

COOPER'S YARD, COOPER LANE,
HOLMFIRTH

Noise Impact Assessment



Document History

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1. INTRODUCTION

MZA Acoustics has been appointed by TTRS Developments Ltd ('the Client') to undertake a noise impact assessment to support a planning application to Kirklees Council (KC) for the Redevelopment of a former Tool Hire Centre to a drinking establishment with extended food provision (sui generis drinking establishment) at Coopers Yard, Cooper Lane, Holmfirth, West Yorkshire, HD9 3BP ('the Site').

This report has been prepared with regard to the West Yorkshire Planning Consultation Guidance (condensed Version) Noise and Vibration published by Kirklees as part of the West Yorkshire Authorities collaboration.

An internal link to the premises is proposed from the existing O'Briens Bottle Shop and Beer Café ('O'Briens') at 67 Huddersfield Road (and within the same ownership/control as the proposed development), but the proposed development will also have a separate entrance off Cooper Lane suitable for disabled access. The two premises were once a single commercial premises operating as Mettrick's Butchers, the rear part covered by this application being the abattoir.

It is understood that as part of the proposed scheme, kitchen facilities will be provided for food provision and as such it is envisaged that kitchen extract will be included within this design. The noise impact of such fixed plant elements will be assessed separately to general operational noise which will include customer generated noise, and internal background music. This report presents our assessments of the noise impact study for the Site based on proposed future operational use.

A baseline environmental noise survey has been undertaken at various locations to establish the prevailing ambient and background sound levels at nearby sensitive receptors, in addition, source noise for existing customer noise from O'Briens, and from a similar scale of outdoor drinking establishment within Holmfirth have been undertaken to assist the assessment of likely future operational sound levels relating to customer activity.

This report occasionally employs technical terminology. To assist the reader, a glossary of terms is presented in Appendix A.

2. SITE DESCRIPTION

2.1 Site Location & Environment

Cooper's Yard, Cooper Lane, Holmfirth, hereby referred to as 'The Site', is a single storey semi-detached building with historic commercial use as a preparation area for the attached butchers (now O'Briens Bottle Shop and Beer Café), and most recently as a tool hire centre which has recently become vacant.

The Site is located to the rear of commercial premises fronting Huddersfield Road in a central village location. The location of the Site is indicated in Figure 1 by the red star and is shown in context of the surrounding, predominantly commercial land uses.

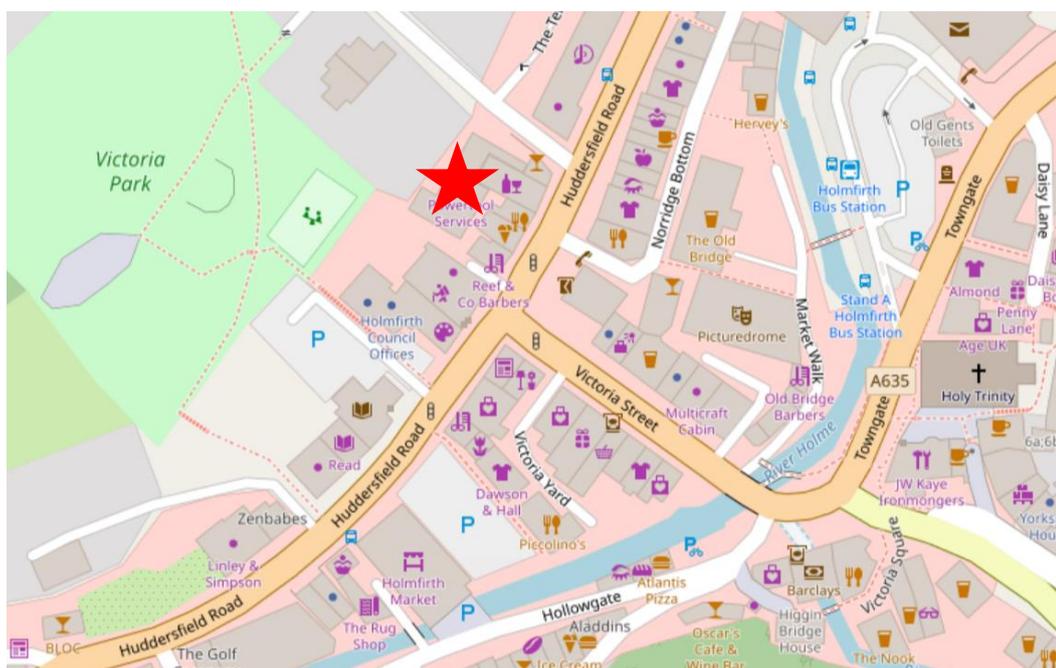


Figure 1 - Site and its surroundings

There are no adjoining sensitive uses to the premises, and the nearest noise sensitive (residential) receptors are identified in Figure 2.

The nearest residential premises is located at 8 The Terrace, off Cooper Lane and will be referenced as 'R3'. Two further residential premises are accessed from Cooper Lane, set back from the Site with long front gardens adjoining the rear boundary retaining wall for the Site. These are identified as R1 and R2 respectively on Figure 2. All remaining buildings near to the Site are fully commercial in nature, with no sensitive element.

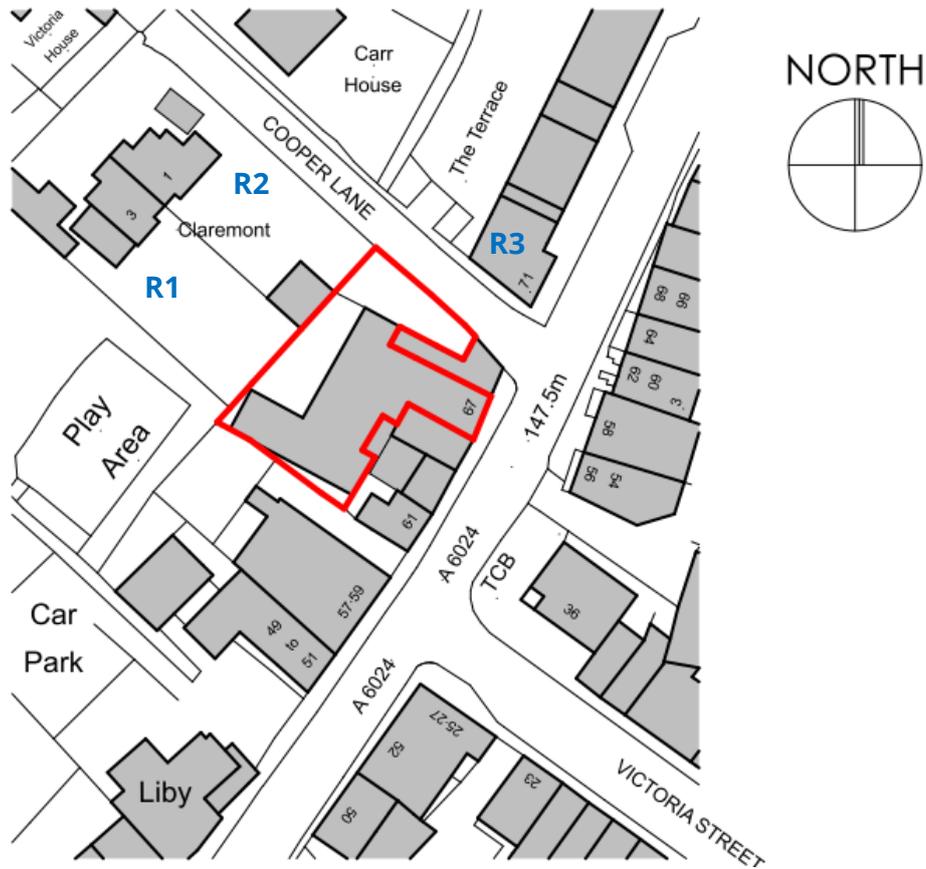


Figure 2 – Nearest Sensitive Receptors (R1, R2 & R3)

2.2 Proposed Development

The proposed redevelopment of the Site is for a single storey commercial space primarily for drinking and includes a number of small kitchens for providing a permanent café facility and street food vendors with associated internal seating. Outside, it is envisaged that food trucks will also visit to compliment the more permanent food provision with external seating when weather conditions allow.

Primary opening times proposed are Thursday to Sunday 11am to 10pm, and the flexible space on offer may also be used for community space as required.

An internal doorway from the existing 1st floor bar seating area of O'Briens will provide access and link to the existing Huddersfield Road entrance, with a secondary entrance and disabled access to the rear yard and commercial space off Cooper Lane.

A pre-application response has been received from KC, which included comments from the Environmental Health (EH) Department. The full EH comments are provided in Appendix E with a summary below;

- Nearest noise sensitive receptors are 1 & 3 Cooper Lane and The Terrace
- Retaining wall to the northern boundary would provide some acoustic screening to 1 & 3 Cooper Lane
- Noise impact assessment will be required as part of the full application, including (but not limited to);

- Outside seating area
- People arriving / leaving
- Fixed mechanical plant and equipment
- Noise from music

The indicative layout is presented in Figure 3 below.



Figure 3 - Indicative Floor Plan

3. ASSESSMENT GUIDANCE

3.1 Introduction

This section details the guidance that will be used in the assessment which follows. Where relevant, the adopted criteria for each element of the development will be included within the assessment section of this report.

3.2 Local Authority Criteria

The Site is located within the Local Planning Authority of Kirklees Council (KC), part of the West Yorkshire Planning Authorities.

Kirklees published guidance entitled 'Noise Design Advice' in 2007 to outline the Council's noise policy for planning purposes and streamline the consultation process. MZA is not aware that the document has been updated since first publication and where reference to rescinded guidance is made, MZA will substitute the most recent national guidance and methodology as summarised below e.g. BS4142:1997 becomes BS4142:2014.

In terms of fixed plant noise, the guidance states that:

1 New Industrial or Commercial Use near to Residential Use

1.1 *This advice aims to protect the present and future occupiers of residential properties from your new industrial or commercial noise.*

Developers should carry out an assessment in accordance with BS4142 to determine the rating level of the new development. It is recommended that during normal daytime hours (0700 to 2300 hours), the BS4142 rating level, measured over 1 hour, should be 5dB below the background (L_{A90}). During the night-time period (2300 to 0700 hours), the BS4142 rating level, measured over 5 minutes should be 5dB below the background (L_{A90}).

The assessment should be carried out at the site boundary or at the nearest noise sensitive premises, depending on the circumstances. These noise levels are intended to ensure that existing noise sensitive premises and land which may be used for noise sensitive development in future does not become blighted by noise.

To aid regeneration, in certain circumstances, a higher rating level **may** be accepted provided the need is justified.

In addition, the levels specified in Appendix 1 should not be exceeded. These should be calculated assuming windows in noise sensitive premises are open for ventilation (see Appendix 1)

Based on the above, the cumulative rating noise level ($L_{Ar,Tr}$) from any fixed plant at the Site shall be 0-5 dB below the measured daytime and night-time typical background noise level ($L_{AF90,T}$) when measured 1m from window of the NSR.

The proposed criteria for entertainment noise levels are presented in section 4 of the document:

4 New Entertainment Premises near to existing Residential. Or Development containing New Entertainment and New Residential

- 4.1 *This advice aims to protect existing and future residents from noise from your new entertainment premises, such as public houses, nightclubs and restaurants.*

Developers should assess the likely impact of the new entertainment premises on the noise environment. The premises must be designed to ensure that music and associated noise is controlled so as to be inaudible inside any residential premises in the vicinity. Inaudibility shall be defined as-

- 4.1.1 LAeq(1,min) (EN) should not exceed LA90 (WEN)
- 4.1.2 L10 (5 min)(EN) should not exceed L90 (WEN) in any 1/3 octave band from 40Hz to 160Hz
- 4.1.3 All levels shall be taken with windows open or closed (which ever makes the music appear louder) or with alternatively provided acoustic ventilation over and above "background" ventilation.
- 4.1.4 Other noise sources from these developments, such as air conditioning plant and kitchen odour extraction systems shall be treated as industrial development and scenario 1 is applicable.

EN = Entertainment noise level, WEN = Representative background noise level without the entertainment noise, both measured inside the noise-sensitive premises.

As the KC guidance requires noise levels to be measured within the noise sensitive premises to which no access is available to the Client, the approach of the assessment will instead utilise elements of section 5 to determine design criteria for operational noise including amplified music and sound which would meet appropriate external sound levels at the nearest sensitive receptors.

5 New Noise Sensitive Premises near to Places of Entertainment

This advice aims to protect your new residents from noise from existing places of entertainment

Developers should assess the likely impact of the entertainment premises on the noise environment. The residential premises must be designed to ensure that music and associated noise is inaudible inside any residential premises in the vicinity.

The minimum acceptable standard is-

- 5.1.1 NR 20 in bedrooms (2300 to 0700)
- 5.1.2 NR 25 in all habitable rooms (0700 to 2300)
- 5.1.3 All indoor levels shall be taken with windows open or closed (which ever makes the music appear louder) or with alternatively provided acoustic ventilation over and above "background" ventilation.
- 5.1.4 Noise Rating curves should be measured as a 15 minute linear L_{eq} at the octave band centre frequencies 31.5 Hz to 8 kHz.
- 5.1.5 Other noise sources from the places of entertainment, such as air conditioning plant and kitchen odour extraction systems shall be treated as industrial development and scenario 3 is applicable.

