



COMPREHENSIVE NOISE ASSESSMENT

for **wetherspoon** by

nineteen47
CHARTERED TOWN PLANNERS
& URBAN DESIGNERS

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DRAGONFLY
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INTRODUCTION

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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 recoded 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 methodolgy 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 survyrys 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.

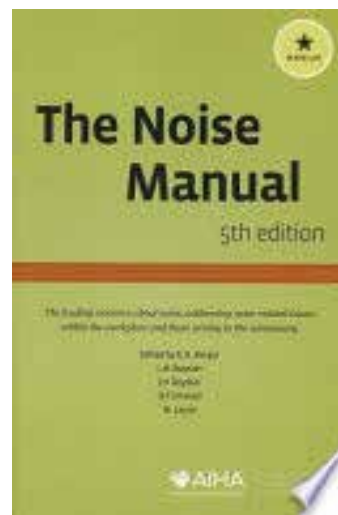
This document does not focus directly on the validity of that underlying assessment methodology, but on the methodology derived for predicting the noise emissions from the beer garden or terrace whilst in use.

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



- 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

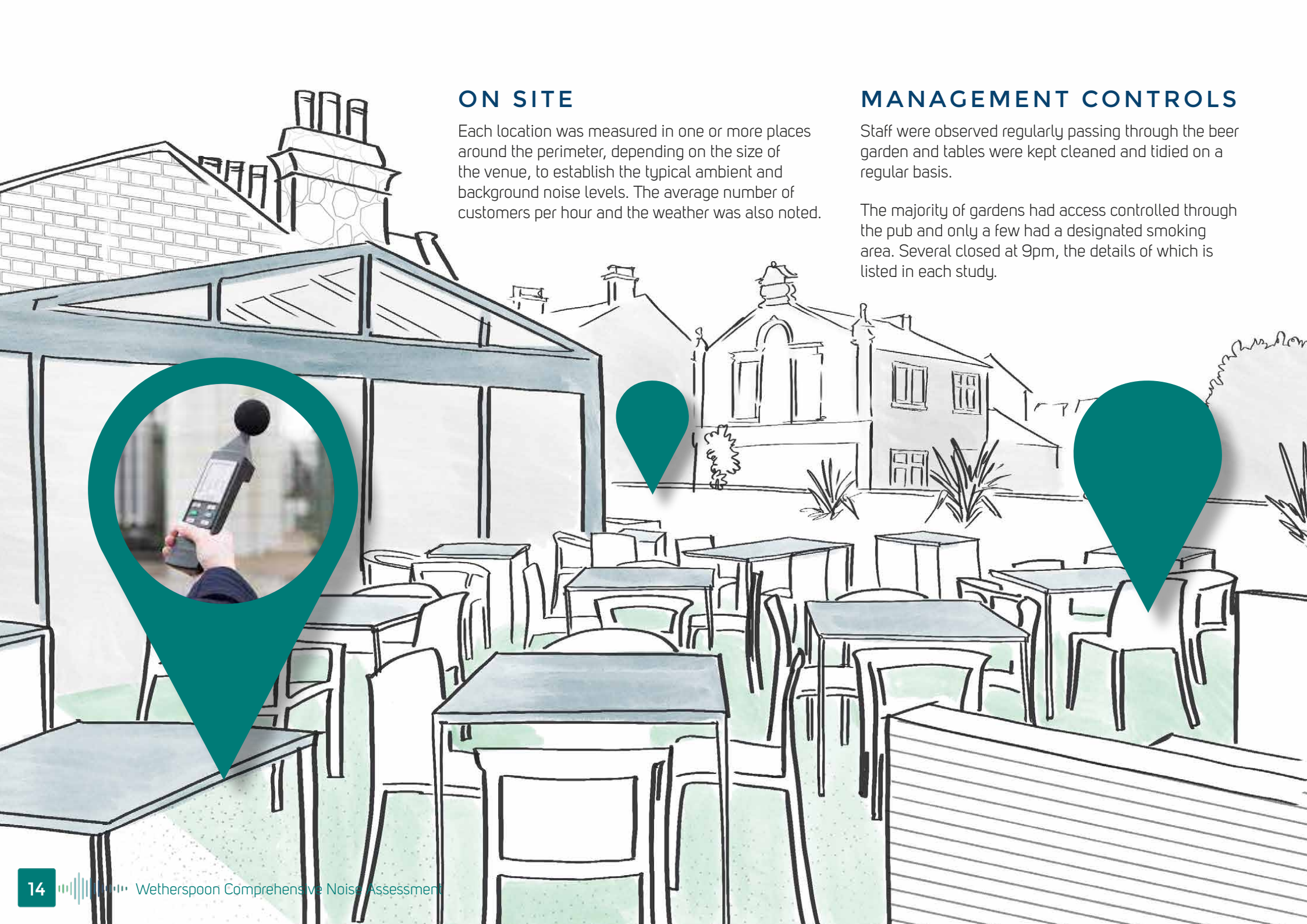
ROOF
TERRACE

- 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

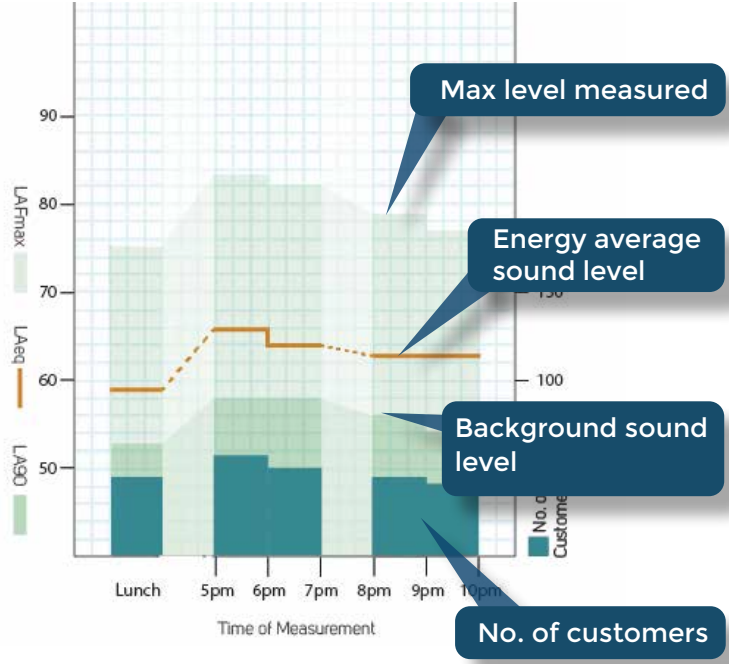
Acoustic measurements were taken by using one or two unattended noise loggers and by carrying out short-term attended measurements at a number of positions around the perimeter of the outdoor amenity areas. Site observations were made during the lunchtime and evening periods.

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

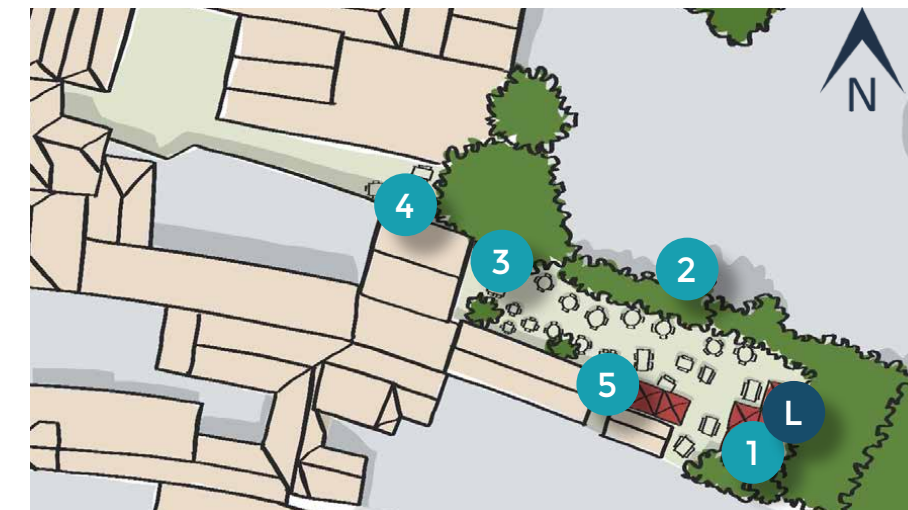
Hitchin

-  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.



