rate at which the pressure fluctuations occur determines the pitch or *frequency* of the sound. The frequency is expressed in Hertz (*Hz*), that is, cycles per second. The human 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 $dBL_{Aeq,T}$.



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, <i>T</i> . 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.
Free-field Level	This refers to the sound level measured outside, away from reflecting surfaces.
Façade Level	This refers to the sound level measured outside, at 1m from a hard reflecting surface, typically 3dB greater than the free-field level.
Background Sound Level	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	Specific sound level plus any adjustment for the characteristic features of the sound.

APPENDIX B – Proposed Plant Layout

Image B1

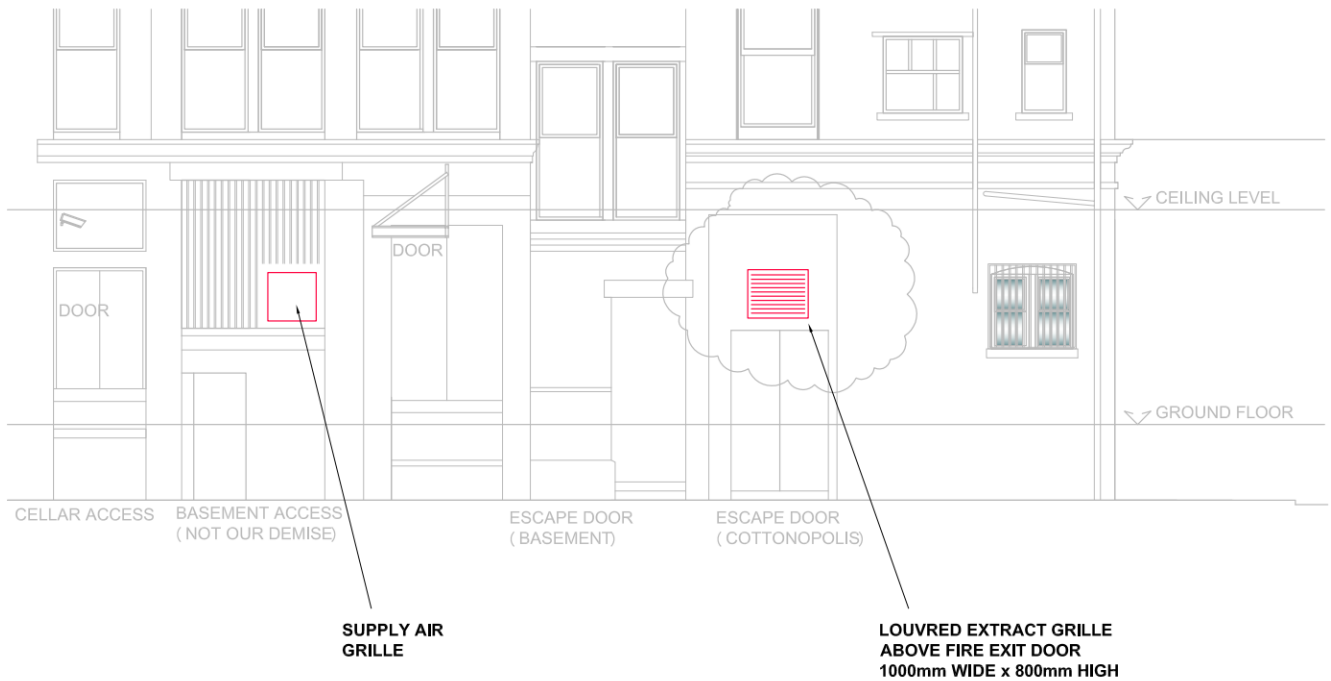


Image B

