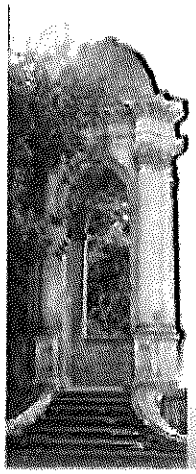
Tab 9



Sanctuary Acoustics

Acoustic Consultancy

NOISE ASSESSMENT FOR
[redacted]

A NOISE ASSESSMENT CONDUCTED IN RESPONSE TO THE PROPOSED LICENSING EXTENSION OF THE ADJOINING YATES'S PUBLIC HOUSE AND THE ASSOCIATED NOISE NUISANCE AT JACOBS COURT, KYRLE STREET, HEREFORD.

DOCUMENT 001

BY

ANTHONY FROST MSC IENG MIOA
MARCH 2015

Sanctuary Acoustics

t: 07851 389789 e: info@sanctuaryacoustics.com w: sanctuaryacoustics.com

EXECUTIVE SUMMARY

Sanctuary Acoustics was asked by [redacted] to assess the existing noise environment at Jacobs Court, Kyrle Street, Hereford. The dwellings located at Jacobs Court are within a built up area in central Hereford and adjoin a Yates's public house with beer garden and smoking area at the rear to which Jacobs Court overlooks. The public house currently operates until 1am but seeks an extension to 2am. However, residents have raised concerns in respect to noise breakout from the public house into amongst other places the dwellings at Jacobs Court. It is our understanding that when the dwellings were originally built and occupied the public houses' license was until midnight but has since crept forward to 1am. The 24-hour period is divided into a 16-hour daytime and an 8-hour night-time. Daytime is 7am to 11pm and subsequently night-time is 11pm to 7am. Noise measurements were conducted in apartment 6 between 12am and 2am to assess both the last hour of the current trading license between 12am and 1am and noise levels during the proposed 1-hour extension between 1am and 2am. It is also proposed that trading be permitted until 3am up to 15 nights a year. Two sets of noise measurements were undertaken, one in the kitchen/diner/lounge/bedroom overlooking the beer garden and a second measurement in a side bedroom that overlooks the main public house building. The noise measurements obtained in the kitchen/diner/lounge/bedroom which are inline of sight of the beer garden were undertaken with and without the balcony doors open and the bedroom measurements were undertaken with the windows closed. It was noted that their did not appear to be any ventilators in the apartments either in the glazed units or through wall vents and therefore to enable an exchange of airflow the balcony doors and windows would need to be opened.

To summarise:

1. Noise measurements were undertaken at Apartment 6, Jacobs Court, Kyrle Street, Hereford.
2. Noise measurements were taken at two locations between 12am to 1am to assess noise levels during the current final hour of trading at the adjoining Yates's Public House and between 1am to 2am to assess noise levels in the vicinity during what would be an extension period to the existing trading license. The noise survey commenced on Saturday 21st March and concluded on Sunday 22nd March 2015.
3. The noise assessment was conducted using two sound level meters, a Norsonics 132 sound level meter set up in a bedroom (location 1) on the side aspect and overlooking the public house taking noise measurements at 5-minute intervals with all windows and doors closed. The second measurement, location 2, was undertaken using a Norsonics 131 sound level meter in the kitchen/diner/lounge/bedroom which overlooks the beer garden. These measurements were taken at alternate 15-minute and 5-minute measurements with and without the balcony doors ajar.
4. The noise measurements were referenced to the *National Planning Policy Framework (NPPF)*. Further reference was also made to *BS 8233:2014 Guidance on sound insulation and noise reduction for buildings*, *BS 7445-1:2003 Description and Measurement of Environmental Noise – Part 1: Guide to Quantities and Procedures, Noise Policy Statement for England (NPSE)* and the *World Health Organisation (WHO) Night Noise Guidelines for Europe.*
5. BS 8233:2014 recommends a 30dB L_{Aeq} in Bedrooms for Sleeping and 35dB L_{Aeq} in Living Rooms for Resting and 40dB L_{Aeq} within Dining Rooms.

6. The results obtained in the bedroom show that prior to 1am which is during trading the recommended internal noise level of 30dB L_{Aeq} which is to enable undisturbed sleep is exceeded. Post 1am when trading has ceased the noise level within the bedroom decreases below 30dB L_{Aeq}. The noise level in the kitchen/diner/lounge/bedroom which overlooks the beer garden is closer to 40dB during trading and increases when the balcony door is left ajar. After trading during cleanup and when staff have finished their shifts but remain in the beer garden the noise level still remains above 35dB in the kitchen/diner/lounge/bedroom with the balcony doors ajar.
7. Based upon the noise results obtained and with reference to applicable guidance it is recommended that the extension beyond 1am should not be granted and furthermore once the cleanup of the beer garden has been completed, staff are not permitted to congregate in the beer garden as they unnecessarily contribute to the noise climate. The only exceptions made to this should be in the event of an emergency such as a fire or to exit the premises once their shift has finished and they need to access vehicles parked to the rear.

