



Noise Impact Assessment of a proposed extension to the existing beer garden at the J D Wetherspoon Public House: The Crown, Berkhamsted

Report ref.

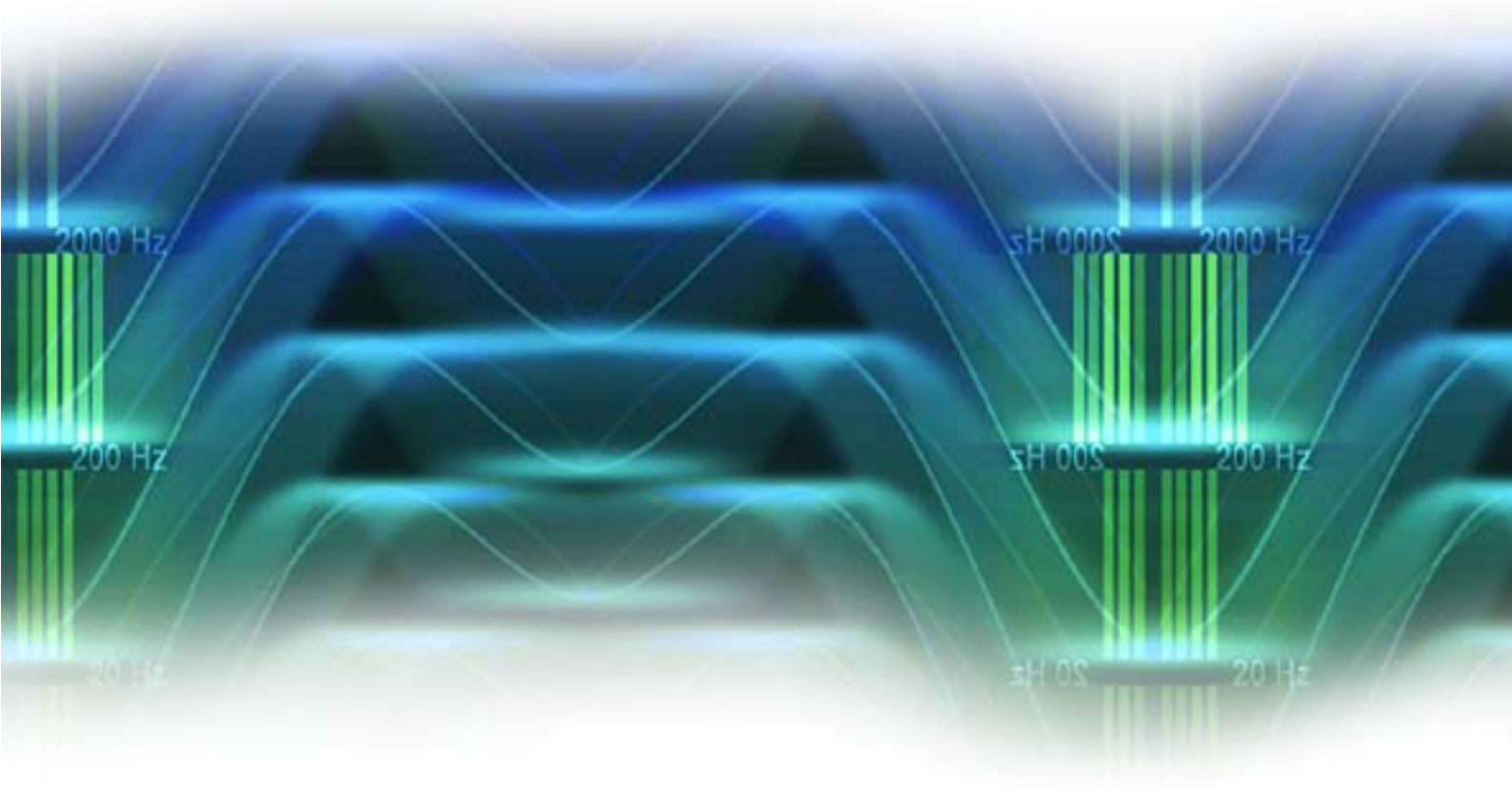
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Date

August 2015

Issued to

J D Wetherspoon Plc



Issued by

Mike McCabe BEng AMIOA
Consultant



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1. INTRODUCTION

J D Wetherspoon (JDW) is seeking planning permission to extend the existing beer garden at “The Crown” Public House at 145 High Street, Berkhamsted, Hertfordshire, HP4 3HH.

Spectrum Acoustic Consultants have been instructed by Harrison Ince Architects, on behalf of JD Wetherspoon, to carry out a noise impact assessment to accompany the planning application.

This report will:

- Consider the relevant guidance
- Report the results of a noise measurement survey
- Predict the noise levels from patrons in the proposed beer garden
- Compare the predicted noise levels against guideline levels and existing levels
- Assess the significance of the noise impact of the proposals on the basis of these comparisons
- Discuss the necessary mitigation measures

2. SITE DESCRIPTION AND PROPOSALS

The Crown Public House is located on the High Street in Berkhamsted. Immediately to the rear of the pub building is an outdoor customer area with seating for approximately 50 patrons, split into four sections at different heights. Along the side of the pub building is a driveway leading to a car park which lies to the rear of the external customer area. The existing car park and customer area are surrounded on three sides by a wall and/or fence. This varies in height from around 1.5m to around 4m.

The existing customer area has been in operation for some time. Consequently noise from patrons in this area forms an accepted part of the existing noise environment. A plan drawing of the existing external area is included in Appendix B.

There are several residential properties surrounding the outdoor customer area at The Crown. The closest receptors are immediately to the south at No. 8 to 11 Cavalier Court. The ground level at Cavalier Court is approximately 2m above the ground level in the Crown car park. There are also office windows overlooking the beer garden area at No. 2 Prince Edward Street, and further residential properties to the east at 1 to 6 Cavalier Court as well as at ‘Sunnymede’ and ‘Haven’, both of which have rear gardens which back onto the existing external customer area at the Crown.

The proposal involves converting the existing car park and driveway into an additional outdoor customer area incorporating seating for an additional 126 patrons and covering an additional 375 m². This noise impact assessment will address noise from patrons in the entire garden, encompassing both the existing and proposed new areas. Proposed scheme plans are included in Appendix B.

The trading hours of the premises are 08:00 to 00:00 Monday to Thursday, 08:00 to 01:00 Friday to Saturday and 08:00 to 00:00 on Sunday. As exceptions to the above, the premises may remain open for an additional period on specific days such as bank holidays. There will be no amplified music at the premises.



3. RELEVANT GUIDANCE

There is no widely agreed assessment procedure for the assessment of noise from patrons in beer gardens. Appendix D provides some general discussion on Spectrum's approach to the analysis and assessment of this type of noise. In essence, it is helpful to understand the factors which cause the noise; those which mitigate the noise and the context in which the noise occurs. This assessment considers noise levels from patrons in the proposed extended beer garden in relation to absolute guideline levels as well as against existing ambient levels.

3.1 WHO: GUIDELINES ON COMMUNITY NOISE (1999)

The World Health Organisation (WHO) provides guideline levels for moderate and serious annoyance in outdoor living areas as well as a guideline limit for speech intelligibility and moderate annoyance inside dwellings throughout the daytime and evening (07:00-23:00). These levels appear in the document *Guidelines on Community Noise (1999)* and are included here in Tables 1 and 2. Noise levels at the nearest sensitive receptors from patrons in the new beer garden area have been compared against these levels to assess the impact in absolute terms.

| Environment | Critical health effect | $L_{Aeq,16hour}$ |
|---------------------|--|------------------|
| Outdoor living area | Few people seriously annoyed, daytime and evening | 55 |
| | Few people moderately annoyed, daytime and evening | 50 |
| Dwelling, indoors | Speech intelligibility and moderate annoyance, daytime and evening | 35 |

Table 1: Daytime and evening guideline criteria from WHO: Guidelines on Community Noise

| Environment | Critical health effect | $L_{Aeq,16hour}$ | L_{AFmax} |
|-----------------|-------------------------------|------------------|-------------|
| Inside bedrooms | Sleep disturbance, night-time | 30 | 45 |

Table 2: Night-time guideline criteria from WHO: Guidelines on Community Noise

3.2 BS 8233:2014 GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

BS 8233 provides a design range for noise in several common types of non-domestic building. While this standard is not intended for use routinely in circumstances where noise sources are brought to existing noise sensitive buildings, in this case the design for executive offices is considered to provide a reasonable guideline for the prevention of adverse impact. The design range for executive offices is L_{Aeq} 35 – 40 dB, consequently a guideline level of L_{Aeq} 40 dB is used in this assessment.

3.3 COMPARISON WITH EXISTING AMBIENT LEVELS

There is no widely agreed assessment procedure which describes the way in which this type of noise would be assessed against existing background and ambient noise levels. Consequently there are no specific criteria which would apply to an assessment of this type. However, it is useful to carry out this comparison as it takes into account the noise context. The noise level from patrons in the new beer garden area (in terms of L_{Aeq}) will be discussed in reference to the existing ambient noise level (in terms of L_{Aeq}) and the existing background noise level (in terms of L_{A90}).



