

SANDY BROWN

Consultants in Acoustics, Noise & Vibration

15058-R06-A

31 January 2023

Bonded Warehouse, Manchester

Planning condition 4 discharge report

London, Manchester, Edinburgh, Birmingham, Belfast, Leeds

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Version	Date	Comments	Author	Reviewer
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Summary

Sandy Brown has been commissioned by AWAS Bonded Ltd to provide acoustic advice in relation to the discharge of planning condition 4 (ref: 127991/FO/2020) relating to entertainment noise egress at Bonded Warehouse, Manchester.

Entertainment noise egress limits have previously been determined following an environmental noise survey and are detailed in Sandy Brown acoustic planning report 15058-R02-F.

A noise survey has been carried out on site with typical music generated by amplified sound systems within the building switched on. Measurements were taken both internally and externally to determine the level of noise egress. An assessment is presented which indicated that the internal entertainment noise from Bonded Warehouse meets the entertainment noise limits established in line with Manchester City Council requirements at all nearby noise sensitive premises.

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1 Introduction

Sandy Brown has been commissioned by AWAS Bonded Ltd to provide acoustic advice in relation to Bonded Warehouse, Manchester.

It is understood that the sound system that provides background music inside Bonded Warehouse was playing music at a worst-case scenario volume at the time of the survey. Moreover, it is understood that all areas that will have background music playing, did so at the same time during the survey.

The aim of the noise survey was to verify if the entertainment noise levels generated inside the Bonded Warehouse meet the entertainment noise criteria.

An assessment is presented which shows that the entertainment noise from Bonded Warehouse meets the entertainment noise criteria at all nearby noise sensitive premises.

2 Site description

2.1 The site and its surroundings

The Bonded Warehouse is on the site of the former Granada Studios. The building has the following uses, as follows:

- Level 1: Approximately half the existing floor plate is B1 offices (B1), with the remainder designated as light industrial / drinking establishment / leisure (B2/A4/D2). This includes music studios.
- Level 2: Majority of the floorplate are office use (B1) with a small ancillary area of retail / cafe.
- Level 3: Majority of the floorplate are office use (B1) with a small ancillary area of retail / cafe.
- Level 4-Level 6 are offices (B1).

The site location (in orange, towards the centre of the image) is shown in Figure 1 in relation to its surroundings.

