

JDW Public House 'The Moon Under Water' 68-74 Deansgate, Manchester, M3 2FN

Proposed Beer Garden Terrace Planning Noise Impact Assessment

Report ref.

RK3450/22285/Rev 0

Issued to

J D Wetherspoon Plc

Prepared by

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Version	Remarks	Date
Rev 0	Initial report issue.	27.09.2022



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1. INTRODUCTION

J D Wetherspoon is seeking planning permission to construct a beer garden terrace at their existing Public House 'The Moon Under Water' in Manchester. The premises has noise sensitive office properties located nearby. Therefore, a noise impact assessment report is required to form part of the planning application.

Spectrum Acoustic Consultants have been instructed by Harrison Ince Architects, on behalf of J D Wetherspoon, to carry out a Noise Impact Assessment to support the planning application. This report is submitted with the intention of providing sufficient information to both inform and satisfy the requirements of the Local Planning Authority.

2. SITE DESCRIPTION AND PROPOSALS

The Moon Under Water is located at 68-74 Deansgate, Manchester, M3 2FN. Deansgate bounds the site to the east and has a number of commercial properties located along it. Bounding the site to the south is the Roxy Ball Room, a live music venue, beyond which are offices at 86 Deansgate. At the rear of the site to the west is the back street of College Land, beyond which are offices at No.3 Parsonage Chambers. Bounding the site to the north is the Slug and Lettuce bar, along with offices directly above at Offices above 64-66 Deansgate. There are no residential properties in the vicinity of the premises. Consequently, the assessment will focus on the expected noise impact at the nearby office properties. Existing site location plans are included in Appendix A.

The Public House is a three storey premises which consists of a customer area at ground floor and first floor levels, along with a bar. At second floor level is a flat which is within JDW's demise and is used by staff. At the front of the premises is a small pavement seating area.

The trading hours for the premises are 10:00 to 23:00 Sunday to Wednesday, 10:00-00:00 on Thursdays, and 10:00 to 02:00 on Fridays and Saturdays. The kitchen operates between 08:00 and 23:00 each day. The premises does not play amplified music.

Scheme proposals involve constructing a new internal customer area and associated 176m² beer garden terrace at second floor level at the premises. The terrace would be accessed via bi-folding opening doors from the new extension area. It is understood there is no intention to make any changes to the mechanical services plant equipment. Proposed scheme plans are included in Appendix B.

3. NOISE CRITERIA

There are no directly applicable standards that relate to the assessment of noise from a proposed beer garden terrace area. However, guidance given by the Institute of Acoustics¹ on the use of gardens and play areas focuses on possible mitigation measures and includes in section 7 (Control Measures) the following advice:

Careful consideration should always be given to the siting of gardens and play areas intended for the use of patrons, in order to minimise the risk of disturbance to neighbours. The use of gardens and external play areas from which noise disturbance has arisen, or may arise, should not commence before the start of formal trading hours and should normally cease at dusk or at 2100 hours, whichever is the earlier.

¹ Good Practice Guide on the Control of Noise from Pubs and Clubs, Institute of Acoustics, March 2003



It further advises:

Consequently, where there are nearby noise sensitive premises, the use of lighting in garden and external play areas late into the evening can be undesirable, unless required for health and safety or security reason. The provision of such lighting may encourage patrons to congregate in these areas and cause noise disturbance at this more sensitive time.

It is clear in this guidance that although this issue can be significant to residents, there is no accepted method proposed to assess the potential noise impact, and yet clearly the level of impact will be dependent on site conditions, eg the proximity to receptors; whether there is screening of line of sight etc. A quantified assessment does have a role in helping to identify situations of potential noise disturbance.

In situations where individual speech content is understandable by residents, it is likely that the voice level is raised and that would be a matter for premises management and door security staff to monitor and control as part of complying with license conditions regarding nuisance.

Noise from premises is defined as neighbourhood noise in the preface to the Guidelines for Community Noise – World Health Organization, 1999 (GCN). The preface to the WHO guidelines also states that neighbourhood noise falls within the definition of community noise.

New guidance from WHO titled Environmental Noise Guidelines for the European Region (ENG) was published in 2018. The document takes a very different approach to guidance set out in the previous GCN document by identifying separate thresholds for specific sources, rather than for community noise as a whole. Consequently, much of the earlier guidance set out in GCN is now absent from ENG. While ENG was intended to supersede GCN, it recognises this absence and states that 'indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) should remain valid.'

BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings* gives guidance on indoor ambient noise levels to be achieved. For each space there might be a range of noise levels that are considered acceptable. In noise-making workshops, etc., the activity noise is dominant and so the internal ambient noise level is not critical. In most other situations internal ambient noise is important.

In some cases, such as open-plan offices and restaurants, a moderate noise level might provide masking for acoustic privacy in shared spaces without causing disturbance, so upper and lower noise levels should be considered (see Table 1).

Objective	Typical situations	Design range $L_{Aeq,T}$ dB
Typical noise levels for acoustic privacy in shared spaces	Open plan office	45-50

Table 1: Indoor ambient noise levels in spaces when they are unoccupied and privacy is also important

Therefore, comparing the predicted beer garden terrace noise levels at the nearby residential receptor locations, with the guideline values for offices listed in BS 8233:2014 is a valid method to establish acceptability for the proposals.



4. AMBIENT NOISE MEASUREMENT SURVEY

To inform the noise impact assessment, measurements of existing ambient noise levels were carried out during a noise survey conducted at the premises on Wednesday 31 August 2022.

4.1 NOISE MEASUREMENT LOCATIONS

For the purpose of the noise assessment, the following noise measurement locations were identified as being representative of the most sensitive properties to the proposed beer garden terrace.

Position A – On the south east corner of the adjacent Roxy roof, across from the (south) office block at 86 Deansgate.

Position B – On the west side of the JDW roof, behind the AHU which is redundant and not operating. Representative of noise levels at the office block façade to the west across the back street (Rezzil at No.3 Parsonage Chambers).

Position C – At ground level halfway down Parsonage Lane and across from the office block to the north (Cosmos on 1st floor).

Position D – At ground level on the east side of Deansgate, opposite the JDW building.

The measurement locations are illustrated on the existing site location plan, included in Appendix A.

4.2 NOISE SURVEY DETAILS AND INSTRUMENTATION

The noise survey consisted of attended sample measurements carried out over the most sensitive periods when the proposed beer garden terrace would be in use. The noise samples were recorded in terms of 5 minute periods.

The following instrumentation was used during the noise measurement survey.

- Bruel & Kjaer Type 2260 Sound Level Meter s/n 1772232
- Bruel & Kjaer type 4189 Microphone s/n 2469838
- Bruel & Kjaer Type 4230 Acoustic Calibrator s/n 1234621
- Bruel & Kjaer Type ZC 0026 Preamplifier s/n

Before and after the survey, the sound level meter was field-calibrated in accordance with the manufacturer's guidelines, and no significant drift was observed. The meter, microphone and field calibrator are laboratory calibrated biennially in accordance with UKAS procedures or to traceable National Standards.

Measurements made were of the following parameters:

- Maximum Noise Level – defined as the maximum (L_{Amax} the maximum noise level)
- Residual Noise Level – defined as the Energy Average Level of a period, in the absence of noise from the proposed development (L_{Aeq})
- Background Noise Level – defined as level exceeded for 90% of a period, in the absence of the noise from the proposed development (L_{A90})

Weather conditions during the survey were mild and dry, with low wind speeds, presenting good conditions for noise measurement purposes.



4.3 NOISE SURVEY RESULTS

Environmental Noise Record sheets showing a full breakdown of the noise measurements are included in Appendix C.

A summary of the measured noise levels for the most sensitive periods when the beer garden terrace would be in use, relative to the surrounding office uses, at each of the measurement positions is included in Table 2.

Location	Time period	Noise level (dB)		
		Typical <i>L</i> _{A90}	Mean <i>L</i> _{Aeq}	Typical <i>L</i> _{Amax}
A. Representative of the office block at 86 Deansgate	13:00-15:00	52	53	73
B. Representative of No.3 Parsonage Chambers	13:00-15:00	55	57	71
C. Representative of the offices to the north off Parsonage Lane	13:00-15:00	66	65	74
D. East side of Deansgate, opposite the JDW building.	13:00-15:00	68	60	88

Table 2: Summary of measured noise levels during sensitive trading hours when the beer garden terrace would be used

5. ASSESSMENT OF POTENTIAL NOISE IMPACT

The beer garden terrace would be located at the front of the premises at roof level. A 2.5m high barrier would be located along the southern boundary, along with an additional cantilever barrier on the eastern boundary overlooking the front of the premises.

The noise generated by customers using the existing beer garden terrace have been calculated using numerical noise modelling software. The numerical noise model was created using SoftNoise's Predictor 2021.1 software, which meets the requirements of ISO 9613 Part 2:1996 ².

The noise models take account of the following in the calculation procedures:

- Source sound power level (for point, line and area sources)
- Reflection from nearby structures and source directivity
- Distance from noise source (geometric spreading)
- Atmospheric absorption
- Acoustic screening of intervening structures and topography
- Ground absorption
- Ground effects (which includes the height of ground relative to the noise source)

² ISO 9613-2:1996 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation to determine Noise Levels"

The input sound power data used in the model has been referenced from a noise study carried out in 2021 by Spectrum Acoustic Consultants and Dragonfly Consulting. The study is based on noise measurement data collected at 16 existing J D Wetherspoon Public House sites across the UK. The study covered a wide range of garden types, locations and demographics. The sound power per square meter for an area source was validated against actual noise measurements during each 1-hour observation period. The study concludes that there are two trading scenarios which are relevant to beer gardens. These are as follows:

- 'Normal Trading' with a sound power level per square metre of L_w/m^2 67 dB
- 'Busy Trading' with a sound power level per square metre of L_w/m^2 74 dB

Consequently, the noise prediction model assumes the above. A copy of the study report is included in Appendix C.

The noise contour maps for all of the simulated trading scenarios are shown in Appendix D. A summary of the predicted noise levels from the proposed beer garden terrace at the noise sensitive receptors compared with the guideline BS 8233:2014 levels is included in Table 3.

Note, the internal levels are calculated for partially open windows, which are assumed to provide a noise attenuation of 13 dB as indicated in the '*Acoustics, Ventilation and Overheating*' (AVO) guidance from the ANC and IOA.

Receptor	Trading	Predicted External Customer Noise Level (dB)	External to Internal Correction - Partially Open window (dB)	Calculated Internal Noise Level (dB)	BS 8233:2014 Criterion (dB)	Excess over 8233:2014 Criterion (dB)
R1. Offices at 86 Deansgate	Normal Trading	46	-13	33	45-50	-12
	Busy Trading	53	-13	40	45-50	-5
R2. No.3 Parsonage Chambers	Normal Trading	45	-13	32	45-50	-13
	Busy Trading	52	-13	39	45-50	-6
R3. Offices off Parsonage Lane	Normal Trading	37	-13	24	45-50	-21
	Busy Trading	44	-13	31	45-50	-14
R4. Offices above 64-66 Deansgate	Normal Trading	38	-13	25	45-50	-20
	Busy Trading	45	-13	32	45-50	-13
R5. First Floor Offices opposite on Deansgate	Normal Trading	38	-13	25	45-50	-20
	Busy Trading	45	-13	32	45-50	-13

Table 3: Summary of predicted noise levels from the beer garden compared with the BS 8233:2014 criterion

For all of the trading scenarios, customer noise levels would be comfortably lower than the BS 8233:2014 guideline levels at all of the sensitive receptors.

A summary of the predicted noise levels compared with the typical ambient $L_{Aeq,T}$ levels measured between 13:00 and 15:00 is included in Table 4.



Receptor	Trading	Predicted customer noise level (dB)	Ambient $L_{Aeq,1300-1500}$ (dB)	Excess over Ambient $L_{Aeq,2100-2300}$ (dB)
R1. Offices at 86 Deansgate	Normal Trading	46	53	-7
	Busy Trading	53	53	0
R2. No.3 Parsonage Chambers	Normal Trading	45	57	-12
	Busy Trading	52	57	-5
R3. Offices off Parsonage Lane	Normal Trading	37	57	-20
	Busy Trading	44	57	-13
R4. Offices above 64-66 Deansgate	Normal Trading	38	53	-15
	Busy Trading	45	53	-8
R5. First Floor Offices opposite on Deansgate	Normal Trading	38	60	-22
	Busy Trading	45	60	-15

Table 4: Summary of predicted noise levels from the beer garden terrace compared with the typical ambient L_{Aeq} levels measured between 13:00 and 15:00.

For all of the trading scenarios, customer noise levels would not exceed the existing ambient $L_{Aeq,13:00-15:00}$ noise levels. Consequently, the overall noise impact would be low.

In order to further ensure the noise impact from the garden remains low, J D Wetherspoon generally adopt the following management plan at their existing sites throughout the UK:

- Members of staff conduct regular checks of the front and rear of the premises at all times it is accessible to the public. The area will also be subject to CCTV coverage with images retained for 30 days.
- Signage erected at the front and rear of the premises to remind customers of the need to respect the rights of our neighbours to the quiet enjoyment of their homes, businesses and other activities.
- If on occasion customers are found to be making excessive noise, a member of staff will take immediate action to rectify the situation, e.g. ask the customer to talk more quietly or if problems persist, ask them to return inside the premises or leave the premises entirely.
- A telephone number may be circulated to nearby residents to allow any complaints relating to noise from the premises or as to any other elements of its operation to be communicated easily.
- If any complaints relating to noise disturbance are received by a member of staff, the complaint will be brought to the attention of the manager on duty and immediate steps will be taken to prevent a recurrence of the situation.

More information about how J D Wetherspoon manage beer garden areas at their existing sites is included in Appendix E.



6. CONCLUSIONS

A noise impact assessment has been completed to consider the potential impact of noise associated with a proposed beer garden terrace at an existing beer garden at J D Wetherspoon Public House 'The Moon Under Water' in Manchester.

An ambient noise survey has been conducted, at locations representative of the most sensitive receptor locations to the development site. Predictions of noise from patrons in the proposed beer garden terrace have been completed.

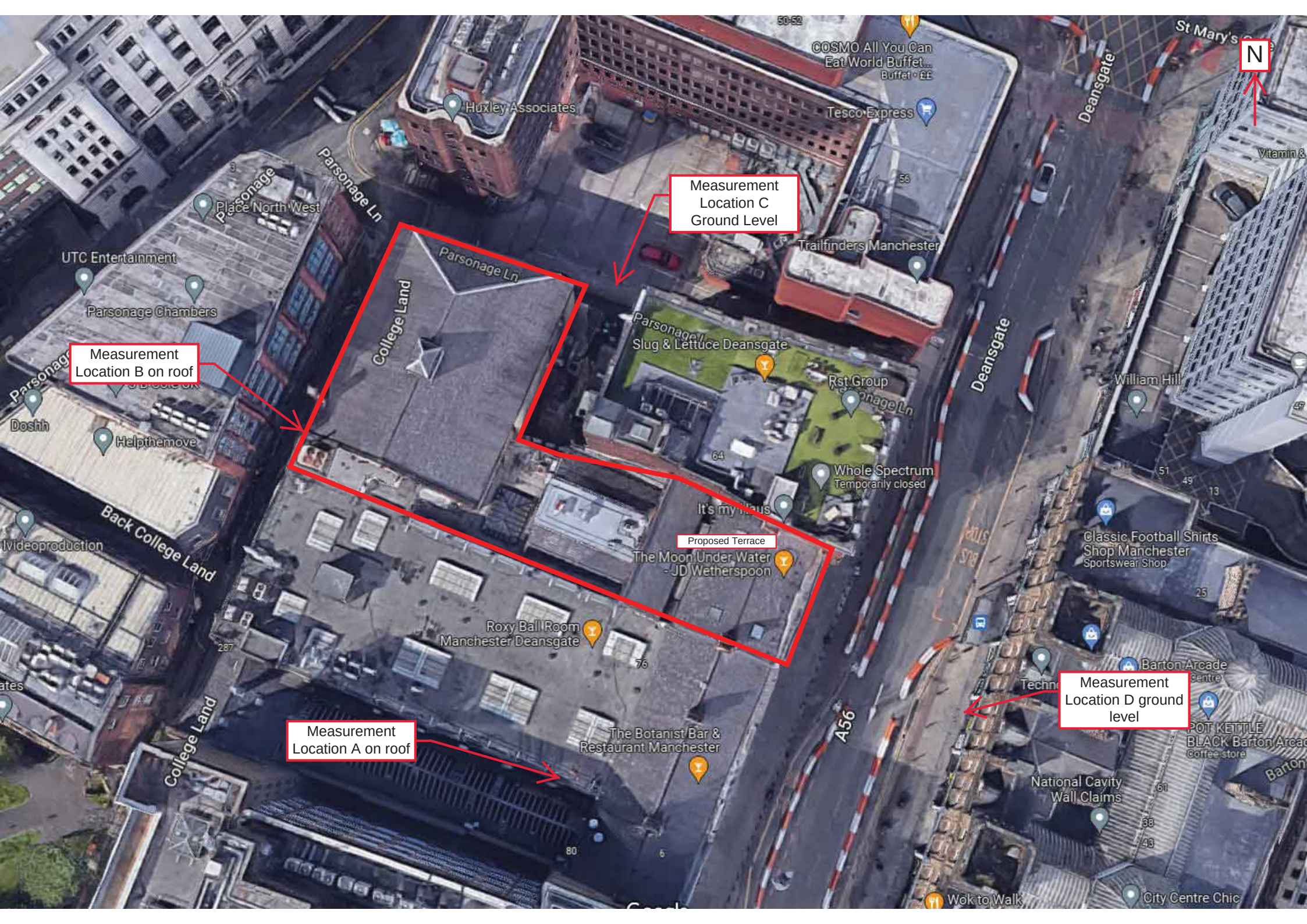
Noise limits for the proposed beer garden terrace have been established taking account of the BS 8233:2014 guideline levels and the existing ambient noise levels. Predictions have indicated that noise levels would be acceptable, resulting in a low impact.

The noise levels predicted for each of the potential trading scenarios are sufficiently low not to cause a significant impact, or effect, on the nearby sensitive receptors.

Providing the beer garden terrace is implemented and managed as described within this report, noise from the patrons would not give rise to unacceptable levels of noise at the nearby noise sensitive receptor locations

A P P E N D I X A

Existing Site Location Plan



Measurement
Location C
Ground Level

Measurement
Location B on roof

Proposed Terrace

Measurement
Location A on roof

Measurement
Location D ground
level

A P P E N D I X B

Proposed Scheme Drawings

KEY

-  CUSTOMER AREA
-  GARDEN AREA
-  TOILETS
-  STORES
-  BACK OF HOUSE (KITCHEN, STAFF ECT)
-  UNDEVELOPED AREAS

- CELLAR DELIVERY ROUTE
- KITCHEN DELIVERY ROUTE
- BIN ROUTE
-  FIRE ESCAPE ROUTE

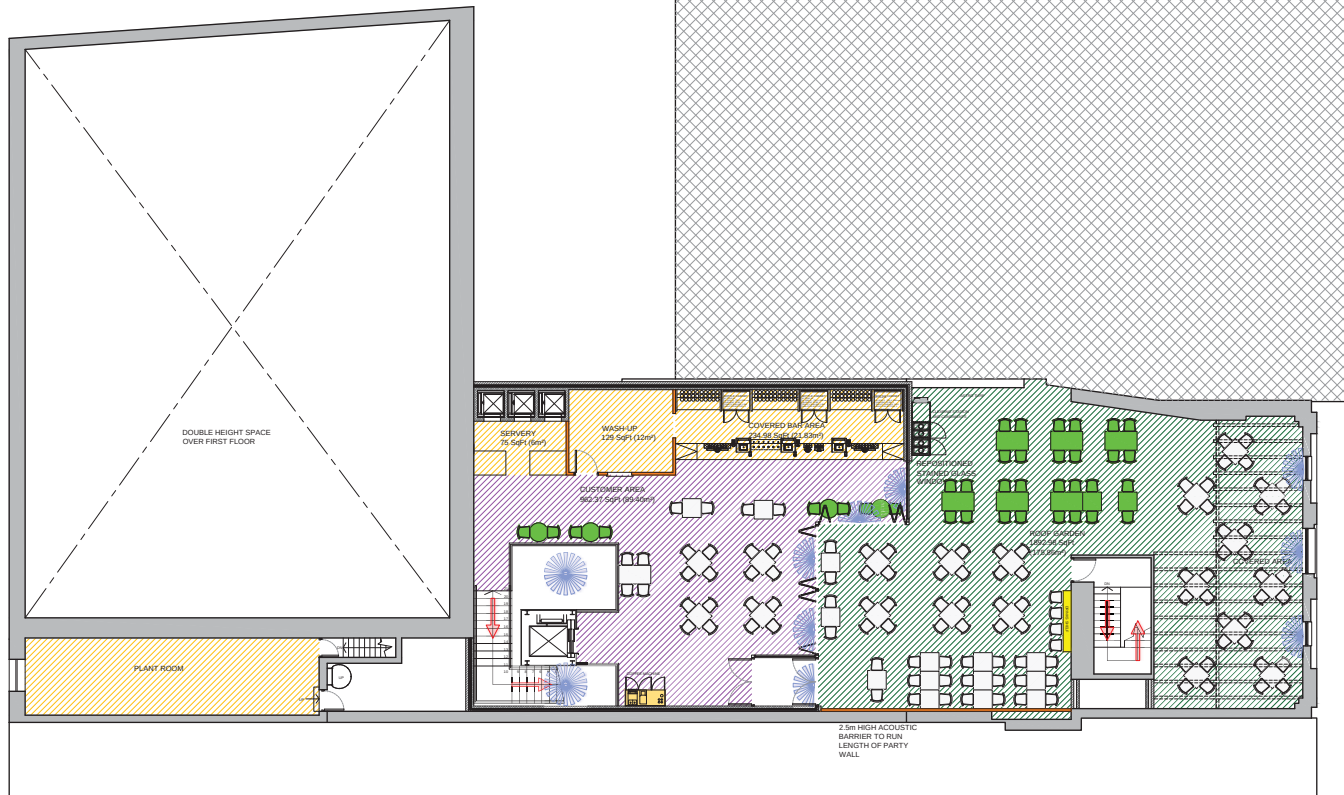
SCHEDULE OF ACCOMMODATION

ROOM	AREA m ²	AREA SqFt
GROUND FLOOR CUSTOMER AREA	475	5117
FIRST FLOOR CUSTOMER AREA	220	2378
SECOND FLOOR CUSTOMER AREA	89	962
ROOF GARDEN	175	1892
TOTAL CUSTOMER AREA (INC GARDEN)	959	10349
BAR (TOTAL)	86	937
KITCHEN	74	800

Do not scale from this drawing. All dimensions to be checked on site prior to manufacture and construction. This drawing is the property of Harrison Ince Holdings Limited and should not be reproduced without permission.
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This drawing is to be read in conjunction with the specification / bill of quantities and related drawings.

REVISIONS

REVISIONS	DESCRIPTION	DATE	BY
-	FIRST ISSUE	02.08.2021	NS
A	UPDATED FOLLOWING OPS ZOOM CALL	20.09.2021	OC
B	POSITION OF ACOUSTIC SCREEN SHOWN	26.09.2022	EW



SECOND FLOOR PLAN

Scale 1:100

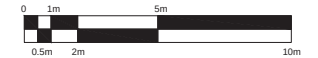
FURNITURE KEY

-  FIXED SEATING
-  COFFEE STATION
-  AWP
-  DRINKS SHELVES
-  POSEUR HEIGHT FURN
-  CONDIMENT / CUTLERY STATION
-  LED TV
-  DAYLIGHT

FEASIBILITY / DDC PLAN CHECKLIST	YES / NO / N/A
GENERAL PLAN	
NORTH POINT SHOWN	YES
ASIAN FIRE SHOWN	YES
SCALE BAR SHOWN	YES
DRINKS SHELVES / AWP SHOWN	YES
WINDOW DAY LIGHT SHOWN	YES
FRONT OF HOUSE	
DRINKS TO FACES TO ALL AREAS	YES
REAR TANKING PROFILES	YES
2 BAR BACKS IN TUNING	YES
OVER BAR GLASS BACK	YES
STANDARD BAR LAYOUT	YES
STANDARD BACK BAR	YES
3 TILES	YES
BAR LEDSTRIP 11 METRES	YES
WINE AND SPIRITS NEXT TO BAR	YES
SECOND BAR IF FIRST FLOOR > 1000	YES
800 (ON APP BAR)	YES
SECOND GLASS WARDEN FOR COFFEE	YES
REAL FIRE	YES
COLOURS VIA	YES
HIGH LOW TABLES OFFERING	YES
BOOTHING	YES
PLASMA / PROJECTION SCREEN	YES
NO PLASMAS IN DINING / ABOVE	YES
BOOTHING	YES
DRINKS SHELVES TO COLUMNS	YES
NUMBER OF AWPS	YES
NO LOBBY ROOMS	YES
OPEN KITCHEN	YES
SHUTTERS OVER KITCHEN GANTRY	YES
3 NO FOOD HOISTS IF KITCHEN ON	YES
ANOTHER FLOOR	YES
STANDARD COFFEE STATION	YES
ALLERIES SCREEN SHOWN	YES
GARDEN / PAVEMENT LICENCE	YES
PAVEMENT LICENCE AREA NEEDED IF	YES
OBTAINED	YES
FRONT GARDEN AND SMOKING	YES
LOBBY ON REAR GARDEN SMOKING	YES
AREAS	YES
BOOTH SEATING TO GARDEN	YES
CANOPY / COVERED AREA TO GARDEN	YES
BACK OF HOUSE	
OFFICE WITH SATURABLE FIRE STORAGE	YES
STANDARD BIN STORE	YES
OPEN CELLAR	YES
2 STAFF WARE	YES
4 STAFF CHANGE	YES
DELIVERIES TO KITCHEN SHOWN	YES
DELIVERIES TO CELLAR SHOWN	YES
BIN COLLECTION ROUTE SHOWN	YES
FIRE ROUTES SHOWN	YES
DOORS ON LEFT HAND AREA	YES
HOTEL	
SHOWERS IN ALL HOTEL ROOMS	YES
ACCESSIBLE HOTEL ROOM	YES
20 LINK ROOMS WITH TVIN BEDS	YES
HOTEL ROOM BREAKDOWN	YES

