Noise Impact Assessment

Client: Joss Roberts

Site: Unit 4, Jaeger House, 141 Holt Road, Wrexham, LL13 9DY

Reference: 2808264

Revision: 0

Issued: 09/10/2026

Project Consultant

T. Brown BSc (Hons) MIOA
Acoustic Consultant
tom@acousticsurveys.co.uk

Executive Summary

A Noise Impact Assessment has been undertaken in relation to the proposed use of Unit 4, Jaeger House, 141 Holt Road, Wrexham, LL13 9DY, as a small-scale microbrewery and taproom.

The proposed development will incorporate a 500-litre brewing system and associated equipment located internally within the existing commercial unit, together with a taproom providing customer seating and background amplified music. A kitchen extraction system is also proposed, although the equipment specifications have not yet been finalised.

The nearest noise-sensitive receptors have been identified as residential properties at 2 Chanticleer Close (NSR 1) and 139 Holt Road (NSR 2).

An environmental noise survey was undertaken between 17 and 18 September 2026 to establish the prevailing noise climate. Representative background sound levels of 43 dB LA90 during the daytime period (09:00–20:00) and 36 dB LA90 during the evening period (20:00–23:00) have been established.

As detailed specifications for the proposed kitchen extraction system and any other external mechanical plant are not yet available, appropriate noise rating level limits have been established to inform the future equipment selection and design. Maximum cumulative rating levels of 43 dB LAr,Tr during the daytime and 36 dB LAr,Tr during the evening are recommended at the nearest noise-sensitive receptors. Subject to achieving these limits, a low noise impact would be expected in accordance with BS 4142:2014+A1:2019.

A qualitative assessment of noise associated with internal brewing operations, patrons, amplified background music, deliveries and vehicle movements has also been undertaken. Given the proposed scale of operations, the internal location of the principal noise-generating activities and the existing commercial nature of the surrounding area, these activities are considered unlikely to result in significant adverse noise impacts, subject to appropriate operational controls.

Overall, it is concluded that the proposed microbrewery and taproom can operate without significant adverse noise impacts at nearby residential properties, provided that external plant is designed to achieve the recommended noise limits and the premises operate in accordance with the assumptions and recommendations outlined in this report.

Contents

EXECUTIVE SUMMARY **2**

Contents *3*
Tables *4*
Figures *4*

1. INTRODUCTION **5**

Overview *5*
Scope & Objectives *5*

2. ENVIRONMENTAL NOISE SURVEY **6**

Measurement Methodology *6*
Site Description *7*
Context and Subjective Noise Climate *8*
Non-Representative Noise Sources *8*
Noise Sensitive Receptors *8*

3. ENVIRONMENTAL NOISE SURVEY RESULTS **9**

Measurement Results *9*

4. NOISE RATING LEVEL LIMIT – EXTERNAL PLANT **10**

Indicative Plant Noise Limit *10*

5. INTERNAL BREWERY EQUIPMENT **11**

6. PATRON NOISE **11**

7. INTERNAL AMPLIFIED MUSIC **12**

8. DELIVERIES AND VEHICLE MOVEMENTS **12**

9. CONCLUSION **13**

10. UNCERTAINTY **14**

APPENDIX A - MEASUREMENT DETAILS **15**

APPENDIX B - EQUIPMENT DETAILS **15**

APPENDIX C - CALIBRATION DETAILS **15**

APPENDIX D - METEOROLOGY DETAILS **16**

APPENDIX E - NOISE SURVEY RESULTS **17**

APPENDIX F - SITE PLANS **18**

APPENDIX G - LEGISLATION, POLICY & GUIDANCE **19**

Planning Policy Wales (Edition 12, 2024) *19*
Technical Advice Note (Wales) 11 – Noise (1997) *19*
Noise and Soundscape Plan for Wales 2023–2028 ..... *20*

BS4142:2014+A1:2019 ..... **20**

BS8233:2014 ..... **21**

APPENDIX H - ACOUSTIC TERMINOLOGY **22**

Tables

TABLE 1: SUBJECTIVE SUMMARY OF NOISE SOURCES 8
TABLE 2: M1 BACKGROUND NOISE SURVEY RESULTS 9
TABLE 3: MAX RATING LEVELS 10
TABLE 4: INDICATIVE MAX SOUND PRESSURE LEVEL AT 1M 10
TABLE 5: MEASUREMENT DATES 15
TABLE 6: MEASUREMENT EQUIPMENT DETAILS 15
TABLE 7: CALIBRATION DETAILS 15

Figures

FIGURE 1: SITE, SOURCE & NSR LOCATIONS - HTTPS://GOOGLE.CO.UK/MAPS 7
FIGURE 2: M1 BACKGROUND STATISTICAL ANALYSIS 9
FIGURE 3: SITE LOCATION MEASUREMENT PICTURES 15
FIGURE 4: METEOROLOGY DATA - HTTPS://WWW.TIMEANDDATE.COM/WEATHER 16
FIGURE 5: MEASURED BACKGROUND SOUND LEVELS TIME HISTORY (M1) 17
FIGURE 6: SITE PLANS PROVIDED BY 'FELGATE & PARTNERS' 18

1. Introduction

Overview

A Noise Impact Assessment has been undertaken in relation to the proposed use of Unit 4, Jaeger House, 141 Holt Road, Wrexham, LL13 9DY, as a small-scale microbrewery and taproom.