3.3 National Planning Policy Framework (NPPF) 2023

The NPPF determines the government's planning policy for England. The document was first published in March 2012, and updated in July 2021 which sets out how these policies are to be applied. The September 2023 update is limited to key paragraphs in Section 14 only, relating to renewable energy policy.

Section 15 'Conserving and enhancing the natural environment' states that Planning policies and decision should contribute to and enhance the natural and local environment by:

"...e) preventing new and existing development from contributing to, being put at risk from or being adversely affected by, unacceptable levels of soil, air, water or **noise** pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans..."

Paragraph 185 continues:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so, they should:

- a) Mitigate and reduce to a minimum potential adverse impacts resulting from **noise** from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- b) Identify and protect tranquil areas which have remained relatively undisturbed by **noise** and are prized for their recreational and amenity value for this reason; and
- c) Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."

The guidance contained within the NPPF further determines that consideration should be given to the Noise Policy Statement for England (DEFRA, March 2010).

3.4 **Noise Policy Statement for England (NPSE, March 2010)**

The NPSE attends to three types of noise;

- "Environmental noise" which includes noise from transportation sources;
- "Neighbour noise" which includes noise from inside and outside people's homes; and
- "Neighbourhood noise", which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street.

In line with the aims determined in the NPPF, the NPSE determines three aims;

- Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development;
- Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development; and,
- Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour

and neighbourhood noise within the context of Government policy on sustainable development.

The guidance detailed within the NPSE relates a number of key phrases with regards to adverse effects which can be applied to noise impacts as used by the World Health Organisation.

- **NOEL – No Observed Effect Level** - The level below which no health effect or detrimental impact on the quality of life is observed.
- **LOAEL – Lowest Observed Adverse Effect Level** - The level at which adverse effects on health and quality of life can be detected
- **SOAEL – Significant Observed Adverse Effect Level** - The level above which significant adverse effects on health and quality of life occur.

The guidance indicates that it is not possible to have a single objective noise-based measure that defines SOAEL, and as such the SOAEL is likely to be different for different noise sources and receptors. The document indicates that further research is required to establish what may constitute a significant adverse impact on health and quality of life from noise.

While the NPSE determines the NOEL, LOAEL and SOAEL descriptions, the document indicates that, unlike other environmental disciplines, there are currently no European or national noise limits which have to be met although the NPSE states that “there can be specific local limits for specific developments” allowing for negotiation.

3.5 **Planning Practice Guidance - Noise**

The Planning Practice Guidance for noise (published in March 2014 and updated July 2019) broadly considers the same issues as demonstrated within both the NPPF and the NPSE with regards to noise within the planning realm.

The information detailed within the PPG indicates that noise should be considered when:

- New developments may create additional noise; and/ or,
- New developments would be sensitive to the prevailing acoustic environment.

The guidance indicates that Local Planning Authorities should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and,
- Whether or not a good standard of amenity can be achieved.

The impact of noise is rated within the policy document in terms of the relative ‘Observed Effect Level’, defined in line with the guidance within the NPSE. Based upon this, the Planning Practice Guidance provides the following matrix of likely average response:

Table 1 – PPG observed effect levels

Perception	Example of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and Intrusive	Noise can be heard and causes small changes in behaviour and/ or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/ or attitude, e.g. avoiding certain activities during periods of intrusion: where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/ or an ability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/ awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

3.6 **BS 4142:2014 Methods for rating and assessing industrial and commercial sound**

BS 4142 provides a methodology for rating and assessing sound associated with both industrial and commercial premises. The purpose of the Standard is clearly outlined in the opening section where it states that the method is appropriate for the consideration of:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train movements on or around an industrial and/or commercial site.

The Standard is based around the premise that the significance of the noise impact of an industrial/commercial facility can be derived from the numerical subtraction of the background noise level (not necessarily the lowest background level measured, but the typical background of the receptor) from the measured/calculated rating level of the specific sound under consideration. This comparison will enable the impact of the specific sound to be concluded based upon the premise that typically “the greater this difference, the greater the magnitude of the impact”. This difference is then considered as follows:

- A difference of around +10 dB or more is likely to be an indication of a **significant adverse impact**, depending on the context.
- A difference of around +5 dB is likely to be an indication of an **adverse impact**, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a **low impact**, depending on the context."

BS 4142 further states that “where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact” again depending upon the specific context of the site. The Standard further qualifies the assessment protocol by outlining conditions to the comparative assessment and stating that “not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact”, thus implying that all sites should be assessed on their own merits and specifics.

The Standard quantifies the typical reference periods to be used in the assessment of noise, namely:

- Typical Daytime 07:00 – 23:00 1-hr assessment period
- Typical Night-time 23:00 – 07:00 15-min assessment period

The Standard also outlines methods for defining appropriate “character corrections” within the rating levels to account for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency. These are:

- a. the Subjective Method,
- b. the Objective Methods for tonality; and,
- c. the Reference Method.

It is noted by the Standard that where multiple features are present the corrections should be added in a linear fashion to the specific level.

Table 2 - BS 4142 Subjective Method Rating Correction

Level of Perceptibility	Tonal Correction dB	Impulsivity Correction dB	Correction for 'other sound characteristics' dB	Intermittency Correction dB
No Perceptibility	+0	+0	Where neither tonal nor impulsive but clearly identifiable +3	If intermittency is readily identifiable +3
Just Perceptible	+2	+3		
Clearly perceptible	+4	+6		
Highly perceptible	+6	+9		

This standard and methodology will only be used to assess the impact of sound from any fixed plant.

3.7 Summary of selected assessment criteria

The below presents a summary of the adopted assessment criteria, with respect to the various elements being considered;

- The assessment of fixed mechanical plant and equipment noise associated with the proposed development will be undertaken in accordance with BS4142:2014. The LOAEL is considered to be achieved by a low impact outcome, typically by a rating level at or below the prevailing typical background sound level, depending on context.
- The assessment of internally generated sound will follow the methodology of BS8233:2014 to quantify the likely noise impact at the nearest noise sensitive receptors from building break-out sound from the external elements of the proposed development. The criteria, in accordance with KC guidance, will be $L_{Aeq,1\ min} EN$ shall not exceed the $L_{A90} WEN$, during the daytime and $L_{A10,1\ min} EN$ shall not exceed the $L_{A90} WEN$ in any 1/3 Octave band between 40Hz to 160 Hz.
- Noise from customers in the yard and arriving and departing will be considered by comparing the predicted $L_{Aeq,T}$ noise levels with and without the customers.

4. BASELINE ENVIRONMENTAL NOISE SURVEY

4.1 Introduction & Methodology

A noise survey has been undertaken at 3no locations at or around the site over the course of a 2-week period between 1st and 12th September 2023 in order to measure the prevailing ambient and background noise levels during a variety of periods across the week when existing commercial businesses were both open and closed. A further measurement was undertaken overlooking a nearby open-air drinking area of an established Holmfirth bar with outdoor seating to provide typical customer noise for external facilities.

The noise survey was undertaken by G Hornby MIOA, Director of MZA Acoustics Limited, a suitably experienced and qualified acoustic engineer.

4.2 Measurement Locations

LT1 – Rear Yard

Continuous unattended monitoring was undertaken at position 'LT1' between 16:30 on Monday 4th September 2023 and 11:00 on Friday 8th September 2023 to establish the prevailing noise levels during the daytime and night-time, representative of when the premises and plant will be operational. The unattended monitoring position is shown in Figure 4 below.



Figure 4 – Monitoring location LT1 at rear boundary with NSR 1

The unattended measurement location was at the boundary fence line between the rear yard at Cooper's Yard, and the front garden of NSR1. The microphone was mounted on a pole approximately 3m above local ground height utilising an all-weather extension kit from the sound level meter. The microphone was considered to be in free-field conditions.

LT2 – Cooper Lane

Continuous unattended monitoring was undertaken at position 'LT2' overlooking Cooper Lane and The Terrace beyond, between 12:00 on Friday 8th September 2023 and 10:15 on Monday 11th September 2023 to establish the prevailing noise levels during the daytime and night-time, representative of when the premises and plant will be operational. The unattended monitoring position is shown in Figure 4 below.

There is a clear line of sight towards NSR3 at 'The Terrace' from this measurement location. The microphone was considered to be in free-field conditions.



Figure 5 – Monitoring location LT2 overlooking Cooper Lane and The Terrace

During the installation of the measurement equipment, the key noise sources observed are almost continuous road traffic noise on Huddersfield Road, and more intermittent but regular traffic passing on Cooper Lane.

Some pedestrian noise is noticeable during lulls in traffic noise and this is more characteristic of the evening noise climate when road traffic reduces and activity at the nearby bars and take away food outlets on Huddersfield road increase footfall in the area.

LT3 – Huddersfield Road

Continuous unattended monitoring was undertaken at position 'LT3' between 11:30 on Friday 8th September 2023 and 14:30 on Tuesday 12th September 2023 to establish the prevailing noise levels during the current operation of O'Briens during the daytime and night-time. The unattended monitoring position is shown in Figure 4 below.



Figure 6 – Monitoring location LT1 at rear boundary with NSR 1

The microphone was mounted out of the first-floor window immediately above the front entrance to the bar at approximately 4m above local ground height and approximately 1m from the building façade utilising an all-weather extension kit from the sound level meter.

Due to the influence of the façade at this position, it is noted that the measured levels will need to be corrected for façade reflection effects.

The measurement was briefly interrupted at 07:44 hours on 9th September due to battery failure, resuming at 19:35 hours on 9th September.

LT4 – Norridge Bottom

Continuous unattended monitoring was undertaken at position 'LT4' between 16:00 on Friday 1st September 2023 and 10:30 on Monday 4th September 2023 to establish the prevailing noise levels during evening and night time commercial activity at a similar outdoor drinking area. The unattended monitoring position is shown in Figure 4 below.



Figure 7 – Monitoring location LT4 overlooking some existing outdoor drinking areas (Y-bar, Holmfirth Tavern & The Old Bridge)

The microphone was mounted outside the rear window of 72 Huddersfield Road utilising an all-weather extension kit from the sound level meter, which overlooks an established outdoor drinking area located on Norridge Bottom, Holmfirth. The microphone was approximately 4m above local ground height and approximately 1m from building facade. Due to the influence of the façade at this position, it is noted that the measured levels will need to be corrected for façade reflection effects.

During installation and collection of equipment, the local noise climate was dominated by limited pedestrian activity and some low-level noise from plant to the rear of The Old Bridge Inn hotel. All noise sources are considered normal of the locality for the daytime, with pedestrian activity significantly increased during the weekend evening and night times. Vehicular activity is very limited at all times due to poor access and restricted to traders during the daytime, and hotel residents at any time.

4.3 **Equipment**

The equipment used to undertake the noise surveys is listed in Appendix B.

Microphones and sound level meters have been calibrated at UKAS accredited laboratories within the preceding two years, while field calibrators have been laboratory calibrated within the preceding 12 months. The equipment was field calibrated prior to, and on completion of, measurement and no significant drift (< 0.5 dB) in calibration was detected.

4.4 **Weather Conditions**

Weather conditions at the time of each installation were dry and calm with very low wind speeds. Weather conditions were tracked remotely and remained generally appropriate for the measurement of environmental noise (i.e. dry with windspeeds generally below 5 m/s). No periods of significant rainfall were noted.

A summary of the prevailing weather conditions at the nearest weather station are presented in Figure 8 for confirmation.

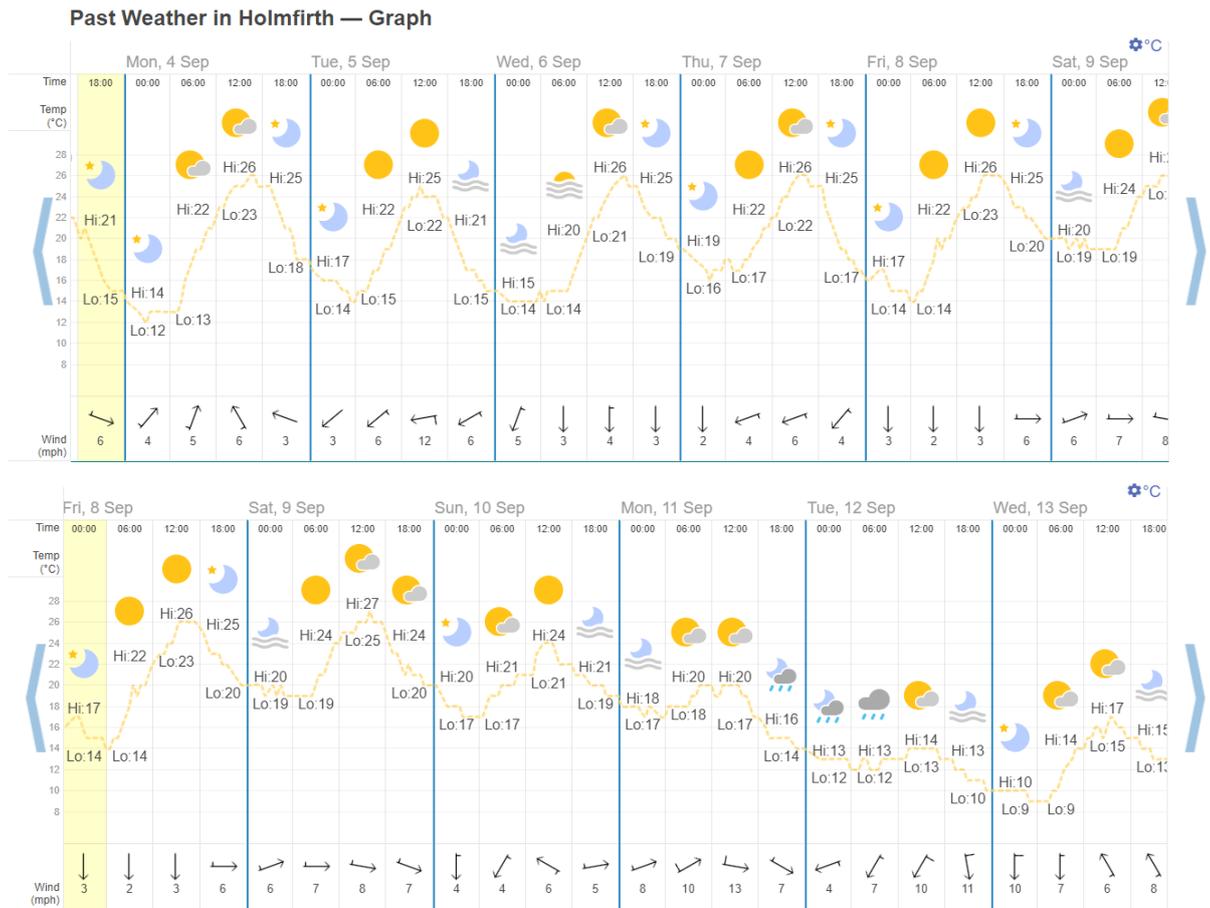


Figure 8 – Summary of local weather conditions during the environmental survey

4.5 Measurement Results

A summary of the results of the unattended monitoring at all locations are presented in

Table 3. The full long-term measurement data is presented in graphical format in Appendix C.

