BENCHMARK

ACOUSTICS

70-74 BAWDLANDS, CLITHEROE

SOUND INSULATION ASSESSMENT

PREPARED FOR:
RALPH POSTLETHWAITE

REPORT REF: BA-25081-RP01

REVISION: P01

DATE: 01/09/2025

PREPARED BY:

BENCHMARK ACOUSTICS LTD

STUDIO 35, HIGHERFORD MILL

BARROWFORD, LANCS

70-74 BAWDLANDS, CLITHEROE
SOUND INSULATION ASSESSMENT

REPORT REF:	BA-25081-RP01
PROJECT:	70-74 BAWDLANDS, CLITHEROE
	SOUND INSULATION ASSESSMENT
PREPARED FOR:	RALPH POSTLETHWAITE
PREPARED BY:	ALEX TAYLOR Bsc(Hons) MIOA
	PRINCIPAL ACOUSTICS CONSULTANT
	BENCHMARK ACOUSTICS LTD
ISSUED ON:	01/09/2025

DOCUMENT REVISION HISTORY

REVISION	COMMENTS	AUTHOR	ISSUED
P01	Initial issue	AT	01/09/2025

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

Benchmark Acoustics has been appointed by Ralph Postlethwaite (*'the Client'*) to provide a desktop assessment of the sound insulation performance of the party wall construction between 76 and 70-74 Bawdlands, Clitheroe ('*the Project'*).

The sound insulation assessment has been requested by Ribble Valley Borough Council (RVBC) for the retrospective planning application for the change of use of the ground floor of 70-74 Bawdlands from hot food takeaway (sui generis) to additional living accommodation for the existing dwelling (C3).

The adjacent property at 76 Bawdlands is designated as Use Class E (Commercial, Business and Service) and currently operates as a mobile phone repair shop.

This sound insulation assessment appraises the party wall construction in relation to the performance requirements of Approved Document E of the Building Regulations 2010, '*Resistance to the passage of sound'* (ADE), and the predicted worst-case Use Class E commercial activity noise breakthrough levels in relation to the internal ambient noise limits within dwellings recommended in British Standard 8233:2014 '*Guidance on sound insulation and noise reduction for buildings'* (BS8233).

The predicted party wall sound insulation performance of $D_{nT,w} + C_{tr}$ 51 dB is an 8 dB improvement over the Building Regulations ADE party wall minimum requirement of $D_{nT,w} + C_{tr}$ 43 dB for dwelling-houses and flats formed by material change of use.

The predicted worst-case Use Class E commercial activity noise breakthrough level of $L_{Aeq,T}$ 26 dB within 70-74 Bawdlands is significantly below the BS8233 recommended internal ambient noise limit of $L_{Aeq,16hr}$ 35 dB for daytime resting in dwellings.

Based on the results of the sound insulation assessment, it is considered that noise should not be a determining factor in granting planning consent for the proposed development.

2.0 RELEVANT STANDARDS & GUIDANCE

2.1 BUILDING REGULATIONS 2010 APPROVED DOCUMENT E ' RESISTANCE TO THE PASSAGE OF SOUND '

Approved Document E of the Building Regulations 2010, '*Resistance to the passage of sound'* (ADE), sets out the minimum performance requirements for sound insulation between and within residential developments, reverberation control within common internal areas of residential developments, and for acoustic conditions within schools.

Requirement E1 relates to the protection against sound from other parts of the building and adjoining buildings, and states that '*Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that they provide reasonable resistance to sound from other parts of the same building and adjoining buildings*.'

Requirement E2 relates to protection against sound within a dwelling-house etc, and states that '*Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that:*

a) internal walls between a bedroom or a room containing a water closet, and other room; and
b) internal floors
provide reasonable resistance to sound'.