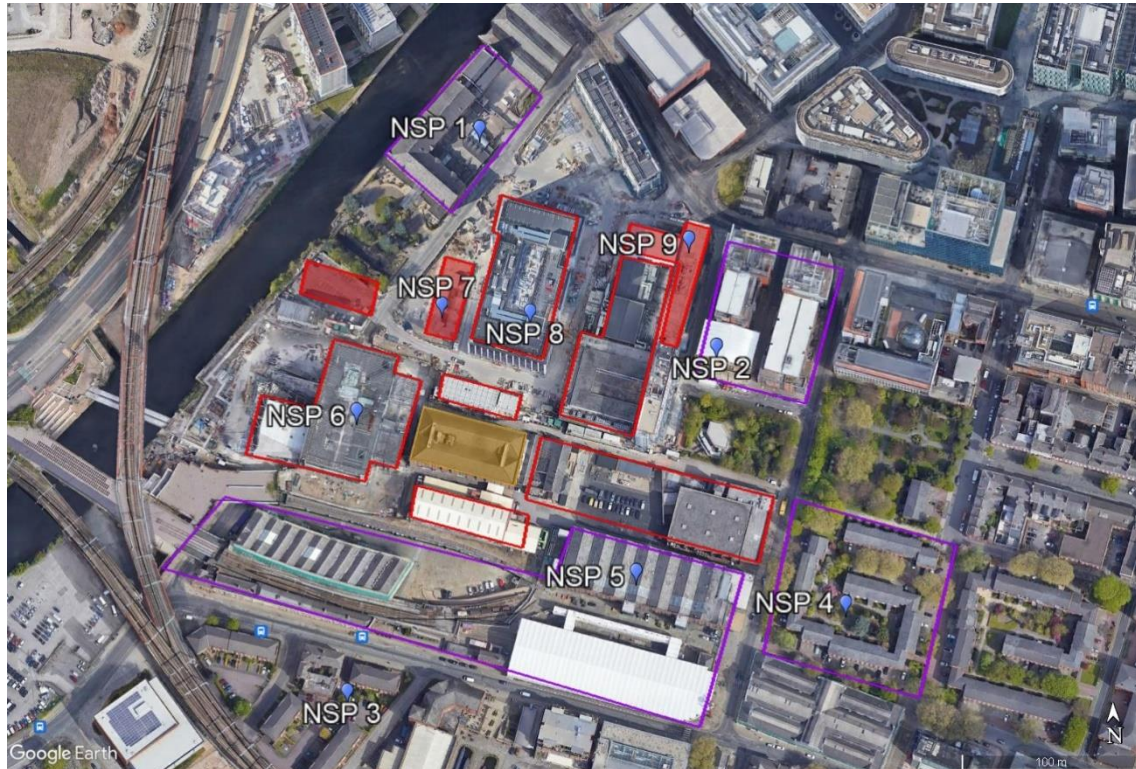


Figure 1 Site map (courtesy of Google Earth Pro)

2.2 Adjacent premises

The nearby existing sensitive premises (NSP) are indicated in Figure 1 with blue markers.

NSP 1 refers to the Marriott Hotel on Water Street. NSP 2 refers to residential buildings along Lower Byrom Street and Atherton Street, and the proposed Manchester Grande Hotel. NSP 3 refers to various residential buildings along Liverpool Road. NSP 4 refers to the residential properties between Byrom Street and Lower Byrom Street. NSP 5 is the Museum of Science and Industry.

The Bonded Warehouse sits in the centre of the St John's Masterplan with proposed developments to the north, east and west of the site; these are highlighted red in Figure 1. Where developments include residential premises, they are shaded red in the image.

The Factory cultural centre is proposed directly to the west of the Bonded Warehouse, referred as NSP 6. To the north-west, two residential towers are proposed; Union Tower 1 and 2, referred as NSP 7. NSP 8 refers to the proposed Manchester Goods Yard and Old Granada Studios scheme to the north of the site. To the north-east is the redevelopment of the Old Granada Studios buildings, referred as NSP 9. To the east of the site are the proposed buildings associated with the Versa Manchester Studios development.

3 Noise limits for amplified sound

3.1 External noise limits

Within planning permission document 127991/FO/2020 planning condition 4 refers to the control of entertainment noise egress. The wording of the conditions is set out below:

'4) The premises shall be acoustically insulated and treated to limit the break out of noise in accordance with a noise study the Acoustic Planning Report, June 2021, ref: 15058-R02-F. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.

Where entertainment noise is proposed the L_{Aeq} (entertainment noise) shall be controlled to 10 dB below the L_{A90} (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63 Hz and 125 Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47 dB and 41 dB, respectively.

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.

Reason - To safeguard the amenities of the occupiers of nearby properties, pursuant to policies SP1 and DM1 of the Core Strategy.'

Based on the representative daytime and night time octave band background sound levels measured as detailed in Sandy Brown15058-R02-F Acoustic planning report suitable operational noise egress limits were set in line with the Local Authority's criteria. These limits are presented in Table 1.

Table 1 amplified sound limits at 1 m from noise sensitive premises

Location of noise sensitive premises/Time of day	Maximum sound pressure level at 1 m from noise sensitive premises, L_{eq} (dB)						
	Octave band centre frequency (Hz)						
	63	125	250	500	1k	2k	4k
<i>Near the Marriot Hotel, St John's Living Tower 1 and Tower 2, Central Village Enterprise Cluster and Residential accommodation</i>							
Daytime (07:00-23:00)	42	41	40	39	37	29	19
Night (23:00-07:00)	38	40	39	40	35	30	22
<i>Liverpool Road, The Factory, The Museum of Science and Industry</i>							
Daytime (07:00-23:00)	48	44	43	39	43	37	22
Night (23:00-07:00) ¹	42	39	37	32	34	28	13
<i>Lower Byrom Street, South Village</i>							
Daytime (07:00-23:00)	24	28	29	34	38	34	27
Night (23:00-07:00)	23	27	25	28	32	28	22

^[1] The Museum of Science and Industry is only a noise sensitive premises during the daytime

4 Noise survey

An environmental noise survey was carried out at Bonded Warehouse on 20 January 2023 by Rita Campos and Jose M.Gonzalez Diaz. The survey consisted of synchronised internal and external noise measurements around the site and at NSP 6 and 8, the closest noise sensitive receivers.

