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NOISE IMPACT ASSESSMENT – REAR GARDEN

20-22 CAMBERWELL CHURCH STREET, LONDON SE5 8QU

FOR

YUCCA GARDEN & HYATT

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1 Executive Summary

The Client is seeking planning approval for the use of the rear garden structure as a shisha bar/lounge (Use Class Sui Generis) at 20-22 Camberwell Church Street, London SE5 8QU. Sound Licensing have been instructed to carry out a noise impact assessment to determine the potential noise impact on the noise sensitive receptors to the rear of the premises, The Colonnades & 10-12 Wren Road, as requested by the client.

The rear garden has been investigated for potential noise problems, noise predictions have been carried out and predicted noise levels have been included within this report. The garden structure is of timber construction with cavity insulation & plasterboard finish with double glazed windows on the side façades and is certainly capable of operating until 03:00 hours as a seated external area with background music without causing loss of amenity to the identified noise sensitive properties.

2 Experience

I can confirm that I am an Acoustic Consultant working at Sound Licensing for over five years. I currently hold the following qualifications; a Bsc in Music Technology, the IOA post graduate diploma in Acoustics & Noise control and the certificate of competence in environmental noise measurement and am an Associate Member of the Institute of Acoustics (AMIOA). I have experience in carrying out field noise measurements for various projects and British Standards including BS 4142:2014+A1:2019 & BS 8233:2014.

3 Introduction

This report was commissioned by the operators of Hayatt Camberwell, in response to advice from the Local Authority Planning Department. This report gives professional advice about the potential noise issues arising from the proposed use of the rear garden structure.

This report seeks to demonstrate that the proposed operation of the garden structure does not result in any loss of amenity at the residential properties at the rear identified by the Client.

4 Site Location and Surrounding Land Use

The premises are located in a busy commercial area with commercial uses at ground floor level & residential uses at first floor level and above. It is a 4-storey brick-built building with a single-storey timber structure in the garden area to the rear. There is a block of flats for residential accommodation at the rear of the site.

Figure 4.1 shows the site indicated in red, the rear structure in green and the identified noise sensitive properties in blue.

Figure 4.1 Site Location and Surrounding Land Use

Source: Google Maps

Nearby Noise Sensitive Receptors

The client has requested that the assessment be completed to the nearest noise sensitive receptor within the block of flats at the rear of the site at The Colonnades and 10-12 Wren Road at approximate distances of 25m and 11m from the garden structure respectively.

5 Local Authority Noise Criteria

The following Legislation & guidance should be considered:

BS 8233:2014

At present there are no current standards of guidelines for the assessment of patron noise in external areas and whilst it is acknowledged that BS8233:2014 was not designed to assess speech noise the internal noise guidelines do provide an indication of the effect of the proposed garden use. Table 5.1 below provides references and guideline values for desirable indoor ambient noise levels:

Table 5.1 BS8233:2014 Desirable internal ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB LAeq,T, with an upper guideline value of 55 dB LAeq,T which would be acceptable in noisier environments.

6 Operating Times

It is understood the proposed operating hours for the rear structure are as follows:

Yucca Garden – 20 Camberwell Church Street

Sunday to Thursday – 08:00 – 23:30 hours
Friday to Saturday – 08:00 – 00:00 hours

Hyatt – 22 Camberwell Church Street

Monday to Wednesday – 10:00 – 01:30 hours
Thursday to Saturday – 10:00 – 03:00 hours
Sunday – 10:00 – 02:00 hours

7 Layout and Construction of the Garden Structure

A non-intrusive examination of the structure was completed. The rear garden structure appears to be constructed of the following:

Walls

- 1 x layer of 10mm plasterboard
- Timber struts (100mm depth)
- 100mm stone wool insulation
- 1 x layer of 18mm plyboard

Both side walls have large double-glazed window installed of approximately 4/12/4 configuration which will provide approximately 29dB Rw.

Roof

- 1 x layer of 10mm plasterboard
- Timber struts (100mm depth)
- 100mm stone wool insulation
- 1 x layer of 18mm plyboard
- Weather proof roof felt

Using standard industry sound insulation prediction software (INSUL) the sound reduction index of walls and roof were calculated and will provide an approximate attenuation of 41dB Rw. Full SI predictions can be found in Appendix B.