Requirement E3 relates to reverberation in the common internal parts of buildings containing flats or rooms for residential purposes and states that '*The common internal parts of buildings which contain flats or rooms for residential purposes shall be designed in such a way as to prevent more reverberation around the common parts than is reasonable'.*

2.2 BS8233:2014 'GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS '

British Standard BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings'* (BS8233) provides guidance on recommended internal ambient noise levels within dwellings. BS8233 states that it is desirable that the internal ambient noise level within dwellings does not exceed the guideline values outlined in Table 1 below.

Table 1: BS8233 desirable internal ambient noise limits for dwellings

Activity	Location	07:00 – 23:00 hrs	23:00 – 07:00 hrs
Resting	Living Room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$

BS8233 comments that where development is considered necessary or desirable *'…the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.'*

3.0 DESIGN CRITERIA

3.1 SOUND INSULATION PERFORMANCE

The party wall construction between 76 and 70-74 Bawdlands will be subject to the statutory minimum sound insulation requirements of Building Regulations ADE. The ADE in-situ sound insulation requirements for dwelling houses and flats formed by a material change of use are summarised in Table 2 below.

Table 2: ADE minimum sound insulation performance standards for separating walls

Dwelling-houses and flats formed by material change of use	Airborne sound insulation $D_{nT,w} + C_{tr}$ (dB)	Impact sound insulation $L_{n,T,w}$ dB
Party Walls	≥ 43	Not applicable

3.2 INTERNAL NOISE LEVELS

In addition to achieving the minimum ADE airborne sound insulation performance, the internal ambient noise level criteria for living rooms recommended in BS8233 and summarised in Table 3 below are considered to be appropriate for the proposed additional ground floor living accommodation within 70-74 Bawdlands.

Table 3: BS8233 desirable internal ambient noise limits for dwellings

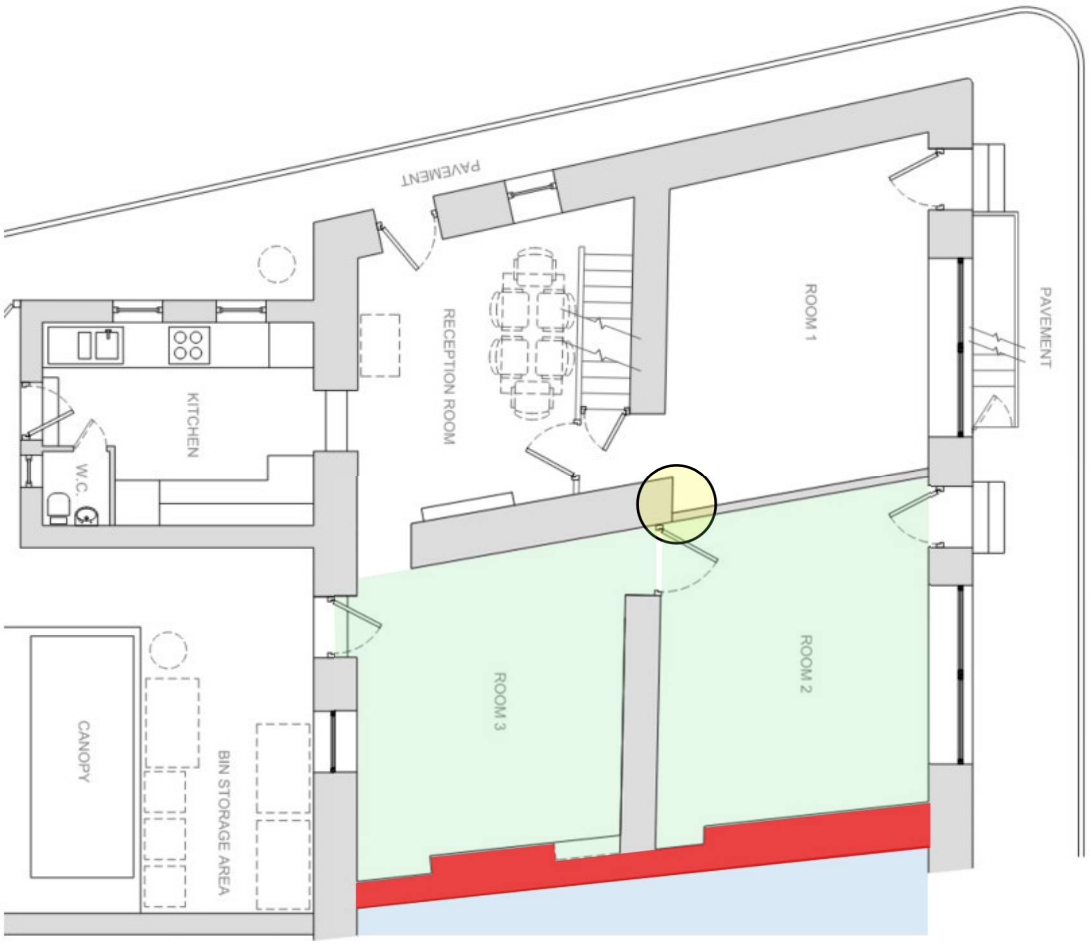
Location	Activity	07:00 – 23:00 hrs
Living Rooms	Resting	35 dB $L_{Aeq,\ 16hr}$

