

Technical Letter

Site Address:	Building 7/8, Circle Square, Oxford Road, Manchester, M1 7FS
Project Reference No:	NP-012030
Subject:	Validation Testing of a Separating Floor Partition
Client:	Concorde BGW
Reported By:	H. Wilson, BSc
Checked By:	M. Caley, MSc, MIOA
Date:	20/02/2025

Introduction

NOVA Acoustics has been commissioned to carry out noise breakthrough testing and analysis at the above address. The building contains a bar venue on the ground floor and residential apartments directly above on the 1st floor. As such, it has been requested that the level of noise transference is assessed.

A predictive noise breakthrough assessment was carried out in April 2024 to specify the minimum acoustic performance for the floor partition (NOVA report ref. NP-011044). The purpose of this technical letter is to compare the results of the onsite testing with the recommended criteria.

Sound Insulation Testing

Airborne sound insulation testing was carried out on 18/02/2025 between Unit L1 and the living room and bedrooms of Apartment 108 directly above. All sound insulation measurements were undertaken in accordance with BS EN ISO 140-4:1998. Full procedural details and test certificates can be found in Appendix A.

The measurement results are compared with the recommended minimum performance standards in the table overleaf.

Source Room	Receiving Room	1/1 Octave Frequency Band (D_{nT} , Hz, dB)							Overall ($D_{nT,W} + C_{tr}$, dB)
		63	125	250	500	1k	2k	4k	
Mezzanine - Unit L1	Apartment 108 – Lounge	43	48	54	62	69	73	76	60
Minimum Performance Standard		36	44	47	58	62	62	57	--
Criteria Achieved (Y/N)		Y	Y	Y	Y	Y	Y	Y	--
Mezzanine - Unit L1	Apartment 108 – Bedroom 1	43	48	56	64	70	74	78	60
Minimum Performance Standard		36	44	47	58	62	62	57	--
Criteria Achieved (Y/N)		Y	Y	Y	Y	Y	Y	Y	--
Mezzanine - Unit L1	Apartment 108 – Bedroom 2	42	45	56	63	70	75	77	58
Minimum Performance Standard		36	44	47	58	62	62	57	--
Criteria Achieved (Y/N)		Y	Y	Y	Y	Y	Y	Y	--

Table 1 – Noise Breakthrough Assessment

Further Testing

Measurements were also undertaken the bar area and the apartment bedroom above whilst the bar was in operation. During the measurement periods, the music within the bar was played through the in-house system at a 'typical' level. The results are shown in the table below.

Description	1/1 Octave Frequency Band (L_{eq} , Hz, dB)							Overall ($L_{Aeq,T}$, dB)
	63	125	250	500	1k	2k	4k	
Internal Noise Level in Bar	50	66	64	63	64	59	55	67
Internal Noise Level in Apartment 108 Bedroom [1]	38	33	29	23	21	15	11	26
Moorhouse Curve + NR25 [2]	47	41	35	29	25	22	20	30
Criteria Achieved (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y

Notes:

[1] This internal noise level includes the contributions of general urban noise ingress through the external façade and noise breakthrough from the bar through the floor partition.

[2] Night-time noise criteria with a correction applied to account for low-frequency emissions.

[3] During the measurements, there were no patrons in the bar as the bar had only just opened. As such, music noise levels were simulated. Considering that the measured internal levels are comfortably within the criteria, any potential increase in noise level is not expected to adversely affect the results.

Table 2 – Internal Ambient Noise Level Assessment

Conclusion

The results of the testing are summarised as follows:

- As can be seen in table 1, the sound insulation performance of the floor is within the criteria recommended in the original acoustic assessment.
- The ambient noise levels measured within the bar are comfortably within the noise limit levels defined in the original acoustic assessment.
- The cumulative ambient noise level within the bedroom of apartment 108 is within the BS8233 night-time criteria and the Moorhouse low-frequency curve. Considering that this includes general noise break-in through the façade of the building, and that the measurement was taken during the daytime, this is a strong indication of low impact.

Further to the above, it should also be noted that noise from the bar was subjectively entirely inaudible within the apartment above during the ambient noise measurement.

Given this, it is thought that the acoustic performance of the floor partition is adequate and that no further mitigation is required.

Appendix A – Sound Insulation Testing Certificates and Procedures

Airborne sound insulation measurements are undertaken in accordance with BS EN ISO 140-4:1998. A summary of the test procedure is provided below:

- 1) A dodecahedral loudspeaker and sub speaker are used to generate pink noise at a steady and continuous level across the required frequency bands.
- 2) The sound levels are measured in 1/3 octave frequency bands from 100Hz to 3.15kHz in the source and receiver room using fixed or moving microphone positions to establish a representative average sound pressure level for each room.
- 3) The reverberation time is measured in the receiving room in accordance with BS EN ISO 354:2003.
- 4) Background sound levels are measured in the receiving room.
- 5) The difference in source and receiver noise levels is calculated for each partition in accordance with BS EN 140-4:1998 and Annex B of ADE. The resulting frequency dependent level differences are converted into “a single number characterising the acoustical performance” using the method given in BS EN ISO 717-1:1997, namely the weighted standardised level difference ($D_{nT,w}$).

