

Former Castle Inn Rochdale

Noise Impact Assessment Report

Client:

Rochdale Borough Council

Date:

7 March 2024

Our Ref:

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**JAMESON
ACOUSTICS**

Consultants in acoustics,
noise and vibration

Document Control

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0	18-11-2023	AJ	-
1	13-02-2024	AJ	Updated floor layouts
2	07-03-2024	AJ	Amended client reference & red line boundary

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Executive Summary

Planning permission is sought for the redevelopment of the Former Castle Inn in Rochdale. The development will create 8nr 1-bed residential units at ground and first floor, with office accommodation at basement level.

The site is subject to noise from road traffic on the surrounding road network.

Jameson Acoustics Limited has been commissioned to undertake a noise impact assessment to supplement the planning application.

The assessment finds that acceptable internal noise levels within new dwellings can be achieved through the appropriate specification of windows and appropriate ventilation/overheating solutions. Conventional double glazing (or refurbished existing windows with secondary glazing) and either MVHR ventilation or acoustic passive ventilators would be required. Ventilators would need to be high-acoustic performance in-wall ventilators to rooms overlooking Manchester Road (A58).

The overheating strategy, in line with Building Regulations Part O, should assume occupants would have their windows closed during the night (23:00-07:00hr). During the day, the overheating strategy shall be made to work based on a limited number of hours windows would be open. These limits may prove restrictive for apartments in the noisiest zones (close to Manchester Road (A58)), and this may push the design into mechanical ventilation solutions (e.g. MVHR) to minimise reliance on openable windows.

Plant noise emission limits have been proposed so that future plant installations (e.g. for the office) do not adversely impact on the locality.

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1.0 Introduction

Planning permission is sought for the redevelopment of the Former Castle Inn in Rochdale. The development will create 8nr 1-bed residential units at ground and first floor, with office accommodation at basement level.

The site is subject to noise from road traffic on the surrounding road network.

Jameson Acoustics Limited has been commissioned to undertake a noise impact assessment to supplement the planning application. The assessment seeks to demonstrate that noise impacts can be sufficiently mitigated to achieve acceptable acoustic conditions within new dwellings and in gardens.

For a description of the acoustic terminology used herein, please see Appendix A.

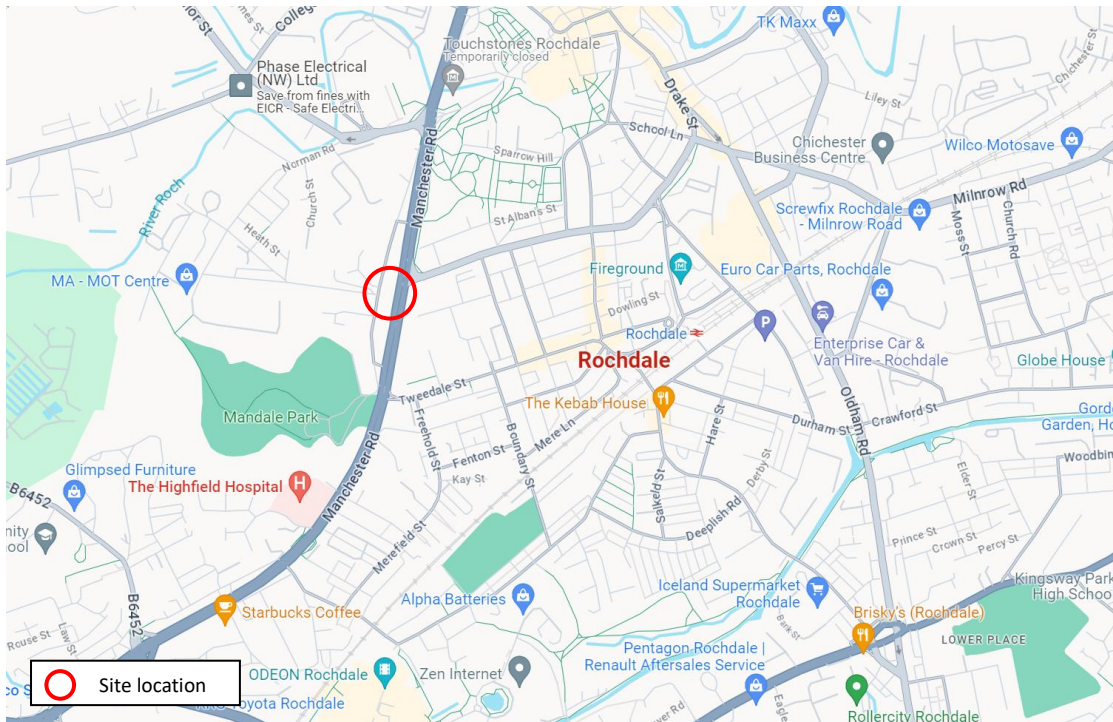
2.0 Objectives

- To review the latest national and local planning policies/requirements and relevant design standards and good practice guides that will inform the noise impact assessments.
- To carry out an automated 24-hour noise survey at the site capturing continuous daytime and night-time noise levels in accordance with BS 7445.
- Based on the survey data, to undertake a noise assessment for the suitability of the site for residential use in accordance with the Noise Policy Statement for England (NPSE), National Planning Policy Framework (NPPF), statutory legislation, Planning Practice Guidance (ProPG), British Standard BS8233, BS 4142 and Local Authority guidance/requirements.
- To subsequently provide guidance on noise mitigation and façade sound insulation solutions to achieve acceptable acoustic conditions within the completed scheme.

3.0 Site Description

3.1 Location

The site is located in Rochdale and falls under the jurisdiction of Rochdale Borough Council. See Location Plan below.



Location Plan (© maps.google.co.uk)

3.2 Description

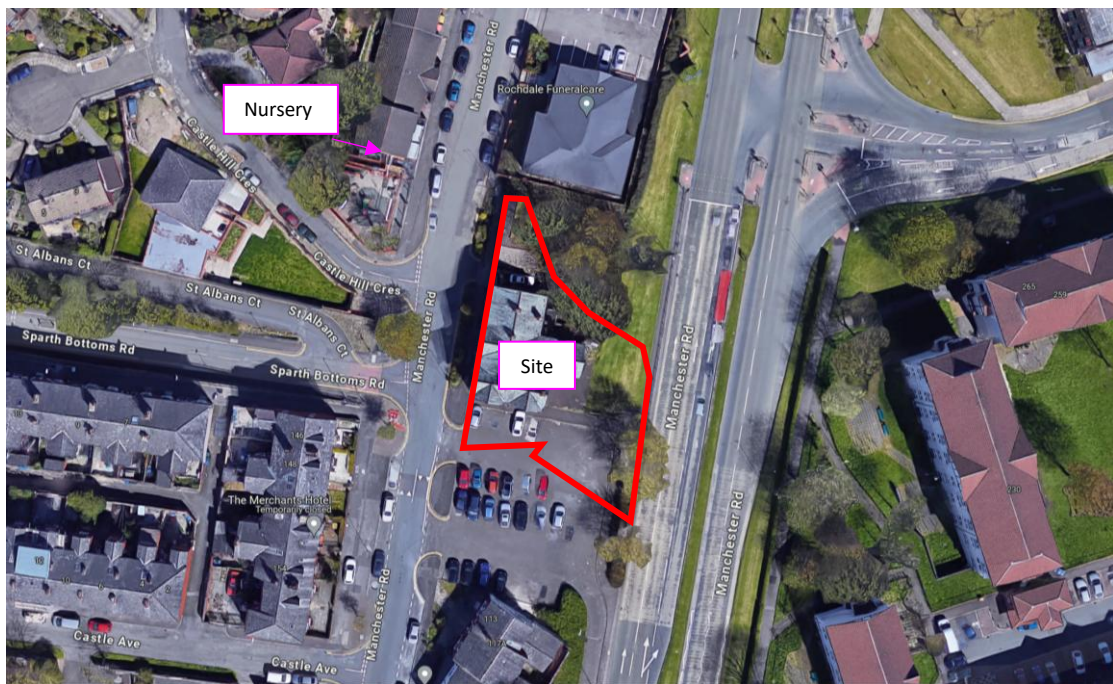
The site is located off Manchester Road (A58), a major dual-lane carriageway through Rochdale town centre. This road passes the site to the east. Vehicle access to the site is provided off a minor single-lane road, also called Manchester Road, to the west. This road primarily serves residential properties to the west, and commercial properties to the north and south of the site.