4. AMBIENT NOISE MEASUREMENT SURVEY

Measurements of existing ambient noise levels were carried out during a noise survey conducted on Wednesday 13 May 2015. Weather conditions during the survey were warm and dry, with low wind speeds.

4.1 INSTRUMENTATION

The following instrumentation was used during the noise measurement survey.

- Bruel & Kjaer Type 2260 Sound Level Meter s/n 2311704
- Bruel & Kjaer Type 4189 Microphone s/n 2733049
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 2688672

- Bruel & Kjaer Type 2250 Sound Level Meter s/n 2726905
- Bruel & Kjaer Type 4189 Microphone s/n 2710995
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 2730220

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

4.2 MEASUREMENT LOCATIONS

The survey consisted of an unattended noise logger measuring continuously between 13:30 and 00:00. A series of unattended measurements were also taken between 13:30 and 00:00 at two locations. The locations were selected in order to provide a representative noise level for each of the nearby sensitive receptors. These locations are shown in Appendix A.

Measurements made were of the following parameters:

- Ambient Noise Level – the energy average sound pressure level over a period (T), in the absence of noise from the proposed development ($L_{Aeq,T}$)
- Maximum Noise Level – defined as the maximum (L_{AFmax}) the maximum noise level)
- Background Noise Level – defined as level exceeded for 90% of a period (T), in the absence of the noise from the proposed development ($L_{A90,T}$)



4.3 RESULTS AND OBSERVATIONS

The noise environment at measurement location 1 and at the noise logger location (at the rear of the existing car park at The Crown) was dominated by noise from mechanical services plant both at The Crown (primarily the condenser units cited to the behind a fence adjacent to the beer garden) and on the roof of the adjacent public house – The Kings Arms (the kitchen inlet and extract as well as additional unidentified plant). When the beer garden was occupied, noise from patrons was sometimes audible over the plant noise due to the different character of the noise. However, customer noise only influenced the measured ambient noise level when occupation was high and beer garden users were speaking in loud voices. As the noise logger measurements were taken at a height of 4.5m above car park level, it had a direct line of sight to both the mechanical plant on adjacent roofs and to patrons on the lower level of the existing beer garden – both of which were partially screened at location 1.

At location 2 the noise environment was characterised by a combination of noise from plant at the Crown, traffic on Chesham Road and patrons in the existing beer garden at the Crown. Noise from passing trains, aircraft and distant road traffic also contributed to the noise environment at this location due to a comparative lack from screening to more distant sources. Noise levels reduced noticeably at this location as a result of reduced patron noise following the closure of the existing beer garden at 23:00.

A summary of the measured levels is provided in Table 3. Full details of the measurements are given in the Environmental Noise Record Sheets provided in Appendix C.

| Measurement location | Existing ambient noise level (L_{Aeq}) | Existing background noise level (L_{A90}) |
|-----------------------|--|---|
| Noise logger location | 48 | 44 |
| Location 1 | 48 | 44 |
| Location 2 | 47 | 42 |

Table 3: Summary of typical measured noise levels

The noise levels in Table 3 are average levels based on the levels measured between 13:30 and 23:00 and include noise as a result of activity in the existing beer garden. Occupancy of the beer garden varied over the course of the survey period; sometimes being completely empty and at other times around 60 - 70% occupied at its peak. For the majority of the survey period occupation of the beer garden was around or below 40%. These occupation rates are considered fairly typical for the time of year, but are expected to increase in the summer months. Therefore the measured levels may represent an under-prediction of levels during peak summertime. Importantly this represents the currently permitted use of this outdoor area.

5. PREDICTION OF NOISE FROM EXISTING AND PROPOSED GARDEN

5.1 PROCEDURE

The approach used here to predict noise from patrons in a beer garden has been derived from Spectrum's long experience of J D Wetherspoon developments. This approach considers two layout scenarios and two trading level scenarios. The two layout scenarios are as follows:

- a) The existing layout in which only the existing beer garden area is in use by patrons.



- b) The proposed layout, in which both the existing and the proposed extended area of the beer garden are in use by patrons.

Within each of these layout scenarios, two scenarios representing different levels of trading are considered. These trading level scenarios are:

- a) Normal trading where half of the external customer area is occupied and people are talking in normal, relaxed voices. This is considered to be the typical situation and, for the majority of the time, occupation and activity in outdoor areas would be at or below these levels.
- b) Peak trading where all of the external customer area is occupied and people are mostly talking in raised voices. This is considered a worst case scenario which would occur on only a few occasions per year, likely to be during the daytime or early part of the evening.

Noise levels from patrons in these scenarios are modelled using the sound pressure level data of human voices is taken from Table 14.1 of 'Handbook of Noise Control', 2nd ed. McGraw Hill, 1979. This data provides average sound levels at various voice efforts. The data is scaled up according to the beer garden occupation rate and converted to a series of area sources (representing the existing and proposed areas of the beer garden). This approach neglects the effect of voice directivity. Therefore, it effectively assumes that all speakers 'face' the surrounding noise receptors. This is a slight overestimate of predicted noise levels as many speakers will face away from these receptors to varying degrees.

This analysis procedure has been validated by actual site measurements at a J D Wetherspoon development and shown to give good agreement between the two methods (measurement and prediction). Spectrum have used this analysis method for a large number of J D Wetherspoon sites throughout the UK and it has been accepted as a robust and accurate method for calculating the noise emission from these areas.

5.2 NUMERICAL NOISE MODEL

In order to predict the propagation of noise to the nearest sensitive receptors, the calculated area sources were fed into a numerical noise model. The model was created using Bruel & Kjaer's Predictor v9.11 software, which meets the requirements of ISO 9613 Part 2:1996¹. The noise model takes account of the following in its calculations procedures:

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

¹ ISO 9613-2:1996 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation to determine Noise Levels"



5.3 INITIAL RESULTS

5.3.1 Existing layout – Normal Trading

At receptor locations close to the beer garden, predicted patron noise levels under normal trading conditions were slightly higher than measured ambient noise levels. However, since the predictions are based on half of the external customer area being occupied and actual occupation regularly fell below this during the survey, the predicted patron noise levels are commensurate with measured levels and observed conditions and are considered to be conservatively representative of actual patron noise levels.

5.3.2 Proposed layout – Normal Trading

Initial results from the numerical noise model of the proposed layout indicated that noise levels from the extended beer garden would exceed the guideline levels recommended in the WHO Guidelines on Community Noise. As a result, a series of physical noise mitigation measures were modelled and the effect of these included in the analysis. Following discussion with the architects, two specific measures have been agreed. These measures are considered to provide the best achievable mitigation of noise while maintaining proposals that area acceptable in other respects.

The first mitigation measure involves increasing the height of the southern boundary wall from 1.8m to 3m. The second measure involves the installation of a solid canopy extending 4.6m out over the proposed beer garden area from the top of the raised boundary wall and sealed to it. The exact locations of these measures are shown on the proposed layout drawing in Appendix B.

Figures showing the noise contours for patrons in the beer garden including the effect of the proposed mitigation, under both normal and peak trading conditions, are shown in Appendix D. These contours show noise levels at a height of 4m.

6. ASSESSMENT OF NOISE FROM PROPOSED GARDEN

6.1 COMPARISON WITH WHO: GUIDELINES ON COMMUNITY NOISE (1999)

Predicted noise levels at the sensitive receptors are given in Tables 4 to 6 below. These levels include the effect of the mitigation measures discussed above. Predictions for noise levels in external amenity areas during the daytime; inside living rooms during the daytime and inside bedrooms during the night-time are provided. At both receptor locations, both living rooms and bedrooms are assumed to be situated on each floor. Internal levels assume a reduction of 15 dB through a partially open window in accordance with BS 8233².

² BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings*



| Trading level | Receptor | WHO guideline $L_{Aeq,16hour}$ (dB) | Predicted noise level from patrons in the beer garden (dB) | Excess over WHO guideline |
|---------------|------------------|--|--|---------------------------|
| Normal | Haven Garden | 50 | 41 | -9 |
| | Sunnymede Garden | 50 | 42 | -8 |
| Peak | Haven Garden | 55 | 53 | -2 |
| | Sunnymede Garden | 55 | 53 | -2 |

Table 4: Comparison of predicted noise levels against WHO guideline levels in external amenity areas during daytime hours (07:00 - 23:00).

| Trading level | Receptor | Guideline level $L_{Aeq,16hour}$ (dB) | Predicted noise level from patrons in the beer garden (dB) | Excess over WHO/BS8233 guideline |
|---------------|---------------------------------|--|--|----------------------------------|
| Normal | 8-11 Cavalier Court - 1st floor | 35 | 34 | -1 |
| | 1-6 Cavalier Court - 2nd floor | 35 | 30 | -5 |
| | 2 Prince Edward St. - 2nd floor | 40 | 38 | -2 |
| Peak | 8-11 Cavalier Court - 1st floor | 35 | 45 | 10 |
| | 1-6 Cavalier Court - 2nd floor | 35 | 41 | 6 |
| | 2 Prince Edward St. - 2nd floor | 40 | 49 | 9 |

Table 5: Comparison of predicted noise levels against guideline levels inside living rooms and in offices during daytime hours (07:00 – 23:00).

| Trading level | Receptor | WHO guideline $L_{Aeq,16hour}$ (dB) | Predicted noise level from patrons in the beer garden (dB) | Excess over WHO/BS8233 guideline |
|---------------|---------------------------------|--|--|----------------------------------|
| Normal | 8-11 Cavalier Court - 1st floor | 30 | 34 | 4 |
| | 1-6 Cavalier Court - 2nd floor | 30 | 30 | 0 |
| Peak | 8-11 Cavalier Court - 1st floor | 30 | 45 | 15 |
| | 1-6 Cavalier Court - 2nd floor | 30 | 41 | 11 |

Table 6: Comparison of predicted noise levels against WHO guideline levels in bedrooms during night-time hours (23:00 – 07:00).

