



PREPARED: 14 October 2024

THE CATHEDRAL HOTEL, SALISBURY NOISE IMPACT ASSESSMENT

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Project Ref:	AS13275	Project Name:	The Cathedral Hotel, Salisbury
Report Ref:	AS13275.241011.NIA	Report Title:	Noise Impact Assessment
Client Name:	Larasian Ltd		
Project Manager:	Ed Clarke		
Report Author:	Ravee Long		
Clarke Saunders Acoustics Winchester SO22 5BE		This report has been prepared in response to the instructions of our client. It is not intended for and should not be relied upon by any other party or for any other purpose.	

1.0 EXECUTIVE SUMMARY

- 1.1 Clarke Saunders Acoustics has been instructed by Larasian Ltd to conduct a noise impact assessment of proposed building services plant and patron noise for The Cathedral Hotel in Salisbury in accordance with the planning requirements for Wiltshire County Council.
- 1.2 An environmental noise survey was undertaken to establish the existing background sound levels.
- 1.3 Manufacturer data was provided to calculate sound levels of the proposed plant at the nearby residential receptors.
- 1.4 Compliance with the requirements of Wiltshire County Council has been demonstrated, no further mitigation is required.
- 1.5 Wiltshire County Council's recommended patron noise assessment methodology has been followed to consider the impact of expected patron noise levels at the nearby residential receptor locations.
- 1.6 The proposed patron areas are within the Wiltshire County Council requirements other than during periods of maximum standing capacity in the rear courtyard. This is unlikely to occur frequently and, therefore, is considered to have low likelihood of adverse comment.

2.0 INTRODUCTION

- 2.1 Planning approval is sought for the installation of new building services plant serving The Cathedral Hotel, Salisbury and for two external patron areas at the hotel, one existing but altered and the other new.
- 2.2 Clarke Saunders Acoustics has been commissioned by Larasian Ltd to conduct building services plant and patron noise assessments in accordance with Wiltshire County Council planning requirements.
- 2.3 The report describes the assessment undertaken, including calculations and its findings.
- 2.4 A glossary relevant to the terminology used in this report is presented in Appendix A.

3.0 SITE DESCRIPTION

- 3.1 The site is located on the north side of Milford Street in the centre of Salisbury. The site is a four storey hotel, currently closed, with a restaurant on the ground floor and courtyard to the rear. Beyond the courtyard to the rear is a car park and existing plant area for other nearby buildings.
- 3.2 The proposed development aims to redevelop the existing building into a luxury hotel and restaurant but in keeping with the historic nature of the site. As part of the redevelopment the existing roof is to be converted into a rooftop bar area.

4.0 LOCAL AUTHORITY REQUIREMENTS

- 4.1 External noise emissions are expected to be predominantly caused by building services plant and patron noise.
- 4.2 Building services plant noise emissions and patron noise emissions will be limited by the criteria set by Wiltshire Council (WC).
- 4.3 It is understood that WC requires building services plant noise to be assessed in accordance with methodologies and procedures outlined in BS4142:2014+A1:2019 – *Methods for rating and assessing industrial and commercial sound* (BS4142).
- 4.4 Building services plant noise emissions are to target a Rating Level of 5 dB below the existing background at the receptor location.
- 4.5 WC outlines a methodology for assessing patron noise in its Planning Consultation Guidance Note, dated 31 October 2023.
- 4.6 Patron noise levels are to be assessed utilising noise level data taken from “Handbook of Acoustical Measurements and Noise Control” (Harris 1991), corrected for the number of people and assuming a 50% “on time”. Propagation corrections are then applied, to predict the patron noise levels against the existing background noise levels (L_{A90}) at the receptor locations.

5.0 SURVEY PROCEDURE & EQUIPMENT

- 5.1 A survey of existing environmental noise levels was undertaken at 3rd floor level above the rear courtyard as outlined in the attached site plan AS13275/SP1. Measurements of consecutive 5-minute L_{Aeq} , L_{Amax} , L_{A10} and L_{A90} sound pressure levels were taken between Friday 2nd February and Thursday 8th February 2024.
- 5.2 The following equipment was used during the course of the survey:
 - 1 no. Rion sound level monitor type NL52;
 - 1 no. Rion sound level calibration type NC-74.
- 5.3 The calibration of the sound level meter was verified before and after use. No significant calibration drift was detected.
- 5.4 The weather during the survey was predominately dry with light winds which made the conditions suitable for environmental noise measurements.
- 5.5 Measurements were made in free-field conditions following procedures in BS 7445:1991 (ISO1996-2:1987) *Description and measurement of environmental noise Part 2- Acquisition of data pertinent to land use* and BS4142.

6.0 SURVEY RESULTS

- 6.1 Figures AS13275/TH1-TH6, attached, show the L_{Aeq} , L_{Amax} , L_{A10} and L_{A90} sound pressure levels as time histories at the survey position.
- 6.2 The measured typical background and average noise levels from the survey are shown in Table 6.1.

Monitoring Location	Monitoring Period	Typical Background $L_{A90,5mins}$	Average Ambient $L_{Aeq,T}$
Rear Courtyard	Daytime 07:00-23:00 Hours	47 dB	53 dB
	Night-time 23:00-07:00 Hours	41 dB	48 dB

Table 6.1 Typical measured background and average noise levels

6.3 On the basis of the information provided by WC discussed in Section 4.0, the plant and patron noise target criteria are detailed in Table 6.2.

Receptor	Period	Plant Noise Criterion	Patron Noise Criterion
11 Milford Street	Daytime 07:00-23:00 Hours	$\leq L_{Aeq,T}$ 42 dB	$\leq L_{Aeq,T}$ 47 dB
	Night-time 23:00- 07:00 Hours	$\leq L_{Aeq,T}$ 36 dB	$\leq L_{Aeq,T}$ 41 dB
6-7 Queen Street	Daytime 07:00-23:00 Hours	$\leq L_{Aeq,T}$ 42 dB	$\leq L_{Aeq,T}$ 47 dB
	Night-time 23:00- 07:00 Hours	$\leq L_{Aeq,T}$ 36 dB	$\leq L_{Aeq,T}$ 41 dB

Table 6.2 Proposed plant and patron noise target criteria

7.0 DISCUSSION

7.1 PROPOSED PLANT

7.1.1 The proposed external building services plant are confirmed as follows:

- 1 no. Daikin REYQ14U condensing unit;
- 1 no. Daikin REYQ16U condensing unit;
- 1 no. Daikin REYQ26U condensing unit;
- 1 no. Systemair MUB 042 500 EV kitchen supply fan; and
- 1 no. Systemair MUB 062 560 D4 kitchen extract fan.