1. INTRODUCTION

Sanctuary Acoustics was asked by [redacted] to assess the existing noise environment at Jacobs Court, Kyrle Street, Hereford. The dwellings located at Jacobs Court are within a built up area in central Hereford and adjoin a Yates's public house with beer garden and smoking area at the rear to which Jacobs Court overlooks. The public house currently operates until 1am but seeks an extension to 2am. However, residents have raised concerns in respect to noise breakout from the public house into amongst other places the dwellings at Jacobs Court. It is our understanding that when the dwellings were originally built and occupied the public houses' license was until midnight but has since crept forward to 1am. The 24-hour period is divided into a 16-hour daytime and an 8-hour night-time. Daytime is 7am to 11pm and subsequently night-time is 11pm to 7am. Noise measurements were conducted in apartment 6 between 12am and 2am to assess both the last hour of the current trading license between 12am and 1am and noise levels during the proposed 1-hour extension between 1am and 2am. It is also proposed that trading be permitted until 3am up to 15 nights a year. Two sets of noise measurements were undertaken, one in the kitchen/diner/lounge/bedroom overlooking the beer garden and a second measurement in a side bedroom that overlooks the main public house building. The noise measurements obtained in the kitchen/diner/lounge/bedroom which are inline of sight of the beer garden were undertaken with and without the balcony doors open and the bedroom measurements were undertaken with the windows closed. It was noted that their did not appear to be any ventilators in the apartments either in the glazed units or through wall vents and therefore to enable an exchange of airflow the balcony doors and windows would need to be opened.

The site is located in a busy location in central Hereford with noted noise sources impinging onto Jacobs Court from customers in the public houses' beer garden, the low frequency component of dance music from the public house by transmission through the structure and by airborne means. Some road traffic noise was also audible, particularly from motorbikes.

Figure 1 depicts the measurement location in the kitchen/diner/lounge/bedroom of apartment 6 which overlooks the beer garden. This space is double height with a bedroom space at mezzanine level. Measurements were taken with and without the balcony doors ajar.

Figure 1: This depicts the measurement location in the kitchen/diner/lounge/bedroom of the development at Jacobs Court, Kyrle Street.

Figure 2 depicts glazed units in the dwelling.

Figure 2: Glazed units.

Figure 3 depicts the balcony doors when left ajar.

Figure 3: The balcony doors when opened for the ajar measurements to simulate the need for airflow.

Figure 4 depicts the measurement location in a side aspect bedroom of apartment 6. Measurements were taken with the window closed for the whole measurement.

Figure 4: The bedroom measurement with the windows closed.

Noise is covered, although briefly, in the new National Planning Policy Framework (NPPF) which states that the planning system should contribute to and enhance the natural and local environment.

Planning policies and decisions should;

- aim to avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;

- mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from the new development, including through the use of conditions;
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established;
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

The Department for the Environment, Food and Rural Affairs have issued an explanatory note to the *Noise Policy Statement for England (NPSE)* which states that the long term vision of Government noise policy is to *"promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."*

The NPPF guidance however gives no objective, tangible standards or criteria to inform planning decisions in respect to noise. The framework does quote existing guidance to make reference to including *WHO* guidelines and *BS 8233: 1999 Sound insulation and noise reduction for buildings – Code of practice*. BS 8233 has since been revised, the fifth imprint; *BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings* was issued last year. The previous planning guidance used in relation to noise for residential planning was *Planning Policy Guidance 24 (PPG24)*, which was repealed in March 2012.

The noise measurement locations were chosen to assess noise impinging onto the development from external noise sources including the adjoining public house.

The measurement intervals in the kitchen/diner/lounge/bedroom were initially of 15-minutes duration. Two uninterrupted measurements were conducted between 12am and 1am in the unoccupied kitchen/diner/lounge/bedroom with the balcony doors closed. Two further 5-minute measurements were conducted with the balcony doors ajar prior to 1am with a final two 15-minute measurements in the kitchen/diner/lounge/bedroom between 1am and 2am, which is during the proposed 1-hour trading extension. Although trading had ceased staff from the public house were cleaning in this area and later congregated at a table when finished. The noise measurements conducted in the unoccupied side aspect bedroom were of 5-minutes duration with the window closed. A total of 24 uninterrupted measurements were conducted. The measurements commenced late on Saturday 21st March 2015 and finishing at 2am on Sunday 22nd March 2015.

In order to assess the existing noise environment, the following were considered:

- Public house customer noise impinging onto the site from the beer garden was assessed onto all facing elevations.
- Music from the public house.
- Noise from nearby road traffic and other nearby commercial activity.
- The glazing, façade construction, ventilation methods and room layout most susceptible to noise ingress.