4.1 Measurement locations

4.1.1 Internal noise measurements

As confirmed by Allied London, there is background music internally within the following areas, as shown in Figure 2 to Figure 4, where microphone locations are represented by letters A to C:

- L03 Reception
- L03 Department Workhub
- L02 Lounge.

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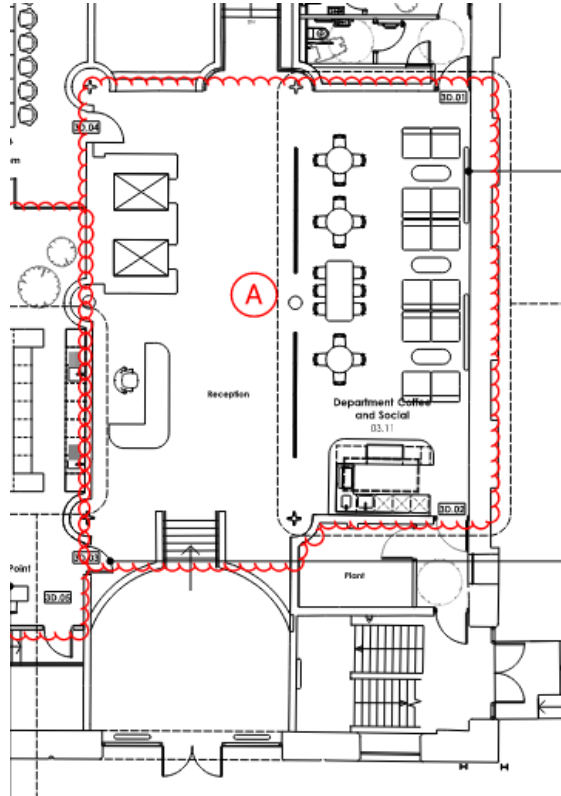


