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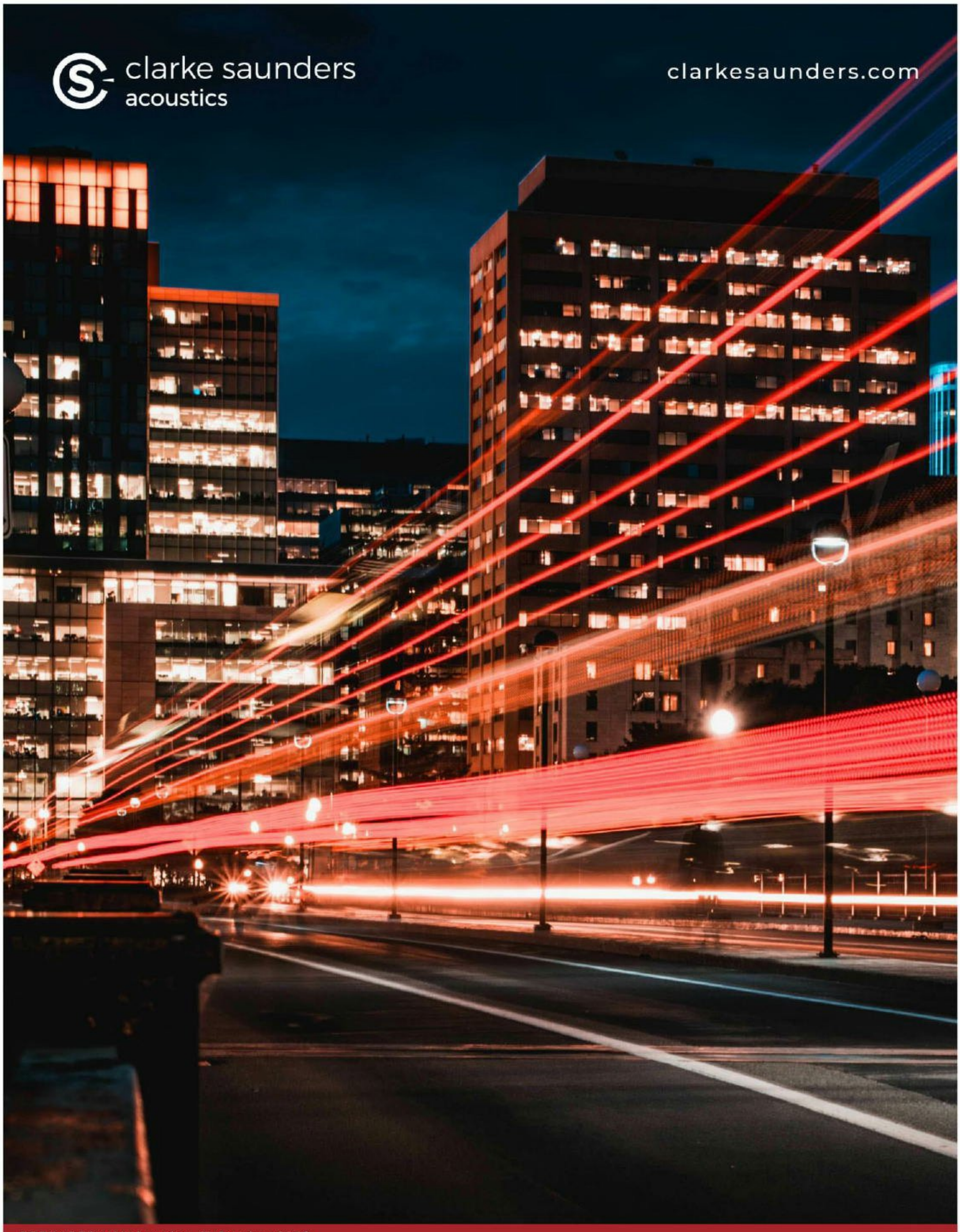

PREPARED: Wednesday, 21 October 2020

CAMPS ROAD, HAVERHILL:
STAGE 2 ACOUSTIC DESIGN STATEMENT

CONTENTS

LIST OF ATTACHMENTS

Project Ref:	AS11500	**Title:**	Camps Road, Haverhill
Report Ref:	AS11500.191205.ADS.1.2	**Title:**	Camps Road, Haverhill: Stage 2 Acoustic Design Statement
Client Name:	Planning Issues		
Project Manager:	Daniel Saunders		
Report Author:	Daniel Saunders		

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1.0 EXECUTIVE SUMMARY

1.1 Planning Issues proposes to demolish the former magistrates' court and Social Services buildings on Camps Road, Haverhill, CB9 8HF, and redevelop the site into an additional 34 apartment plots as part of the adjacent Churchill Retirement Living development. Furthermore, they intend to build an additional three terraced houses for C3 (Dwelling) use.

1.2 A survey of the prevailing noise climate has been undertaken by Clarke Saunders Associates, commissioned by Planning Issues.

1.3 The initial Stage 1 Risk Assessment (appended to this report) identified the majority of the development as negligible-to-low risk in terms of the significance of noise impact. However, the prevailing noise climate at the closest areas of the site to Camps Road are considered low-to-medium risk, which indicates a requirement for consideration of appropriate site layout and design.