The proposed development will incorporate a 500-litre brewing system, with associated production equipment and plant located internally within the existing commercial unit. The premises will also include a taproom serving customers, with background amplified music potentially played through an internal speaker system. No live music performances or organised entertainment events are currently proposed.

The applicant has indicated that the premises will operate between 09:00 and 23:00, seven days a week, although the taproom may operate for shorter periods. The submitted plans do not identify any external beer garden or outdoor seating areas.

A kitchen extraction system is also proposed, although the equipment specifications and installation arrangements have not yet been finalised.

The assessment considers the potential noise impact associated with the proposed operations upon nearby residential properties, including noise from mechanical plant, internal brewing activities, patrons, amplified music, deliveries and vehicle movements.

Where detailed equipment specifications are not yet available, appropriate noise limits and operational recommendations have been established to minimise the potential for adverse impacts upon nearby noise-sensitive receptors.

Scope & Objectives

The scope of the noise assessment can be summarised as follows:

- Undertake an environmental noise monitoring survey to establish the prevailing ambient and background sound levels at locations representative of nearby noise-sensitive receptors, in accordance with BS 7445 – *Description and Measurement of Environmental Noise*;
- Identify the nearest noise-sensitive receptors and characterise the existing noise environment surrounding the development;
- Establish appropriate noise rating level limits for the future selection and design of the proposed kitchen extraction system and any other external mechanical plant, with reference to BS 4142:2014+A1:2019 – *Methods for rating and assessing industrial and commercial sound*;
- Undertake a qualitative assessment of the potential noise impacts associated with internal brewing equipment, patron activity, amplified background music, deliveries and vehicle movements;

- Consider the suitability of the proposed development in the context of relevant national planning policy and guidance, including Planning Policy Wales and Technical Advice Note (Wales) 11 – *Noise*; and
- Recommend appropriate design considerations and operational controls where necessary to minimise the potential for adverse noise impacts upon nearby residential properties.

Further information on the legislation can be found in **Appendix G.**

2. Environmental Noise Survey

Measurement Methodology

To establish the existing environmental noise levels on site, a noise survey was conducted from 17 – 18 September 2026. Measurements of $L_{Aeq,T}$ and $L_{A90,T}$ were logged in 5-minute intervals in accordance with BS7445 - *'Description and Measurement of Environmental Noise'*.

The unattended monitoring location (M1) was positioned to the western corner of the site at a height of approximately 2.5 metres.

The monitoring position is considered representative of sound levels at 'NSR 1' during the typical operational periods of the proposed development.

Further detail of the measurement along with site pictures is given in **Appendix A.**

Measurements were obtained using Class 1 instrumentation. Full equipment details are given in **Appendix B**.

Equipment was calibrated before and after use and no significant drift occurred during measurements. Up-to-date calibration certification can be provided upon request. Full calibration details are provided in **Appendix C.** A -3dB correction has been applied to measured data to account for proximity to the building façade.

Daytime temperatures during the survey were noted as between 12 - 16°C with wind speeds typically between 4 - 5m/s; deemed suitable for conducting environmental noise monitoring. Detailed meteorological information can be found in **Appendix D.**

The site, monitoring and NSR locations are shown in **Figure 1.**



Figure 1: Site, Source & NSR Locations - https://google.co.uk/maps

Site Boundary

Noise Sensitive Receptors (NSRs)

Background Monitoring Location M1

Site Description

The site is an located within an existing commercial / industrial unit on Holt Road. Adjacent uses include a mobility centre and children's play centre. There are houses to the south, east and west of the site and a large playing field and school to the north.

Context and Subjective Noise Climate

Noise Source	Description	Time of Observation	Photo
Road	Medium road noise to the front of the site from cars, vans, HGV's etc	Intermittent during site visits	
Existing Plant	Extract system running on building next-door	Constant during site visits	
Car Park	Vehicles using car park at the front of the site	Intermittent vehicle movements	

Table 1: Subjective Summary of Noise Sources

Non-Representative Noise Sources

During the survey, no noise events occurred which would be deemed as atypical of the site location.

Noise Sensitive Receptors

The nearest or most-affected Noise Sensitive Receptors (NSRs) were identified as 2 Chanticleer Close (NSR 1) and 139 Holt Road (NSR 2).

3. Environmental Noise Survey Results

Measurement Results

The site is proposed to operate between 9am and 11pm every day.

The day and night-time background sound levels from measurement M1 are summarised below.

Measurement	Date(s)	Period	$L_{Aeq,T}$	$L_{A90,T}$
M1	17 & 18 September 2026	Daytime (07:00 – 23:00)	57	43
	17 & 18 September 2026	Night-time (23:00 – 07:00)	49	31

Table 2: M1 Background Noise Survey Results

A full-time history of the survey data is shown in **Appendix E.**

For the derivation of a representative daytime background sound level, data from the relevant daytime period between 9am and 8pm has been analysed.