There is a daycare nursery to the west, with a small outdoor play area directly opposite the garage (proposed office) element of the scheme.

There is a small car park to the immediate south of the site, beyond which lies the former St Albans Hotel and public house (now closed).

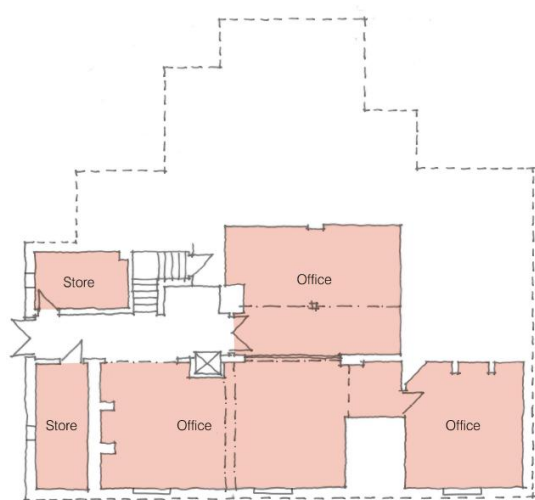
The surrounding area is predominantly residential.

See Site Plan below.

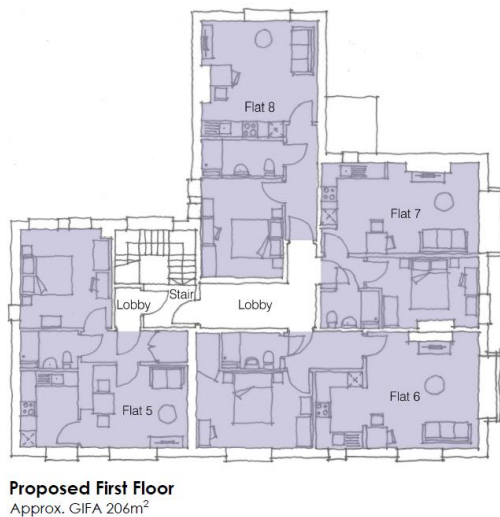
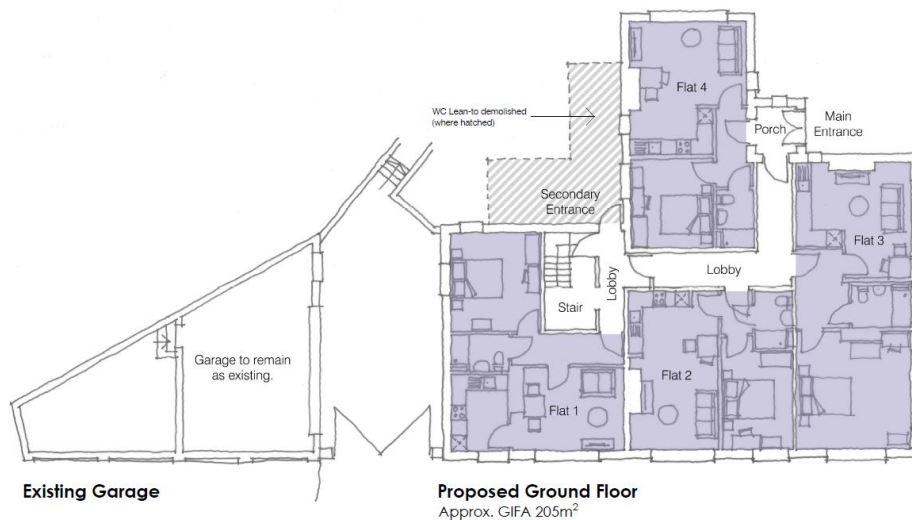


Satellite Plan (© maps.google.co.uk)

The development will see the remodelling of the main building into 8nr 1-bed apartments at ground and first floor, with office accommodation at basement level. See below Proposed Plans.



Proposed Cellar
Approx. GIFA 125m²



Proposed Ground & First Floor Layouts (c/o Triangle Architects)

4.0 Planning Policy, Legislation & Assessment Guides

4.1 National Planning Policy

National planning policies are set out in the following:

- Noise Policy Statement for England [NPSE], 2010;
- National Planning Policy Framework [NPPF], 2023;
- National Planning Practice Guidance – Noise [PPGN], 2019.

These documents provide a qualitative approach to noise assessments. See Appendix B for a detailed description of each.

4.2 Local Planning Requirements

The Core Strategy for Rochdale borough was adopted on 19 October 2016 and is the Council's leading document in the Local Plan.

Policy G9 of the Core Strategy relates to the control of pollution and states “**Noise**, including transport noise, is an increasing problem which can affect quality of life and health. Careful consideration of this should take place when new developments are being designed”. Policy DM1 concerns general development requirements, and also states the need to mitigate noise impacts.

Further policies are outlined in the Council’s Unitary Development Plan, 2006, including Policies H/10 and H/12 relating to housing/multi-dwelling developments, which states “*the proposal should not have any adverse impact upon the character of the surrounding area or the amenity of residents in any adjoining properties by reason of noise, visual intrusion or loss of privacy*”.

Policy EM/3 pertains to noise and new development, and states “*Development will not be permitted where: a) It would lead to unacceptable levels of noise nuisance to nearby existing or future occupants of buildings, or users of open space; or b) It involves a noise sensitive use (such as housing, a school or hospital) which would be sited in or close to an area that is, or is likely to become, subject to unacceptably high levels of noise generation. Where the effects of existing noise on proposed new development, or noise likely to be generated by new development, can be adequately controlled by design, landscaping and other measures, as enforced by planning conditions, the Council will grant planning permission, provided the development is acceptable in all other respects*”. Reference is made to PPG24 as the document against which acceptability will be judged. However, this document has since been superseded by ProPG, which is referenced herein.

4.3 Legislation (Building Regulations)

The development will need to be built in such a way that it conforms to the Building Regulations 2010. In relation to noise and acoustics, the key documents to consider are:

- Approved Document E: 2003 Edition (incorporating amendments to 2015) – Resistance to the Passage of Sound [ADE];
- Approved Document F: 2021 Edition – Ventilation [ADF];
- Approved Document O: 2021 Edition – Overheating [ADO].

ADE relates to the design of the building’s internal building fabric and primarily considers the control sound transfer between adjacent spaces. In planning terms, this development will contain party walls and floors separating new dwellings which will need to achieve on-site sound insulation performance requirements. This topic is not, however, covered in this Report.

ADF includes a section on controlling noise from ventilation systems. It states that “*account should be taken of outside noise when considering whether openable windows are appropriate for purge ventilation*” and that noise from mechanical ventilation systems operating under normal conditions

(not boost rates) should not exceed 30 dB $L_{Aeq,T}$ for noise sensitive rooms (e.g. bedrooms) and 45 dB $L_{Aeq,T}$ in less sensitive rooms.