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

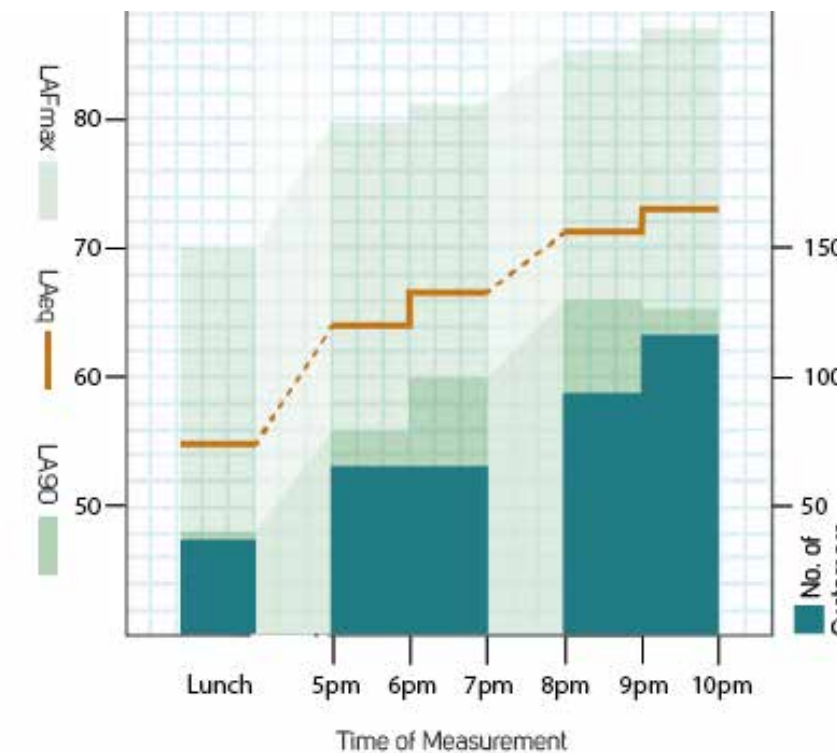
EXISTING MANAGEMENT CONTROLS

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.



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

2. THE WHALEBONE

Downham Market





Market town



Enclosed garden



Families/Young adults/Middle age/Mature



528m² (201m² after 9pm*)



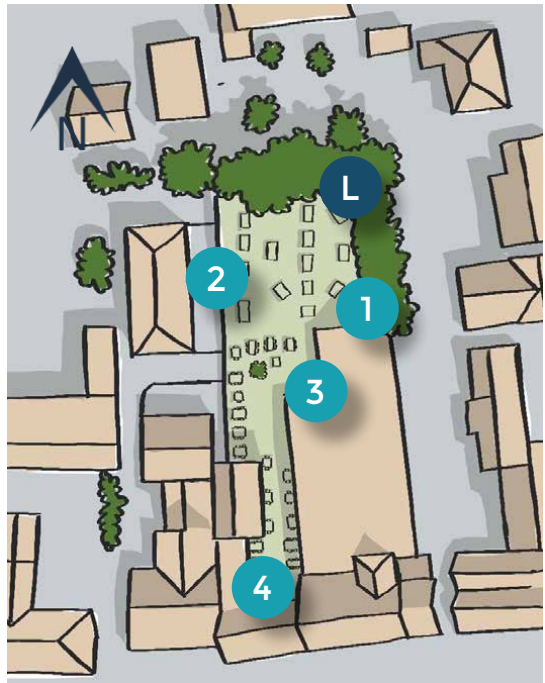
Capacity of 290



Cloudy



20th August 2021

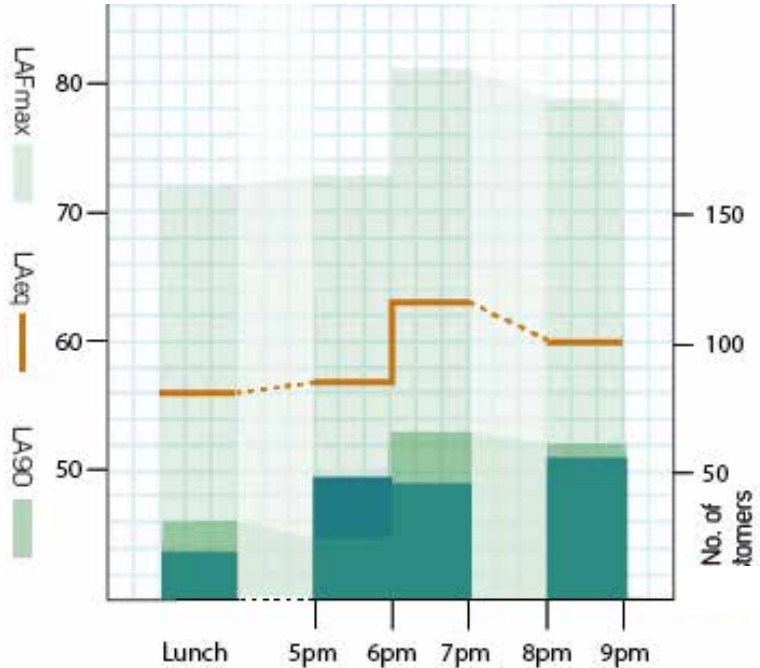


Location plan showing the unattended logger and short-term attended measurement positions

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

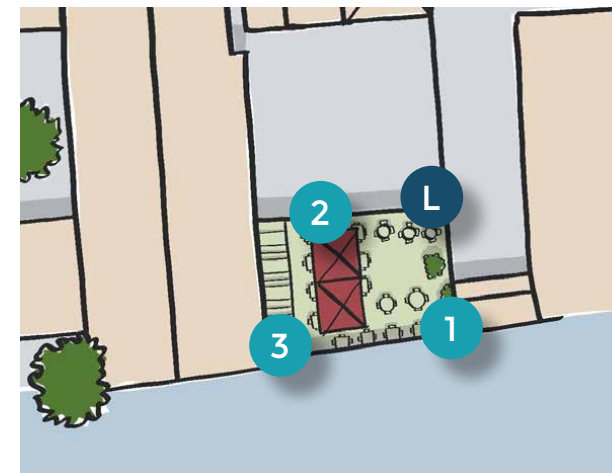
Reading

-  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.

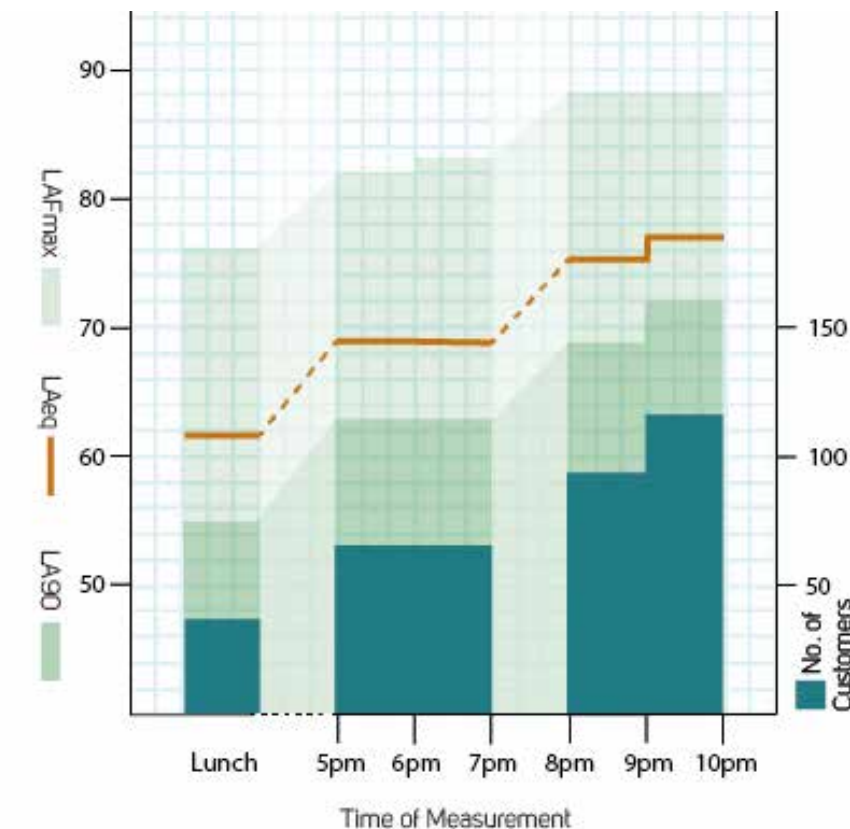
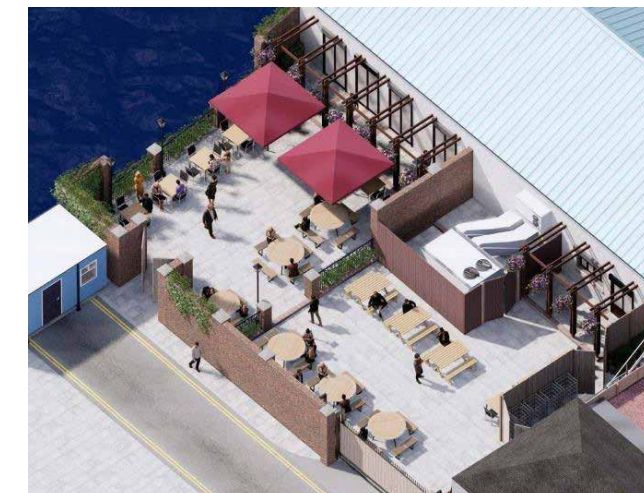
The site became a J D Wetherspoon public house in 1996. The garden, which overlooks River Kennet, is enclosed on all sides.