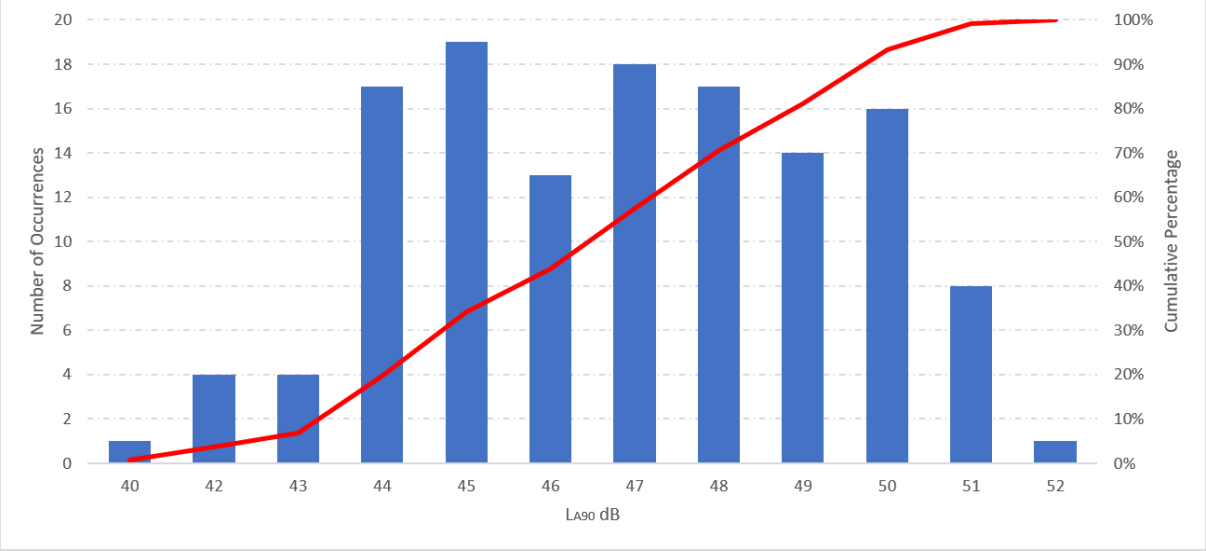


Figure 2: M1 Background Statistical Analysis

From the statistical analysis of the M1 measurements, a representative background sound level of 43 dB LA90 has been selected for the daytime period between 09:00 and 20:00.

For the evening period between 20:00 and 23:00, a separate statistical analysis has been undertaken to account for the reduction in background sound levels towards the end of the proposed operating period. A representative background sound level of 36 dB LA90 has been selected, which was exceeded for approximately 75% of the evening measurement period.

These levels have been adopted to establish appropriate noise rating level limits for the proposed external plant.

4. Noise Rating Level Limit – External Plant

At the time of the assessment, detailed specifications and locations of the proposed kitchen extraction system and any other external mechanical plant were not available. As such, a quantitative assessment of specific plant noise emissions cannot be undertaken. Instead, appropriate noise limits have been established to inform the future selection and design of external plant.

In accordance with BS 4142:2014+A1:2019, it is recommended that the cumulative rating level from all external plant associated with the development should not exceed the representative background sound level at the nearest noise-sensitive receptors.

Based on the results of the environmental noise survey, representative background sound levels of 43 dB LA90 during the daytime period (09:00–20:00) and 36 dB LA90 during the evening period (20:00–23:00) have been established.

The recommended rating level limits for external plant are therefore as follows:

Period	Representative Background Sound Level	Maximum Rating Level
Daytime (09:00 – 20:00)	43 dB LA90	43 dB LAr, Tr
Evening (20:00 – 23:00)	36 dB LA90	36 dB LAr, Tr

Table 3: Max Rating Levels

These limits apply to the cumulative noise emissions from all external mechanical plant operating simultaneously during the respective periods.

Indicative Plant Noise Limit

For preliminary design purposes, indicative maximum sound pressure levels at 1 metre from external plant can be established based on the separation distance to the nearest residential receptors.

Assuming a minimum separation distance of approximately 30 metres, free-field distance attenuation of approximately 20 dB would be expected. Allowing a provisional acoustic character correction of +5 dB for potential tonal, impulsive or intermittent characteristics, this would result in the following indicative maximum plant sound pressure levels:

Period	Maximum Rating Level at NSR	Indicative Maximum Sound Pressure Level at 1m
Daytime (09:00 – 20:00)	43 dB LAr, Tr	58 dBA
Evening (20:00 – 23:00)	36 dB LAr, Tr	51 dBA

Table 4: Indicative Max Sound Pressure Level at 1m

These indicative limits assume a single plant source operating under free-field conditions. Actual noise propagation will depend on the final location, installation arrangement, directivity, screening and acoustic characteristics of the equipment. Where multiple plant items are installed, their cumulative contribution must be considered.