During normal and peak trading, in external amenity areas at residential receptors, the predicted noise level from patrons in the proposed extended beer garden would be below the WHO daytime guideline for 'few people being moderately annoyed'.

Patron noise levels in living rooms at residential receptors during the daytime are predicted to be below the WHO daytime guideline level for speech intelligibility and moderate annoyance. During the relatively infrequent periods when peak trading occurs, noise levels in living rooms at nearby sensitive receptors exceed the guideline levels by up to 10 dB. Patron noise in nearby offices is below the guideline level during normal trading. Again however, during infrequent peak trading periods, noise levels are predicted to exceed the guideline level by up to 9 dB.



During the night-time, patron noise levels in bedrooms at the nearest residences would exceed the WHO guideline levels for sleep disturbance during normal trading. During the relatively infrequent periods of peak trading WHO guideline levels would be exceeded by 11 - 15 dB.

This comparison indicates that the noise impact of the proposed beer garden extension is likely to be low during daytime hours under normal trading conditions, as levels fall below WHO guidelines at all sensitive receptor locations.

Whilst operating at peak trading levels, during daytime hours, levels are predicted to be higher than WHO guidelines by up to 10 dB. This indicates a potentially significant impact but will be considered in context in the following sections.

During night-time hours the WHO guideline levels are exceeded at the nearest sensitive receptors during both normal and peak trading. This indicates a significant noise impact and night-time use of the external customer area is unlikely to be acceptable.

6.2 COMPARISON WITH EXISTING AMBIENT LEVELS

| Trading level | Receptor | Measured L_{A90} background levels | Measured L_{Aeq} ambient levels | Predicted noise level from patrons in the beer garden (dB) |
|---------------|---------------------------------|--------------------------------------|-----------------------------------|--|
| Normal | 8-11 Cavalier Court - 1st floor | 44 | 48 | 49 |
| | 1-6 Cavalier Court - 2nd floor | 42 | 47 | 46 |
| Peak | 8-11 Cavalier Court - 1st floor | 44 | 48 | 60 |
| | 1-6 Cavalier Court - 2nd floor | 42 | 47 | 57 |

Table 7: Comparison of predicted noise levels against existing background noise levels

As shown in Table 7, during normal trading, predicted noise levels are commensurate with measured ambient levels, within 1 dB of the measured L_{Aeq} values. During infrequent peak trading, predicted noise levels exceed measured ambient noise levels by up to 12 dB. While this appears to indicate a significant impact, it is important to note that the measured ambient levels were not measured during a period of peak trading in the current beer garden. During peak trading the measured ambient level would be expected to be higher. Consequently this comparison provides a particularly cautious assessment of the impact in this scenario.

6.3 SUMMARY OF NOISE IMPACT

Under normal trading conditions, during the daytime period, predicted noise from patrons in the proposed beer garden is below WHO absolute guideline levels, both in external amenity areas and in living rooms. Patron noise is also below the guideline level for noise inside offices. Noise from patrons in the proposed beer garden is also predicted to be either below or within 1 dB of existing external ambient noise levels. Considering both indicators, the impact of the proposal is expected to be low during daytime hours, under normal trading conditions.



Under infrequent peak trading conditions, during the day-time period, predicted noise from patrons in the proposed beer garden exceeds the WHO guideline level for speech intelligibility and moderate annoyance in living rooms but falls below the maximum guideline level for external amenity areas. Patron noise under these conditions is predicted to exceed guideline levels in offices. Noise from patrons is also predicted to exceed existing ambient levels by up to 12 dB. Considering these indicators, the impact of the proposal during peak trading periods is expected to be significant.

Experience has shown that the 'normal' trading scenario models the typical occupancy and behaviour in JD Wetherspoon customer areas outdoors for the vast majority of the time. It should be noted that the peak trading scenario typically occurs for only a limited number of hours, during some summer weekends when the weather is warm. Additionally, it is important to note that the character of the noise is not likely to change from the existing established noise environment which currently includes noise from patrons in the existing beer garden.

The assessment of predicted beer garden noise against the WHO absolute guideline levels indicates that during night-time periods the noise impact will be significant, even with the physical mitigation measures that have been incorporated into the design. Considering these indicators the impact of the proposal during night-time hours is expected to be significant.

6.4 SUMMARY OF MITIGATION RECOMMENDATIONS

In order to minimise the likelihood of noise from patrons in the proposed beer garden having a significant impact nearby residential receptors during peak trading hours, the following mitigation measures should be employed.

1. The noise barrier and canopy detailed in the drawings in Appendix A should be included.
2. Use of the proposed new beer garden area should be limited to between the hours of 07:00 and 21:00. After 21:00 patrons should be directed into the existing beer garden area. This represents a cautious approach to preventing significant impact and is in keeping both with the existing use of the beer garden and the background noise levels (both of which are likely to gradually reduce in the late evening).
3. The beer garden should not be used during the night time (23:00 – 07:00).
4. J D Wetherspoon should adopt the management plan which is already generally in place at their existing sites throughout the UK. This includes the following measures:
 - Members of staff conduct regular checks of the front and rear of the premises at all times it is accessible to the public. The area will also be subject to CCTV coverage with images retained for 30 days.
 - Signage erected at the front and rear of the premises to remind customers of the need to respect the rights of our neighbours to the quiet enjoyment of their homes, businesses and other activities.



- If on occasion customers are found to be making excessive noise a member of staff will take immediate action to rectify the situation, e.g. ask the customer to talk more quietly or if problems persist, ask them to return inside the premises or leave the premises entirely.
- A manager's telephone number is available to nearby residents to contact the pub at any time and allow any complaints relating to noise from the premises or as to any other elements of its operation to be communicated easily.
- If any complaints relating to noise disturbance are received by a member of staff, the complaint will be brought to the attention of the manager on duty and immediate steps will be taken to prevent a recurrence of the situation.

7. CONCLUSION

A noise assessment has been conducted to consider the potential impact of noise generated by patrons following a proposed extension to the beer garden at the JD Wetherspoon Public House "The Crown" on the High Street, Berkhamsted.

Predictions of noise from patrons in the proposed beer garden has been carried out using a proprietary numerical noise model. Comments on the nature of the noise environment, mitigation measures and likely noise impact have also been provided.

Noise from patrons in the beer garden has been predicted during normal trading (which occurs for the great majority of the time) in daytime hours (07:00 – 23:00). No significant noise impact as a result of patron noise is predicted under these conditions.

Noise from patrons in the beer garden has been calculated for occasional peak trading periods during daytime hours. Noise impact during these periods is predicted to be significant. However with the relevant mitigation in place, including the recommended barrier and canopy, J D Wetherspoon's management program and the recommended usage limitations, the significance of this impact will be sufficiently mitigated.

Noise from patrons in the beer garden has been calculated for normal and peak trading during night-time hours (23:00 – 07:00) and the noise impact is predicted to be significant. This impact should be avoided by ensuring that the new beer garden area is not used during night-time hours.

Report Code: E/C/FD



APPENDIX A

Site location plan showing noise monitoring locations

Site location plan showing measurement locations

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REVISIONS

- FIRST ISSUE

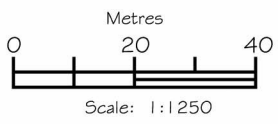
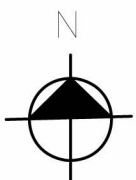
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Attended Location 1

Noise logger location

Attended Location 2



INDICATES SITE AREA

| | |
|---|--------------------------|
|  | |
| HARRISON INCE ARCHITECTS INTERIOR DESIGNERS | |
| client JD WETHERSPOON PLC | |
| project THE CROWN BERKHAMSTEAD | |
| title SITE PLAN | |
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| job no. PN 0473/2 | drawg. no. AS01 |
| drawn CAD/OC | checked |