The noise measurements in the kitchen/diner/lounge/bedroom were undertaken using a Norsonics 131 Sound Level Meter (Serial Number 1313597) which was calibrated before and after the noise measurements were taken using a CEL 284/2

Acoustic Calibrator (Serial Number 4-02123778). This equipment has traceable calibration certificates with these two items of Norsonics and CEL equipment designated as being Type 1 instruments inline with IEC 61672 & 61260 and IEC 60942 respectively.
The noise measurements in the bedroom were undertaken using a Norsonics 132 Sound Level Meter (Serial Number 1322854) which was calibrated before and after the noise measurements were taken using a Cirrus CR:514 Acoustic Calibrator (Serial Number 60242). This equipment has traceable calibration certificates with these two items of Norsonics and Cirrus equipment designated as being Type 2 instruments inline with IEC 61672, 60651 & 60804 and IEC 60942 respectively.

The Sound Level Meters were mounted on tri-pods 1.5m above floor level. The Nor 131 sound level meter was calibrated to 114dB at 1kHz before and after the noise survey and the Nor 132 was calibrated to 94dB at 1kHz. The results of the noise measurements and their acoustic parameters are detailed in section 2, Measurements and Observations. The full 1/1 octave band data for the measurements are detailed at the end of this report in Annex A.

2. Measurements and Observations

The purpose of the noise assessment is to measure and assess existing noise levels in the vicinity with the primary noise source being identified with the use of the Yates's beer garden and smoking area and the noise created by customers at the Yates's public house. As stated previously the trading license has already been extended from 12pm to 1am which further encroaches into the official night-time period with a proposal for a further extension to 2am and a potential extra limited trading till 3am up till 15 nights a year. This assessment seeks to quantify and analyse current noise levels and there frequency component were applicable that impinges onto the dwellings located at Jacobs Court. Therefore to monitor noise impinging onto the site a sound level meter (Norsonics 132) was set in logging mode to measure noise at 5-minute intervals in a bedroom with a side aspect to the public house during the current final hour of trading and during the proposed hour extension. A second sound level meter (Norsonics 131) was set up in the kitchen/diner/lounge/bedroom to monitor at 15-minute and 5-minute intervals over the same time period but with and without the balcony doors ajar to simulate airflow as required. With no visible ventilators in the apartment façade the opening of windows and the balcony doors was seen as the only method of allowing a change of airflow in the room.

It was noted between 12am and 1am customers in the beer garden were audible with various maximum noise events arising from shrieks and raised voices. The only other noise source noted were some road vehicles, particularly motorbikes. With the balcony doors left ajar the internal noise levels did increase. Between 1am and 2am after trading had ceased although the continuous noise diminished the cleanup process in the beer garden itself created some noise and it was further noted that after staff had finished cleaning up they congregated around a large table in the beer garden before leaving the premises. The equivalent continuous noise level (L_{Aeq}) appeared to be determined by noise activity created by customers as was many of the maximum individual noise events (L_{Amax}) with the exception of some road vehicles. Post trading noise was still audible from staff clearing up such as the banging of bottles and bottle bins. Staff who were seated at the table in the beer garden after the public house had closed were also audible.

A glossary of the acoustic parameters/terms used can be found in Annex A.

BS 7445-1:2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures states in section 5.2.4 *Measurements inside buildings;*

"These measurements shall be carried out in enclosures where the noise is of interest. If not otherwise specified, the preferred measurement positions are at least 1m from the walls or other major reflecting surfaces, 1.2m to 1.5m above the floor and approximately 1.5m from windows".

The noise results obtained in the kitchen/diner/lounge/bedroom taken between 12:05 to 12:20 are detailed in table 1.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level
Time & Duration	00:05 – 00:20 15-Minute Measurement March 21st
Weather & Site Conditions/Observations	Site Conditions – All windows and doors closed to the kitchen/diner/lounge/bedroom. Pub customers in the beer garden. Customers from Yates's audible; raised voices, laughter etc., low frequency component of dance music by direct airborne transmission and through the building structure. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.
Measurement Parameter	**Measurement Reading**
L_{Aeq}	38.9dB(A)
L_{A10}	40.7dB(A)
L_{Amin}	34.1dB(A)
L_{Amax}	46.8dB(A)
L_{A90}	36.8dB(A)

Table 1: The results taken for the external measurement location 1 between 00:05 to 00:20

