

VALIDATION TESTING TECHNICAL LETTER

Our Ref: 6517MM



To: Mr. Mobeen Mohsin of Brgr Hub Ltd.

From: Mr. Michael Caley, MSc, MIOA
Acoustic Consultant
NOVA Acoustics Ltd.

Date: 05/10/2021

Subject: Validation Testing for a Hot Food Takeaway Development

Site Address: 315 Wilmslow Road, Manchester, M14 6NW

Brief:

NOVA Acoustics Ltd has been commissioned to measure and assess the noise emissions from the takeaway development at 315 Wilmslow Road, Manchester, M14 6NW. The conditions imposed by Manchester City Council for the approved planning application (127897/FO/2020 – 'Change of use from betting shop to hot food takeaway including installation of flue to rear and shop front') are as follows:

"4.) The premises shall be acoustically insulated and treated to limit the breakout of noise in accordance with a noise study of the premises and a scheme of acoustic treatment that has been submitted to and approved in writing by the City Council as local planning authority.

Upon completion of the development a verification report will be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that acceptable criteria has 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."

"5.) 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 5 dB LAeq below the typical background LA90 level at the nearest noise sensitive location.

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 level of noise emanating from the site. The approved scheme shall be completed before the premises is occupied.

Upon completion of the development a verification report will be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that acceptable criteria has 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."

The aim of this technical letter is to assess whether the development complies with the conditions shown above.

Extraction System Noise Assessment:

Extraction System Specific Noise Level

Measurements were taken at the rear of the development with the extraction system on and off. It was not possible to take measurements at the closest residential window due to access issues, and as such, measurements were instead taken at a surrogate location. The measurement location is shown in Figure 1.0 below.



Figure 1.0 – Measurement Location

As can be seen, this location was approximately 1m closer to the main sources of noise and had no acoustic shielding from the extraction system elements. For this reason, a conservative -3dB correction will be applied to the measured specific noise level. This is thought to be the minimum correction that should be applied.

The on-site measurements can be seen in the table below.

Description	L _{Aeq,t} (dB)
Extraction System On	52.0
Extraction System Off	51.0
Extraction System Specific Noise Level	45.0
Conservative Distance and Shielding Correction	-3.0
Specific Noise Level at Most Affected NSR Window	42.0

Table 1.0 – Measured Noise Levels

BS4142:2014 Rating Penalty

The rating penalty that will be applied to the specific noise measurement is explained below.

Tonality -

The subjective opinion of the engineer on site was that the noise emissions from the extraction system were just audible in the acoustic environment. An objective tonal assessment (as specified in BS4142:2014) shows that the noise emissions are slightly tonal at 200Hz, which was corroborated by the subjective impression of the engineer. As such, a +2 dB penalty will be applied to account for "Just Perceptible" tonality.

Intermittency -

The extraction system is expected to run for the full operational periods of the takeaway. As such, there will be no definable on/off conditions and no penalty will be applied.

Impulsivity -

During the site visit, the engineer noted that there was no impulsive component to the noise emissions. This is typical of modern extraction systems.

Other -

No other acoustic components that could be viewed to cause increased annoyance were audible against the residual acoustic environment.

Background Noise Level

Background noise levels were measured by NOVA Acoustics between 11/03/21 and 15/03/21 (report ref: 5766MM). As requested by David Morris of Manchester City Council, the typical background noise level will be calculated using the method shown in Appendix A of Manchester City Council's 'Planning and Noise Technical Guidance' document. For this method, the arithmetic average of each 15-minute measurement period is calculated and the lowest average is considered to be the typical background noise level. This is shown in the table below, further details are shown in Appendix A.

Description	L _{A90} (dBA)
Arithmetic Average of Dataset	47.0
Minimum Average of Dataset	46.0
Minimum of Dataset	43.0
Maximum of Dataset	56.0

Table 2.0 – Background Noise Level

As can be seen in the table above, the background noise level which will be used for the validation assessment is 46 dB.

Results

The BS4142:2014 rating noise level of the extraction system is compared with the calculated background sound level in the table below.

Description	L _p (dBA)
Extraction System Specific Noise Level	42.0
BS4142:2014 Rating Penalty	+2.0
Extraction System Rating Noise Level	44.0
Background Noise Level (L _{A90})	46.0
Exceedance of Background Noise Level	-2.0

Table 3.0 – BS4142:2014 Assessment

Discussion

As can be seen in the assessment above, the rating noise level of the extraction system is 2 dB below the background sound level. This is classed as 'Low Impact' when assessed with BS4142:2014 and 'No Observed Effect Level' (NOEL) when assessed with the NPPF and NPSE. This is marginally above the Local Authority criteria; however, it is thought the following mitigating factors should be considered:

- The measurement position is located directly adjacent to the façade of the building. No façade correction has been applied; however, this is likely to have increased the measured noise levels by approximately 1 dB to 3 dB.
- A correction has been applied to account for the attenuation caused by acoustic shielding and the distance between the system elements and the windows of the NSRs (-3 dB). This is thought to be highly conservative, and in reality, the noise levels at the windows are likely to be significantly lower.

As such, it is thought that it is probable that the measured noise levels are compliant with the Local Authority criteria. Further to this, it should be noted that 'Low Impact' has been achieved when considering the BS4142:2014 criteria.