FOR PLANNING

@1:100 scale



HARRISON INCE

ARCHITECTS INTERIOR DESIGNERS



JD WETHERSPOON PLC

CLIENT

THE MOON UNDER WATER (PN193)
68-74 DEANS GATE, MANCHESTER, M3 3FN

PROPOSED SECOND FLOOR PLAN

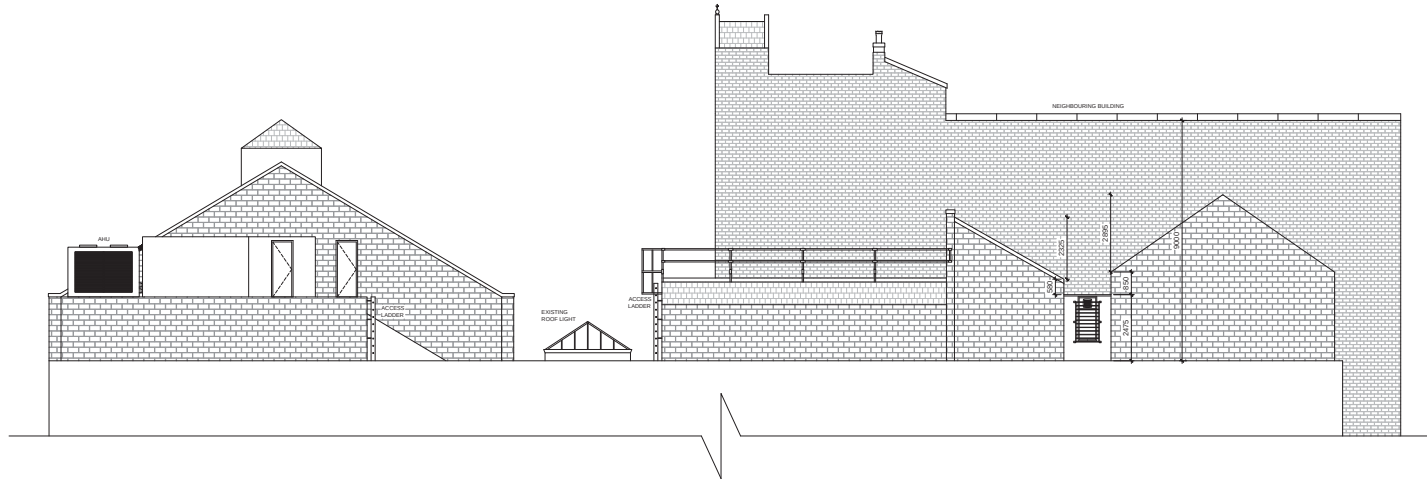
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JOB NO.	DWG NO.
PN193-13	AK03 - B
DRAWN	CHECKED
CADINS	

2-4 LITTLE PETER STREET
MANCHESTER
M1 4PS
TEL: 0161 226 2600
EMAIL: enquiries@harrisonince.co.uk

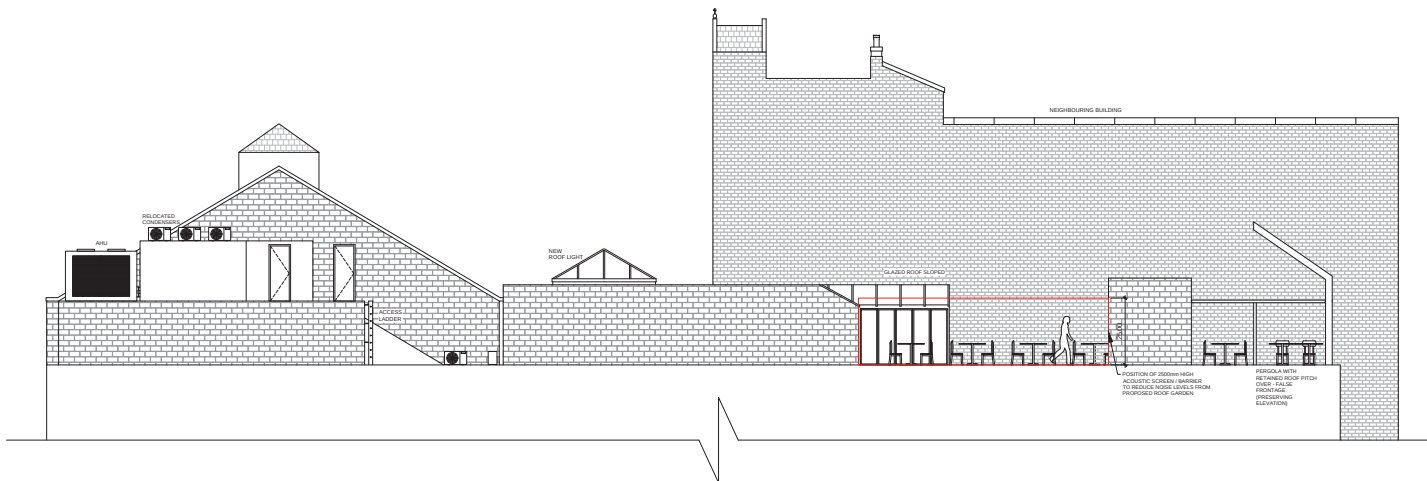
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REVISIONS

-	FIRST ISSUE	21.09.2022	EW
A	POSITION OF ACOUSTIC SCREEN SHOWN	26.09.2022	EW



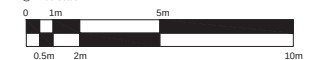
EXISTING ROOF SECTION
SCALE 1:100



PROPOSED ROOF SECTION
SCALE 1:100

FOR PLANNING

@1:100 scale



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ARCHITECTS INTERIOR DESIGNERS

CLIENT
JD WETHERSPOON PLC

PROJECT
**THE MOON UNDER WATER, 68-74
DEANS GATE, MANCHESTER M3 2FN**

TITLE
**EXISTING AND PROPOSED
ROOF SECTION**

DATE
SEPTEMBER 2022

SCALE
1:100 @ A1

JOB NO.
PN0193-13

DWG NO.
AX01 A

DRAWN
CAD/EW

CHECKED

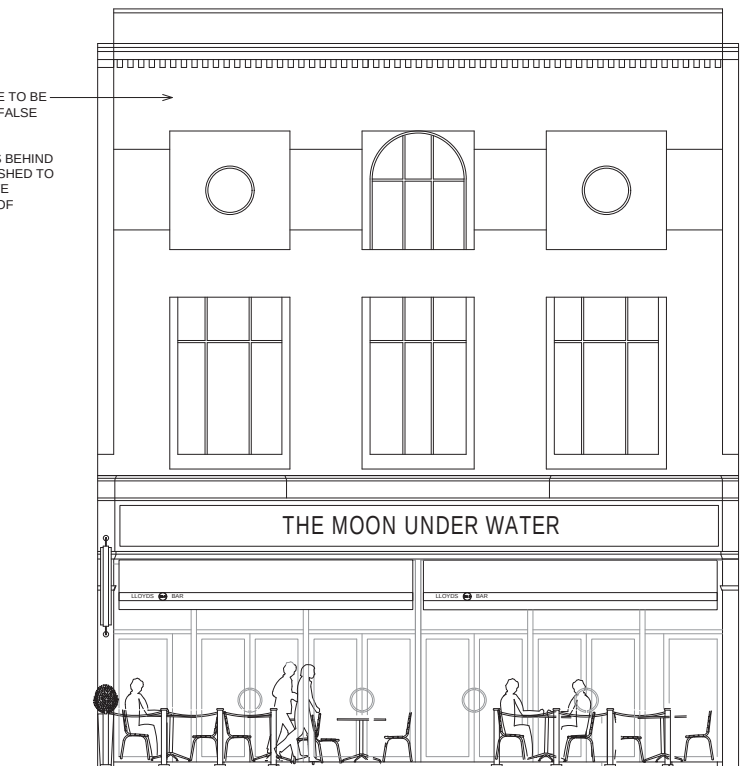
SUN 10/9/22
2-4 LITTLE PETER STREET
M20 1RL
MANCHESTER
M13 9PS
TEL: 0161 226 3600
EMAIL: enquiries@harrisonince.co.uk



EXISTING FRONT ELEVATION
SCALE 1:50

FRONT FACADE TO BE
RETAINED AS 'FALSE
FRONTAGE'

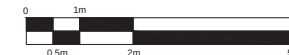
ROOF PITCHES BEHIND
TO BE DEMOLISHED TO
ACCOMMODATE
EXTERNAL ROOF
GARDEN



PROPOSED FRONT ELEVATION
SCALE 1:50

FOR PLANNING

@1:50 scale



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ARCHITECTS INTERIOR DESIGNERS

JD WETHERSPOON PLC

CLIENT

THE MOON UNDER WATER, 68-74
DEANS GATE, MANCHESTER M3 2FN

PROJECT

EXISTING AND PROPOSED FRONT
ELEVATION

TITLE

DATE

SEPTEMBER 2022

SCALE

1:50 @ A1

JOB NO.

PN0193-13

DWG NO.

AV01

DRAWN

CAD/EW

CHECKED

50/10/2022
2-4 LITTLE PETER STREET
M20 1RL
MANCHESTER
M13 9SS
TEL: 0161 236 3000
EMAIL: enquiries@harrisonince.co.uk

A P P E N D I X C

Environmental Noise Record Sheets



ENVIRONMENTAL NOISE RECORD SHEET

Sheet 1 of 4
RK3451/22285**Location:** A – On the south east corner of the adjacent Roxy roof, across from the (south) office block at 86 Deansgate.**Project:** JDW The Moon Under Water, Deansgate**Date:** Wednesday 31 August 2022.**Instrumentation:** Briel & Kjaer 2260**Calibration Times:** 13:00, 14:35.**Plant Operating Condition:** -

Date	Time		Weather			Noise Level dB(A)						Comments (Including description of noise (eg whine, hiss, rumble, impact, vehicle rain, vegetation, or animal noise)).
	Start	Dur'n (Min)	Wind Speed m/s	Wind Dir'n	Cloud (%)	L10	L50	L90	LMAX	LMIN	LAeq	
31.08.2022	13:03	15	-	-	25			52	73		54	Steady noise from the multitude of HVAC equipment located on the roofs and wall of adjacent and local buildings. Steady noise from the multitude of HVAC equipment located on the roofs and wall of adjacent and local buildings.
31.08.2022	13:18	15	-	-	25			52	72		53	

Date	Time	LAeq dB(A)	Leq Octave Band Pressure Level									Comments
			31	63	125	250	500	1k	2k	4k	8k	
31.08.2022	13:03	54	62	61	62	55	50	48	43	37	28	As above.
31.08.2022	13:18	53	62	60	61	55	49	47	43	36	26	As above.



ENVIRONMENTAL NOISE RECORD SHEET

Sheet 2 of 4
RK3451/22285

Location: B – On the west side of the JDW roof, behind the AHU which is redundant and not operating. Representative of noise levels at the office block façade to the west across the back street (Rezzil at No.3 Parsonage Chambers).

Project: JDW The Moon Under Water, Deansgate

Date: Wednesday 31 August 2022.

Instrumentation: Briel & Kjaer 2260

Calibration Times: 13:00, 14:35.

Plant Operating Condition: -

Date	Time		Weather			Noise Level dB(A)						Comments (Including description of noise (eg whine, hiss, rumble, impact, vehicle rain, vegetation, or animal noise)).
	Start	Dur'n (Min)	Wind Speed m/s	Wind Dir'n	Cloud (%)	L10	L50	L90	LMAX	LMIN	LAeq	
31.08.2022	13:36	13:26	-	-	25			55	71		57	Steady noise from the multitude of HVAC equipment located on the roofs and wall of adjacent and local buildings.

Date	Time	LAeq dB(A)	Leq Octave Band Pressure Level									Comments
			31	63	125	250	500	1k	2k	4k	8k	
31.08.2022	13:36	57	63	62	64	58	53	51	47	41	31	As above.



ENVIRONMENTAL NOISE RECORD SHEET

Sheet 3 of 4
RK3451/22285**Location:** C – At ground level half way down Parsonage Lane and across from the office block to the north (Cosmos on 1st floor).**Project:** JDW The Moon Under Water, Deansgate**Date:** Wednesday 31 August 2022.**Instrumentation:** Briel & Kjaer 2260**Calibration Times:** 13:00, 14:35.**Plant Operating Condition:** -

Date	Time		Weather			Noise Level dB(A)						Comments (Including description of noise (eg whine, hiss, rumble, impact, vehicle rain, vegetation, or animal noise)).
	Start	Dur'n (Min)	Wind Speed m/s	Wind Dir'n	Cloud (%)	L10	L50	L90	LMAX	LMIN	LAeq	
31.08.2022	13:58	05:01	-	-	25			65	74		66	Steady high level of noise from an array of noisy condenser / chiller units located on the office west wall (see photo) producing dominant and steady noise level.

Date	Time	LAeq dB(A)	Leq Octave Band Pressure Level									Comments
			31	63	125	250	500	1k	2k	4k	8k	
31.08.2022	13:58	66	73	72	77	64	62	62	55	49	42	As above.



ENVIRONMENTAL NOISE RECORD SHEET

Sheet 4 of 4
RK3451/22285

Location: D – At ground level on the east side of Deansgate, opposite the JDW building.

Project: JDW The Moon Under Water, Deansgate

Date: Wednesday 31 August 2022.

Instrumentation: Briel & Kjaer 2260

Calibration Times: 13:00, 14:35.

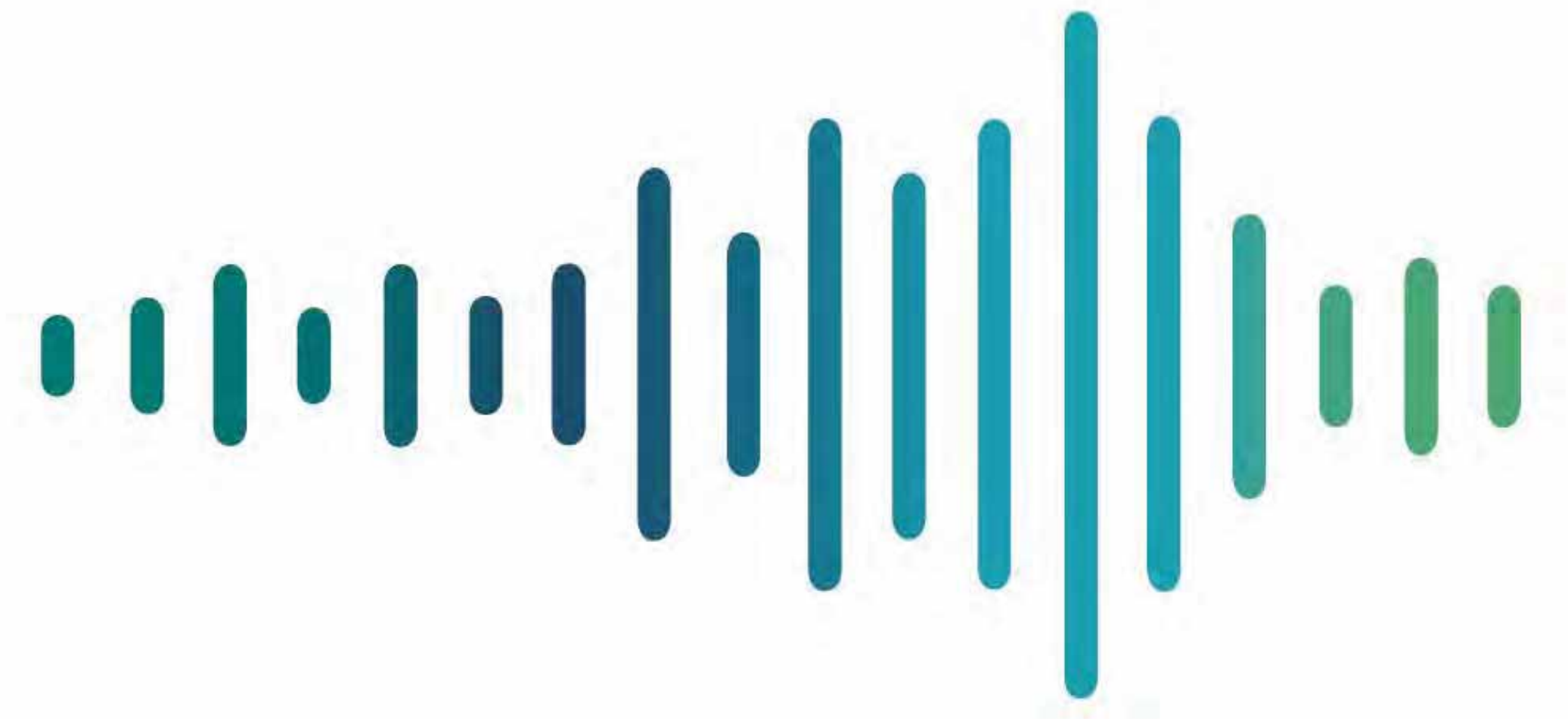
Plant Operating Condition: -

Date	Time		Weather			Noise Level dB(A)						Comments (Including description of noise (eg whine, hiss, rumble, impact, vehicle rain, vegetation, or animal noise).
	Start	Dur'n (Min)	Wind Speed m/s	Wind Dir'n	Cloud (%)	L10	L50	L90	LMAX	LMIN	LAeq	
31.08.2022	14:15	04:26	-	-	25			62	94		71	Local traffic noise from Deansgate traffic and general street noise along busy Deansgate. Variable noise dependent on traffic / public. Local traffic noise from Deansgate traffic and general street noise along busy Deansgate. Variable noise dependent on traffic / public. Local traffic noise from Deansgate traffic and general street noise along busy Deansgate. Variable noise dependent on traffic / public. Short 1 minute period snap-shot with no vehicles passing and no public passing measurement position.
31.08.2022	14:20	04:15	-	-	25			60	80		67	
31.08.2022	14:24	06:19						59	88		66	
31.08.2022	14:31	00:52						56	66		59	

Date	Time	LAeq dB(A)	Leq Octave Band Pressure Level									Comments
			31	63	125	250	500	1k	2k	4k	8k	
31.08.2022	14:15	71	73	75	74	65	67	67	64	57	47	As above.
31.08.2022	14:20	67	76	74	72	63	66	62	59	52	46	As above.
31.08.2022	14:24	66	75	73	68	62	64	61	59	54	46	As above.
31.08.2022	14:31	59	65	64	62	59	59	54	49	43	36	As above.

A P P E N D I X D

J D Wetherspoon Beer Garden Noise Study Report



COMPREHENSIVE NOISE ASSESSMENT

for wetherspoon by

nineteen47
CHARTERED TOWN PLANNERS
& URBAN DESIGNERS

DC
DRAGONFLY
CONSULTING

SPECTRUM
ACOUSTIC CONSULTANTS

nineteen47

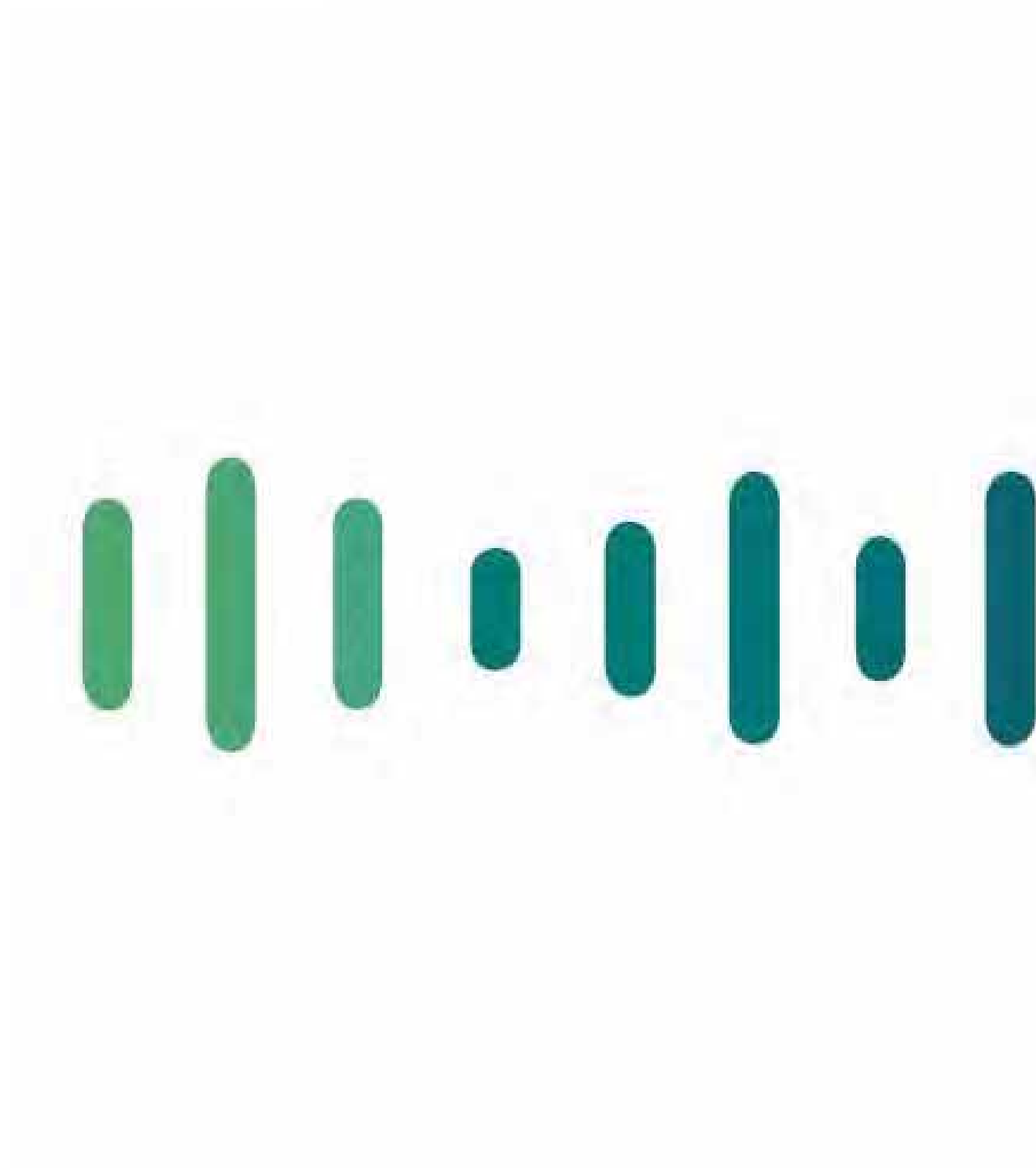
CHARTERED TOWN PLANNERS
& URBAN DESIGNERS

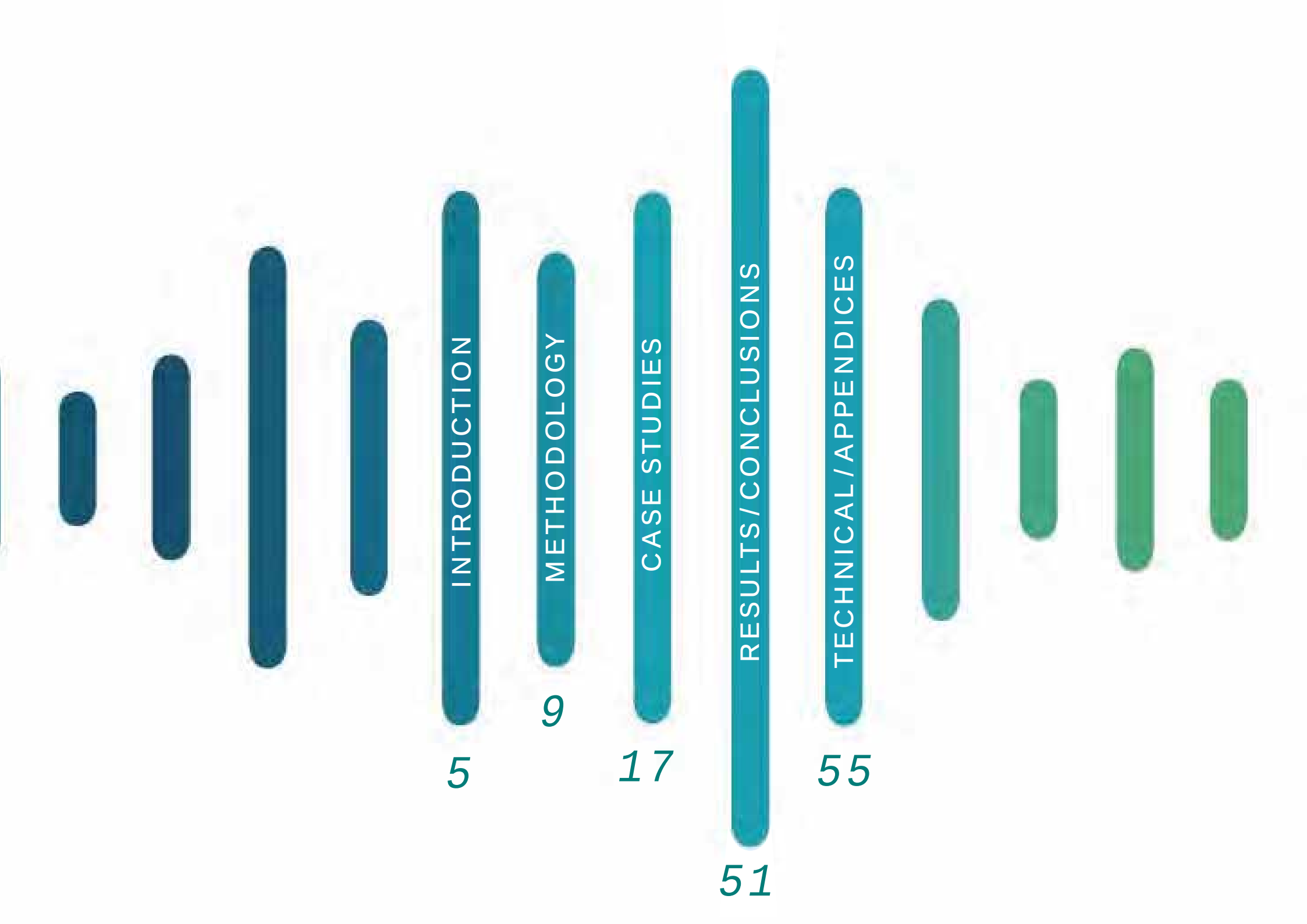


DRAGONFLY
CONSULTING

SPECTRUM

ACOUSTIC CONSULTANTS







INTRODUCTION

INTRODUCTION

There is no current widely accepted methodology for the assessment of noise generated by the use of external areas associated with licenced premises such as pubs, bars and restaurants.

Whilst there are established methodologies for considering noise impact from entertainment noise associated with licenced premises (albeit that there are not currently any good practice approaches) no uniform approach exists which considers noise from premises that do not have, or do not permit, music, live music, public address systems or televisions.

On behalf of JD Wetherspoon (JDW) Dragonfly Consulting and Spectrum Acoustics have developed a methodology for assessing the noise impact from the use of terraces and beer gardens associated with JDW premises. Whilst this methodology was developed for JDW specifically, it can equally be applied to any pub beer garden or terrace where there is no live or recorded music and no other form of entertainment noise.



DOCUMENT STRUCTURE

The document structure is as follows:

- 1**  **Introduction.....** [page 5](#) Outlines the need for an established methodology and the structure of the document.
- 2**  **Methodologies.....** [page 9](#) Sets out the guides and references used to construct the methodology used.
- 3**  **Case Studies.....** [page 17](#) Overview surveys of the 16 pub gardens and terraces, explaining their individual context.
- 4**  **Results/Conclusion.....** [page 51](#) Provides an overall summary of the surveys undertaken and how this can be used in practise.
- 5**  **Technical Appendices.....** [page 59](#) Detailed reports from both Spectrum Acoustics and Dragonfly Consulting





METHODOLOGIES

METHODOLOGIES

APPROACH

This assessment methodology follows the base principles set out by the Institute of Environmental Management and Assessment (IEMA) and long-standing principles of human response to changes in a noise level, with reference to the context of the site.

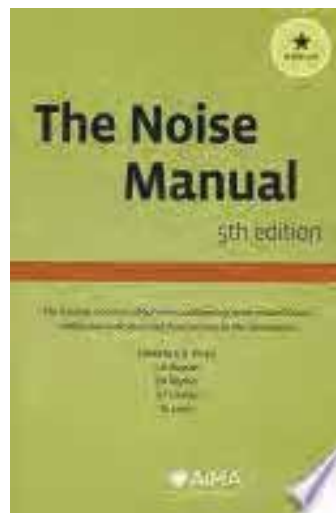
This document does not focus directly on the validity of that underlying assessment methodology, but on the methodology derived for predicting the noise emissions from the beer garden or terrace whilst in use.

The basis of the prediction model relies on the noise level associated with the vocal effort of each speaker and the overall sound power of the beer garden in use is derived from that vocal effort.

The predictions are based on typical speech noise levels for persons speaking in both a normal and slightly raised voice to provide guidance on the likely range of noise levels associated with the external seating area use.