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



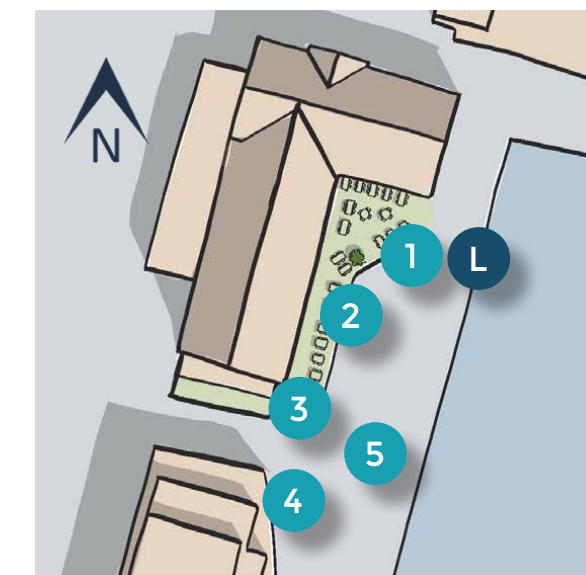
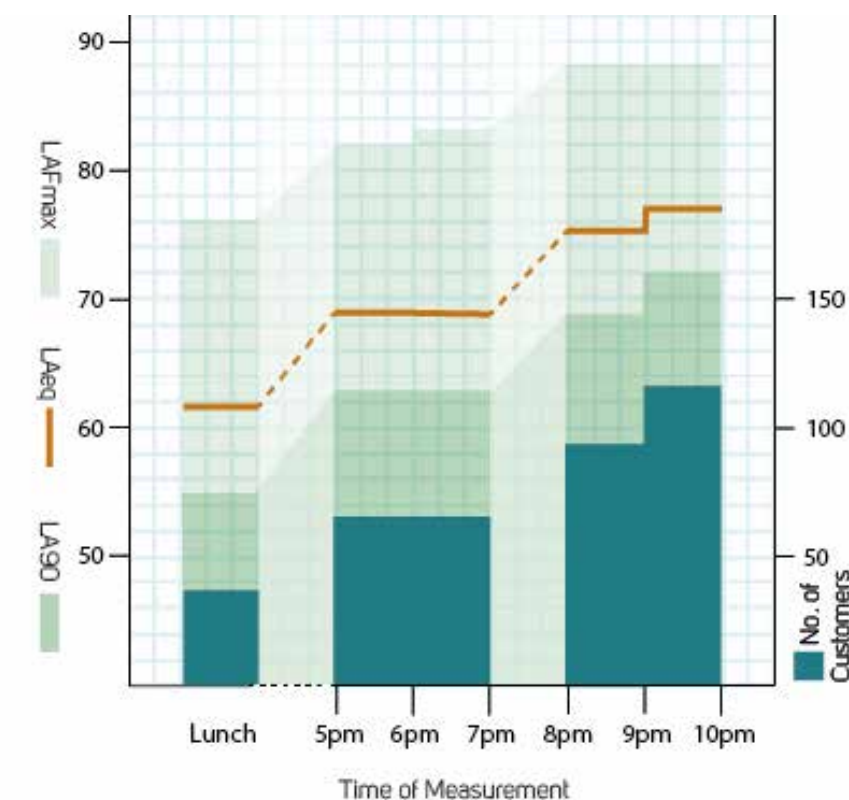
-  Seaside student city
-  Open garden
-  Older couples/
Students/Young adults
-  193m²
-  Capacity of 220
-  Sunny/Cloudy with showers
-  8th September 2021

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.

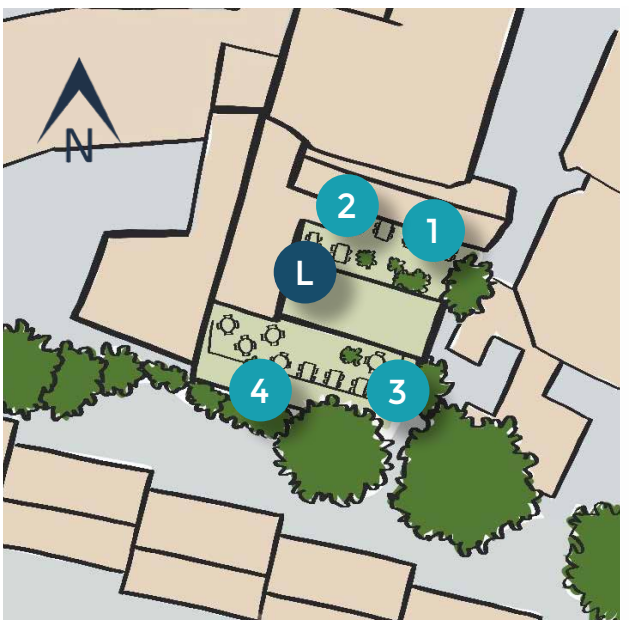
Illustrative Graph depicting number of customers and noise levels, from all positions in the garden



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

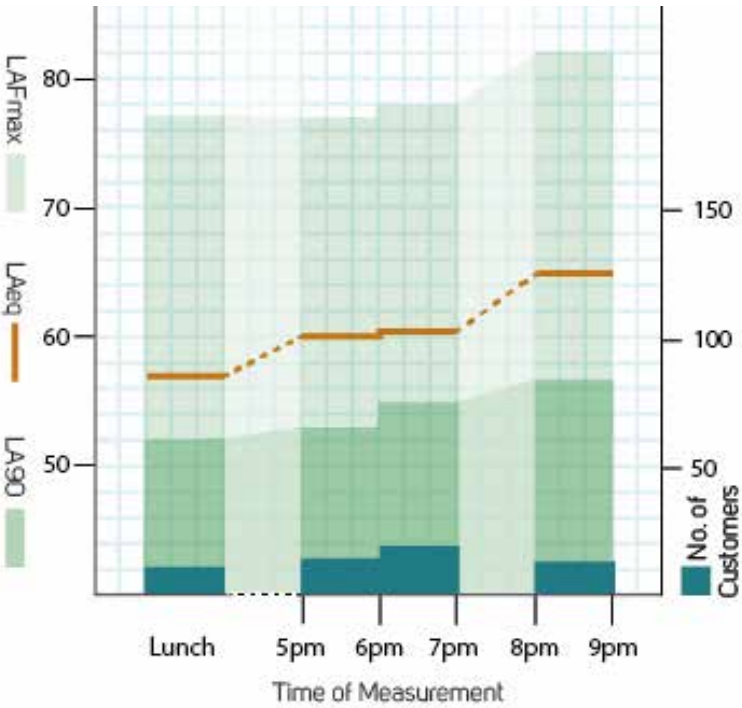


Location plan showing the unattended logger and short-term attended measurement positions

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

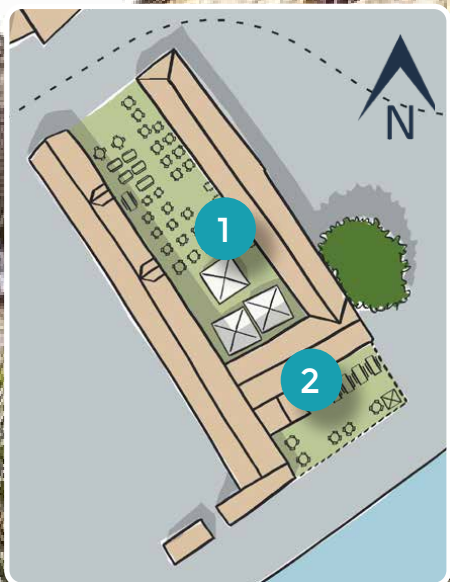
The survey was carried out on Saturday 11th September 2021. Weather during the survey was sunny, warm and dry with little to no wind throughout. The beer garden was quiet during the lunchtime period, then became busier during the mid afternoon and with use eventually tapering off towards the late evening 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 Rote 72 respectively. There were no specific provisions regarding smoking in either beer garden.