8 Site Visit

3rd July 2023

A site visit was made to investigate the existing structure and the location of noise sensitive properties.

Entrances and Exits

There is one designated entrance to the garden through the rear of the building. The structure is accessible through an opening at the front.

Structure Walls & Roofing

The existing single storey structure appears to be in good repair. The double-glazed windows on both side walls can be opened remotely.

Seating & Capacity

At the time of the site visit the structure was not in use. The maximum capacity of the structure is envisaged to be 100 seated persons.

Observations

At the time of the visit the proposed uses of the structure were discussed. The following potential noise breakout points were observed:

Potential Noise Breakout Routes

- Through the opening at the front of the structure.
- Through the open windows in the side facades.

9 Discussion

The Local Authority planning department has requested a noise impact assessment for the proposed use of the rear garden structure. Following receipt of the request, the operator has sought professional advice. The garden structure has been investigated and discussed for construction and potential noise break out. This report has focused on the existing mitigation measures to ensure that the external area will be able to operate without causing disturbance to the residential properties at the rear as identified by the Client.

10 Patron Speech Noise

The external garden is proposed to be used between 08:00 and 03:00 hours. The noise source in the external garden is the introduction of patron speech and music to be played at background level. There is no standard/guidance/similar in respect to assessing patron speech noise from commercial premises therefore predicting patron speech noise levels has been completed using the below assumptions and calculations;

The proposal is to have an approximate maximum number of 100 patrons in the garden, this number assumes a worst-case scenario.

The garden structure construction is as stated within section 7 of this report. It is assumed that the windows on the side façades will remain closed during the busy operating periods of the garden.

In order to anticipate the noise levels at the identified sensitive receptors, a distance correction has been applied. Distances have been calculated from the closest window of the proposed garden seating area to the sensitive façades (approximately 27m and 13m respectively) of the identified receptors (first-floor flats at The Collonades and first-floor flat at 10 Wren Road).

Patron speech noise is approximately (for one person speaking in loud conversation) 70dB(A) at 1 metre (reference). It is assumed that a maximum of 50 people will be speaking at any one time in the external area as part of typical conversation between people (e.g., one person speaking, others listening). Therefore, in our experience a cumulative total of 87dB $L_{Aeq,T}$ has been used.

It should be noted that it is proposed to only play background music (approximately 75dB $L_{Aeq,T}$) within the rear garden structure.

In order to calculate noise break-out from an internal diffuse field to an external free field the following calculation should be used:

$$SPL_{ext} = SPL_{int} - SRI - 6$$

The Collonades

The window construction in the garden structure provides approximately 29dB Rw attenuation. A distance correction of 27m (from the closest window of the structure) should also be applied to arrive at the façade level (see figure 10.1 below):

Figure 10.1 Distance Attenuation

Level distance given a LPA @ a distance (Assumes point source and Hemispherical)

(Pressure Calculations)

LPA = 52 dB at distance of = 1 metre

dB level a 27 metres = 23.4 dB

Formula = $L_{PA1} = L_{PA2} - 20 \text{ Log } (d_1/d_2)$

This would result in a predicted façade level of **23dB(A)** and an indicative maximum internal noise level (residential windows open*) of **8dB(A)** $L_{Aeq,T}$ inside the noise sensitive receptors.

Additionally, noise from the opening at the front of the structure should be considered.

The distance to The Collonades from the opening at the front of the site is 41m. Building screening attenuation should be considered as there will be no direct line of site from the receptor to the opening.