The following values have been typically assumed for speech at 1m from the speaker:

- Female – 55/63dB (normal/raised speech);
- Male – 58/65dB (normal/raised speech).



These noise levels are taken from **The Noise Manual (Berger 2003)**, which itself refers to the paper **The Effects of Noise on Man (Kryter 1985)**. These values are cross-referenced against guidance in **Average Speech Levels and Spectra in Various Speaking/Listening Conditions: A Summary of the Pearson, Bennett, & Fidell (1977) (Olsen, 1998)** and confirm those previously stated in other documents, namely **Methods for the calculation and use of the articulation index (Kryter, 1962)** and **Prediction of verbal communication in noise – a review: Part 1 (Lazarus, 1986)**.



These are generally considered to be reliable values across the industry and have been utilised by Spectrum Acoustics and Dragonfly Consulting for a number of years to assess noise from various developments of this nature. The levels measured were described as LAeq values, 1m directly in front of the speaker; these values are per person and have been corrected for distance assuming normal point source propagation without consideration of directivity or first order reflections.

The manner in which these values have been used in the assessment diverges between the two methodologies at this point.

Spectrum utilise a standardised sound power across all beer gardens based on the intensity of use of the space. The spectrum methodology assumes three scenarios when driving the sound power level per square metre: normal, busy and worst-case.

The Dragonfly methodology assumes two states of use, normal and peak, and bases the prediction on the practical expected occupation levels of the beer garden or terrace and calculates a source sound power for each site respectively.



LOCATIONS OF BEER GARDENS/TERRACES

- 1 The Regal, Cambridge
- 2 The Mount Stuart, Cardiff
- 3 The Admiral Humber, Hull
- 4 The Captain Alexander, Liverpool
- 5 The Bull Inn, Bangor
- 6 The Picture House, Morley
- 7 The Picture Playhouse, Bexhill on Sea
- 8 The Jolie Brise, Teignmouth
- 9 Figure of Eight, Birmingham
- 10 The Mossy Well, London
- 11 The Angel's Vault, Hitchin
- 12 The Buck Inn, Northallerton
- 13 The Whalebone, Downham Market
- 14 The West Quay, Brighton
- 15 The Back of Beyond, Reading
- 16 The Quayside, Newcastle

Key



Enclosed roof terrace



Open roof terrace



Enclosed garden



Open garden



Location with lots of students



CITY



TOWN



WATERSIDE



The Regal, Cambridge



The Mount Stuart, Cardiff



The Admiral Humber, Hull



The Captain Alexander, Liverpool



The Bull Inn, Bangor



The Picture House, Morley



The Picture Playhouse, Bexhill on Sea



The Jolie Brise, Teignmouth

ROOF
TERRACE



Figure of Eight, Birmingham



The Mossy Well, London



The Angel's Vault, Hitchin



The Buck Inn, Northallerton



The Whalebone, Downham Market



The West Quay, Brighton



The Back of Beyond, Reading



The Quayside, Newcastle

BEER
GARDEN

ON SITE

Each location was measured in one or more places around the perimeter, depending on the size of the venue, to establish the typical ambient and background noise levels. The average number of customers per hour and the weather was also noted.

MANAGEMENT CONTROLS

Staff were observed regularly passing through the beer garden and tables were kept cleaned and tidied on a regular basis.

The majority of gardens had access controlled through the pub and only a few had a designated smoking area. Several closed at 9pm, the details of which is listed in each study.



MEASUREMENTS

Acoustic measurements were taken by using one or two unattended noise loggers and by carrying out short-term attended measurements at a number of positions around the perimeter of the outdoor amenity areas. Site observations were made during the lunchtime and evening periods.

Three sound measurements are shown to be as transparent in our findings as possible.

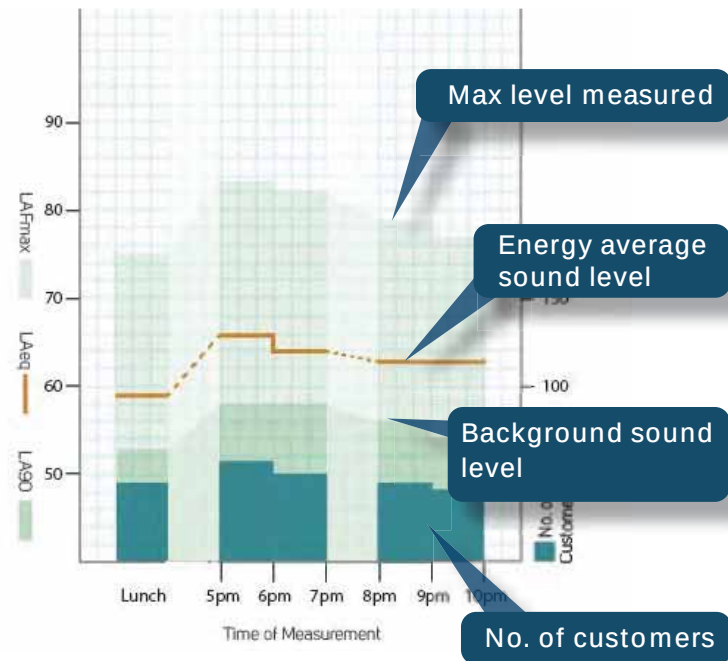
LAeq The energy average level of a period

LA90 The level exceeded for 90% of a period (background sound level)

LAFmax The maximum level measured during a period

The results presented in each case study graph are an average of the measured sound levels, considered representative for each 1-hour observation period.

This data is then used to determine the sound power level per square metre, which is explained further in the results section.





CASE STUDIES

CASE STUDIES

THE ANGEL'S VAULT

Hitchin



Town centre



Enclosed garden



Students/Young
adults/Middle age/
Mature



352m²



Capacity of 260



Warm and Sunny

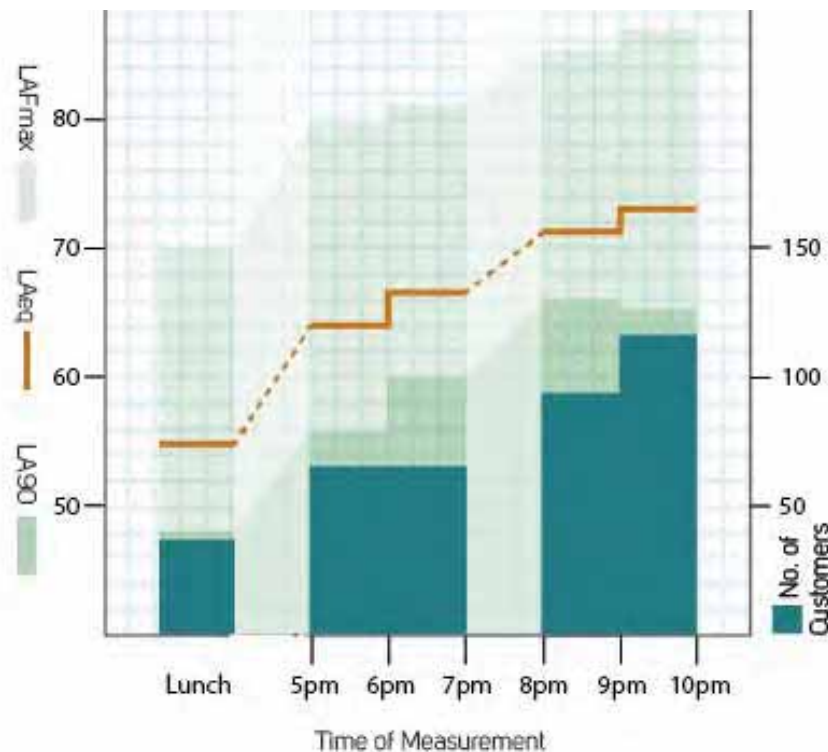


13th August 2021

SITE DESCRIPTION

The site is located in a row of existing commercial premises on Sun Street in the centre of Hitchin. The site became a JD Wetherspoon public house in 2015 and was formerly a Conservative Club prior to J D Wetherspoon ownership.

The beer garden consists of two areas. The smaller area is located immediately off the internal customer area, beyond which is a large beer garden area which is enclosed on all sides. A large canopy structure is located at the back of the garden to provide screening to the nearby residential properties.



Illustrative Graph depicting number of customers and noise levels, from all positions in the garden



Location plan showing the unattended logger and short-term attended measurement positions

EXISTING MANAGEMENT CONTROLS

Access to the garden is controlled through the pub itself, with no external access. Part of the small external area is designated for smoking, whilst in the main beer garden area there was a no-smoking policy. The main beer garden closes at 21:00.

SURVEY OBSERVATIONS

The survey was undertaken on Friday 13 August 2021. Weather during the survey was warm and sunny with a light breeze. Throughout the survey, patrons were generally evenly spread across all the external area. This is with the exception of the period after 21:00, when beer garden patrons were restricted to the patio area only.

The patrons generally comprised families and young adults in the afternoon, whilst during the late evening they were predominantly students and young adults. The age profile of customers in the beer garden terrace was broad, with customers in all age brackets throughout the day. It was observed that most of the patrons consumed food at some point during their stay.

2. THE WHALEBONE

Downham Market



Market town



Enclosed garden



Families/Young
adults/Middle age/
Mature



528m² (201m² after
9pm*)



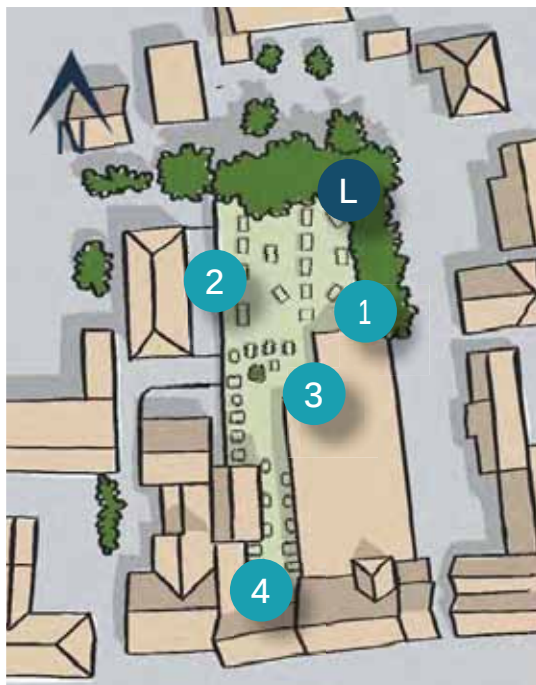
Capacity of 290



Cloudy



20th August 2021

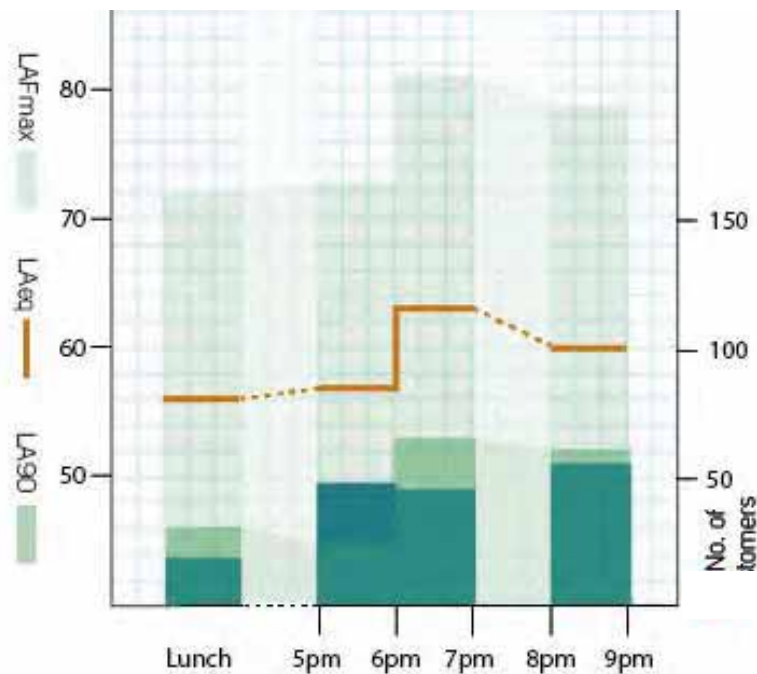


Location plan showing the unattended logger and short-term attended measurement positions

SITE DESCRIPTION

The site is located in a row of existing commercial premises on Bridge Street in the centre of Downham Market. The site became a JD Wetherspoon public house in 2018 and was formerly a Public House prior to JD Wetherspoon ownership.

The beer garden consists of a single large external customer area at the back of the premises. Seating is spread across an area of grass and a smaller area of patio nearer the pub building.



Illustrative Graph depicting number of customers and noise levels, from all positions in the garden

EXISTING MANAGEMENT CONTROLS

Access to the garden is controlled by the pub itself via doors to the rear, there is no external access. There is a smoking area within the patio, near the pub building. The grassed area of the beer garden is closed to patrons from 21:00.

SURVEY OBSERVATIONS

The survey was undertaken on Friday 20th August 2021. Weather during the survey was warm and overcast with a light breeze. The beer garden was quiet during the lunchtime period, before becoming busier towards the mid-afternoon and evening periods. Throughout the survey, patrons were generally evenly spread across all beer garden areas. This is with the exception of the period after 21:00, when beer garden patrons were restricted to the patio area only.

During lunchtime and the mid-afternoon periods, it was observed that a significant proportion of beer garden users were consuming food at some point during their stay. Towards the evening, it was noted that most beer garden patrons were drinking and/or smoking only.

The age profile of customers in the beer garden terrace was broad, with customers in all age brackets throughout the day. During the lunchtime and afternoon periods the patrons generally comprised families and small groups of people above 40 years of age. During the evening period, the patrons were generally groups of people below 40 years of age. It was observed that most of the beer garden patrons consumed food at some point during their stay.

3. THE BACK OF BEYOND

Reading



Market town



Enclosed garden



Older couples/
Students/Young
adults



130m²



Capacity of 104



Cloudy

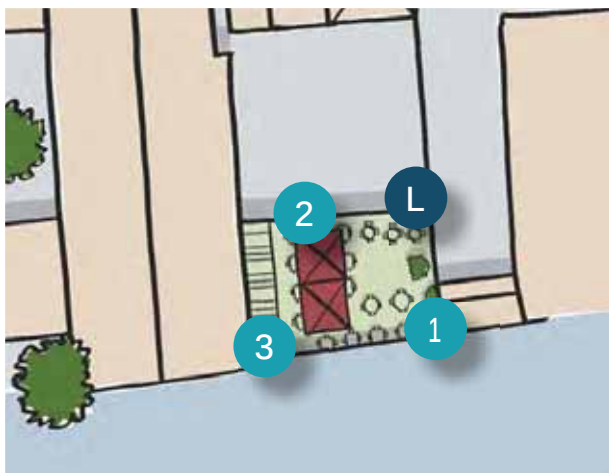


4th September 2021

SITE DESCRIPTION

The site is located in a row of existing commercial premises on King's Road in the centre of Reading. A large residential apartment block bounds the site to the east.

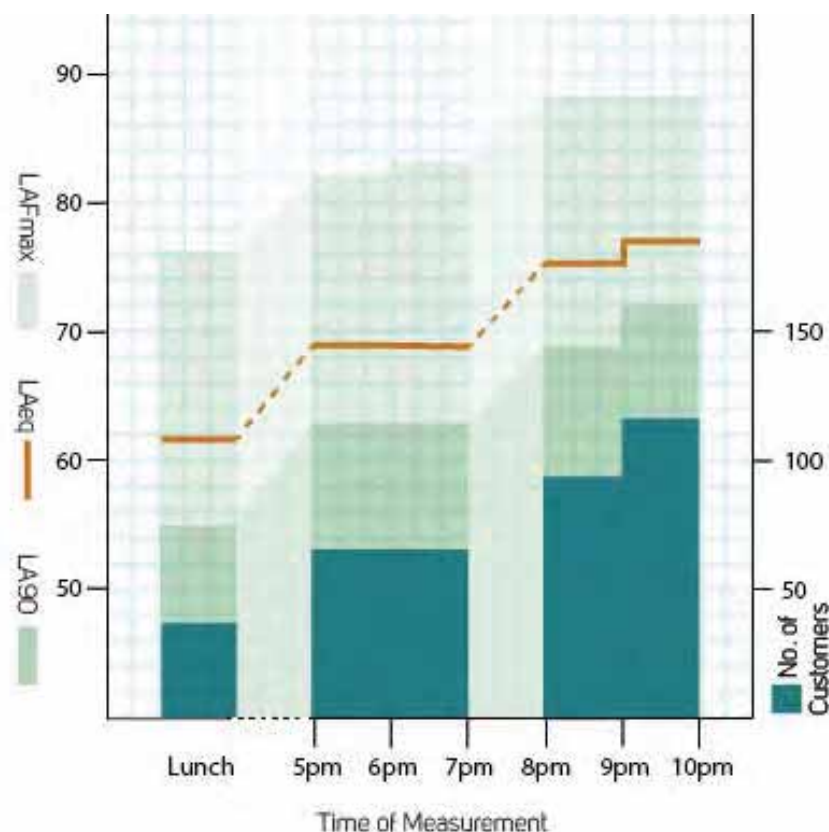
The site became a J D Wetherspoon public house in 1996. The garden, which overlooks River Kennet, is enclosed on all sides.



Location plan showing the unattended logger and short-term attended measurement positions

EXISTING MANAGEMENT CONTROLS

Access to the beer garden is controlled through the pub itself, there is no external access. Smoking was prohibited within the beer garden.



SURVEY OBSERVATIONS

The survey was undertaken on Friday 3rd September 2021. Weather during the survey was cloudy, warm and dry with little to no wind throughout. The beer garden was quiet during the lunchtime period, before becoming slightly busier in the mid-afternoon and then reached its busiest in the evening. Throughout the survey patrons were generally evenly spread across all areas of the beer garden.

It was observed that only a small proportion of beer garden users were consuming food at some point during their stay, otherwise patrons were primarily drinking within the garden.

During the lunchtime and mid-afternoon periods, the beer garden patrons were spread across the full range of the age spectrum. However, towards the evening, beer garden patrons were primarily formed by younger people below the age of 40.

Illustrative Graph depicting number of customers and noise levels, from all positions in the garden

4. THE WEST QUAY

Brighton



Seaside student city



Open garden



Older couples/
Students/Young
adults



193m²



Capacity of 220



Sunny/Cloudy with
showers



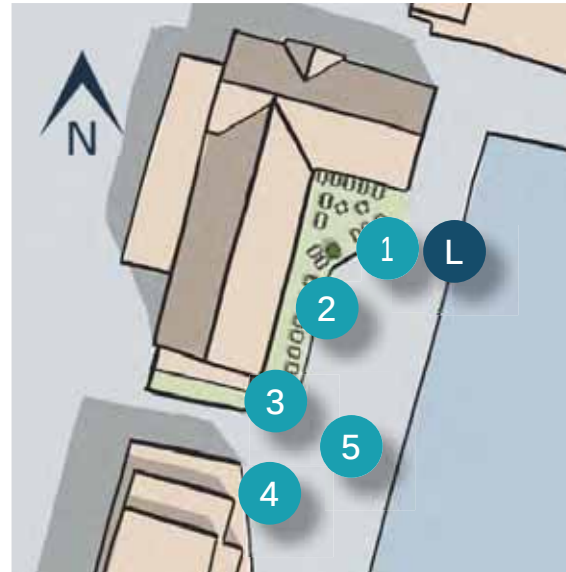
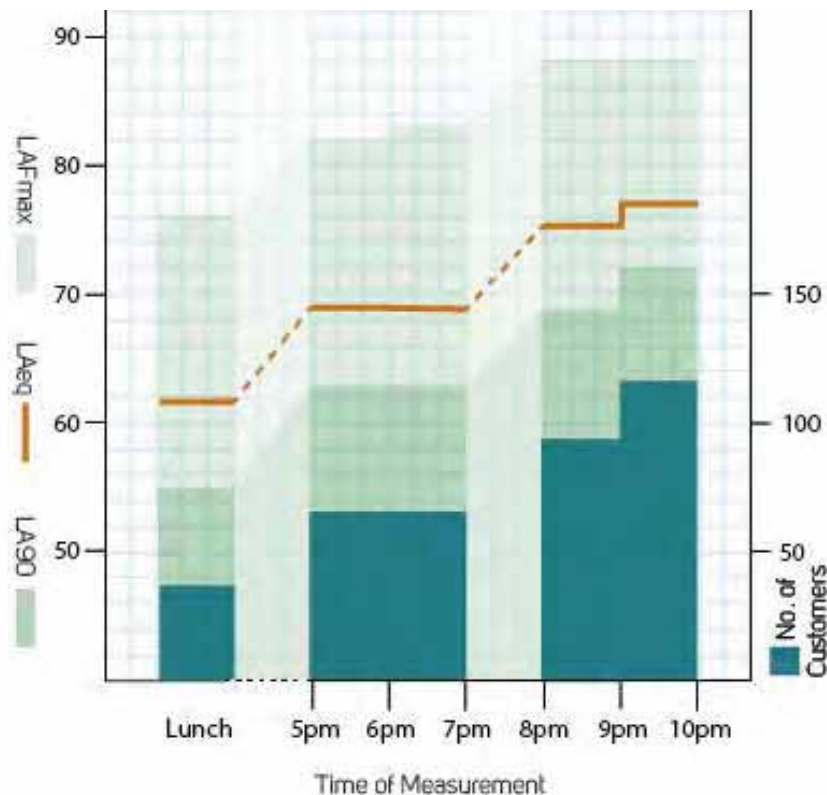
8th September 2021

SITE DESCRIPTION

The site is located on the edge of a marina which consists of a number of commercial and residential properties. The site became a J D Wetherspoon public house in 2004.

Formerly a pub called Jackson's Wharf, the building takes its name from its location on the marina's west quay. Located at the foot of the cliffs at Black Rock, east of the city centre, Brighton Marina was officially opened in 1979. The marina has since been developed in stages, acquiring its first public house (The Master Mariner) in 1987. Jackson's Wharf was granted planning permission in December 1998 and began trading soon after.

The pub comprises a seating area at the ground floor of the pub and a terrace at first floor. During the survey, only the ground floor external area was open, with no patrons on the first-floor terrace.



Location plan showing the unattended logger and short-term attended measurement positions

EXISTING MANAGEMENT CONTROLS

The ground-floor beer garden can be accessed either through the pub via opened bi-folding doors or directly from the promenade. However, most of the external area is surrounded by planters, with only two access points. There was a no smoking policy within the garden area.

SURVEY OBSERVATIONS

The survey was undertaken on Wednesday 8th September 2021. Weather during the survey was warm and sunny with a light breeze. However, an unpredicted thunderstorm with heavy rainfall started at 19:30. After this there were no patrons in the external area until the closing time of the premises.

The beer garden was busy during the lunchtime period and afternoon. Throughout the survey, patrons were generally evenly spread across the main seating area and most of these consumed food at some point during their stay.

The age profile of customers in the beer garden terrace was broad, with customers in all age brackets throughout the afternoon.

Illustrative Graph depicting number of customers and noise levels, from all positions in the garden

5. THE MOSSY WELL

Muswell Hill, London



Capital City



Enclosed garden



Older couples/
Students/Young
adults



153m²



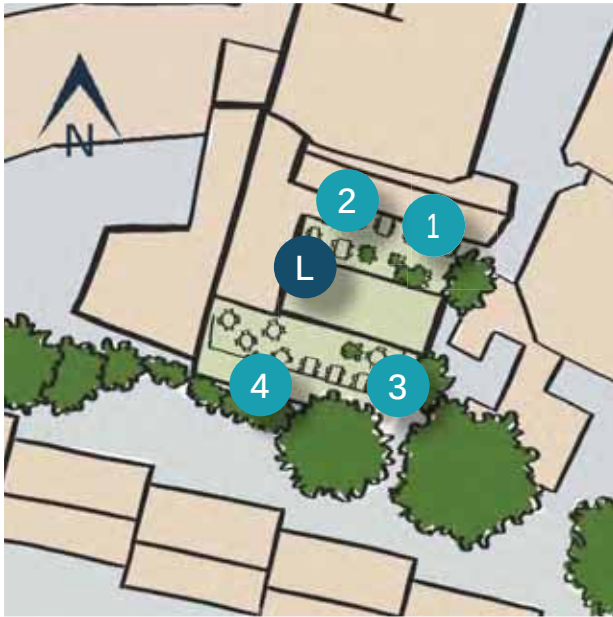
Capacity of



Warm and sunny



9th September 2021

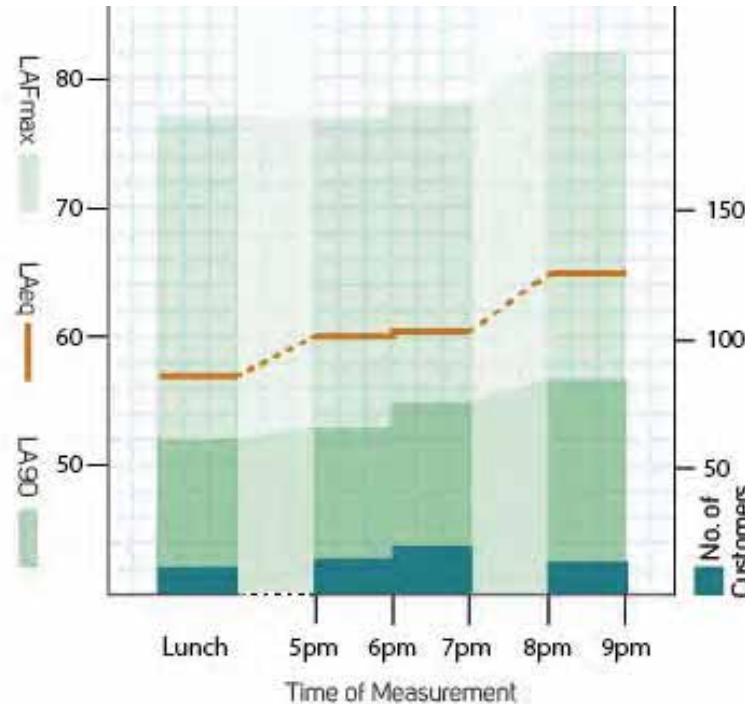


Location plan showing the unattended logger and short-term attended measurement positions

SITE DESCRIPTION

The site is located in a row of existing commercial premises off the A504 Muswell Hill in north London. A number of residential properties are located to the rear. The site became a J D Wetherspoon public house in 2015.

The beer garden is split across two levels, with an upper level balcony accessed via rear pub doors and a pair of staircases lead to the lower level, which makes up the majority of the area of the garden. The garden is enclosed on all sides and incorporates a number of acoustic canopies to reduce noise levels emanating from it. A small fountain is located on the lower level of the beer garden, which provides a low level of masking noise.



Illustrative Graph depicting number of customers and noise levels, from all positions in the garden

EXISTING MANAGEMENT CONTROLS

Access to the beer garden is controlled via the rear doors of the pub, there is no other external access. The rear double doors to the pub remained open throughout the survey period. There was no smoking area included in the rear beer garden and the garden has a closing time of 21:00 which is enforced by on site security.