1.4 Good acoustic design has been considered throughout the feasibility and planning stage, including careful attention to site layout, internal plot layout and glazing locations to achieve, wherever possible, maximum separation of habitable rooms from Camps Road.

1.5 It is feasible to maintain the aspirational internal noise level guidelines in habitable rooms in the development using standard thermal double glazing throughout.

1.6 Communal external amenity space is also provided which can achieve the ProPG guidance levels.

1.7 Private external amenity spaces are also provided for some plots. Noise levels vary for the private amenity spaces across the site, not all of which achieve desired noise levels although access to alternative quieter spaces is readily available within the development proposal.

2.0 ELEMENT 1 - ACOUSTIC DESIGN CONSIDERATIONS

2.1 This Stage 2 Acoustic Design Statement considers in detail the extent of this noise impact on the site and any requirement for mitigation measures to address the risk identified.

2.2 The site is partially adversely affected by the proximity of Camps Road, notably the twelve apartments that directly overlook it, Plots 3-6, 12a-16, 24-27.

2.3 Consideration is also given to the operational ambulance facilities located towards the north-east boundary of site.

2.4 The nearest façade to Camps Road is around 13m away from the centre of the road. It is only the south façade that is deemed to be adversely affected by the noise levels from vehicle traffic on this road.

2.5 The proposed terraced houses are located around 80 metres from Camps Road and benefit from building mass screening of the proposed retirement living block as well as distance attenuation.

2.6 Good acoustic design has been considered from the beginning of this application, including the following examples:

- The massing of building development has been designed to form an 'L' shape meaning that further into the development (and generally, further north and east across the site), dwelling facades and gardens will be increasingly screened from the principal noise source in the area;

- The orientation of the building mass has been chosen to ensure that less than a third of the total plots overlook the primary noise source, Camps Road;

- The internal layout of the bedrooms in Plots 3-6, 12a-16, 24-27, which directly overlook Camps Road, have been designed so that noise impact will be minimised;

- Non-glazed building elements of suitable materials and mass have been proposed for dwellings across the site, where all facades are constructed from masonry, with casement double-glazed units;

- With the exception of private patios and balconies, there are external amenity spaces located in areas that benefit from building mass screening and include a large separation distance to the primary noise source;

- Where possible, private external amenity spaces are orientated away from Camps Road.

3.0 ELEMENT 2 - INTERNAL NOISE LEVEL ASSESSMENT

3.1 The second element of the assessment is to seek to achieve recommended noise levels inside noise sensitive rooms in the new residential development.

3.2 PROPG INTERNAL NOISE LEVEL GUIDELINES

3.2.1 ProPG brings together relevant guidance from several sources including a British Standard (BS 8233: 2014 *Guidance on sound insulation and noise reduction for buildings*) and internationally published guidance in the form of World Health Organisation *Guidelines for Community Noise* (1999). This is summarised in the following table.

ACTIVITY	LOCATION	07:00 TO 23:00	23:00 TO 07:00
Resting	Living Room	35 dB $L_{Aeq, 16\ hour}$	-
Dining	Dining Room	40 dB $L_{Aeq, 16\ hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16\ hour}$	30 dB $L_{Aeq, 8\ hour}$

NOTE 1: *The Table provides recommended internal L_{Aeq} target levels for overall noise in the design of a building. These are the sum total of structure-borne and airborne noise sources. Ground-borne noise is assessed separately and is not included as part of these targets, as human response to ground-borne noise varies with many factors such as level, character, timing, occupant expectation and sensitivity.*

NOTE 2: *The internal L_{Aeq} target levels shown in the Table are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port with high levels of traffic at certain times of the night, an appropriate alternative period, e.g. 1 hour, may be used, but the level should be selected to ensure consistency with the internal L_{Aeq} target levels recommended in the Table.*

NOTE 3: *These internal L_{Aeq} target levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night or New Year's Eve.*

NOTE 4: *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 45dB $L_{Amax,F}$ 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 (see Appendix A).*

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 (see Section 3.D).*

3.3 EXTERNAL BUILDING FABRIC SPECIFICATION & INTERNAL NOISE LEVEL ASSESSMENT

3.3.1 The following design review is based on the architectural drawings for the proposed construction and site layout available at the time of writing, targeting the internal noise levels set out in Section 3.2.1.

3.4 PRINCIPLE NOISE SOURCE – CAMPS ROAD

3.4.1 The principal source of noise impact on the site is from road traffic on Camps Road.

3.4.2 Please see the appended Stage1 Risk Assessment for details on the environmental noise survey and noise measurement results as time histories.

3.4.3 The south façade of the retirement living block is 13 metres from Camps Road. Due to the designed shape of the development, this noise source will have a lower impact on the rest of the site, which is elongated northwards overlooking the adjacent access road.

3.4.4 The orientation of the development with regards to Camps Road, means that the building mass acts as a barrier, providing additional screening losses to a large proportion of the dwellings.

3.4.5 Noise levels extrapolated from the long-term roadside measurement position have been used in the assessment of mitigation below.