The proposed kitchen extraction system and any other external plant should therefore be selected and designed to achieve the recommended rating level limits at the nearest noise-sensitive receptors.

Acoustic attenuation, including silencers or other mitigation measures, should be incorporated where necessary.

Subject to the final plant installation achieving these limits, a low noise impact would be expected in accordance with BS 4142:2014+A1:2019.

5. Internal Brewery Equipment

The proposed development will incorporate a small-scale microbrewery utilising a 500-litre brewing system, with associated production equipment and plant located internally within the existing building.

The operation is understood to be relatively small-scale, with brewing activities undertaken entirely within the premises. No external brewing plant or associated equipment has been identified as part of the proposals.

Noise generated by the brewing equipment will be attenuated by the external walls and roof of the existing building before propagating towards nearby noise-sensitive receptors. Given the internal location of the equipment, the separation distances to the nearest residential properties and the existing commercial nature of the surrounding area, noise associated with the brewing operations is not expected to result in significant adverse impacts at nearby residential properties.

This assessment assumes that brewing activities will be undertaken with external doors and windows closed where practicable, particularly during noisier operations. Any ventilation openings or external equipment associated with the brewing process should be designed to ensure that noise emissions remain within the limits established in Section 4.

On this basis, noise from the proposed internal brewing operations is considered unlikely to result in a significant adverse impact on the amenity of nearby residential receptors.

6. Patron Noise

The proposed development will incorporate a taproom serving customers within the existing commercial unit. Noise associated with the taproom is expected to consist primarily of customer conversation and general activity within the premises.

The submitted site plans do not identify any external beer garden or outdoor seating areas, and it is therefore understood that customer activity will be principally contained within the building.

Noise generated by patrons within the taproom will be attenuated by the external building envelope before reaching nearby residential properties. The site is also located within an established commercial area, with existing activity associated with neighbouring businesses and traffic movements along Holt Road.

Some noise may arise from customers arriving at and leaving the premises, particularly during the evening. However, such activity is expected to be intermittent and relatively short in duration, rather than a continuous source of noise.

To minimise the potential for disturbance, it is recommended that external doors and windows remain closed where practicable, particularly during the evening, and that customers are encouraged to leave the premises quietly.

Taking account of the proposed scale of the operation, the internal nature of the taproom and the existing noise environment, patron noise is considered unlikely to result in significant adverse impacts at nearby residential properties, provided the premises are operated in accordance with the assumptions outlined above.

7. Internal Amplified Music

The proposed taproom may incorporate amplified background music played through an internal speaker system. The applicant has confirmed that no live music performances or organised entertainment events are currently proposed.

Music is understood to be intended as background entertainment, rather than a principal activity of the premises. As such, music levels are expected to remain relatively low, allowing normal conversation between customers.

Noise from internally amplified music will be attenuated by the existing building envelope before propagating towards nearby residential properties. The premises are located within an established commercial area, with existing road traffic and commercial activity contributing to the prevailing noise environment.

To minimise the potential for disturbance, it is recommended that music volume levels are appropriately controlled and that external doors and windows remain closed while amplified music is being played, particularly during the evening.

The assessment assumes that the premises will not operate as a nightclub or dedicated live music venue and that high-level amplified entertainment will not take place.

Subject to these operational controls, amplified background music within the taproom is considered unlikely to result in significant adverse noise impacts at nearby residential properties.

8. Deliveries and Vehicle Movements

The proposed development will generate vehicle movements associated with deliveries, staff and customers attending the premises.

Deliveries to the microbrewery are expected to consist primarily of brewing ingredients, packaging materials and other general supplies, transported by vans and delivery vehicles as required. Given the relatively small scale of the proposed brewing operation, delivery activity is not expected to be particularly frequent.

The site is situated within an established commercial area, where vehicle movements and deliveries already form part of the existing noise environment. Road traffic along Holt Road and movements associated with neighbouring commercial premises were observed during the environmental noise survey.

Noise associated with deliveries is expected to consist primarily of vehicle arrivals and departures, loading and unloading activities and occasional engine noise. These activities are anticipated to be intermittent and relatively short in duration.

To minimise the potential for disturbance, it is recommended that deliveries and associated loading and unloading activities are undertaken during normal daytime working hours wherever practicable, avoiding the early morning and late evening periods.

Customer and staff vehicle movements are also expected to be intermittent and are unlikely to materially alter the existing noise environment, given the established commercial use of the surrounding area.

Taking account of the proposed scale of operations, the existing commercial setting and the intermittent nature of the anticipated vehicle movements, noise associated with deliveries and vehicles is considered unlikely to result in significant adverse impacts at nearby residential properties.

9. Conclusion

A Noise Impact Assessment has been undertaken in relation to the proposed use of Unit 4, Jaeger House, 141 Holt Road, Wrexham, as a small-scale microbrewery and taproom.

An environmental noise survey was undertaken between 17 and 18 September 2026 to establish the prevailing noise climate at nearby noise-sensitive receptors. Representative background sound levels of 43 dB LA90 for the daytime period (09:00–20:00) and 36 dB LA90 for the evening period (20:00–23:00) have been established.