Breakout Noise Assessment:

It was specified in the acoustic report for the development (ref: 5766MM) that a minimum of 12mm single glazing should be installed at the development to limit noise breakout to a maximum of 4 dB below the background sound level in all octave band frequencies from 63 Hz to 4 kHz. Due to high residual sound levels in the area, this cannot be verified by acoustic measurement. As such, the engineer on site instead measured the thickness of the glazing (where possible) and found this to be a minimum of 12mm, as specified. Subjectively, noise breaking out from inside the takeaway was not audible externally at the building façade. Further to this, the client has stipulated that background music will not be played within the development, which means internal noise levels are expected to be significantly lower than previously assumed. Considering these factors, it is thought that low impact has been achieved and that Condition 4 should be discharged.

Appendix A – Background Noise Survey

Time Period	11/03/21 – LA90 (dBA)	12/03/21 – LA90 (dB)	13/03/21 – LA90 (dB)	14/03/21 – LA90 (dB)	Arithmetic Average (dBA)
11:00 – 11:15	--	46.0	46.0	45.0	46.0
11:15 – 11:30	--	45.0	46.0	46.0	46.0
11:30 – 11:45	--	46.0	47.0	44.0	46.0
11:45 – 12:00	--	49.0	45.0	45.0	46.0
12:00 – 12:15	--	49.0	46.0	44.0	46.0
12:15 – 12:30	--	47.0	46.0	45.0	46.0
12:30 – 12:45	--	48.0	47.0	45.0	47.0
12:45 – 13:00	--	48.0	47.0	45.0	47.0
13:00 – 13:15	--	48.0	47.0	46.0	47.0
13:15 – 13:30	--	48.0	48.0	46.0	47.0
13:30 – 13:45	--	47.0	47.0	50.0	48.0
13:45 – 14:00	--	47.0	47.0	56.0	50.0
14:00 – 14:15	52.0	46.0	47.0	50.0	49.0
14:15 – 14:30	51.0	47.0	46.0	50.0	49.0
14:30 – 14:45	49.0	46.0	46.0	50.0	48.0
14:45 – 15:00	51.0	47.0	46.0	51.0	49.0
15:00 – 15:15	49.0	46.0	46.0	52.0	48.0
15:15 – 15:30	49.0	46.0	46.0	53.0	49.0
15:30 – 15:45	49.0	49.0	46.0	52.0	49.0
15:45 – 16:00	49.0	47.0	46.0	50.0	48.0
16:00 – 16:15	48.0	48.0	46.0	51.0	48.0
16:15 – 16:30	49.0	47.0	47.0	50.0	48.0
16:30 – 16:45	48.0	48.0	47.0	48.0	48.0
16:45 – 17:00	47.0	47.0	47.0	48.0	47.0
17:00 – 17:15	47.0	47.0	47.0	48.0	47.0
17:15 – 17:30	47.0	47.0	47.0	47.0	47.0
17:30 – 17:45	46.0	47.0	45.0	46.0	46.0

17:45 – 18:00	47.0	46.0	46.0	46.0	46.0
18:00 – 18:15	49.0	47.0	46.0	46.0	47.0
18:15 – 18:30	49.0	48.0	48.0	46.0	48.0
18:30 – 18:45	49.0	49.0	49.0	46.0	48.0
18:45 – 19:00	49.0	49.0	48.0	46.0	48.0
19:00 – 19:15	49.0	49.0	48.0	46.0	48.0
19:15 – 19:30	48.0	49.0	48.0	46.0	48.0
19:30 – 19:45	49.0	49.0	48.0	46.0	48.0
19:45 – 20:00	49.0	49.0	49.0	46.0	48.0
20:00 – 20:15	49.0	50.0	49.0	46.0	49.0
20:15 – 20:30	49.0	51.0	49.0	46.0	49.0
20:30 – 20:45	48.0	49.0	49.0	45.0	48.0
20:45 – 21:00	47.0	50.0	49.0	46.0	48.0
21:00 – 21:15	48.0	50.0	49.0	45.0	48.0
21:15 – 21:30	49.0	50.0	49.0	45.0	48.0
21:30 – 21:45	49.0	52.0	49.0	45.0	49.0
21:45 – 22:00	48.0	52.0	48.0	45.0	48.0
22:00 – 22:15	49.0	50.0	48.0	44.0	48.0
22:15 – 22:30	48.0	49.0	48.0	44.0	47.0
22:30 – 22:45	48.0	49.0	48.0	44.0	47.0
22:45 – 23:00	48.0	48.0	48.0	43.0	47.0
23:00 – 23:15	48.0	49.0	47.0	--	48.0
23:15 – 23:30	47.0	46.0	47.0	--	47.0
23:30 – 23:45	48.0	48.0	47.0	--	48.0
23:45 – 00:00	48.0	51.0	43.0	--	47.0
00:00 – 00:15	44.0	49.0	44.0	--	46.0
00:15 – 00:30	46.0	53.0	43.0	--	47.0
00:30 – 00:45	46.0	49.0	43.0	--	46.0
00:45 – 01:00	46.0	48.0	43.0	--	46.0