3.4.6 A partially open window affords a noise reduction of 15dB. Calculations have shown that the desired internal daytime L_{Aeq} noise levels and night-time L_{Aeq} and L_{Amax} noise levels given in Section 3.2 can be met with a partially open window for the majority of plots across the development.

3.4.7 Plots located on the south façade, with a window directly overlooking the principle noise source, do not meet the desired internal ambient noise levels with a partially open window.

3.4.8 With the exception of Plots 3-6, 12a-16, 24-27, which have windows overlooking Camps Road, noise levels are such that a natural ventilation strategy, via partially open windows would be appropriate for this development.

3.4.9 Compliance with other statutory requirements however, specifically Approved Document F, are likely to necessitate provision of background ventilation in any event.

3.4.10 A specification for glazing is provided in the following sections.

3.4.11 Non-Glazed Façade Element

3.4.12 It has been assumed that all non-glazed elements, i.e. masonry walls/facings and the roof systems, will provide the following minimum sound insulation performance of R_w 51dB, when tested in accordance with ISO 10140-2:2010 and this is typically achievable with a traditional insulated brick and block external cavity wall.

3.4.13 Glazing Specification

3.4.14 Good acoustic design has been prioritised to limit noise levels in rooms on the more affected south façade of this development.

3.4.15 Standard proprietary thermal double glazing (an indicative build-up of 4-12-4) is expected to be suitable throughout the development to control internal ambient noise levels below the *"target noise levels"* in all areas of the development.

3.4.16 An acoustically rated trickle vent would be required for windows on the south façade of the building, i.e. Plots 3-6, 12a-16, 24-27, however partially open windows or standard trickle vents are considered suitable for all other areas in the development.

3.4.17 In order to achieve the desired internal noise levels, the acoustically rated trickle vents on the south façade will need to achieve $D_{n,e,w}$ 30dB. This figure is based on a single vent per room. If multiple vents are required, then the performance requirement will increase by a value equal to +10log(*N*), with *N* being the total number of vents serving the room.

3.4.18 Glazing units on all facades will still be openable and provide reasonable internal conditions as shown above, although, there is also no reason why windows could not be opened as a matter of personal preference or for purge ventilation. No internal noise criteria are specified for the purge scenario, during which the expulsion of odours and/or fumes such as burned toast or drying paint is the priority.

3.4.19 The above analysis is based on controlling internal noise levels to the aspirational target criteria outlined in the ProPG.

3.5 SECONDARY NOISE SOURCE – AMBULANCE STATION

3.5.1 An operational ambulance station is located at the north-east boundary of the proposed site.

3.5.2 It is understood that ambulances do not use their sirens until the vehicles turn onto Camps Road. Noise events of concern in the immediate vicinity to the station and the proposed dwellings overlooking might therefore include ambulances accessing and manoeuvring on the drive and vehicle crew voices. However, worst-case events are attributed to vehicle door closures which are expected to generate the highest maxima.

3.5.3 ProPG guidance given in Section 3.2 Note 4 suggests that to minimise disturbance, individual noise events should not normally exceed 45dB $L_{Amax,F}$ more than 10 times a night in noise sensitive rooms.

3.5.4 For the purposes of this assessment, it is assumed that there are not more than 10 ambulance vehicle noise events per night.

3.5.5 A door closure produced by a two-crew ambulance is likely to generate a sound pressure levels of around $L_{Amax,f}$ 80dB at one metre.

3.5.6 Ambulance doors are typically closed in the forecourt, approximately 2 metres from the garage. Given that ambulances are approximately 6.5 metres long, the assessment was based on the door closures occurring 8.5 metres from the ambulance garage.

3.5.7 For the proposed development, the nearest façade is at least 19 metres from the assumed location of ambulance door closures. The resultant noise level at the nearest façade is calculated to be $L_{Amax,f}$ 54 dB.

3.5.8 On the basis that a partially open window provides around 15dB attenuation, internal noise levels are unlikely to exceed the guidance values given in the ProPG.

4.0 ELEMENT 3 - EXTERNAL AMENITY AREA NOISE ASSESSMENT

4.1 The ProPG makes it clear that consideration of noise in proposed external amenity areas is an important element in managing noise impact in new residential developments. The ProPG encourages a more holistic consideration of amenity than simply rating the level of noise outside.

4.2 PROPG EXTERNAL NOISE LEVEL GUIDELINES

4.3 ProPG states the following regarding the consideration and assessment of noise in external amenity spaces:

> *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 LAeq,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 facade (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 a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance). The local planning authority could link such provision to the definition and management of Quiet Areas under the Environmental Noise Regulations."*

4.4 EXTERNAL AMENITY SPACE NOISE ASSESSMENT - PROPOSALS

4.4.1 It is proposed that the majority of the retirement living plots on site will feature private external amenity areas in the form of patios or balconies.

4.4.2 It is also proposed that a large area of shared green external amenity space will be located to the rear of the retirement living development, which will be largely screened from Camps Road by the building mass.

4.4.3 A smaller amenity space is also found towards the southern boundary of the site, accessible via a green walkway around the building. This will not be screened by the road traffic noise from Camps Road.

4.4.4 Residents at the proposed development will also have access to the recreational park, directly opposite the proposed development. This is a large green park, open to all members of the public, and is located within a 5-minute walk from the proposed development, as specified within the ProPG.