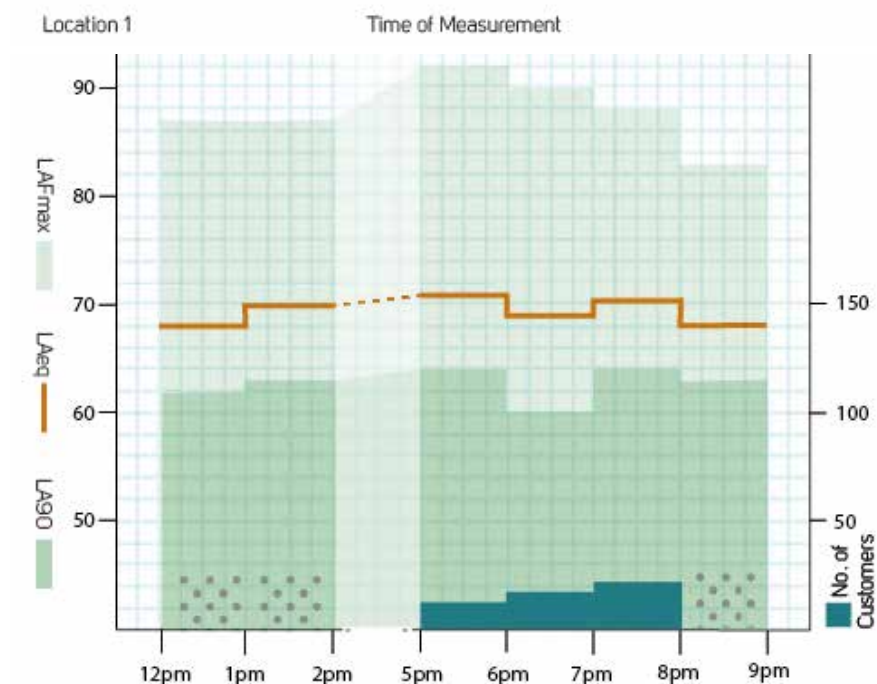
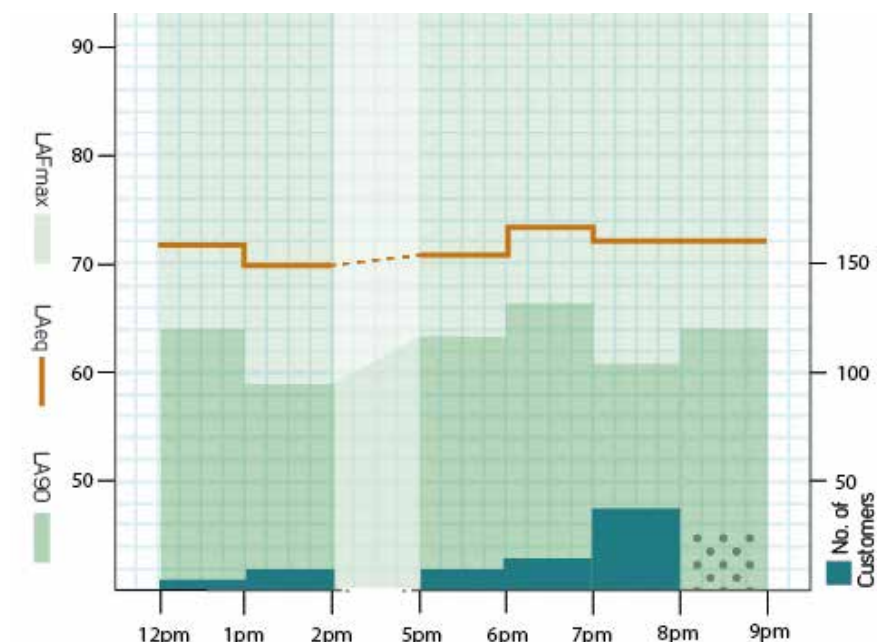
SURVEY OBSERVATIONS

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
- 10st 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

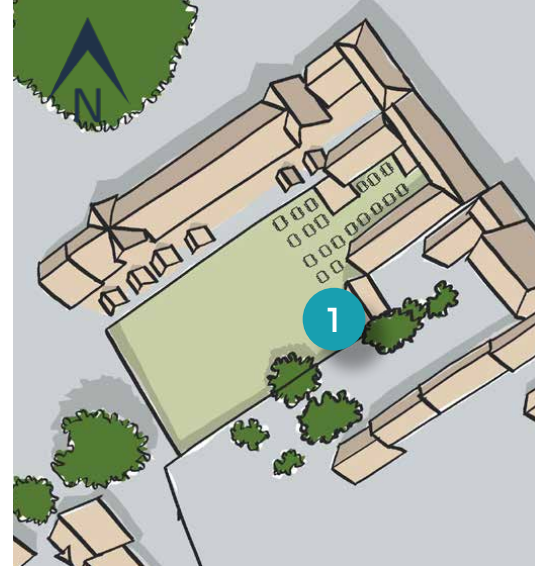
The survey was undertaken on Friday 10th September 2021. Weather during the survey was warm, sunny and dry with little to no breeze. The beer garden was quiet throughout the lunchtime but busy in the afternoon and early evening period. As the evening went on the beer garden became very busy with patrons 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.



8. THE BUCK INN

Northallerton



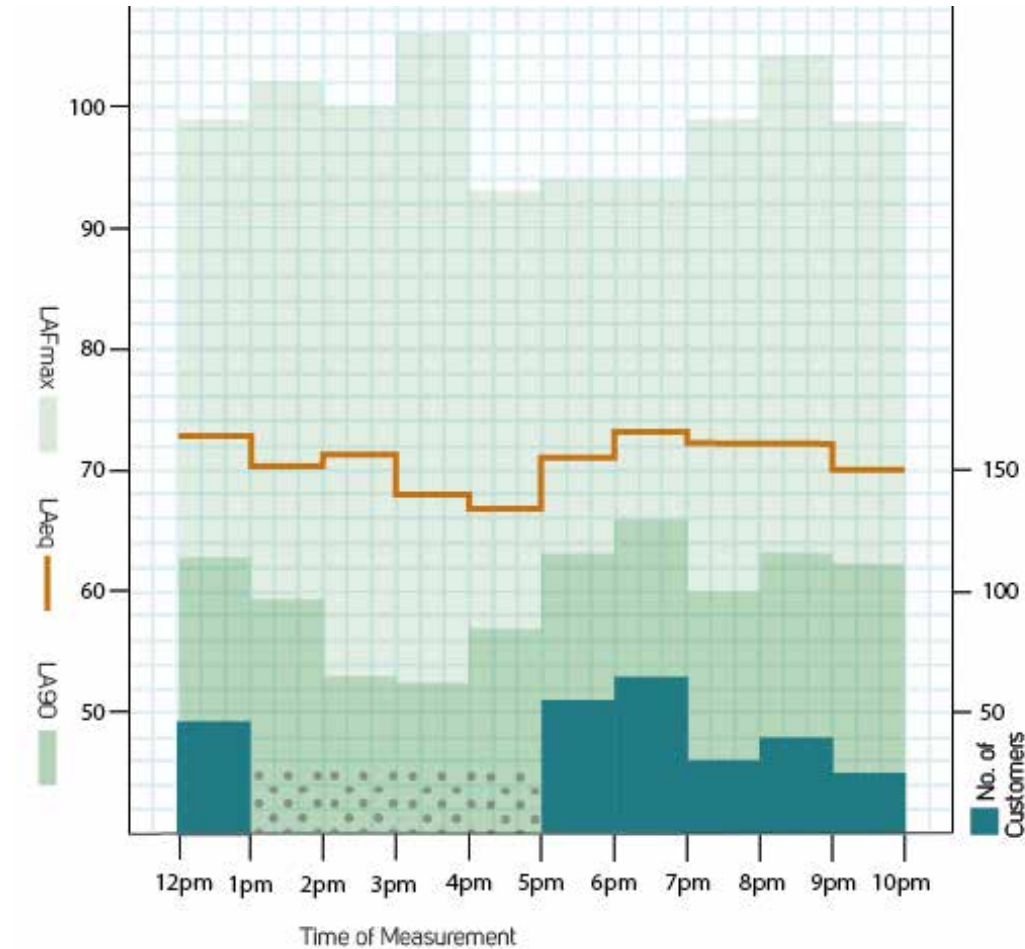
Location plan showing the unattended logger and short-term attended measurement positions