Table 2 details the 1/1 octave band measurements for the measurement.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level							
Time & Duration	00:05 – 00:20 15-Minute Measurement March 21st							
Site Conditions or Observations	Site Conditions – All windows and doors closed to the kitchen/diner/lounge/bedroom. Pub customers in the beer garden. Customers from Yates's audible; raised voices, laughter etc., low frequency component of dance music by direct airborne transmission and through the building structure. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.							
Measurement Parameter	**Frequency (Hz) Octave Bands**							
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
L_{eq} (Ambient Level)	58.1	48.4	38.2	35.5	32.9	27.6	22.0	13.3
L_{max} (Maximum Level)	69.6	58.6	45.7	45.4	45.3	42.4	35.3	26.1
L_{90} (Background Level)	52.1	44.6	36.8	32.7	28.1	23.1	17.2	12.9

Table 2: The 1/1 Octave Band Data taken between 00:05 to 00:20

The noise results obtained for measurement 2 at location 1 are detailed in table 3.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level
Time & Duration	00:20 – 00:35 15-Minute Measurement March 21st
Weather & Site Conditions/Observations	Site Conditions – All windows and doors closed to the kitchen/diner/lounge/bedroom. Pub customers in the beer garden. Customers from Yates's audible; raised voices, laughter etc., low frequency component of dance music by direct airborne transmission and through the building structure. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.
Measurement Parameter	**Measurement Reading**
L_{Aeq}	39.3dB(A)
L_{A10}	40.8dB(A)
L_{Amin}	33.2dB(A)
L_{Amax}	50.2dB(A)
L_{A90}	36.2dB(A)

Table 3: The results taken for Measurement 2 at Location 1 for 00:20 to 00:35

Table 4 details the 1/1 octave band measurements for this measurement.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level							
Time & Duration	00:20 – 00:35 15-Minute Measurement March 21st							
Site Conditions or Observations	Site Conditions – All windows and doors closed to the kitchen/diner/lounge/bedroom. Pub customers in the beer garden. Customers from Yates's audible; raised voices, laughter etc., low frequency component of dance music by direct airborne transmission and through the building structure. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.							
Measurement Parameter	**Frequency (Hz) Octave Bands**							
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
L_{eq} (Ambient Level)	57.7	48.6	38.9	36.5	33.1	28.2	24.2	14.1
L_{max} (Maximum Level)	67.3	58.4	48.6	49.7	49.1	44.3	42.9	30.4
L_{90} (Background Level)	49.3	44.5	37.0	32.5	27.5	22.6	16.9	12.9

Table 4: The 1/1 Octave Band Data taken at Measurement Location 1 for 00:20 to 00:35

The noise results obtained for the third measurement at location 1 are detailed in table 5.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level
Time & Duration	00:50 – 00:55 5-Minute Measurement March 21st
Weather & Site Conditions/Observations	Site Conditions – All windows closed but the balcony doors to the kitchen/diner/lounge/bedroom are ajar. Pub customers in the beer garden. Customers, although at this time there numbers are reduced were still audible; raised voices, laughter etc. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.
Measurement Parameter	**Measurement Reading**
L_{Aeq}	40.8dB(A)
L_{A10}	42.2dB(A)
L_{Amin}	35.8dB(A)
L_{Amax}	59.7dB(A)
L_{A90}	37.7dB(A)

Table 5: The results taken at the measurement location 1 during 00:50 to 00:55

Table 6 details the 1/1 octave band measurements for this measurement.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level							
Time & Duration	00:50 – 00:55 5-Minute Measurement March 21st							
Site Conditions or Observations	Site Conditions – All windows closed but the balcony doors to the kitchen/diner/lounge/bedroom are ajar. Pub customers in the beer garden. Customers, although at this time there numbers are reduced were still audible; raised voices, laughter etc. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.							
Measurement Parameter	**Frequency (Hz) Octave Bands**							
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
L_{eq} (Ambient Level)	54.3	54.7	41.7	35.0	31.7	27.6	24.2	17.4
L_{max} (Maximum Level)	62.2	67.8	48.8	54.4	51.8	54.4	53.1	45.3
L_{90} (Background Level)	51.8	49.1	40.3	32.4	26.9	21.5	14.8	13.1

Table 6: The 1/1 Octave Band Data taken at Measurement Location 1 for 00:50 to 00:55

The noise results obtained for the fourth measurement taken at location 1, the last during existing trading hours are detailed in table 7.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level
Time & Duration	00:55 – 01:00 5-Minute Measurement March 21st
Weather & Site Conditions/Observations	Site Conditions – All windows closed but the balcony doors to the kitchen/diner/lounge/bedroom are ajar. Pub customers in the beer garden. Customers, although at this time there numbers are reduced were still audible; raised voices, laughter etc. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.
Measurement Parameter	**Measurement Reading**
L_{Aeq}	40.1dB(A)
L_{A10}	41.9dB(A)
L_{Amin}	34.8dB(A)
L_{Amax}	53.9dB(A)
L_{A90}	37.2dB(A)