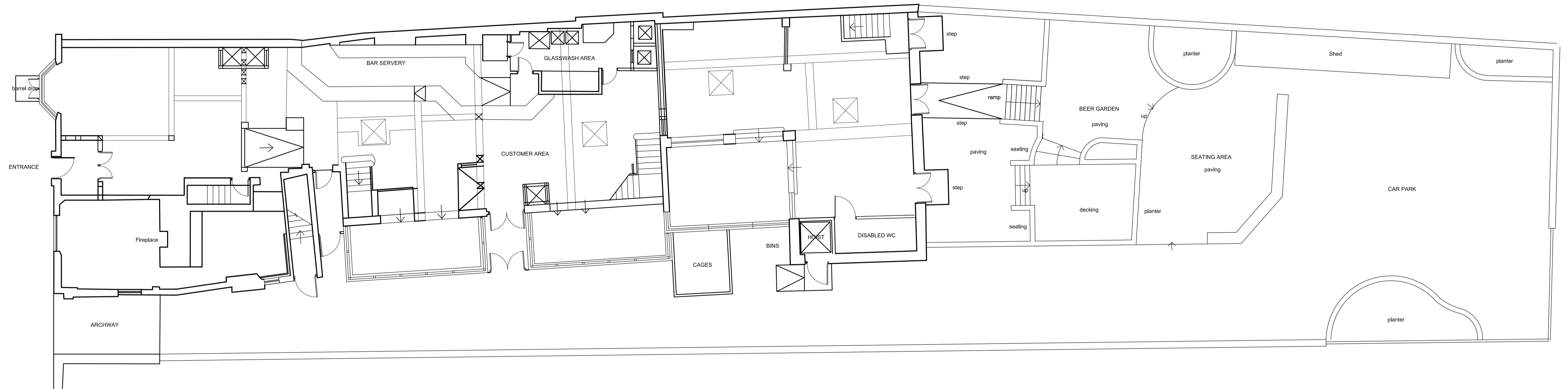
2, Jordan Street, Knott Mill
Manchester M15 4PP
Tel: 0161 238 9600
Fax: 0161 238 9997
E-Mail: enquiries@harrisonince.co.uk

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REVISIONS

– FIRST ISSUE


15.10.14 LB



EXISTING GROUND FLOOR PLAN



EXISTING PHOTOS

| | |
|--|-------------------------|
|  HARRISON INCE ARCHITECTS INTERIOR DESIGNERS | |
| client JD WETHERSPOON PLC | |
| project THE CROWN BERKHAMSTEAD | |
| title EXISTING BEER GARDEN | |
| date JAN 2014 | scale 1:100 @ A1 |
| job no. PN 0473/2 | dwg. no. AS05 |
| drawn CAD/OC | checked |

2, Jordan Street, Knott Mill
 Manchester, M20 4RT
 Tel: 0161 236 3650
 Fax: 0161 236 9997
 e-mail: info@harrison-ince.co.uk



A P P E N D I X B

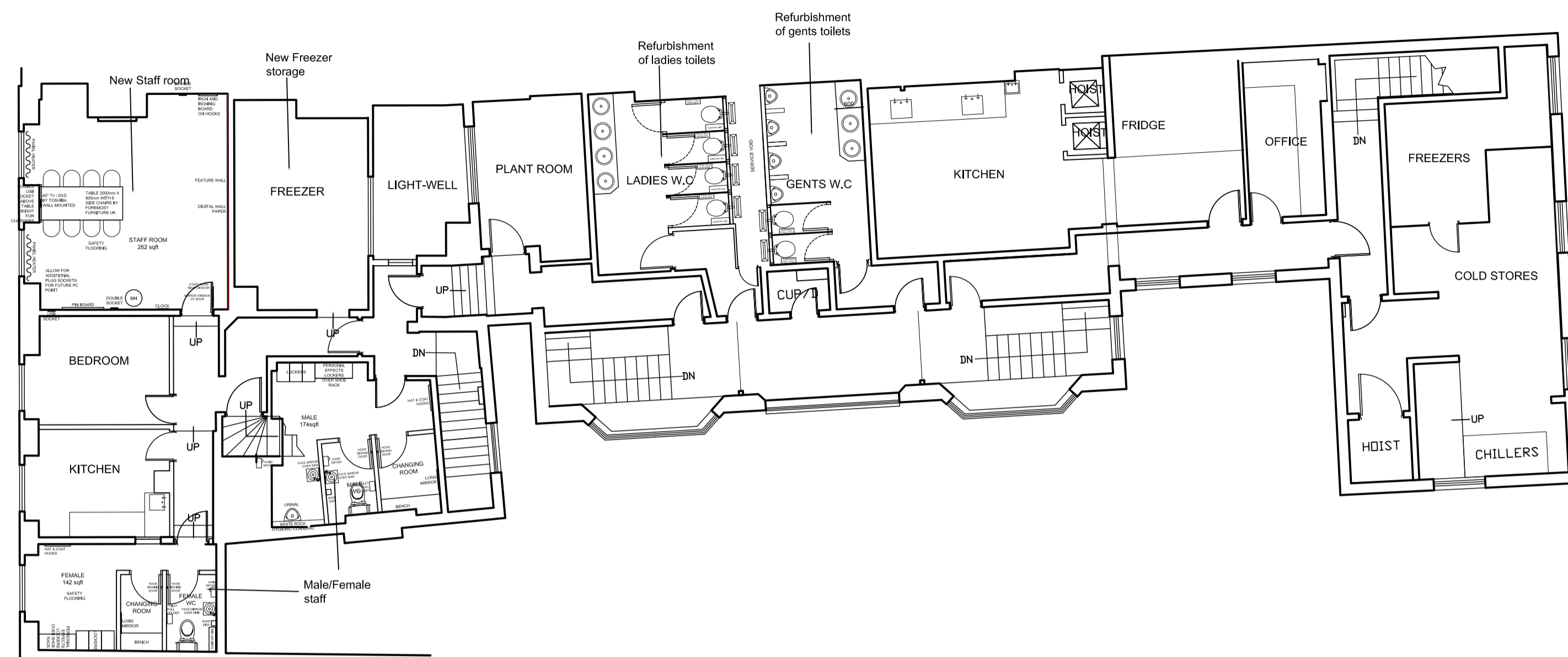
Proposed scheme drawings showing mitigation measures

Proposed beer garden layout

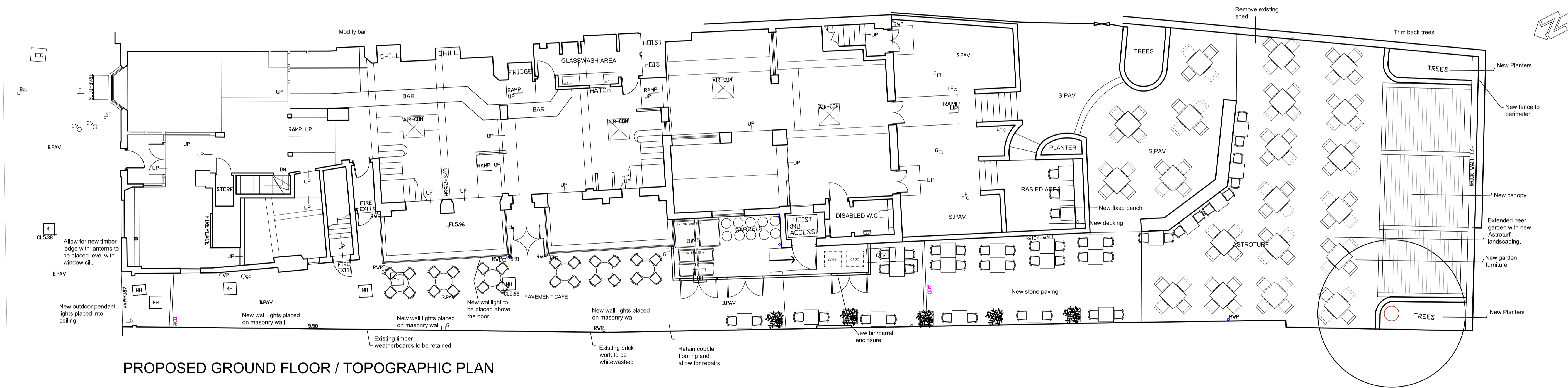
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REVISIONS

| | | | |
|---|------------------------------|----------|----|
| - | FIRST ISSUE | 03.10.13 | SA |
| A | ADDITIONAL INFORMATION ADDED | 16.12.13 | RS |
| B | CHANGED BEER GARDEN LAYOUT | 27.10.14 | LB |
| C | SCALE BAR ADDED | 05.11.14 | LB |
| D | LAYOUT AMENDED | 22.04.15 | LB |
| E | LAYOUT AMENDED | 05.08.15 | LB |