Table 3 – Unattended survey results (dB) – free-field levels

Location	Period	Equivalent Continuous Sound Level (dB L_{Aeq,T})⁴	Typical Background Sound Level (dB L_{AF90, 5min})¹
LT1 Rear Boundary	Daytime (07:00 – 23:00)	50	47
	Night-time (23:00 – 07:00)	42	30
LT2 Cooper Ln	Daytime (07:00 – 23:00)	58	49
	Night-time (23:00 – 07:00)	52	43
LT3³ Huddersfield Road (O'Briens)	Daytime (07:00 – 23:00)	61 ²	54 ²
	Night-time (23:00 – 07:00)	58 ²	38 ²
LT4 Norridge Bottom	Daytime (07:00 – 23:00)	59 ²	50 ²
	Night-time (23:00 – 07:00)	58 ²	43 ²
¹ Statistically typical background noise levels presented ² Corrected for façade effects by -3dB ³ Note battery failed between 07:00 and 19:35 on Sat 9 th Sept ⁴ Log average of concatenated data			

5. FIXED PLANT NOISE IMPACT ASSESSMENT

5.1 Introduction

It is deemed likely that an application for this type of premises use will potentially require externally mounted plant for kitchen extraction and externally mounted condenser units.

At this stage of the design, there is no detail available on the number or type of externally mounted units required and as such this impact assessment is undertaken in order to provide a maximum recommended combined operating rating level for any plant required to be installed externally to the premises in relation to each nearby sensitive receptor.

5.2 Description of plant operations

Existing wall mounted condenser units mounted on the Cooper Lane façade serve the O'Briens' cellar. Their operation will not change and as such the equipment is considered to form part of the prevailing noise climate of Cooper Lane. The existing arrangement is shown in Figure 9.



Figure 9 - Existing O'Briens' cellar cooling plant

Any new plant required to serve the Cooper's Yard redevelopment are most likely for kitchen extract and refrigeration plant. Such equipment is likely to operate intermittently when the kitchen is operational. Any additional condenser units required would operate subject to ambient temperatures and as such, the condenser fan is not in constant operation throughout the hours of operation.

Due to the potential intermittent operation of such fixed plant, a +3 dB noise characteristic penalty will be added to the calculations in accordance with BS4142:2014.

To meet the local authority criterion, the cumulative rating noise level ($L_{A,T,r}$) from the proposed plant should be 0 to 5dB below the measured daytime and night-time typical background noise level ($L_{AF90,T}$) when measured 1m from window of the NSR. Typical use would be during weekend service, and occasional evenings and as such the reference L_{A90} will be identified for the evening opening period as a worst case to determine the comfortable operating sound limit of any new plant.

The full assessment is set out in the following section.

5.3 Operating Plant Noise Design Criteria

As the plant is not yet selected or in situ, acoustic calculations have been undertaken to calculate the maximum rating level of the plant required in order to achieve the Local Authority criteria, based on the existing measured daytime and night time background sound levels at the nearest sensitive receptors.

5.3.1 Plant locations

Current plans received from the client do not identify the location for any external fixed plant, but the pre-application statement indicates that any kitchen plant would be located, as close as possible to existing extract plant of the neighbouring 'Holmfirth Spice' restaurant and hot food take away. This would indicate a suitable location to be near the toilet facilities indicated in the plan below.

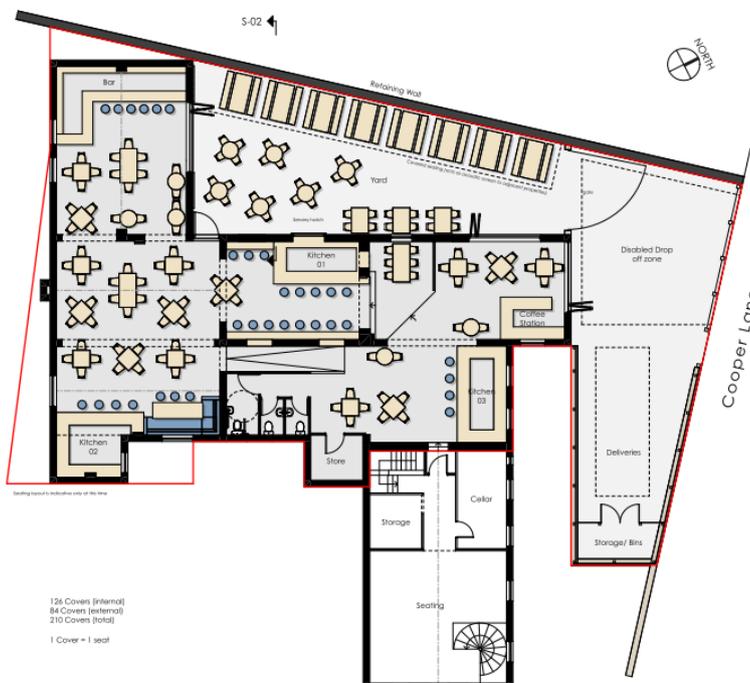


Figure 10 – Indicative internal floor plan

An extract in this location would be partially screened to NSR1 and 2 by the boundary retaining wall and depending on the extract position could be fully screened, but could also be designed such that the outlet faces away from the nearest residential receptors.

5.3.2 Receptor locations

The nearest sensitive receptor to the rear yard is that of the pair of semi-detached dwellings at 1 and 3 Cooper Lane. Both properties benefit from extensive gardens to the sensitive elevation and sensitive windows are located approximately 28m from the rear yard area. There is not likely to be a direct line of sight to the proposed development due to the elevated position and tall boundary wall to Coopers Yard, however any roof mounted plant may be partially visible.

A further group of receptors are found off Cooper Lane in the form of 2-storey dwellings above lower ground floor commercial units at 71 to 71c Huddersfield Road, known as 'The Terrace'. The nearest property in this modern development is directly opposite the condenser units serving O'Briens and overlooks the junction of Cooper Lane and Huddersfield Road, with the closest line of sight being approximately 15m to the existing yard gates. NSR 3 is completely screened from the likely location of kitchen extraction plant, and the single gable end window is believed to be non-opening/non sensitive.

Table 4 – Plant noise emissions at 1m from nearest noise sensitive window

Period	Typical Background Sound Level $L_{A90,T}$	Target Rating Level L_{Ar}	Correction for intermittent operation	Maximum Cumulative Design Rating Level for fixed plant $L_{Ar,Tr}$
NSR 1&2				
Daytime (07:00 – 23:00)	47	≤ 47	-3	44
Night-time (23:00 – 07:00)	30	≤ 30	-3	27
NSR 3				
Daytime (07:00 – 23:00)	49	≤ 49	-3	46
Night-time (23:00 – 07:00)	43	≤ 43	-3	40

BS 4142 states that “where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a **low impact**, depending upon the specific context of the site”.

In the context of this development, there is similar plant operating at or near the Site already contributing to the existing noise climate. The design rating level has been calculated based on not exceeding the existing background level but due to the proposed noise sources being comparable in character to those already in use in the vicinity, the context of the Site would not seem to justify a Rating level of 5dB below the typical background level.

Furthermore, the above recommended rating levels apply where plant is confirmed to operate intermittently. Where the plant operates continuously for the full operational period, the 3dB correction may be relaxed, provided that the plant is also free from tonal characteristics.

Where it can be confirmed that plant can be isolated such that it does not need to run at all during the night time period (the operations are already identified to close at 10pm), the daytime rating level will be the overriding criteria.

If plant needs to operate beyond 2300 hours, a rating level of **27dB L_{Ar,15min}** will apply with reference to R1 and R2.

Maintaining the plant at an operating rating level at or below the prevailing background level will meet the LPA's criteria and in context with the average existing ambient noise climate, it is highly unlikely that noise generated by the use of fixed plant would cause a noticeable impact.

In line with NPSE and PPG's effect levels, this is likely to correlate to a situation between a '**no observed effect level**' (**NOEL**) and a '**lowest observed adverse effect level**' (**LOAEL**). As such, no additional specific measures are deemed to be required.

The assessment has been carried out to the nearest noise sensitive window; therefore, it can be safely assumed that other NSRs located equidistant or further afield will be impacted less due to a greater level of distance attenuation.

6. OPERATIONAL NOISE ASSESSMENT

6.1 Introduction

In order to assess potential noise impacts from the operation of the premises due consideration has been given to the proposed drinking and extended food provision at the Site, and the associated proposed hours of use of Thursday to Sunday; 11am to 10pm (last food orders 9pm).

6.2 Customer Noise from Outdoor Seating Area

Noise from customers using the outdoor seating areas was specifically raised by KC Environmental Health Department.

In order to consider this, MZA Acoustics installed a noise meter on Norridge Bottom (LT4) to measure noise from customers using the outdoor drinking area. The microphone overlooked the outdoor terrace of 'Y-bar' with other outdoor terraces to the front of Holmfirth Taven, The Picture Box and The Old Bridge in the vicinity.

Measurements were conducted over a Friday, Saturday and Sunday with the equipment removed on the Monday morning.

- Friday evening / night – immediate drop in noise levels at 11pm indicating area closed and patrons dispersed quickly. Noise levels were elevated between 8pm and 11pm ($L_{Aeq,1hr}$ 64 to 67dB) compared to below $L_{Aeq,1hr}$ 60dB immediately before and immediately after this period. Noise levels reduced to below $L_{Aeq,1hr}$ 55dB after 2am, due to other late-night venues in the vicinity.
- Saturday – noise levels exceed $L_{Aeq,1hr}$ 60dB from 2pm and build up to circa $L_{Aeq,1hr}$ 70dB before falling to below 55dB after 11pm. The weather on the Saturday was particularly warm and sunny for the time of year and as such the data is expected to be very much worst case.
- Sunday – noise levels were elevated over $L_{Aeq,1hr}$ 60dB between 2pm and 7pm and then reduced to $L_{Aeq,1hr}$ 55dB indicating the external seating area wasn't in use after this time.
- The distance between the seating area at Y Bar (the closest to the microphone) was circa 10m

Based on the measurement data obtained from LT4 the equivalent sound power level attributable to the external seating area of L_{WA} 85dB up to 98dB during the noisiest hour. This may include contributions from other surrounding external seating areas and patrons moving between premises.

Applying these sound power levels to the proposed outdoor seating area results in the noise levels at the nearest receptors as presented below;

Table 5 – Predicted Noise Levels from the Outdoor Seating Area

Location	Distance	Source L _{WA} dB	Screening (dB)	Predicted SPL
1 & 3 Cooper Lane	30m	85	-10	40
		98		53
The Terrace	25m	85	-5	47
		98		60

The nearest measurement position to 1 and 3 Cooper Lane was LT2. The measurement data from LT1 (rear of Cooper’s Yard) are generally at or above L_{Aeq,5mins} 50dB up to circa 7pm, reducing to circa L_{Aeq,5mins} 45dB by 10pm when the proposed use will cease.

From the above it can be seen that the predicted noise level from the use of the outdoor seating area based on the quieter periods at Y-Bar would be at least 5dBA below the ambient noise levels, but if the outdoor space created noise levels similar to those recorded in Norridge Bottom the noise levels could be above the existing ambient noise levels, particularly towards the end of the night.

The above assumes acoustic screening of 10dBA based on the retaining wall blocking line of sight. The applicants have agreed to install a canopy over the seating area which would potentially improve matters further. This canopy has not been designed, but could feasibly be constructed to improve the amount of acoustic screening and include an acoustically absorptive lining to avoid unwanted reflections off the canopy.