4.4.5 The proposed terraced houses towards the north boundary of the site will have private garden spaces to the rear.

4.5 EXTERNAL AMENITY SPACE NOISE ASSESSMENT - ANTICIPATED NOISE LEVELS

4.5.1 Anticipated noise levels in external amenity areas will largely be determined by (attenuated) contributions from Camps Road.

4.5.2 Noise contributions from the nearby ambulance station are likely to be event based. The ProPG document does not provide any guidance as to daytime $L_{Amax,f}$ noise events, but in the interest of best practice, noise levels at the rear communal external amenity space events from ambulance door closures are expected to be around $L_{Amax,f}$ 50dB(A). As such, the operation of the ambulance station is expected to have a negligible impact on the external amenity spaces.

4.5.3 Existing measured daytime noise levels at site were $L_{Aeq,16hour}$ 61dB(A) at the south façade of the proposed retirement living development and $L_{Aeq,16hour}$ 50dB(A) towards the rear communal external amenity space.

4.5.4 Measured noise levels at the rear monitoring position had direct line of sight to Camps Road. Significantly lower noise levels would be expected in this area in the proposed development, due to screening from the proposed building mass of the retirement living accommodation. As such, levels in the rear, communal, external amenity space are expected to meet the ProPG guidance levels.

4.5.5 Anticipated noise levels in the private external amenity spaces vary throughout the site. South facing patios and balconies are anticipated to be subject to daytime noise levels of L_{Aeq} 61dB(A). As such, those towards the southern façade are unlikely to meet the ProPG guidance levels, however those located further from Camps Road or screened by the building mass are expected to meet the guidance levels.

4.6 EXTERNAL AMENITY SPACE NOISE ASSESSMENT - DISCUSSION

4.6.1 The development features a rear communal external amenity space for all plots where all residents can enjoy noise levels commensurate with the ProPG guidance range for enjoyment of external amenity.

4.6.2 Noise levels at private external amenity spaces vary, where those in close proximity to Camps Road would likely exceed the ProPG guidance levels. However, the benefit of having an additional private amenity space is likely to outweigh the increased noise levels expected there.

4.6.3 Measurements were not undertaken in the nearby recreational park. However, given its size, it is expected that significant portions of the park would meet the desired levels

given within the ProPG guidance. Again, due to the size of the park, relative privacy could be expected within this space, allowing residents without private external amenity spaces, or those exposed to higher noise levels, a place outside of the rear communal external amenity space to relax in.

4.6.4 Given the distance from Camps Road and additional screening from the building mass of the proposed retirement living development, noise levels in the private gardens of the proposed terraced housing are not expected to exceed the ProPG guidance levels.

5.0 ELEMENT 4 - ASSESSMENT OF OTHER RELEVANT ISSUES

5.1 COMPLIANCE WITH RELEVANT NATIONAL AND LOCAL POLICY

5.1.1 National planning policy for England, set out in the Noise Policy Statement for England (NPSE), the National Planning Policy Framework (NPPF) and the ProPG, aims to promote the building of high quality sustainable homes in desirable areas whilst ensuring future and existing nearby residents and businesses are not adversely affected by the scheme (including by noise, amongst others).

5.1.2 The ProPG outlines a staged process by which to initially assess the risk posed by the existing noise climate followed by a more in-depth assessment of those risks and consideration of strategies by which they can be mitigated.

5.1.3 This assessment has demonstrated that through the use of good acoustic design, suitable mitigation measures, appropriate design of façade performance, layout of the site and internal layout of the dwellings, acceptable noise levels can be achieved both internally and externally.

5.2 COMPLIANCE WITH THE PROPG GUIDANCE

5.2.1 This assessment has demonstrated that whilst the acoustic environment at the development site is determined by road noise from Camps Road, appropriate internal and external noise levels can still be achieved across the proposed scheme. The development therefore complies with the guidance of the ProPG.

5.3 PROPOSED OCCUPANCY

5.3.1 The scheme consists of two buildings. The retirement living accommodation, split into 34 apartments, and the additional housing at the northern boundary, subdivided into three terraced houses.

5.3.2 Intended occupancy for the retirement living accommodation is anticipated to be elderly individuals/couples, whilst the terraced houses will be for standard C3 (Dwelling) use.

5.3.3 As such, it is appropriate that individual external amenity areas are provided for both accommodation types.

5.3.4 Approximately two thirds of the retirement living dwellings feature a patio or balcony, but there is also communal green external amenity space to the rear of the property, where quieter noise levels can be enjoyed, if desired.

5.3.5 Given the small size, layout and purpose of the proposed development, future changes in types of occupancy are not anticipated for the retirement living accommodation. However, the proposed design would allow dwellings to be fit for further residential purpose, in line with the requirements of ProPG.

5.3.6 The terraced houses feature rear gardens and private parking, enabling them to be used as both permanent housing or rented accommodation should future occupancy type change.

5.4 ACOUSTIC DESIGN VS. WIDER PLANNING OBJECTIVES

5.4.1 The acoustic design outlined in the report generally supports the wider planning objectives of providing necessary sheltered accommodation apartments in appropriate settings.