PROPOSED FIRST FLOOR PLAN



PROPOSED GROUND FLOOR / TOPOGRAPHIC PLAN

HARRISON INCE ARCHITECTS INTERIOR DESIGNERS

client **JD WETHERSPOON PLC**

project **THE CROWN BERKHAMSTEAD**

title **PROPOSED FLOOR PLANS**

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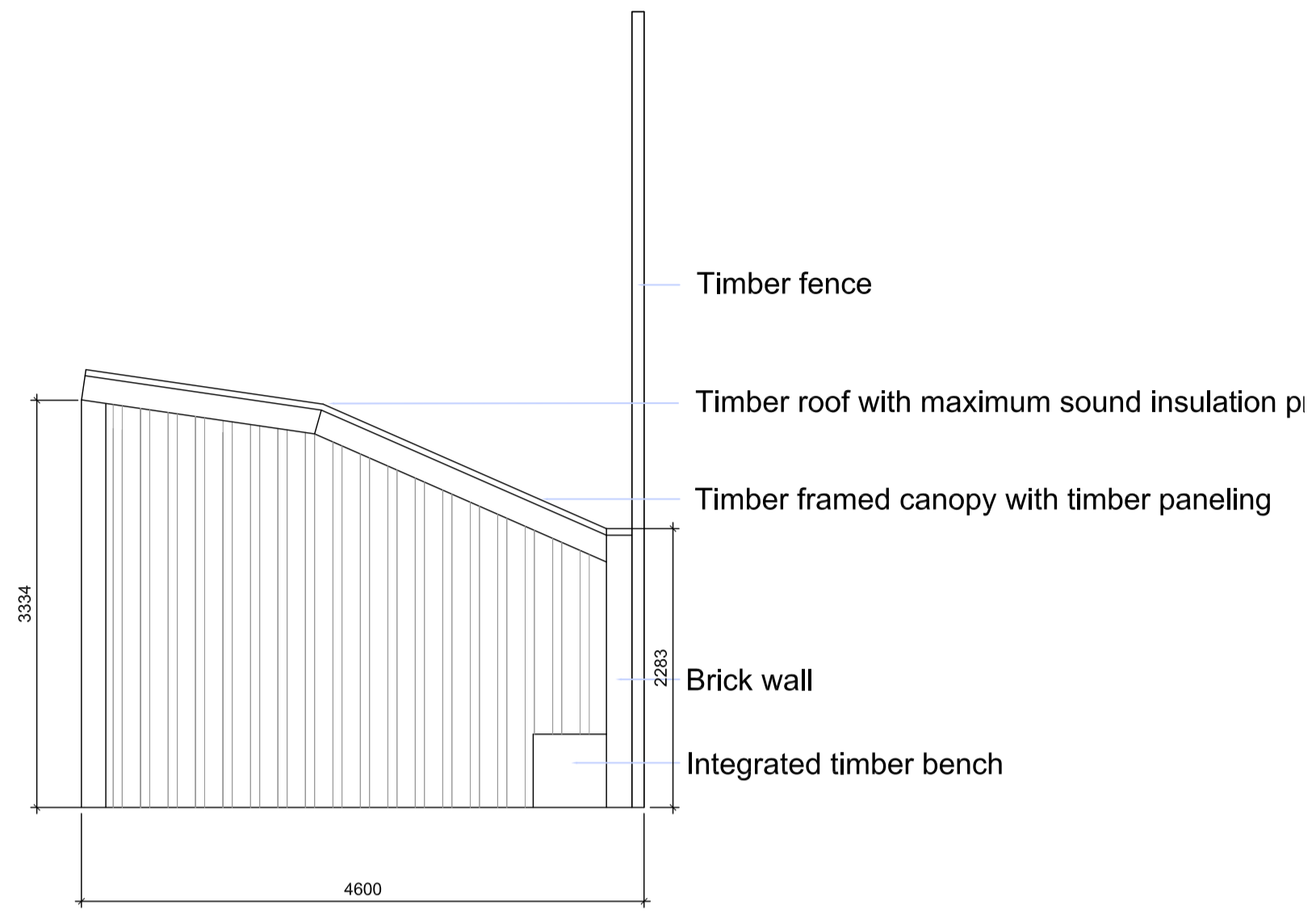
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Tel: 0161 236 3650
Fax: 0161 236 9997
e: info@harrisonince.co.uk

Proposed noise mitigation canopy

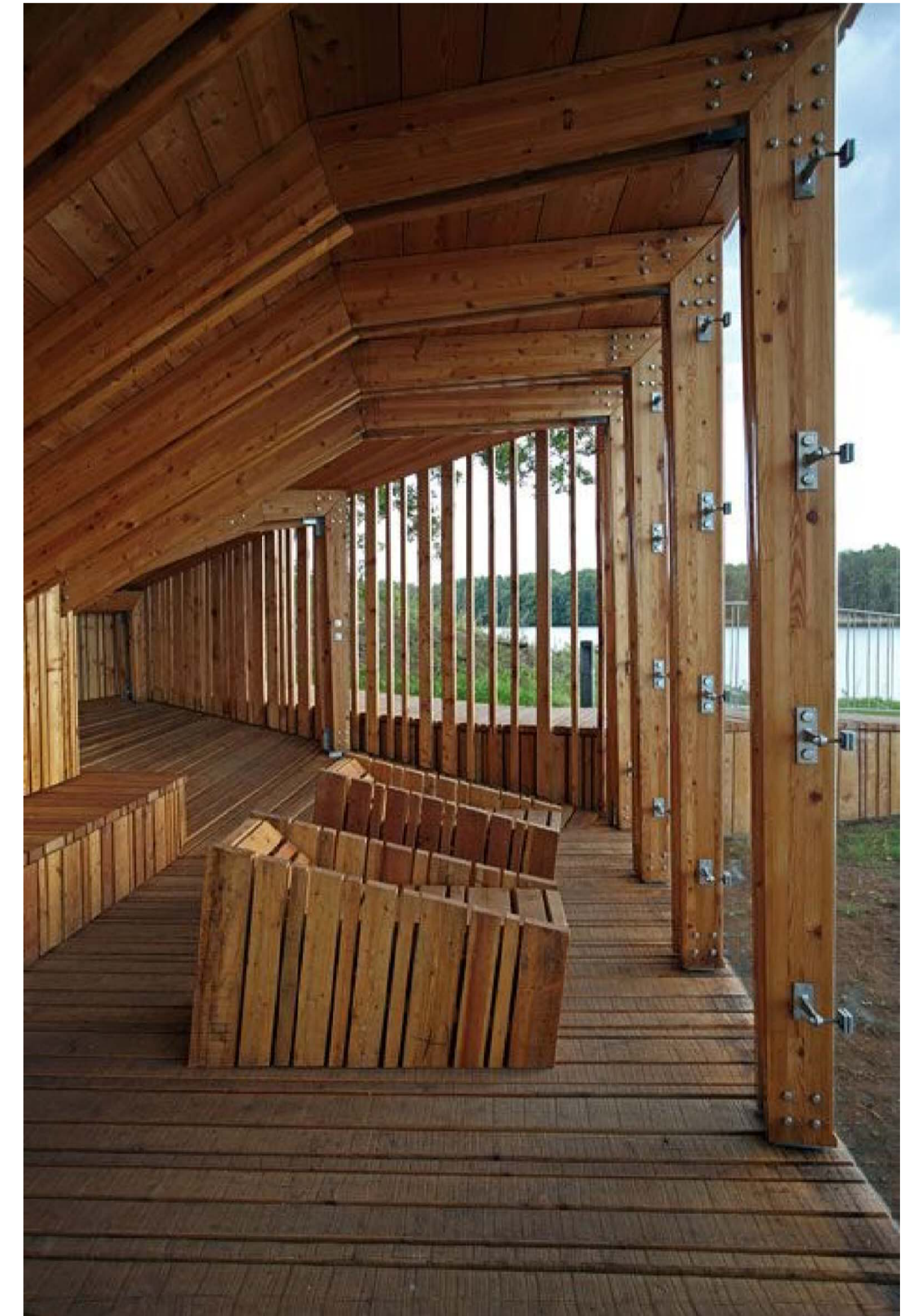
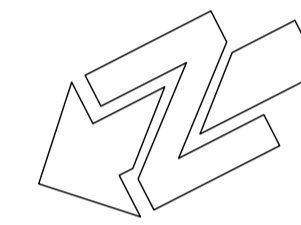
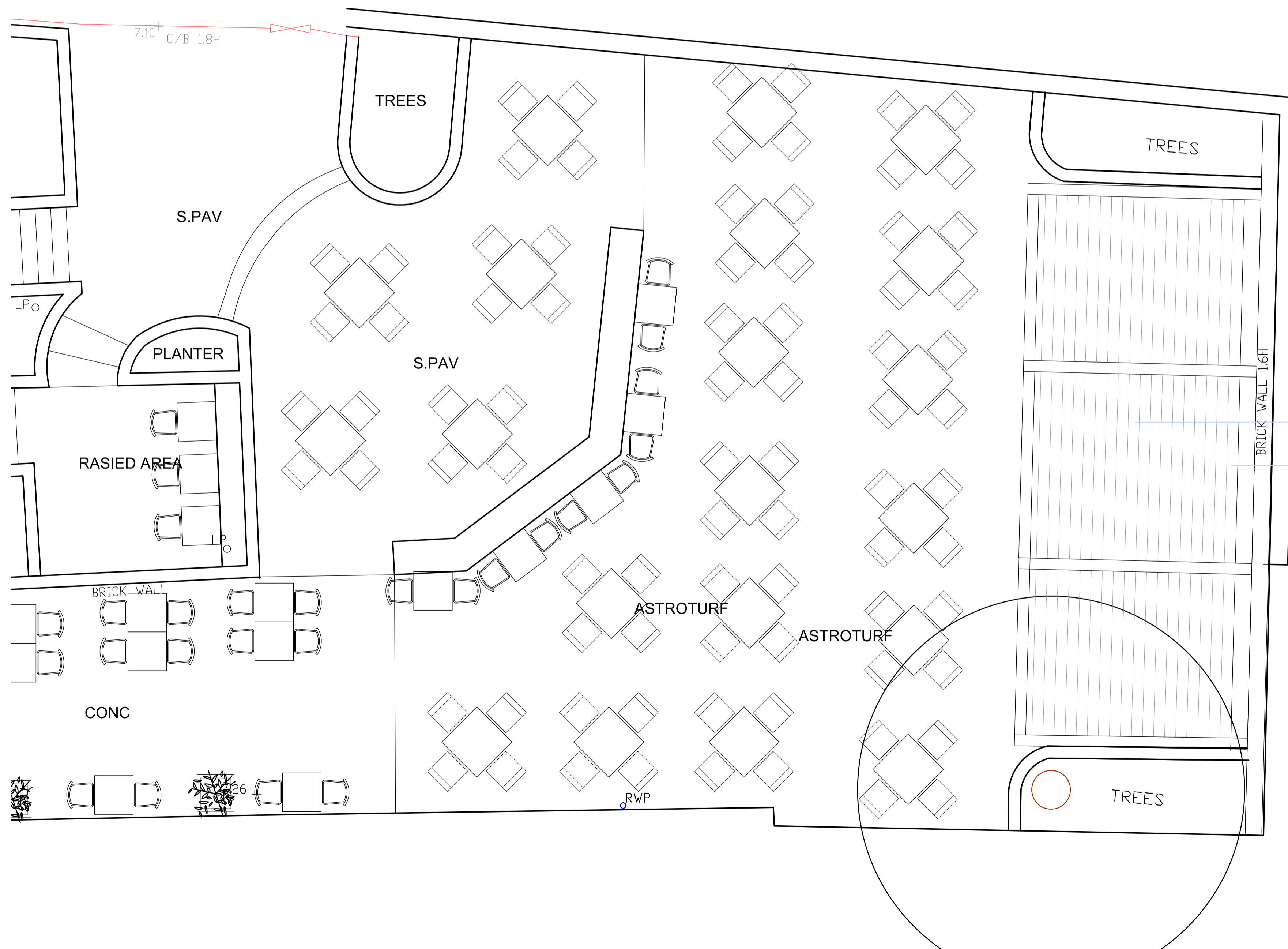
Do not scale off this drawing. All dimensions to be checked on site prior to manufacture and construction. This drawing is the property of Harrison Ince Partnership and should not be reproduced without permission. All discrepancies to be brought to the attention of the architect immediately. This drawing to be read in conjunction with the specification / bill of quantities and related drawings.