7.1.2 The proposed Daikin REYQ14U and Daikin REYQ26U condensing units are to be located on the ground floor within the rear courtyard, as indicated in the attached site plan AS13275/SP1. It has been confirmed that the REYQ14U will be limited to “low noise 2” (LN2) operation and the REYQ26U will be limited to “low noise 1” (LN1) operation.

7.1.3 The proposed Daikin REYQ16U condensing unit is to be located at roof level in the location shown in the attached site plan AS13275/SP1. It has been confirmed that this unit will be limited to LN2 operation.

- 7.1.4 The kitchen supply and extract fans are to be located at first floor level, above the proposed kitchen area, in the location shown in the attached site plan AS13275/SP1.
- 7.1.5 The sound emission levels for each unit model have been confirmed by the manufacturers for the selected mode of operation and are presented in Table 7.1.

Frequency (Hz)	63	125	250	500	1K	2K	4K	8K	dB(A)
Daikin REYQ14U LN2 (L _w)	79	74	71	71	65	61	61	59	72
Daikin REYQ16U LN2 (L _p @ 1m)	56	57	52	50	43	40	40	36	51
Daikin REYQ26U LN1 (L _w)	89	84	82	81	75	73	74	68	83
Systemair MUB 042 500 EV Breakout (L _w)	52	63	53	46	48	49	40	30	54
Systemair MUB 062 560 D4 Breakout (L _w)	64	68	73	53	53	51	45	37	65

Table 7.1 Sound emission levels of the proposed external building services plant items

- 7.1.6 The Daikin condensing units located on the ground floor in the rear courtyard and the Systemair MUB 062 560 D4 kitchen extract fan have been confirmed to be installed within acoustic enclosures. The confirmed minimum insertion losses of the enclosures are detailed in Table 7.2.

Frequency (Hz)	63	125	250	500	1K	2K	4K	8K
Daikin REYQ14U	2	4	8	12	13	13	9	8
Daikin REYQ26U	6	9	13	22	33	33	27	24
Systemair MUB 062 560 D4	5	4	5	6	9	13	14	13

Table 7.2 Confirmed acoustic enclosure minimum insertion losses

- 7.1.7 All ducted building services plant will have appropriate attenuation so that cumulative plant noise levels do not exceed the target plant noise criteria.

7.2 PLANT SOUND ASSESSMENT

- 7.2.1 Plant sound has been calculated at the nearest residential receptor locations incorporating losses from the proposed acoustic enclosures, distance losses and building edge screening, where appropriate, with all plant operating simultaneously. The predicted plant noise levels are detailed in Table 7.3.

Receptor	Period	Plant Noise Level at Receptor	Plant Noise Criterion
11 Milford Street	Daytime 07:00-23:00 Hours	L _{Aeq,T} 36 dB	≤ L _{Aeq,T} 42 dB
	Night-time 23:00-07:00 Hours	L _{Aeq,T} 36 dB	≤ L _{Aeq,T} 36 dB

Receptor	Period	Plant Noise Level at Receptor	Plant Noise Criterion
6-7 Queen Street	Daytime 07:00-23:00 Hours	$L_{Aeq,T}$ 31 dB	$\leq L_{Aeq,T}$ 42 dB
	Night-time 23:00-07:00 Hours	$L_{Aeq,T}$ 31 dB	$\leq L_{Aeq,T}$ 36 dB

Table 7.3 Predicted building sound levels at the nearest residential receptors

7.2.2 Compliance with the building services plant noise requirements of WC has been demonstrated. No further mitigation is required.

7.2.3 A summary of the plant sound calculations is presented in Appendix B.

7.3 PROPOSED EXTERNAL PATRON AREAS

7.3.1 There are two proposed external patron areas located on site: the rear courtyard which will host external seating for the restaurant on the ground floor and external portions of the proposed rooftop bar.

7.3.2 The rear courtyard is an existing external patron area used by the original hotel. As part of the development, it is proposed to host a maximum of 120 patrons (standing) on occasion but, for the majority of the time, occupancy will be limited to a maximum of 55 seated patrons.

7.3.3 The rooftop bar is a new proposed external patron area and will have a maximum capacity of 40 patrons.

7.3.4 It has been confirmed that the external patron areas will not have any amplified sound systems or music, and both will be closed during the night-time period (23:00-07:00).

7.4 PATRON SOUND ASSESSMENT

7.4.1 A patron sound assessment has been conducted following the WC recommended methodology. Building screening has been considered, where appropriate.

7.4.2 The results of the assessment are outlined as follows:

Receptor	Patron Area	Patron Noise Level at Receptor			Patron Noise Criteria
		Casual Voice	Normal Voice	Raised Voice	
11 Milford Street	Rear Courtyard (120 patrons)	$L_{Aeq,T}$ 39 dB	$L_{Aeq,T}$ 44 dB	$L_{Aeq,T}$ 51 dB	$\leq L_{Aeq,T}$ 47 dB
	Rear Courtyard (55 patrons)	$L_{Aeq,T}$ 35 dB	$L_{Aeq,T}$ 40 dB	$L_{Aeq,T}$ 47 dB	
	Rooftop Bar (40 patrons)	$L_{Aeq,T}$ 33 dB	$L_{Aeq,T}$ 38 dB	$L_{Aeq,T}$ 45 dB	

Receptor	Patron Area	Patron Noise Level at Receptor			Patron Noise Criteria
		Casual Voice	Normal Voice	Raised Voice	
6-7 Queen Street	Rear Courtyard (120 patrons)	$L_{Aeq,T}$ 38 dB	$L_{Aeq,T}$ 43 dB	$L_{Aeq,T}$ 50 dB	$\leq L_{Aeq,T}$ 47 dB
	Rear Courtyard (55 patrons)	$L_{Aeq,T}$ 35 dB	$L_{Aeq,T}$ 40 dB	$L_{Aeq,T}$ 47 dB	
	Rooftop Bar (40 patrons)	$L_{Aeq,T}$ 34 dB	$L_{Aeq,T}$ 39 dB	$L_{Aeq,T}$ 46 dB	

Table 7.4 Predicted patron sound levels at the nearest residential receptors

7.4.3 Where observing the range of voice levels, the proposed patron areas comply with the criteria in all but the “Raised Voice” levels for 120 patrons (maximum capacity) within the rear courtyard. As detailed previously, the rear courtyard will generally offer external seating only and, therefore, occurrence of maximum capacity 120 patrons (standing) is unlikely to be common.