SURVEY OBSERVATIONS

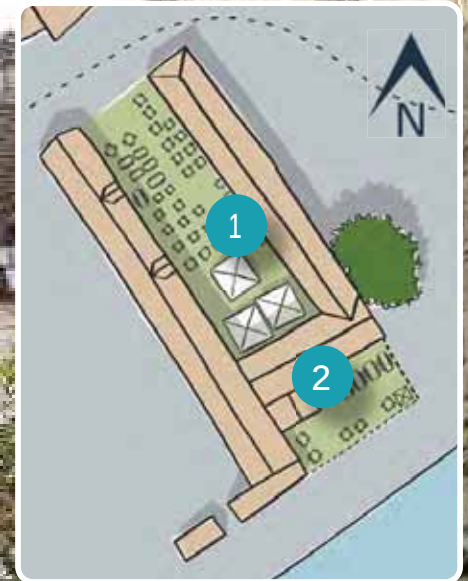
The survey was carried out on Saturday 11th September 2021. Weather during the survey was sunny, warm and dry with little to no wind throughout. The beer garden was quiet during the lunchtime period, then became busier during the mid afternoon and with use eventually tapering off towards the late evening as it approached closing time for rear area. Throughout the survey patrons were generally evenly spread across all beer garden areas, however it was noted that older patrons and families tended to sit on the upper balcony area, while younger people sat across the lower levels.

During lunchtime and the mid-afternoon periods, it was observed that a significant proportion of beer garden users were consuming food at some point during their stay. Towards the evening, it was noted that most beer garden patrons were drinking only.

During the lunchtime period, the beer garden use was generally skewed towards younger people and families below the age of 40. However, by the mid-afternoon use was spread across patrons of all ages. Towards the evening, only younger people roughly below the age of 30 remained within the beer garden.

6. THE QUAYSIDE

Newcastle



City



Enclosed rear garden
Open front garden



Older couples/
Families/Young
adults



163m²



Capacity of 261 for
rear and 87 for front



Overcast and humid



7th October 2021

SITE DESCRIPTION

Site is located on the River Tyne a short distance from Newcastle city centre. The customer area is across part of the ground and first floor of the premises, with the kitchen and storage area on the eastern wing of the building. The rear beer garden is located in the rear courtyard of the U-shaped building and the front beer garden openly facing the River Tyne and Cycle Route 72. The north side of the rear beer garden has a covered shelter blocking the open entrance to the B1600. Seating is laid out with planting across the central area.

EXISTING MANAGEMENT CONTROLS

Access to the beer garden is controlled through the pub itself, there is external access into both the rear and front beer gardens from the B1600 through the covered shelter and Cycle Route 72 respectively. There were no specific provisions regarding smoking in either beer garden.

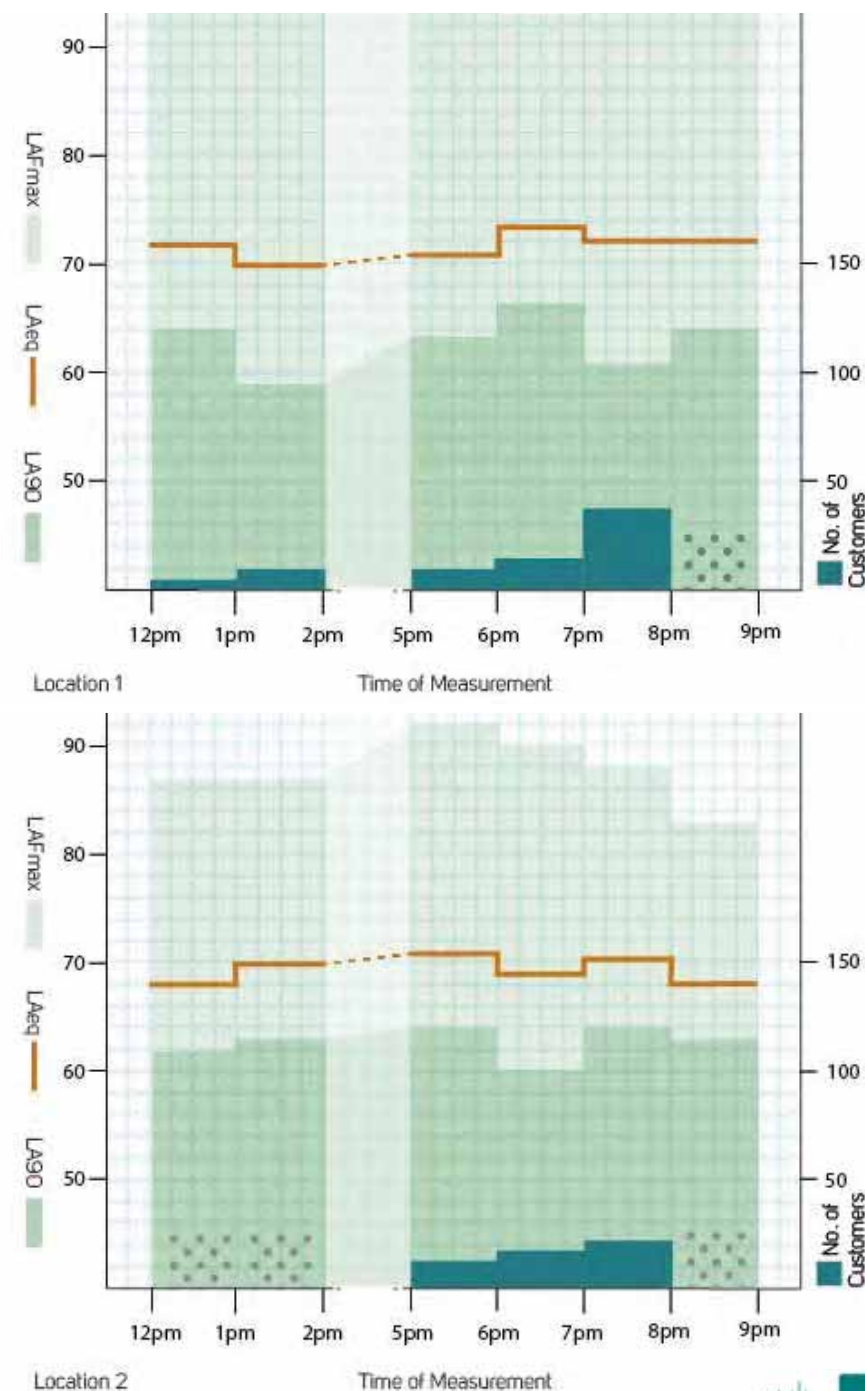
SURVEY OBSERVATIONS

The survey was undertaken on Friday 7th October 2021. Weather during the survey was overcast and humid with no rain and little to no breeze. The beer garden was quiet throughout the lunchtime but busy in the afternoon and early evening period. As the evening went on the beer garden became busier and those that were in the garden were evenly spread across the area. The use of the beer garden was more short term into the evening due to smokers coming outside. Throughout the survey period, it was observed that a significant proportion of beer garden users were consuming food at some point during their stay.

The age profile of customers at this location was broad, with customers in all age brackets throughout the day in approximately similar proportions in each age group. During the evening period the proportion of customers in the age bracket over 60 years of age reduced, particularly in the rear beer garden.



 No data recorded for number of customers



7. FIGURE OF EIGHT

Birmingham



City centre



Enclosed garden



Young adults/Middle age



366.5m²



Capacity of 150



Warm, sunny, dry



10th September 2021

SITE DESCRIPTION

Site is located on Broad Street in central Birmingham surrounded by a number of other commercial premises, as well as some residential dwellings to the rear. The customer area is across the ground floor of the premises with access to rear beer garden through bi-fold doors. Seating is laid out with planting across the central area.

EXISTING MANAGEMENT CONTROLS

Access to the beer garden is controlled through the pub itself with no external access. There were no specific provisions regarding smoking in either beer garden.



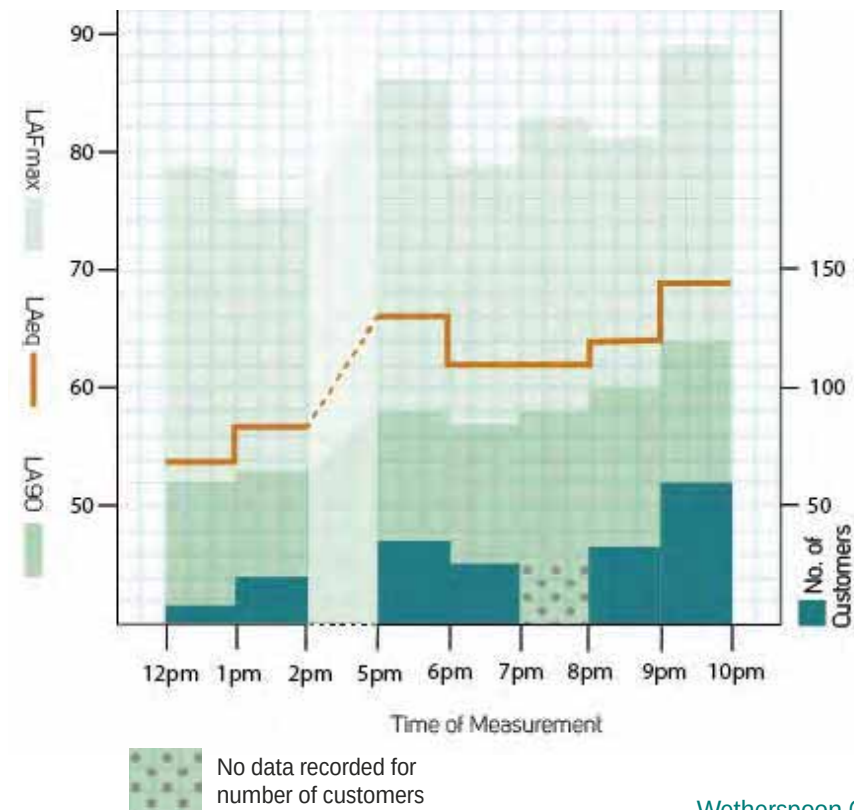
Location plan showing the unattended logger and short-term attended measurement positions

SURVEY OBSERVATIONS

The survey was undertaken on Friday 10th September 2021. Weather during the survey was warm, sunny and dry with little to no breeze. The beer garden was quiet throughout the lunchtime but busy in the afternoon and early evening period. As the evening went on the beer garden became very busy with patrons stood as well as seated. The use of the beer garden was short term to some patrons due to smokers coming in and out of the pub. During the later evening period, patrons were increasingly loud. Throughout the survey period, it was observed that a significant proportion of beer garden users were consuming food at some point during their stay.

The age profile of customers at this location was broad, with customers in all age brackets throughout the day in approximately similar proportions in each age group. During the evening period the proportion of customers in the age bracket over 40 years of age reduced.

Illustrative Graph depicting number of customers and noise levels, from all positions in the garden



8. THE BUCK INN

Northallerton



Location plan showing the unattended logger and short-term attended measurement positions



Market town



Enclosed garden



Young adults/Middle age/Mature



219.3m²



Capacity of 142



Warm, sunny, light breeze



27th August 2021

SITE DESCRIPTION

Site is located in a row of existing commercial premises at the northern end of Northallerton town centre. The site became a JD Wetherspoon public house in 2019 and was formerly a public house prior to JD Wetherspoon ownership.

The customer area is across the full ground floor of the premises with the beer garden directly to the rear of the site, connected to the ground floor accommodation by bi-fold doors. The beer garden is fully enclosed and laid out with covered booth seating around the west and north side of the beer garden and a covered smoking shelter on the southern edge of the beer garden. Seating is laid out with planting across the central area. There is no provision for patrons to stand and drink, other than in the covered smoking shelter.

EXISTING MANAGEMENT CONTROLS

Access to the beer garden is controlled through the pub itself, there is no external access into the beer garden without first accessing the ground floor customer area of the pub. Smoking is only permitted in the smoking shelter which is enforced through signage and staff observation.

SURVEY OBSERVATIONS

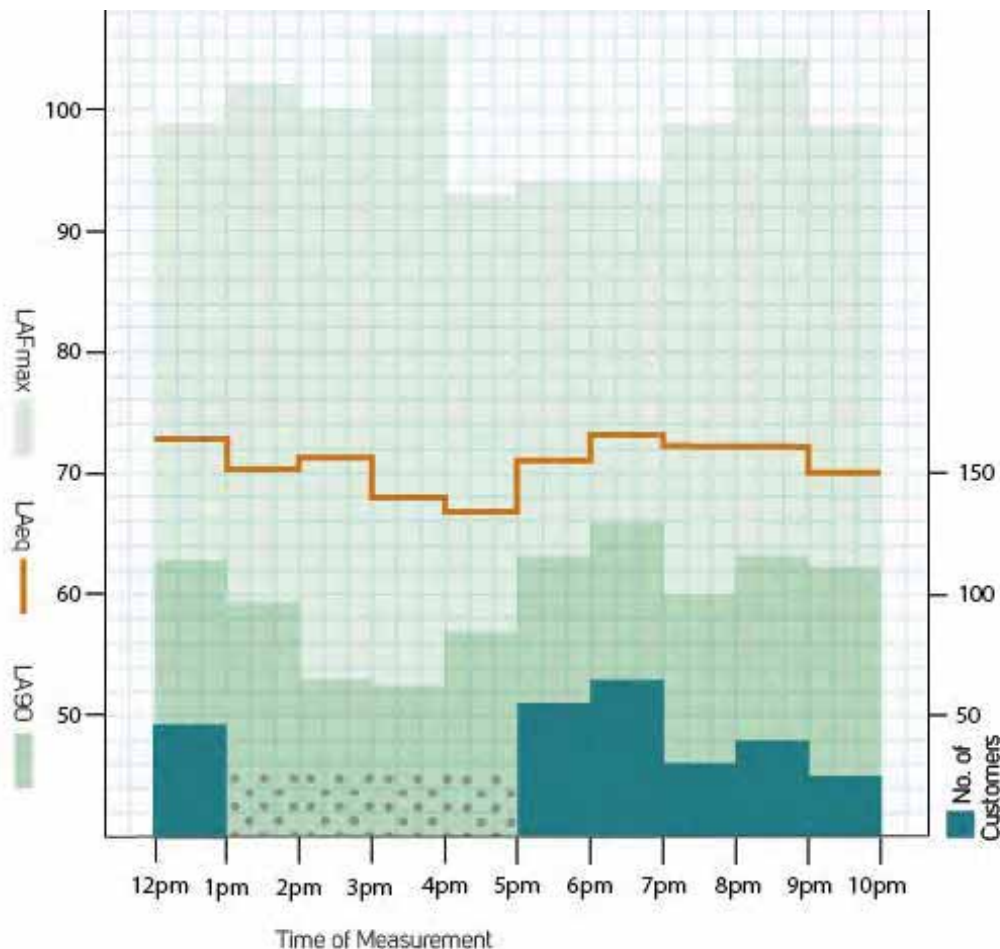
The survey was undertaken on Friday 27th August 2021. Weather during the survey was warm and dry with a light breeze. The beer garden was busy throughout the lunchtime and afternoon and early evening period. As the sun went down the number of people in the beer garden reduced noticeably and those that were in the garden were primarily located in the covered seating areas around the edge of the garden as these areas had in-built space heating.

Into the evening, the users of the beer garden increased again, although the use was more short term and the use of the smoking area increased significantly compared to during the daytime period.

Throughout the survey period, it was observed that a significant proportion of beer garden users were consuming food at some point during their stay.

The bi-fold doors to the pub remained open throughout the survey period.

The age profile of customers at this location was broad, with customers in all age brackets throughout the day in approximately similar proportions in each age group. During the evening period the proportion of customers in the age bracket over 60 years of age reduced.



No data recorded for number of customers

9. THE JOLIE BRISE

Teignmouth



Seaside town



Roof terrace



Young adults/Middle age/Mature



89m²



Capacity of 142



Sunny spells



18th September 2021

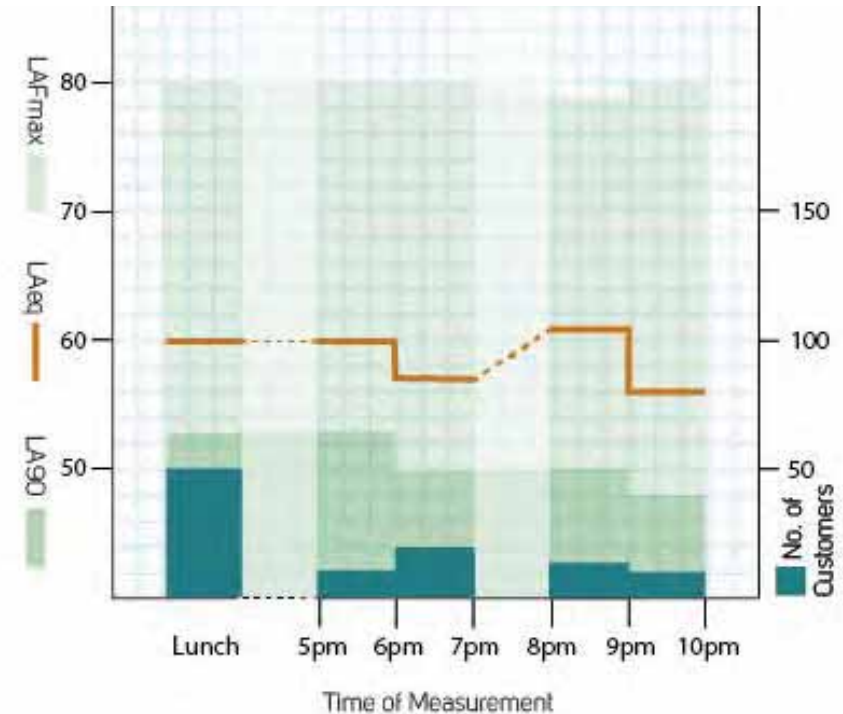
SITE DESCRIPTION

The site is located in a row of existing commercial and residential properties on Station Road in Teignmouth, Devon. A first floor beer garden terrace is located to the rear which overlooks Lower Brook Street. Opposite the external customer areas is a Lidl supermarket, however there is no vehicular access to this from Lower Brook Street.

The site became a J D Wetherspoon public house in 2015. The building was purpose built as a supermarket in the 1970s. The first-floor terrace benefits from a 2m glazed screen around the northern and western elevations, and a 2m close-boarded timber fence on the southern elevation.

EXISTING MANAGEMENT CONTROLS

Access to the upper-level terrace is controlled via doors from the first floor of the pub, with no external access. The rear double doors to the pub remained open throughout the survey period. Smoking was prohibited on the terrace.



Illustrative Graph depicting number of customers and noise levels, from all positions in the garden

SURVEY OBSERVATIONS

The survey was carried out on Saturday 18th September 2021. Weather during the survey was sunny, warm and dry with low wind speeds throughout. The beer garden was busy during the lunchtime period, after which the number of patrons in the beer garden tapered off.

The age profile of customers on the terrace was broad, with customers in all age brackets throughout the day. During the lunchtime and afternoon periods the patrons generally comprised families with young children and small groups of people in all age brackets. During the evening period, the patrons comprised couples and groups of your professionals. It was observed that most of the beer garden patrons consumed food at some point during their stay.



Location plan showing the unattended logger and short-term attended measurement positions

10. THE PICTURE PLAYHOUSE

Bexhill on Sea



Seaside town



Enclosed roof terrace



Young adults/
Middle age/Mature



150m²



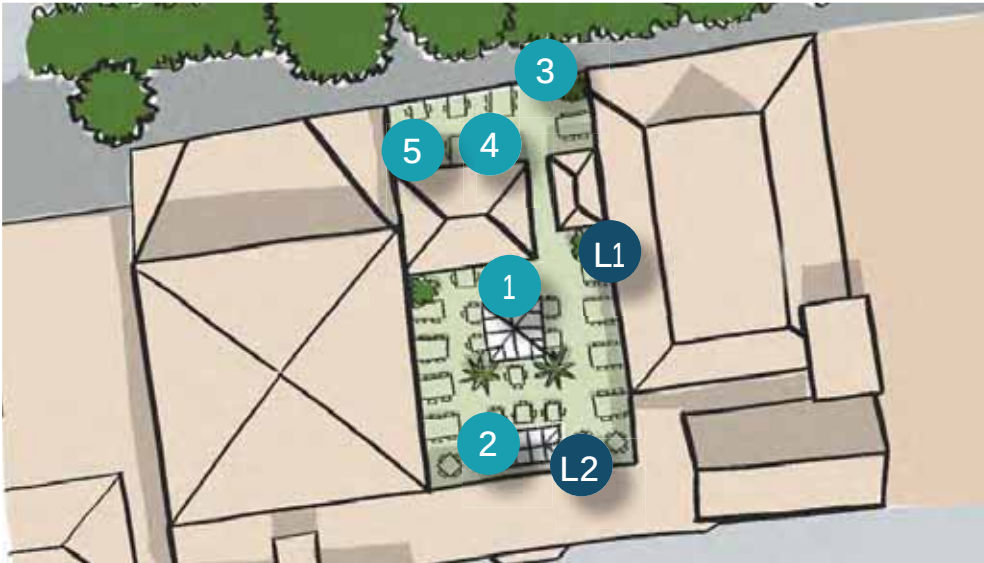
Capacity of



Warm and sunny



24th September 2021



Location plan showing the unattended logger and short-term attended measurement positions

SITE DESCRIPTION

The site is located in a row of commercial properties on Western Road in Bexhill-on-Sea, East Sussex. The site is bounded to the rear by a railway line, with a Sainsbury's supermarket beyond. The Pub features a roof terrace which is enclosed on all sides and laid out with booth seating and tables.

The site became a JD Wetherspoon public house in 2017. The building was previously operated as a cinema and theatre until 2008. The Picture Playhouse, officially opened in 1921. In 1974 the stalls were turned into a bingo club and later an antiques market and the circle into the Curzon Picture House.

EXISTING MANAGEMENT CONTROLS

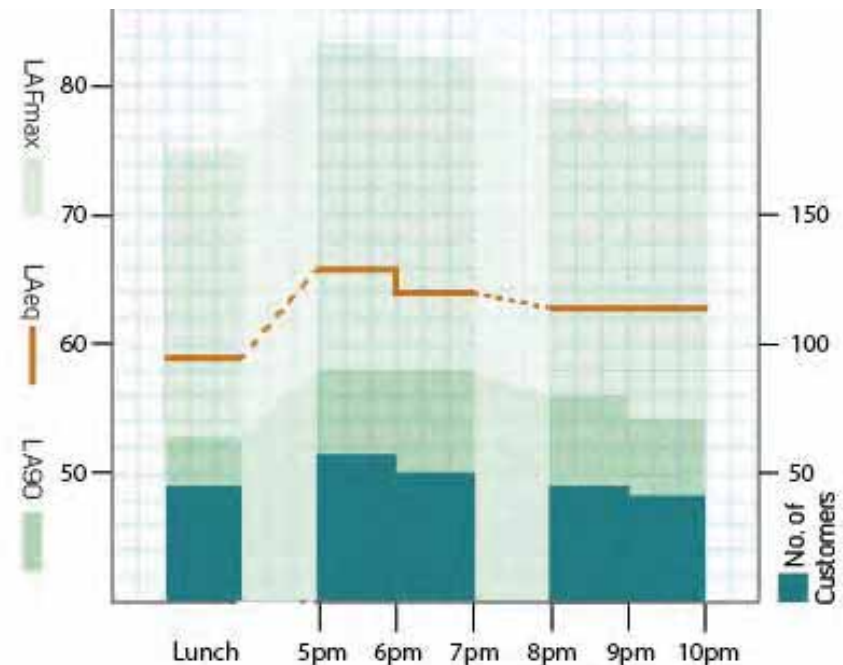
Access to the beer garden is controlled via bi-fold doors at the first floor of the pub, with no external access into the beer garden without first accessing the ground floor customer area of the pub. The bi-fold doors to the pub remained open throughout the survey period. Smoking is only permitted in the northern part of the terrace, which is enforced through signage and staff observation.

SURVEY OBSERVATIONS

The survey was undertaken on Friday 24th September 2021, which was a payday. It is understood that payday Fridays are generally busier than other weekdays of the month. Weather during the survey was warm and dry with a light breeze. The beer garden was busy throughout the survey period.

During the lunchtime and afternoon periods, patrons comprised couples and groups of people in all age brackets, and the great majority of the customers consumed food during their stay. Towards the evening, the patrons of the beer garden generally comprised groups of young professionals and couples, most of whom consumed drinks only.

The patrons were evenly distributed across the terrace until around 10pm, after which most of the patrons were located in the smoking area on the northern part of the terrace. It was observed that the smoking area was much noisier than the main section of the terrace during the late evening busy period.



Illustrative Graph depicting number of customers and noise levels, from all positions in the garden

11. THE REGAL

Cambridge



City centre



Open roof terrace



Students/Young adults/Middle age/Mature



77m²



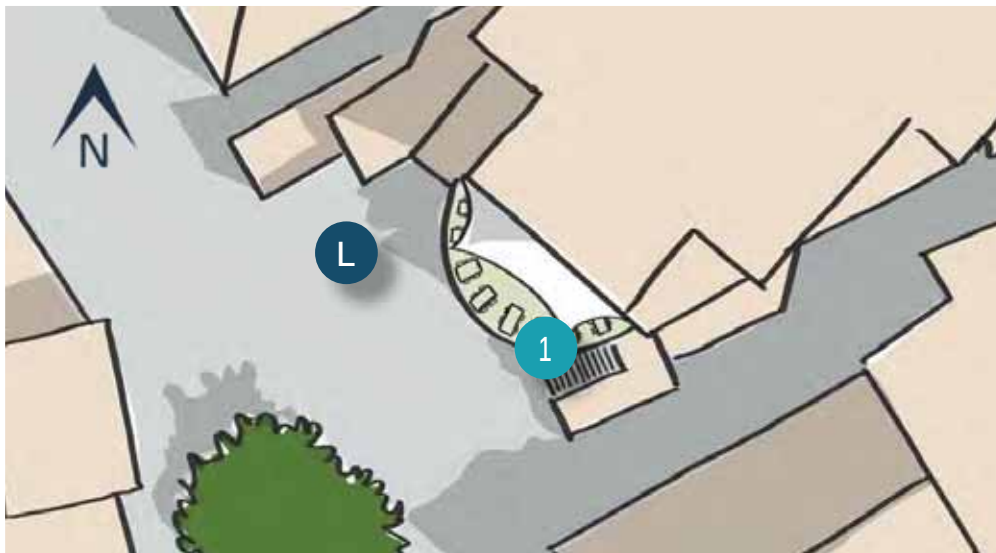
Capacity of



Warm and Sunny



24th September 2021



Location plan showing the unattended logger and short-term attended measurement positions

SITE DESCRIPTION

The site is located in a row of existing commercial properties on St Andrew's Street in Cambridge. The Pub features an external customer area at ground floor, as well as first floor where a terrace is located. These external areas are at the rear of the Pub which backs on the Downing Place. Only the ground-floor customer area was utilised during the survey.

The site became a JD Wetherspoon public house in 2000. When it was opened, it was thought to be the largest pub in the UK. It occupies two floors of the former Regal cinema (the Picture House Cinema occupies the rest of the building).