REVISIONS


| | | | |
|---|----------------|----------|----|
| - | FIRST ISSUE | 03.05.15 | LB |
| A | REVISED CANOPY | 06:08:14 | LB |



PROPOSED CANOPY SECTION



Timber roof with maximum sound insulat
Timber framed canopy with timber panel

| | |
|---|------------|
|  HARRISON INCE ARCHITECTS INTERIOR DESIGNERS | |
| client | |
| JD WETHERSPOON PLC | |
| project | |
| THE CROWN BERKHAMSTEAD | |
| title | |
| PROPOSED CANOPY DETAILS | |
| date | scale |
| OCT 2013 | 1:100 @ A1 |
| job no. | drwg. no. |
| PN 0473/2 | AD01 A |
| drawn | checked |
| CAD/SA | |

2, Jordan Street, Knott Mill
Manchester, M20 9WJ
Tel: 0161 256 3650
Fax: 0161 256 3697
E-mail: info@harrison-ince.co.uk



APPENDIX C

Environmental noise record sheets and noise logger chart



ENVIRONMENTAL NOISE RECORD SHEET

Location: Position 1 – In existing car park at J D Wetherspoon “The Crown” **Project:** 15173 – JDW The Crown, Berkhamsted
Date: 13th May 2015 **Instrumentation:** Bruel & Kjaer 2260/5
Calibration Times: 13:32, 14:29, 16:05, 18:09, 22:10, 23:52 **Plant Operating Condition:** n/a

| Date | Time | | Wind Speed m/s | Weather | | L10 | L50 | Noise Level dB(A) | | | | LAeq | Comments (Including description of noise (eg whine, hiss, rumble, impact, vehicle rain, vegetation, or animal noise). |
|------------|-------|-------------|----------------|------------|-----------|-----|-----|-------------------|------|------|----|--|--|
| | Start | Dur'n (Min) | | Wind Dir'n | Cloud (%) | | | L90 | LMAX | LMIN | | | |
| 13/05/2015 | 13:26 | 10:00 | 0-1 | - | 60 | 49 | 46 | 43 | 62 | 42 | 47 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads | |
| 13/05/2015 | 14:01 | 10:00 | 0-1 | - | 60 | 49 | 46 | 45 | 59 | 43 | 47 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads | |
| 13/05/2015 | 15:06 | 10:00 | 0-1 | - | 50 | 48 | 45 | 44 | 58 | 42 | 46 | Plant at JDW and the Kings Arms, distant voices, aircraft | |
| 13/05/2015 | 15:37 | 10:00 | 0-1 | - | 20 | 48 | 45 | 44 | 67 | 42 | 47 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads | |
| 13/05/2015 | 17:07 | 10:00 | 0-1 | - | 20 | 52 | 48 | 45 | 66 | 42 | 50 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads, aircraft | |
| 13/05/2015 | 17:40 | 10:00 | 0-1 | - | 20 | 51 | 47 | 44 | 62 | 40 | 49 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads | |
| 13/05/2015 | 19:17 | 10:00 | 0-1 | - | 0 | 51 | 47 | 45 | 64 | 43 | 49 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads, distant train | |

| Date | Time | dB(A) | Octave Band Pressure Level | | | | | | | | Comments | |
|------------|-------|-------|----------------------------|----|-----|-----|-----|----|----|----|----------|--|
| | | | 31 | 63 | 125 | 250 | 500 | 1k | 2k | 4k | | 8k |
| 13/05/2015 | 13:26 | 47 | 57 | 58 | 52 | 46 | 44 | 42 | 39 | 34 | 26 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads |
| 13/05/2015 | 14:01 | 47 | 57 | 59 | 53 | 47 | 44 | 41 | 38 | 33 | 27 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads |
| 13/05/2015 | 15:06 | 46 | 58 | 58 | 54 | 46 | 42 | 40 | 37 | 32 | 25 | Plant at JDW and the Kings Arms, distant voices, aircraft |
| 13/05/2015 | 15:37 | 47 | 56 | 55 | 52 | 46 | 44 | 42 | 39 | 34 | 26 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads |
| 13/05/2015 | 17:07 | 50 | 61 | 59 | 56 | 52 | 48 | 44 | 40 | 35 | 29 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads, aircraft |
| 13/05/2015 | 17:40 | 49 | 60 | 58 | 53 | 47 | 48 | 43 | 39 | 32 | 24 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads |
| 13/05/2015 | 19:17 | 49 | 56 | 58 | 55 | 48 | 46 | 44 | 40 | 34 | 28 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads, distant train |



ENVIRONMENTAL NOISE RECORD SHEET

Location: Position 1 – In existing car park at J D Wetherspoon “The Crown” **Project:** 15173 – JDW The Crown, Berkhamsted
Date: 13th May 2015 **Instrumentation:** Bruel & Kjaer 2260/5
Calibration Times: 13:32, 14:29, 16:05, 18:09, 22:10, 23:52 **Plant Operating Condition:** n/a

| Date | Time | | Wind Speed m/s | Weather | | L10 | L50 | Noise Level dB(A) | | | | LAeq | Comments (Including description of noise (eg whine, hiss, rumble, impact, vehicle rain, vegetation, or animal noise). |
|------------|-------|-------------|----------------|------------|-----------|-----|-----|-------------------|------|------|----|---|--|
| | Start | Dur'n (Min) | | Wind Dir'n | Cloud (%) | | | L90 | LMAX | LMIN | | | |
| 13/05/2015 | 19:45 | 10:00 | 0-1 | - | 0 | 56 | 49 | 45 | 72 | 43 | 53 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads | |
| 13/05/2015 | 21:06 | 10:00 | 0-1 | - | 0 | 50 | 46 | 44 | 62 | 42 | 48 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads | |
| 13/05/2015 | 21:37 | 10:00 | 0-1 | - | 0 | 52 | 47 | 44 | 64 | 42 | 50 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads, aircraft | |
| 13/05/2015 | 22:51 | 10:00 | 0-1 | - | 0 | 48 | 44 | 43 | 60 | 41 | 46 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads, aircraft | |

| Date | Time | dB(A) | Octave Band Pressure Level | | | | | | | | Comments | |
|------------|-------|-------|----------------------------|----|-----|-----|-----|----|----|----|----------|---|
| | | | 31 | 63 | 125 | 250 | 500 | 1k | 2k | 4k | | 8k |
| 13/05/2015 | 19:45 | 53 | 54 | 56 | 54 | 49 | 51 | 48 | 44 | 37 | 30 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads |
| 13/05/2015 | 21:06 | 48 | 52 | 58 | 53 | 47 | 46 | 43 | 40 | 34 | 27 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads |
| 13/05/2015 | 21:37 | 50 | 53 | 58 | 54 | 46 | 47 | 44 | 42 | 36 | 29 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads, aircraft |
| 13/05/2015 | 22:51 | 46 | 53 | 53 | 54 | 45 | 42 | 42 | 38 | 33 | 27 | Plant at JDW and the Kings Arms, voices in JDW beer garden, occasional traffic on surrounding roads, aircraft |



ENVIRONMENTAL NOISE RECORD SHEET

Location: Position 2 – In car park outside 1 to 6 Cavalier Court
Date: 13th May 2015
Calibration Times: 13:32, 14:29, 16:05, 18:09, 22:10, 23:52

