

Tom Jackson
Applejack's
83, Berry Lane,
Longridge,
Preston
PR3 3WH

10th January 2020

Dear Tom,

Ref: Noise insulation assessment for the proposed change of use of a flat premises at 83, Berry Lane, Longridge

Further to my visit to you on site on Friday 10th January, I am pleased to provide an assessment of the current situation. Thank you for the information regarding this site and about the requirement for a Noise Insulation Assessment. As I understand it, you are intending to change the use of the existing separate flat above the Applejack's micro pub into a meeting/function room. The intended hours of operation will be in line with the current licence for Applejack's. There is an existing flat above the adjacent "Hair Envy" hairdressing premises at 85, Berry Lane and it is considered by the Local Authority that the level of noise created by the new development could be detrimental to any future resident. You have indicated that you intend to improve the amount of noise insulation in the party wall where relevant. Hence, it is important to be aware of the current level of noise protection in order to determine how much extra noise insulation will be needed.

Technical Background:

The Building Regulations 2000 Approved Document E - Resistance to the passage of sound is the relevant standard. In this document there are levels of noise insulation stated that should give adequate protection between dwellings in a domestic situation. The parameter DnTw + Ctr is used for domestic properties. For the case of a commercial to domestic situation, the Approved Document has no guidance except to state that, "expert guidance should be sought". This is because the nature of the commercial enterprise could be different and therefore the noise creation possibilities would be different. The required level of noise insulation to achieve an acceptable environment for residents would therefore also vary.

The target for acceptable noise levels in the daytime (before 11pm) in living rooms is often taken as 35dB(A). However, BS8233 suggests that for "good" conditions a level of 30dB(A) is better. This could also be seen to be a better target for the evening. Therefore, a level of 30dB(A) will be used in this assessment as the specification target. The DnTw + Ctr parameter is not used in BS8233. Only DnTw is referred to.

A standard Airborne noise test was carried out according to the protocol of BS EN ISO 140 between the existing flat above Applejack's at No:83 Berry Lane and the flat above No:85 Berry Lane. The results, copied directly from the Bruel & Kjaer Building Acoustics program

BZ7204, are shown below.

Measured Results:

Job: Airborne - Applejacks Berry Lane

Date of measurement: 10/01/2020

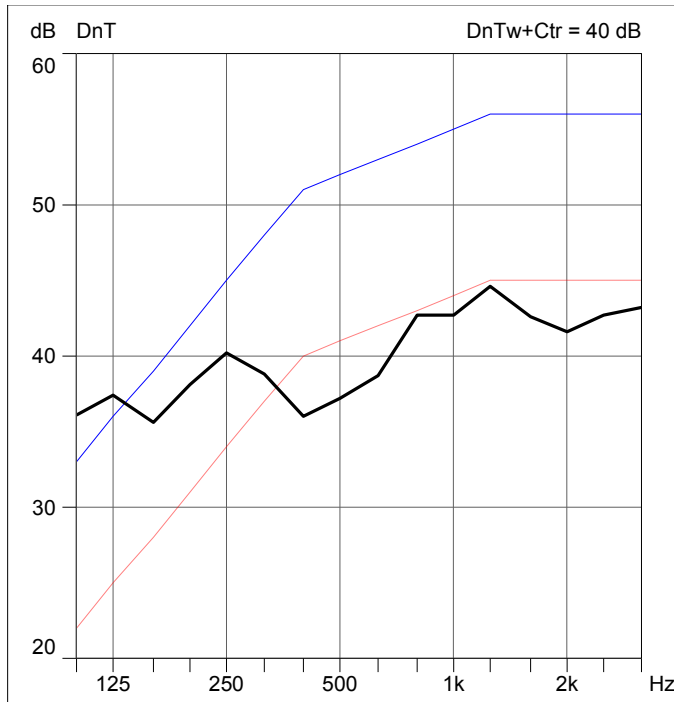
Airborne sound insulation

Calculations according to: BREW

Partition: A 'Flat at 83 to Flat at 85'

Wall:

Overall Result(s): DnTw = 41 dB DnTw+C = 41 dB DnTw+Ctr = 40 dB



Part. A 'Flat at 83 to Flat at 85' Results

Part. A 'Flat at 83 to Flat at 85' Results:

[Hz]	L1A[dB]	L2A[dB]	B2A[dB]	T2A[s]	DnT[dB]
100	87.9	48.9	36.3	0.26	36.1
125	93.2	53.8	30.9	0.31	37.4
160	91.4	53.2	33.2	0.27	35.6
200	93.5	52.2	31.7	0.24	38.1
250	96.0	53.3	23.8	0.28	40.2
315	93.6	52.4	21.8	0.29	38.8
400	88.2	49.6	22.7	0.28	36.0
500	87.5	47.9	20.8	0.29	37.2
630	85.3	44.3	20.4	0.30	38.7
800	88.2	43.1	24.9	0.29	42.7
1 k	90.0	44.3	25.3	0.25	42.7
1.25 k	92.8	45.5	27.4	0.27	44.6
1.6 k	89.2	44.3	22.9	0.29	42.6
2 k	86.1	42.6	20.3	0.32	41.6
2.5 k	86.4	41.0	19.3	0.27	42.7
3.15 k	86.2	40.6	21.4	0.29	43.2