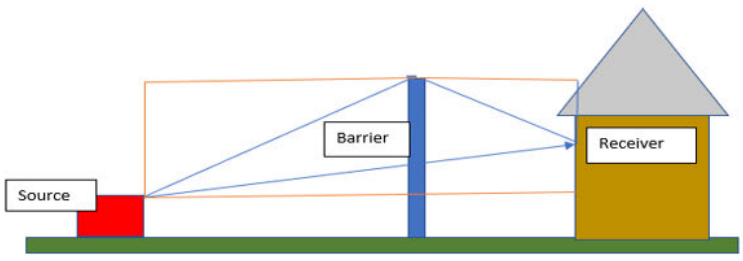
The screening will provide average attenuation of 19dB (500Hz) to the receptor (see figure 10.2 below):

Figure 10.2 Building Screening Attenuation

Applicable where barrier breaks line of sight between source and receiver

Example Illustration of Barrier Attenuation

		Metres
Source to Barrier		1.2
Receiver to Barrier		41
Source to Receiver		41



Path Difference	1.2

Frequency Hz	63	125	250	500	1000	2000	4000	8000
Barrier Correction	10.7	13.1	15.8	18.6	21.6	24.5	27.5	30.5

A distance correction of 41m should be applied to arrive at the façade level (see figure 10.3 below):

Figure 10.3 Distance Attenuation

Level distance given a LPA @ a distance (Assumes point source and Hemispherical)

(Pressure Calculations)

LPA = **87** dB at distance of = **1** metre

dB level a **41** metres = **54.7** dB

Formula = $L_{PA1} = L_{PA2} - 20 \text{ Log } (d_1/d_2)$

This would result in a predicted façade level of 36dB $L_{Aeq,T}$ (55dB – 19dB building screening) and an indicative maximum internal noise level (residential windows open*) of **21dB(A)** $\mathbf{L_{Aeq,T}}$ inside the noise sensitive receptors.

The façade levels from the noise breakout through the windows of the structure and from the opening at the front of the structure should be considered together as the cumulative effect will increase the façade noise level.

Adding dB

Levels to be added (Max. of eight)

Enter values	23	36	0	0	0	0	0	0

Total = **36.2** dB

The predicted cumulative façade level is 36dB(A) and an indicative maximum internal noise level (residential windows open*) of **21dB(A)** $\mathbf{L_{Aeq,T}}$ inside the first-floor residents at The Collonades, Wren Road.

*Reference BS8233:2014 – Slightly open window attenuation = 15dB

10-12 Wren Road

The window construction in the garden structure provides approximately 29dB Rw attenuation. A distance correction of 13m (from the closest window of the structure) should also be applied to arrive at the façade level (see figure 10.4 below):

Figure 10.4 Distance Attenuation

Level distance given a LPA @ a distance (Assumes point source and Hemispherical)

(Pressure Calculations)

LPA = 52 dB at distance of = 1 metre

dB level a 13 metres = 29.7 dB

Formula = $L_{PA1} = L_{PA2} - 20 \text{ Log } (d_1/d_2)$

This would result in a predicted façade level of **30dB(A)** and an indicative maximum internal noise level (residential windows open*) of **15dB(A)** $L_{Aeq,T}$ inside the noise sensitive receptors.

Additionally, noise from the opening at the front of the structure should be considered.

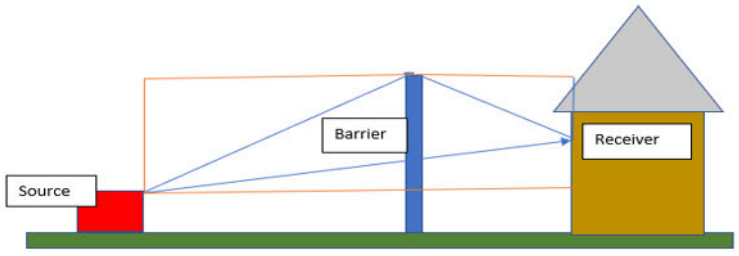
The distance to 10 Wren Road from the opening at the front of the site is 27m. Building screening attenuation should be considered as there will be no direct line of site from the receptor to the opening.

The screening will provide average attenuation of 19dB (500Hz) to the receptor (see figure 10.5 below):

Figure 10.5 Building Screening Attenuation

Applicable where barrier breaks line of sight between source and receiver

Example Illustration of Barrier Attenuation



		Metres
Source to Barrier		1.2
Receiver to Barrier		27
Source to Receiver		27

Path Difference	1.2

Frequency Hz	63	125	250	500	1000	2000	4000	8000
Barrier Correction	10.7	13.1	15.8	18.6	21.6	24.5	27.5	30.5

A distance correction of 27m should be applied to arrive at the façade level (see figure 10.6 below):

Figure 10.6 Distance Attenuation

Level distance given a LPA @ a distance (Assumes point source and Hemispherical)

(Pressure Calculations)

LPA = 87 dB at distance of = 1 metre

dB level a 27 metres = 58.4 dB

Formula = $L_{PA1} = L_{PA2} - 20 \text{ Log } (d_1/d_2)$

This would result in a predicted façade level of 39dB $L_{Aeq,T}$ (58dB – 19dB) and an indicative maximum internal noise level (residential windows open*) of **24dB(A) $L_{Aeq,T}$** inside the noise sensitive receptors.