Standardized level difference according to Resistance to the passage of sound approved document E
Field measurements of airborne sound insulation between rooms

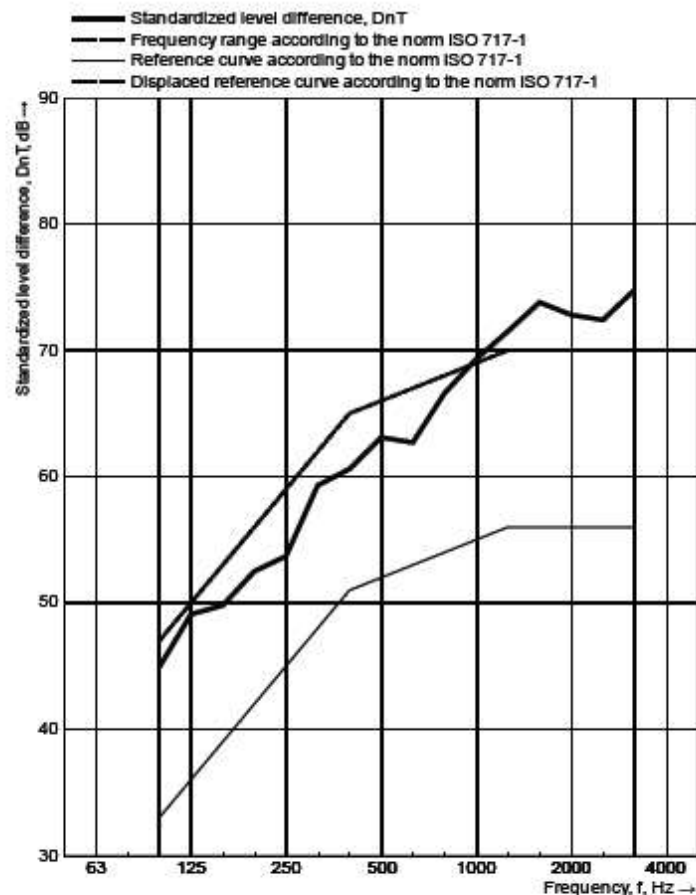
Client : Concorde BGW

Test date : 18 February 2025

Description and identification of the building construction and test arrangement, direction of measurement :

Source room volume : 122.00 m³
Receiving room volume : 57.00 m³

Frequency f Hz	DnT (1/3 octave) dB
50	—
63	—
80	—
100	44.9
125	49.1
160	49.8
200	52.5
250	53.7
315	59.3
400	60.6
500	63.1
630	62.7
800	66.6
1000	69.3
1250	71.5 *
1600	73.8
2000	72.8
2500	72.4
3150	74.8
4000	—
5000	—



* Maximum background noise correction

Rating according to ISO 717-1

DnT,w (C;Ctr) = 66 (-2 ; -6) dB;

Evaluation based on in situ measurement
results obtained by an engineering method
(1/3 octave)

No. of test report : NP-012030

Date : 18 February 2025

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Signature : *H. Wilson*

Standardized level difference according to Resistance to the passage of sound approved document E
Field measurements of airborne sound insulation between rooms