EXISTING MANAGEMENT CONTROLS

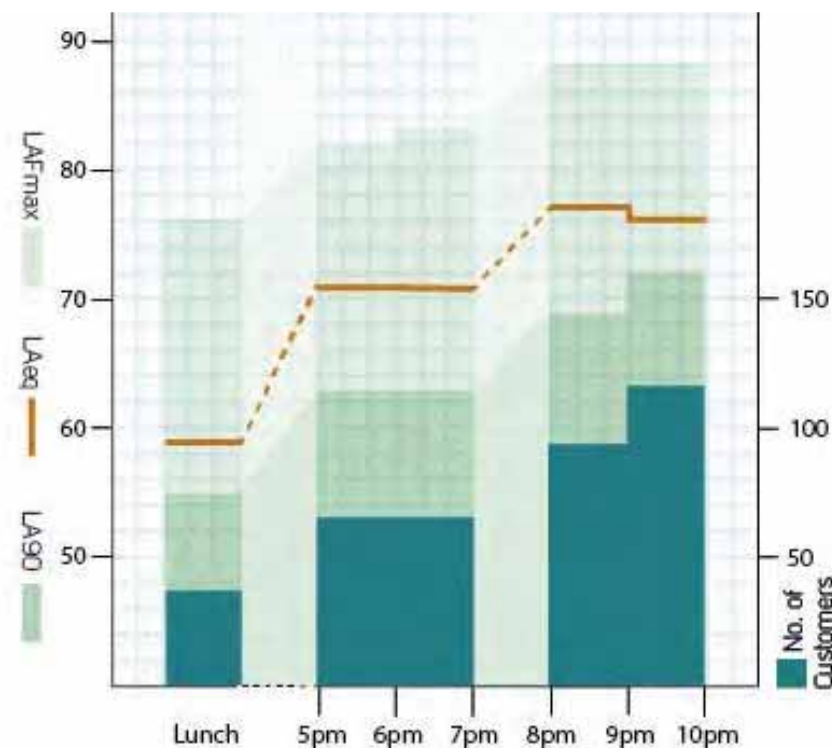
Access to the roof garden is via the pub itself, with external access from Downing Place to the rear. The beer garden included a smoking area.

SURVEY OBSERVATIONS

The survey was carried out on Friday 24th September 2021. Weather during the survey was sunny, warm and dry with little to no wind throughout. The beer garden was quiet during the lunchtime period, before becoming busier towards the mid-afternoon and evening periods. Throughout the survey patrons were generally evenly spread across the ground floor external area. No patrons were observed on the first-floor terrace.

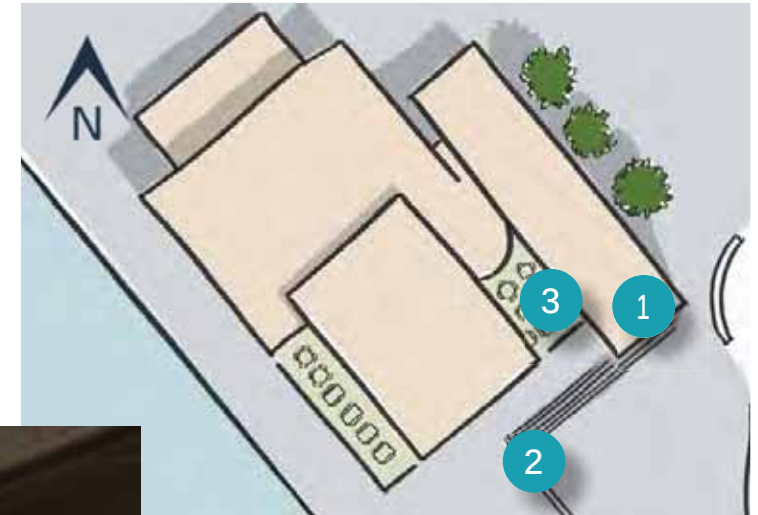
During lunchtime and the mid-afternoon periods, it was observed that a significant proportion of beer garden users were consuming food at some point during their stay. Towards the evening, it was noted that most beer garden patrons were drinking and/or smoking only.

During the lunchtime period, the patrons in the beer garden were generally over 35 years of age. Towards the mid-afternoon and evening, beer garden use shifted to younger people, generally aged below 35 years old.



12. THE MOUNT STUART

Cardiff



Location plan showing the unattended logger and short-term attended measurement positions

 City

 Open roof terrace and garden

 Young adults/Middle age/Mature

 280m²

 Capacity of

 Cloudy with sunny spells

 1st October 2021

SITE DESCRIPTION

The site became a J D Wetherspoon public house in 2013. The former dock building was the long-time offices of the Mount Stuart Dry Docks Co. Ltd. It was built in the 1880s, next to Graving Dock No.1, all part of Cardiff Docks. The pub features a minimalist industrial design extending over two floors. Each floor has an outside drinking terrace, with the upper one providing views across the Bay.

EXISTING MANAGEMENT CONTROLS

Access to the upper level beer garden terrace is controlled via doors from the first floor of the pub. The ground level garden area can be accessed via the front and side doors of the pub. This area can also be accessed externally from Landsea Square.



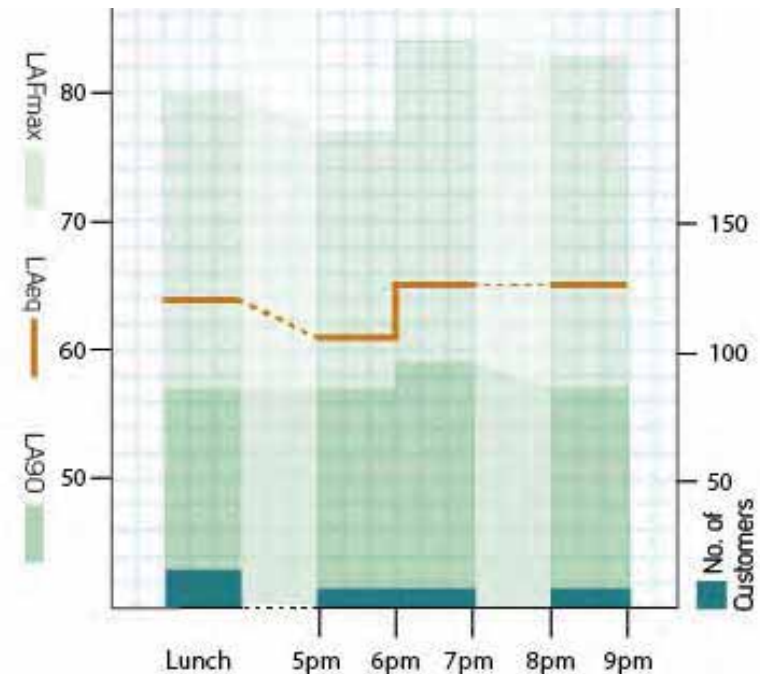
SURVEY OBSERVATIONS

The survey was carried out on Friday 1st October 2021. Weather during the survey was cloudy with sunny spells, remaining dry with little to no wind throughout. Conditions were warm during lunchtime and the mid-afternoon, but transitioned to becoming fairly cold into the evening. Due to pressure washing of the upper level beer garden terrace, measurements of noise related to beer garden patrons were not carried out during the lunchtime period. Throughout the survey, it was observed that almost all beer garden patrons were located within the ground level areas only.

During the mid-afternoon period, it was observed that a significant proportion of beer garden users were consuming food at some point during their stay. Towards the evening, it was noted that most beer garden patrons were drinking and/or smoking only.

The age profile of customers at this location was broad throughout the entire mid-afternoon – evening measurement period, however patrons were almost all below the age of 60.

Use of the beer garden areas during the evening period was limited and typically short in duration, likely due to the cold temperatures during the period.



Illustrative Graph depicting number of customers and noise levels, from all positions in the garden

13. THE PICTURE HOUSE

Morley



Town



Open roof terrace



Young adults/Middle age/Mature



104.3m²



Capacity of 142



Overcast and dry



1st October 2021

SITE DESCRIPTION

Site is located on Queen Street in the centre of Morley, a suburban town near Leeds. The customer area is across the ground floor of the premises. The roof terrace is located directly up a set of stairs of the single-storey building. Seating is laid out with planting across the central area.

EXISTING MANAGEMENT CONTROLS

Access to the roof terrace is controlled through the pub itself, there is no external access. There was a no smoking policy on the roof terrace.

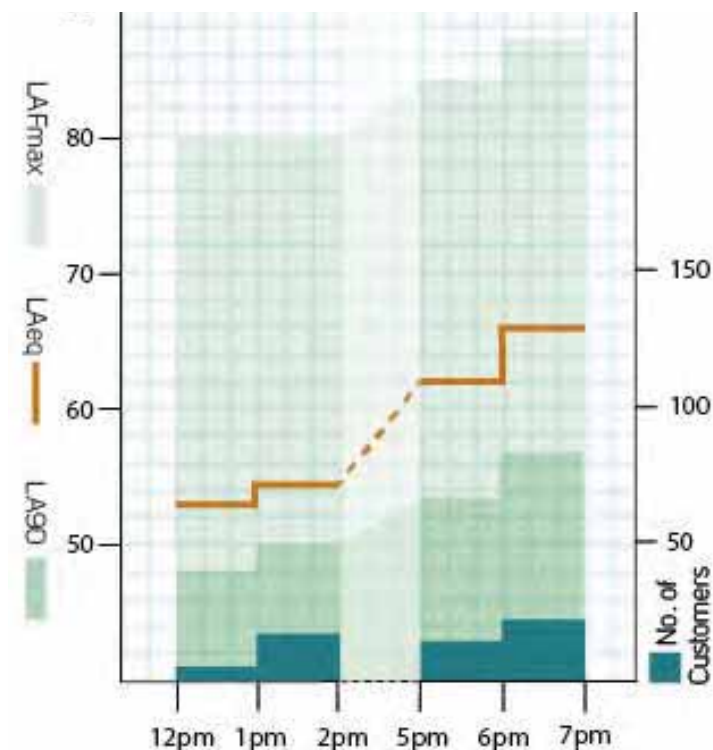
SURVEY OBSERVATIONS

The survey was undertaken on Friday 20th August 2021. Weather during the survey was overcast and dry. The roof terrace was quiet throughout the day, only becoming slightly busier in the evening. Throughout the survey period, it was observed that a significant proportion of beer garden users were consuming food at some point during their stay.

The age profile of customers at this location was broad, with customers in all age brackets throughout the day in approximately similar proportions in each age group. During the evening period the proportion of customers in the age bracket over 60 years of age reduced, particularly in the rear beer garden



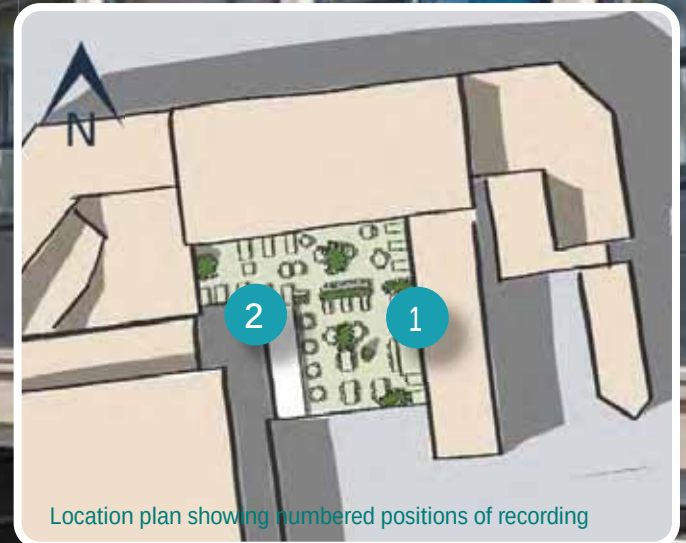
Location plan showing the unattended logger and short-term attended measurement positions



Illustrative Graph depicting number of customers and noise levels, from all positions in the garden

14. THE ADMIRAL HUMBER

Hull



Location plan showing numbered positions of recording

Aerial view of The Admiral Humber showing locations of surveys



City centre



Enclosed roof terrace



Young adults/Middle age/Mature



249.5m²



Capacity of 160



Dry & sunny



8th October 2021

SITE DESCRIPTION

Site is located on Anlaby Road in the centre of Hull. The customer area is across the ground floor of the premises. The roof terrace is located directly up a set of stairs in the multi-storey building, which consists of a Wetherspoons hotel above the pub. Seating is laid out with planting across the central area.

EXISTING MANAGEMENT CONTROLS

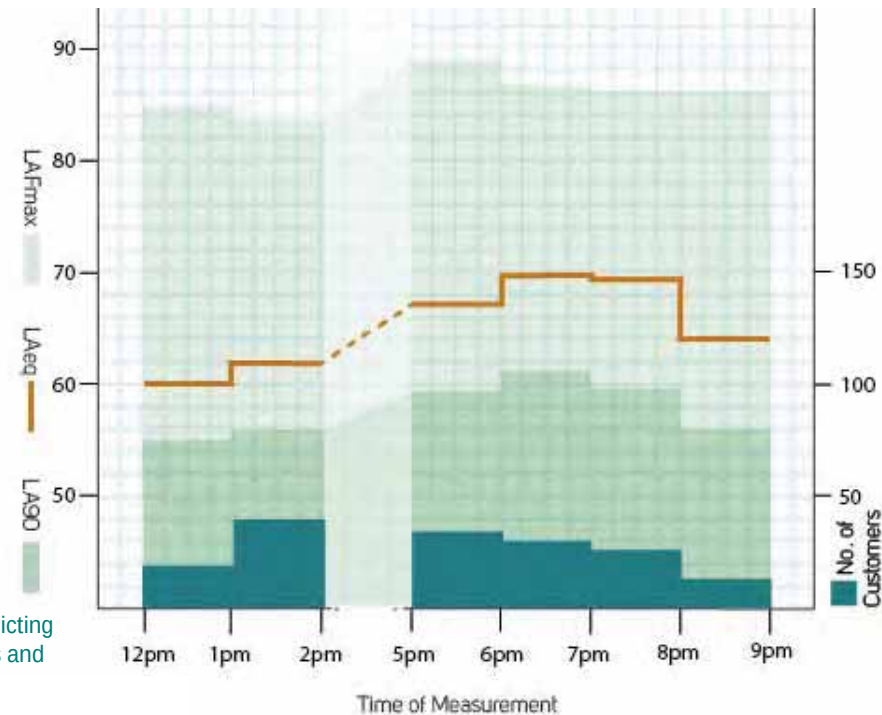
Access to the roof terrace is controlled through the pub itself, there is no external access. There was a no smoking policy on the roof terrace.



SURVEY OBSERVATIONS

The survey was undertaken on Friday 8th October 2021. Weather during the survey was sunny and dry. The roof terrace was busy throughout the day and evening, with it getting quieter throughout the night. Throughout the survey period, it was observed that a significant proportion of roof terrace users were consuming food at some point during their stay.

The age profile of customers at this location was broad, with customers in all age brackets throughout the day in approximately similar proportions in each age group. During the evening period the proportion of customers in the age bracket over 60 years of age reduced.



Illustrative Graph depicting number of customers and noise levels

15. THE CAPTAIN ALEXANDER

Liverpool



City centre



Enclosed roof terrace



Young adults/Middle age/Mature



145.6m²



Capacity of 80



Dry & sunny



20th August 2021

SITE DESCRIPTION

Site is located on James Street in the centre of Liverpool. The customer area is across the ground floor of the premises. The roof terrace is located directly up a set of stairs in the multi-storey building, which consists of offices above the pub. Seating is laid out with planting across the central area.

EXISTING MANAGEMENT CONTROLS

Access to the roof terrace is controlled through the pub itself, there is no external access. There were no smoking provisions on the roof terrace.

SURVEY OBSERVATIONS

The survey was undertaken on Friday 20th August 2021. Weather during the survey was sunny and mostly dry, with the survey cut short due to rain. The roof terrace was busy throughout the day and evening. Throughout the survey period, it was observed that a significant proportion of roof terrace users were consuming food at some point during their stay.

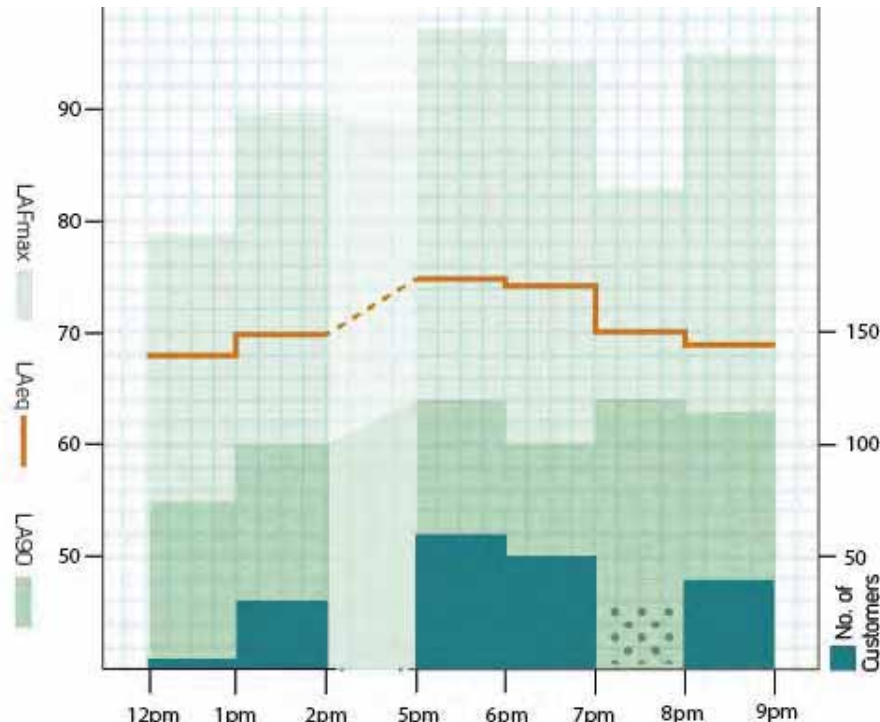
The age profile of customers at this location was broad, with customers in all age brackets throughout the day in approximately similar proportions in each age group. It should be noted that there were a number of large stag and hen parties on the roof terrace during the survey. During the evening period the proportion of customers in the age bracket over 60 years of age reduced.



Location plan showing the unattended logger and short-term attended measurement positions



No data recorded for number of customers



16. THE BLACK BULL

Bangor



Town



Open roof terrace and garden



Young adults/Middle age



132.4m²



Capacity of 75



Dry & sunny



5th October 2021

SITE DESCRIPTION

Site is located on High Street in the centre of Bangor. The customer area is across the ground floor of the premises. The roof terrace is located directly to the rear of the building overlooking a car park, with stairs leading down to a beer garden. Seating is laid out with planting across the central area.

EXISTING MANAGEMENT CONTROLS

Access to the roof terrace is controlled through the pub itself, with external access from the car park to the rear. There were no smoking provisions on the roof terrace or beer garden.



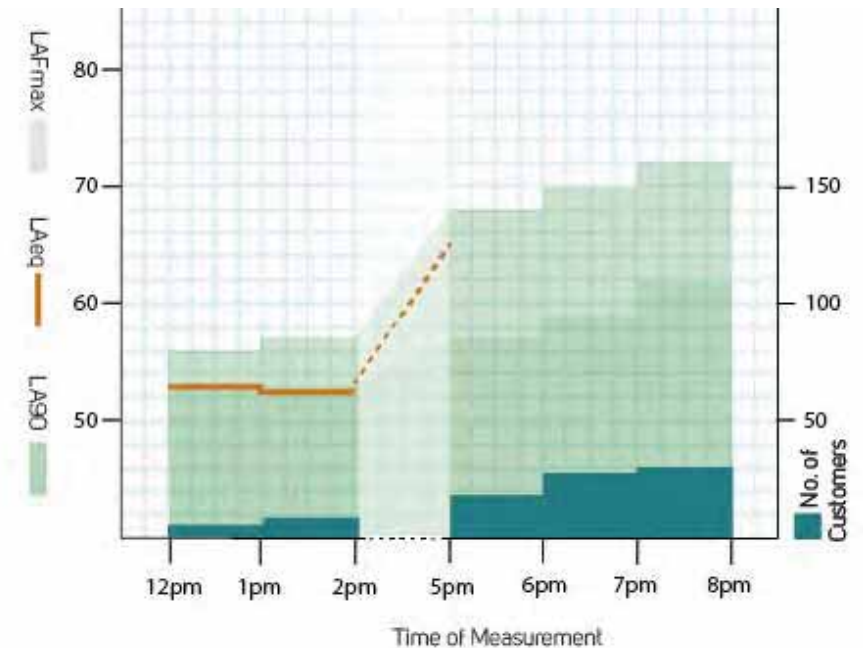
SURVEY OBSERVATIONS

The survey was undertaken on Friday 8th October 2021. Weather during the survey was sunny and dry. The roof terrace was busy throughout the day and evening, whilst the beer garden was quieter. Throughout the survey period, it was observed that a significant proportion of roof terrace and beer garden users were consuming food at some point during their stay.

The age profile of customers at this location was younger, gathered in small groups throughout the day and larger groups during the evening. It should be noted that were a number of large student groups during the survey. During the evening period the proportion of customers were significantly louder.



Location plan showing the unattended logger and short-term attended measurement positions





RESULTS/CONCLUSION



RESULTS/CONCLUSION

GARDEN RESULTS 1	 Time of measurement	 People/m ²	 Lw/m ² (dBA)
The Angel's Vault, Hitchin 	Lunch	0.11	57
	5-6pm	0.18	64
	6-7pm	0.18	64
	8-9pm	0.27	66
	9-10pm	0.33	70
The Whalebone, Downham Market 	Lunch	0.04	53
	5-6pm	0.09	57
	6-7pm	0.09	60
	8-9pm	0.11	57
The Back of Beyond, Reading 	Lunch	0.11	62
	5-6pm	0.24	69
	6-7pm	0.25	69
	8-9pm	0.42	75
	9-10pm	0.49	77
The West Quay 	Lunch	0.42	64
	5-6pm	0.26	63
	6-7pm	0.37	64
	7-7:30pm	0.32	64

GARDEN RESULTS 2	 Time of measurement	 People/m ²	 Lw/m ² (dBA)
The Mossy Well 	Lunch	0.07	58
	5-6pm	0.09	60
	6-7pm	0.13	64
	8-9pm	0.08	63
The Quayside 	5-6pm	23	61.6
	6-7pm	31	60.0
	7-8pm	38	58.7
The Figure of Eight 	12-1pm	8	53.6
	1-2pm	20	56.3
	5-6pm	36	65.4
	6-7pm	24	61.5
	8-9pm	32	63.7
	9-10pm	60	68.3
The Buck Inn 	12-1pm	45	71.8
	5-6pm	55	70.6
	6-7pm	65	72.7
	7-8pm	30	71.4
	8-9pm	40	71.5
	9-10pm	25	69.1



ROOF TERRACE 1	 Time of measurement	 People/m ²	 Lw/m ² (dBA)
The Jolie Brise 	Lunch	0.56	64
	5-6pm	0.11	62
	6-7pm	0.22	62
	8-9pm	0.16	61
	9-10pm	0.11	61
The Picture Playhouse 	Lunch	0.29	61
	6-7pm	0.38	38
	7-8pm	0.33	66
	9-10pm	0.31	65
	10-11pm	0.28	61
The Regal 	Lunch	0.18	69
	5-6pm	0.32	66
	6-7pm	0.30	68
	8-9pm	0.36	74
	9-10pm	0.32	73
The Mount Stuart 	5-6pm	0.05	65
	6-7pm	0.03	63
	8-9pm	0.03	63
	9-10pm	0.03	63

ROOF TERRACE 2	 Time of measurement	 People/m ²	 Lw/m ² (dBA)
The Picture House 	12-1pm	4	55.3
	1-2pm	18	59.0
	5-6pm	16	62.4
	6-7pm	22	66.7
The Admiral Humber 	12-1pm	20	62.6
	1-2pm	40	64.8
	5-6pm	35	67.5
	6-7pm	30	70.3
	7-8pm	25	70.0
	8-9pm	15	68.5
The Captain Alexander 	12-1pm	6	60.6
	1-2pm	30	70.6
	5-6pm	60	79.9
	6-7pm	50	78.7
	8-9pm	40	73.7
The Black Bull 	5-6pm	20	54.9
	6-7pm	36	52.2
	7-8pm	34	67.5
	8-9pm	29	70.4



RESULTS

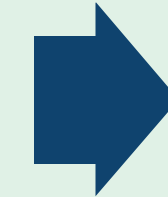
In considering the results of the surveys and how they relate to the previously described methodologies for establishing source sound power levels per square meter squared (L_w/m^2) for the beer gardens and terraces in operation, the following methodology has been followed:

- Each beer garden has been modelled, utilising either the CadnaA noise mapping software or the Softnoise Predictor software, incorporating the local environment including ground heights, buildings and acoustic screening of intervening structures;
- Receiver points were placed into the noise models to represent the locations at which the sound level meters were positioned during the surveys where physical measurements were taken;
- The areas of the beer gardens occupied by patrons were represented by area sources;
- The sound power level per square metre for the area sources were then validated against actual noise measurements during each 1-hour observation period;
- The L_w/m^2 derived from the empirical data and the L_w/m^2 validated from the noise measurements have been compared to establish if the two values are comparable, or to quantify any differential.

WHAT IS SOUND POWER?

- Energy quantity
- Independent of distance
- Theoretically calculated

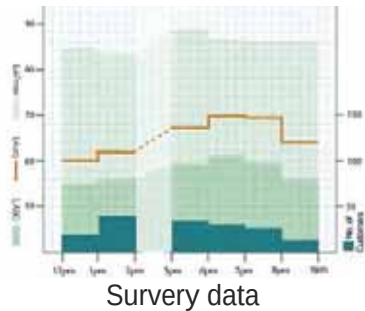
Sound Power level (L_w) is the total airborne energy emitted by a sound source. It is a constant and non directional value.



This makes it possible to create comparisons without knowledge of location and distance measured.

HOW IT'S CALCULATED

BASED ON ON-SITE SURVEY MEASURED VALUES



Survey data



CadnaA noise mapping
or
Softnoise Predictor

Calculated adjustments for contextual factors



Sound
Power Level
(L_w)

BASED ON EMPIRICAL DATA



Empirical data
for speech



Spectrum Methodology :
Adjust for the expected intensity levels
for the beer garden or terrace

Dragonfly Methodology :
Adjust for the expected occupation
levels of the beer garden or terrace



Sound
Power Level
(L_w)

Comparison to
establish if the
two values are
comparable or
to quantify any
differential



The following contextual factors were considered relevant in undertaking the comparison, to understand if any factor in particular was a determining factor on the correlation of the modelled and measured values:

Type of external space

- Beer Garden
- Terrace
- Roof Terrace

Location of Premises

- City Centre
- Market Town
- Suburban

Age Range of Clientele

- High proportion of under 25s

In summary, overall there is a clearly a good correlation between the measured and predicted noise levels for both the Spectrum and Dragonfly methodologies. For the majority of sites the predicted noise level from the beer garden or terrace correlated with the highest measured noise levels from that use, such that the methodology could be considered as a 'worst case' assessment of noise emissions.

The results show that the Dragonfly methodology is likely to provide an accurate prediction of noise levels in 'normal' trading with the Spectrum methodology likely to provide a robust prediction that may slightly overpredict noise levels.

Where trading is busy, with high levels of beer garden or terrace occupancy, the Dragonfly methodology

shows a greater likelihood to underpredict noise levels, albeit that the predicted noise levels are still within the accepted margin of accuracy. The Dragonfly methodology allows for consideration of periods of 'peak use'. However, the Spectrum method takes account of these periods more robustly without the need for adaption for consideration of peak periods.

The calculated sound power levels per square metre derived for each site were analysed in order to determine representative values for two trading scenarios:

- A 'normal trading' scenario, where the outdoor amenity areas were not very busy and the patrons generally consumed food during their stay. This generally represents expected trading levels during the weekdays and the lunchtime through to the early evening period at weekends.
- A 'busy trading' scenario, where the great majority of patrons consumed only drinks. This is typical of the evening and late evening periods, most likely at weekends or associated with local special events.

The analysis indicates that the average sound power level for the 'normal trading' scenario is Lw/m² 67 dB, and the average sound power levels for the 'busy trading' scenario is Lw/m² 74 dB.

In seeking to understand this divergence, it is necessary to look at the specifics of how these sites operate.

When considering the details of the sites there is a clear delineation in terms of correlation between sites in central city locations. These include:

The Figure of Eight, Birmingham
The Captain Alexander, Liverpool

For these sites, at times the measured noise levels exceed the predicted noise levels by an unacceptable margin of circa 9-10dB.