As details of the proposed kitchen extraction system and any other external mechanical plant are not yet available, maximum cumulative rating level limits of 43 dB LAr,Tr during the daytime and 36 dB LAr,Tr during the evening have been recommended at the nearest noise-sensitive receptors. These limits are intended to inform the future selection and design of equipment, with appropriate acoustic mitigation incorporated where necessary. Compliance with these limits would be indicative of a low noise impact in accordance with BS 4142:2014+A1:2019.

The proposed brewing equipment will be located internally within the existing building, with noise emissions attenuated by the building envelope. Given the relatively small scale of the operation, the internal location of the equipment and the surrounding commercial environment, noise from the brewing activities is considered unlikely to result in significant adverse impacts.

Noise associated with patrons, amplified background music, deliveries and vehicle movements has also been considered. These activities are expected to be relatively limited in scale, with the principal customer activities and music taking place internally. Appropriate operational controls have been recommended to minimise the potential for disturbance, particularly during the evening.

Overall, it is considered that the proposed microbrewery and taproom can operate without significant adverse noise impacts at nearby residential properties, subject to the external plant achieving the recommended noise rating level limits and the premises operating in accordance with the assumptions and recommendations outlined within this report.

10. Uncertainty

Uncertainty in the assessment arises from the measurement of existing background sound levels, the assumptions regarding the proposed operations and the absence of detailed specifications for the proposed mechanical plant.

Environmental noise measurements were undertaken using Class 1 sound level monitoring equipment. The equipment was calibrated before and after the survey, with no significant calibration drift identified. Measurements were undertaken during weather conditions considered suitable for environmental noise monitoring.

Background sound levels naturally fluctuate over time depending on local activity, traffic movements and other environmental factors. Representative background sound levels have been selected through statistical analysis of the measured data, with separate values adopted for the daytime and evening operating periods to account for variations in the prevailing noise climate.

As the specifications and final locations of the proposed kitchen extraction system and any other external mechanical plant are not yet available, the assessment establishes recommended noise rating level limits rather than predicting actual noise emissions. The indicative plant sound pressure limits are based on assumed separation distances, free-field propagation and a provisional correction for acoustic characteristics. Actual noise levels will depend on the final equipment selection, installation arrangements, screening and any acoustic attenuation incorporated into the design.

The assessment of internal brewing activities, patron noise, amplified music and vehicle movements is qualitative, based on the operational information provided by the applicant. The actual noise impact will depend on the nature and intensity of these activities, the acoustic performance of the building envelope and adherence to the operational recommendations outlined in this report.

These uncertainties have been considered in the assessment, and the conclusions are subject to the proposed development operating in accordance with the stated assumptions and the external plant achieving the recommended noise rating level limits.

APPENDIX A - Measurement Details

Measurement	Kit	Start Date	Start Time	End Date	End Time
M1	3	17/09/2026	10:30	18/09/2026	13:20

Table 5: Measurement Dates



Figure 3: Site Location Measurement Pictures

APPENDIX B - Equipment Details

Kit	Equipment	Make	Model	Class	Serial Number
3	Sound Meter	Svantek	977	1	45494
	Pre-Amp	Svantek	SV12L	1	49995
	Microphone	ACO	7052E	1	72673
	Calibrator	Svantek	SV33	1	90107

Table 6: Measurement Equipment Details

APPENDIX C - Calibration Details

Measurement	Calibrator Ref Level (dB)	Deviation Before (dB)	Deviation After (dB)
M1	113.60	0.05	0.19