Project: 15173 – JDW The Crown, Berkhamsted
Instrumentation: Bruel & Kjaer 2260/5
Plant Operating Condition: n/a

| Date | Time | | Wind Speed m/s | Weather | | L10 | L50 | Noise Level dB(A) | | | | LAeq | Comments (Including description of noise (eg whine, hiss, rumble, impact, vehicle rain, vegetation, or animal noise). |
|------------|-------|-------------|----------------|------------|-----------|-----|-----|-------------------|------|------|----|---|--|
| | Start | Dur'n (Min) | | Wind Dir'n | Cloud (%) | | | L90 | LMAX | LMIN | | | |
| 13/05/2015 | 13:44 | 08:50 | 0-1 | - | 70 | 50 | 45 | 42 | 61 | 41 | 47 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, birdsong, aircraft | |
| 13/05/2015 | 14:16 | 10:00 | 0-1 | - | 50 | 50 | 45 | 42 | 64 | 40 | 47 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road | |
| 13/05/2015 | 15:23 | 10:00 | 0-1 | - | 20 | 51 | 46 | 42 | 60 | 40 | 48 | Plant at JDW, voices on Chesham Road, occasional traffic on Chesham Road, vacuum cleaner at residential | |
| 13/05/2015 | 15:53 | 10:00 | 0-1 | - | 20 | 52 | 45 | 42 | 61 | 41 | 49 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, birdsong, aircraft | |
| 13/05/2015 | 17:22 | 08:13 | 0-1 | - | 20 | 51 | 45 | 43 | 57 | 41 | 48 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road | |
| 13/05/2015 | 17:54 | 10:00 | 0-1 | - | 20 | 51 | 46 | 43 | 60 | 42 | 48 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, distant train | |
| 13/05/2015 | 19:32 | 09:13 | 0-1 | - | 0 | 52 | 45 | 42 | 68 | 40 | 50 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, aircraft (including low-flying light aircraft) | |

| Date | Time | dB(A) | Octave Band Pressure Level | | | | | | | | Comments | |
|------------|-------|-------|----------------------------|----|-----|-----|-----|----|----|----|----------|---|
| | | | 31 | 63 | 125 | 250 | 500 | 1k | 2k | 4k | | 8k |
| 13/05/2015 | 13:44 | 47 | 57 | 59 | 53 | 48 | 44 | 41 | 39 | 32 | 21 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, birdsong, aircraft |
| 13/05/2015 | 14:16 | 47 | 57 | 57 | 52 | 47 | 44 | 42 | 38 | 31 | 21 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road |
| 13/05/2015 | 15:23 | 48 | 58 | 57 | 53 | 47 | 46 | 43 | 38 | 30 | 23 | Plant at JDW, voices on Chesham Road, occasional traffic on Chesham Road, vacuum cleaner at residential |
| 13/05/2015 | 15:53 | 49 | 61 | 60 | 55 | 50 | 46 | 43 | 39 | 32 | 23 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, birdsong, aircraft |
| 13/05/2015 | 17:22 | 48 | 57 | 57 | 53 | 46 | 45 | 44 | 39 | 32 | 24 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road |
| 13/05/2015 | 17:54 | 48 | 57 | 60 | 52 | 46 | 45 | 44 | 40 | 32 | 23 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, distant train |
| 13/05/2015 | 19:32 | 50 | 55 | 56 | 53 | 51 | 48 | 45 | 40 | 36 | 37 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, aircraft (including low-flying light aircraft) |



ENVIRONMENTAL NOISE RECORD SHEET

Location: Position 2 – In car park outside 1 to 6 Cavalier Court
Date: 13th May 2015
Calibration Times: 13:32, 14:29, 16:05, 18:09, 22:10, 23:52

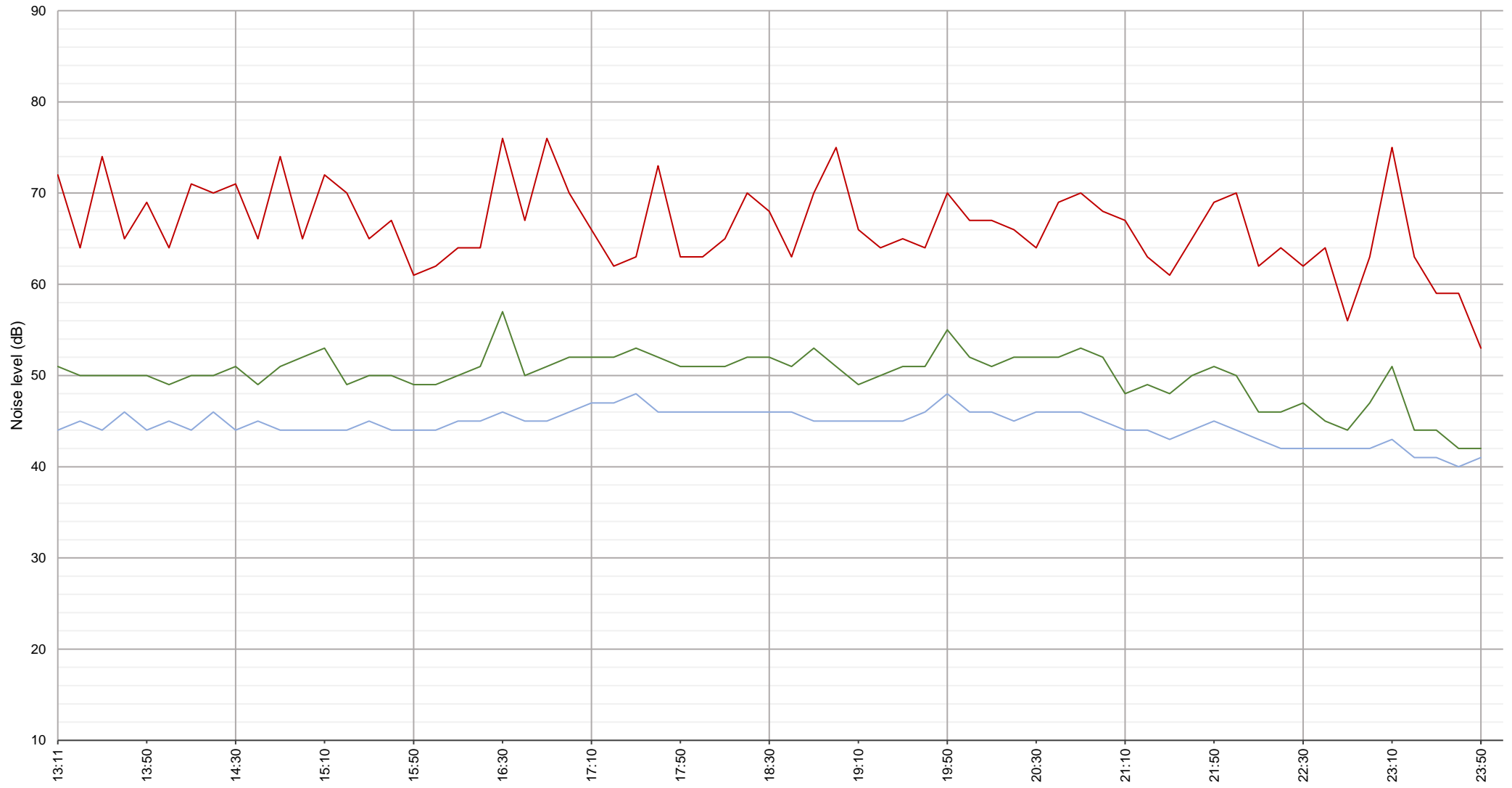
Project: 15173 – JDW The Crown, Berkhamsted
Instrumentation: Bruel & Kjaer 2260/5
Plant Operating Condition: n/a

| Date | Time | | Wind Speed m/s | Weather | | L10 | L50 | Noise Level dB(A) | | | | LAeq | Comments (Including description of noise (eg whine, hiss, rumble, impact, vehicle rain, vegetation, or animal noise). |
|------------|-------|-------------|----------------|------------|-----------|-----|-----|-------------------|------|------|----|---|--|
| | Start | Dur'n (Min) | | Wind Dir'n | Cloud (%) | | | L90 | LMAX | LMIN | | | |
| 13/05/2015 | 19:59 | 10:00 | 0-1 | - | 0 | 49 | 45 | 42 | 60 | 40 | 47 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, distant train (with horn), voices in garden at residential | |
| 13/05/2015 | 21:20 | 07:25 | 0-1 | - | 0 | 48 | 44 | 41 | 56 | 39 | 45 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, distant train (with horn), voices in garden at residential | |
| 13/05/2015 | 21:59 | 10:00 | 0-1 | - | 0 | 48 | 43 | 41 | 62 | 40 | 46 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, distant church bells | |
| 13/05/2015 | 23:11 | 10:00 | 0-1 | - | 0 | 47 | 41 | 40 | 64 | 38 | 47 | Plant at JDW, cleaning and tidying in JDW beer garden, occasional traffic on Chesham Road, aircraft | |

| Date | Time | dB(A) | Octave Band Pressure Level | | | | | | | | Comments | |
|------------|-------|-------|----------------------------|----|-----|-----|-----|----|----|----|----------|---|
| | | | 31 | 63 | 125 | 250 | 500 | 1k | 2k | 4k | | 8k |
| 13/05/2015 | 19:59 | 47 | 56 | 55 | 50 | 45 | 44 | 41 | 39 | 33 | 26 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, distant train (with horn), voices in garden at residential |
| 13/05/2015 | 21:20 | 45 | 54 | 56 | 49 | 45 | 44 | 41 | 36 | 30 | 21 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, distant train (with horn), voices in garden at residential |
| 13/05/2015 | 21:59 | 46 | 53 | 57 | 49 | 43 | 42 | 41 | 38 | 31 | 23 | Plant at JDW, voices in JDW beer garden, occasional traffic on Chesham Road, distant church bells |
| 13/05/2015 | 23:11 | 47 | 52 | 58 | 57 | 52 | 41 | 37 | 35 | 30 | 23 | Plant at JDW, cleaning and tidying in JDW beer garden, occasional traffic on Chesham Road, aircraft |