6.0 CONCLUSIONS

6.1 Measurements have been made of the prevailing noise climate at the proposed site for residential development at Camps Road, Haverhill, CB9 8HF.

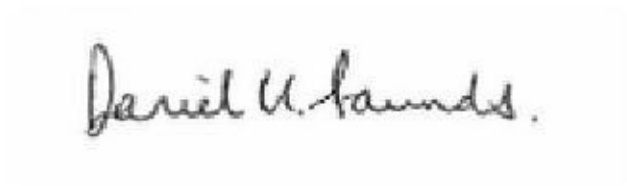
6.2 The measured levels have been assessed against the National Planning Policy Framework and currently available standards and guidance documents including the Professional Practice Guidance on Planning and Noise, World Health Organisation *Guidelines for Community Noise (1999)* and BS8233:2014 *Guidance on Sound Insulation and Noise Reduction for Buildings*, to consider whether the site is suitable for its proposed residential use.

6.3 Good acoustic design has been considered throughout the feasibility and planning stages, including careful attention to site layout, internal plot layout and glazing locations to ensure, wherever possible, maximum separation of habitable rooms from the predominant noise source, Camps Road.

6.4 It is possible to achieve the aspirational internal noise level guidelines in habitable rooms in the development using standard thermal double glazing throughout. For plots with windows on the south façade, acoustically rated trickle vents will be required to provide an appropriate level of background ventilation whilst maintaining indoor ambient noise levels.

6.5 Noise levels across the rest of the site are such that occupants should be able to maintain appropriate reasonable internal noise levels with openable windows.

6.6 Private external amenity space is provided for most dwellings, where all occupants will also have access to quiet areas of on-site communal external amenity space where noise levels are anticipated to be commensurate with the aspirational design range provided in the ProPG. Furthermore, there is also a large area of green external amenity space for residents located in the recreational park directly opposite the proposed development.



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APPENDIX A

ACOUSTIC TERMINOLOGY AND HUMAN RESPONSE TO BROADBAND SOUND

1.1 Acoustic Terminology

The human impact of sounds is dependent upon many complex interrelated factors such as 'loudness', its frequency (or pitch) and variation in level. In order to have some objective measure of the annoyance, scales have been derived to allow for these subjective factors.

Sound Vibrations propagating through a medium (air, water, etc.) that are detectable by the auditory system.

Noise Sound that is unwanted by or disturbing to the perceiver.

Frequency The rate per second of vibration constituting a wave, measured in Hertz (Hz), where 1Hz = 1 vibration cycle per second. The human hearing can generally detect sound having frequencies in the range 20Hz to 20kHz. Frequency corresponds to the perception of 'pitch', with low frequencies producing low 'notes' and higher frequencies producing high 'notes'.

dB(A): Human hearing is more susceptible to mid-frequency sounds than those at high and low frequencies. To take account of this in measurements and predictions, the 'A' weighting scale is used so that the level of sound corresponds roughly to the level as it is typically discerned by humans. The measured or calculated 'A' weighted sound level is designated as dB(A) or L_A.

L_{eq}: A notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 8 hour, 1 hour, etc).

The concept of L_{eq} (equivalent continuous sound level) has primarily been used in assessing noise from industry, although its use is becoming more widespread in defining many other types of sounds, such as from amplified music and environmental sources such as aircraft and construction.

Because L_{eq} is effectively a summation of a number of events, it does not in itself limit the magnitude of any individual event, and this is frequently used in conjunction with an absolute sound limit.

L_{max}: The maximum sound pressure level recorded over a given period. L_{max} is sometimes used in assessing environmental noise, where occasional loud events occur which might not be adequately represented by a time-averaged L_{eq} value.

1.2 Octave Band Frequencies

In order to determine the way in which the energy of sound is distributed across the frequency range, the International Standards Organisation has agreed on "preferred" bands of frequency for sound measurement and analysis. The widest and most commonly used band for frequency measurement and analysis is the Octave Band. In these bands, the upper frequency limit is twice the lower frequency limit, with the band being described by its "centre frequency" which is the average (geometric mean) of the upper and lower limits, e.g. 250 Hz octave band extends from 176 Hz to 353 Hz. The most commonly used octave bands are:

Octave Band Centre Frequency Hz	63	125	250	500	1000	2000	4000	8000

1.3 Human Perception of Broadband Noise

APPENDIX A

ACOUSTIC TERMINOLOGY AND HUMAN RESPONSE TO BROADBAND SOUND

Because of the logarithmic nature of the decibel scale, it should be borne in mind that sound levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) sound level is not twice as loud as 50dB(A). It has been found experimentally that changes in the average level of fluctuating sound, such as from traffic, need to be of the order of 3dB before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10dB is perceived by the average listener as a doubling or halving of loudness. Using this information, a guide to the subjective interpretation of changes in environmental sound level can be given.