- 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

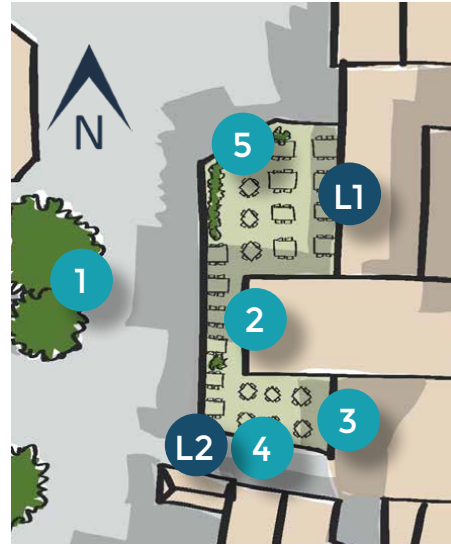
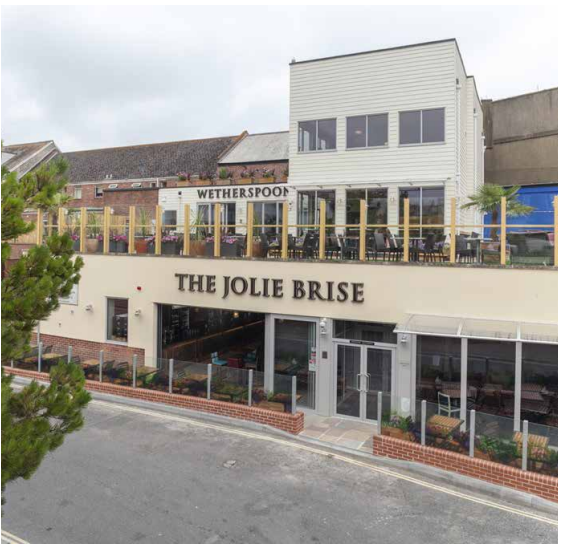
SITE DESCRIPTION

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.

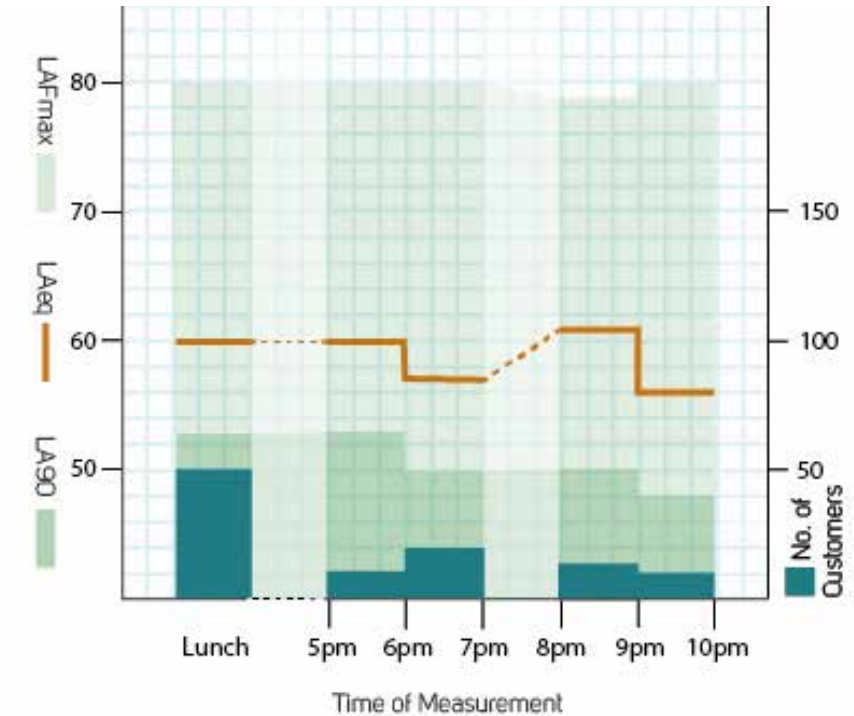
The site became a J D Wetherspoon public house in 2015. The building was purpose built as a supermarket in the 1970s. The first-floor terrace benefits from a 2m glazed screen around the northern and western elevations, and a 2m close-boarded timber fence on the southern elevation.

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.



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

SURVEY OBSERVATIONS

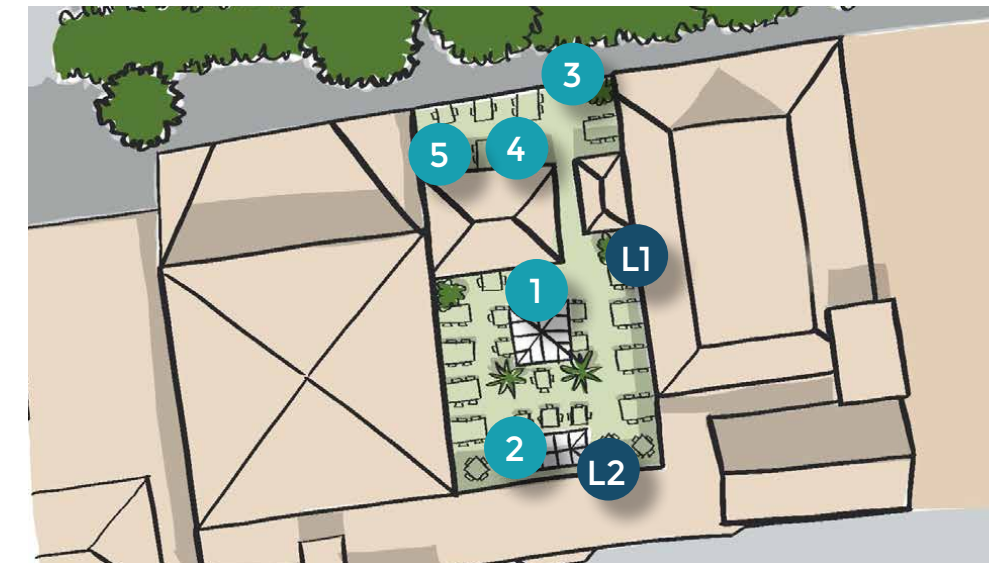
The survey was carried out on Saturday 18th September 2021. Weather during the survey was sunny, warm and dry with low wind speeds throughout. The beer garden was busy during the lunchtime period, after which the number of patrons in the beer garden tapered off.

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.

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

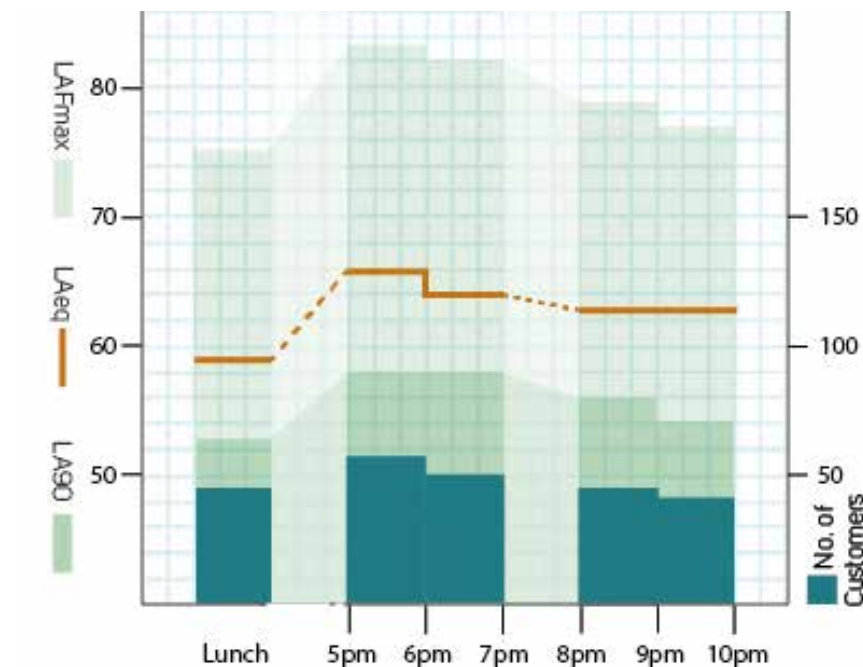
Access to the beer garden is controlled via bi-fold doors at the first floor of the pub, with no external access into the beer garden without first accessing the ground floor customer area of the pub. The bi-fold doors to the pub remained open throughout the survey period. Smoking is only permitted in 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.



