Chartered Building Consultancy

Acoustic South East

Planning Assessment – Change of Use

Report by: Scott Castle BSc (Hons) CEnvH, MCIEH MIOA

Date: 03/06/2024

Project: J3851

Issue 1

Site: **13 Station Parade, Tarring Road, Worthing**

Client: **Tony Button**

Constructionline Part of Capita plc

CQMS Safety Scheme

ANC THE ASSOCIATION OF NOISE CONSULTANTS

ATTMA

Acoustic South East is a Trading Name of Acoustic Associates Sussex Ltd, Company Registration No: 5646519

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Issue 1	03/06/2024	Original Issue

1 Introduction and Executive Summary

Acoustic South East have been appointed to undertake an acoustic assessment to support a planning application for a change of use. Specifically, the ground floor property is to change from a fabric shop to a microbrewery and a residential demise exists immediately above (13A Station Parade).

Sound Insulation Testing was carried out on 3rd June 2024 between the commercial premises and the vacant first floor residential property above. The criterion from Environmental Health for a mixed-use premises was to ensure a minimum sound insulation performance of 50dB $D_{nTw}+C_{tr}$. The three habitable rooms at first floor which were tested, each exceeded this value.

A condition is therefore not necessary to be applied to any decision notice and planning permission should not be withheld on noise grounds.

2 Context, Noise Criteria & Noise Assessment Methodology

2.1 Context

The proposal seeks a change of use from a fabric shop to a microbrewery, with the closest residential demise being immediately above the premises (13A). The application is live with Adur and Worthing Council under reference AWDM/0328/24

It is understood that Environmental Health (memo dated 4th April 2024) have suggested a condition regarding the soundproofing as follows, albeit at the time of writing the document, the application had not yet been determined.

"The use hereby permitted shall not commence unless and until an insulation scheme for protecting the upper floor residential unit from noise has been submitted to and approved by the local planning authority. The scheme shall achieve a minimum airborne sound insulation value of 50dB (DnTw + Ctr dB) for all floors. Following approval and implementation of the scheme, a test shall be undertaken. All works, which form part of the approved scheme, shall be completed before the use commences."

2.2 Site Location

The site can be seen below in Figure 1.

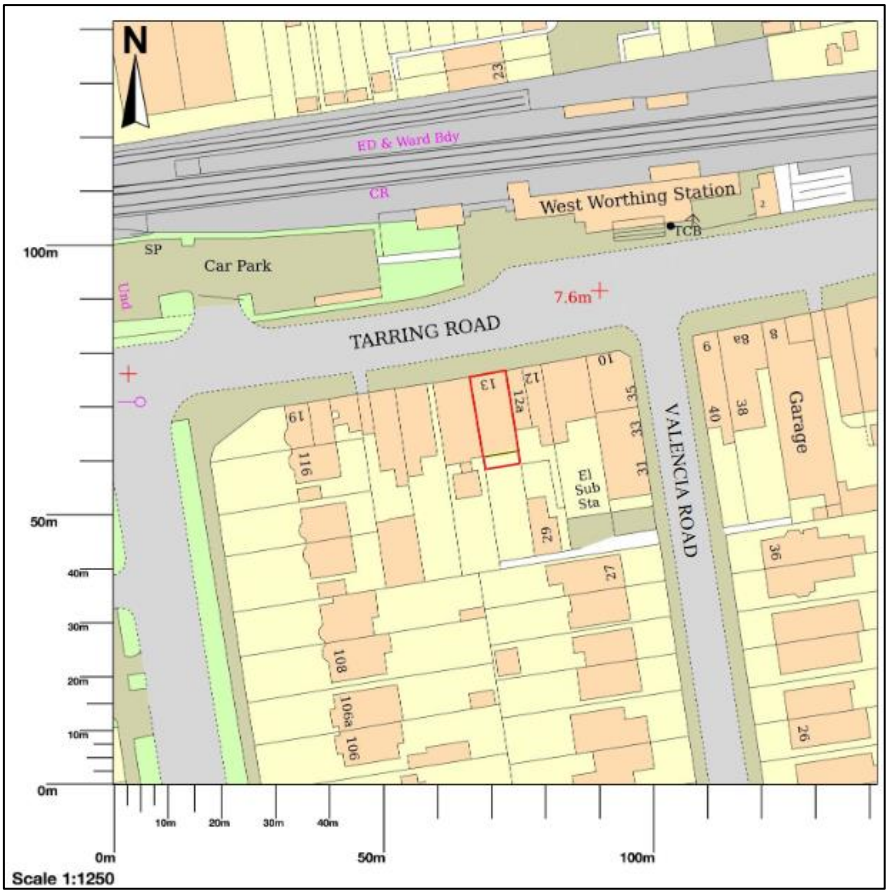


Figure 1. Site Location Plan



Figure 2. Front of Premises

2.3 Methodology

A number of vertical airborne sound insulation tests were carried out on 3rd June 2024 to identify the sound insulation performance of the separating partition. The results are included below in Section 3 with the testing graphs listed in Appendix A.