Figure 2 L03 Reception – Internal measurement locations

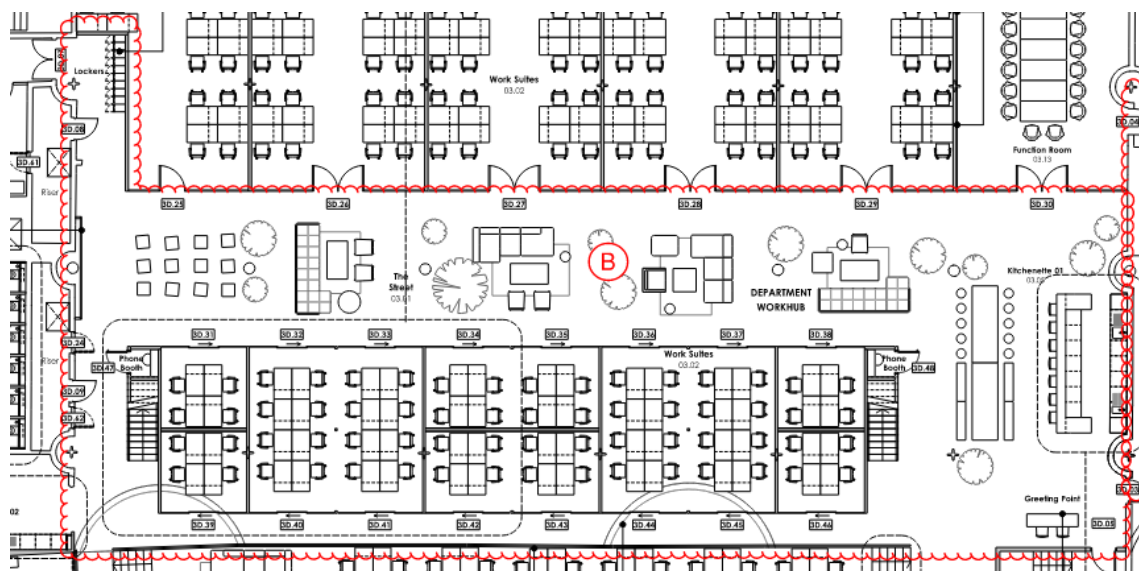


Figure 3 L03 Department Workhub – Internal measurement locations

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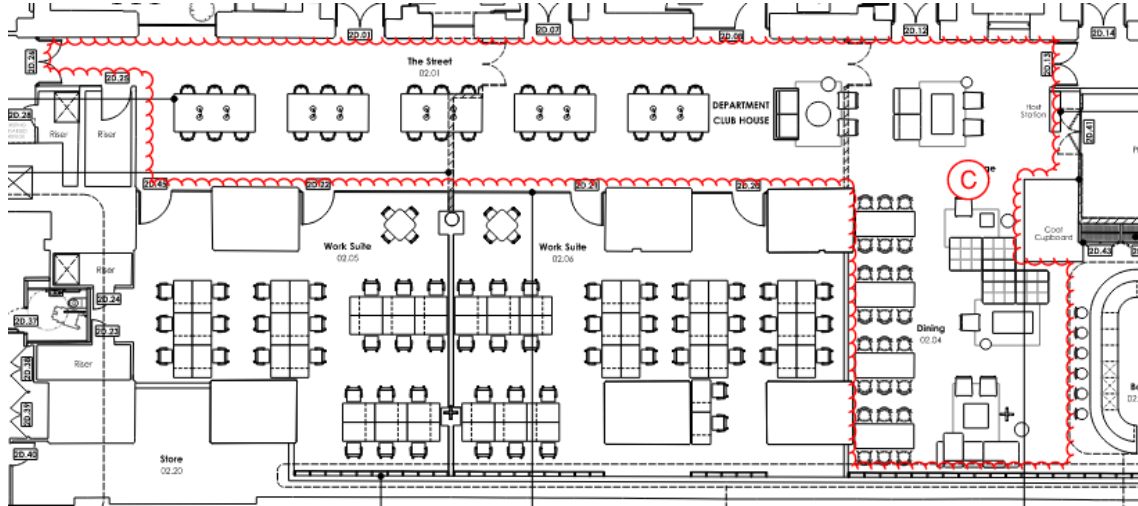


Figure 4 L02 Lounge – Internal measurement locations

Measurements were taken with amplified music playing at typical levels. The measurement locations were worst case close to the loudspeakers within each area.

4.1.2 External noise measurements

The locations of the external façade noise measurements are identified in Figure 5 with the numbers 1 to 5. Locations 4 and 5 are representative of NSP 6 and 8 respectively.

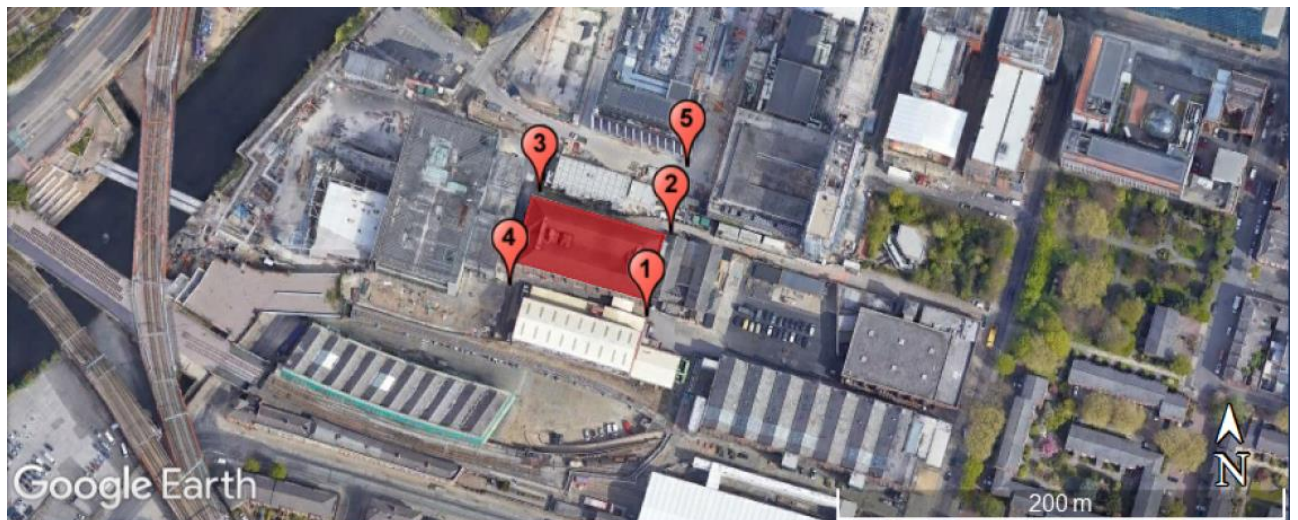


Figure 5 Site map (courtesy of Google Earth Pro) – External measurement locations

4.2 Observations

4.2.1 *External noise climate*

The dominant noise source observed at the site during the survey consisted of construction noise. Less significant noise sources included pedestrians passing by.