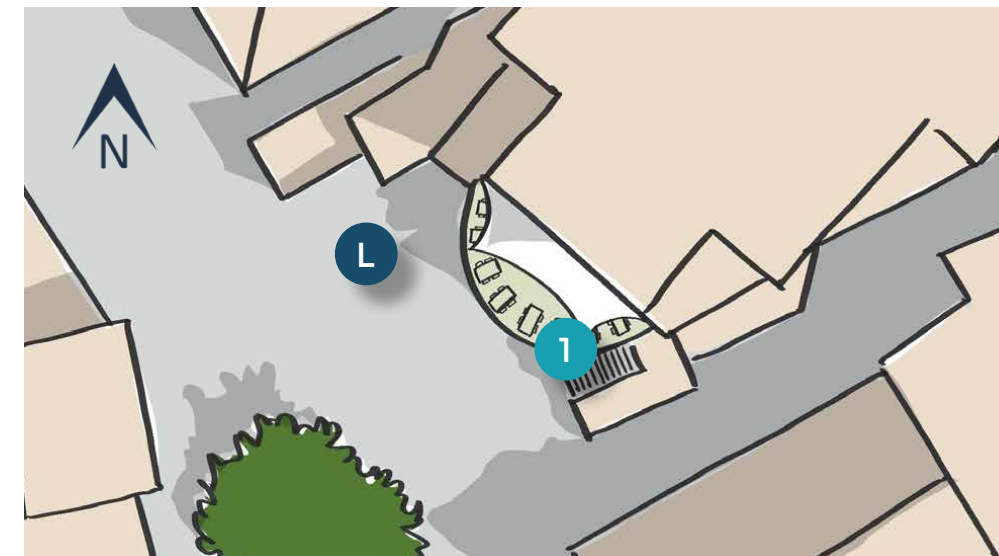
Illustrative Graph depicting number of customers and noise levels, from all positions in the garden

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

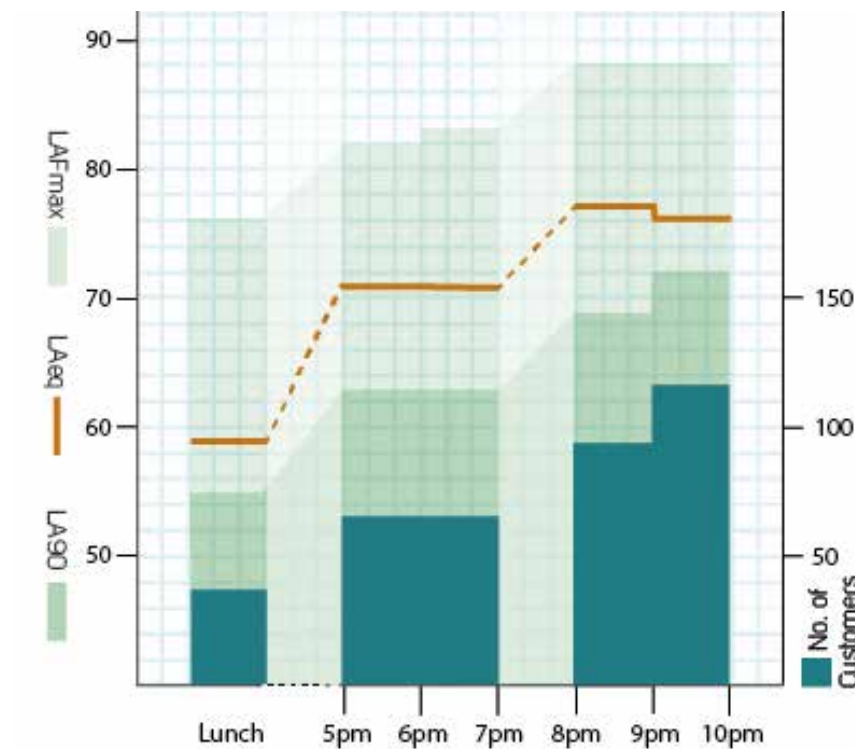
Access to the roof garden is via the pub itself, with external access from Downing Place to the rear. The beer garden included a smoking area.

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.

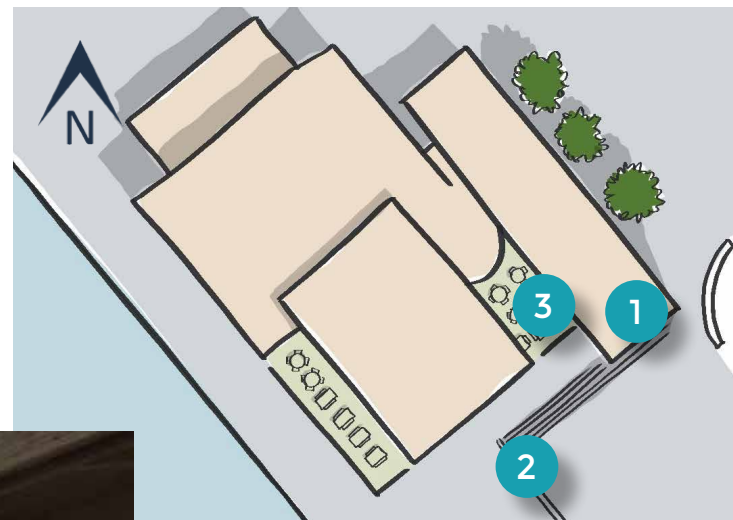
During lunchtime and the mid-afternoon periods, it was observed that a significant proportion of beer garden users were consuming food at some point during their stay. Towards the evening, it was noted that most beer garden patrons were drinking and/or smoking only.

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.



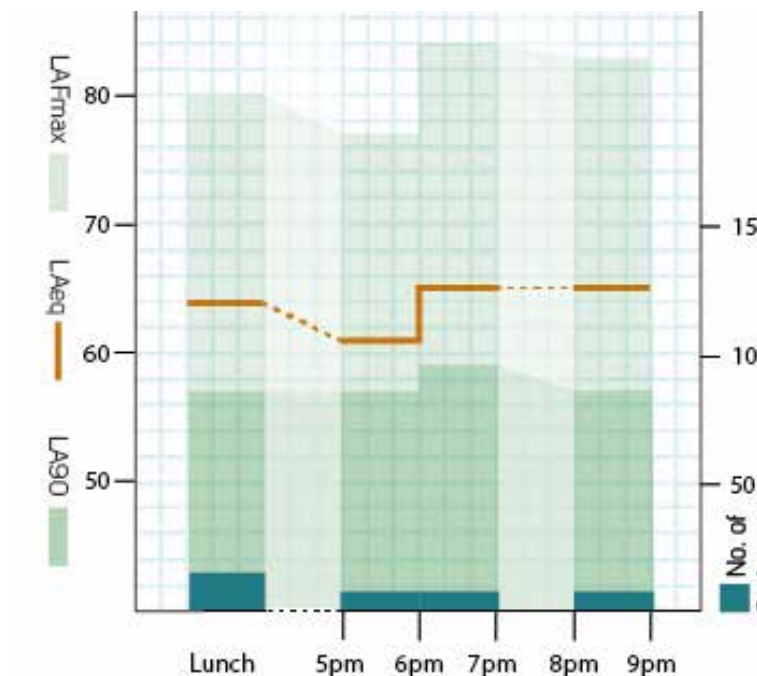
SURVEY OBSERVATIONS

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
-  1th 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.