The ground floor premises were operational and the first-floor premises(13A) were in the process of being decorated.

2.4 Floor Composition

The floor build up was not understood. Whilst carpet was removed in some spaces, underlay remained and it was not appropriate to lift the materials, as the residential property was still occupied.

3 Sound Insulation Performance

Three sound insulation tests were carried out. These were vertical airborne tests to cover three residential rooms inside the first-floor property. The kitchen was not tested, as the window was not capable of being closed. Two tests were carried out at the front of the premises and a single test was carried out at the rear to understand the acoustic performance of the floor.

Results of the measurements, in terms of single-figure ratings for airborne sound insulation are provided as Weighted Standardised Level Differences $D_{nT,w}$ + Ctr as required by BS EN ISO 140-4 Acoustics.

Measurement of sound insulation in buildings and of building elements - Part 4: Field measurements of airborne sound insulation between rooms 1998.

They are also defined in ISO 717-1 Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation 1997.

Reverberation Time measurements are specifically defined in BS EN ISO 3382 Measurement of Room Acoustic Parameters - Part 2: Reverberation Time in Ordinary Rooms 2008

Test Methods and Procedures are also detailed within the ANC Practice Guidance for sound insulation testing in dwellings v1.1 2018

All results criteria are set out in Approved Document E 2003 (as amended 2015) of The Building Regulations 2010*: Resistance to the passage of sound*

3.1 Test 1 – Front of Space (Ground Floor) to Bedroom 1(RHS)

The test data indicated a $D_{nTw}+C_{tr}$ of 55dB.

3.2 Test 2 – front of Space (Ground Floor) to Bedroom 2 (LHS)

The test data indicated a $D_{nTw}+C_{tr}$ of 56dB.

3.3 Test 3 – Rear of Space to Rear Bedroom

The test data indicated a $D_{nTw}+C_{tr}$ of 54dB.

3.4 Summary of Testing

The sound insulation testing of the three first floor habitable spaces indicates that the performance of the separating partition achieves in excess of the requirements suggested by Environmental Health of $D_{nTw}+C_{tr}$ or 50dB for a mixed commercial/residential tenure.

4 Conclusion

Sound Insulation Testing was carried out on 3rd June 2024 between the commercial premises and the vacant first floor residential property above. The criterion from Environmental Health for a mixed-use premises was to ensure a minimum sound insulation performance of 50dB $D_{nTw}+C_{tr}$. The three habitable rooms at first floor which were tested, each exceeded this value.

A condition is therefore not necessary to be applied to any decision notice and planning permission should not be withheld on noise grounds.