Table 7: The results taken at the location 1 measurement during 00:55 to 01:00

Table 8 details the 1/1 octave band measurements for this measurement.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level							
Time & Duration	00:55 – 01:00 5-Minute Measurement March 21st							
Site Conditions or Observations	Site Conditions – All windows closed but the balcony doors to the kitchen/diner/lounge/bedroom are ajar. Pub customers in the beer garden. Customers, although at this time there numbers are reduced were still audible; raised voices, laughter etc. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.							
Measurement Parameter	**Frequency (Hz) Octave Bands**							
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
L_{eq} (Ambient Level)	54.9	54.1	41.6	33.4	29.6	26.3	25.7	17.7
L_{max} (Maximum Level)	67.8	63.9	50.4	49.5	45.5	48.1	51.5	40.6
L_{90} (Background Level)	52.1	49.0	39.8	31.1	26.1	21.4	14.4	13.1

Table 8: The 1/1 Octave Band Data taken at the location 1 measurement location for 00:55 to 01:00

The noise results obtained for measurement 5 at the location 1, the first of two 15-minute measurements while staff clean up the beer garden are detailed in table 9.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level
Time & Duration	01:00 – 01:15 15-Minute Measurement March 21st
Weather & Site Conditions/Observations	Site Conditions – All windows closed but the balcony doors to the kitchen/diner/lounge/bedroom are ajar. Pub customers have left the beer garden. Staff are clearing up the beer garden with occasional voices and the banging of bottles and bottle bins. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.
Measurement Parameter	**Measurement Reading**
L_{Aeq}	36.3dB(A)
L_{A10}	37.1dB(A)
L_{Amin}	33.5dB(A)
L_{Amax}	48.6dB(A)
L_{A90}	35.0dB(A)

Table 9: The results taken at Measurement Location 1 for 01:00 to 01:15

Table 10 details the 1/1 octave band measurements for the measurement.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level							
Time & Duration	01:00 – 01:15 15-Minute Measurement March 21st							
Site Conditions or Observations	Site Conditions – All windows closed but the balcony doors to the kitchen/diner/lounge/bedroom are left ajar. Pub customers have left the beer garden. Staff are clearing up the beer garden with occasional voices and the banging of bottles and bottle bins. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.							
Measurement Parameter	**Frequency (Hz) Octave Bands**							
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
L_{eq} (Ambient Level)	52.8	48.2	40.0	31.1	26.1	22.3	17.2	13.3
L_{max} (Maximum Level)	63.2	58.3	50.3	45.4	42.3	41.1	35.5	23.3
L_{90} (Background Level)	50.5	46.5	38.5	29.1	23.4	17.9	13.2	12.9

Table 10: The 1/1 Octave Band Data taken at Measurement Location 1 for 01:00 to 01:15

The noise results obtained for measurement 6 at location 1 are detailed in table 11.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level
Time & Duration	01:15 – 01:30 15-Minute Measurement March 21st
Weather & Site Conditions/Observations	Site Conditions – All windows closed but the balcony doors to the kitchen/diner/lounge/bedroom are ajar. Pub customers have left the beer garden. Staff are clearing up the beer garden with occasional voices and the banging of bottles and bottle bins. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.
Measurement Parameter	**Measurement Reading**
L_{Aeq}	36.0dB(A)
L_{A10}	36.9dB(A)
L_{Amin}	33.5dB(A)
L_{Amax}	45.4dB(A)
L_{A90}	35.0dB(A)

Table 11: The results taken for Measurement 6 at Location 1 for 01:15 to 01:30

Table 12 details the 1/1 octave band measurements for this measurement.

Location	1. Apartment 6 – Kitchen/Diner/Lounge with Bedroom at Mezzanine Level							
Time & Duration	01:15 – 01:30 15-Minute Measurement March 21st							
Site Conditions or Observations	Site Conditions – All windows closed but the balcony doors to the kitchen/diner/lounge/bedroom are ajar. Pub customers have left the beer garden. Staff are clearing up the beer garden with occasional voices and the banging of bottles and bottle bins. Rumble of road traffic noise from surrounding roads, particularly motorbikes and large vehicles.							
Measurement Parameter	**Frequency (Hz) Octave Bands**							
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
L_{eq} (Ambient Level)	52.7	48.0	39.9	30.7	25.7	20.1	16.2	13.3
L_{max} (Maximum Level)	65.8	58.4	51.1	43.3	41.4	37.8	33.2	22.0
L_{90} (Background Level)	50.5	46.5	38.6	29.0	23.5	18.0	13.2	13.0

Table 12: The 1/1 Octave Band Data taken at Measurement Location 1 for 01:15 to 01:30

The noise results obtained from the Norsonics 132 sound level meter set up in the bedroom (location 2) to log at 5-minute intervals commenced at 11.55pm on Saturday 21st and finished at 2am on Sunday 22nd. The results are in table 13.