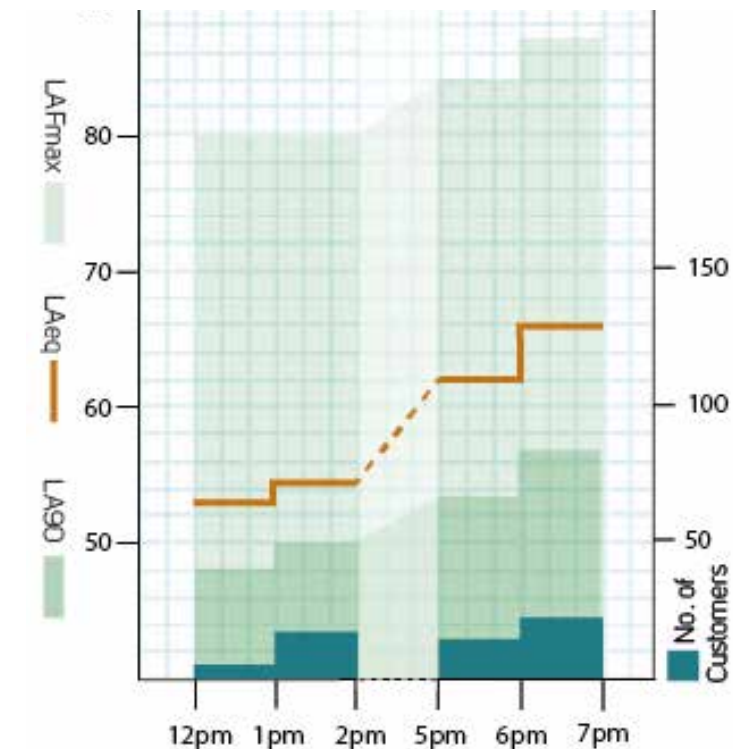
SURVEY OBSERVATIONS

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



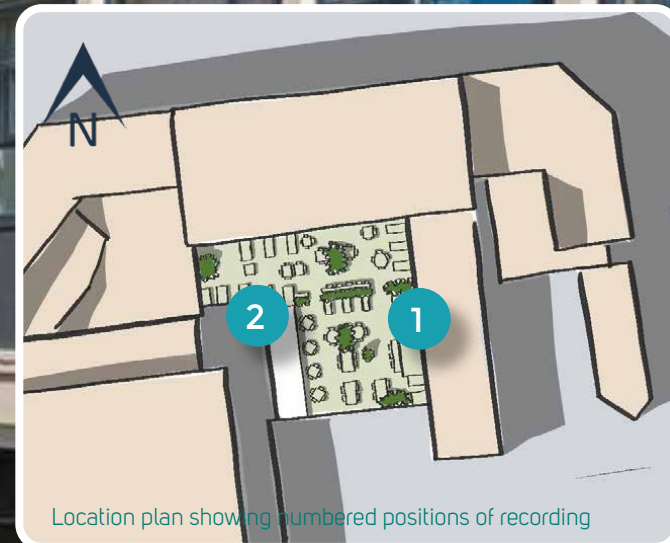
Location plan showing the unattended logger and short-term attended measurement positions



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

14. THE ADMIRAL HUMBER

Hull



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.

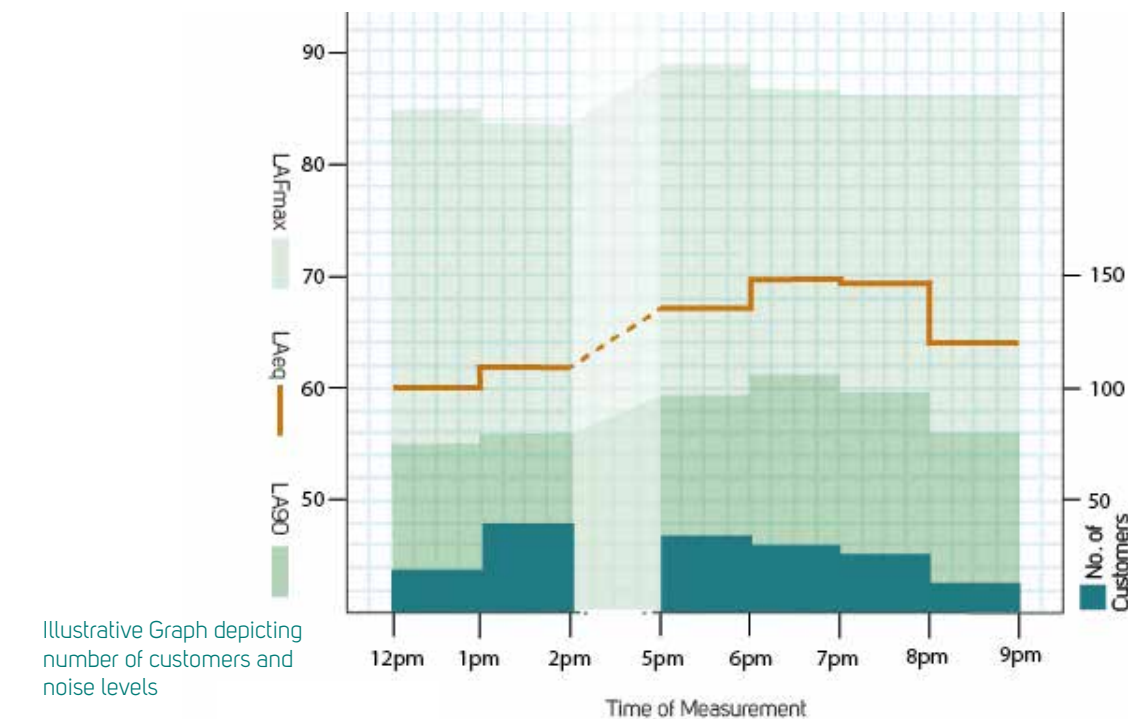
EXISTING MANAGEMENT CONTROLS

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.

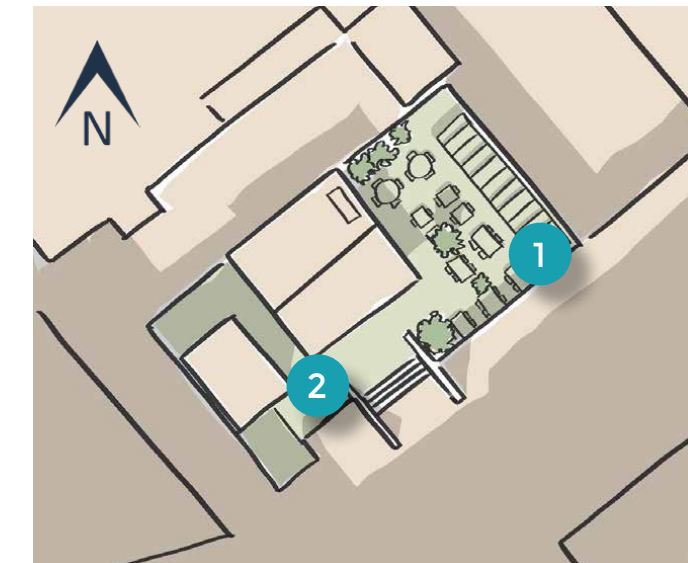
EXISTING MANAGEMENT CONTROLS

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.

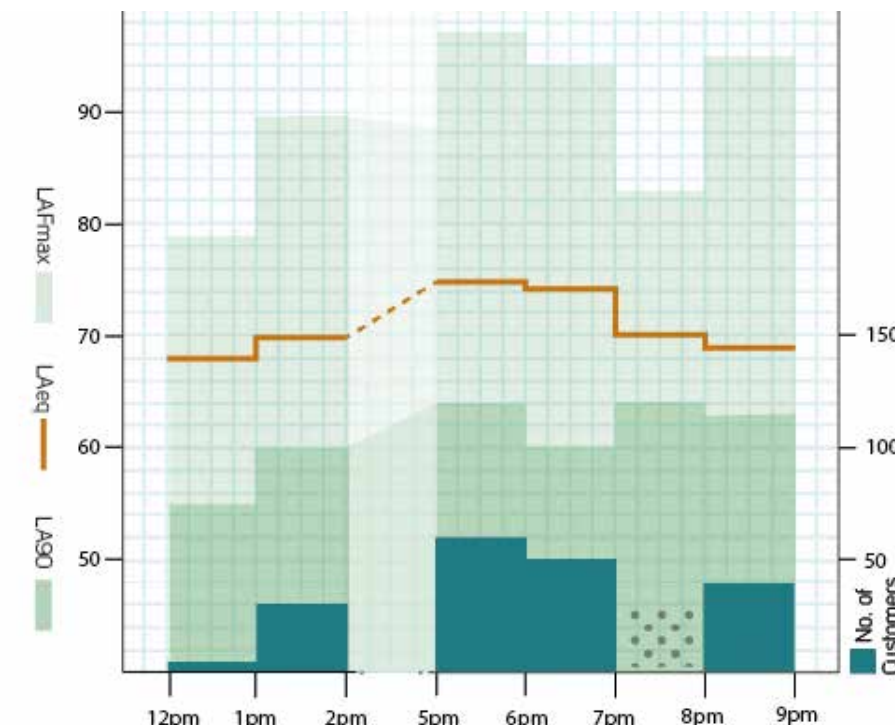
The age profile of customers at this location was broad, with customers in all age brackets throughout the day in approximately similar proportions in each age group. It should be noted that were a number of large stag and hen parties on the roof terrace during the survey. During the evening period the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