5 Appendix A

5.1 Test 1

Standardized level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

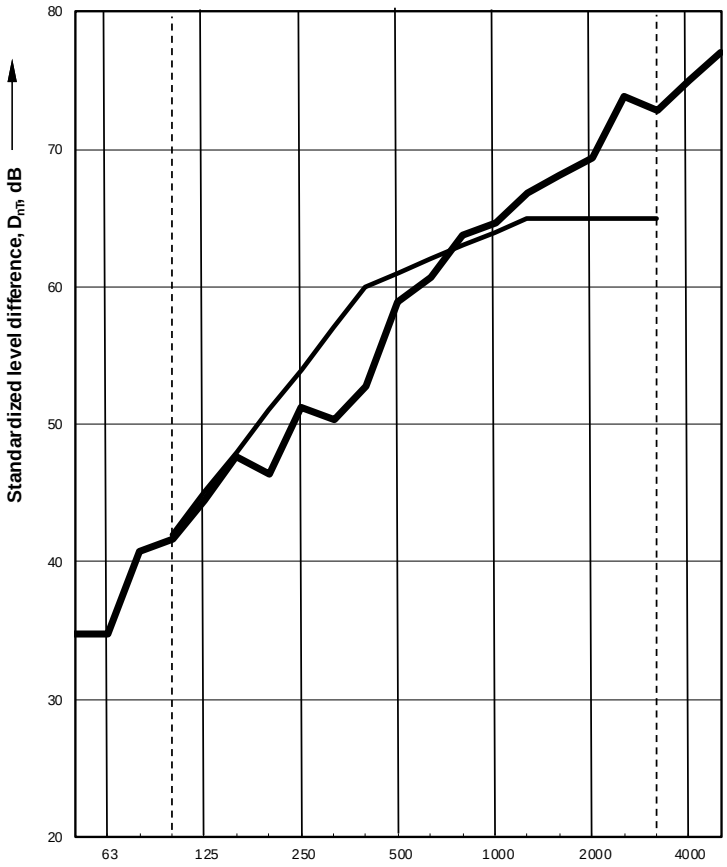
Client: Date of test: 03/06/2024

Description and identification of the building construction and test arrangement, direction of measurement:
Shop front to Bed 1 (right)

Source room volume: m³
Receiving room volume: m³

Frequency range according to the curve of reference values (ISO 717-1)

Frequency f Hz	D_{nT} (one-third octave) dB
50	34.8
63	34.8
80	40.8
100	41.7
125	44.5
160	47.7
200	46.4
250	51.2
315	50.4
400	52.8
500	58.9
630	60.7
800	63.8
1000	>= 64.6 *
1250	>= 66.8 *
1600	>= 68.1 *
2000	>= 69.4 *
2500	>= 73.8 *
3150	>= 72.8 *
4000	>= 75.0 *
5000	>= 77.1 *



* Result should be taken as limit of measurement due to low SNR in receiver room (<=6 dB)

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 61 (; -6) dB; $D_{nT,w} + C_{tr}$ = 55 dB

Evaluation based on field measurement
results obtained by an engineering method

No. of test report:	Test 1	Name of test institute:	Acoustic South East
Date:	03/06/2024	Signature:	Scott Castle

5.2 Test 2

Standardized level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

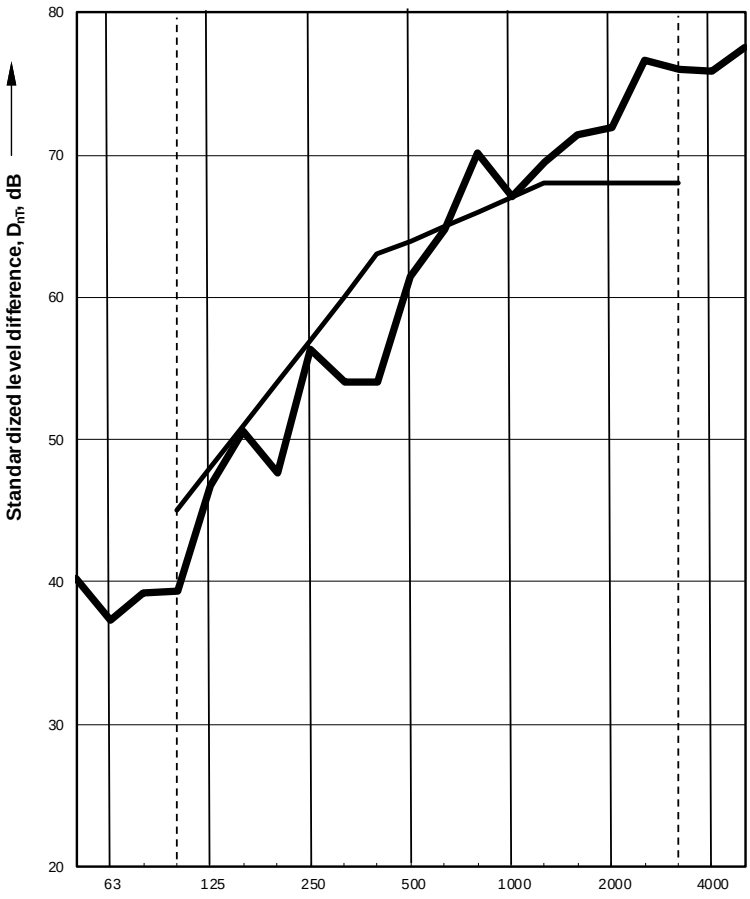
Client: Date of test: 03/06/2024

Description and identification of the building construction and test arrangement, direction of measurement:
Shop front to Bed 2 (left)

Source room volume: m³
Receiving room volume: m³

Frequency range according to the curve of reference values (ISO 717-1)