7.4.4 It is not, therefore, expected that the proposed external patron areas are likely to cause adverse comment.

8.0 CONCLUSION

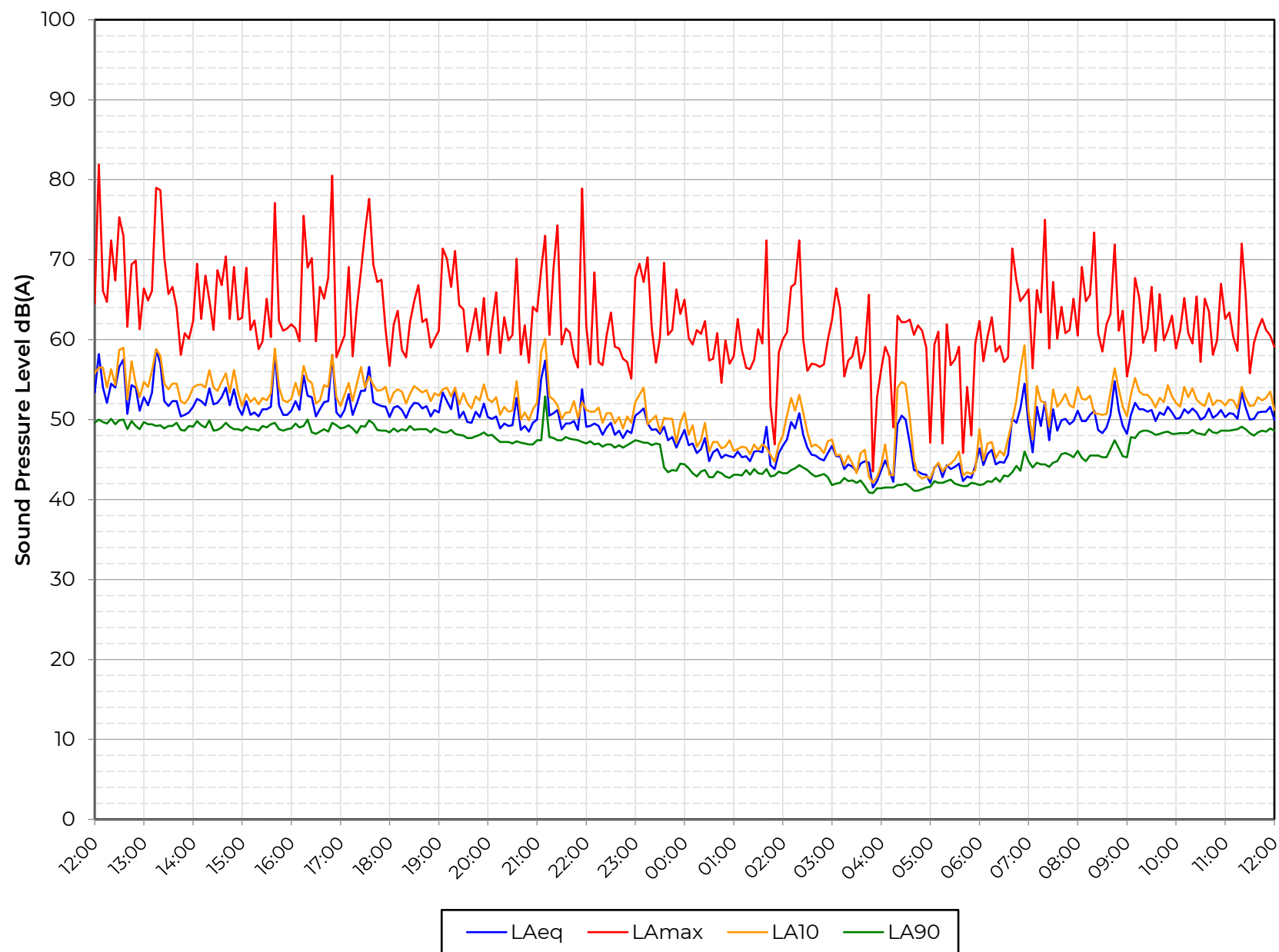
- 8.1 Clarke Saunders Acoustics has been instructed by Larasian Ltd to conduct a noise impact assessment of proposed building services plant and patron noise for The Cathedral Hotel in Salisbury in accordance with the planning requirements for Wiltshire Council.
- 8.2 An environmental noise survey was undertaken to establish the existing background sound levels.
- 8.3 Manufacturer data was provided to calculate the predicted sound levels of the proposed plant to the nearby residential receptors.
- 8.4 Compliance with the requirements of Wiltshire Council has been demonstrated, no further mitigation is required.
- 8.5 Wiltshire Council’s recommended patron noise assessment methodology has been followed to consider the impact of expected patron noise levels at the nearby residential receptor locations.
- 8.6 The proposed patron areas are within the Wiltshire Council requirements apart from the maximum standing capacity of the rear courtyard. This is unlikely to occur frequently and therefore is considered to have low likelihood of adverse comment.