Time Period 21-22/03/2015	Measurement Parameters				
	L_{Aeq}	L_{Amin}	L_{Amax}	L_{A10}	L_{A90}
23:55 to 00:00	32.0dB(A)	26.9dB(A)	48.7dB(A)	33.0dB(A)	29.4dB(A)
00:00 to 00:05	34.3dB(A)	26.5dB(A)	52.8dB(A)	34.7dB(A)	28.5dB(A)
00:05 to 00:10	29.9dB(A)	25.6dB(A)	41.6dB(A)	31.5dB(A)	27.6dB(A)
00:10 to 00:15	30.9dB(A)	26.5dB(A)	41.3dB(A)	32.3dB(A)	28.8dB(A)
00:15 to 00:20	30.7dB(A)	26.5dB(A)	39.3dB(A)	32.2dB(A)	29.0dB(A)
00:20 to 00:25	30.5dB(A)	26.1dB(A)	38.7dB(A)	31.8dB(A)	28.7dB(A)
00:25 to 00:30	30.6dB(A)	26.1dB(A)	38.1dB(A)	32.5dB(A)	28.2dB(A)
00:30 to 00:35	30.7dB(A)	26.1dB(A)	36.4dB(A)	32.5dB(A)	28.6dB(A)
00:35 to 00:40	34.3dB(A)	26.1dB(A)	46.3dB(A)	36.9dB(A)	28.8dB(A)
00:40 to 00:45	31.5dB(A)	26.8dB(A)	45.1dB(A)	33.3dB(A)	28.7dB(A)
00:45 to 00:50	31.6dB(A)	25.7dB(A)	49.0dB(A)	32.9dB(A)	27.8dB(A)
00:50 to 00:55	31.8dB(A)	25.3dB(A)	43.8dB(A)	33.9dB(A)	27.8dB(A)
00:55 to 01:00	31.5dB(A)	24.9dB(A)	48.5dB(A)	33.0dB(A)	27.8dB(A)
01:00 to 01:05	30.6dB(A)	24.1dB(A)	53.1dB(A)	30.3dB(A)	25.5dB(A)
01:05 to 01:10	27.5dB(A)	24.1dB(A)	42.1dB(A)	29.0dB(A)	25.3dB(A)
01:10 to 01:15	26.5dB(A)	23.9dB(A)	36.3dB(A)	27.9dB(A)	24.9dB(A)
01:15 to 01:20	26.2dB(A)	23.7dB(A)	34.7dB(A)	27.4dB(A)	24.8dB(A)
01:20 to 01:25	26.8dB(A)	22.9dB(A)	41.8dB(A)	27.5dB(A)	24.5dB(A)
01:25 to 01:30	27.9dB(A)	22.7dB(A)	44.9dB(A)	27.2dB(A)	23.8dB(A)
01:30 to 01:35	25.7dB(A)	22.6dB(A)	42.9dB(A)	26.7dB(A)	23.8dB(A)
01:35 to 01:40	26.7dB(A)	22.5dB(A)	48.4dB(A)	28.0dB(A)	23.7dB(A)
01:40 to 01:45	25.1dB(A)	22.6dB(A)	37.8dB(A)	26.0dB(A)	23.9dB(A)
01:45 to 01:50	27.5dB(A)	22.7dB(A)	44.0dB(A)	27.5dB(A)	23.7dB(A)
01:50 to 01:55	25.4dB(A)	22.5dB(A)	32.1dB(A)	26.8dB(A)	23.9dB(A)

Table 13: Noise results for Apartment 6, Bedroom taken on 21st – 22nd March 2015.

The results from both measurement locations show that the noise climate does vary between 12am to 1am and 1am to 2am. The continuously logging measurements taken in the bedroom show results taken each at 5-minute interval with an equivalent continuous noise level, L_{Aeq} of above 30dB(A) prior to 1am and dropping below 30dB(A) after 1am when customers have left the beer garden. The results taken in the kitchen/diner/lounge/bedroom show that with the balcony doors closed during trading that the equivalent continuous noise level, L_{Aeq} is around 40dB(A) prior to 1am. When the balcony doors are left ajar the noise level remains around 40dB(A), although at this time many of the customers have left the beer garden. Post 1am during the cleanup, the equivalent continuous noise level, L_{Aeq} only reduces marginally to around 36dB(A).

3. Reference to Guidance

Noise criteria is absent from the *National Planning Policy Framework (NPPF)*, but it does make reference to other guidance such as the *Noise Policy Statement for England (NPSE)*, *BS 8233* and *WHO* guidance on sleep disturbance and community noise levels. *BS 8233:2014 Guidance on sound insulation and noise reduction for buildings* which was revised in 2014 is now a far more robust standard that reflects current planning needs and viewpoints.