Frequency *f* Hz	D_{nT} (one-third octave) dB
50	>= 40.2 *
63	37.3
80	39.2
100	39.3
125	46.7
160	50.6
200	47.7
250	56.4
315	54.1
400	54.1
500	61.5
630	>= 64.8 *
800	>= 70.1 *
1000	>= 67.1 *
1250	>= 69.5 *
1600	>= 71.4 *
2000	>= 71.9 *
2500	>= 76.6 *
3150	>= 76.0 *
4000	>= 75.9 *
5000	>= 77.5 *



* Result should be taken as limit of measurement due to low SNR in receiver room (<=6 dB)

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 64 (; -8) dB; $D_{nT,w} + C_{tr}$ = 56 dB

Evaluation based on field measurement
results obtained by an engineering method

No. of test report:	Test 2	Name of test institute:	Acoustic South East
Date:	03/06/2024	Signature:	Scott Castle

5.3 Test 3

Standardized level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

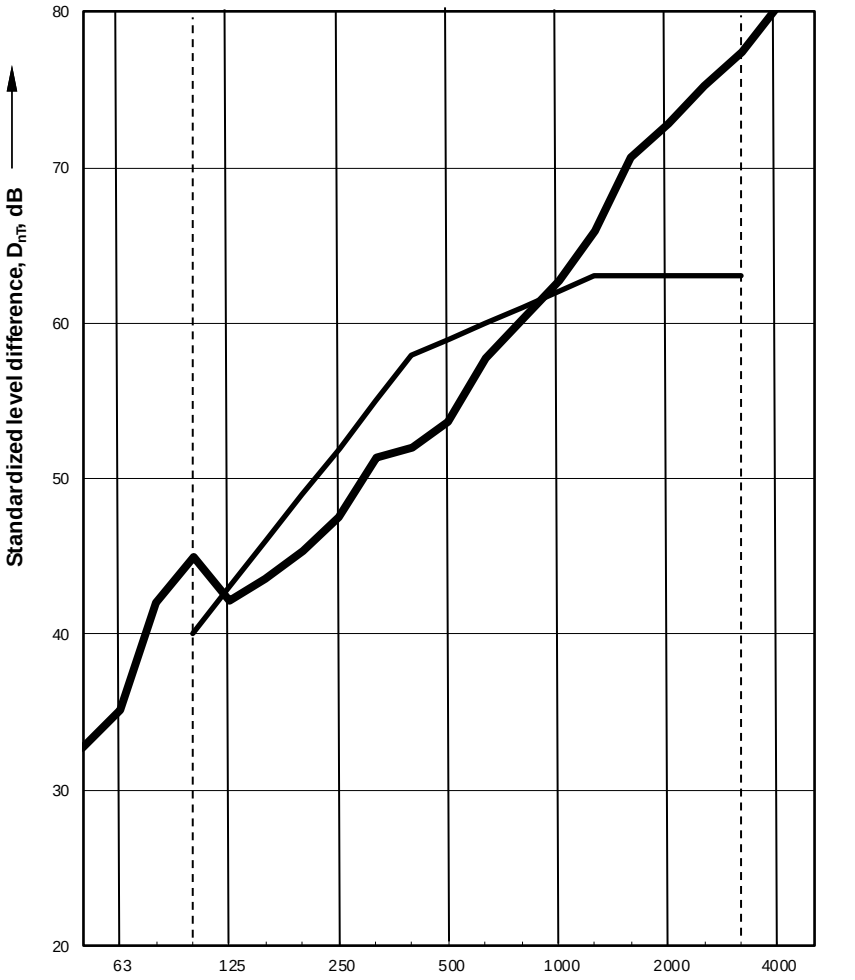
Client: Date of test: 03/06/2024

Description and identification of the building construction and test arrangement, direction of measurement:
Shop rear to Bed 3 (rear)

Source room volume: m³
Receiving room volume: m³

Frequency range according to the curve of reference values (ISO 717-1)

Frequency f Hz	D_{nT} (one-third octave) dB
50	32.7
63	35.1
80	42.0
100	45.0
125	42.1
160	43.6
200	45.4
250	47.5
315	51.4
400	52.0
500	53.6
630	57.7
800	60.2
1000	62.7
1250	65.9
1600	70.7
2000	72.8
2500	75.3
3150	>= 77.4 *
4000	>= 80.4 *
5000	>= 81.9 *



* Result should be taken as limit of measurement due to low SNR in receiver room (<=6 dB)

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 59 (; -5) dB; $D_{nT,w} + C_{tr}$ = 54 dB

Evaluation based on field measurement
results obtained by an engineering method

No. of test report:	Test 3	Name of test institute:	Acoustic South East
Date:	03/06/2024	Signature:	Scott Castle