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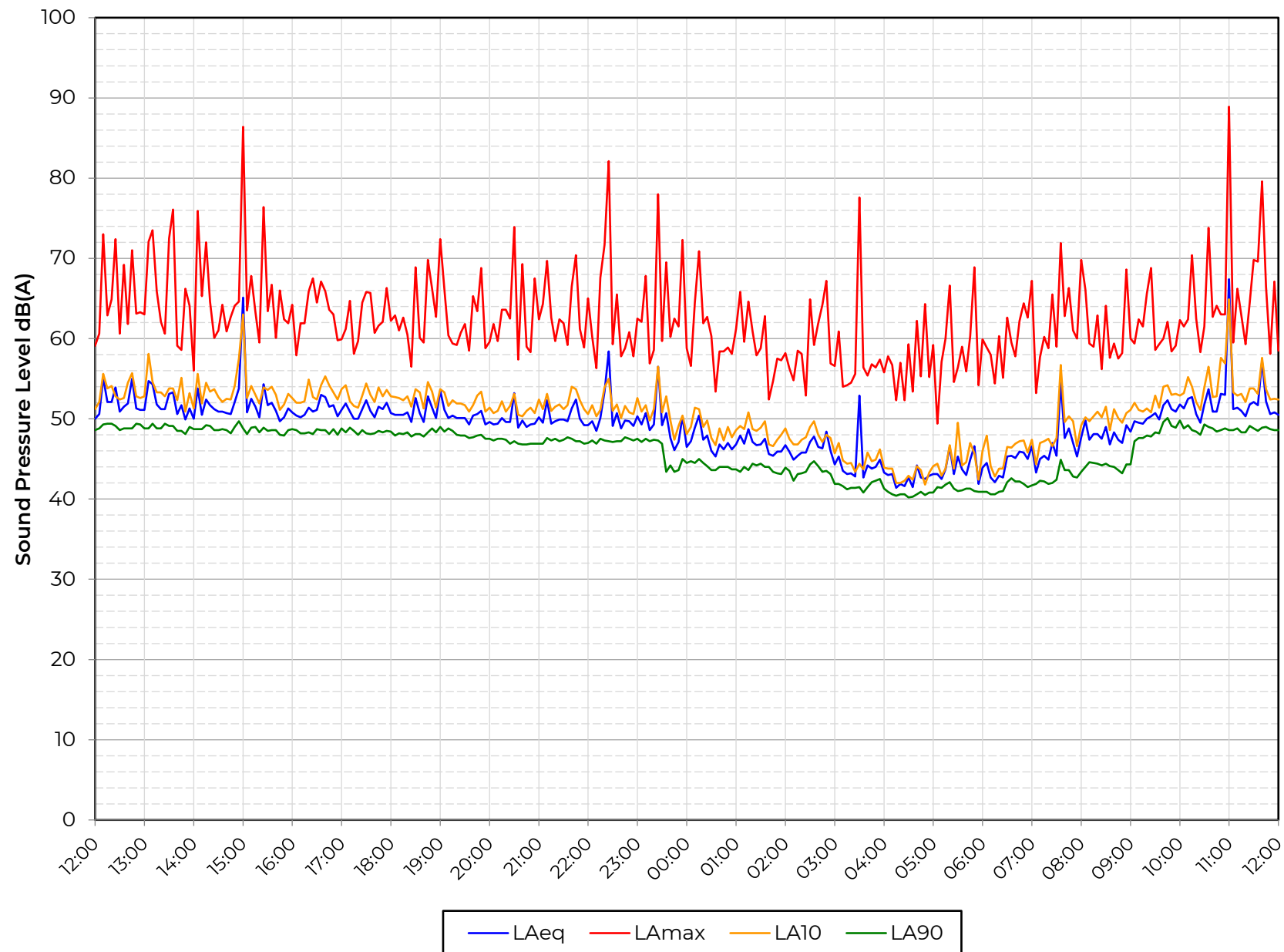
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CLARKE SAUNDERS ACOUSTICS