This would be subject to further design development but it is considered that a further 5dBA attenuation may be possible which, in conjunction with an active management of the yard area, should ensure that the existing ambient noise levels are not exceeded.

In relation to noise impacts at The Terrace, the ambient noise levels from LT2 (Cooper Lane) have been considered. The ambient noise levels at this position generally exceeded L_{Aeq,5mins} 55dB until well after 10pm, when the use is proposed to cease. From Table 5 it can be seen that the predicted noise level from the use of the outdoor seating area based on the quieter periods at Y-Bar would also be at least 5dBA below the ambient noise levels, but if the outdoor space is similar to those recorded in Norridge Bottom the noise levels could be above the existing ambient noise levels, particularly towards the end of the night.

Therefore, the same management controls listed above would be recommended in order to protect residents of The Terrace.

It should be noted that this assessment is considered very much worst case as it is based on the noise levels recorded in Norridge Bottom on a particularly hot / sunny weekend at the end of summer. This location has three outdoor seating areas in close proximity to one another (Y-Bar, Holmfirth Tavern and The Old Bridge) plus patrons travelling to and from other nearby bars (Picturedrome, Box Office etc). Based on the target clientele at O’Briens, it is not considered truly representative, but in the absence of alternative data this has been used.

The use of an outdoor seating area in a commercial centre environment is not an uncommon feature, and given the use is proposed to cease by 10pm, will finish earlier than many others elsewhere in the town. It is considered an effective noise management plan would enable the use to continue in a manner appropriate to its

town centre environment, whilst managing any impacts to surrounding neighbouring areas.

6.3 Music Noise

Given the proposed use, it is expected that background music would be a feature and therefore the potential impact of amplified sound needs to be considered.

The plans indicate numerous bifold doors, access doors and a serving hatch. These elements will only assist in controlling noise break out when in the closed position. This may be hard to manage unless access to the outdoor space is completely prevented as there is little scope to install lobbied doors to exits.

Based on KC guidance the noise level from music should aim not to exceed the L_{A90} noise levels at the nearest noise sensitive receptors. The most likely to be affected residents are 1 and 3 Cooper Lane, by virtue of the site orientation and location of opening doors etc.

The measured background noise levels for each day, between 12:00 and 22:00 (the typical hours of opening) for LT1 (considered to be representative of background noise levels at 1 and 3 Cooper Lane) are presented below.

Table 6 –Daily $L_{A90,T}$ Noise Levels from Rear of Coopers Yard

Day	$L_{A90,10hrs}$ (dB)
Monday ¹	42
Tuesday	45
Wednesday	44
Thursday	44
¹ . Part period	

On the basis of the prevailing background being $L_{A90,T}$ 44dB (not proposed to open on Mondays), and doors and windows being open, the music noise levels must not exceed $L_{Aeq,T}$ 44dB at 1 and 3 Cooper Lane. This would equate to an internal reverberant music level limit of 80dBA. This would be considered acceptable for background music in the bar /café seating area.

6.4 Patrons Arriving / Departing

The main access / egress route noted in the Pre-Application document is via the main O'Briens' entrance fronting Huddersfield Road.

To this end a sound level meter was installed out the first floor of O'Briens' entrance on Huddersfield Road. The meter was installed to cover a Friday, Saturday, Sunday and Monday period. Of these, the bar was open on the Friday, Saturday and Sunday, but closed all day on Monday.

The measured daytime $L_{Aeq,T}$ noise levels for each day have been considered based on the period 12:00 hours to 22:00 hours each day.

Table 7 –Daily L_{Aeq,T} Noise Levels from above O'Briens' Entrance

Day	L_{Aeq,T} (dB)
Friday	68
Saturday	69 ¹
Sunday	65
Monday	66
¹ . Limited data due to battery failure	

From Table 6 it can be seen that the noise levels measured on the Monday (when O'Briens was closed all day) were higher than the Sunday and only marginally lower than those measured on Friday or Saturday. It is therefore concluded that noise levels on Huddersfield Road are dominated by road traffic as opposed to customers arriving or leaving.

There is a disabled access / drop off zone proposed off Cooper Lane but the use of this will be relatively limited and could be appropriately managed by the operators to avoid this route becoming the primary access to and from the yard.

7. CONCLUSION

MZA Acoustics has been appointed by TTRS Developments Ltd ('the Client') to undertake a noise impact assessment to support a planning application to Kirklees Council (KC) for the Redevelopment of a former Tool Hire Centre to a drinking establishment with extended food provision (sui generis drinking establishment) at Cooper's Yard, Cooper Lane, Holmfirth, West Yorkshire, HD9 3BP ('the Site').

This report has been prepared with regard to pre-planning consultation comments received by the Client from the Environmental Health Officer at KC, and reference to the West Yorkshire Planning Consultation Guidance (condensed Version) Noise and Vibration published by Kirklees as part of the West Yorkshire Authorities collaboration.

A baseline environmental noise survey has been undertaken at 4no. locations representative of the nearest noise sensitive receivers to the Site, and of representative sound sources, in order to establish the prevailing background and ambient noise levels.

As plant requirement is yet to be decided, a noise design target has been determined based upon the methodology in BS4142:2014 and the strict criteria set by KC. In order to achieve a rating level at or below the prevailing background sound level, any new plant to be installed at the premises must not exceed a cumulative rating level of 44dBA during daytime period, and 27dBA during full night time operation at the nearest and potentially worst affected sensitive receptors off Cooper Lane. As the plant requirement is yet to be determined and the exact position of external extracts and mode of operation is unknown, these recommendations may be relaxed when further plant and operational information is available.

In line with NPSE and PPG's effect levels, this is likely to correlate to a situation between a '**no observed effect level**' (NOEL) and a '**lowest observed adverse effect level**' (LOAEL). As such, no additional specific measures are deemed to be required.

An operational noise assessment has also been undertaken to consider non-fixed noise elements including customer noise from outdoor seating area; internal sound generation; and the arrival/departure of patrons.

To assess customer noise impact, a weekend noise survey was undertaken at a local outdoor drinking area. As noise produced from such areas are variable, the impact would range from below the existing ambient sound level, to exceeding this level. A number of mitigation options may be applied to control noise emissions including managerial and physical noise control which would be subject to further design development.

Internal background music / amplified sound have also been assessed with windows and doors open, and indicate that internally generated music should be limited to 80dBA such that the existing ambient sound level is not exceeded at the sensitive receptors. This level is considered adequate for background music.

Other sound generated through arrival / departure of customers is not found to exceed the existing ambient sound levels at the Huddersfield Road entrance which is governed by road traffic noise. The use of the disabled access / drop off zone off Cooper Lane will be reasonably limited and access should therefore be appropriately managed by the operators to avoid this route becoming the primary access to and from the yard.

Overall, it is considered that there are no significant issues associated with the proposed development that would preclude the development from being granted planning approval on grounds of noise, subject to the application of suitable management controls and further design detail where required.

Appendices

Appendix A- Glossary of Acoustic Terminology

Acoustics is the branch of physics concerned with the properties of sound, including ultrasound, infrasound and vibration. A scientist or engineer who works in the field of acoustics is an acoustician or acoustic engineer.

Sound can be measured by a sound level meter or other measuring system. Noise is related to a human response, and is routinely described as unwanted sound, or sound that is considered undesirable or disruptive. Care has been taken in this document to use the most relevant of these terms (whereby 'sound' is used predominantly); however, in most reference documents, and, indeed, generally, 'sound' and 'noise' are used interchangeably. Consequently, just because the term 'noise' is used doesn't necessarily mean a negative effect exists or will occur, and the context of the accompanying text should be taken into account.

Human hearing is able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble), and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain).

The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify sound in a manner that approximates the response of the human ear, a weighting mechanism is used, which reduces the importance of lower and higher frequencies in a similar manner to human hearing.

The weighting mechanism that best corresponds to the response of the human ear (though not necessarily perfectly) is the 'A'-weighting scale. This is widely used for environmental sound measurement, and the levels are denoted as dBA, dB(A) or L_{Aeq} , L_{A90} etc. according to the metric being measured or determined (see the Definitions over leaf).

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. Where other changes occur (associated with the change in sound level), such as additional vehicle movements on a road, which can be seen, then these may result in changes in sound level being more noticeable than they might otherwise be.

Further to such visual clues, and any other non-acoustical factors that affect people's response (such as personal characteristics, and social, residential, or environmental factors), the subjective response to a sound is dependent not only upon the sound pressure level and component frequencies, but also its intermittency. Consequently, various metrics have been developed to try and correlate people's attitudes to different sounds with the sound level and its fluctuations. The metrics used in this document, as per the relevant guidance, are defined overleaf.

Airborne Sound	Sound that reaches the point of interest by propagation through air.
Ambient Sound:	Sound from all sources at any given time, from both near and far. Usually measured in terms of L_{Aeq} .
A-Weighting	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Background Sound Level	The A-weighted sound pressure level that can be considered the baseline in the absence of any noise from a specific source of sound under assessment. Measured in terms of $L_{A90, T}$.
Calibration	The measurement system/ chain should be periodically calibrated, within a laboratory, against traceable calibration instrumentation, to either National Standards or as UKAS-Accredited, as required. The calibration of the system should also be checked in the field using a portable calibrator before and after each short-term measurements, and periodically for longer term monitoring.
Class 1	The Class of a sound level meter describes its accuracy as defined by the relevant international standards – Class 1 is more accurate than Class 2. The older standard IEC 60651 referred to the grade as "Type", whereas the new standard IEC 61672 refers to it as the "Class". The most accurate meters used in the field (as opposed to a laboratory) are Class 1. Class 2 meters can be used in some instances; however, MZA Acoustics use Class 1 (or Type 1) meters by default, as required by BS 4142:2014, for example.
Decibel	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds (s_1 and s_2) is given by $20 \log_{10}(s_1/s_2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20 Pa.
Fast time Weighting (F)	Averaging time used in sound level meters. Defined in BS EN 61672-2:2013 Electroacoustics. Sound level meters. Pattern evaluation tests.
Free-field / Façade	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5 m away.
LAF90, T	The A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time fast time-weighting (F). Generally used to describe the 'background' sound conditions.
LAFmax	The maximum A-weighted sound pressure level during a given time period. L_{max} is sometimes used for the assessment of occasional loud sounds, which may have little effect on the overall L_{eq} noise level, but could still affect the sound environment. Unless described otherwise, it is measured using the fast time-weighting (F).
Leq, T	A sound level index called the equivalent continuous sound level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded. Where the value is A-weighted, it will be presented ' $L_{Aeq,T}$ ' or ' $dB A_{Leq,T}$ ', otherwise it should be an un-weighted (or linear) value.
Lp	See Sound Pressure Level.
Noise	Related to human response to sound. Unwanted sound, or sound that is considered undesirable or disruptive.

Octave Band	Frequency ranges in which the upper limit of each band is twice the lower limit. Octave bands are identified by their geometric mean frequency, or centre frequency.
Sound Absorption Coefficient	A measure of how effective a material is at absorbing sound incident to its surface. The index range is between 0 and 1, where 1 indicates a perfectly absorbent material and 0 indicates a perfectly reflective one.
Sound Power	In a specified frequency band, the rate at which acoustic energy is radiated from a source. In general, the rate of flow of sound energy, whether from a source, through an area, or into an absorber.
Sound Power Level	Of airborne sound, ten times the common logarithm of the ratio of the sound power under consideration of the standard reference power of 1 pW. Expressed in decibels.
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level	The sound level is the sound pressure relative to a standard reference pressure of 20 Pa (20×10^{-6} Pascals) on a decibel scale.
Weighted Sound Reduction Index (R_w)	A single-figure quantity which characterises the airborne sound insulating properties of a material or element over a range of frequencies.

Appendix B – National Planning Policy and Guidance

NATIONAL PLANNING POLICY FRAMEWORK (NPPF), 2023

The NPPF determines the government's planning policy for England. The document was first published in March 2012 with the most recent update in September 2023 which sets out how these policies are to be applied.

Section 15 'Conserving and enhancing the natural environment' states that Planning policies and decision should contribute to and enhance the natural and local environment by:

"...e) preventing new and existing development from contributing to, being put at risk from or being adversely affected by, unacceptable levels of soil, air, water or **noise** pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans..."

Paragraph 185 continues:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so, they should:

- d) Mitigate and reduce to a minimum potential adverse impacts resulting from **noise** from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- e) Identify and protect tranquil areas which have remained relatively undisturbed by **noise** and are prized for their recreational and amenity value for this reason; and
- f) Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."

The guidance contained within the NPPF further determines that consideration should be given to the Noise Policy Statement for England (DEFRA, March 2010).

NOISE POLICY STATEMENT FOR ENGLAND (NPSE), 2010

The NPSE provides more detail than the NPPF setting out the long-term vision of the Government noise policy and applying to all forms of noise excluding occupational noise. The NPSE repeatedly refers to the management and control of noise within the context of Government Policy on sustainable development.

The NPSE also stresses that noise impact should not be treated in isolation from other related factors. At paragraph 2.7 for example it states:

'...the application of the NPSE should enable noise to be considered alongside other relevant issues and not to be considered in isolation. In the past, the wider benefits of a particular policy, development or other activity may not have been given adequate weight when assessing the noise implications.'