The music playing internally at the Bonded Warehouse was inaudible outside the building.

4.3 Attended measurement results

Octave band data for each measurement is provided in Appendix C. An overall description of the noise climate is presented in Section 4.3.1.

The sound pressure levels recorded during the daytime attended measurements are summarised in Table 2 to Table 5 along with the dominant noise sources.

The external noise measurements carried out at positions 2, 3 and 5 were dominated by construction noise.

The music from the amplified sound systems within the Bonded Warehouse was subjectively inaudible at all external locations.

Table 2 L03 reception – Sound pressure level measurements, with amplified sound system

Date	Location	Start time	Sound pressure levels (dB)			Noise sources
			$L_{Aeq,5min}$	$L_{AFmax,5min}$	$L_{A90,5min}$	
20/01/2023	Internally	14:02	61	74	57	Internally, the dominant noise source was the background music and less predominant noise source was people talking quietly.
	Externally at position 1	14:02	53	71	53	
20/01/2023	Internally	13:00	63	82	55	Externally, the dominant noise source was construction noise from adjacent sites and less predominant noise source was people passing by
	Externally at position 2	13:00	64	82	65	
20/01/2023	Internally	13:11	60	74	55	
	Externally at position 3	13:11	65	82	69	
20/01/2023	Internally	13:55	60	76	54	
	Externally at position 4	13:55	48	65	49	
20/01/2023	Internally	13:47	63	82	56	
	Externally at position 5	13:47	64	79	65	

Table 3 L03 Department Workhub - Sound pressure level measurements, with amplified sound system

Date	Location	Start time	Sound pressure levels (dB)			Noise sources
			$L_{Aeq,5min}$	$L_{AFmax,5min}$	$L_{A90,5min}$	
20/01/2023	Internally	14:45	58	74	55	Internally, the dominant noise source was equally from background music and people talking.
	Externally at position 1	14:45	52	72	54	
20/01/2023	Internally	14:14	58	73	54	Externally, the dominant noise source was construction noise from adjacent sites and less predominant noise source was people passing by
	Externally at position 2	14:14	65	76	67	
20/01/2023	Internally	14:20	58	70	55	
	Externally at position 3	14:20	63	71	65	
20/01/2023	Internally	14:39	56	72	51	
	Externally at position 4	14:39	47	63	48	
20/01/2023	Internally	14:31	57	69	54	
	Externally at position 5	14:31	62	71	64	

Table 4 L02 Lounge - Sound pressure level measurements, with amplified sound system

Date	Location	Start time	Sound pressure levels (dB)			Noise sources
			$L_{Aeq,5min}$	$L_{AFmax,5min}$	$L_{A90,5min}$	
20/01/2023	Internally	15:24	58	74	52	Internally, the dominant noise source was the background music and less predominant noise source was people talking quietly.
	Externally at position 1		52	75	53	
20/01/2023	Internally	14:55	59	78	52	Externally, the dominant noise source was construction noise from adjacent sites and less predominant noise source was people passing by
	Externally at position 2		65	82	68	
20/01/2023	Internally	15:03	58	70	51	
	Externally at position 3		62	75	65	
20/01/2023	Internally	15:18	58	72	48	
	Externally at position 4		48	56	50	
20/01/2023	Internally	15:10	58	76	53	
	Externally at position 5		60	66	62	

Table 5 External sound pressure level measurements, with amplified sound system off

Date	Location	Start time	Sound pressure levels (dB)			Noise sources
			$L_{Aeq,5min}$	$L_{AFmax,5min}$	$L_{A90,5min}$	
20/01/2023	1	15:36	56	76	49	The dominant sources at this location were construction activities in nearby construction sites. Less significant sources included pedestrians passing by and talking.
		15:41	53	73	49	
		15:46	49	50	48	
20/01/2023	2	15:36	61	74	64	
		15:41	63	84	65	
		15:46	62	71	65	
20/01/2023	3	15:51	61	74	64	
		15:57	62	75	64	
		16:02	62	75	65	
20/01/2023	4	15:52	49	65	46	
		15:57	49	68	46	
		16:02	49	67	46	
20/01/2023	5	16:08	67	84	67	
		16:13	59	68	62	
		16:18	60	68	63	

The octave band data measured at the internal locations is presented in Table 6.