ADO took effect on 15 June 2022 and does not apply to work subject to a building notice, full plans application or initial notice submitted before that date, provided the building work is started before 15 June 2023. It requires noise to be considered as part of the development’s overheating strategy in locations where external noise may be an issue. It states that the overheating strategy should take account of the likelihood that windows will be closed during sleeping hours if noise within bedrooms exceeds the following limits.

- 40 dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).
- 55 dB L_{AFmax} , more than 10 times a night (between 11pm and 7am).

4.4 Assessment Guides

For planning and noise, the following industry standards and assessment guides shall be considered.

- ProPG: Planning & Noise, 2017;
- BS 8233: 2014 ‘Guidance on sound insulation and noise reduction for buildings’;
- World Health Organisation [WHO] Environmental Noise Guidelines, 2018;
- Acoustics, Ventilation & Overheating [AVO] Residential Design Guide, 2020.
- BS 4142: 2014+A1: 2019 ‘Methods for rating and assessing industrial & commercial sound’.

See Appendix B for a detailed description of each.

5.0 Baseline Environmental Noise Survey

5.1 Procedure

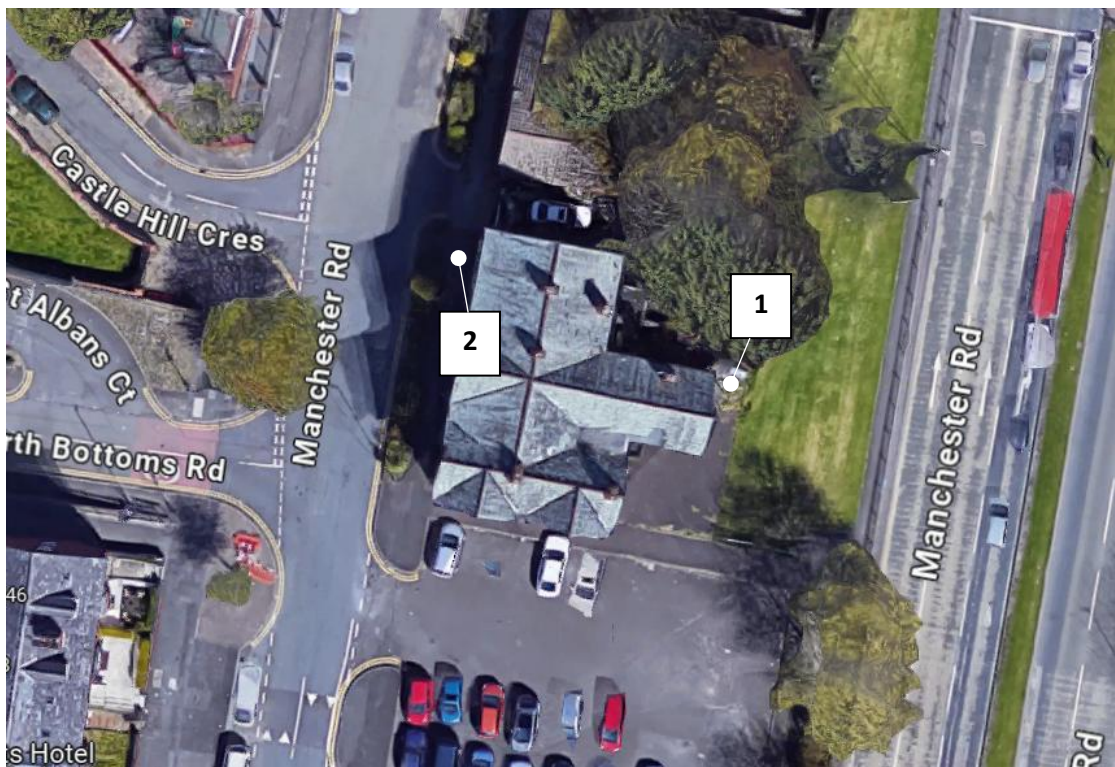
Automated noise level measurements were taken from 12:00 hours on Tuesday 31 October 2023 to 11:00 hours on Wednesday 1 November 2023 at 2nr on-site positions as described below. Both positions were selected to establish the typical prevailing daytime and night-time ambient, maximum and background noise levels on the east and west facing elevations of the main building.

Position	Type	Description
1	Automated	To the east, approximately 12 m from the roadside edge of Manchester Road (A58). Microphone protruding 1 m out of first floor window with full sight of Manchester Road (A58, dual carriageway).
2	Automated	To the west, approximately 4 m from the roadside edge of Manchester Road. Microphone protruding 1 m out of first floor window with full sight of Manchester Road (single carriageway).

The microphones were fitted with windshields.

The equipment was programme to continuously log all relevant A-weighted broadband (dBA) and linear spectral noise level indices, including L_{eq} , L_{90} , L_{10} and L_{max} , over 5-minute and 15-minute periods.

All measurements were taken in general accordance with BS 7445-1: 2003 '*Description and Measurement of Environmental Noise*'.



Site Plan showing measurement positions (© maps.google.co.uk)

5.2 Instrumentation

The instrumentation used for the survey is summarised below. The sound level meters were hand-calibrated at the beginning and end of the survey periods. No significant deviations were noted.

Description	Equipment	Serial Nr	Lab Calibration Expiry	Lab Calibration Certificate Nr
Class 1 sound level meter	Svantek 971A (with Type 7152 microphone)	124663 (82835)	11 Aug 2024	12 Aug 2022
Class 1 sound level meter	Svantek 971A (with Type 7152 microphone)	131635 (85533)	1 Nov 2024	2 Nov 2022
Class 1 sound calibrator	Cirrus CR:515	57570	8 Nov 2023	182770

5.3 Weather Conditions

Due to the nature of the survey, i.e. unmanned, it is not possible to describe the noise climate throughout the duration of the survey period. However, on install and collection, weather conditions were considered suitable for obtaining representative readings. The sky was overcast, road surfaces were dry/damp and wind speeds were low (below 4 m/s). Based on internet weather reports for the full duration of the survey, conditions generally remain commensurate with those described, although there were reported periods of rainfall during the night between 03:00-04:00 hr. Noise level measurements during these periods appear to have been unduly elevated by the rain, which shall be factored into our results analysis.

5.4 Observed Noise Climate

Due to the nature of the survey, i.e. unmanned, it is not possible to describe the noise climate throughout the duration of the survey period. However, on install and collection the noise climate was dominated by road traffic on Manchester Road (A58, dual carriageway). During install, the nursery was open and children were playing in the outdoor space. However, subjectively, the associated noise was not significant relative to the prevailing traffic noise.

5.5 Results & Analysis

The uncorrected results of the automated survey have been plotted on Time History Graphs 22097-G1 and 22097-G2 enclosed in Appendix C. The graph presents the 15-minute A-weighted (dBA) L_{90} , L_{eq} and L_{max} levels at each position throughout the duration of the survey. These values are ‘façade’ measurement values.

A summary of the results, corrected from façade to free-field values (in accordance with BS 8233), and as used to inform subsequent assessments against current guidelines, is presented in the following tables.