The façade levels from the noise breakout through the windows of the structure and from the opening at the front of the structure should be considered together as the cumulative effect will increase the façade noise level.

Adding dB

Levels to be added (Max. of eight)

Enter values	30	39	0	0	0	0	0	0

Total = 39.5 dB

The predicted cumulative façade level is 40dB(A) and an indicative maximum internal noise level (residential windows open*) of **25dB(A) $L_{Aeq,T}$** inside the first-floor residents at 10 Wren Road.

*Reference BS8233:2014 – Slightly open window attenuation = 15dB

As the garden will close at 00:00 hours night-time criteria should be applied, BS8233:2014 guidance is shown in Table 10.4 below:

Table 10.4 BS8233:2014 Desirable internal ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

It should be noted that the resultant predicted façade noise level at the nearest residential property would comply with BS 8233:2014's design criteria for external areas, which states:

For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB LAeq,T, with an upper guideline value of 55 dB LAeq,T which would be acceptable in noisier environments.

11 Recommended Noise Mitigation

The following recommendation should be considered to comply with best practice:

- The windows installed in the side façades should not be opened during the busy operational hours of the rear structure.

12 Conclusion

The operator of the venue is seeking planning permission for permitted use of the rear garden, after advice from the Local Authority planning department a noise impact assessment has been carried out. This report gives professional advice about potential noise issues and addresses those concerns.

The rear garden structure has been investigated for construction and potential noise problems. The existing structure provides sufficient sound reduction to operate as an outdoor seated area with the windows closed during busy operating periods.

The garden structure is certainly capable of operating without causing loss of amenity to the residential occupiers at The Collonades & 10-12 Wren Road and the predicted resultant internal & external noise levels would comply with BS8233:2014 desirable noise guidelines.

APPENDIX A – ACOUSTIC TERMINOLOGY

Parameter	Description
Acoustic environment	Sound from all sound sources as modified by the environment
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far
Ambient sound level, La = LAeq,T	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T
Background sound level, LA90,T	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing ($20x10^{-6}$ Pascals).
Equivalent continuous A-weighted sound pressure level, LAeq,T	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, T = t2 – t1, has the same mean-squared sound pressure as a sound that varies with time
Measurement time interval, Tm	Total time over which measurements are taken
Rating level, LAr,Tr	Specific sound level plus any adjustment for the characteristic features of the sound
Reference time interval, Tr	Specified interval over which the specific sound level is determined
Residual sound	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound
Residual sound level, Lr = LAeq,T	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T
Specific sound level, Ls = LAeq,Tr	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr
Specific sound source	Sound source being assessed

References:

BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'

APPENDIX C – SOUND INSULATION PREDICTION

Garden Structure Wall/Roof

Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
- Key No. 5559
Job Name: 20-22 CAMBERWELL CHURCH STREET, LONDON SE5 8QU
Job No.: 000853 Initials:ML
Date:12/07/2023
File Name:insul

INSUL

Notes:Rear garden structure walls/roof construction.