Position Rear Courtyard

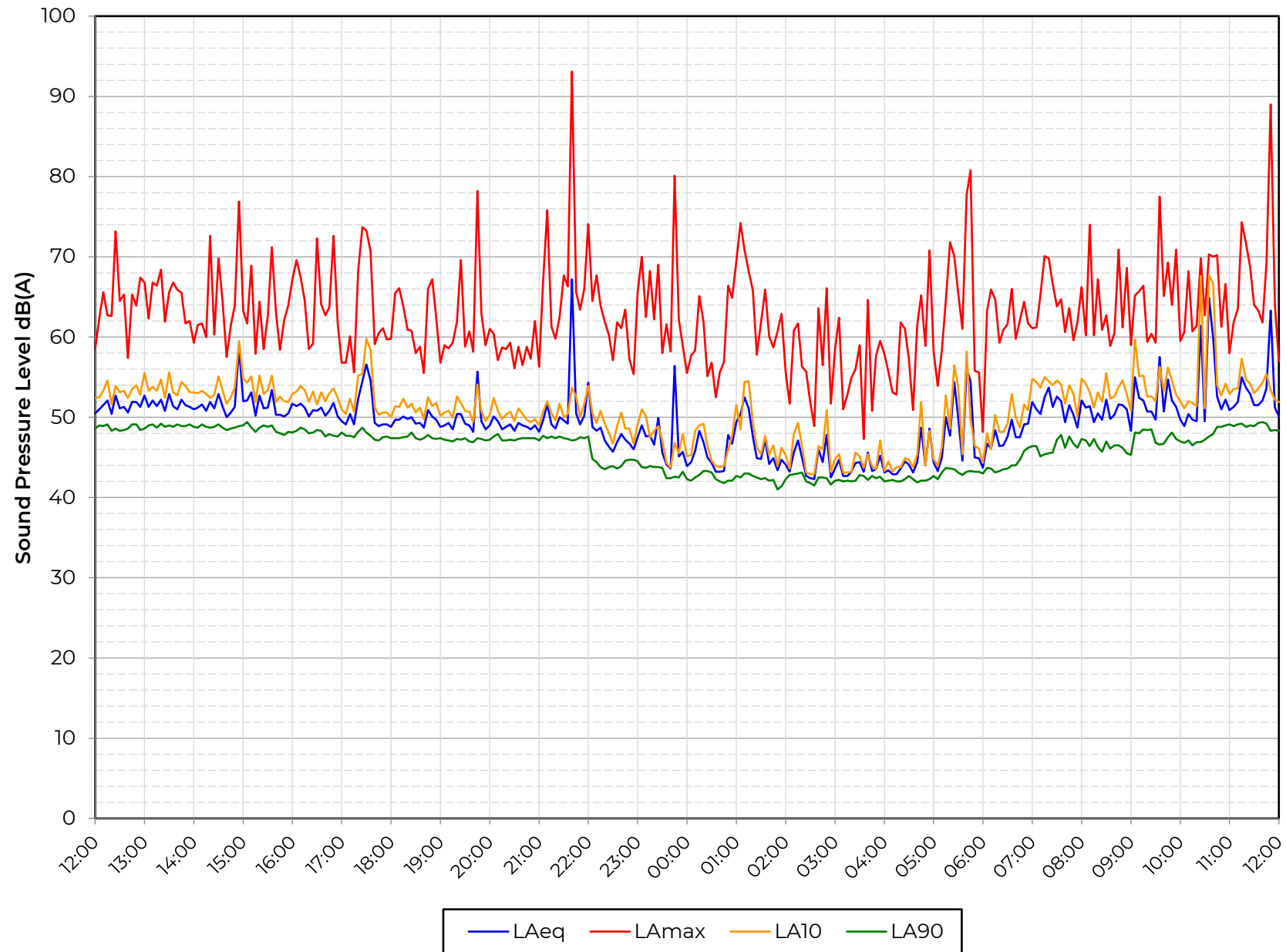


Position Rear Courtyard

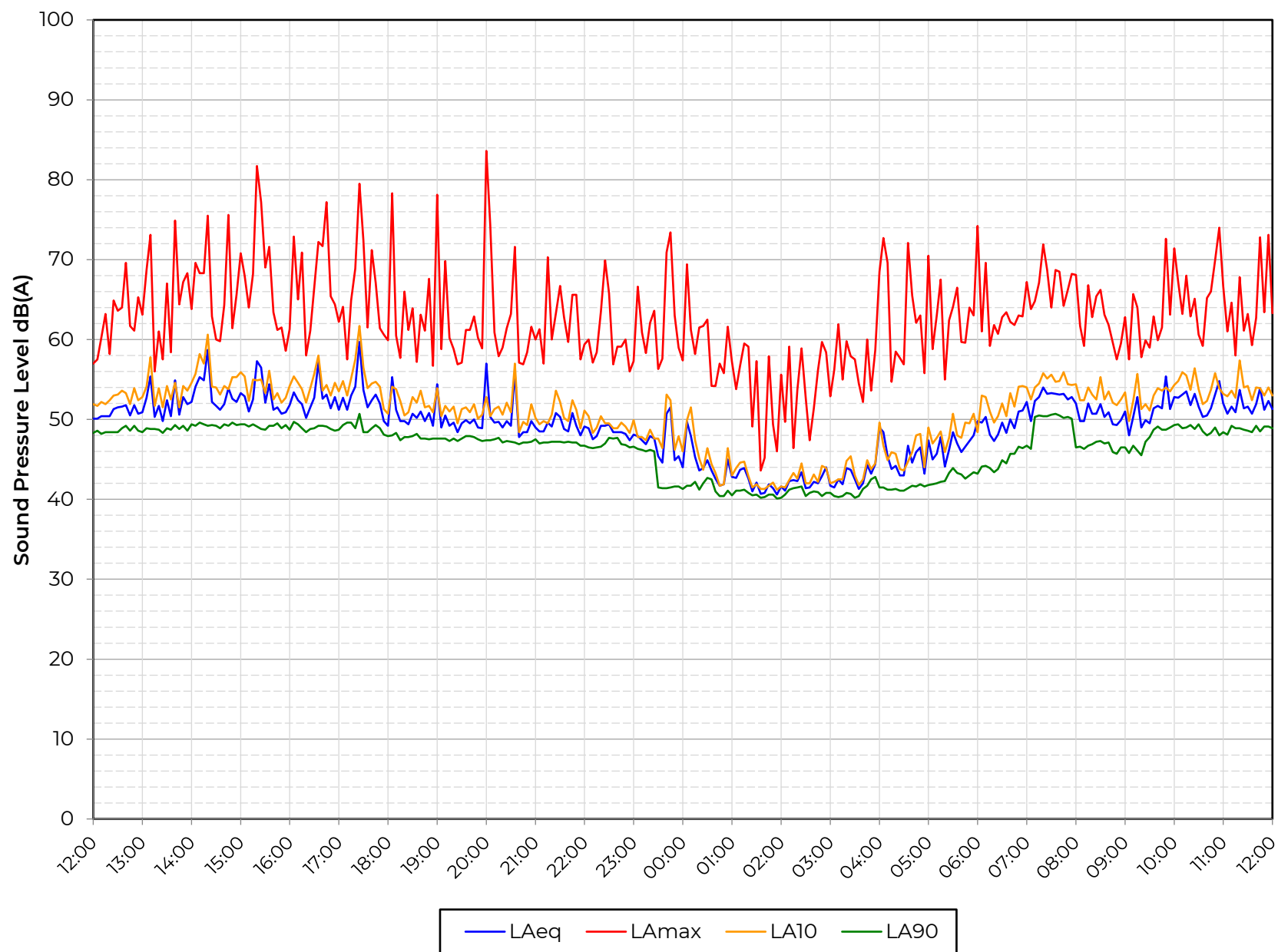


The Cathedral Hotel, Salisbury

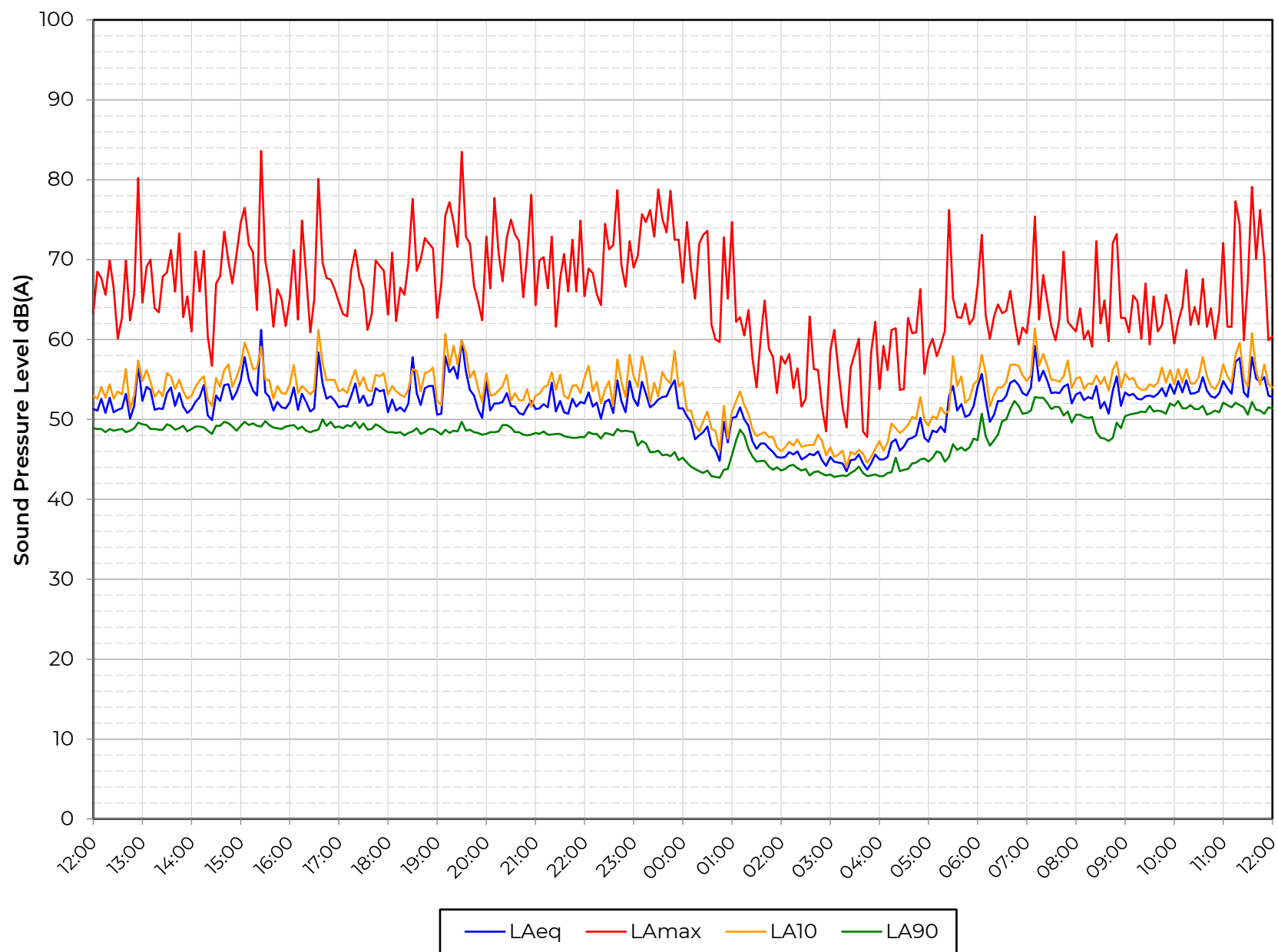
Position Rear Courtyard



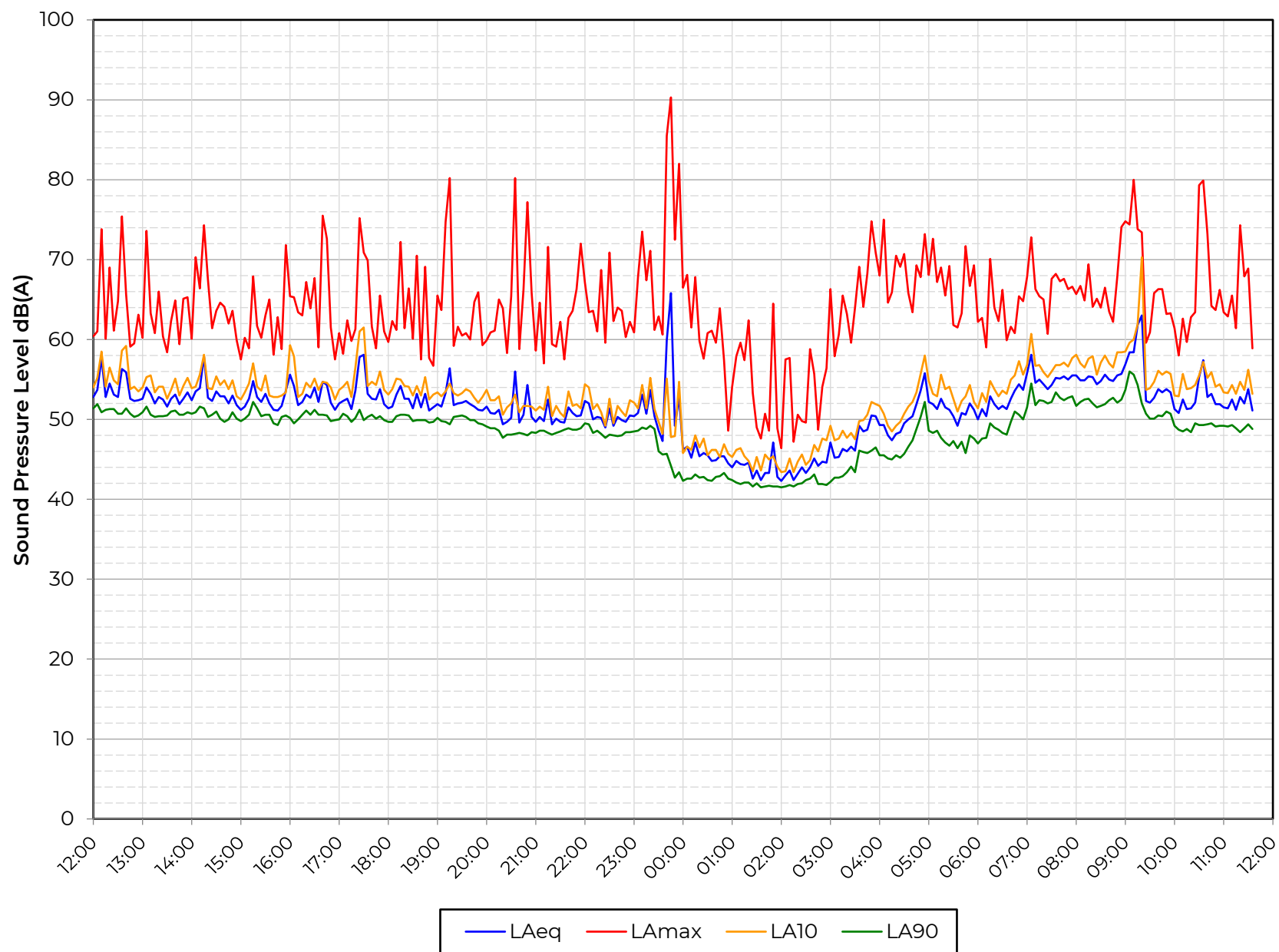
Position Rear Courtyard



Position Rear Courtyard



Position Rear Courtyard



Acoustic Terminology

The human impact of sounds is dependent upon many complex interrelated factors such as 'loudness', its frequency (or pitch) and variation in level. In order to have some objective measure of the annoyance, scales have been derived to allow for these subjective factors.

Sound	Vibrations propagating through a medium (air, water, etc.) that are detectable by the auditory system.
Noise	Sound that is unwanted by or disturbing to the perceiver.
Frequency	The rate per second of vibration constituting a wave, measured in Hertz (Hz), where 1Hz = 1 vibration cycle per second. The human hearing can generally detect sound having frequencies in the range 20Hz to 20kHz. Frequency corresponds to the perception of 'pitch', with low frequencies producing low 'notes' and higher frequencies producing high 'notes'.
dB(A):	Human hearing is more susceptible to mid-frequency sounds than those at high and low frequencies. To take account of this in measurements and predictions, the 'A' weighting scale is used so that the level of sound corresponds roughly to the level as it is typically discerned by humans. The measured or calculated 'A' weighted sound level is designated as dB(A) or L_A .
L_{eq}:	A notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 8 hour, 1 hour, etc). The concept of L_{eq} (equivalent continuous sound level) has primarily been used in assessing noise from industry, although its use is becoming more widespread in defining many other types of sounds, such as from amplified music and environmental sources such as aircraft and construction. Because L_{eq} is effectively a summation of a number of events, it does not in itself limit the magnitude of any individual event, and this is frequently used in conjunction with an absolute sound limit.
L_{10} & L_{90}:	Statistical L_n indices are used to describe the level and the degree of fluctuation of non-steady sound. The term refers to the level exceeded for n% of the time. Hence, L_{10} is the level exceeded for 10% of the time and as such can be regarded as a typical maximum level. Similarly, L_{90} is the typical minimum level and is often used to describe background noise. It is common practice to use the L_{10} index to describe noise from traffic as, being a high average, it takes into account the increased annoyance that results from the non-steady nature of traffic flow.
L_{max}:	The maximum sound pressure level recorded over a given period. L_{max} is sometimes used in assessing environmental noise, where occasional loud events occur which might not be adequately represented by a time-averaged L_{eq} value.