Table 7: Calibration Details

APPENDIX D - Meteorology Details

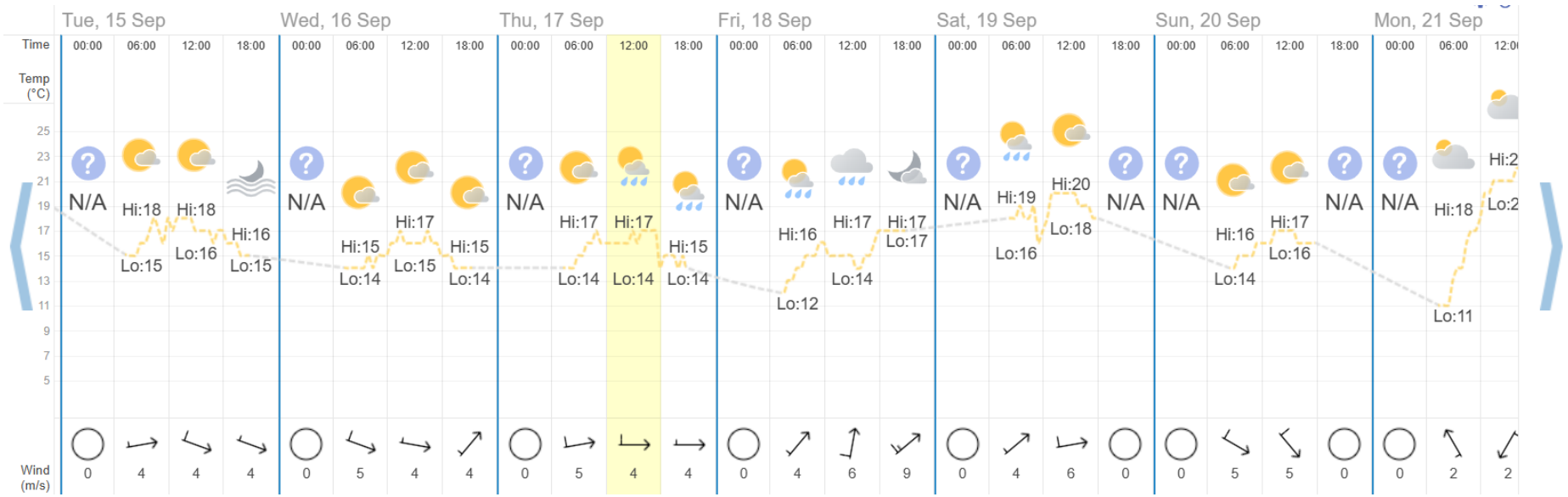


Figure 4: Meteorology Data - https://www.timeanddate.com/weather

APPENDIX E - Noise Survey Results

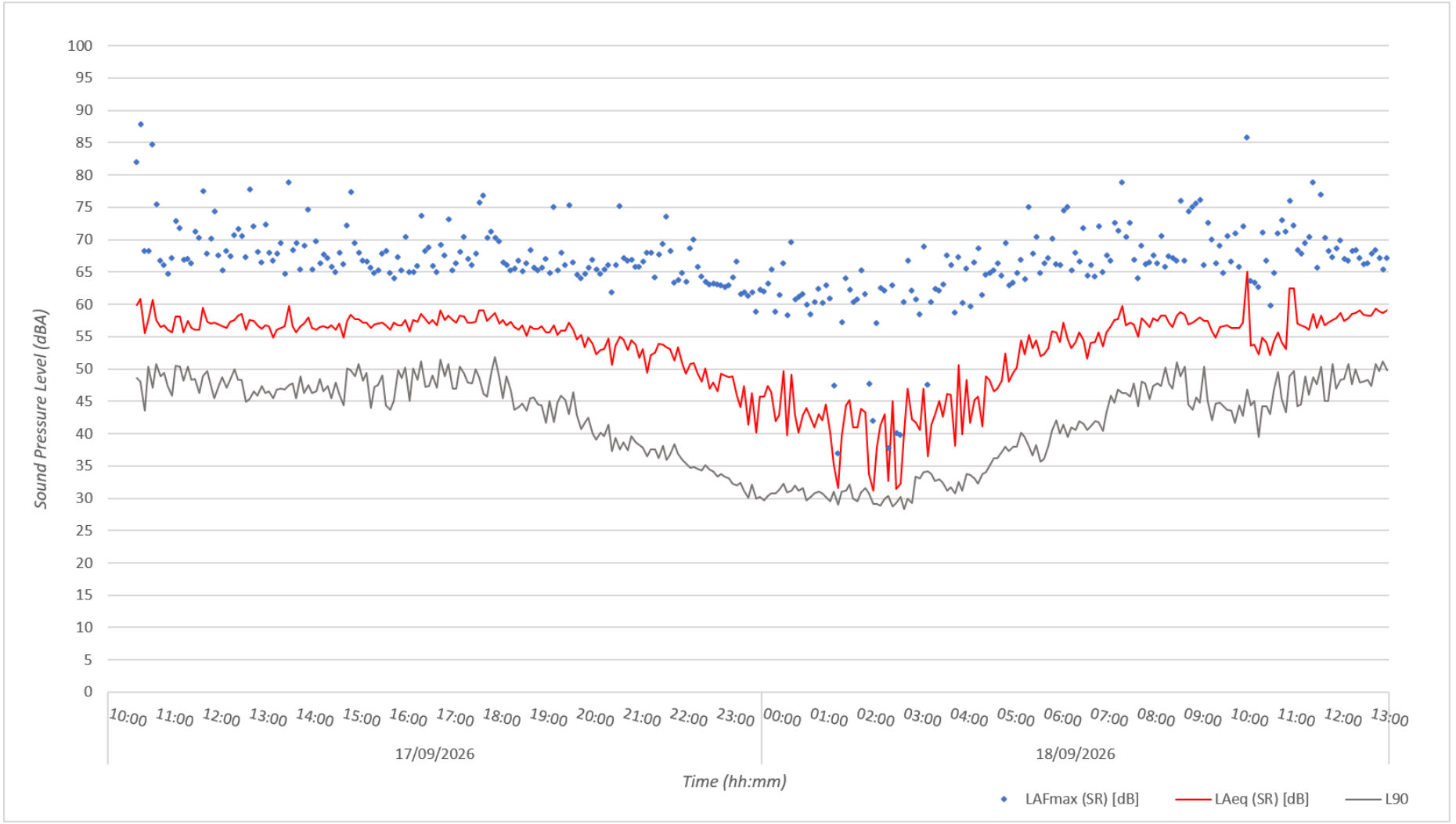


Figure 5: Measured Background Sound Levels Time History (M1)