L_{Aeq} Ambient Noise Levels

The logarithmically-averaged 16-hour daytime and 8-hour night-time L_{Aeq} ambient noise levels

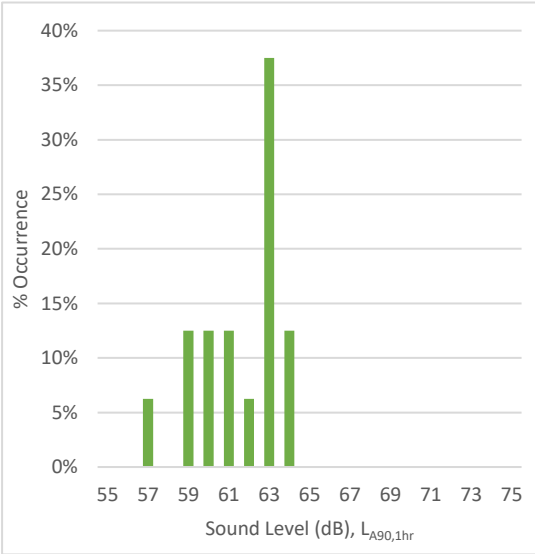
Position	Free-Field Ambient Noise Level (dB)	
	Daytime $L_{Aeq,16hr}$ (07:00-23:00)	Night-time $L_{Aeq,8hr}$ (23:00-07:00)
1	70	64
2	59	51

L_{A90} Background Noise Levels

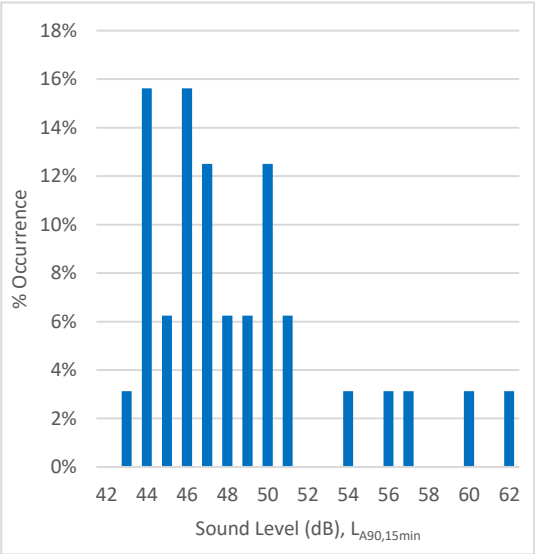
The representative background determined through statistical analysis to BS 4142

Position	Free-Field Background Noise Level (dB)	
	Daytime L _{A90,1hr} (07:00-23:00)	Night-time L _{A90,15min} (23:00-07:00)
1	59	44
2	51	41

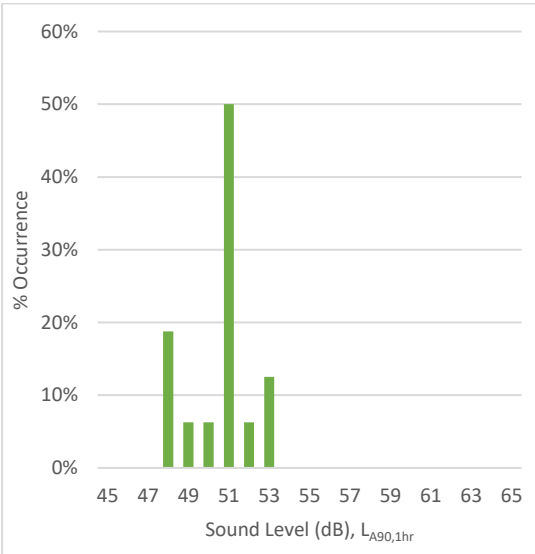
See below graphs showing the % distribution of background noise levels at each position throughout the duration of the survey.



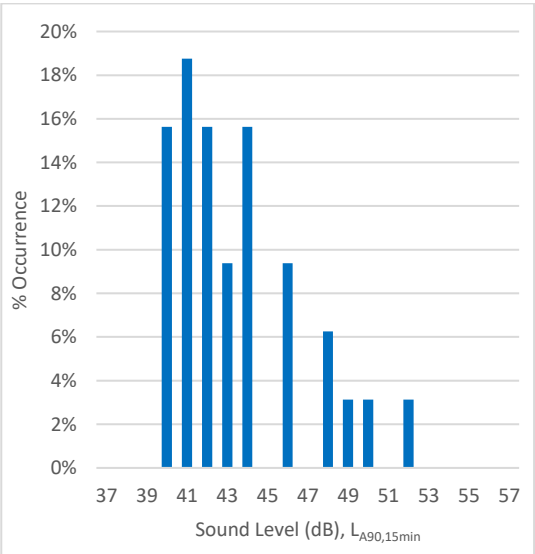
Position 1 – Daytime



Position 1 – Night-time



Position 2 – Daytime



Position 2 – Night-time

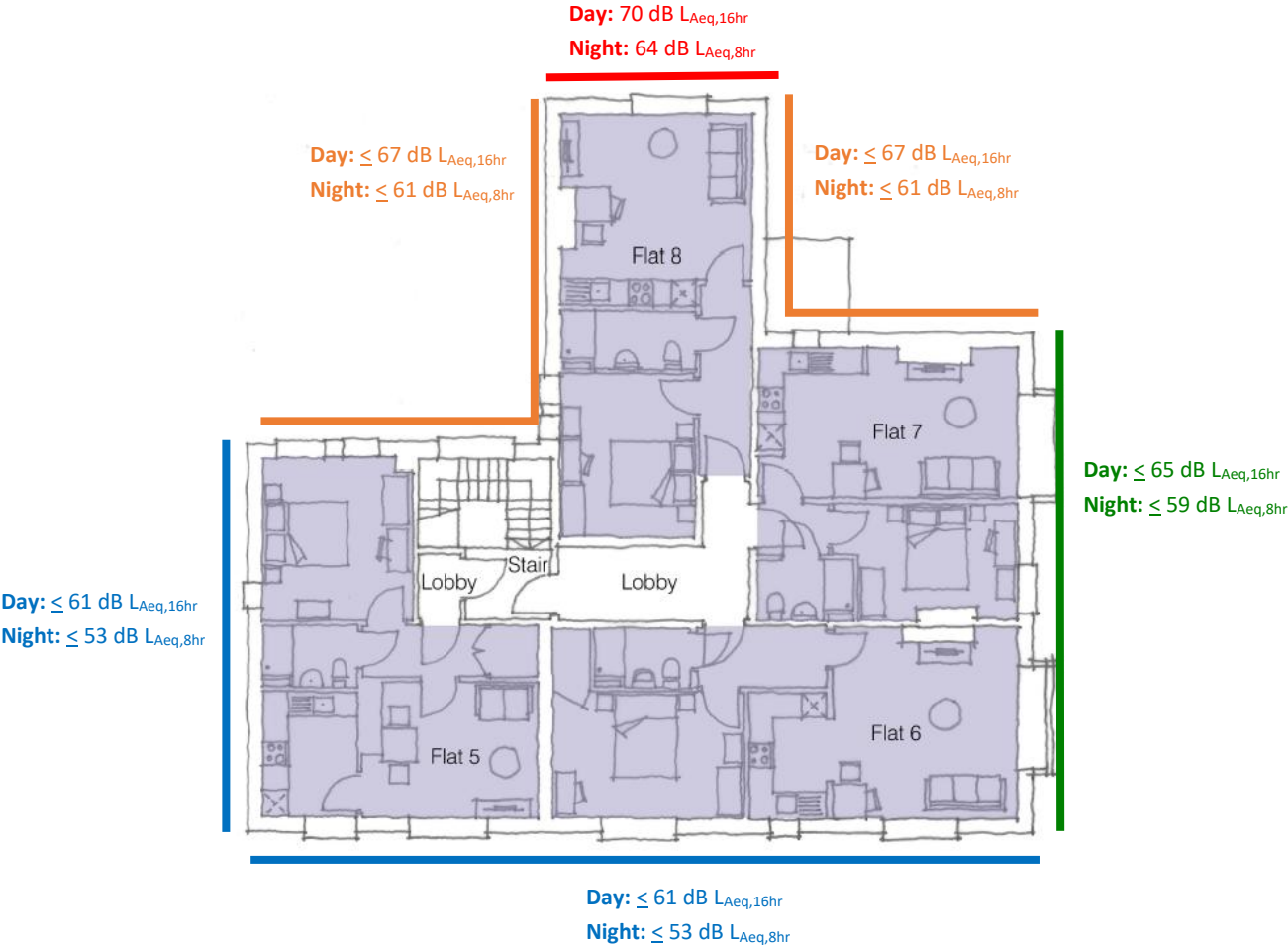
L_{Afmax} Maximum Noise Levels at Night

The 10-15th highest 5-minute L_{Afmax} maximum noise level ‘event’ at night

Position	Free-Field Maximum Noise Level (dB) At Night-time L _{Amax,5min} (23:00-07:00)
1	79
2	68