The NPSE introduces and describes three categories, or levels, describing the presence or absence of noise effects but does not quantify those categories, stating that the corresponding objective levels are likely to be different for different noise sources, receptors and times of the day or night. These categories are:

- **NOEL** – No Observed Effect Level – This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise
- **LOAEL** – Lowest Observed Adverse Effect Level – This is the level above which adverse effects on health and quality of life can be detected
- **SOAEL** – Significant Observed Adverse Effect Level – This is the level above which significant adverse effects on health and quality of life occur.

The NPSE recognised that, at the time of publication, further research was needed into how these categories might be quantified for different scenarios. There is still no robust, universally accepted method of deriving suitable values and a variety of approaches are adopted in different circumstances. The subjective guidance provided in the Planning Practice Guidance (PPG) for noise can be of assistance in deriving suitable values.

The three aims of the NPSE are:

- Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

PLANNING PRACTICE GUIDANCE – NOISE (PPG-N), 2019

The Government launched the Planning Practice Guidance (PPG) web-based resource in March 2014 and refreshed it in July 2019. The section on noise provides tabulated descriptions of example outcomes of the categories introduced in the NPSE based on the likely average response. It also adds a fourth category termed Unacceptable Adverse Effect (UAE).

The PPG-N describes sound that is not noticeable to be at levels below the NOEL. It describes exposures that are noticeable but not to the extent there is a perceived change in quality of life as below the LOAEL and need no mitigation. With reference to the definition of noise in the NPSE, such emissions are ‘sound; and not ‘noise’. On this basis, the audibility of sound from a development is not, in itself, a criterion to judge noise effects that is commensurate with national planning policy.

The PPG-N suggests that noise exposures above the LOAEL cause small changes in behaviour. Examples of noise exposures above the LOAEL provided in the PPG-N is having to turn up the volume on the television; needing to speak more loudly to be heard; where there is no alternative ventilation, closing windows for some time because of the noise; or, a potential for some reported sleep disturbance. In line with the NPPF and NPSE, the PPG-N states that

consideration needs to be given to mitigating and minimising effects above the LOAEL but taking account of the economic and social benefits being derived from the activity causing the noise.

The PPG-N suggests that noise exposures above the SOAEL cause material changes in behaviour. Examples of noise exposures above the SOAEL cause material changes in behaviour. Examples of noise exposures above the SOAEL provided in the PPG-N are, where there is no alternative ventilation, keeping windows closed for most of the time or avoiding certain activities during periods when the noise present; and/or there is a potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. In line with the NPPF and NPSE, the PPG-N state that effects above the SOAEL should be avoided and that whilst the economic and social benefits being derived from the activity causing the noise must be taken into account, such exposures are undesirable.

The guidance in the PPG-N, which is based on that provided in the NPSE, is summarised in the following table.

The PPG-N states that there are many factors which should be considered when determining if noise is of concern; one factor is the number of noise events, the frequency and pattern of occurrence of the noise.

The PPG-N provides further information on the adverse effects of noise and how it can be mitigated. For noise sensitive development, mitigation measures can include: avoiding noisy locations; designing the development to reduce the impact of noise from the local environment, including noise barriers; and optimising the sound insulation provided by the building envelope including through noise insulation.

Perception	Examples of Outcomes	Increasing Effect Levels	Action
No Observed Effect Level			
Not present	No effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

PROFESSIONAL PRACTICE GUIDANCE ON PLANNING AND NOISE (PROPG)

As discussed in Section 2 of this report, the ProPG is designed to provide practitioners with guidance on a recommended assessment approach to the management of noise within the planning system in England for new residential development.

The guidance is non-statutory and is primarily aimed at the assessment of proposed residential development 'exposed predominantly to noise from existing transport sources'. Despite being non-statutory, it is expected to be widely adopted by planning authorities as best practice when considering noise affecting new residential development.

The ProPG aims to complement Government planning and noise policy and guidance, and in particular it strives to:

- "advocate full consideration of the acoustic environment from the earliest possible stage of the development control process;
- encourage the process of good acoustic design in and around new residential developments;
- outline what should be taken into account in deciding planning applications for new noise-sensitive developments;
- improve understanding of how to determine the extent of potential noise impact and effect; and
- assist the delivery of sustainable development."

The assessment approach, as summarised and implemented in the body of this report, is described as follows.

Stage 1 Risk Assessment

The Stage 1 initial noise risk assessment is based on placing the site within ranges of external noise levels, which correspond to varying degrees of risk. The external noise levels refer to the combined free-field noise level from all relevant sources of transport noise that affect the site. The external noise levels may also include industrial/commercial noise where it is present, but where it is "not dominant".

The indicative noise levels are intended to provide a sense of the noise challenge at a potential residential development site and should be interpreted flexibly having regard to the locality, the project and the wider context.

The initial noise risk assessment approach is presented in Figure 1 in the ProPG, which is reproduced in the following figure.

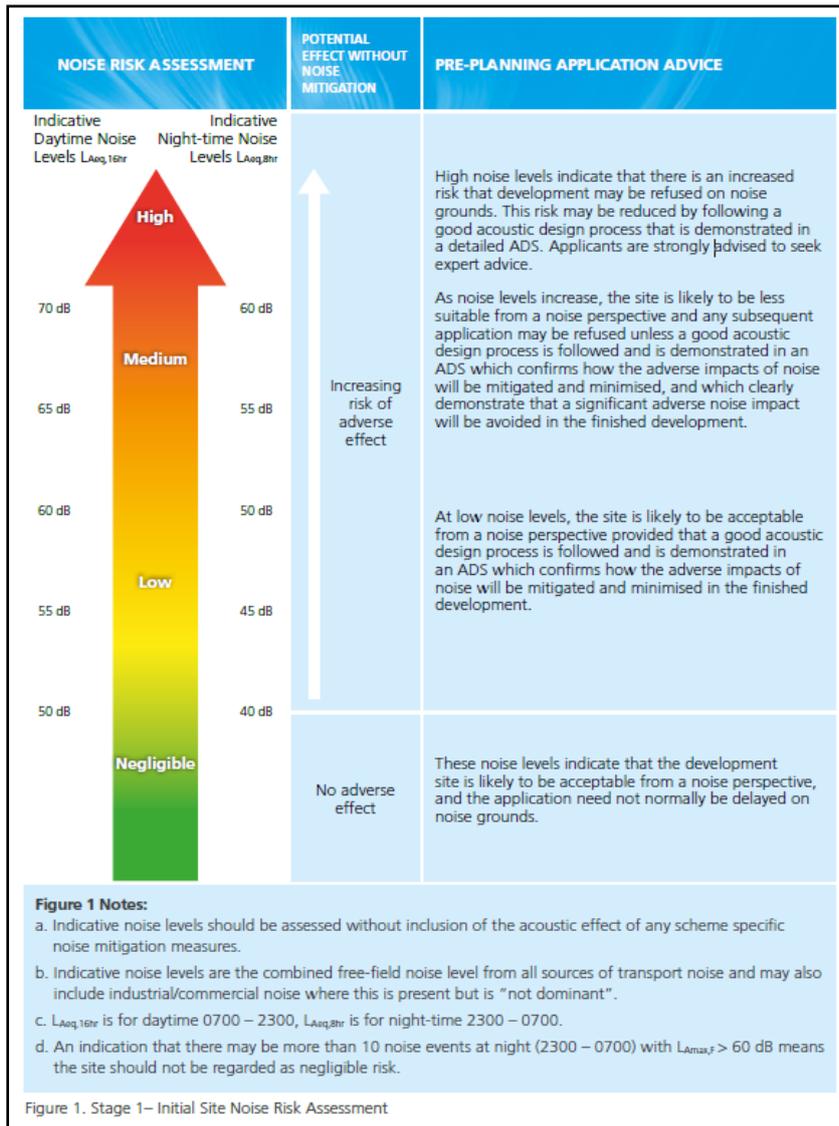


Figure 11: ProPG Stage 1 Risk Assessment

Stage 2 Element 1 – Good Acoustic Design Process

ProPG states that planning applications for new residential development should include evidence that the following have been properly considered:

- Check the feasibility of relocating, or reducing noise levels from relevant sources.
- Consider options for planning the site or building layout.
- Consider the orientation of proposed building(s).
- Select construction types and methods for meeting building performance requirements.
- Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost CDM (construction design and management) etc.
- Assess the viability of alternative solutions.
- Assess external amenity area noise.

Stage 2 Element 2 – Internal Noise Level Guidelines

The internal noise level guidelines provided under Element 2 within Figure 2 of the ProPG are based upon the guidance in BS8233:2014. Accompanying notes 4 – 7 from Figure 2 of the ProPG state the following:

Note 4 – Regular individual noise events (for example, schedules aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number distribution, predictability and regularity of noise events.

Note 5 – Designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the “open” position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded, subject to the further advice in Note 7.

Note 6 – Attention is drawn to the requirements of the Building Regulations.

Note 7 – Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal L_{Aeq} target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved. The more often internal L_{Aeq} levels start to exceed the internal L_{Aeq} target levels by more than 5 dB, the more that most people are likely to regard them as “unreasonable”. Where such exceedances are predicted, applicants should be required to show how the relevant number of rooms affected has been kept to a minimum. Once internal L_{Aeq} levels exceed the target levels by more than 10 dB, they are highly likely to be regarded as “unacceptable” by most people, particularly if such levels occur more than occasionally. Every effort should be made to avoid relevant rooms experiencing “unacceptable” noise levels at all and where such levels are likely to occur frequently, the development should be prevented in its proposed form.”

Stage 2 Element 3 – External Amenity Area Noise Assessment

ProPG refers to the design ranges in BS8233:2014 with respect to the assessment of external amenity, as well as guidance in the PPG-N. Based on these two documents the following guidance is provided with respect to the assessment of noise in external amenity areas:

3(i) “If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended”

3(ii) “The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.”

3(iii) These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces."

3(iv) "Whether or not external amenity spaces are an intrinsic part of the overall design, consideration of the need to provide access to a quiet or relatively quiet external amenity space forms part of a good acoustic design process."

3(v) "Where, despite following a good acoustic design process, significant adverse noise impacts remain on any private external amenity space (e.g. garden or balcony) then that impact may be partially off-set if the residents are provided, through the design of the development or the planning process, with access to:

- a relatively quiet façade (containing openable windows to habitable rooms) or a relatively quiet externally ventilated space (i.e. an enclosed balcony) as part of their dwelling; and/or
- a relatively quiet alternative or additional external amenity space for sole use by a household, (e.g. a garden, roof garden or large open balcony in a different protected location); and/or
- a relatively quiet, protected, nearby, external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or
- a relatively quiet, protected, publicly accessible, external amenity space (e.g. a public park or local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance)."

Stage 2 Element 4 – Other Relevant Issues

ProPG states that the following other relevant issues, should be considered, where appropriate:

- 4(i) compliance with relevant national and local policy
- 4(ii) magnitude and extent of compliance with ProPG
- 4(iii) likely occupants of the development
- 4(iv) acoustic design verses unintended adverse consequences
- 4(v) acoustic design verses wider planning

Planning Recommendations

Following the ProPG assessment approach, will lead the noise practitioner to choose between four possible recommendations to the decision maker. These are as follows:

- planning consent may be granted without any need for noise conditions.
- planning consent may be granted subject to the inclusion of suitable noise conditions.
- planning consent should be refused on noise grounds in order to avoid significant adverse effects ("avoid"); or
- planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects ("prevent").

Full details of where and when the above recommendations apply are provided in Section 3 of ProPG.

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

BS8233:2014 Guidance on sound insulation and noise reduction for buildings provides guidance for the control of noise in and around buildings. Through providing appropriate criteria and limits for internal and external noise levels it can be used to guide the design of new buildings (or refurbished buildings undergoing a change of use).

Guidance pertaining to indoor noise levels for residential spaces is summarised in the table below. These levels refer to the overall internal noise resulting from steady external environmental noise, such as road traffic, and are not applicable for sources of noise with specific character.

Table 7: BS 8233 – Indoor ambient noise levels in spaces when unoccupied

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

In terms of design criteria for "...traditional external areas that are used for amenity space, such as gardens and patios..." BS8233:2014 states that:

"...it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited."

In relation to other external amenity areas it states:

"Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens and terraces, which might be intended to be used for relaxation. In high-noise areas, consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55 dB $L_{Aeq,T}$ or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space."

Shorter duration and intermittent noise events can be responsible for sleep disturbance. While BS8233 does not recommend specific maximum noise limits for controlling these events, Note 4 from Figure 2 of the ProPG states that good acoustic design can be used so that individual noise events do not normally exceed 45 dB L_{AFmax} more than 10 times a night.

BS8233:2014 states that, "Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night." However, the document does not recommend any specific criterion.

The noise level criteria specified in BS8233:2014 are broadly in line with those specified by the World Health Organization (WHO) in its Guidelines for Community Noise (1999), as described below.

WHO GUIDELINES FOR COMMUNITY NOISE

The WHO Guidelines consolidate scientific knowledge on the health effects of community noise and provide guidance to environmental health authorities and professionals trying to protect people from the harmful effects of noise in non-industrial environments. The main sources of community noise are identified as road, rail and air traffic; industries; construction and public work; and neighbours.

The effects of noise in dwellings are, typically, sleep disturbance, speech interference and annoyance. Suggested guideline limitations, and the time periods to which they relate, are presented in the following table.