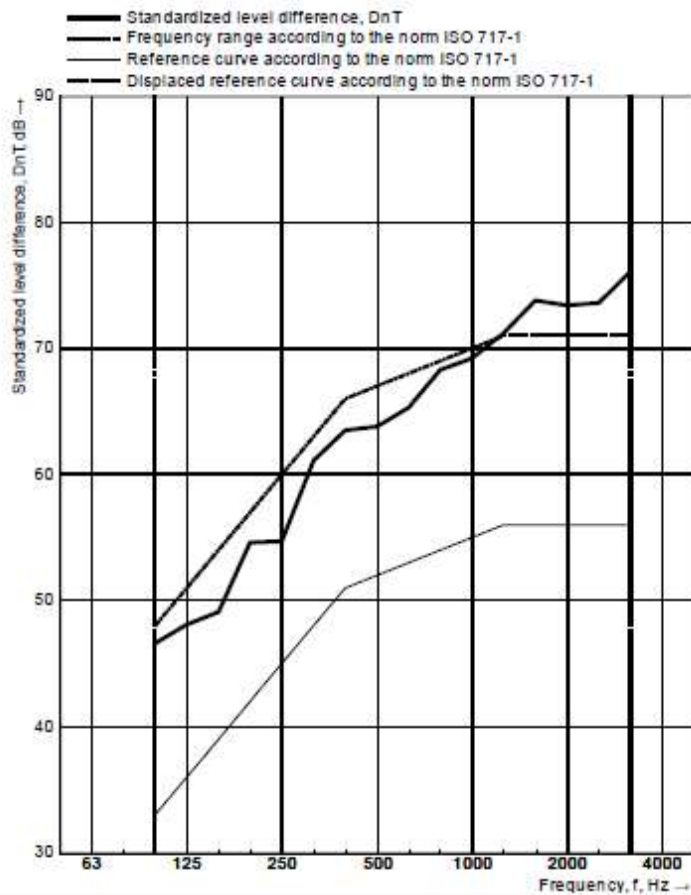
Client : Concorde BGW

Test date : 18 February 2025

Description and identification of the building construction and test arrangement, direction of measurement :

Source room volume : 122.00 m³
Receiving room volume : 41.00 m³

Frequency f Hz	DnT (1/3 octave) dB
50	--
63	--
80	--
100	48.6
125	48.1
160	49.1
200	54.6
250	54.7
315	61.1
400	63.5
500	63.8
630	65.3
800	68.3
1000	69.2
1250	71.2
1600	73.8
2000	73.4
2500	73.8
3150	76.1
4000	--
5000	--



Rating according to ISO 717-1

DnT,w (C;Ctr) = 67 (-2 ; -7) dB;

Evaluation based on in situ measurement
results obtained by an engineering method
(1/3 octave)

No. of test report : NP-012030 - B

Name of test institute : NOVA Acoustics Ltd

Date : 18 February 2025

Signature : *H. Wilson*

Standardized level difference according to Resistance to the passage of sound approved document E
Field measurements of airborne sound insulation between rooms

Client : Concorde BGW

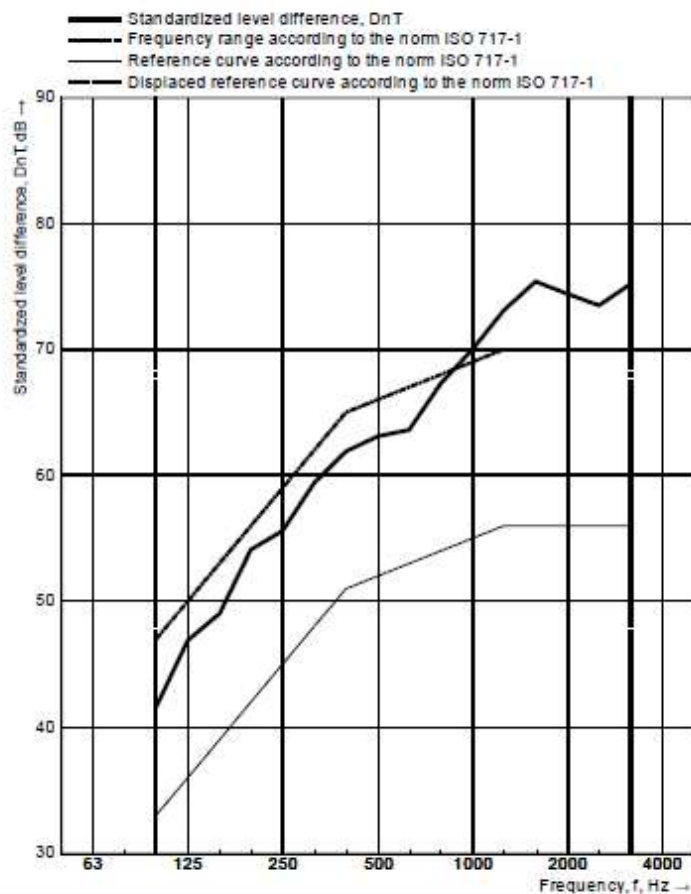
Test date : 18 February 2025

Description and identification of the building construction and test arrangement, direction of measurement :

Source room volume : 122.00 m³

Receiving room volume : 41.00 m³

Frequency f Hz	DnT (1/3 octave) dB
50	—
63	—
80	—
100	41.6
125	46.9
160	49.0
200	54.1
250	55.6
315	59.4
400	61.9
500	63.1
630	63.6
800	67.3
1000	70.0
1250	73.1
1600	75.4
2000	74.4
2500	73.5
3150	75.2
4000	—
5000	—



Rating according to ISO 717-1

$D_{nT,w} (C;Ctr) = 66 (-2 ; -8) \text{ dB}$

Evaluation based on in situ measurement
results obtained by an engineering method
(1/3 octave)

No. of test report : NP-012030 - C

Date : 18 February 2025

Name of test institute : NOVA Acoustics Ltd

Signature : *H. Wilson*

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