The revised *BS 8233:2014* states suitable indoor ambient noise levels for dwellings which are detailed in table 14;

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

Table 14: BS 8233:2014 Indoor ambient noise levels for dwellings

The noise results obtained in the bedroom prior to 1am exceed the 30dB L_{Aeq} internal noise level for night-time sleeping. Post 1am when trading has ceased the internal noise level decreased to below 30dB L_{Aeq}.

Further reference can be made to the NPSE in which it seeks in its aims to minimise adverse impacts and to mitigate in regards to health and quality of life resulting from environmental, neighbour and neighbourhood noise onto one other neighbour or site within the context of Government policy on sustainable development. In this instance, this refers to situations were noise impact lies somewhere between the *Lowest Observed Adverse Effect Level (LOAEL)*. This is the level above which adverse effects on health and quality of life can be detected and the *Significant Observed Adverse Effect Level (SOAEL)*. This is the level above which significant adverse effects on health and quality of life occur.

If no noise was audible from the source then this would be referred to as *NOEL – No Observed Effect Level*. This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to noise.

Table 15 details the applicable LOAEL and SOAEL.

Noise Source	Assessment Location	LOAEL	SOAEL	Times
General Environmental Noise and Road Traffic	Outdoor living space Facade	50dB $L_{Aeq, 1hour}$	55dB $L_{Aeq, 1hour}$	Day 07:00 – 23:00
	Facade	50dB $L_{Aeq, 16hour}$	72dB $L_{Aeq, 16hour}$	Day 07:00 – 23:00
	Facade	45dB $L_{Aeq, 8hour}$	67dB $L_{Aeq, 8hour}$	Night 23:00 – 07:00
	Habitable Room	30dB $L_{Aeq, 8hour}$	40dB $L_{Aeq, 8hour}$	Night 23:00 – 07:00
	Habitable Room	35dB $L_{Aeq, 16hour}$	45dB $L_{Aeq, 16hour}$	Day 07:00 – 23:00

Table 15: NPSE Criteria

From the results obtained from the noise survey the following conclusions have been drawn and referenced to guidance;

- The night-time L_{Aeq} noise levels measured in the bedroom fall in between the LOAEL and the SOAEL.
- Although night-time L_{Aeq} noise levels were not measured at the façade on the balcony of apartment 6, with L_{Aeq} noise levels within the kitchen/diner/lounge/bedroom at 40dB it can be assumed that noise levels at the façade on the balcony prior to 1am will exceed 45dB L_{Aeq} on the balcony and therefore would fall in between the LOAEL and the SOAEL.

In 2009 the *World Health Organisation (WHO)* published guidance on community annoyance in which with respect to night-time noise limits at levels below 30dB $L_{night,outside}$ it was found there are no observed effects, NOEL. When levels increased to 40dB $L_{night,outside}$ adverse effects are observed, it should be noted that in addition to steady state or continuous noise, effects were also observed for transient or individual maximum noise events which exceeded 42dB $L_{AFmax,inside}$. Therefore, it is suggested that for sleep disturbance the LOAEL is 45dB $L_{night,outside}$ and 45dB $L_{AFmax,inside}$ (i.e. 55dB $L_{AFmax,outside}$ with open windows). When external levels increase above this level it would be necessary to close the windows and provide alternative ventilation to ensure that the internal noise levels continue to be acceptable.

From the results obtained from the noise survey the following conclusions have been drawn and referenced to guidance;

- The current noise levels prior to 1am exceed the recommended internal noise levels of 30dB L_{Aeq}. This level is achieved in the bedrooms post 1am when existing trading has ceased.
- Once trading has ceased noise from activity in the beer garden continues which with any cleanup exercise cannot be avoided but staff congregating in the beer garden once all work including the cleanup in the pub has been completed can be avoided.

4. Recommendations

Following the noise assessment the following recommendations are made;

- Based upon the noise results attained during and after the existing licensed trading hours has ceased it is recommended that further trading beyond this time be refused on the grounds of noise nuisance.
- After existing trading and once the cleanup process has been completed it is further recommended that the beer garden is not used for a post-work get together by pub staff but should only be used in an emergency, for example such as in the event of a fire or when staff are post shift and need to walk through the beer garden to access parked vehicles.

5. Conclusions

The existing noise levels prior to 1am already exceed recommended internal noise levels of 30dB $L_{Aeq\ 8\text{-}hour}$ in the bedroom which overlooks the side aspect. In the kitchen/diner/lounge/bedroom which overlooks the beer garden the noise level is higher at 40dB. The results post 1am show a decrease in noise levels to within guidelines provided in BS 8233:2014, the NPSE and WHO guidance in the bedroom but levels still remain higher in the kitchen/diner/lounge/bedroom.

Therefore, in conclusion it is recommended that a further extension of trading under the license agreement is not carried forward and that once work in the beer garden has been completed and members of the Yates's staff have finished there shifts they are not permitted to congregate in the beer garden which currently prolongs the raised noise level in the vicinity but must wait inside. Access to the beer garden once cleanup has been completed as stated above should be restricted to emergencies or returning to parked vehicles post-shift.