Table 8: WHO guideline values for community noise in specific environments

Specific environment	Critical health effect(s)	$L_{Aeq,T}$	Time base, T (hours) ¹	L_{AFmax}
Outdoor living areas	Serious annoyance, daytime and evening	55 dB	16	-
	Moderate annoyance, daytime and evening	50 dB	16	-
Dwellings indoors	Speech intelligibility and moderate annoyance, daytime and evening	35 dB	16	-
Inside bedrooms	Sleep disturbance, night-time	30 dB	8	45 dB ²
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45 dB	8	60 dB

¹ These periods are usually taken to be 07:00 – 23:00 (16 hour day) and 23:00 – 07:00 (8 hour night)

² The document states that, "For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{AFmax} more than 10-15 times per night..."

In line with the quoted guidance from the WHO Guidelines, it is taken that the L_{AFmax} criterion should not be compared to the highest L_{AFmax} level applicable to the assessment location(s), but rather to that more representative of conditions typically.

It is noted that the WHO guidance relating to night-time maximum noise levels is based on a study of sleep disturbance due to aircraft movements, which are not a prominent feature here. However, in the absence of similar guidance relevant to rail or road traffic, together with aircraft noise typically being considered more annoying than the other two modes of transport, it is considered appropriate to apply the guidance for the purposes of the assessment.

BS 4142:2014+A1:2019 METHODS OF RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

BS4142:2014+A1:2019 primarily provides a numerical method by which to determine the significance of sound of an industrial nature (i.e. the 'specific sound' from the proposed development and/or existing source) at residential NSRs. The specific sound level may then be corrected for the character of the sound, if appropriate, and this is then termed the 'rating level' (denoted as $L_{Ar,Tr}$), whether or not a rating penalty is applied.

With regard to the rating correction, paragraph 9.2 of BS4142:2014+A1:2019 suggests the following subjective methods for the determination of the rating penalty for tonal, impulsive and/or intermittent specific sounds:

Tonality

- For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0 dB and +6 dB for tonality. Subjectively, this can be converted to a penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.

Impulsivity

- A correction of up to +9 dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible.

Intermittency

- When the specific sound has identifiable on/off conditions, the specific sound level should be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.

Other sound characteristics

- Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied."

BS4142:2014+A1:2019 requires that the background sound levels adopted for the assessment be representative for the period being assessed. The Standard recommends that the background sound level should be derived from continuous measurements of normally not less than 15-

minute intervals, which can be contiguous or disaggregated. However, the Standard states that there is no 'single' background sound level that can be derived from such measurements. The accompanying paragraph 8.1.4 states that:

"A representative level should account for the range of background sound levels and should not automatically be assumed to be either the minimum or modal value."

Estimating Impact

An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level of the specific sound. In the context of the Standard, adverse impacts include, but are not limited to, annoyance and sleep disturbance.

Typically, the greater this difference, the greater the magnitude of the impact, while the lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.

BS4142:2014 recommends the following scale to estimate the impact:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on context.
- Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

Whilst there is a relationship between the significance of impacts determined by the method contained within BS4142:2014+A1:2019 and the significance of effects described in the PPG-N, there is not a direct link. It is not appropriate to ascribe numerical rating / background level differences to LOAEL and SOAEL because this fails to consider the context of the sound which is a key requirement of the Standard.

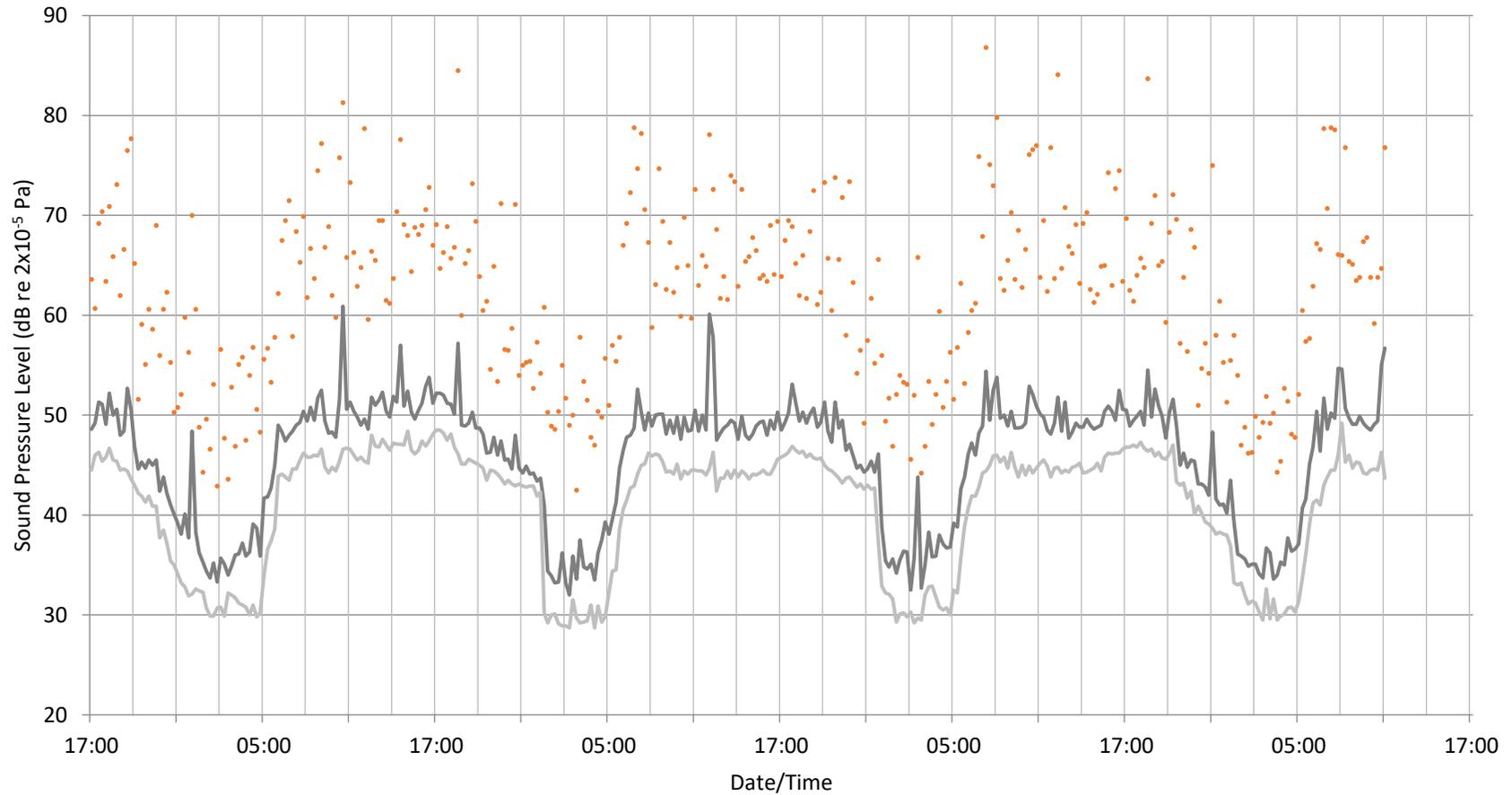
The significance of the effect of the noise in question (i.e. whether above or below SOAEL and LOAEL) should be determined on the basis of the initial estimate of impact significance from the BS4142:2014 assessment with reference to the examples of outcome described within the PPG-N and after having considered the context of the sound. It is necessary to consider all pertinent factors, including:

- the absolute level of the sound;
- the character and level of the residual sound compared to the character and level of the specific sound; and
- the sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions such as:
 - façade insulation treatment;
 - ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
 - acoustic screening.

Appendix C – Equipment Used During all Surveys

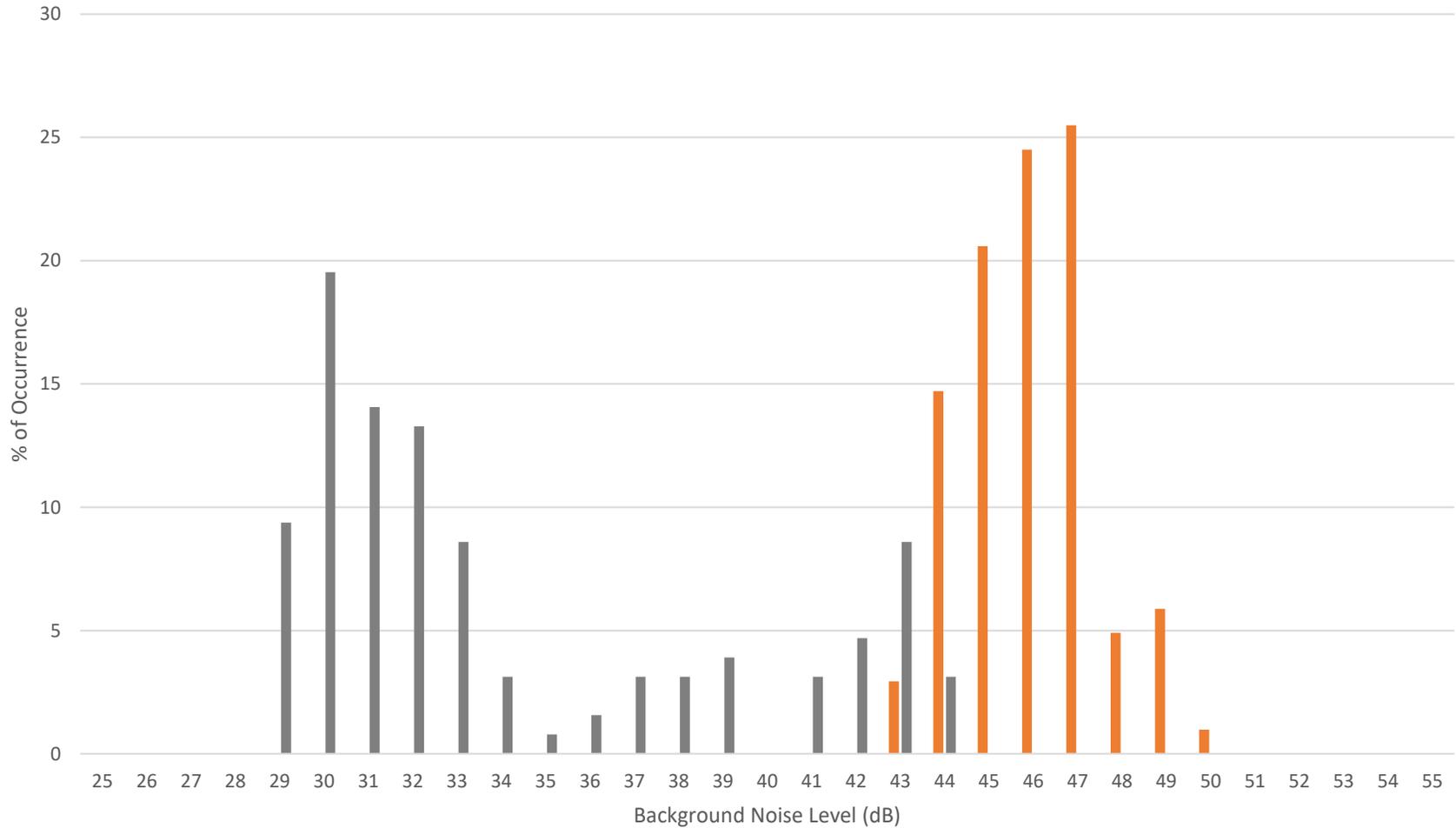
Position(s)	Equipment	Type	Serial Number	Calibration Certificate No.	Calibration Due Date
LT1, 3 & 4	Sound Level Meter	01dB Metravib CUBE	14240	CV-DTE-L-22-PVE-82757	29/05/2024
	Pre-amplifier	01dB Metravib PRE22	2138129		
	Microphone	GRAS 40CD 1/2" Pre-polarised free-field	367230		
	Calibrator	Cirrus CR:515	100874	190122	30/03/2024
LT2	Sound Level Meter	01dB Metravib FUSION	11703	TR-REP-10473	23/06/2024
	Pre-amplifier	01dB Metravib PRE22	2138123		
	Microphone	GRAS 40CD 1/2" Pre-polarised free-field	470866		
	Calibrator	01dB Metravib CAL31	82793	TCRT23/1345	20/06/2024