6.0 Incident Environmental Noise Levels

Based on the survey results, the following plan illustrates calculated incident (free-field) daytime L_{Aeq,16hr} and night-time L_{Aeq,8hr} environmental noise levels onto each building façade (ground & first floor levels). The survey data has been corrected for distance and screening based on the Calculation of Road Traffic Noise (CRTN) methods.



Incident night-time L_{Amax} noise levels are calculated to be 79 dB for red facades, up to 75 dB for orange facades, up to 72 dB for green facades and up to 70 dB for blue facades.

7.0 Achieving Internal Noise Levels

7.1 Criteria

In accordance with the planning requirements and assessment guides reviewed in Section 4.0, we would propose the following internal noise levels to be achieved (where feasible) within new dwellings during normal ventilation conditions.

Room	Desirable Internal Noise Level	
	Daytime (07:00-23:00)	Night-time (23:00-07:00)
Living Room	35 dB $L_{Aeq,16hr}$	-
Bedroom	-	30 dB $L_{Aeq,8hr}$ 45 dB* L_{Amax}

* Noise events - not exceeded more than 10-15 times per night

7.2 Building Envelope Acoustic Design

7.2.1 External Walls & Roofs

The façades comprise brick/rendered outer leaf with internal brick and punched-in double glazed windows. The external walls will be internally lined (with thermal insulation). This construction would be expected to provide ample sound reduction for this site, with an estimated sound reduction performance of at least 45 dB $R'_w + C_{tr}$.

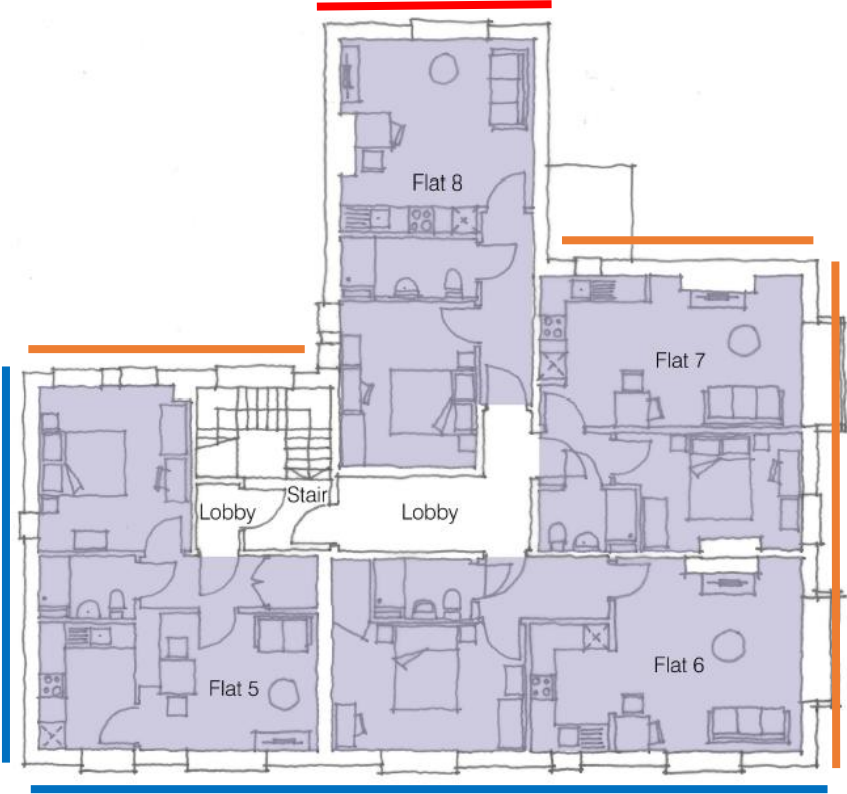
The roof elements are likely to be tiled insulated cavity roofs with plasterboard ceilings which, again, will provide ample sound reduction for this site (again, greater than 45 dB $R'_w + C_{tr}$ based on a 500 mm+ insulated cavity, roof tiles and 12.5 mm plasterboard ceiling).

7.2.2 Framed External Windows/Door Systems

Preliminary sound insulation calculations have been carried out in order to specify the minimum sound insulation performance of the windows to achieve the internal noise criteria detailed in Section 7.1. Our calculations follow BS 8233 procedures, typical habitable room dimensions and the above external wall/roof sound reduction performance. Window sizes are taken from the drawings (for width) and site measurements (for height).

Based on our calculations, provisions should be made to provide window systems capable of achieving the following sound reduction performance. Example configurations are provided for guidance only.

Façade Zone (Ref. Figure below)	Min. Required Sound Reduction $R_w + C_{tr}$ (dB)	Example Double Glazing Configuration
Red	36	10.8 [lam.] / 16 / 6 mm Or existing single glazed window retained (refurbished and sealed), with 8 mm (min.) secondary glazed window system installed with min. 100 mm cavity from primary window.
Orange	34	10 / 16 / 6 mm Or existing single glazed window retained (refurbished and sealed), with 8 mm (min.) secondary glazed window system installed with min. 75 mm cavity from primary window.
Blue	29	8 / 16 / 6 mm Or existing single glazed window retained (refurbished and sealed), with 6 mm (min.) secondary glazed window system installed with min. 50 mm cavity from primary window.



For the office accommodation, conventional double glazing (achieving 27 dB R_w+C_{tr}) would ensure daytime internal noise levels fall below 40 dB $L_{Aeq,1hr}$, which would align with current industry design guidelines for offices (BCO, BS 8233, BREEAM).

7.2.3 Ventilation

Background ventilation (to Part F rates) is usually provided by either:

- (a) openable windows,
- (b) trickle ventilators, typically installed in the head of window frames with air drawn through via constant mechanical extract ventilation fans (MEV) in bathrooms, or
- (c) whole-dwelling mechanical MVHR heat recovery systems, which remove the need for trickle ventilators in window frames.

On this scheme, option (a) will not be an acoustically acceptable solution. Option (b) or (c) would be viable for this scheme. With Option (c) – MVHR – no trickle ventilators or any other passive natural ventilation openings would be required in the facades and the acoustic integrity of the walls/windows (specified above) would be maintained.

If option (b) is chosen, trickle ventilators in facades (typically in the head of window frames) to habitable rooms will need to be suitably acoustically rated to maintain the acoustic integrity of the complete façade. To achieve this, passive ventilators achieving the performance stipulated below would be required.