Table 6 Internal noise levels, with amplified sound system on

Location	Internal noise levels measured with amplified sound system on, $L_{eq,5min}$ (dB)						
	Octave band centre frequency (Hz)						
	63	125	250	500	1k	2k	4k
Reception	57	60	60	59	57	51	48
Department hub	52	59	57	56	52	48	44
Lounge	53	58	55	54	55	48	43

The octave band ambient noise levels at external locations with music on and off are presented in Table 7 and Table 8, respectively.

Table 7 Ambient noise levels at external locations with music on

Location	Ambient noise levels measured at external locations with music on, $L_{eq,5min}$ (dB)						
	Octave band centre frequency (Hz)						
	63	125	250	500	1k	2k	4k
1	61	51	50	51	47	43	37
2	71	61	60	61	59	58	53
3	70	60	62	61	58	55	49
4	54	47	47	45	43	39	31
5	68	63	61	60	57	53	44

Table 8 Ambient noise levels at external locations with music off

Location	Ambient noise levels measured at external locations with music on, $L_{eq,5min}$ (dB)						
	Octave band centre frequency (Hz)						
	63	125	250	500	1k	2k	4k
1	62	54	53	53	50	45	42
2	68	62	59	58	58	55	46
3	67	60	59	59	58	55	47
4	55	48	47	46	45	41	35
5	69	61	59	59	57	53	47

5 Assessment of amplified sound egress

Subjectively, the music generated by the amplified sound systems within the Bonded Warehouse was inaudible externally at all measurement locations.

The external measurements taken during the survey were dominated by construction noise, particularly at the locations to the north of the site.

As shown in Appendix B, the octave band ambient noise levels at the nearest sensitive receivers do not present changes when the music generated by the amplified sound systems is on within the Bonded Warehouse.

As the music generated by the amplified sound systems was inaudible at external measurement locations, an assessment has been carried out based on the internal noise measurements to demonstrate compliance with the entertainment noise egress limits in Table 1.

The assessment considers the following:

- Attenuation due to screening
- Screening due to distance
- A facade construction comprising solid brickwork and 6 mm single glazing, expected minimum sound insulation of $R'_w + C_{tr}$ 25 dB.

The predicted noise levels at the nearest noise sensitive receivers are presented in Table 6.

Table 9 Predicted noise levels at nearest noise sensitive receivers

Location	Predicted noise levels at nearest sensitive receivers with the music generated by the amplified sound systems on, $L_{eq,5min}$ (dB)						
	Octave band centre frequency (Hz)						
	63	125	250	500	1k	2k	4k
NSP 6	≥ 0	≥ 0	≥ 0	≥ 0	≥ 0	≥ 0	≥ 0
NSP 8	≥ 0	≥ 0	≥ 0	≥ 0	≥ 0	≥ 0	≥ 0

The predicted noise levels at the nearest sensitive receivers corroborate the subjective assessment in that the music generated by the amplified sound systems inside the Bonded Warehouse is inaudible at the nearest sensitive receivers. Therefore, the installed, current, amplified sound systems within the Bonded Warehouse are operating in line with the requirement of planning condition 4.

Appendix A

Survey details

Equipment

The attended noise measurements were taken using a Rion NL-52 sound level meter and a Norsonic Nor118 sound level meter.

Calibration details for the equipment used during the survey are provided in Table A1.

Table A1 Equipment calibration data

Equipment description	Type/serial number	Manufacturer	Calibration expiry	Calibration certification number
Sound level meter	Nor118/31754	Norsonic	16 Feb 23	UCRT21/1226
Microphone	40AF/62396	Gras	16 Feb 23	UCRT21/1226
Pre-amp	1206/30873	Norsonic	16 Feb 23	UCRT21/1226
Calibrator	1251/31322	Norsonic	16 Feb 23	UCRT21/1224
Sound level meter	NL-52/01143564	Rion	15 Dec 24	TCRT22/1766
Microphone	UC-59/10153	Rion	15 Dec 24	TCRT22/1766
Pre-amp	NH-25/43581	Rion	15 Dec 24	TCRT22/1766
Calibrator	NC-74/34257023	Rion	15 Dec 24	TCRT22/1765

Calibration of the meters used for the measurements is traceable to national standards. Calibration certificates for the sound level meter used in this survey are available upon request.

Calibration checks were carried out on the meters and their measurement chains at the beginning and end of the survey. No significant calibration deviation occurred.