Octave Band Frequencies

In order to determine the way in which the energy of sound is distributed across the frequency range, the International Standards Organisation has agreed on "preferred" bands of frequency for sound measurement and analysis. The widest and most commonly used band for frequency measurement and analysis is the Octave Band.

In these bands, the upper frequency limit is twice the lower frequency limit, with the band being described by its "centre frequency" which is the average (geometric mean) of the upper and lower limits, e.g. 250 Hz octave band extends from 176 Hz to 353 Hz. The most commonly used octave bands are:

Octave Band Centre Frequency Hz	63	125	250	500	1000	2000	4000	8000
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Human Perception of Broadband Noise

Because of the logarithmic nature of the decibel scale, it should be borne in mind that sound levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) sound level is not twice as loud as 50dB(A). It has been found experimentally that changes in the average level of fluctuating sound, such as from traffic, need to be of the order of 3dB before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10dB is perceived by the average listener as a doubling or halving of loudness. Using this information, a guide to the subjective interpretation of changes in environmental sound level can be given.

INTERPRETATION

Change in Sound Level dB	Subjective Impression	Human Response
0 to 2	Imperceptible change in loudness	Marginal
3 to 5	Perceptible change in loudness	Noticeable
6 to 10	Up to a doubling or halving of loudness	Significant
11 to 15	More than a doubling or halving of loudness	Substantial
16 to 20	Up to a quadrupling or quartering of loudness	Substantial
21 or more	More than a quadrupling or quartering of loudness	Very Substantial

Earth Bunds and Barriers - Effective Screen Height

When considering the reduction in sound level of a source provided by a barrier, it is necessary to establish the "effective screen height". For example if a tall barrier exists between a sound source and a listener, with the barrier close to the listener, the listener will perceive the sound as being louder if he climbs up a ladder (and is closer to the top of the barrier) than if he were standing at ground level. Equally if he sat on the ground the sound would seem quieter than if he were standing. This is explained by the fact that the "effective screen height" is changing with the three cases above. In general, the greater the effective screen height, the greater the perceived reduction in sound level.

Similarly, the attenuation provided by a barrier will be greater where it is aligned close to either the source or the listener than where the barrier is midway between the two.

APPENDIX B

AS13275 - THE CATHEDRAL HOTEL, SALISBURY SUMMARY OF PLANT SOUND CALCULATIONS

PLANT SOUND TO 11 MILFORD STREET		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>GF CONDENSER</u>										
Daikin REYQ14U (Lw) LN2	Lw	79	74	71	71	65	61	61	59	72
Lw to Lp @ 1m	Q = 2	-8	-8	-8	-8	-8	-8	-8	-8	
Attenuation Loss	45-600	-2	-4	-8	-12	-13	-13	-9	-8	
Screening Loss	Inf - 1 GFC	0	0	0	0	0	0	0	0	
Distance Loss	13m	-22	-22	-22	-22	-22	-22	-22	-22	
	Subtotal	47	40	33	29	22	18	22	21	32
<u>SUITES CONDENSER</u>										
Daikin REYQ26U (Lw) LN1	Lw	89	84	82	81	75	73	74	68	83
Lw to Lp @ 1m	Q = 2	-8	-8	-8	-8	-8	-8	-8	-8	
Attenuation Loss	25-600	-6	-9	-13	-22	-33	-33	-27	-24	
Screening Loss	Inf - 2 SC	0	0	0	0	0	0	0	0	
Distance Loss	15m	-23	-23	-23	-23	-23	-23	-23	-23	
	Subtotal	52	44	37	27	11	9	16	13	33
<u>ROOFTOP CONDENSER</u>										
Daikin REYQ16U (SPL) LN2	Lp @ 1m	56	57	52	50	43	40	40	36	51
Lw to Lp @ 1m	-	0	0	0	0	0	0	0	0	
Attenuation Loss	None	0	0	0	0	0	0	0	0	
Screening Loss	Inf - 3 RC	-12	-15	-18	-18	-18	-18	-18	-18	
Distance Loss	18m	-25	-25	-25	-25	-25	-25	-25	-25	
	Subtotal	19	17	9	7	0	0	0	0	10
<u>KITCHEN SUPPLY BREAKOUT</u>										
Systemair MUB 042 500 EV Breakout	Lw	52	63	53	46	48	49	40	30	54
Lw to Lp @ 1m	Q = 2	-8	-8	-8	-8	-8	-8	-8	-8	
Attenuation Loss	None	0	0	0	0	0	0	0	0	
Screening Loss	Inf - 6 Kite	0	0	0	0	0	0	0	0	
Distance Loss	15m	-24	-24	-24	-24	-24	-24	-24	-24	
	Subtotal	20	31	21	14	16	17	8	0	23
<u>KITCHEN EXTRACT BREAKOUT</u>										
Systemair MUB 062 560 D4 Breakout	Lw	64	68	73	53	53	51	45	37	65
Lw to Lp @ 1m	Q = 2	-8	-8	-8	-8	-8	-8	-8	-8	
Attenuation Loss	SL-100	-5	-4	-5	-6	-9	-13	-14	-13	
Screening Loss	Inf - 6 Kite	0	0	0	0	0	0	0	0	
Distance Loss	15m	-24	-24	-24	-24	-24	-24	-24	-24	
	Subtotal	27	32	36	15	12	6	0	0	28
Specific sound level at receptor	L_{eq} 1hr	53	46	41	31	24	21	23	22	36