Noise levels at noise logger location - outside 8 to 11 Cavalier Court (3 May 2015)

— LAeq (dB) — LA90 (dB) — LAFMax (dB)



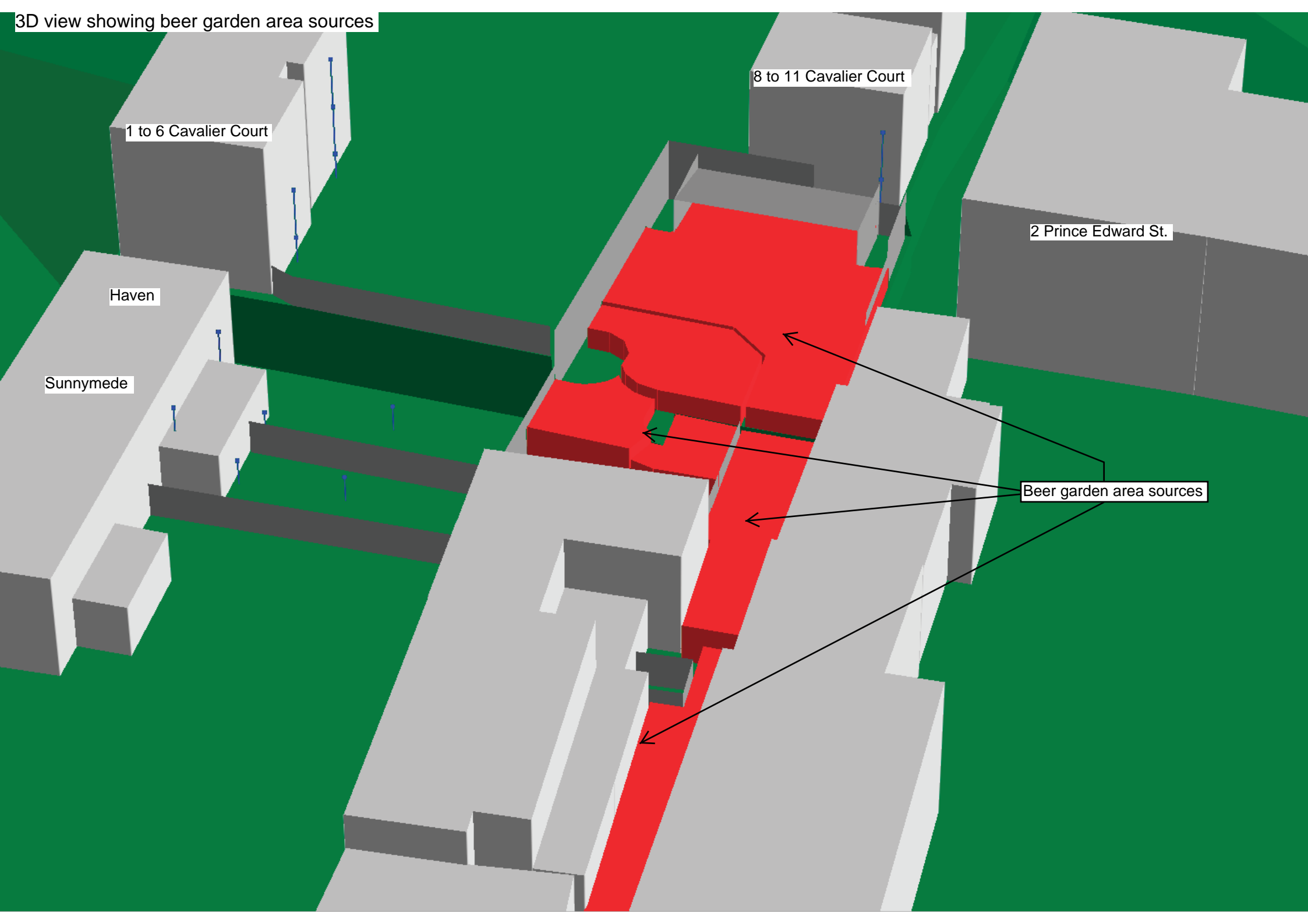
13 May 2015



A P P E N D I X D

Contour figures showing predicted noise levels from patrons in the beer garden

3D view showing beer garden area sources



1 to 6 Cavalier Court

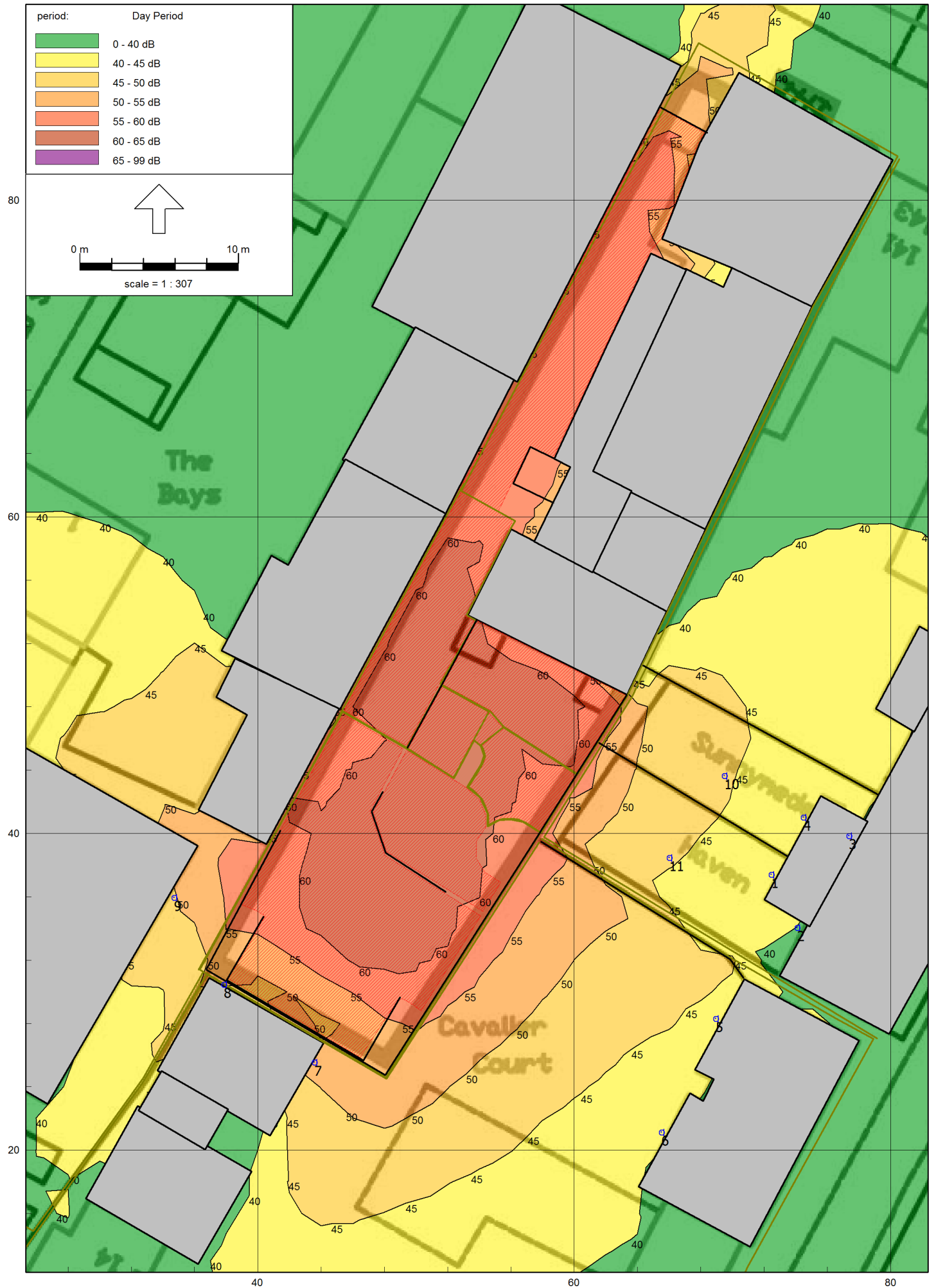
8 to 11 Cavalier Court

2 Prince Edward St.

Haven

Sunnymede

Beer garden area sources





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TELEPHONE: HEAD OFFICE: +44 (0)1767 318871 WIGAN: +44 (0)1257 473242