APPENDIX F - Site Plans

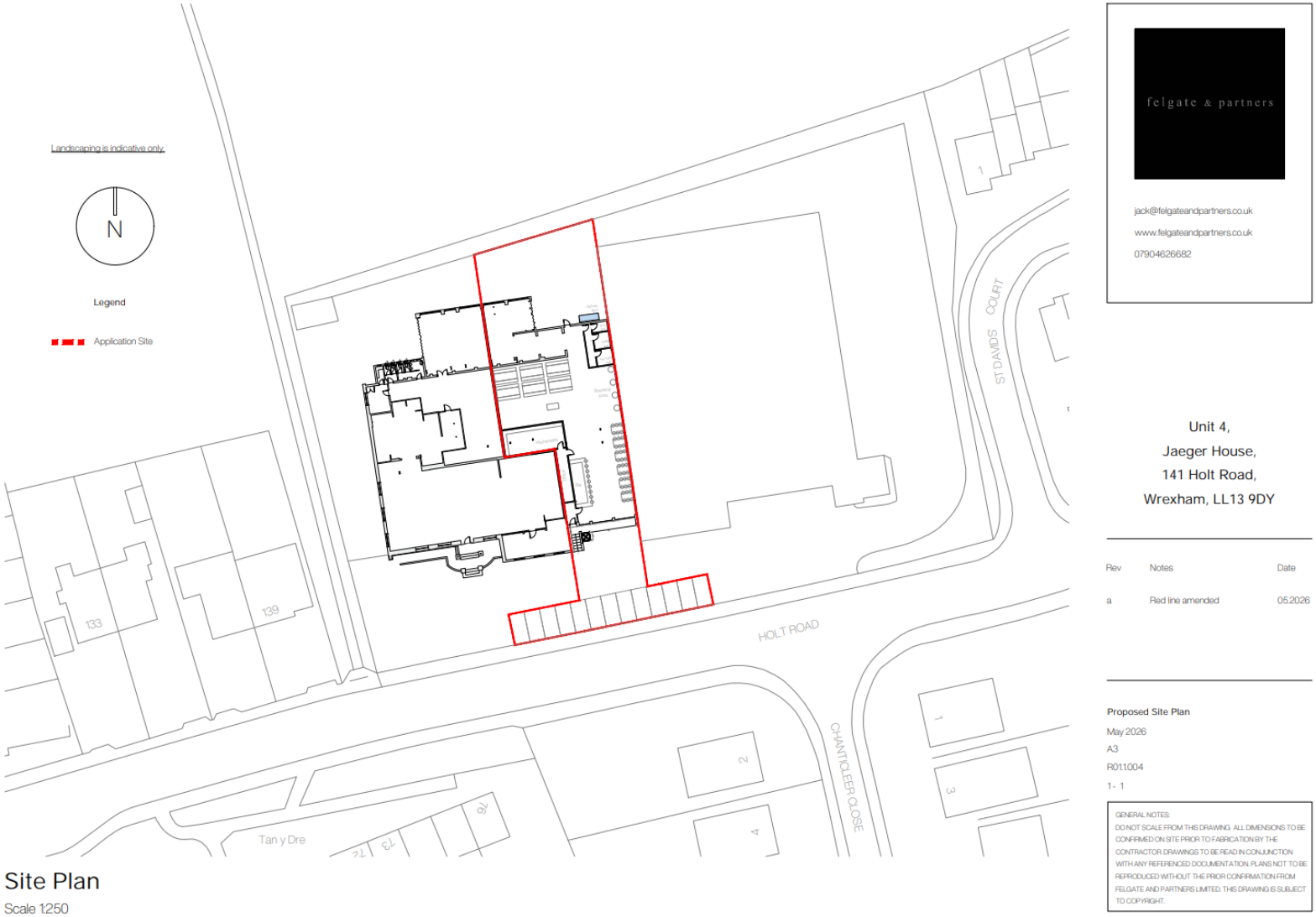


Figure 6: Site Plans Provided by 'Felgate & Partners'

APPENDIX G - Legislation, Policy & Guidance

Planning Policy Wales (Edition 12, 2024)

Planning Policy Wales (PPW) sets out the Welsh Government's national land-use planning policies and provides guidance on the consideration of environmental effects associated with proposed developments.

Section 6.7 of PPW addresses air quality and soundscape, recognising that noise can affect residential amenity, health and well-being.

Paragraph 6.7.3 identifies that noise pollution can adversely affect amenity and that the planning system has an important role in protecting people from noise impacts, including those which may not constitute a statutory nuisance.

Paragraphs 6.7.4 and 6.7.5 establish the importance of reducing exposure to noise pollution and considering both the effects of proposed developments on the existing sound environment and the effects of the existing sound environment on proposed developments.

The assessment of the proposed development has therefore considered the potential for noise associated with the microbrewery and taproom to affect the amenity of surrounding residential properties.