APPENDIX B

AS13275 - THE CATHEDRAL HOTEL, SALISBURY SUMMARY OF PLANT SOUND CALCULATIONS

PLANT SOUND TO 6-7 QUEEN STREET		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>GF CONDENSER</u>										
Daikin REYQ14U (Lw) LN2	Lw	79	74	71	71	65	61	61	59	72
Lw to Lp @ 1m	Q = 2	-8	-8	-8	-8	-8	-8	-8	-8	
Attenuation Loss		-2	-4	-8	-12	-13	-13	-9	-8	
Screening Loss		0	0	0	0	0	0	0	0	
Distance Loss	30m	-29	-29	-29	-29	-29	-29	-29	-29	
Subtotal		40	33	26	22	15	11	15	14	24
<u>SUITES CONDENSER</u>										
Daikin REYQ26U (Lw) LN1	Lw	89	84	82	81	75	73	74	68	83
Lw to Lp @ 1m	Q = 2	-8	-8	-8	-8	-8	-8	-8	-8	
Attenuation Loss		-6	-9	-13	-22	-33	-33	-27	-24	
Screening Loss		0	0	0	0	0	0	0	0	
Distance Loss	30m	-29	-29	-29	-29	-29	-29	-29	-29	
Subtotal		46	38	31	21	5	3	9	7	27
<u>ROOFTOP CONDENSER</u>										
Daikin REYQ16U (SPL) LN2	Lp @ 1m	56	57	52	50	43	40	40	36	51
Lw to Lp @ 1m	-	0	0	0	0	0	0	0	0	
Attenuation Loss		0	0	0	0	0	0	0	0	
Screening Loss		-2	-2	-3	-4	-6	-8	-10	-13	
Distance Loss	31m	-30	-30	-30	-30	-30	-30	-30	-30	
Subtotal		24	25	19	16	7	3	0	0	17
<u>KITCHEN SUPPLY BREAKOUT</u>										
Systemair MUB 042 500 EV Breakout	Lw	52	63	53	46	48	49	40	30	54
Lw to Lp @ 1m	Q = 2	-8	-8	-8	-8	-8	-8	-8	-8	
Attenuation Loss		0	0	0	0	0	0	0	0	
Screening Loss		0	0	0	0	0	0	0	0	
Distance Loss	23m	-27	-27	-27	-27	-27	-27	-27	-27	
Subtotal		17	28	17	11	13	14	5	0	19
<u>KITCHEN EXTRACT BREAKOUT</u>										
Systemair MUB 062 560 D4 Breakout	Lw	64	68	73	53	53	51	45	37	65
Lw to Lp @ 1m	Q = 2	-8	-8	-8	-8	-8	-8	-8	-8	
Attenuation Loss		-5	-4	-5	-6	-9	-13	-14	-13	
Screening Loss		0	0	0	0	0	0	0	0	
Distance Loss	23m	-27	-27	-27	-27	-27	-27	-27	-27	
Subtotal		24	29	32	12	9	3	0	0	24
Specific sound level at receptor	L_{eq} 1hr	47	40	36	25	18	16	16	15	31

APPENDIX C

AS13275 - THE CATHEDRAL HOTEL, SALISBURY SUMMARY OF PATRON SOUND CALCULATIONS

PEOPLE SOUND FROM REAR COURTYARD TO 11 MILFORD STREET (120 PATRONS)	CASUAL VOICE	NORMAL VOICE	RAISED VOICE
Base at 1 metre - $L_{Aeq,T}$	52	57	64
Number of Patrons - 120 people	21	21	21
Corretion for 50% "on time"	-3	-3	-3
Screening Losses	-5	-5	-5
Correction for distance from middle of patron area to receptor location - 20 metres	-26	-26	-26
Total Sound level at nearest residenital receptor - $L_{Aeq,T}$	39	44	51
Background level at nearest residential receptors - $L_{A90,5minutes}$	47	47	47
Difference between people noise and background	-8	-3	4

PEOPLE SOUND FROM REAR COURTYARD TO 11 MILFORD STREET (55 PATRONS)	CASUAL VOICE	NORMAL VOICE	RAISED VOICE
Base at 1 metre - $L_{Aeq,T}$	52	57	64
Number of Patrons - 55 people	17	17	17
Corretion for 50% "on time"	-3	-3	-3
Screening Losses	-5	-5	-5
Correction for distance from middle of patron area to receptor location - 20 metres	-26	-26	-26
Total Sound level at nearest residenital receptor - $L_{Aeq,T}$	35	40	47
Background level at nearest residential receptors - $L_{A90,5minutes}$	47	47	47
Difference between people noise and background	-12	-7	0

PEOPLE SOUND FROM ROOFTOP BAR TO 11 MILFORD STREET (40 PATRONS)	CASUAL VOICE	NORMAL VOICE	RAISED VOICE
Base at 1 metre - $L_{Aeq,T}$	52	57	64
Number of Patrons - 40 people	16	16	16
Corretion for 50% "on time"	-3	-3	-3
Screening Losses	-10	-10	-10
Correction for distance from middle of patron area to receptor location - 12 metres	-22	-22	-22
Total Sound level at nearest residenital receptor - $L_{Aeq,T}$	33	38	45
Background level at nearest residential receptors - $L_{A90,5minutes}$	47	47	47
Difference between people noise and background	-14	-9	-2

APPENDIX C

AS13275 - THE CATHEDRAL HOTEL, SALISBURY SUMMARY OF PATRON SOUND CALCULATIONS

PEOPLE SOUND FROM REAR COURTYARD TO 6-7 QUEEN STREET (120 PATRONS)	CASUAL VOICE	NORMAL VOICE	RAISED VOICE
Base at 1 metre - $L_{Aeq,T}$	52	57	64
Number of Patrons - 120 people	21	21	21
Corretion for 50% "on time"	-3	-3	-3
Screening Losses	-5	-5	-5
Correction for distance from middle of patron area to receptor location - 21 metres	-26	-26	-26
Total Sound level at nearest residenital receptor - $L_{Aeq,T}$	38	43	50
Background level at nearest residential receptors - $L_{A90,5minutes}$	47	47	47
Difference between people noise and background	-9	-4	3

PEOPLE SOUND FROM REAR COURTYARD TO 6-7 QUEEN STREET (55 PATRONS)	CASUAL VOICE	NORMAL VOICE	RAISED VOICE
Base at 1 metre - $L_{Aeq,T}$	52	57	64
Number of Patrons - 55 people	17	17	17
Corretion for 50% "on time"	-3	-3	-3
Screening Losses	-5	-5	-5
Correction for distance from middle of patron area to receptor location - 21 metres	-26	-26	-26
Total Sound level at nearest residenital receptor - $L_{Aeq,T}$	35	40	47
Background level at nearest residential receptors - $L_{A90,5minutes}$	47	47	47
Difference between people noise and background	-12	-7	0

PEOPLE SOUND FROM ROOFTOP BAR TO 6- 7 QUEEN STREET (40 PATRONS)	CASUAL VOICE	NORMAL VOICE	RAISED VOICE
Base at 1 metre - $L_{Aeq,T}$	52	57	64
Number of Patrons - 40 people	16	16	16
Corretion for 50% "on time"	-3	-3	-3
Screening Losses	-5	-5	-5
Correction for distance from middle of patron area to receptor location - 20 metres	-26	-26	-26
Total Sound level at nearest residenital receptor - $L_{Aeq,T}$	34	39	46
Background level at nearest residential receptors - $L_{A90,5minutes}$	47	47	47
Difference between people noise and background	-13	-8	-1