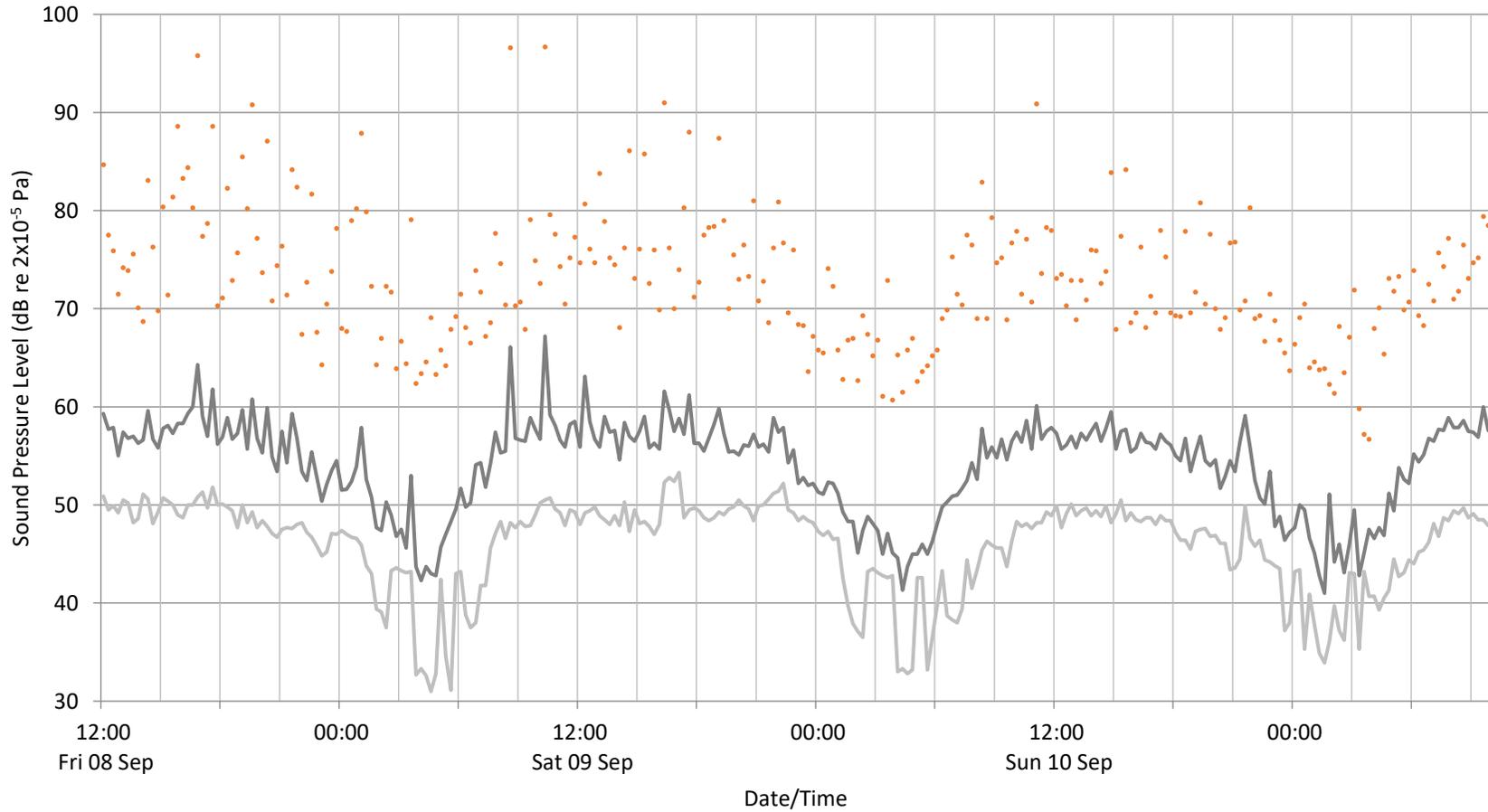
Appendix D – Baseline Noise Survey Data

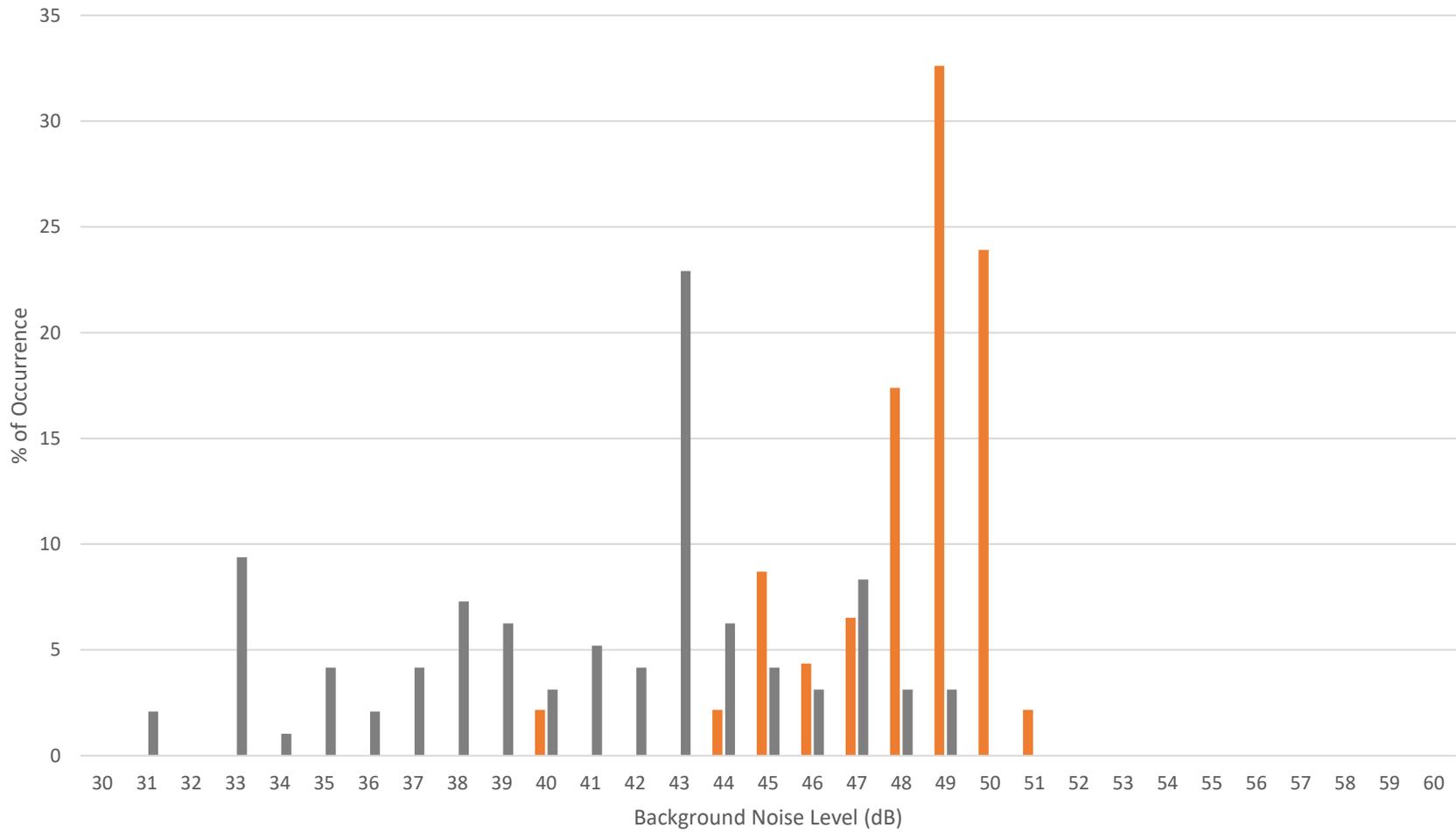


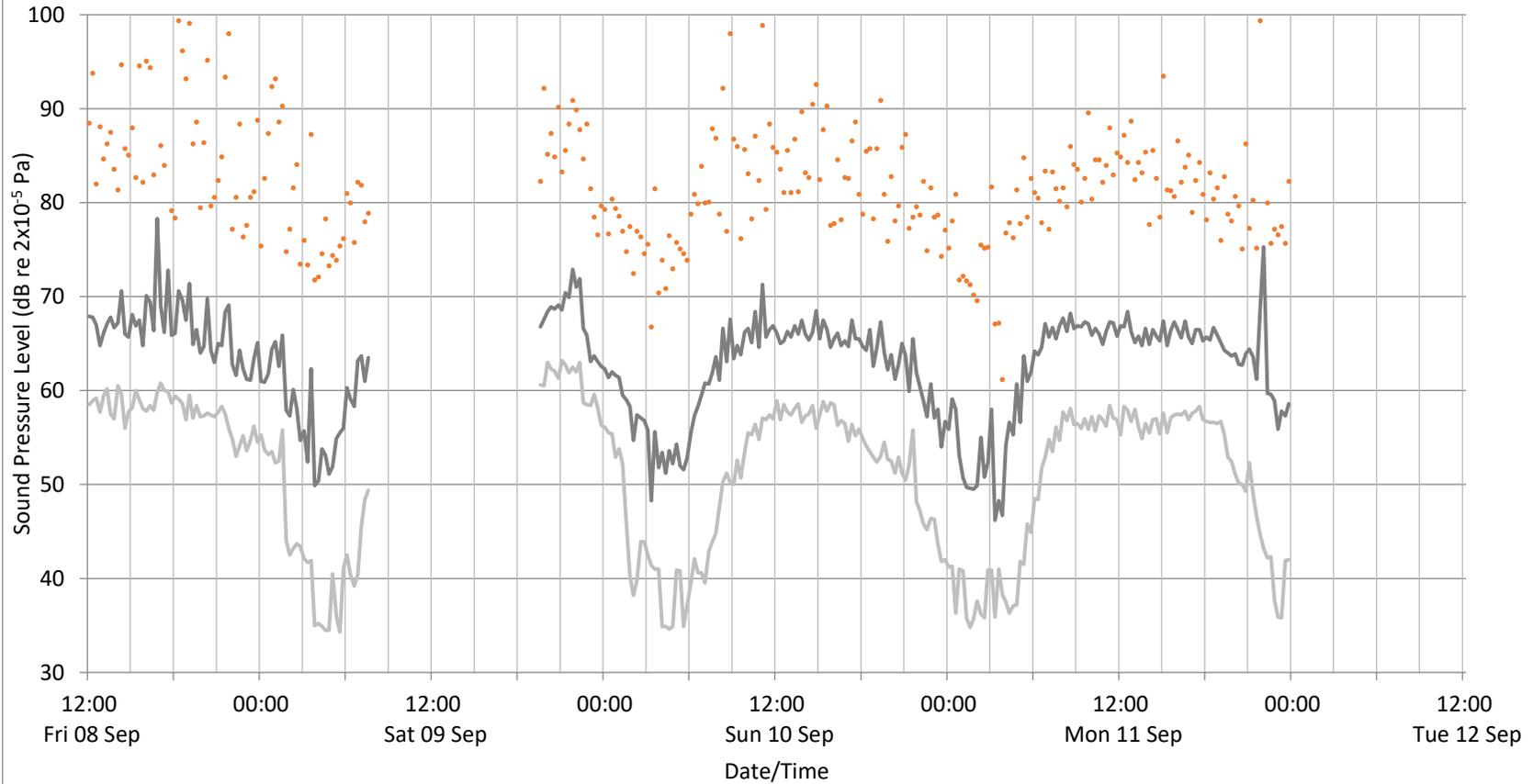
Cooper's Yard, Holmfirth
Acoustic Monitoring
LT1 - Rear Yard

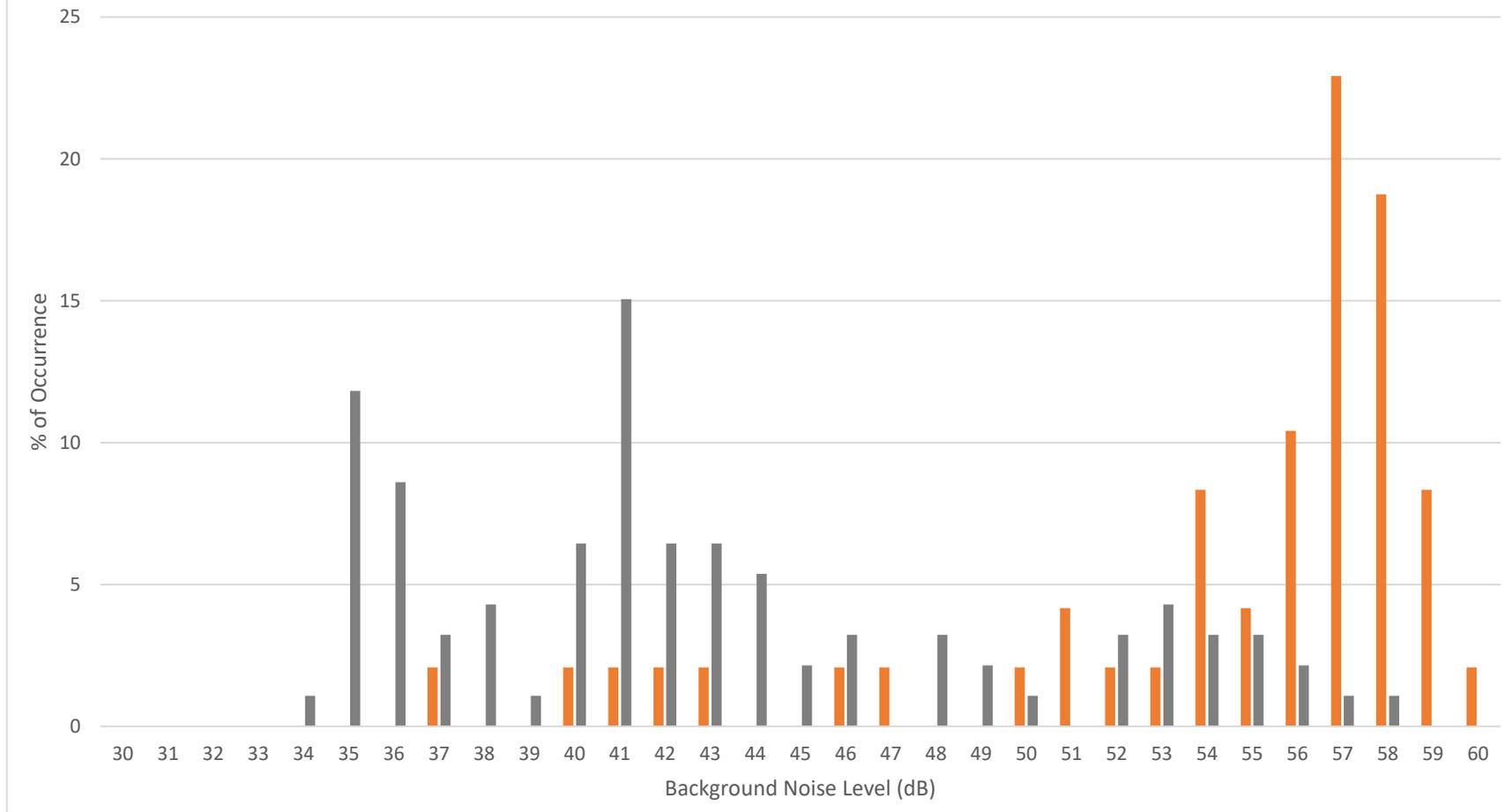
Daytime (1 hour)
Night-time (15 min)