Technical Advice Note (Wales) 11 – Noise (1997)

Technical Advice Note (TAN) 11 provides guidance on the consideration of noise within the planning process, including the assessment of noise-generating developments and appropriate measures to minimise adverse impacts.

Paragraph 8 states that local planning authorities should ensure that noise-generating development does not cause an unacceptable degree of disturbance.

Paragraph 9 identifies that the characteristics of noise, as well as its absolute level, should be considered when assessing potential impacts. Particular consideration should be given to noise containing distinctive tonal, impulsive or irregular characteristics.

Paragraph 11 identifies a range of measures which may be employed to reduce noise impacts, including engineering controls, appropriate site layout, restrictions on operating hours and the specification of acceptable noise limits.

Annex B provides guidance on the assessment of noise from different sources, including industrial and commercial activities.

Paragraph B18 specifically recognises that commercial premises such as public houses and restaurants can present particular noise considerations, especially during evening periods. It identifies the need to consider noise generated within premises, customer activity in the surrounding area and associated vehicle movements.

In accordance with this guidance, the assessment considers noise from mechanical plant, internal brewing operations, customer activity, amplified background music, deliveries and associated vehicle movements.

Noise and Soundscape Plan for Wales 2023–2028

The Noise and Soundscape Plan for Wales 2023–2028 sets out the Welsh Government's national strategy for managing noise and improving the quality of sound environments.

The strategy recognises the importance of protecting health and well-being from unwanted noise while supporting appropriate development and maintaining suitable soundscapes.

The principles of the strategy have been considered through the assessment of potential noise impacts upon nearby residential properties and the identification of appropriate design limits and operational recommendations.

BS4142:2014+A1:2019

BS 4142:2014+A1:2019 – *Methods for rating and assessing industrial and commercial sound* provides a methodology for assessing the potential impact of industrial and commercial sound upon nearby noise-sensitive receptors.

The assessment method considers the difference between the rating level of the specific sound source and the representative background sound level, together with the context in which the sound occurs.

The rating level incorporates appropriate corrections to account for identifiable acoustic characteristics such as tonality, impulsivity, intermittency or other distinctive features.

The standard indicates that:

- A rating level at or below the background sound level is indicative of a low impact, depending on the context.
- A rating level approximately 5 dB above the background sound level is likely to indicate an adverse impact, depending on the context.
- A rating level approximately 10 dB above the background sound level is likely to indicate a significant adverse impact, depending on the context.

The significance of the impact depends upon both the difference between the rating and background sound levels and the context in which the sound occurs.

For the proposed development, BS 4142 has been used to inform the recommended noise rating level limits for the future selection and design of external mechanical plant.

BS8233:2014

BS8233:2014 - *Guidance on sound insulation and noise reduction for buildings* suggests indoor ambient noise levels for dwellings in Table 4, Section 7.7.2. These are summarised below.

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

These guideline values relate to internal ambient noise levels and provide general context for the consideration of residential amenity.

The guidelines are not intended to serve as direct external noise limits for industrial plant or commercial operations, which are more appropriately considered using source-specific assessment methods.

APPENDIX H - Acoustic Terminology

To aid the understanding of acoustic terminology and the relative difference between noise levels the following background information is provided.

We perceive sound when the ear detects fluctuations in air pressure (sound waves), which are then processed by the brain and perceived as sound. Humans can hear an incredibly wide range of sound intensities ranging from jet engines to fingertips lightly brushing against each other. This range is quantified using a logarithmic scale called the decibel scale (dB). The comfortable range of the decibel scale typically ranges from 0dB (the threshold of hearing) to around 140dB. Here are some examples of common environments and their typical noise levels.

Noise Level	Environment
0 dB(A)	Threshold of hearing
20 to 30 dB(A)	Quiet bedroom at night
30 to 40 dB(A)	Living room during the day
40 to 50 dB(A)	Typical office
50 to 60 dB(A)	Inside a moving car
60 to 70 dB(A)	Typical high street
100 to 110 dB(A)	Fire alarm at 1 metre away
140 dB(A)	Threshold of pain

Terminology

dB (decibel) – A unit used to quantify the pressure level of sound. Defined as 20 times the logarithm of the ratio between the root-mean-square pressure of a given sound field and a reference pressure level ($2x10^{-5}$ Pa – threshold of hearing).

$L_{Aeq,\,T}$ – The equivalent continuous sound pressure level over a stated period. It quantifies a fluctuating sound level over a given period as the equivalent continuous sound level over which the same amount of acoustic energy is contained over. This is A-weighted in order to assess human perception.

L_{A90} – The sound level exceeded 90% of the time. Typically used to describe background noise the L_{90} is regarded as the 'average minimum level' and quantifies the common sound level of a fluctuating sound field i.e. the sound level that occurs 90% of the time. Alternatively, L_{10} describes the sound level exceeded 10% of the time and therefore quantifies the 'average maximum level' of sound which is often used during the calculation of road traffic noise.

A-Weighting – A standard weighting of the audible frequencies designed to reflect the response of the human ear to noise.

R_w – The Weighted Sound Reduction Index (R_w) is a number used to rate the effectiveness of a soundproofing system or material.