Façade Zone (Ref. Figure in Section 7.2.2)	Min. Required Element Sound Level Difference Performance (vent open), $D_{n,e,w} + C_{tr}$ (dB)	Example Configuration
Red	42	Specialist acoustic in-wall ventilator: e.g. Duco DucoMax Medio 15
Orange	40	Specialist acoustic in-wall ventilator: e.g. Greenwood Airvac Acoustic Air Brick AAB-4000
Blue	35	Acoustic hit-miss trickle ventilator: e.g. Titon 2500EA TA5223 (V50) + TA5005 (SF 418)

The above assumes a single vent per room. If more than one vent is proposed, the above specification would increase by +3 dB for 2 vents, +5dB for 3 vents, +6dB for 4 vents.

For option (b) or (c), noise generated by the operation of the mechanical ventilation system will need to be designed to achieve a noise rating level of NR 25 in bedrooms at night and NR 30 in living rooms during the day.

7.3 Overheating & Noise

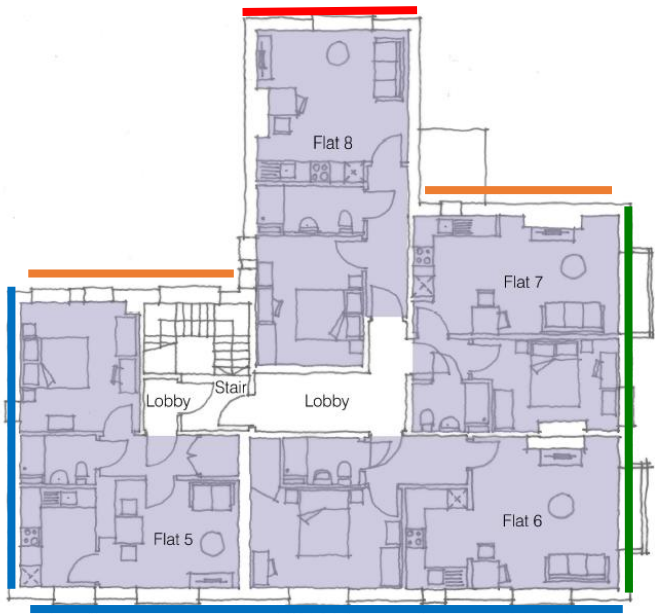
Often the overheating strategy for residential buildings places some reliance on openable windows in the summer months. For sites where incident noise levels are high, noise should be taken into account when considering whether openable windows are appropriate for providing this extra purge ventilation to control overheating.

In accordance with the Acoustics, Ventilation and Overheating Guide (AVO), the associated risk of noise levels been deemed unacceptably high with windows open would be when incident external noise levels exceed 65 dB LAeq,16hr (day) and 55 dB LAeq,8hr (night). In addition, Building Regulations’ Part O advises that the overheating strategy should assume windows will be closed throughout the night where incident façade noise levels exceed circa 49 dB LAeq,8hr and 64 dB LAmax.

Based on the Part O requirements, the overheating strategy shall assume windows will be closed throughout the night.

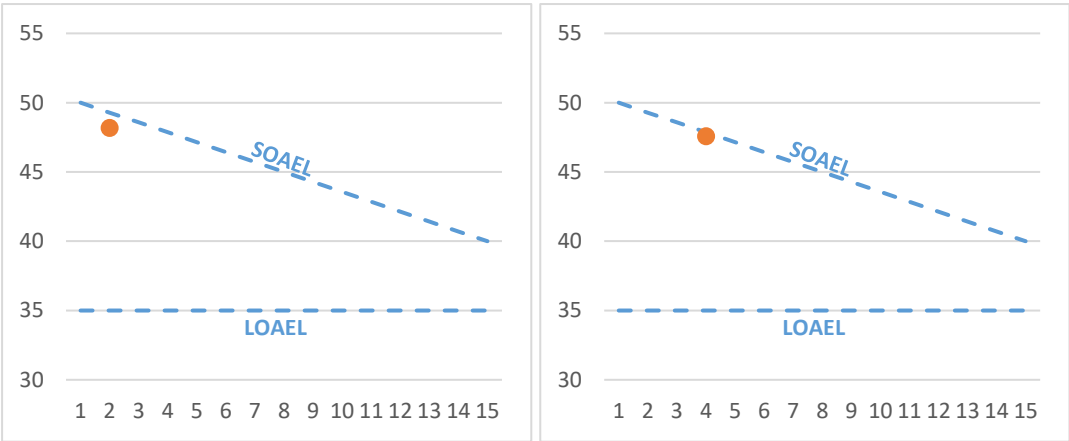
For AVO (daytime), the following table sets out the maximum number of hours windows can be opened during daytime hours before internal noise levels would exceed the Significant Observed Adverse Effect Level (SOAEL).

Façade Zone (Ref. Figure below)	Maximum number of hours windows can be open during the day (07:00-23:00)
Red	2 hours
Orange	4 hours
Green	5 hours
Blue	9 hours



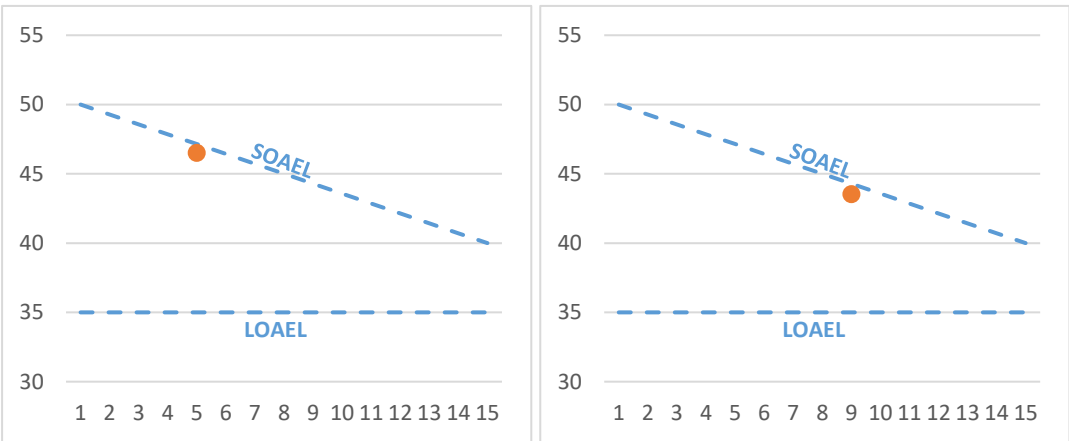
Provided the above limits are achieved, internal noise levels would fall below the AVO SOAEL threshold in both zones, as demonstrated on the below Figures.

The x-axis scale is duration for which ‘overheating condition’ occurs (in hours), the y-axis is the internal ambient noise level (in dB, $L_{Aeq,16hr}$).



Red Zone – AVO Assessment

Orange Zone – AVO Assessment



Green Zone – AVO Assessment

Orange Zone – AVO Assessment

Based on our experience working on similar schemes with restricted reliance on openable windows for acoustics, TM59 internal temperature targets can be maintained with a combination of suitably specified solar-rated glazing, appropriately sized windows, black-out blinds, and the specification of suitably sized mechanical ventilation systems.

Air conditioning can be considered for quality developments. However, the introduction of mechanical solutions should be considered carefully; not only with regard to cost and maintenance, but sustainability and the environment, which are factors that carry more importance for any new development in the Local Authority’s jurisdiction.

8.0 Plant Noise Emission Limits

Based on the results of the noise survey, we propose the following plant noise emission limits to be achieved incident at the nearest noise sensitive windows with all plant operating simultaneously. These limits are 5 dB below the prevailing 'representative' background noise levels.