4.0 WALL CONSTRUCTIONS

The constructions of the party wall and associated flanking wall are discussed in the following sections. The information used to inform this desktop assessment has been provided by the Client and includes the floor plan drawing ref *'70-74 Bawdlands, Clitheroe BB7 2LA – After Mods'* dated 15/11/2022 and observations and measurements of the party wall and flanking wall dimensions.

The ground floor layout of 70-74 Bawdlands is illustrated below in Figure 1.

Figure 1: Ground floor layout of 70-74 Bawdlands (party wall to 76 Bawdlands highlighted in red, commercial Use Class E side of 76 Bawdlands highlighted in blue)



4.1 PARTY WALL CONSTRUCTION

Based on the information received from the Client, the party wall construction is understood to consist of the following build-up:

- Solid random stone wall with assumed minimum density of 1600 kg/m^3
- 640mm maximum overall thickness (approx mass per unit area 1024 kg/m^2)
- 390mm thickness in recessed alcoves (approx mass per unit area 624 kg/m^2)

- 240mm thickness at chimney wall (approx mass per unit area 384 kg/m^2)
- Plastered or dry-lined finish to internal areas

We understand that the 640mm maximum overall thickness and solid random stone construction of the party wall noted above is based on the observed construction and dimensions of the original separating wall between 70 and 74 Bawdlands which has been partially removed to form the current single property, and is assumed to be the typical party wall construction for the adjacent properties. A photo of the partially exposed section of the previously separating wall between 70 and 74 Bawdlands taken at the highlighted circled location in Figure 1 is presented below for reference.

Figure 2: Photo showing a section through the width of part-exposed previously separating wall between 70 and 74 Bawdlands

4.2 FLANKING WALL CONSTRUCTION

Based on the information received from the Client, the flanking wall constructions are understood to consist of the following build-up:

- Solid random stone wall with assumed minimum density of 1600 kg/m^3
- 640mm maximum overall thickness (approx mass per unit area 1024 kg/m^2)
- Plastered or dry-lined finish to internal areas

5.0 ASSESSMENT

5.1 SOUND INSULATION PERFORMANCE

Based on the room dimensions of the proposed additional living accommodation at 70-74 Bawdlands and the assumed party wall and flanking wall constructions outlined above, the party wall construction is calculated to achieve a minimum in-situ sound insulation performance of $D_{nT,w}$ + C_{tr} 51 dB.

Note that the in-situ sound insulation performance of the party wall has been calculated assuming that the commercial property at 76 Bawdlands is the source room and the proposed additional living accommodation at 70-74 Bawdlands are the receiver rooms.