The Dragonfly modelling principle is based more directly on the practical seated capacity of the beer garden or terrace. This methodology has been developed based on how JD Wetherspoon sites typically operate, with the use of beer gardens and terraces largely focused around a mixed food and drink offer with the vast majority of users seated. For these two sites, it was noted that the actual operating capacity was more than the seated capacity with a significant number of standing patrons using only the drinking offer. A similar situation was observed for the very busy smoking area of The Picture Playhouse in Bexhill on Sea, resulting in higher noise levels.

Based on the survey observations, it is considered that in these instances, the noise levels could be significantly reduced by the premises implementing management controls limiting the number of customers to the seated capacity.

Therefore, the results of this study indicate that two trading scenarios are considered representative for future assessments of noise from outdoor amenity areas, with the following sound power levels per square metre:

- 'Normal Trading' with a sound power level per square metre of Lw/m² 67 dB
- 'Busy Trading' with a sound power level per square metre of Lw/m² 74 dB



CONCLUSION

Spectrum and Dragonfly have been commissioned to carry out surveys at 16 J D Wetherspoon premises across the UK. The results of the surveys have demonstrated that the assessment process utilised for predicting noise emissions from JD Wetherspoon sites, by considering the vocal effort of speakers and modelling the beer garden as an area source at a height of 1.5m above ground level, is an accurate and robust methodology for establishing noise emissions for all sites.

Both methodologies produce reliable and robust measurements for the majority of sites. The Dragonfly methodology is more accurate in predicting the noise emissions from the site during general day to day levels of trading, but this method is less accurate where the number of patrons reaches or exceeds the seated capacity of the beer garden or terrace.

The Spectrum methodology, which considers only the area in use by patrons and does not consider the capacity of the beer garden when determining the modelled noise level, provides a robust assessment especially during busy trading scenarios but may overpredict during quieter periods.

The results of this analysis demonstrate that two trading scenarios can be considered typical for each premise: a 'normal trading' scenario, and a 'busy trading' scenario. The associated sound power levels per square metre for each scenario

have been determined, and it is proposed that the following sound power levels per square metre are to be utilised in future assessments of outdoor amenity areas.

- 'Normal Trading' with a sound power level per square metre of L_w/m^2 67dB
- 'Busy Trading' with a sound power level per square metre of L_w/m^2 74dB

It is noted that the two proposed trading scenarios recommended to be used in future assessments are consistent with the approach previously taken in noise assessments completed on behalf of JD Wetherspoon by both consultants. The two new trading scenarios are considered to provide an approach that will ensure that in all circumstances noise levels are predicted such that all circumstances of use are considered.

The study also indicates that, in two instances, noise from the outdoor amenity areas could exceed the 'busy trading' level. Nevertheless, it is considered that this level is atypical for the majority of sites and the noise levels can normally be managed by the premises implementing the JDW management controls.





TECHNICAL APPENDICES



TECHNICAL APPENDICES

THE ANGELS VAULT, HITCHIN - SPECTRUM

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % F:M	Approximate Age of Patrons	LAeq	LA90	LAFmax	Observations
A1	12:43	5	26	Families / Older Groups	50:50	40	50	45	69	General speaking
A2	12:52	5	32	Families / Older Groups	50:50	45	54	47	65	Louder speaking, increased wind and drilling noise
A3	12:58	5	32	Families / Young Adults	60:40	35	53	48	66	Gusts of wind
A4	13:04	5	41	Families / Young Adults	60:40	40	57	51	71	
A5	13:11	5	43	Families / Young Adults	60:40	45	55	50	73	
A1	13:17	5	43	Families / Young Adults	60:40	50	59	50	77	Larger gusts, shelter rattling
A2	13:23	5	45	Families / Young Adults	50:50	45	53	47	70	Foliage noise, light speaking
A3	13:30	5	39	Families / Young Adults	50:50	45	54	48	68	Light foot traffic near mic
A4	13:36	5	36	Families / Young Adults	50:50	40	59	50	76	Baby crying, gusts of wind
A5	13:43	5	31	Families / Young Adults	50:50	40	58	50	71	Loud speaking from close group
A1	17:33	5	59	Families / Young Adults	30:70	30	68	58	81	Large group close to mic
A2	17:43	5	63	Families / Young Adults	30:70	30	63	58	75	Low wind noise
A3	17:50	5	69	Families / Young Adults	30:70	35	67	60	86	Large group close to mic
A4	17:58	5	64	Families / Young Adults	30:70	35	58	50	79	High foot traffic area
A5	18:07	5	61	Families / Young Adults	30:70	30	68	63	82	Table being cleared
A1	18:15	5	69	Families / Young Adults	30:70	30	68	59	81	Large loud group
A2	18:23	5	67	Students / Young Adults	40:60	25	65	60	79	Strong gusts
A3	18:30	5	76	Students / Young Adults	40:60	25	65	58	84	Loud talking near mic



THE ANGELS VAULT, HITCHIN - SPECTRUM, CONTINUED

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % F:M	Approximate Age of Patrons	L _{Aeq}	L _{A90}	L _A F _{max}	Observations
A4	18:37	5	62	Students / Young Adults	50:50	25	57	52	78	Busy foot traffic
A5	18:45	5	55	Students / Young Adults	50:50	30	66	60	76	Close to waiter stand, cutlery noise
A1	18:51	5	53	Students / Young Adults	50:50	30	66	58	77	Table clearing
A2	19:37	5	81	Students / Young Adults	50:50	25	67	61	80	Light wind, foliage noise
A3	19:43	5	89	Students / Young Adults	50:50	25	64	59	82	Large group walking past
A4	19:51	5	101	Students / Young Adults	50:50	30	61	53	74	High foot traffic
A1	20:00	5	107	Students / Young Adults	50:50	30	71	63	86	Shouting from large group
A5	20:20	5	108	Students / Young Adults	60:40	30	73	68	85	Loud people near mic
A2	20:27	5	123	Students / Young Adults	50:50	30	70	67	81	High levels of shouting
A3	20:36	5	125	Students / Young Adults	50:50	30	72	67	91	Loud talking near smoking area
A4	20:46	5	122	Students / Young Adults	60:40	30	66	60	84	Close chair movements, shouting
A5	20:55	5	108	Students / Young Adults	50:50	25	73	69	84	Table clearing, glass noises
A2	21:05	5	121	Students / Young Adults	50:50	30	68	60	85	Bottom of beer garden empty
A5	21:19	5	115	Students / Young Adults	50:50	25	72	65	89	Shouting
A5	21:24	5	102	Students / Young Adults	50:50	25	75	66	89	Loud talking group close to mic
A5	21:30	5	100	Students / Young Adults	50:50	25	75	67	85	High foot traffic
A5	21:36	5	106	Students / Young Adults	50:50	25	77	68	89	Large amounts of shouting

THE WHALEBONE, DOWNHAM MARKET - SPECTRUM

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % F:M	Approximate Age of Patrons	LAeq	LA90	LAFmax	Observations
1	12:38	5	17	Families / Older Groups	60:40	35	44	42	56	Birdsong, foliage noise
2	12:45	5	14	Families / Older Groups	70:30	45	45	42	58	Birdsong, foliage noise
3	12:51	5	17	Families / Older Groups	70:30	45	54	48	77	Some kitchen noise
4	12:58	5	22	Families / Older Groups	60:40	40	63	52	80	Close to bins and road
1	1:05	5	26	Families / Older Groups	60:40	40	46	43	66	Baby crying, plant noise
2	1:11	5	26	Families / Older Groups	60:40	40	47	44	58	Low level speaking
3	1:17	5	34	Families / Older Groups	70:30	45	55	50	72	Cutlery noise
4	1:24	5	38	Families / Older Groups	60:40	40	59	50	70	Road traffic noise
1	5:30	5	50	Young Groups / Older Groups	50:50	35	52	47	68	Busier grassed area
2	5:36	5	49	Young Groups / Older Groups	50:50	35	53	48	71	Table clearing close to position
3	5:43	5	51	Young Groups / Older Groups	50:50	35	61	56	73	High level foot traffic
4	5:50	5	49	Young Groups / Older Groups	50:50	35	81	53	101	Glass bins taken out
1	5:57	5	42	Young Groups / Older Groups	50:50	30	50	45	61	Food taken to table close
2	6:04	5	51	Young Groups / Older Groups	40:60	30	53	49	70	Large group close laughing
3	6:10	5	51	Young Groups / Older Groups	40:60	30	61	56	79	Louder internal noises
4	6:19	5	59	Young Groups / Families	50:50	35	61	54	76	High road traffic noise



Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % F:M	Approximate Age of Patrons	L _{Aeq}	L _{A90}	L _A F _{max}	Observations
1	6:32	5	71	Young Groups / Families	50:50	30	52	48	68	Children shouting and running
2	6:41	5	73	Young Groups / Families	50:50	30	58	51	73	Food being served
3	6:49	5	76	Young Groups / Families	50:50	30	67	57	90	Internal noise dominant
4	6:57	5	82	Young Groups / Families	50:50	35	66	58	81	Bins taken out, gate slam, close talking
1	8:04	5	84	Young Groups / Older Groups	30:70	25	50	45	63	Kids running around
2	8:11	5	81	Young Groups / Older Groups	30:70	25	61	54	79	Shouting kids
3	8:21	5	78	Young Groups / Older Groups	40:60	30	61	56	73	Indoor noise dominant
4	8:30	5	67	Young Groups / Older Groups	50:50	35	64	58	80	Loud road traffic noise, louder talking
1	8:40	5	57	Young Groups / Older Groups	50:50	35	53	47	70	Very empty grass section
2	8:50	5	47	Young Groups / Older Groups	50:50	45	59	51	74	Clearing tables
3	8:59	5	45	Young Groups / Older Groups	50:50	45	62	56	75	Indoor noise dominant
4	9:13	5	51	Young Groups / Older Groups	60:40	35	65	59	75	Low level speaking
3	9:24	5	47	Young Groups / Older Groups	60:40	35	62	55	80	Loud laughing group
4	9:32	5	42	Young Groups / Older Groups	50:50	30	66	59	78	Gate slam

THE BACK OF BEYOND, READING - SPECTRUM

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % (F-M)	Approximate Age of Patrons	LAeq	LA90	LAFmax	Observations
1	1240	5	12	Older Groups	20-80	45	60	55	76	Distant sirens
2	1248	5	10	Older Groups	20-80	50	61	55	76	Table being cleared
3	1257	5	15	Older Groups / Families	30-70	40	61	55	76	Light wind
1	1305	5	11	Younger Groups / Families	30-70	35	58	53	77	Laughing children
2	1312	5	17	Younger Groups / Families	30-70	35	62	57	77	Louder group
3	1322	5	18	Younger Groups / Families	30-70	40	60	56	71	Light wind
2	1657	5	33	Older Groups	40-60	50	70	64	85	Loud laughing
3	1704	5	33	Older Groups	40-60	50	68	62	82	Little / No wind
1	1716	5	30	Older Groups / Younger Groups	50-50	40	69	63	82	Loud Talking
2	1722	55	35	Older Groups / Younger Groups	40-60	45	70	64	82	Loud talking
3	1728	5	31	Older Groups / Younger Groups	40-60	45	69	63	81	Shouting, distant motorcycle
1	1734	5	31	Older Groups / Younger Groups	40-60	45	69	63	81	Close talking
2	1750	5	32	Older Groups / Younger Groups	40-60	40	67	62	82	Close talking
3	1757	5	19	Older Groups	40-60	50	67	59	85	Table clearing
1	1804	5	21	Older Groups	40-60	45	68	60	82	Table clearing
2	1812	5	23	Older Groups	30-70	45	67	60	83	Loud talking
3	1820	5	32	Older Groups / Students	40-60	35	68	62	82	Distant sirens
1	1827	5	33	Older Groups / Students	40-60	35	68	63	80	Distant sirens
2	1835	5	37	Older Groups / Students	40-60	35	69	65	80	Laughing close



THE BACK OF BEYOND, READING - SPECTRUM, CONTINUED

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split %	Approximate Age of Patrons	LAeq	LA90	LAFmax	Observations
3	1862	5	38	Younger Groups / Students	40-60	30	72	66	85	Close sirens
1	1850	5	46	Younger Groups / Students	40-60	30	70	65	83	Table clearing
2	1959	5	59	Younger Groups / Students	40-60	25	74	69	85	Larger groups
3	2006	5	55	Younger Groups / Students	50-50	30	74	68	86	Glass bins emptied
1	2012	5	38	Younger Groups	50-50	30	73	68	87	General talking
2	2018	5	53	Younger Groups	60-40	30	75	69	88	Larger group
3	2025	5	49	Younger Groups	60-40	30	74	69	90	Loud laughing
1	2030	5	58	Younger Groups	60-40	30	75	69	93	Close talking / Distant shouting
2	2036	5	62	Younger Groups	60-40	30	76	70	92	Large group cheering
3	2043	5	65	Younger Groups	60-40	25	76	71	88	Close talking
1	2050	5	54	Younger Groups	60-40	30	75	70	87	Close talking
2	2057	5	56	Younger Groups	60-40	30	76	71	88	Large group chanting
3	2108	5	61	Younger Groups	60-40	30	75	71	88	General talking
1	2114	5	63	Younger Groups	60-40	30	76	71	90	Close talking
2	2121	5	70	Younger Groups	50-50	30	76	71	90	Close talking
3	2126	5	65	Younger Groups	60-40	25	77	73	88	Louder shouting
1	2132	5	62	Younger Groups	60-40	30	78	74	93	Distant screaming

THE WEST QUAY, BRIGHTON - SPECTRUM

Attended Project	Position	Time	Duration (mins)	No. of People N-Side / S-Side	Type of people e.g. students, families, young professions etc.	Gender Split % M/F	Approx. Age of Patrons	LAeq	LA90	LAFmax
1	A	12:41	05:30	54 / 30-35	Families, middle-aged couples, young professionals	60/40	35-70	59	55	69
2	B	12:49	05:30	55-60 / 31	Families, middle-aged couples, young professionals	60/40	35-70	59	56	71
3	C	12:55	05:30	55-60 / 31	Families, middle-aged groups	60/40	35-70	61	56	73
4	A	13:01	05:30	55-60 / 31	Families, middle-aged groups	60/40	35-70	61	58	68
5	B	13:08	05:00	55-60 / 31	Families, middle-aged groups	60/40	35-70	62	58	77
6	C	13:13	05:00	50-55 / 35-40	Families, middle-aged groups	60/40	35-70	62	58	77
7	A	13:18	05:00	50-55 / 35-40	Families, middle-aged groups	60/40	35-70	60	57	72
8	B	13:24	05:00	50-55 / 35-40	Families, middle-aged groups	60/40	35-70	61	58	69
9	C	13:32	05:00	50 / 25-30	Families, middle-aged groups, couples, young professionals	60/40	35-70	61	57	70
10	A	13:38	05:00	50 / 25	Families, middle-aged groups, couples, young professionals	60/40	35-70	63	59	78
11	B	13:45	05:00	50 / 25	Families, middle-aged groups, couples, young professionals	60/40	35-70	60	56	76
12	C	13:51	05:00	50 / 25	Families, middle-aged groups, couples, young professionals	60/40	35-70	59	55	72
13	D	13:57	05:00	50 / 25	Families, middle-aged groups, couples, young professionals	60/40	35-70	58	54	72
14	A	17:26	05:00	25-30 / 16-20	Couples, young professionals, middle-aged groups	60/40	30-60	57	54	69
15	B	17:31	05:00	25-30 / 16-20	Couples, young professionals, middle-aged groups	60/40	30-60	62	55	76
16	C	17:37	05:00	25-30 / 16-20	Couples, young professionals, middle-aged groups	60/40	30-60	58	53	71
17	A	17:43	05:00	25-30 / 16-20	Couples, young professionals, middle-aged groups	60/40	25-60	58	54	70
18	B	17:49	05:00	25-30 / 16-20	Couples, young professionals, middle-aged groups	60/40	25-60	61	55	75
19	C	17:55	05:00	35-40 / 24	Couples, young professionals, middle-aged groups	60/40	25-60	62	54	78
20	A	18:01	05:00	35-40 / 24	Couples, young professionals, middle-aged groups	60/40	25-60	58	55	69
21	B	18:07	05:00	35-40 / 24	Couples, young professionals, middle-aged groups	60/40	25-60	66	56	92



THE WEST QUAY, BRIGHTON - SPECTRUM, CONTINUED

23	A	18:21	05:00	35-40 / 25-30	Couples, young professionals, middle-aged groups	60/40	25-60	57	53	71
24	B	18:26	05:00	35-40 / 25-30	Couples, young professionals, middle-aged groups	60/40	25-60	60	56	74
25	C	18:32	05:00	35-40 / 30-35	Couples, young professionals, middle-aged groups	60/40	25-60	61	56	75
26	A	18:38	05:00	35-40 / 30-35	Couples, young professionals, middle-aged groups	60/40	25-60	60	57	73
27	B	18:43	05:00	35-40 / 30-35	Couples, young professionals, middle-aged groups	60/40	25-60	60	56	75
28	C	18:49	05:00	50 / 35-40	Couples, young professionals, middle-aged groups	60/40	25-60	60	57	76
29	A	18:55	05:00	50 / 35-40	Couples, young professionals, middle-aged groups	60/40	25-60	61	57	82
30	B	19:01	05:00	35-40 / 35-40	Couples, young professionals, middle-aged groups	60/40	25-60	62	58	76
31	C	19:06	05:00	35-40 / 35-40	Couples, young professionals, middle-aged groups	60/40	25-60	62	57	76
32	E	19:12	05:00	35-40 / 35-40	Couples, young professionals, middle-aged groups	60/40	25-60	60	56	76
33	A	19:27	02:53	25 / 20	Couples, young professionals, middle-aged groups	60/40	25-60	58	55	70



THE MOSSY WELL, MUSWELL HILL, LONDON - SPECTRUM

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split %	Approximate Age of Patrons	LAeq	LA90	LAFmax	Observations
1 - N under balcony/terrace	13:07	5	2	Young professionals / students	50	30	50	49	58	Fountain splashing dominant, intermittent birdsong, no patron noise (Had synchronise to clock turned on – turned off after this measurement)
2 – N on balcony/terrace	13:13	5	4	Young professionals / students	50	25	55	54	69	Extract vent dominant, intermittent beeping from kitchen indoors (doors open throughout), door slam at apartment nearby
3 – SE corner next to fountain	13:20	5	5-9	Young professionals / students / families	40 M – 60 F	25	58	57	68	Fountain dominant, screened road noise, some patrons talking towards end
4 – SW position in raised area	13:27	5	9	Young professionals / students / families	40 M – 60 F	25	53	48	71	Patrons talking quietly dominant, plane, fountain
1	13:33	5	9-11	Young professionals / students / families	40 M – 60 F	25	56	50	77	Patrons talking + impacts on terrace and stairs dominant, fountain, 2 planes
2	13:40	5	11-13	Young professionals / students / families	40 M – 60 F	30	58	54	71	Patrons talking dominant, extract vent
3	13:46	5	13	Young professionals / students / families	50	35	60	57	76	Fountain dominant, intermittent patrons talking, light table impacts
4	13:51	5	13	Young professionals / students / families	50	35	52	47	69	Patrons talking dominant, fountain
1	13:57	5	13	Young professionals / students / families	50	30	54	49	78	Patrons talking + impacts on terrace and stairs dominant, fountain
2	14:04	5	16	Young professionals / pensioners / families	50	35	59	54	73	Intermittent patrons talking dominant, extract vent
3	14:11	5	16-20	Young professionals / pensioners / families	50	40	59	57	72	Intermittent patrons talking dominant, chair scrapes on floor, kid's scooter impacts on stairs, fountain
4	14:17	5	22	Young professionals / pensioners / families	50	40	55	48	71	Patrons talking dominant, fountain



THE MOSSY WELL, MUSWELL HILL, LONDON - SPECTRUM, CONTINUED

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split %	Approximate Age of Patrons	L _{Aeq}	L _{A90}	L _A F _{max}	Observations
1	17:00	5	22-17	Students / young professionals / families / pensioners	50	30	55	51	70	Patrons talking + impacts on terrace and stairs dominant, fountain
2	17:06	5	17	Students / young professionals / families / pensioners	50	40	63	56	86	Patrons talking dominant, extract vent, paused for man talking to me, chair scrape/impacts. plane
3	17:13	5	13	Students / young professionals / middle-aged / pensioners	60 M – 40 F	50	58	57	72	Fountain dominant, patrons talking quietly
4	17:19	5	10	Students / young professionals / middle-aged / pensioners	60 M – 40 F	50	55	47	69	Patrons talking dominant, fountain
1	17:25	5	10	Students / young professionals / middle-aged / pensioners	50	40	53	50	68	Fountain dominant, chairs scraping on terrace. plane
2	17:31	5	9-12	Students / young professionals / middle-aged / pensioners	50	30-40	62	56	77	Patron noise dominant, chair scrape, extract vent, plates/glasses clinking
3	17:38	5	15	Students / young professionals / middle-aged / pensioners	60 M – 40 F	30	60	57	71	Patron noise dominant, fountain, birdsong
4	17:44	5	15	Students / young professionals / middle-aged / pensioners	60 M – 40 F	30	55	49	66	Patron noise dominant, fountain
1	17:50	5	15	Students / young professionals / middle-aged / pensioners	60 M – 40 F	30	59	52	70	Patron noise dominant, football commentary on phone, chair scrape on terrace. plane
2	17:57	5	18	Students / young professionals / middle-aged / pensioners	50	35	64	58	77	Patron noise dominant, extract fan
3	18:03	5	20	Students / young professionals / middle-aged / pensioners	50	35	62	59	74	Patrons talking/music from phone dominant, paused for somebody talking to me
4	18:10	5	20	Students / young professionals / middle-aged / pensioners	50	30	57	51	69	Patrons talking dominant, music from phone, fountain, glasses clinking
1	18:16	5	22	Students / young professionals / middle-aged	50	25	61	54	79	Patrons talking dominant, siren in distance, music on phone, glasses clinking, impacts on terrace
2	18:22	5	25	Students / young professionals / middle-aged	50	25	63	57	77	Patrons talking dominant, extract vent, chairs scrape

THE MOSSY WELL, MUSWELL HILL, LONDON - SPECTRUM, CONTINUED

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split %	Approximate Age of Patrons	L _{Aeq}	L _{A90}	L _A Fmax	Observations
3	18:29	5	23	Students / young professionals	50	25	65	60	78	Patrons talking/music on phone dominant, loud car engine in distance, fountain
4	18:34	5	18	Students / young professionals	50	25	54	49	73	Patrons talking/music from phone dominant, fountain, glasses clinking
1	18:40	5	20	Students / young professionals	50	25	61	55	71	Patrons talking dominant, fountain
2	18:46	5	18-14	Students / young professionals	50	25	59	56	72	Patrons talking dominant, extract vent, plane
3	18:52	5	14	Students / young professionals	50	25	62	58	72	Patron noise dominant, fountain
4	18:58	5	16	Students / young professionals	50	25	54	48	71	Patron noise dominant, short burst of music from phone, fountain
1	20:00	5	12-8	Students / young professionals	50	20	59	52	73	Patrons talking dominant, fountain, 4 people leave at start with impacts on stairs/terrace
2	20:11	5	10	Students / young professionals	50	20	62	59	76	Had to pause for guy talking to me, extract vent dominant, patrons talking/beeping from indoors
3	20:18	5	14	Students / young professionals	50	20	69	61	84	Patrons talking loudly dominant, fountain
4	20:23	5	10	Students / young professionals	70 M – 30 F	20	67	55	82	Guys talk to me, patron noise dominant, fountain
1	20:29	5	16	Students / young professionals	60 M – 40 F	20	61	54	76	Patrons talking dominant, fountain, plates clinking, people talk to me briefly
2	20:36	5	16-10	Students / young professionals	50	20	62	59	83	Paused for people talking to me, extract vent dominant, patrons talking indoors
3	20:43	5	10	Students / young professionals	50	20	63	59	76	Patron noise dominant, fountain



THE JOLIE BRISE, TEIGNMOUTH - SPECTRUM

Attended Project	Position	Time	Duration (mins)	No. of People S / Mid / N	Type of people e.g. students, families, young professions etc.	Gender Split % M/F	Approx. Age of Patrons	LAeq	LA90	LAFmax	Observations
-	-	13:45		20 / 16 / 24	Families, couples, groups of people	50 / 50	10 - 60	-	-	-	People talking normally, distant traffic audible
2	A	14:11		20 / 16 / 24	Families, couples, groups of people	50 / 50	10 - 60	52	49	66	People talking normally, distant traffic audible
3	B	14:18		12 / 10 / 30	Families, couples, groups of people	50 / 50	10 - 60	62	56	85	Glasses clattering, seagulls, 14:26 motorcycle
4	C	14:30		12 / 10 / 30	Families, couples, groups of people	50 / 50	10 - 60	59	51	76	14:34 plane, distant mechanical plant
5	D	14:41		16 / 20 / 11	Families, couples, groups of people	50 / 50	10 - 60	61	55	80	14:43 and 14:49 glasses shatter, normal talking
-	-	17:30 – 18:00		2 / 4 / 8	Couples, groups of people	50 / 50	25-70	-	-	-	Normal talking, seagulls, plane passing, distant mechanical plant.
6	A	18:05		10 in the smoking area	Families, couples, groups of people	50 / 50	25-70	54	49	69	One group loud, people audible from terrace.
7	E	18:11		2 / 8 / 8	Families, couples, groups of people	60 / 40	25-70	61	53	80	One group loud, but not busy. Mechanical plant audible.
8	C	18:21		2 / 8 / 8	Families, couples, groups of people	60 / 40	25-70	52	47	77	Seagulls, people audible mostly from the mid-section
-	-			0 / 2 / 10	Families, couples, groups of people	60 / 40	30-60	-	-	-	Seagulls, 18:59 lorry passing on road.
9	D	19:00		0 / 10 / 14	Families, couples, groups of people	60 / 40	30-60	56	49	74	Normal talking, bottles dumped at 19:17
-	-	19:30		0 / 10 / 14	Families, couples, groups of people	60 / 40	30-60	-	-	-	19:30 bottles dumped, seagulls loud
-	-	20:00		0 / 4 / 5	Couples, young professionals	70 / 30	25-50	-	-	-	-
10	D	20:15		0 / 4 / 5	Couples, young professionals	70 / 30	25-50	56	48	79	20:31 staff speaking next to mic.
11	B	20:38		0 / 4 / 12	Couples, young professionals	80 / 20	25-50	63	52	89	-
12	A	21:25		3 in the smoking area	-	-	-	56	52	67	Patron noise breaking out mostly from inside.
13	B	21:33		0 / 6 / 10	Couples, young professionals	80 / 20	25-50	59	49	80	21:34 4 people leave, 21:37 another 4 people leave
14	A	21:47		0 / 4 / 4	Couples, young professionals	80 / 20	25-50	47	43	61	Distant traffic, smoking area closed, pub door closed, people talking on street