Receptor Location	Plant Noise Rating Limit, $L_{A,r,T,r}$ ref. BS 4142 (dB)	
	Daytime (07:00-23:00)	Night-time (23:00-07:00)
Any Noise Sensitive Receptor	46	36

Noise shall be assessed in accordance with BS 4142:2014 with corrections applied for any plant emitting noise of a tonal or irregular quality.

The above limits shall be subject to the final approval of the Local Authority.

9.0 Conclusions

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Plant noise emission limits have been proposed so that future plant installations (e.g. for the office) do not adversely impact on the locality.

Appendix A – Acoustic Terminology

dB	Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form.
dB(A)	The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The _A subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted (e.g. $L_{Aeq,T}$ in dB). Noise levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is only just perceptible.
$L_{Aeq,T}$	$L_{Aeq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time measurement period, T .
$L_{10,T}$	L_{10} is the noise level exceeded for 10% of the measurement period T (i.e. the quietest 10% of the measurement) and has, for many years, been used in the assessment of road traffic noise.
$L_{90,T}$	L_{90} is the noise level exceeded for 90% of the measurement period T (i.e. the quietest 10% of the measurement) and is often used to describe the 'background' noise level.
L_{max}	L_{max} is the maximum sound pressure level recorded over the measurement period, T . L_{max} is often used in assessing scheduled environmental noise 'events' (such as train passbys), particularly at night where such events may cause sleep disturbance.
R_w	The weighted sound reduction index, R_w , is a single figure description of sound reduction as defined in BS EN ISO 717-1. It is single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies. The R_w is calculated from sound insulation measurements taken in an acoustic laboratory. Sound insulation ratings derived from site measurements are invariably lower than the laboratory figures and are referred to as the apparent weighted sound reduction index, R'_w .
$D_{n,e,w}$	The weighted element-normalised level difference, $D_{n,e,w}$, is a single figure description of the sound insulation performance of small building elements, such as a trickle ventilator.
C_{tr}	C_{tr} is correction term applied against the sound insulation single-number values (e.g. R_w) to provide a weighting against low frequency performance. The reference values used within the C_{tr} calculation are based on urban traffic noise.

Appendix B – Planning Policy & Assessment Guides

Planning Policy

- **Noise Policy Statement for England (NPSE)**

The Noise Policy Statement for England (NPSE) launched in March 2010 states the long-term vision of Government noise policy is to “*promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development*”.

The long-term vision is supported by the following aims; through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life;
- Where possible, contribute to the improvement of health and quality of life.

The intention is that the NPSE should apply to all types of noise apart from noise in the workplace (occupational noise).

The NPSE introduces a three-tier concept for the assessment of noise impacts onto a receptor:

- **NOEL – No Observed Effect Level:** The level below which no effect can be detected and below which there is no detectable effect on health and quality of life due to noise.
- **LOAEL – Lowest Observable Adverse Effect Level:** The level above 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.

There are no numeric thresholds relating to each of the above. The NPSE acknowledges that the severity of noise impacts vary depending upon the type of noise, the type of receptor, the duration (on-time) of the noise, the characteristics of the noise, the time of day, the day of the week, etc.. As a result, the definition of what constitutes an SOAEL is somewhat flexible.

- **National Planning Policy Framework (NPPF)**

The National Planning Policy Framework (NPPF) was first published in 2012 and sets out the government’s planning policies for England and how these are expected to be applied.

The latest revision of the NPPF (2023) states that planning system should **contribute to, and enhance**, the natural and local environment by (amongst others) “*preventing both new and existing development from*

*contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, water or **noise pollution** or land stability.”*

The express inclusion of noise in the NPPF means that it is a material planning consideration for local planning decisions.

Paragraph 123 of the NPPF document states that planning policies and decisions should aim to:

“A. Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;

B. Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;

C. Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and

D. Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.”

NPPF advises that decisions relating to planning applications should ensure “...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.”

To achieve this, new developments should “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” and should also “identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.”

The NPPF recognises that “...new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.”

- **Planning Practice Guidance on Noise (PPG)**

The National Planning Practice Guidance (PPG) is a web-based resource, launched by the Department for Communities and Local Government (DCLG) in March 2014 to support the NPPF and make it more accessible. It advises on how planning can manage potential noise impacts in new development. The guidance is regularly reviewed and updated and noise is listed as a specific category. The guidance is for ad hoc developments, as major infrastructure is covered by overarching National Policy Statements.

PPG provides the following tabulated summary of the effects of noise exposure (in terms of health and quality of life) associated with noise generating and sensitive developments.

Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not present	No effect	No Observed Effect	No specific measures required
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 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 or 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

Assessment Guides

- ProPG: Planning & Noise**

ProPG: Planning & Noise 'Professional Practice Guidance on Planning & Noise' was issued in May 2017 with the primary goal of assisting the delivery of sustainable residential development by promoting good health and well-being through the effective management of noise. It seeks to do that through encouraging a good acoustic design process in and around proposed new residential development having regard to national policy on planning and noise.

It is applicable to noise from existing transport sources (noting that good professional practice should have regard to any reasonably foreseeable changes in existing and/or new sources of noise). The recommended approach is also considered suitable where some industrial or commercial noise contributes to the acoustic environment provided that is “not dominant”.

ProPG advocates a systematic, proportionate, risk based, 2-stage, approach. The approach encourages early consideration of noise issues, facilitates straightforward accelerated decision making for lower risk sites, and assists proper consideration of noise issues where the acoustic environment is challenging.

The two sequential stages of the overall approach are:

Stage 1 – an initial noise risk assessment of the proposed development site; and

Stage 2 – a systematic consideration of four key elements.

Element 1 – demonstrating a “Good Acoustic Design Process”;

Element 2 – observing internal “Noise Level Guidelines”;

Element 3 – undertaking an “External Amenity Area Noise Assessment”; and

Element 4 – consideration of “Other Relevant Issues”.

The ProPG considers suitable guidance on internal noise levels found in BS 8233 (see below) with the addition of an $L_{Amax,f}$ requirement for bedrooms at night, as below.

“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. 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.”

- **BS 8233: 2014**

British Standard 8233: 2014 ‘Sound insulation and noise reduction for buildings’ presents the following desirable internal ambient noise levels for dwellings based on steady external noise sources (e.g. road traffic).

Activity	Location	Desirable Internal Ambient Noise Level	
		07:00 – 23:00	23:00 – 07:00
Resting	Living Rooms	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 $L_{Aeq,8hour}$

BS 8233 states that where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

For outdoor living spaces, BS 8233 states:

“For traditional external areas that are used for amenity space, such as gardens and patios, 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 and 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.

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.”

- **World Health Organisation (WHO)**

The current WHO Environmental Noise Guidelines 2018 for the European Region supersede the 1999 Guidelines for Community Noise, although it does suggest that the 1999 values for indoor noise levels remain valid, as presented below.