Noise Insulation Assessment:

The overall average apparent insulation level is currently **41dB DnTw**. This is quite a poor result but is typical of the construction. Building Bulletin 93: Appendix 4 suggests that a **double** solid brick construction with dense plaster both sides would have a sound reduction of 51dB. The existing wall is understood to be single brick with plaster on the side in No:83 and dot-and-dab plasterboard on the side in No:85.

Since a halving of mass is roughly equivalent to a difference of 6dB in sound reduction and the degree of plaster finish is also not significant, the existing wall could be expected to show a performance figure around 42/43 dB. The actual measured level was 41dB

It would be anticipated that the meeting/function room noise levels would be almost entirely due to conversation between people at the function. There is no intention to have high levels of music with significant bass frequency content. There is no possibility for DJ or live music in the area. Based on previous measurement experience and a typical maximum of around 30 people, Sound Advice suggests that the average noise level is unlikely to exceed 80dB(A). This is actually the level at which people are advised to wear hearing protection in industry.

Thus, with a target noise level of 30 dB(A) in the flat at No:85, then the required insulation protection would be about **50dB**. The current value is 41dB DnTw. Thus an improvement of 9dB is required.

Recommendations:

The only party wall between the proposed meeting/function room and a room for residential purposes in the flat at No:85 is to the front of the building. The party wall to the rear of the building is with a corridor/entrance in the flat. The party wall to the front of the building has a large chimney-breast area and two alcoves. The chimney-breast area is extremely solid with several layers of old brick and will provide a very good level of noise reduction.

The real issue is with the two alcoves. These areas should have a timber (3x2) stud wall framework constructed that is fixed to floor and ceiling but not to the side walls. This framework should be stood off the party wall by at least 35mm. Rockwool (or similar) acoustic insulation slab should be placed in the void and two layers of overlapping high quality plasterboard fixed to the front face. The plasterboard should be of two different thicknesses. eg: one 12.5mm Fireline and one 15mm Soundbloc (minimum). The plasterboards should not touch the wall sides at any point. The edges should be sealed with a suitable flexible sealant.

The relevant extract from the Building Regulations 2000 Approved Document E guidance showing the recommended form of construction is shown below in Appendix 1. This is for a wall already plastered both sides. **It should be remembered that this guidance is intended to bring the sound reduction of a single brick wall up to domestic standard. The situation here requires a slightly more robust approach.**

Recommendations (continued):

If done correctly, this configuration should meet the required performance. The expected performance of the stud wall construction would be around 43dB Rw. (Ref: Building Bulletin 93: Appendix 4). However, it is not possible to simply add together the two figures of 41dB and 43dB to estimate the overall effect.

There is a “rule-of-thumb” that the overall practical sound reduction will around 2/3rds of the combined value. This suggests a figure of **56dB**. This is above the target requirement. There is therefore also some tolerance for occasional high levels. Hence, the suggestion of Fireline and Soundbloc boards. For even better performance, Versapanel boards could be used. These are much denser than normal plasterboards.

I trust that this clarifies the position and helps you to progress the work. Please call me if you think that I can assist further or if a test needs to be carried out after the work.

Regards,

John Houldsworth

John M Houldsworth. BSc. MIOA

APPENDIX 1

Wall treatment 1: Independent panel(s) with absorbent material

4.22 The resistance to airborne sound depends on the form of existing construction, the mass of independent panel(s), the isolation of the panel(s) and the absorbent material.

Construction

4.23 The independent panel may be used on one side of the existing wall only where the existing wall is masonry, and has a thickness of at least 100 mm and is plastered on both faces. With other types of existing wall the independent panels should be built on both sides.

4.24 Independent panel(s) with absorbent material (see Diagram 4-2)

- minimum mass per unit area of panel (excluding any supporting framework) 20 kg/m^2
- each panel should consist of at least 2 layers of plasterboard with staggered joints
- if the panels are free-standing they should be at least 25 mm from masonry core
- if the panels are supported on a frame there should be a gap of at least 10 mm between the frame and the face of the existing wall
- mineral wool, minimum density 10 kg/m^3 and minimum thickness 35 mm, in the cavity between the panel and the existing wall

4.25 Points to watch

Do

- Do ensure that the independent panel and its supporting frame are not in contact with the existing wall.
- Do seal the perimeter of the independent panel with tape or sealant.

Diagram 4-2: Wall treatment 1