THE PICTURE PLAYHOUSE, BREXHILL ON SEA - SPECTRUM

Attended Project	Position	Time	Duration (mins)	No. of People South / Mid / North	Type of people e.g. students, families, young professions etc.	Gender Split % M/F	Approx. Age of Patrons	LAeq	LA90	LAFmax	Observations
1	A	12:45	05:00	22 / 6 / 4	Middle-aged groups and couples	60/40	30-60	60	53	84	People talking normally, constant mechanical plant audible
2	B	12:51	05:00	22 / 6 / 4	Middle-aged groups and couples	60/40	30-60	59	54	74	People talking normally, occasional vehicles audible,
3	C1	12:57	05:00	25 / 6 / 10	Middle-aged groups and couples	60/40	30-60	55	49	72	People talking normally, constant mechanical plant audible, 12:57 people sit next to mic
4	A	13:03	05:00	34 / 6 / 10	Middle-aged groups and couples	60/40	30-60	57	53	72	
5	B	13:09	05:00	34 / 6 / 10	Middle-aged groups and couples	60/40	30-60	62	52	81	Loud talking nearby, train at 13:13
6	C1	13:15	05:00	34 / 6 / 10	Middle-aged groups and couples	60/40	30-60	59	51	71	Quiet in the North area. Plant audible, occasional wind gusts
7	A	13:22	05:00	30 / 6 / 8	Middle-aged groups and couples	60/40	30-60	61	56	72	Bin collection on street, distant plant
8	B	13:28	05:00	30 / 6 / 8	Middle-aged groups and couples	60/40	30-60	56	51	74	Car horns on street, a few wind gusts
9	C1	13:34	05:00	34 / 6 / 12	Groups of young professionals and middle-aged people, couples	60/40	20 - 50	60	51	75	Normal talking, distant plant
10	A	18:01	05:00	34 / 6 / 14	Groups of young professionals and middle-aged people, couples	60/40	20 - 50	64	57	84	18:05 glasses clattering next to mic (short period)
11	B	18:07	05:00	34 / 6 / 14	Groups of young professionals and middle-aged people, couples	60/40	20 - 50	63	56	76	Normal talking, distant plant, 18:07 train passing
12	C1	18:14	05:00	34 / 6 / 14	Groups of young professionals and middle-aged people, couples	60/40	20 - 50	64	51	84	One group loud, 18:15 trains passing
13	C1	18:20	05:00	35-40 / 6 / 14	Groups of young professionals and middle-aged people, couples	60/40	20 - 50	68	57	81	One group loud, 18:25 trains passing
14	A	18:27	05:00	42 / 6 / 14	Groups of young professionals and middle-aged people, couples	60/40	20 - 50	65	61	79	
15	B	18:39	05:00	42 / 6 / 14	Groups of young professionals and middle-aged people, couples	60/40	20 - 50	65	59	78	18:42 train



THE PICTURE PLAYHOUSE, BREXHILL ON SEA - SPECTRUM, CONTINUED

Attended Project	Position	Time	Duration (mins)	No. of People South / Mid / North	Type of people e.g. students, families, young professionals etc.	Gender Split % M/F	Approx. Age of Patrons	L _{Aeq}	L _{A90}	L _A Fmax	Observations
16	C1	18:50	05:00	30 / 7 / 16	Groups of young professionals and middle-aged people, couples	60/40	20 - 50	69	58	92	One group louder
17	A	19:02	05:00	30 / 7 / 16	Groups of young professionals and middle-aged people, couples	60/40	25 - 50	65	59	89	19:07 train, people audible from inside the pub, seagulls, glasses clattering
18	B	19:14	05:00	20 / 6 / 28	Groups of young professionals and middle-aged people, couples	60/40	25 - 50	60	54	77	19:16 loud car, South side is quieter, North part is busy and louder
19	C2	19:27	05:00	18 / 6 / 28	Young professionals and a few couples	60/40	25 - 50	75	68	87	Big group next to logger, 19:32 train
20	A	19:39	05:00	18 / 6 / 28	Young professionals and a few couples	60/40	25 - 50	67	62	80	More noise audible from inside (people talking)
21	B	19:45	05:00	20 / 6 / 20	Young professionals and a few couples	60/40	25 - 50	62	57	77	
22	C2	19:53	05:00	20 / 6 / 20	Young professionals and a few couples	60/40	25 - 50	80	72	97	Loud group of girls loud, glass breaks 19:59
23	C2	19:59	05:00	20 / 8 / 20	Young professionals and a few couples	60/40	25 - 50	79	72	93	
24	A	21:18	05:00	20 / 6 / 20	Young professionals and a few couples	60/40	25 - 50	73	63	92	One group is loud
25	B	21:29	05:00	20 / 6 / 20	Young professionals and a few couples	60/40	25 - 50	63	57	83	Loud group close to Pos A. 21:30 and 21:34 trains
26	C3	21:40	05:00	20 / 6 / 20	Young professionals and a few couples	60/40	25 - 50	77	71	92	People sing, 21:46 train
27	A	21:51	05:00	20 / 8 / 20	Young professionals	60/40	25 - 50	74	63	91	One loud group
28	B	22:04	05:00	20 / 8 / 20	Young professionals	60/40	25 - 50	64	56	79	22:07 helicopter, 22:12 train, big group loud next to Pos A.
29	C	22:16	05:00	20 / 8 / 20	Young professionals	60/40	25 - 50	80	72	100	V noisy area, 22:24 guy talks into the mic
30	A	22:27	05:00	8-10 / 8 / 20	Young professionals	60/40	25 - 50	73	59	97	22:30 guy sings into mic, big group that is loud leaves.
31	B	22:39	05:00	8-10 / 8 / 20	Young professionals	60/40	25 - 50	61	54	77	22:46 train, normal talking, not v noisy
32	C4	22:50	05:00	8-10 / 8 / 20	Young professionals	60/40	25 - 50	79	68	98	22:52 train, one group is loud, not as noisy as before. Distant mechanical plant audible, 22:57 singing
33	A	23:01	05:00	8 / 4 / 6	Young professionals	60/40	25 - 50	63	57	82	Big group leaves at 23:00. Quieter outside, less people, noise audible from inside.
34	B	23:13	05:00	8 / 4 / 6	Young professionals	60/40	25 - 50	57	51	73	Quiet. A few people talking, mechanical plant more audible.
35	C4	23:24	05:00	8 / 4 / 8	Young professionals	60/40	25 - 50	66	54	87	Not noisy, people talking normally

THE PICTURE PLAYHOUSE, BREXHILL ON SEA - SPECTRUM, CONTINUED

Attended Project	Position	Time	Duration (mins)	No. of People South / Mid / North	Type of people e.g. students, families, young professions etc.	Gender Split % M/F	Approx. Age of Patrons	LAeq	LA90	LAFmax	Observations
36	A	23:36	05:00	4 / 4 / 8	Young professionals	70 / 30	25 - 40	60	53	79	Not noisy, plant audible, 23:40 train
38	B	23:45	05:00	4 / 6 / 8	Young professionals	70 / 30	25 - 30	57	50	72	Loud patrons from inside, 23:47 train, glasses clattering, loud guys on N side
39	C4	23:50	05:00	4 / 6 / 8	Young professionals	70 / 30	25 - 30	65	52	85	Group of guys next to the mic, mechanical plant audible
40	C4	23:56	05:00	4 / 6 / 8	Young professionals	70 / 30	25 - 30	72	53	94	Sweeping floor, cleaning, 23:59 loud shouting.



THE REGAL, CAMBRIDGE - SPECTRUM

Project	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % (F-M)	Approximate Age of Patrons	LAeq	LA90	LAFmax	Observations
1	12:41		10	Older groups	40:60	50	59	58	63	Soft speech, empty top floor, plant noise, table clearing inside
1	12:56		13	Older groups	40:60	45	57	55	63	Truck reversing on street, bins taken out
1	13:05		14	Older groups, Families	50:50	40	57	55	67	Discharging plant noise (similar to bus breaks), shouting from smoking area
1	13:17		18	Older groups, Young Professionals	50:50	35	59	55	75	Louder talking, food delivered to tables
1	13:27		18	Older groups, Young Professionals	50:50	35	60	57	67	Cars passing on street, loud laughing from smoking area
2	17:20		22	Young Professionals, Students	30:70	30	69	59	84	Moderate Talking, some tables cleared
2	17:26		23	Young Professionals, Students	30:70	30	70	61	83	Loud laughing close to mic, shouting from smoking area, glass clearing
2	17:35		26	Young Professionals, Students	30:70	30	71	60	85	Close talking, discharging plant noise, table clearing
2	17:44		27	Young Professionals, Students	40:60	25	71	62	81	Stopped measurement due to moving positions
2	17:49		26	Young Professionals, Students	40:60	25	73	64	84	Laughing close, loud banging of chairs,
2	18:02		29	Young Professionals, Students	40:60	25	67	59	81	Loud car playing music, measurement paused due to talking
2	18:07		26	Young Professionals, Students	30:70	30	73	65	82	Clapping from group, loud shouting from group
2	18:16		22	Young Professionals, Students	30:70	30	69	63	79	Table cleared, loud shouting close, car parking
2	18:22		23	Young Professionals, Students	30:70	30	71	65	81	Very loud shouting
2	18:33		17	Young Professionals, Students	30:70	35	72	64	81	Loud talking close to mic position
2	18:41		20	Young Professionals, Older Groups	40:60	40	72	66	82	Plant noise audible in talking lull

THE REGAL, CAMBRIDGE - SPECTRUM, CONTINUED

Project	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split %	Approximate Age of Patrons	LAeq	LA90	LAFmax	Observations
2	18:54		21	Young Professionals, Older Groups	40:60	40	70	65	77	People leaving beer garden due to decreased temperature
3	19:50		27	Young Professionals, Students	40:60	30	71	67	78	Loud talking close
3	19:59		32	Young Professionals, Students	40:60	25	76	71	85	Talking close to mic position
3	20:08		32	Young Professionals, Students	40:60	25	77	72	84	Louder group close to mic, shouting
3	20:18		29	Young Professionals, Students	50:50	25	75	71	83	Door slam, glass dropped, clapping
3	20:31		26	Young Professionals, Students	40:60	25	77	70	85	Large group leaving, loud shouting from smoking area
3	20:40		28	Young Professionals, Students	40:60	25	79	75	86	Shouting, loud laughing
3	20:49		27	Young Professionals, Students	40:60	25	77	72	87	Door slam close, shouting
3	20:58		24	Young Professionals, Students	40:60	25	76	70	87	Loud laughing, table cleared close
3	21:09		24	Young Professionals, Students	40:60	25	76	70	82	Music playing from patrons' phone, door slam
3	21:20		26	Young Professionals, Students	40:60	25	76	71	86	Table cleared, dropped glass



THE MOUNT STUART, CARDIFF - SPECTRUM

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % F:M	Approximate Age of Patrons	L _{Aeq}	L _{A90}	L _{Afmax}	Observations
1	17:05	5	15-17	Young professionals / Middle aged / Students	50:50	35	66	58	81	Patrons talking dominant, music from Mermaid Quays pub behind
1	17:10	5	15-19	Young professionals / Middle aged / Students	50:50	35	66	58	80	Patrons talking dominant, music from Mermaid Quays pub behind
1	17:15	5	19-22	Young professionals / Middle aged / Students	50:50	35	64	58	79	Patrons talking dominant, music from Mermaid Quays pub behind, chairs scrape on balcony
1	17:20	5	22	Young professionals / Middle aged / Students	50:50	35	66	60	76	Patrons talking dominant, music from Mermaid Quays pub behind
1	17:25	5	18-14	Young professionals / Students	50:50	30	65	57	78	Patrons talking dominant, music from Mermaid Quays pub behind
1	17:30	5	14-10	Young professionals / Students	50:50	25	64	58	77	Patrons talking dominant, music from Mermaid Quays pub behind, distant horn, birdsong
1	17:35	5	8	Young professionals / Students	50:50	25	63	56	78	Patrons talking dominant, music from Mermaid Quays pub behind, group of people walk past
1	17:40	5	10	Young professionals / Students	50:50	25	61	56	75	Patrons talking dominant, music from Mermaid Quays pub behind
1	17:45	5	13	Young professionals / Middle aged / Students	40:60	30	63	57	76	Patrons talking dominant, music from Mermaid Quays pub behind, seagull caws
1	17:50	5	16-7	Young professionals / Middle aged / Students	30:70	30	66	58	80	Patrons talking dominant, music from Mermaid Quays pub behind, large group leaves, glasses clink
1	17:55	5	6	Young professionals / Students	0:100	30	59	55	82	Becomes cold outside, Music from Mermaid Quays pub behind dominant, patrons talking + noise from inside through open doors, high frequency impact in distance, birdsong

THE MOUNT STUART, CARDIFF - SPECTRUM, CONTINUED

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % F:M	Approximate Age of Patrons	LAeq	LA90	LAFmax	Observations
1	18:00	5	6	Young professionals	0:100	30	61	56	74	Music from Mermaid Quays pub behind dominant, patrons talking outdoors + noise from inside through open doors, couple bikes wheeled off, plane, siren
1	18:05	5	7-6	Young professionals	0:100	30	60	56	75	Patrons talking dominant, birdsong, car horn in distance, music from Mermaid Quays pub behind
1	18:10	5	6-8	Young professionals / Middle aged	20:80	35	60	57	73	Patrons talking dominant, music from Mermaid Quays pub behind, birdsong
1	18:15	5	8	Young professionals / Middle aged	20:80	35	62	59	75	Patrons talking dominant, music from Mermaid Quays pub behind, loud birdsong, glasses clink
1	18:20	5	8-10	Young professionals / Middle aged	20:80	35	65	60	87	Equal contributions birdsong and patrons talking dominant, music from Mermaid Quays pub behind, man yells, loads of bottles dumped at nearby pub
1	18:25	5	13-8	Young professionals / Middle aged	20:80	35	61	57	74	Equal contributions birdsong and patrons talking dominant, doors to inside of pub closed, group of people leave, music from Mermaid Quays pub behind
1	18:30	5	8-5	Young professionals	20:80	30	58	56	66	Birdsong dominant, patrons talking, music from Mermaid Quays pub behind
1	18:35	5	7	Young professionals / Students	30:70	25	59	56	75	Birdsong dominant, patrons talking, music from Mermaid Quays pub behind, guy talks to me at end
1	18:40	5	5	Young professionals	40:60	30	61	55	75	Guy still talking to me dominant, afterwards music from Mermaid Quays pub behind dominant
1	18:45	5	3	Young professionals	30:70	30	59	56	77	Music from Mermaid Quays pub behind dominant, patrons talking



THE MOUNT STUART, CARDIFF - SPECTRUM, CONTINUED

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % F:M	Approximate Age of Patrons	LAeq	LA90	LAFmax	Observations
1	18:50	5	3-5	Young professionals / Middle aged / Students	50:50	30	59	56	71	Patrons talking dominant, music from Mermaid Quays pub behind, siren in distance
1	18:55	5	6-8	Young professionals / Middle aged / Students	30:70	25	62	57	86	Patrons talking dominant, music from Mermaid Quays pub behind, glasses clinking
1	19:00	5	8-3	Young professionals / Middle aged / Students	30:70	25	81	57	106	Loud patrons talking to me dominant, guy yells into microphone, music from Mermaid Quays pub behind
1	20:00	5	3-7	Young professionals	0:100	30	62	59	74	Music from Mermaid Quays pub behind dominant, patrons talking
	20:05		7-10	Young professionals / Students	0:100	35	65	60	76	Patrons talking dominant, music from Mermaid Quays pub behind, guy talks to me quietly near meter
	20:10		8	Young professionals / Middle aged / Students	10:90	30	70	60	96	Patrons talking dominant, music from Mermaid Quays pub behind
	20:15		6	Young professionals / Middle aged	20:80	40	65	59	84	Music from Mermaid Quays pub behind and from café to SE dominant, patrons talking, guys yell nearby
	20:20		2-5	Young professionals / Students	0:100	30	61	58	75	Music from Mermaid Quays pub behind and from café to SE dominant, patrons talking
	20:25		5-6	Young professionals / Students	20:80	20	62	58	77	Music from Mermaid Quays pub behind and from café to SE dominant, patrons talking
	20:30		6	Young professionals / Students	20:80	20	62	59	73	Music from Mermaid Quays pub behind and from café to SE dominant, patrons talking, guy talks to me briefly, beeping sound inside pub
	20:35		4-6	Young professionals / Students	20:80	20	62	58	78	Music from Mermaid Quays pub behind and from café to SE dominant, patrons talking, beeping sound inside pub

THE MOUNT STUART, CARDIFF - SPECTRUM, CONTINUED

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % F:M	Approximate Age of Patrons	L _{Aeq}	LA90	LAF _{max}	Observations
	20:40		10-8	Young professionals / Students	20:80	25	64	59	77	Music from Mermaid Quays pub behind and from café to SE dominant, patrons talking
	20:45		8-14	Young professionals / Students	40:60	25	64	59	74	Patrons talking dominant, music from café to SE
	20:50		16	Young professionals / Students	50:50	25	65	59	81	Patrons talking dominant, music from café to SE, guy yells nearby
	20:55		12	Young professionals / Students	30:70	25	66	59	87	Patrons talking dominant, music from café to SE
	21:00		8-4	Young professionals / Students	40:60	25	64	58	77	Patrons talking and music from phone speaker dominant, music from café to SE, woman talks to me briefly
	21:05		2-4	Young professionals / Students	0:100	25	59	56	71	Patrons talking and music from phone speaker dominant, music from café to SE
	21:10		6-8	Young professionals / Middle aged / Students	20:80	30	62	57	77	Patrons talking dominant, music from café to SE
	21:15		5-10	Young professionals / Middle aged / Students	20:80	30	63	57	84	Patrons talking dominant, music from café to SE, music from phone speaker, loud guy on phone walks past
	21:20		9-6	Young professionals / Middle aged / Students	20:80	30	62	57	74	Patrons talking dominant, music from café to SE, music from phone speaker, loud guy continues to talk on phone, woman talks to me briefly
	21:25		6-8	Young professionals / Middle aged / Students	0:100	40	61	56	73	Patrons talking dominant, music from café to SE, music from phone speaker, loud guy continues to talk on phone, loud whistles in distance
	21:30		10-8	Young professionals / Middle aged / Students	20:80	40	62	57	76	Patrons talking dominant, music from café to SE
	21:35		8-2	Young professionals / Middle aged / Students	20:80	30	60	55	81	Patrons talking dominant, music from café to SE, loud whistles in distance



THE MOUNT STUART, CARDIFF - SPECTRUM, CONTINUED

Position	Time	Duration (mins)	No. of People	Type of people e.g. students, families, young professions etc.	Gender Split % F:M	Approximate Age of Patrons	LAeq	LA90	LAFmax	Observations
	21:40		4-5	Young professionals / Students	20:80	25	59	55	73	Patrons talking dominant, music from café to SE, bottles emptied into a bin nearby
	21:45		6-10	Young professionals / Students	20:80	20	62	57	78	Patrons talking dominant, music from café to SE
	21:50		10-12	Young professionals / Students	20:80	25	67	58	83	Patrons talking dominant, music from café to SE, guy talks to me near meter
	21:55		4-12	Young professionals	0:100	25	72	58	93	Patrons talking dominant, music from café to SE, guy talks into microphone and others talk to me

THE ADMIRAL HUMBER, THE BLACK BULL INN, THE BUCK INN - DRAGONFLY

	Time Period		No. of people during the survey period (average)	Capacity of beer garden	Area of beer garden (m ²)	People/ m ²	Based on survey Spectrum (Hz)								
							Lw/m2 ((dBA)	63	125	250	500	1k	2k	4k	8k
The Admiral Humber, Hull	12:00	13:00	20	160	249.53	0.08	62.6	46.9	50.0	54.0	60.6	58.8	54.6	48.5	38.3
	13:00	14:00	40	160	249.93	0.16	64.8	49.1	52.2	56.2	62.8	61.0	56.9	50.8	40.5
	17:00	18:00	35	160	249.93	0.14	67.5	51.8	54.9	58.9	65.5	63.7	59.6	53.5	43.2
	18:00	19:00	30	160	249.93	0.12	70.3	54.5	57.7	61.7	68.3	66.4	62.3	56.2	46.0
	19:00	20:00	25	160	249.93	0.10	70.0	54.2	57.4	61.4	68.0	66.1	62.0	55.9	45.7
	20:00	21:00	15	160	249.93	0.06	68.5	52.8	55.9	60.0	66.5	64.7	60.6	54.5	44.3
The Black Bull, Bangor (Top)	12:00	13:00	5	75	116.21	0.04	52.0	36.3	39.4	43.4	50.0	48.2	44.0	37.9	27.7
	13:00	14:00	9	75	116.21	0.08	51.8	36.1	39.2	43.3	49.8	48.0	43.9	37.8	27.6
	17:00	18:00	18	75	116.21	0.15									
	18:00	19:00	27	75	116.21	0.23									
	19:00	20:00	30	75	116.21	0.26									
	20:00	21:00	20	75	116.21	0.17									
The Black Bull Bangor (Bottom)	17:00	18:00	20	75	132.4	0.15	54.9	39.2	42.3	46.4	52.9	51.1	47.0	40.9	30.7
	18:00	19:00	26	75	132.4	0.20	52.2	38.5	41.6	45.6	52.2	50.4	46.2	40.1	29.9
	19:00	20:00	34	75	132.4	0.26	67.5	51.8	54.9	59.0	65.5	63.7	59.6	53.5	43.3
	20:00	21:00	29	75	132.4	0.22	70.4	54.6	57.8	61.8	68.4	66.5	62.4	56.3	46.1
The Buck Inn, Northallerton	12:00	13:00	45	142	219.35	0.21	71.8	56.0	59.2	63.2	69.8	67.9	63.8	57.7	47.5
	17:00	18:00	55	142	219.35	0.25	70.6	54.9	58.0	62.1	68.6	66.8	62.7	56.6	46.4
	18:00	19:00	65	142	219.35	0.30	72.7	56.9	60.1	64.1	70.7	68.8	64.7	58.6	48.4
	19:00	20:00	30	142	219.35	0.14	71.4	55.7	58.8	62.8	69.4	67.6	63.5	57.4	47.1
	20:00	21:00	40	142	219.35	0.18	71.5	55.7	58.9	62.9	69.5	67.6	63.5	57.4	47.2
	21:00	22:00	25	142	219.35	0.11	69.1	53.4	56.5	60.5	67.1	65.3	61.2	55.1	44.8



Based on Survey Measured Lp at X location (dBA)	Based on empirical data Spectrum (Hz)									Predicted Lp at X location (dBA)	Predicted Lp at X location - Design Capacity (dBA)	
	Lw/m2 (dBA)	63	125	250	500	1k	2k	4k	8k			
60.5	60.7	45.1	48.2	52.2	58.8	57.0	52.8	46.7	36.5	58.7	67.7	The Admiral Humber, Hull
62.7	63.8	48.1	51.2	55.2	61.8	60.0	55.9	49.8	39.5	61.7		
65.4	63.2	47.5	50.6	54.6	61.2	59.4	55.3	49.2	38.9	61.1		
68.1	62.5	46.8	50.0	54.0	60.6	58.7	54.6	48.5	38.3	60.4		
67.8	61.7	46.0	49.2	53.2	59.8	57.9	53.8	47.7	37.5	59.6		
66.4	59.5	43.8	46.9	51.0	57.5	55.7	51.6	45.5	35.3	57.4		
53.2	58.0	42.4	45.5	49.5	56.1	54.3	50.1	44.0	33.8	59.3	68.9	The Black Bull, Bangor (Top)
53.1	60.6	44.9	48.0	52.1	58.6	56.8	52.7	46.6	36.4	61.9		
	63.6	47.9	51.1	55.1	61.7	59.8	55.7	49.6	39.4			
	65.4	49.7	52.8	56.8	63.4	61.6	57.5	51.4	41.1			
	65.8	50.1	53.3	57.3	63.9	62.0	57.9	51.8	41.6			
	64.1	48.4	51.5	55.5	62.1	60.3	56.2	50.1	39.8			
54.5	63.5	47.8	50.9	55.0	61.5	59.7	55.6	49.5	39.3	63.1	71.1	The Black Bull Bangor (Bottom)
53.8	64.6	49.0	52.1	56.1	62.7	60.9	56.7	50.6	40.4	64.3		
67.1	65.8	50.1	53.2	57.3	63.8	62.0	57.9	51.8	41.6	65.4		
69.9	65.1	49.4	52.6	56.6	63.2	61.3	57.2	51.1	40.9	64.7		
69.8	64.8	49.1	52.3	56.3	62.9	61.0	56.9	50.8	40.6	62.9	67.9	The Buck Inn, North Allerton
68.7	65.7	50.0	53.1	57.2	63.7	61.9	57.8	51.7	41.5	63.8		
70.7	66.4	50.7	53.9	57.9	64.5	62.6	58.5	52.4	42.2	64.5		
69.5	63.1	47.4	50.5	54.5	61.1	59.3	55.2	49.1	38.8	61.2		
69.5	64.3	48.6	51.8	55.8	62.4	60.5	56.4	50.3	40.1	62.4		
67.2	62.3	46.6	49.7	53.7	60.3	58.5	54.4	48.3	38.0	60.4		

THE CAPTAIN ALEXANDER, THE FIGURE OF EIGHT, THE PICTURE PLAYHOUSE - DRAGONFLY

	Time Period		No. of people during the survey period (average)	Capacity of beer garden	Area of beer garden (m ²)	People/ m ²	Based on survey Spectrum (Hz)								
							Lw/m2 ((dBA)	63	125	250	500	1k	2k	4k	8k
The Captain Alexander, Liverpool	12:00	13:00	6	80	145.68	0.04	60.6	44.9	48.0	52.0	58.6	56.8	52.6	46.5	36.3
	13:00	14:00	30	80	145.68	0.21	70.6	54.9	58.0	62.0	68.6	66.8	62.6	56.5	46.3
	17:00	18:00	60	80	145.68	0.41	79.9	64.2	67.3	71.3	77.9	76.1	71.9	65.8	55.6
	18:00	19:00	50	80	145.68	0.34	78.7	63.0	66.1	70.1	76.7	74.9	70.8	64.7	54.4
	20:00	21:00	40	80	145.68	0.27	73.7	58.0	61.1	65.2	71.7	69.9	65.8	59.7	49.5
	Spectrum Level			80	145.68	0.00									
The Figure of Eight, Birmingham	12:00	13:00	8	150	0.02	0.02	53.6	37.9	41.0	45.1	51.6	49.8	45.7	39.6	29.4
	13:00	14:00	20	150	0.05	0.05	56.3	40.6	43.7	47.7	54.3	52.5	48.4	42.3	32.0
	17:00	18:00	36	150	0.10	0.10	65.4	49.6	52.8	56.8	63.4	61.5	57.4	51.3	41.1
	18:00	19:00	24	150	0.07	0.07	61.5	45.8	48.9	52.9	59.5	57.7	53.6	47.5	37.2
	20:00	21:00	32	150	0.09	0.09	63.7	47.9	51.1	55.1	61.7	59.8	55.7	49.6	39.4
	21:00	22:00	60	150	0.16	0.16	68.3	53.0	56.1	60.1	66.7	64.9	60.7	54.6	44.4
	Spectrum Level			150	0.00	0.00									
The Picture Playhouse, Morley	12:00	13:00	4	142	104.3	0.04	55.3	39.6	42.7	46.7	53.3	51.5	47.3	41.2	31.0
	13:00	14:00	18	142	104.3	0.17	59.0	43.3	46.4	50.4	57.0	55.2	51.1	45.0	34.7
	17:00	18:00	16	142	104.3	0.15	62.4	46.7	49.8	53.8	60.4	58.6	54.5	48.4	38.1
	18:00	19:00	22	142	104.3	0.21	66.7	51.0	54.1	58.1	64.7	62.9	58.7	52.6	42.4