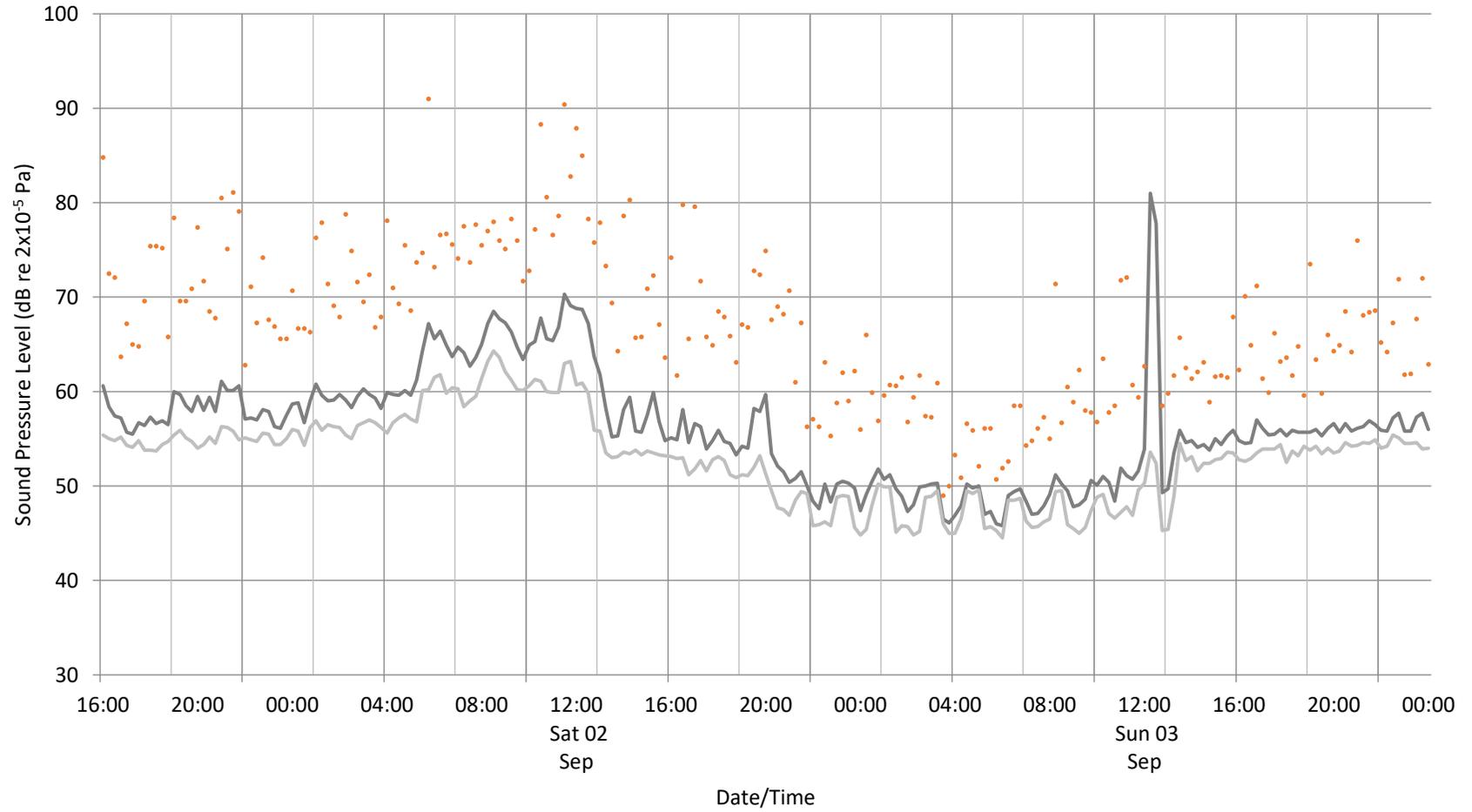


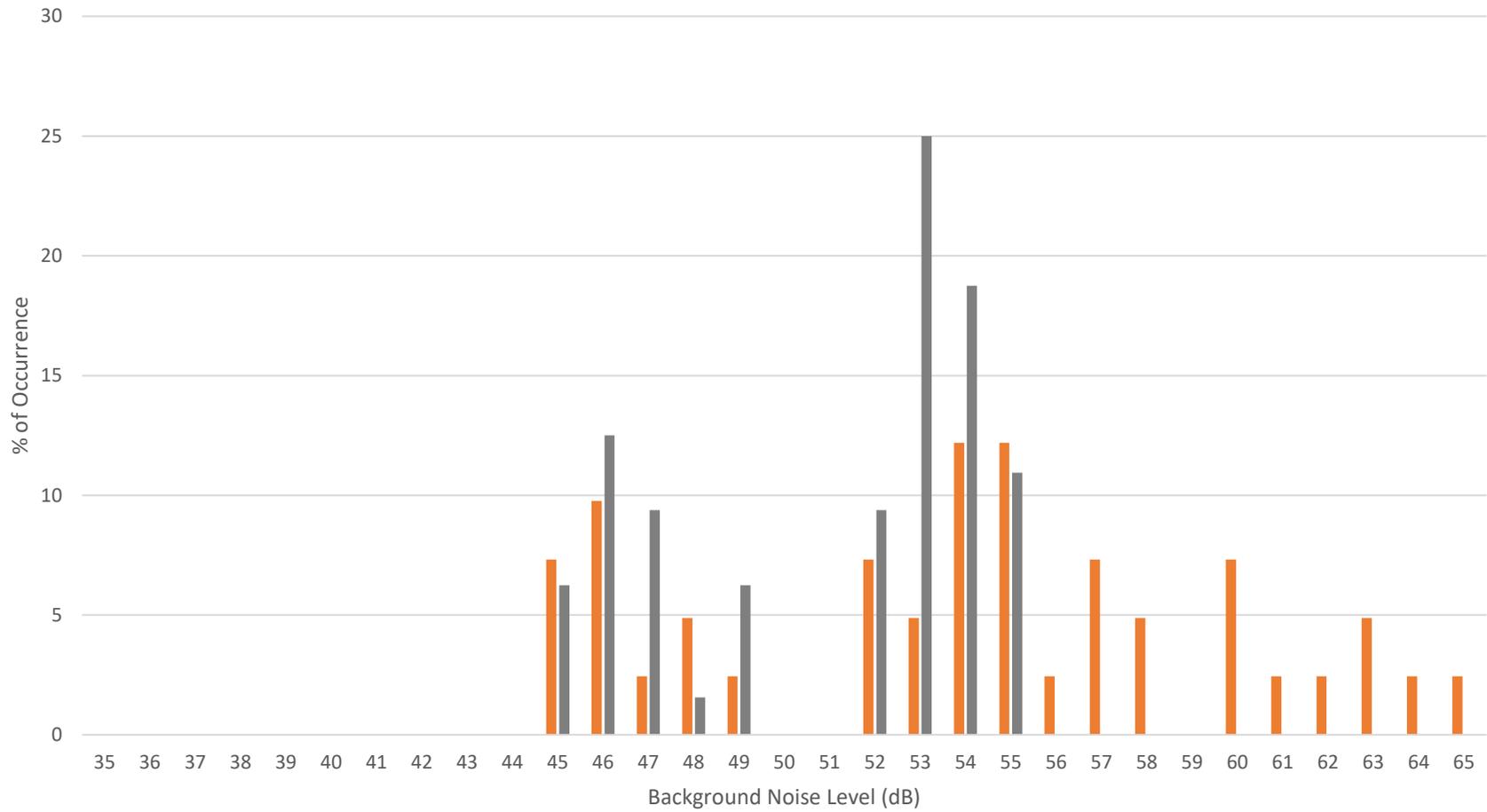












Appendix E – Extract from Pre-Application Response from KC

2. Impact on Residential Amenity:

The nearest residential properties are 1-3 Cooper Lane to the north-west and, on the opposite side of Cooper Lane, a modern development known as The Terrace. The A6024 has a strongly commercial frontage on Cooper Lane commercial uses give way quickly to residential. Cooper Lane is a quiet road which at present experiences few sources of noise other than from Huddersfield Road. The implications of introducing a use of this nature into such an environment must therefore be carefully considered.

It is noted that the high retaining wall to the north-west would provide a degree of noise attenuation to the north-west, and that it is proposed that the main customer access would be via the O'Briens premises, with the Cooper Lane entrance being used mainly for servicing. Notwithstanding these factors the proposed development is likely to generate noise which will have the potential to cause a loss of amenity to the occupiers of nearby noise-sensitive premises. A noise impact assessment should be provided with any future application. The assessment should determine the likely noise that will arise from all aspects of the proposed development (including but not limited to noise from the outside seating areas, people coming and going to and from the venue, fixed mechanical plant and equipment, and noise from music).

From the information provided it is likely that the current structure of the building does not lend itself to sound insulation. If there are residential dwellings above O'Briens Beer Café & Bottle Shop fronting Huddersfield Road, this must also be considered.

The noise assessment must also detail the control and mitigation measures that will be necessary to prevent the amenity of nearby receptors being affected by any such noise.

All noise assessments should be carried out by a competent person. Developers may wish to contact the Association of Noise Consultants <http://www.association-of-noise-consultants.co.uk/> (020 8253 4518) or the Institute of Acoustics <http://www.ioa.org.uk> (0300 999 9675) for a list of members.

Depending on the outcome of the noise assessment it may be that officers are unable to support the development.

Artificial lighting of the open-air customer service areas may be required for the convenience and safety of customers after dark. If any external artificial lighting is deemed necessary, this will need to be controlled to minimise stray light and glare.

We note that the proposal includes food vendor trucks to be parked at the venue. Environmental Health have raised the concern that it may not be possible to adequately control odours arising from these and this may lead to loss of amenity to nearby sensitive receptors. Therefore, we may not be able to support this aspect of any future application. With regard to the 3-5 permanent kitchens (café and street food vendors) that will involve the preparation and cooking of food we would expect a detailed extract scheme to be submitted with any future application to demonstrate how odours and noise will be effectively controlled. The scheme will need to provide the following information:

- A risk assessment for odour which considers amount and type of food that will be cooked together with the proposed dispersion of odours and proximity of receptors likely to be affected by any cooking odours.
- Based on the risk assessment, details of the proposed methods of odour control and dispersion of any extracted odours.
- Details showing the proposed location of all the major components of the extract system.
- The noise mitigation measures that will be incorporated in the extract system and details of the likely resulting noise levels that will be caused by operation of the extract system, how loud it will be at nearby noise sensitive locations.
- The proposed ongoing maintenance schedule that will be carried out to ensure that the extract system continues to effectively control odours and not cause excessive noise.

Detailed advice is available in “Control of Odour and Noise from Commercial Kitchen Exhaust Systems” by EMAQ May 2022.

Preferably, this information should be submitted with a future application but in its absence it may be possible to control it by means of a condition requiring one to be submitted and approved before the use commences.

To conclude, further detailed information is required to ensure that the development is compatible with the amenity of neighbouring residential properties in accordance with the aims of Policies LP24(b) and 52 of the Local Plan, 2(10) and 8(7) of the Holme Valley NDP and Chapter 15 of the NPPF.

Appendix E – Limitations to this Report

This report has been prepared for the titled project or named part thereof and should not be used in whole or part and relied upon for any other project without the written authorisation of MZA Acoustics Limited. MZA Acoustics Limited accepts no responsibility or liability for the consequences of this document if it is used for a purpose other than that for which it was commissioned. Persons wishing to use or rely upon this report for other purposes must seek written authority to do so from the owner of this report and/ or MZA Acoustics Limited and agree to indemnify MZA Acoustics Limited for any and all loss or damage resulting therefrom. MZA Acoustics Limited accepts no responsibility or liability for this document to any other party other than the person by whom it was commissioned.

The findings and opinions expressed are relevant to the dates of the site works and should not be relied upon to represent conditions at substantially later dates. Opinions included therein are based on information gathered during the study and from our experience. If additional information becomes available which may affect our comments, conclusions or recommendations MZA Acoustics Limited reserve the right to review the information, reassess any new potential concerns and modify our opinions accordingly.

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