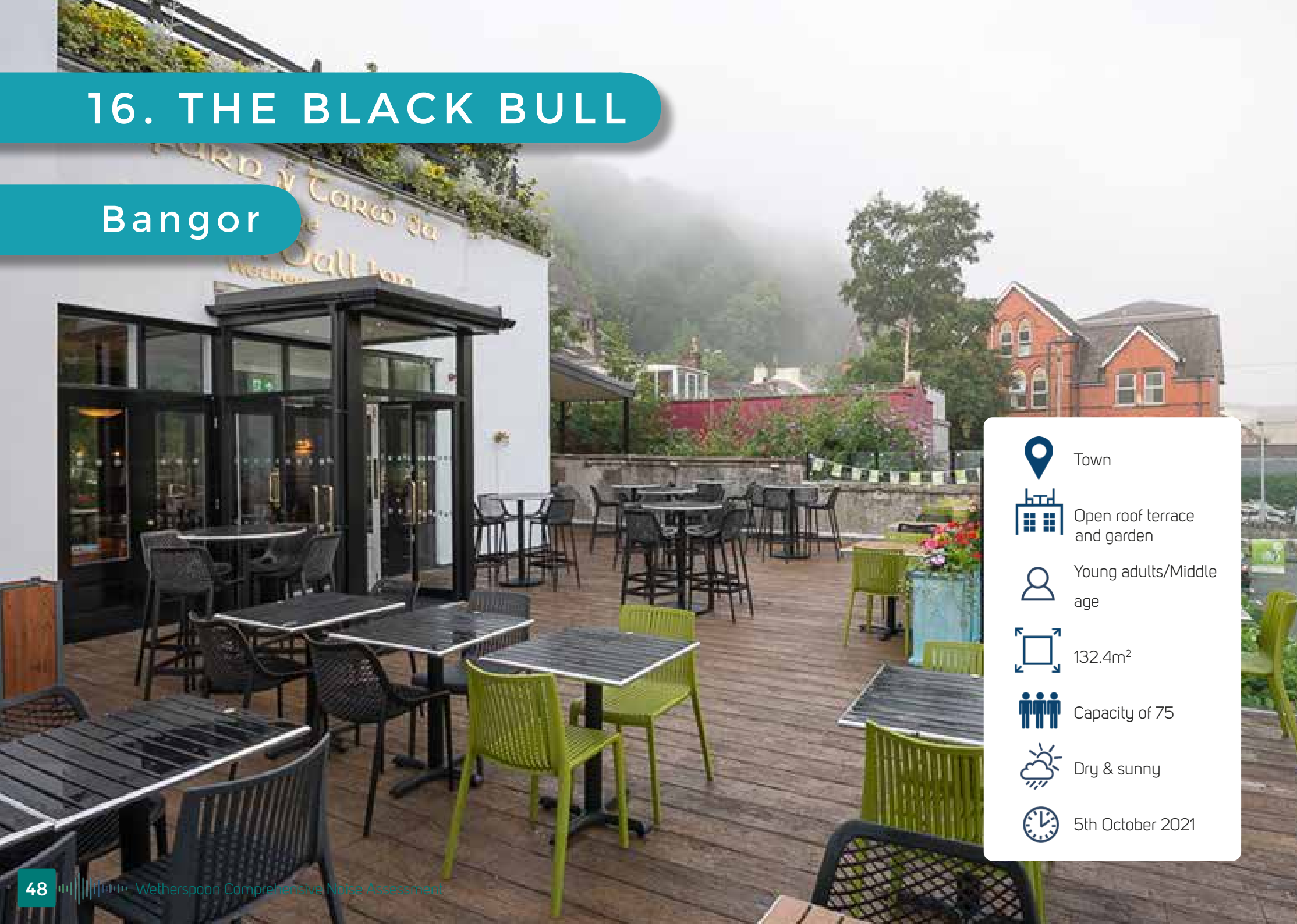


 No data recorded for number of customers



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 pack, 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.



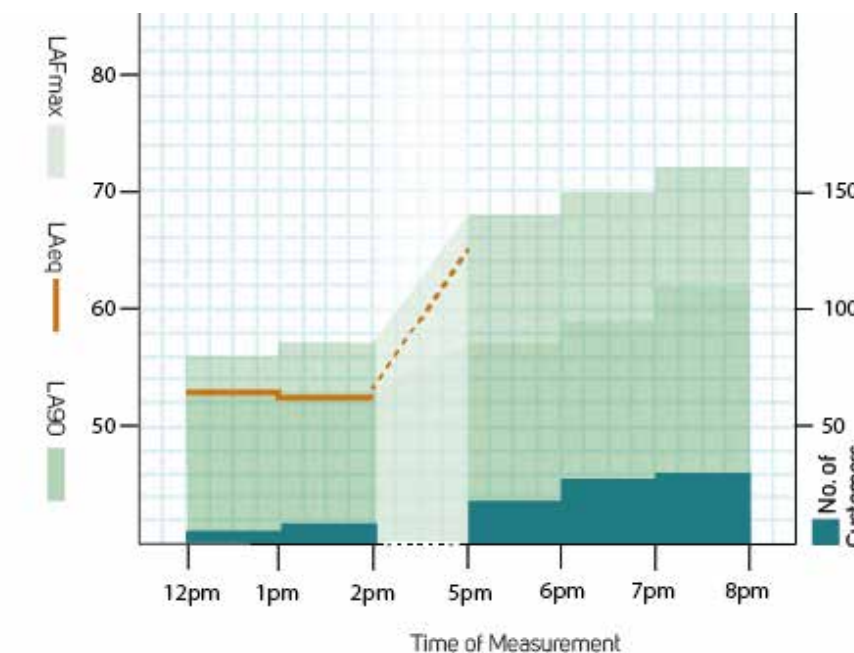
SURVEY OBSERVATIONS

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)
	Lunch	0.11	57
	5-6pm	0.18	64
	6-7pm	0.18	64
	8-9pm	0.27	66
	9-10pm	0.33	70
	Lunch	0.04	53
	5-6pm	0.09	57
	6-7pm	0.09	60
	8-9pm	0.11	57
	Lunch	0.11	62
	5-6pm	0.24	69
	6-7pm	0.25	69
	8-9pm	0.42	75
	9-10pm	0.49	77
	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)
	Lunch	0.07	58
	5-6pm	0.09	60
	6-7pm	0.13	64
	8-9pm	0.08	63
	5-6pm	23	61.6
	6-7pm	31	60.0
	7-8pm	38	58.7
	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
	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)
	Lunch	0.56	64
	5-6pm	0.11	62
	6-7pm	0.22	62
	8-9pm	0.16	61
	9-10pm	0.11	61
	Lunch	0.29	61
	6-7pm	0.38	38
	7-8pm	0.33	66
	9-10pm	0.31	65
	10-11pm	0.28	61
	Lunch	0.18	69
	5-6pm	0.32	66
	6-7pm	0.30	68
	8-9pm	0.36	74
	9-10pm	0.32	73
	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)
	12-1pm	4	55.3
	1-2pm	18	59.0
	5-6pm	16	62.4
	6-7pm	22	66.7
	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
	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
	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?

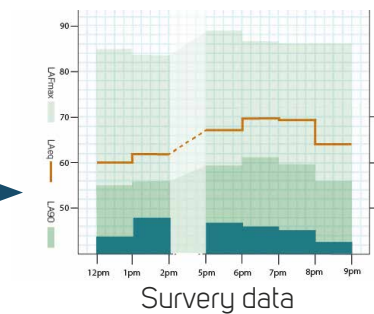
- **Energy quantity**
- **Independent of distance**
- **Theoretically calculated**

Sound Power level (L_w) is the total airbourne 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



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 Lw/m2 67dB
- ‘Busy Trading’ with a sound power level per square metre of Lw/m2 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

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	LAeq	LA90	LAFmax	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	LAeq	LA90	LAFmax	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	LAeq	LA90	LAFmax	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	LAeq	LA90	LAFmax	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 professions etc.	Gender Split % M/F	Approx. Age of Patrons	LAeq	LA90	LAFmax	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	LAeq	LA90	LAFmax	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	LAeq	LA90	LAFmax	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 (m²)	People/ m²	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 (m²)	People/ m²	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 (m²)	People/ m²	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		



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