Based on Survey Measured Lp at X location (dBA)	Based on empirical data Spectrum (Hz)									Predicted Lp at X location (dBA)	Predicted Lp at X location - Design Capacity (dBA)	
	Lw/m2 (dBA)	63	125	250	500	1k	2k	4k	8k			
56.1	57.8	42.2	45.3	49.3	55.9	54.1	49.9	43.8	33.6	53.4	64.6	The Captain Alexander, Liverpool
66.1	64.8	49.2	52.3	56.3	62.9	61.1	56.9	50.8	40.6	60.4		
75.4	67.8	52.2	55.3	59.3	65.9	64.1	59.9	53.8	43.6	63.4		
74.2	67.1	51.4	54.5	58.5	65.1	63.3	59.2	53.1	42.8	62.6		
69.2	66.1	50.4	53.5	57.6	64.1	62.3	58.2	52.1	41.9	61.6		
	71.0	-	37.0	53.0	64.0	69.0	64.0	58.0	51.0	66.7		
54.7	55.1	39.4	42.5	46.6	53.1	51.3	47.2	41.1	30.9	56.2	68.7	The Figure of Eight, Birmingham
57.4	59.1	43.4	46.5	50.5	57.1	55.3	51.2	45.1	34.8	60.2		
66.4	61.6	45.9	49.1	53.1	59.7	57.8	53.7	47.6	37.4	62.7		
62.6	59.9	44.2	47.3	51.3	57.9	56.1	52.0	45.9	35.6	61.0		
64.7	61.1	45.4	48.6	52.6	59.2	57.3	53.2	47.1	36.9	62.2		
69.8	63.8	48.2	51.3	55.3	61.9	60.1	55.9	49.8	39.6	65.0		
	71.0	-	37.0	53.0	64.0	69.0	64.0	58.0	51.0	72.4		
54.2	57.5	41.9	45.0	49.0	55.6	53.8	49.6	43.5	33.3	56.5	72.0	The Picture Playhouse, Morley
57.9	64.1	48.4	51.5	55.5	62.1	60.3	56.2	50.1	39.8	63.0		
61.3	63.6	47.9	51.0	55.0	61.6	59.8	55.7	49.6	39.3	62.5		
65.6	64.9	49.3	52.4	56.4	63.0	61.2	57.0	50.9	40.7	63.9		

THE QUAYSIDE - DRAGONFLY

	Time Period		No. of people during the survey period (average)	Capacity of beer garden	Area of beer garden (m ²)	People/ m ²	Based on survey Spectrum (Hz)								
							Lw/m2 ((dBA)	63	125	250	500	1k	2k	4k	8k
The Quayside, Newcastle (front)	17:00	18:00	23	87	163.1	0.14	61.6	45.9	49.0	53.1	59.6	57.8	53.7	47.6	37.4
	18:00	19:00	31	87	163.1	0.19	60.0	44.3	47.4	51.5	58.0	56.2	52.1	46.0	35.8
	19:00	20:00	38	87	163.1	0.23	58.7	43.0	46.1	50.1	56.7	54.9	50.8	44.7	34.4
The Quayside, Newcastle (back)	12:00	13:00	5	261	494.91	0.01	54.3	38.6	41.7	45.7	52.3	50.5	46.3	40.2	30.0
	13:00	14:00	10	261	494.91	0.02	56.5	40.8	43.9	47.9	54.5	52.7	48.6	42.5	32.2
	17:00	18:00	10	261	494.91	0.02	59.0	43.3	46.4	50.4	57.0	55.2	51.1	45.0	34.7
	18:00	19:00	16	261	494.91	0.03	62.6	46.9	50.0	54.1	60.6	58.8	54.7	48.6	38.4
	19:00	20:00	38	261	494.91	0.08	65.2	49.5	52.6	56.6	63.2	61.4	57.3	51.2	40.9



Based on Survey Measured Lp at X location (dBA)	Based on empirical data Spectrum (Hz)									Predicted Lp at X location (dBA)	Predicted Lp at X location - Design Capacity (dBA)	
	Lw/m2 (dBA)	63	125	250	500	1k	2k	4k	8k			
64.1	63.2	47.5	50.6	54.7	61.2	59.4	55.3	49.2	39.0	65.7	71.5	The Quayside, Newcastle (front)
62.5	64.5	48.8	51.9	56.0	62.5	60.7	56.6	50.5	40.3	67.0		
61.2	62.4	46.7	49.8	53.8	60.4	58.6	54.5	48.4	38.1	64.9		
58.8	51.7	36.1	39.2	43.2	49.8	48.0	43.8	37.7	27.5	56.3	73.5	The Quayside, Newcastle (back)
61.1	54.8	39.1	42.2	46.2	52.8	51.0	46.9	40.8	30.5	59.4		
63.6	54.8	39.1	42.2	46.2	52.8	51.0	46.9	40.8	30.5	59.4		
67.2	56.8	41.1	44.2	48.3	54.8	53.0	48.9	42.8	32.6	61.4		
69.8	60.6	44.9	48.0	52.0	58.6	56.8	52.7	46.6	36.3	65.2		



wetherspoon

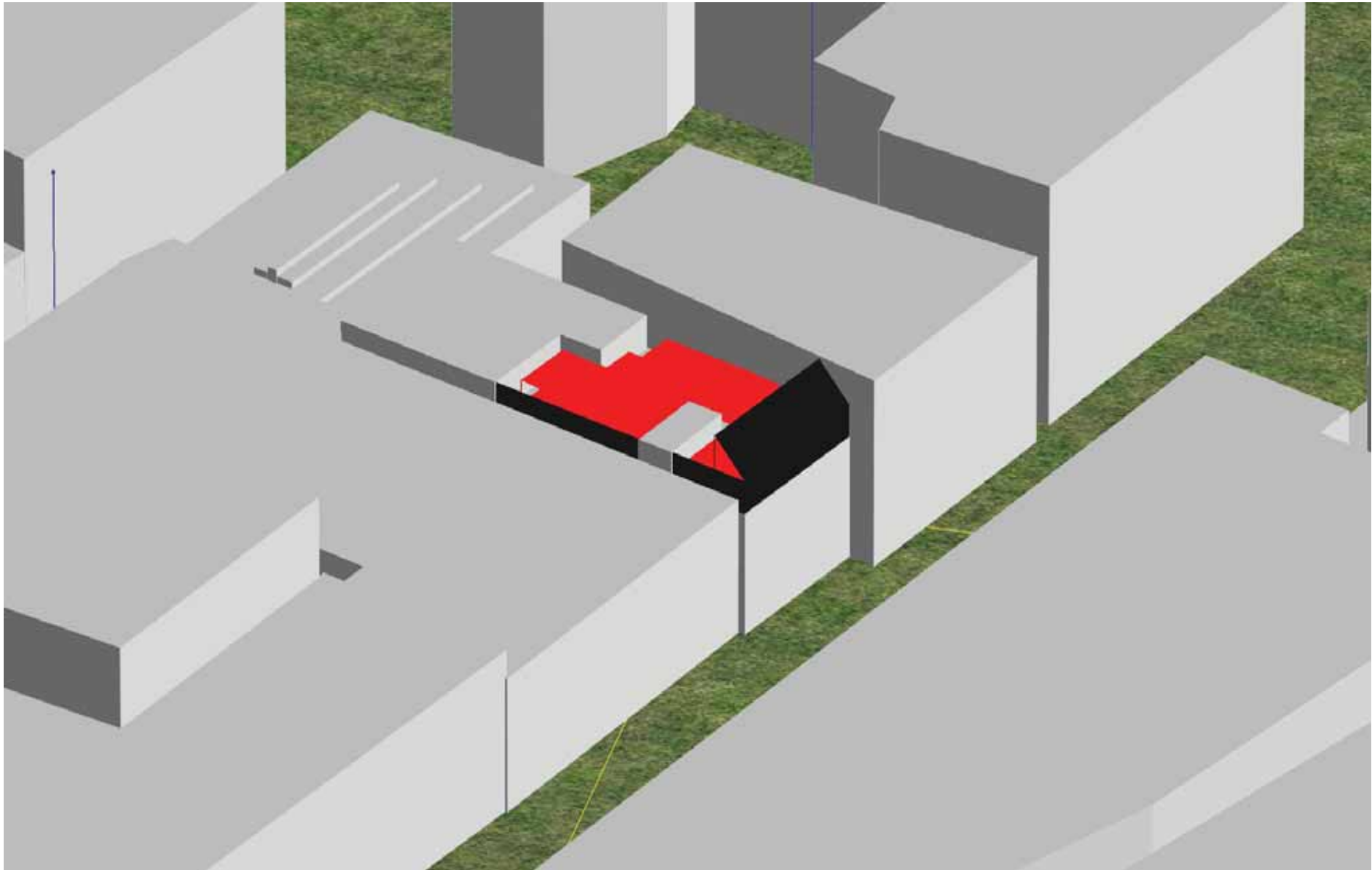
nineteen47
CHARTERED TOWN PLANNERS
& URBAN DESIGNERS

DRAGONFLY
CONSULTING

SPECTRUM
ACOUSTIC CONSULTANTS

APPENDIX E

Beer Garden Noise Prediction Model

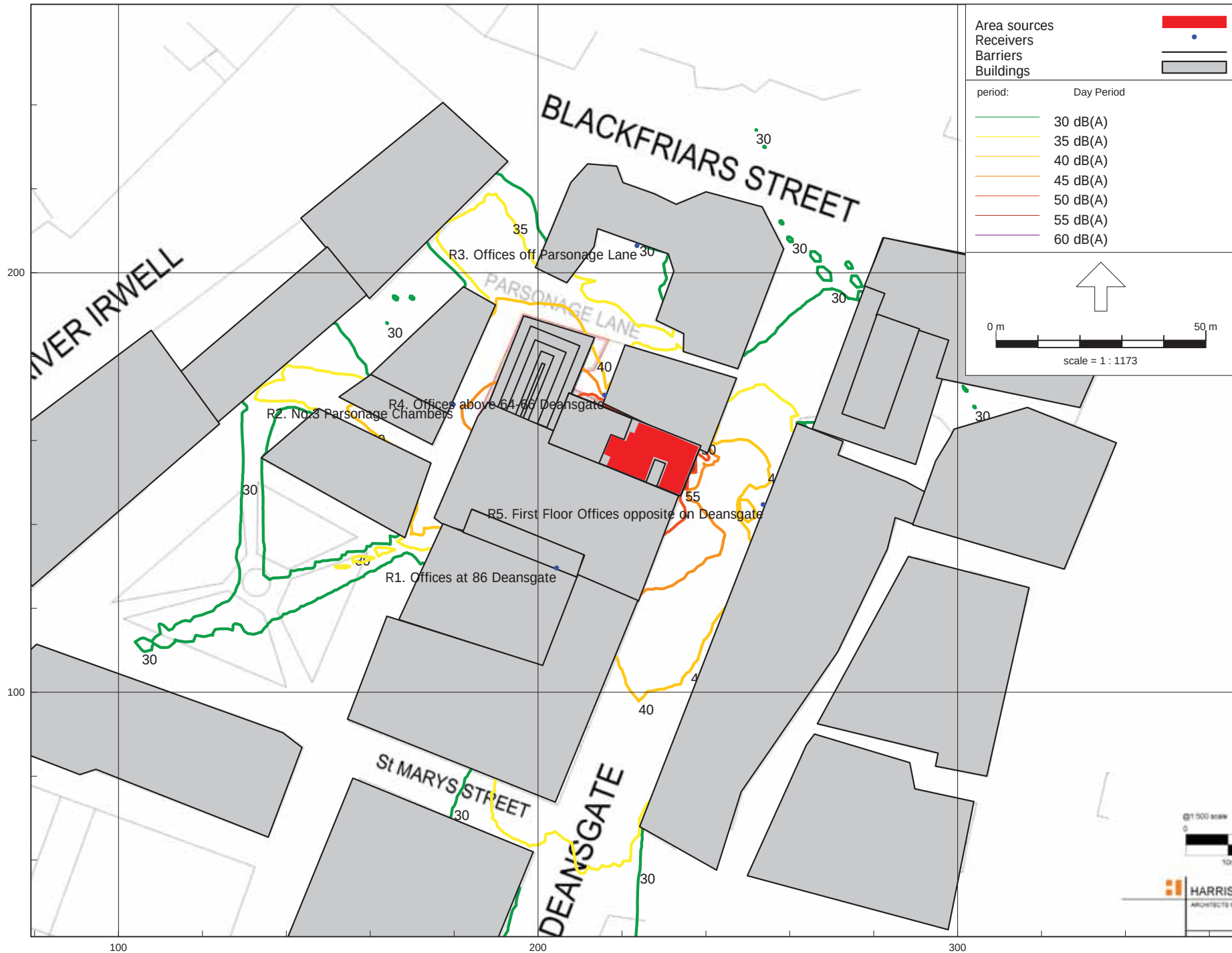


JDW The Moon Under Water, Deansgate
Predicted Roof Terrace Noise Levels - Normal Trading

Report: Table of Results
Model: Roof Terrace - Normal Trading
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name		Height	Day								
Receiver	Description		Total	63	125	250	500	1000	2000	4000	8000
_A	R1. Offices at 86 Deansgate	16.00	46	--	13	27	39	44	39	32	22
_A	R2. No.3 Parsonage Chambers	14.00	45	--	11	25	38	42	36	29	18
_A	R3. Offices off Parsonage Lane	16.00	37	--	8	20	31	35	28	19	7
_A	R4. Offices above 64-66 Deansgate	10.00	38	--	13	24	33	35	27	20	12
_A	R5. First Floor Offices opposite on Deansgate	12.00	38	--	12	24	33	35	26	18	9

All shown dB values are A-weighted

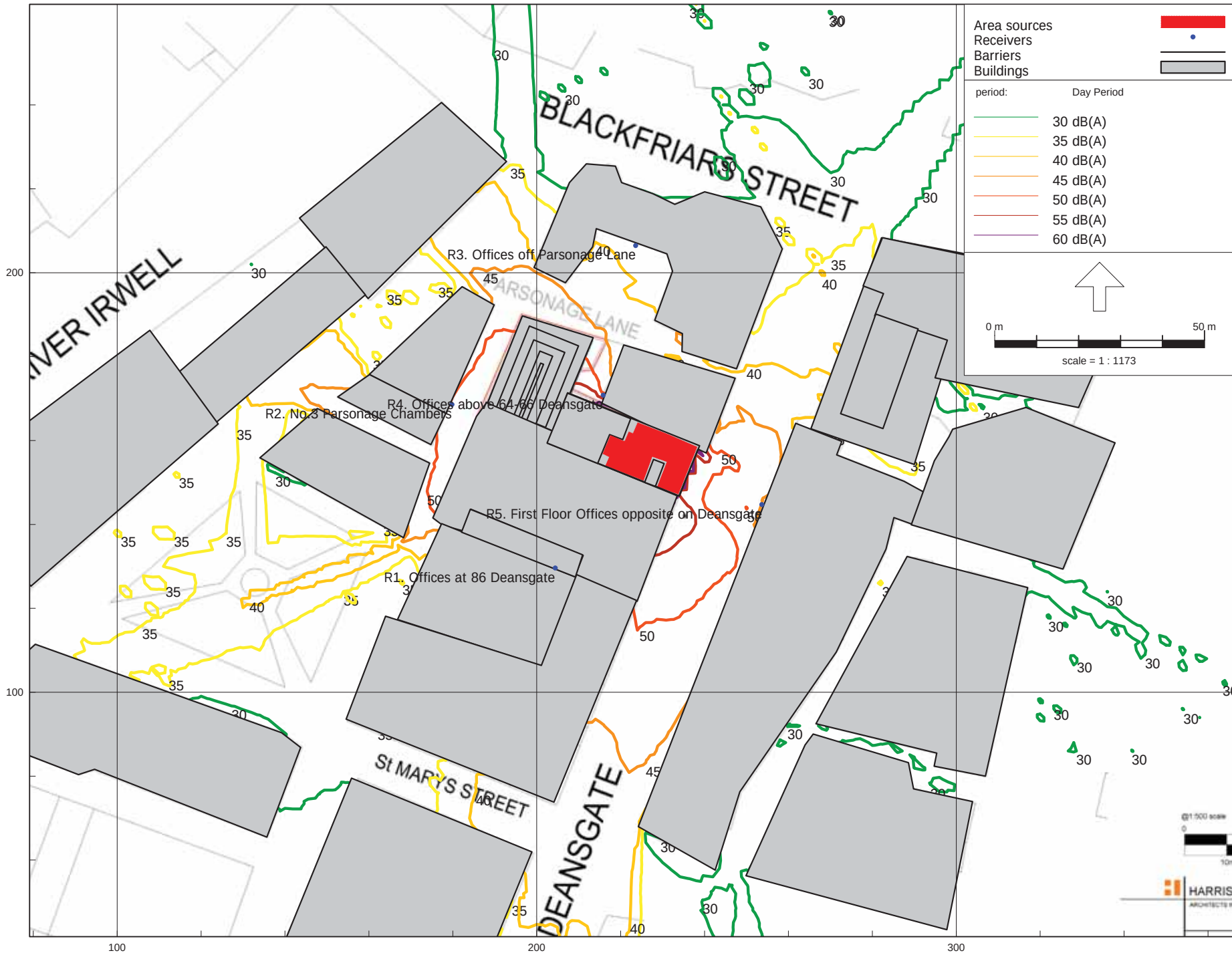


JDW The Moon Under Water, Deansgate
Predicted Roof Terrace Noise Levels - Busy Trading

Report: Table of Results
Model: Roof Terrace - Busy Trading
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name		Height	Day								
Receiver	Description		Total	63	125	250	500	1000	2000	4000	8000
_A	R1. Offices at 86 Deansgate	16.00	53	--	20	36	46	51	46	39	29
_A	R2. No.3 Parsonage Chambers	14.00	52	--	18	34	45	49	43	36	25
_A	R3. Offices off Parsonage Lane	16.00	44	--	15	29	38	42	35	26	14
_A	R4. Offices above 64-66 Deansgate	10.00	45	--	20	33	40	42	34	27	19
_A	R5. First Floor Offices opposite on Deansgate	12.00	45	--	19	32	40	42	33	25	16

All shown dB values are A-weighted



A P P E N D I X F

J D Wetherspoon Outside Area Management Information

Outside Areas – The JD Wetherspoon Approach

Introduction

JD Wetherspoon operates 866 premises in England, Wales, Scotland and Northern Ireland. The provision of facilities whereby customers can eat and drink outside has been a key part in the development of those premises. We all like to sit outside when the weather permits and our customers are no different. Accordingly we have tried wherever possible to allow for an outside customer area when we build new premises or refurbish existing ones.

The requirement for outside areas became more important after the introduction of restrictions on smoking inside premises. The lack of an outside area means that smokers use the public footpath outside or adjacent to premises where they are more difficult to control and there is greater potential for litter and anti-social behaviour.

We are increasingly acknowledging that whilst our outside areas are popular with our customers who wish to smoke, their use of such areas should not be to the detriment of non-smoking customers and we have a number of outside areas where smoking is limited to certain areas or not permitted at all.

Wherever possible we look to incorporate an outside area within the demise of our premises. If this is not possible then where appropriate, we look to operate an area on the public footpath in front or adjacent to the premises by way of a pavement licence or similar issued by the relevant Highway Authority. At some premises, we operate both.

As well as providing a facility for our customers, outside areas also add to the visual appeal of our premises and a significant amount of investment goes into landscaping and afterwards maintaining them to maximise that appeal.

It is difficult to provide an exact figure but we would estimate that approximately 80% of our premises operate some form of outside area. Of those premises which do not, the majority are in city centre locations where the physical space for an outside area does not exist.

Management and Control

We fully appreciate that when customers use our outside areas then there is a potential risk for noise and disturbance to be caused to those who live and work in the vicinity of our premises which is beyond that if our customers were restricted to inside.

This risk is mitigated by a number of management control measures which are generally applied across our estate. Such measures include the following:

- Effective staff supervision.
- CCTV.
- Signage.
- Restricted hours of use either by way of licensing or planning condition or a voluntary restriction.
- Noise attenuation considerations built into the design.
- Efficient procedures for dealing with any complaints quickly and effectively at premises level.
- No internal music in the vast majority of our premises and no external music at all.

The application of the above measures has meant that formal authority complaints in respect of customer noise from our outside areas are extremely infrequent. The company has not faced any formal enforcement action or premises licence reviews arising from noise issue from outside areas. Any complaint is dealt with quickly and effectively.

It is common for our use of an outside area to be curtailed by way of either a planning or licensing condition although the latter is more frequent given that the prevention of public

nuisance is one of the four licensing objectives (five in Scotland). Wherever possible, we will look to address any concerns of the Environmental Health Officer during both the licensing and planning process to agree a suitable condition/restriction which balances the fully recognised right of local residents and business not to be disturbed from our outside areas and our wish to provide such areas to our customers.

By way of information of the 29 premises which the company opened in 2012, conditions/restrictions restricting use of outside areas were applied as follows:

The Court of Requests, Oldbury (17.1.12) - "The hours of use of the beer garden shall be limited to between 8am and 11pm on Sundays and 8am to 11.30pm on Mondays to Saturdays" (Planning permission)

The Man in the Wall, Wimborne (20.1.12) – "The rear external terrace area of the premises immediately adjacent to the premises, further identified as the area shaded green on the approved premises licence plan shall not be used by customers for the purpose of consumption of food and drink between the hours of 2200 and 0700. All other rear external terrace areas shall not be used between 2200 and 0700 for any purpose" (Premises Licence)

The Watchman, New Malden (27.3.12) – "The outside area to the left of the exit, as viewed from inside the building, will not be used by customers between the hours of 2300 and 0700. Between the hours of 2300 and 0700 the outside areas to the right of the exit, as viewed from inside the building, will be restricted to customers who wish to smoke" (Premises Licence)

The Queens Picture House, Waterloo (10.4.12) – "Unless otherwise agreed in writing with Merseyside Police, no consumption of alcohol shall occur in the outside patio area beyond 2300 hours" (Premises Licence)

The Prestwick Pioneer, Prestwick (15.5.12) – "Any beer garden must be closed for the consumption of alcohol after 10pm" (Premises Licence)

The Thorns Farm, Yate (29.5.12) – "All outside areas shall be cleared of food and drinks receptacles by 23:00 hours and no food and drink receptacles are to be taken outside after 23:00 hours. Signage indicating this condition shall be prominently displayed inside all external doors" (Premises Licence)

Henry Bell, Helensburgh (29.5.12) – "The terminal hour for the external drinking area is 9pm Sunday to Thursday and 10pm Friday and Saturday. Persons using the external area after this time, have to remain within the area marked "smoking area" on the plan" (Premises Licence)

Railway Hotel, Lytham (10.7.12) – "There shall be no consumption of food or drink in any external area of the premises after 2300" – Premises Licence

The Kingfisher, Poynton (18.12.12) – "There shall be no consumption of food and drink in any outside area of the premises after 2200 until close on any day. All glasses and bottles shall be regularly cleared from any outside area with none remaining after 2200. The premises licence holder will ensure that after 2200 until close of the premises there is regular monitoring of any outside area to ensure that public nuisance is not caused" (Premises Licence)

The above conditions were requested by the authorities, and agreed to by the company, in acknowledgement of near-by residential properties. Some conditions, as will be noted, prevent use of outside terrace areas completely after a certain time and others prevent use for consumption of food and drink thereby allowing use by smokers as an alternative to the pavement or street. This recognises the fact that where customers are not permitted to take drinks with them into the outside area then they are more likely to return inside quickly minimising the potential for any noise nuisance being caused. Where possible the company prefer the flexibility of allowing smokers to use outside terrace areas up until close simply because it allows a greater degree of management control. If the authorities however feel that

the interests of our neighbours are better served by a complete restriction on use then we will concur if the request is a reasonable one.

Case Studies

The approach taken by JD Wetherspoon and the authorities to the control of outside terrace areas via the licensing and planning processes at our premises is more fully demonstrated by the following three case studies.

The Frank Hornby, Maghull, Liverpool

The premises opened on the 17th April 2012.

The premises had previously traded as the Everest Hotel, a long standing public house with a poor reputation in the local community in its final years of operation for causing noise and disturbance.

The Frank Hornby is located in an entirely residential area with houses to the front, sides and rear in close proximity.

The refurbishment of the premises included plans for an extended and enhanced outside area at the front of the premises to replace some free standing bench style seating in what was previously used as a car park.



Possible noise and disturbance from this area was one of a number of issues that caused a high level of concern amongst near-by residents which the company sought to address at 3 public meetings prior to the premises opening. One of the meetings was attended by 70 residents as well as local councillors.

The Planning Authority (Sefton Council) also had concerns over the operation of the area. Our development team worked closely with the planning officer to address those concerns by a reduction in the size of the proposed outside terrace and a management plan which provided for the following:

- No consumption of food and drink in the outside terrace area after 2200
- Regular checks by staff of the outside terrace area
- 24 hour CCTV coverage
- Erection of signage in the area requesting customers to respect the neighbour's right to quiet enjoyment.
- Regular residents meetings

The first residents' meeting took place on the 30th May 2012. 13 residents attended. No complaints were made as to noise from the outside area although one resident did ask us to ensure that smokers did use the area rather than the car park area to the side of the pub.

The second residents meeting took place on the 8th August. On this occasion only 2 residents attended and no concerns were raised about any aspect of the premise's operation.

The Broken Bridge, Pontefract, West Yorkshire

The premises opened on the 18th June 2010 after conversion from former retail premises.

The development included proposals for an outside terrace area at the rear of the premises in close proximity to a row of terraced housing.



Concerns were raised by the EHO as the possibility of noise from the area disturbing the occupiers of the houses. In response to her concerns, the following condition was agreed with her.

“The outside beer garden area shall not be used between 2100 and 1000 except as a smoking area until the premises licence holder has prepared such a scheme of works to address the noise likely to emanate from the area and completed such works to the satisfaction of the EHO”

Given the proximity of the area to the residential properties unfortunately we were unable to come to agreement with the EHO as to a suitable scheme and the restriction remains on the premises licence.

An early complaint was received from one of the occupiers of the houses shortly after opening involving the EHO. Closer management focus was applied to the area and subsequent to that initial complaint, no further complaints have been received as to use of the area.

The manager of the premises is particularly keen to communicate with the residents and keep them abreast of any activity at the premises which might affect them in the belief this minimises complaints. This is something the company encourages all its managers to do and especially those whose pubs are next to noise sensitive premises.

The Five Swans, St Mary's Place, Newcastle

The premises opened on the 29th March 2011 after conversion from 4 separate retail and restaurant properties.

The development included provision for a relatively small external terrace area to the rear of the premises which was directly overlooked by a neighbouring residential property as shown on the picture below



After liaison with the EHO from Newcastle City Council, the following premises licence condition was agreed:

"The premises licence holder will ensure that there shall be no consumption of alcohol, non-alcoholic drinks or food in the outside area to the rear of the premises after the daily terminal hour for closure the premises and before 0700 the following day"

This restriction was not sufficient for the owner of the residential flat and the committee imposed an earlier cut off time for use of 2200 and in addition required the fitting of a Mag Lock to the access door for the area, which also doubled as a fire door, to prevent unauthorised access after 2200. The Mag Lock would prevent anyone opening the door after 2200 but it would automatically allow use once the premises fire alarm was activated.

There were some initial teething problems with the use of the Mag Lock as customers were able to manually to override it. This led to a complaint via the EHO from our neighbour in August 2011 that customers were using the area after 2200.

In response, the pub's operational team met our neighbour and a number of measures as follows were agreed for immediate implementation to stop a reoccurrence:

- Replacement of the original Maglock with a break glass emergency exit system
- More prominent signage informing customers of the hours of use of the terrace area
- Installation of an alarm in the door so that if it was opened in unauthorised circumstances, a member of the pubs management team would be immediately alerted.

There have been no other complaints received regarding the issue.

Conclusion

The above case studies show that with a combination of pre-opening liaison with the authorities and the local community, imposition of workable restrictions, whether on the premises licence or planning permission, and a commitment to address any problems when they arise after opening, that we are able operate outside areas which do not impact on our neighbours.

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