5.2 BUILDING REGULATIONS APPROVED DOCUMENT E

The predicted party wall sound insulation performance of $D_{nT,w}$ + C_{tr} 51 dB is a +8 dB improvement over the Building Regulations ADE party wall minimum requirement of $D_{nT,w}$ + C_{tr} 43 dB for dwelling-houses and flats formed by material change of use.

5.3 INTERNAL AMBIENT NOISE LEVELS

The LPA has confirmed that adjacent building at 76 Bawdlands is designated as Use Class E (Commercial, Business and Service). Whilst 76 Bawdlands currently operates as a mobile phone repair shop, Use Class E includes the following potential uses:

Use, or part use, for all or any of the following purposes—
a) for the display or retail sale of goods, other than hot food, principally to visiting members of the public,
b) for the sale of food and drink principally to visiting members of the public where consumption of that food and drink is mostly undertaken on the premises,
c) for the provision of the following kinds of services principally to visiting members of the public—
(i) financial services,
(ii) professional services (other than health or medical services), or
(iii) any other services which it is appropriate to provide in a commercial, business or service locality,
d) for indoor sport, recreation or fitness, not involving motorised vehicles or firearms, principally to visiting members of the public,
e) for the provision of medical or health services, principally to visiting members of the public, except the use of premises attached to the residence of the consultant or practitioner,
f) for a creche, day nursery or day centre, not including a residential use, principally to visiting members of the public,
g) for—
(i) an office to carry out any operational or administrative functions,
(ii) the research and development of products or processes, or
(iii) any industrial process, being a use, which can be carried out in any residential area without detriment to the amenity of that area by reason of noise, vibration, smell, fumes, smoke, soot, ash, dust or grit.

Based on the above, a reasonable worst-case assumption is that with a change of tenancy/ownership, 76 Bawdlands could generate internal activity noise levels comparable to a busy restaurant. The following

indicative noise level spectrum for a busy restaurant equating to an internal noise level of $L_{Aeq,T}$ 80 dB, has therefore been used to inform a worst-case assessment of the potential Use Class E activity noise breakthrough from 76 to 70-74 Bawdlands.

Table 4: Assumed activity noise levels from 'busy restaurant' use

Octave Band Centre Frequency, Hz	63	125	250	500	1k	2k	4k	A
Activity noise levels for a busy restaurant, $L_{eq,T}$ (dB)*	60	70	75	75	75	75	70	**80**

* Sourced from '*The Little Red Book of Acoustics: A Practical Guide' by Richard Watson and Owen Downey*

Based on the assumed worst-case Use Class E activity noise levels and the assessed sound insulation performance of the party wall noted above, the potential noise breakthrough from the commercial activities within 76 Bawdlands is calculated to be $L_{Aeq,T}$ 26 dB within the proposed additional living accommodation at 70-74 Bawdlands.

The predicted worst-case Use Class E activity noise break-through level of $L_{Aeq,T}$ 26 dB is significantly below the BS8233 recommended internal ambient noise limit of $L_{Aeq,16hr}$ 35 dB for resting during the daytime, demonstrating that the party wall construction will provide a suitable level of sound insulation for the proposed change of use of the ground floor of 70-74 Bawdlands to additional living accommodation.

6.0 CONCLUSION

The predicted party wall sound insulation performance of $D_{nT,w}$ + C_{tr} 51 dB is an 8 dB improvement over the Building Regulation ADE party wall minimum requirement of $D_{nT,w}$ + C_{tr} 43 dB for dwelling-houses and flats formed by material change of use.

The predicted worst-case Use Class E commercial activity noise breakthrough level of $L_{Aeq,T}$ 26 dB within the proposed additional living accommodation of 70-74 Bawdlands is significantly below the BS8233 recommended internal ambient noise limit of $L_{Aeq,16hr}$ 35 dB for daytime resting in dwellings.

Based on the results of the sound insulation assessment, it is considered that noise should not be a determining factor in granting planning consent for the proposed development.