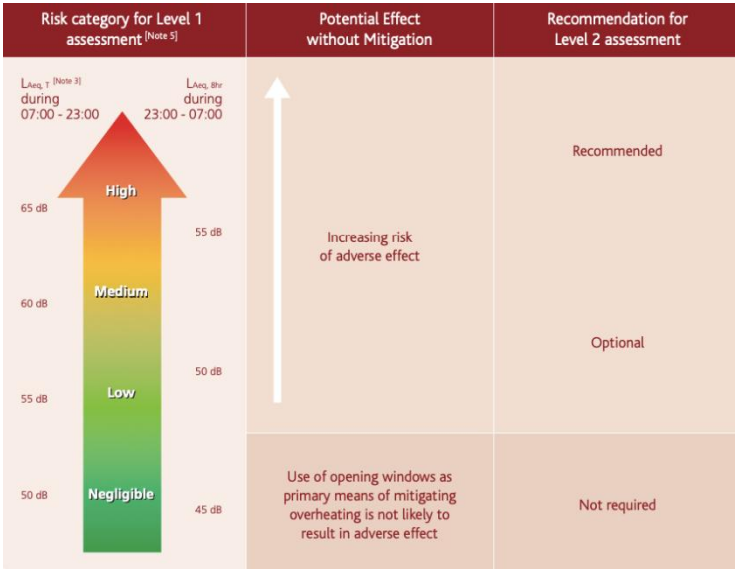
Noise Source	CNG guideline indoors all sources	ENG guideline outdoors noise from specific source only
Road traffic	35 dB $L_{Aeq, 16h}$	53 dB L_{den}
	30 dB $L_{Aeq, 8h}$	45 dB L_{night}
Railway	35 dB $L_{Aeq, 16h}$	54 dB L_{den}
	30 dB $L_{Aeq, 8h}$	44 dB L_{night}
Aircraft	35 dB $L_{Aeq, 16h}$	45 dB L_{den}
	30 dB $L_{Aeq, 8h}$	40 dB L_{night}

With regard to night-time noise “events”, WHO states *“In many situations, average noise levels like the L_{den} or L_{night} indicators may not be the best to explain a particular noise effect. Single-event noise indicators – such as the maximum sound pressure level (L_{Amax}) and its frequency distribution – are warranted in specific situations, such as in the context of night-time railway or aircraft noise events that can clearly elicit awakenings and other physiological reactions that are mostly determined by $L_{A,max}$. Nevertheless, the assessment of the relationship between different types of single-event noise indicators and long-term health outcomes at the population level remains tentative. The guidelines therefore make no recommendations for single-event noise indicators.”*

- Acoustics, Ventilation & Overheating Residential Design Guide

The Acoustics, Ventilation and Overheating Residential Design Guide (Version 1.1) was issued in January 2020 by the Association of Noise Consultants (ANC) and the Institute of Acoustics (IOA). This document provides guidance on the interdependence between acoustics, ventilation and overheating.

The AVO guide recommends a two-level approach to assess the potential impact of noise ingress through windows that have been opened to mitigate overheating and also noise from any mechanical services used to provide comfort cooling. The level 1 assessment relates to incident environmental noise levels across a proposed site, it is used to define “risk categories” for each building façade based on these levels. These categories are set out below:



At planning stage the level of information required to undertake a level 2 assessment in-line with the AVO guide is often not available and a level 1 assessment, which establishes the risk categories of each proposed façade, would be most suitable.

- BS 4142:2014

British Standard BS 4142 looks at the assessment of noise of a commercial / industrial nature. It describes methods for rating and assessing outdoor sound of an industrial and/or commercial nature “on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident”. In relation to this development, this includes sound from fixed installations, comprising M&E plant and equipment.

The assessment method is based on the difference between the measured ‘background sound level’ without the influence of any industrial noise source, and the ‘rating level’ of the industrial source, at the receiver location. The standard states that:

- *“a difference of around +10 dB or more is likely to be an indication of a significant adverse impact”;*
- *“a difference of around +5 dB is of marginal significance is likely to be an indication of an 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”.*

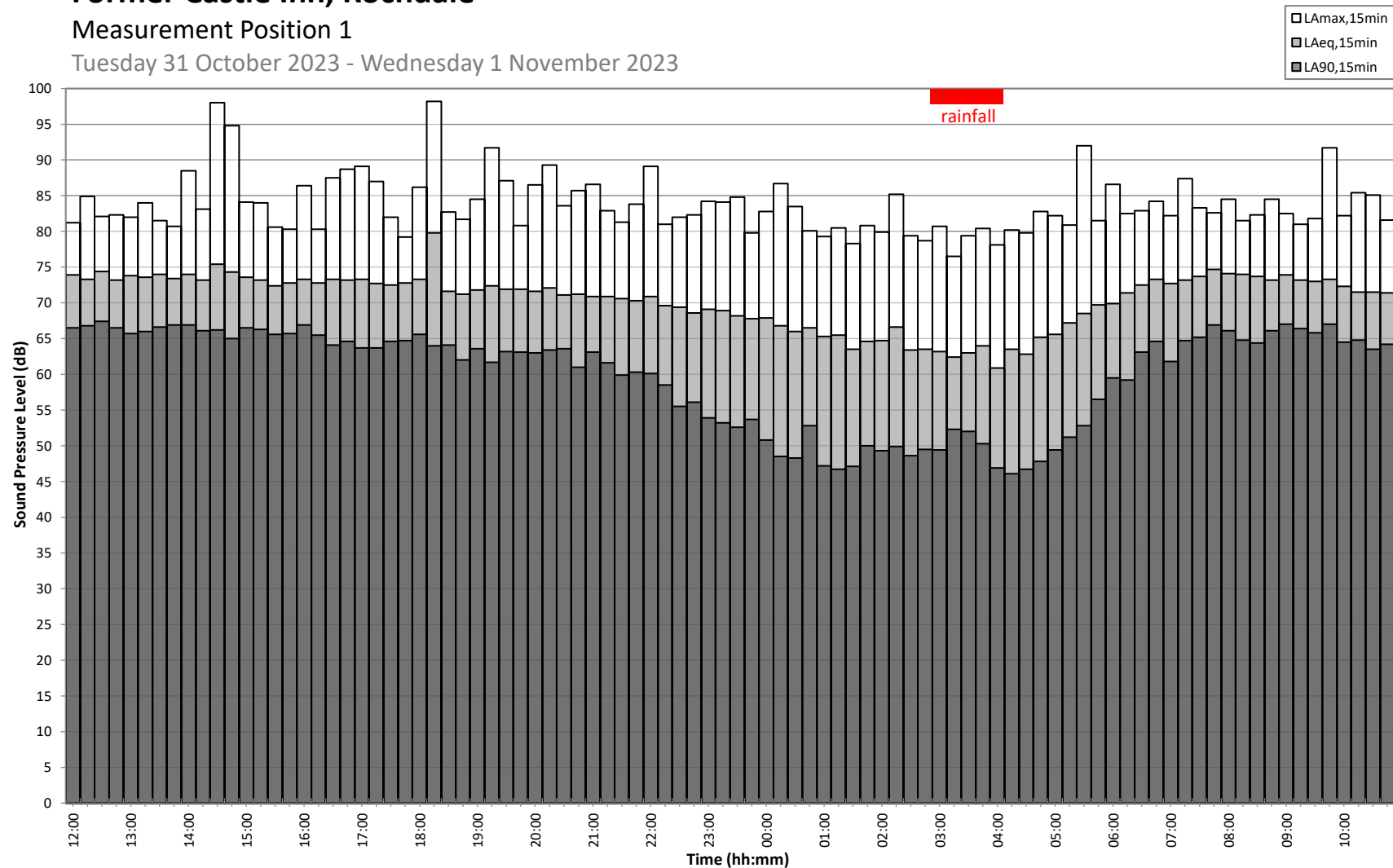
Appendix C – Noise Survey Time History Graphs

Former Castle Inn, Rochdale

Measurement Position 1

Tuesday 31 October 2023 - Wednesday 1 November 2023

22097-1-G1



Former Castle Inn, Rochdale

Measurement Position 2

Tuesday 31 October 2023 - Wednesday 1 November 2023

22097-1-G2