INTERPRETATION

Change in Sound Level dB	Subjective Impression	Human Response
0 to 2	Imperceptible change in loudness	Marginal
3 to 5	Perceptible change in loudness	Noticeable
6 to 10	Up to a doubling or halving of loudness	Significant
11 to 15	More than a doubling or halving of loudness	Substantial
16 to 20	Up to a quadrupling or quartering of loudness	Substantial
21 or more	More than a quadrupling or quartering of loudness	Very Substantial

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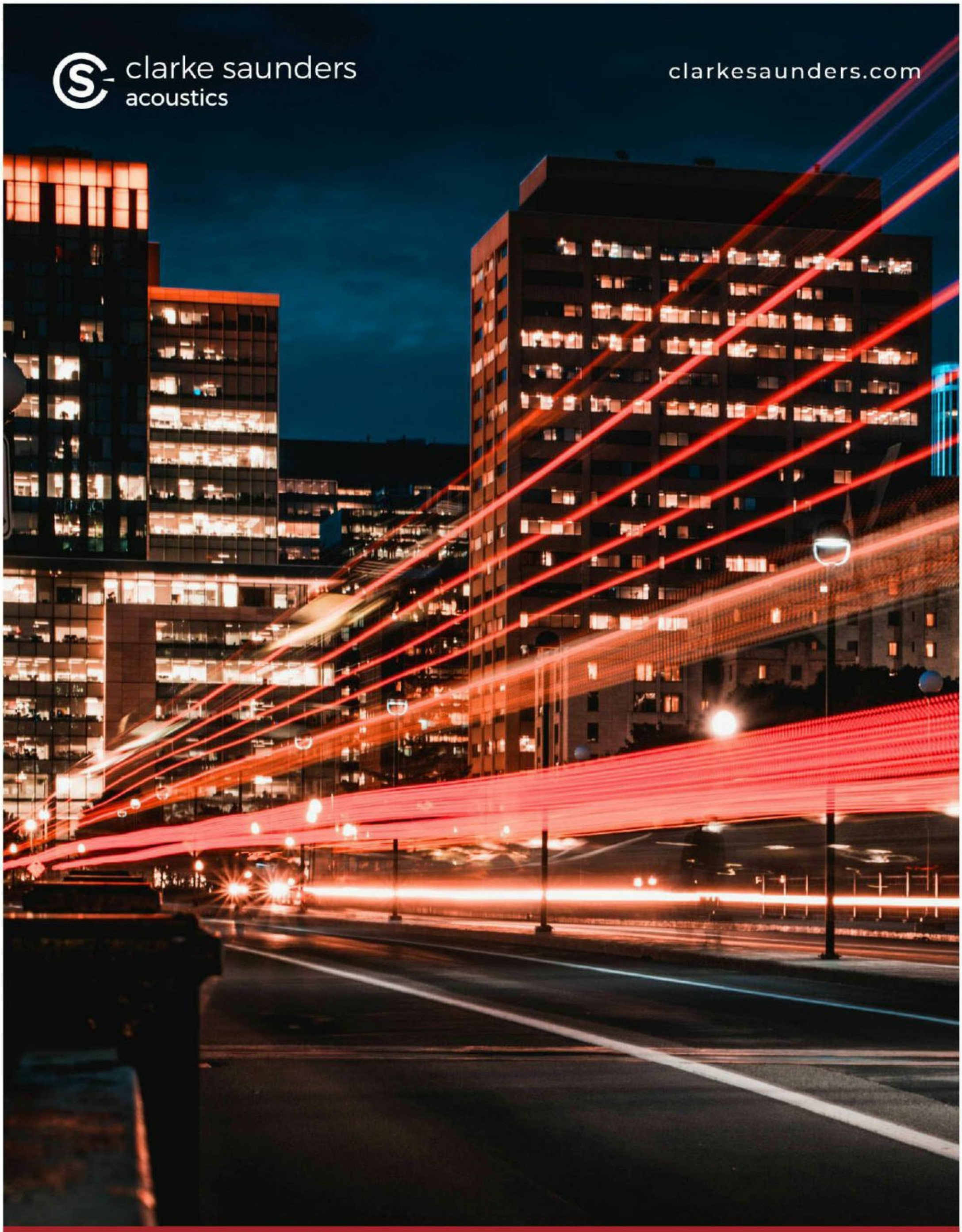

PREPARED: Wednesday, 21 October 2020

CAMPS ROAD, HAVERHILL: STAGE 1 RISK ASSESSMENT

CONTENTS

LIST OF ATTACHMENTS

Project Ref:	AS11500	Title:	Camps Road, Haverhill
Report Ref:	AS11500.191205.RA.1.1	Title:	Camps Road, Haverhill: Stage 1 Risk Assessment
Client Name:	Planning Issues		
Project Manager:	Daniel Saunders		
Report Author:	Daniel Saunders		

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Winchester SO22 5BE

1.0 EXECUTIVE SUMMARY

1.1 Planning Issues proposes to demolish the former magistrates' court and Social Services buildings on Camps Road, Haverhill, CB9 8HF and redevelop the site into an additional 34 dwellings as part of the adjacent Churchill Retirement Living development. They also propose to construct an additional three terraced houses for C3 (Dwelling) use.

1.2 A survey of the prevailing noise climate has been undertaken by Clarke Saunders Associates, commissioned by Planning Issues. A subsequent risk assessment following ProPG: Planning and Noise has shown there to be negligible-to-low risk for the majority of the site. The prevailing noise climate at the closest areas of the site to Camps Road are a low-to-medium risk.