6. SUMMARY.

Sanctuary Acoustics was asked by [redacted] to assess the existing noise environment at Jacobs Court, Kyrle Street, Hereford. The dwellings located at Jacobs Court are within a built up area in central Hereford and adjoin a Yates's public house with beer garden and smoking area at the rear to which Jacobs Court overlooks. The public house currently operates until 1am but seeks an extension to 2am. However, residents have raised concerns in respect to noise breakout from the public house into amongst other places the dwellings at Jacobs Court. It is our understanding that when the dwellings were originally built and occupied the public houses' license was until midnight but has since crept forward to 1am. The 24-hour period is divided into a 16-hour daytime and an 8-hour night-time. Daytime is 7am to 11pm and subsequently night-time is 11pm to 7am. Noise measurements were conducted in apartment 6 between 12am and 2am to assess both the last hour of the current trading license between 12am and 1am and noise levels during the proposed 1-hour extension between 1am and 2am. It is also proposed that trading be permitted until 3am up to 15 nights a year. Two sets of noise measurements were undertaken, one in the kitchen/diner/lounge/bedroom overlooking the beer garden and a second measurement in a side bedroom that overlooks the main public house building. The noise measurements obtained in the kitchen/diner/lounge/bedroom which are inline of sight of the beer garden were undertaken with and without the balcony doors open and the bedroom measurements were undertaken with the windows closed. It was noted that their did not appear to be any ventilators in the apartments either in the glazed units or through wall vents and therefore to enable an exchange of airflow the balcony doors and windows would need to be opened.

To summarise:

1. Noise measurements were undertaken at Apartment 6, Jacobs Court, Kyrle Street, Hereford.
2. Noise measurements were taken at two locations between 12am to 1am to assess noise levels during the current final hour of trading at the adjoining Yates's Public House and between 1am to 2am to assess noise levels in the vicinity during what would be an extension period to the existing trading license. The noise survey commenced on Saturday 21st March and concluded on Sunday 22nd March 2015.
3. The noise assessment was conducted using two sound level meters, a Norsonics 132 sound level meter set up in a bedroom (location 1) on the side aspect and overlooking the public house taking noise measurements at 5-minute intervals with all windows and doors closed. The second measurement, location 2, was undertaken using a Norsonics 131 sound level meter in the kitchen/diner/lounge/bedroom which overlooks the beer garden. These measurements were taken at alternate 15-minute and 5-minute measurements with and without the balcony doors ajar.
4. The noise measurements were referenced to the *National Planning Policy Framework (NPPF)*. Further reference was also made to *BS 8233:2014 Guidance on sound insulation and noise reduction for buildings*, *BS 7445-1:2003 Description and Measurement of Environmental Noise – Part 1: Guide to Quantities and Procedures, Noise Policy Statement for England (NPSE)* and the *World Health Organisation (WHO) Night Noise Guidelines for Europe.*
5. BS 8233:2014 recommends a 30dB L_{Aeq} in Bedrooms for Sleeping and 35dB L_{Aeq} in Living Rooms for Resting and 40dB L_{Aeq} within Dining Rooms.

6. The results obtained in the bedroom show that prior to 1am which is during trading the recommended internal noise level of 30dB L_{Aeq} which is to enable undisturbed sleep is exceeded. Post 1am when trading has ceased the noise level within the bedroom decreases below 30dB L_{Aeq}. The noise level in the kitchen/diner/lounge/bedroom which overlooks the beer garden is closer to 40dB during trading and increases when the balcony door is left ajar. After trading during cleanup and when staff have finished their shifts but remain in the beer garden the noise level still remains above 35dB in the kitchen/diner/lounge/bedroom with the balcony doors ajar.
7. Based upon the noise results obtained and with reference to applicable guidance it is recommended that the extension beyond 1am should not be granted and furthermore once the cleanup of the beer garden has been completed, staff are not permitted to congregate in the beer garden as they unnecessarily contribute to the noise climate. The only exceptions made to this should be in the event of an emergency such as a fire or to exit the premises once their shift has finished and they need to access vehicles parked to the rear.

7. ANNEX A

Acoustics Glossary of Terms

$L_{Aeq,T}$ – Equivalent continuous sound pressure level. This is the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that within a specified time interval, T, has the same mean squared sound pressure as a sound that varies with time.

L_{A10} – The A-weighted mean square sound pressure level that is exceeded for 10% of the time.

L_{A90} – The A-weighted mean square sound pressure level that is exceeded for 90% of the time. Referred to as the background noise level.

L_{Amin} – The lowest A-weighted noise level recorded during a noise event.

L_{Amax} – The highest A-weighted noise level recorded during a noise event.