Rw 41 dB
C -4 dB
Ctr -11 dB

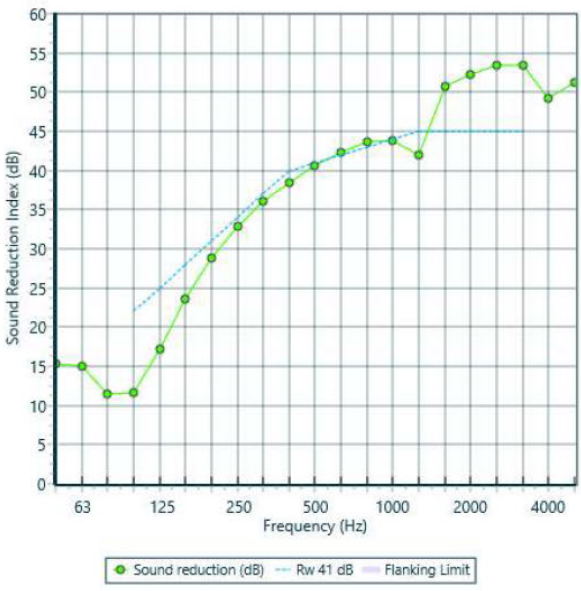
Mass-air-mass resonant frequency = =79 Hz
Panel Size = 2.7 m x 4.0 m
Partition surface mass = 20.5 kg/m²

System description

Panel 1 : 1 x 10 mm Plasterboard

Frame: Timber stud (1E2 mm x 45 mm), Stud spacing 600 mm ; Cavity Width 100 mm , 1 x Rockwool (33kg/m3) Thickness 100 mm
Panel 2 : 1 x 18 mm Plywood

freq.(Hz)	R(dB)	R(dB)
50	15	
63	15	14
80	11	
100	12	
125	17	15
160	24	
200	29	
250	33	32
315	36	
400	38	
500	41	40
630	42	
800	44	
1000	44	43
1250	42	
1600	51	
2000	52	52
2500	53	
3150	53	
4000	49	51
5000	51	



Example 4/12/4 Double Glazing Acoustic Performance Data

Sound insulation data for standard products

Glass	Sound reduction index (dB)									
	Octaveband Centre Frequency (Hz)						R_w (C; C_{tr})	R_w	R_w+C	R_w+C_{tr}
	125	250	500	1000	2000	4000				
Single glazing										
4 mm Float Glass	17	20	26	32	33	26	29 (-2; -3)	29	27	26
6 mm Float Glass	18	23	30	35	27	32	31 (-2; -3)	31	29	28
8 mm Float Glass	20	24	29	34	29	37	32 (-2; -3)	32	30	29
10 mm Float Glass	23	26	32	31	32	39	33 (-2; -3)	33	31	30
12 mm Float Glass	27	29	31	32	38	47	34 (0; -2)	34	34	32
6 mm Laminated Glass	20	23	29	34	32	38	32 (-1; -3)	32	31	29
8 mm Laminated Glass	20	25	32	35	34	42	33 (-1; -3)	33	32	30
10 mm Laminated Glass	24	26	33	33	35	44	34 (-1; -3)	34	33	31
12 mm Laminated Glass	24	27	33	32	37	46	35 (-1; -3)	35	34	32
16 mm Laminated Glass	26	31	30	35	43	51	36 (-1; -3)	36	35	33
Insulating glass units										
4 mm / (6 - 16 mm) / 4 mm	21	17	25	35	37	31	29 (-1; -4)	29	28	25
6 mm / (6 - 16 mm) / 4 mm	21	20	26	38	37	39	32 (-2; -4)	32	30	28
6 mm / (6 - 16 mm) / 6 mm	20	18	28	38	34	38	31 (-1; -4)	31	30	27
8 mm / (6 - 16 mm) / 4 mm	22	21	28	38	40	47	33 (-1; -4)	33	32	29
8 mm / (6 - 16 mm) / 6 mm	20	21	33	40	36	48	35 (-2; -6)	35	33	29
10 mm / (6 - 16 mm) / 4 mm	24	21	32	37	42	43	35 (-2; -5)	35	33	30
10 mm / (6 - 16 mm) / 6 mm	24	24	32	37	37	44	35 (-1; -3)	35	34	32
6 mm / (6 - 16 mm) / 6 mm Laminated	20	19	30	39	37	46	33 (-2; -5)	33	31	38
6 mm / (6 - 16 mm) / 10 mm Laminated	24	25	33	39	40	49	37 (-1; -5)	37	36	32

The above are generally accepted values for generic products taken from EN 12758. They are conservative values that can be used in the absence of measured data.
Data for laminated glass is based on pvb interlayers (excluding acoustic pvb interlayers). Glass thickness for laminated glass excludes interlayer thickness.
Data can be adopted for air or argon gas-filled cavities