1.3 The ProPG recommends that a Stage 2 Acoustic Design Statement be prepared to consider the noise impact of the site in detail and to address the requirement for any outline measures as appropriate for the proposed residential development.

2.0 INTRODUCTION

2.1 Planning Issues proposes to develop land to the north of Camps Road, Haverhill, CB9 8HF, located adjacent to the existing Churchill Retirement Living development. The proposal is to demolish the existing structures at site and build 34 further residential apartments as part of the existing retirement living development.

2.2 It is proposed that an additional three terraced houses will be built towards the north of the site for C3 (Dwelling) use.

2.3 Clarke Saunders Associates has been commissioned by Planning Issues to undertake an assessment of the current environmental noise impact on the site. Noise will be assessed in accordance with the National Planning Policy Framework, the recently published ProPG: Planning and Noise for new residential developments and with reference made to the relevant guidance set out in BS8233: 2014 *Guidance on sound Insulation and noise reduction for buildings*.

2.4 This report presents the results of the Stage 1 Risk Assessment which will be used to inform the requirement for a subsequent Stage 2 Acoustic Design Statement.

3.0 SITE DESRIPTION

3.1 The site is located at the former magistrates' court and Social Services buildings on Camps Road.

3.2 The site is north of Camps Road and east of the Place Farm Primary Academy access road. The onsite engineer noted relatively high traffic flows on Camps Road, however traffic calming measures are in place in close proximity to the site, so traffic speeds are relatively low.

3.3 The area is predominantly suburban in nature, with some light industry approximately 300m further to the east. The nearest main road is the A1017, located some 1.2km to the south and west.

3.4 The site is bounded to the west by a Churchill Retirement Living development and to the east by Haverhill Methodist Church. It is also separated to the north by an operational ambulance station and access road and to the south lies Camps Road. Place Farm Primary Academy school buildings and playing fields lie to the north-west of the site.

4.0 ENVIRONMENTAL NOISE SURVEY

4.1 A survey of the existing ambient noise levels was undertaken at positions LTM1 and LTM2 as shown on AS11500/SP1.

4.2 The noise monitors were set to record measurements of consecutive 5-minute L_{Aeq}, L_{Amax}, L_{A10} and L_{A90} sound pressure levels between 12:15 hours on Friday 29th November and 12:00 on Wednesday 4th December 2019.

4.3 The following equipment was used during the course of the survey:

- 1 no Rion sound level meter type NA28;
- 1 no Rion sound level meter type NL32;
- 1 no Rion sound level calibrator type NC74.

4.4 The calibration of the sound level meters was verified before and after use. No significant calibration drift was detected.

4.5 The weather during the survey was generally dry with light or little wind, which made the conditions suitable for the measurement of environmental noise.

4.6 Measurements were made following procedures in BS 7445:1991 (ISO1996-2:1987) *Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use*.

4.7 Please refer to Appendix A for details of the acoustic terminology used throughout this report.

5.0 RESULTS

5.1 Figure AS11500/TH1-TH10 shows the L_{Aeq}, L_{Amax}, L_{A10} and L_{A90} sound pressure levels as time histories at the measurement positions.

5.2 The average noise levels for the 'Daytime' and 'Night-time' periods are shown below, as well as the typical L_{AFmax}, defined as the 90th percentile of the night-time L_{AFmax} dataset.

MEASUREMENT POSITION	DAYTIME	NIGHT-TIME	TYPICAL NIGHT-TIME
LTM1	61 dB $L_{Aeq, 16\ hour}$	53 dB $L_{Aeq, 8\ hour}$	70 dB L_{AFMax}
LTM2	50 dB $L_{Aeq, 16\ hour}$	42 dB $L_{Aeq, 8\ hour}$	63 dB L_{AFMax}

6.0 CONCLUSION

6.1 Clarke Saunders has undertaken a noise survey between Friday 29th November and Wednesday 4th December to ascertain the baseline daytime and night-time noise climate and assess the current environmental noise impact on the proposed site.

6.2 Noise has been assessed in accordance with the National Planning Policy Framework, Professional Practice Guidance: Planning and Noise for new residential developments (2017) and with reference made to the relevant guidance set out in BS8233: 2014 *Guidance on sound Insulation and noise reduction for buildings*.

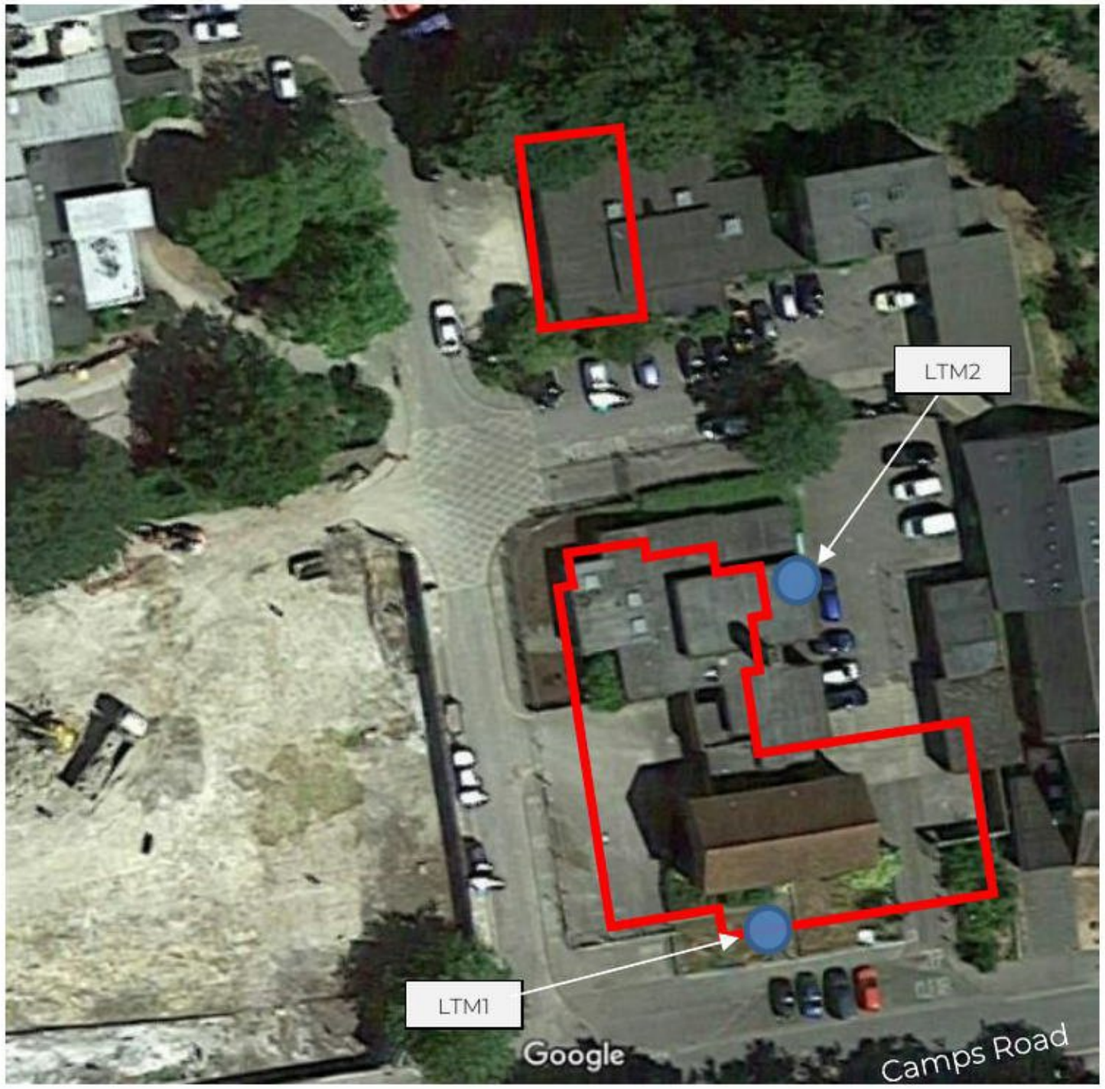
6.3 The Stage 1 risk assessment, following ProPG: Planning and Noise, has shown the prevailing noise climate to be low-to-medium risk at the closest areas to Camps Road but negligible-to-low risk for most part elsewhere. A subsequent Stage 2 Acoustic Design Statement is required to detail further mitigation for plots closest to the noise source.

6.4 This will utilise iterative 'Good Acoustic Design' to produce sustainable and healthy conditions for future occupants that are sensitive to the specific acoustic characteristics of the location.

6.5 With careful space planning, it is likely that acceptable levels of external residential amenity can be achieved without the need for further mitigation.

[redacted]

Daniel Saunders MIOA
CLARKE SAUNDERS ACOUSTICS



Monitoring Position LTM1:

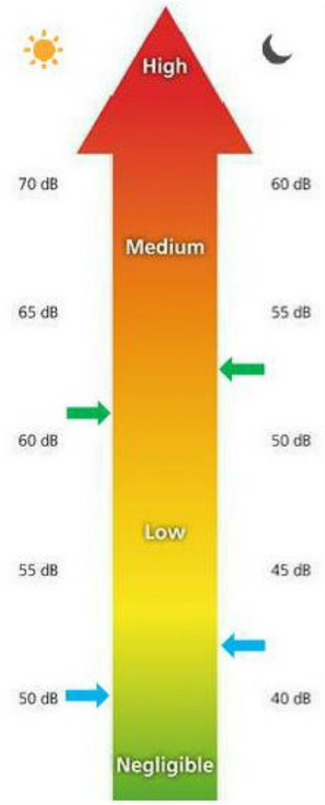
Daytime: 61 dB
$L_{Aeq, 16\ hr}$

Night-time: 53 dB
$L_{Aeq, 8\ hr}$

Monitoring Position LTM2:

Daytime: 50 dB
$L_{Aeq, 16\ hr}$

Night-time: 42 dB
$L_{Aeq, 8\ hr}$



A survey of the existing noise climate was undertaken at positions LTM1 and LTM2 between Friday 29th November and Wednesday 4th December 2019.

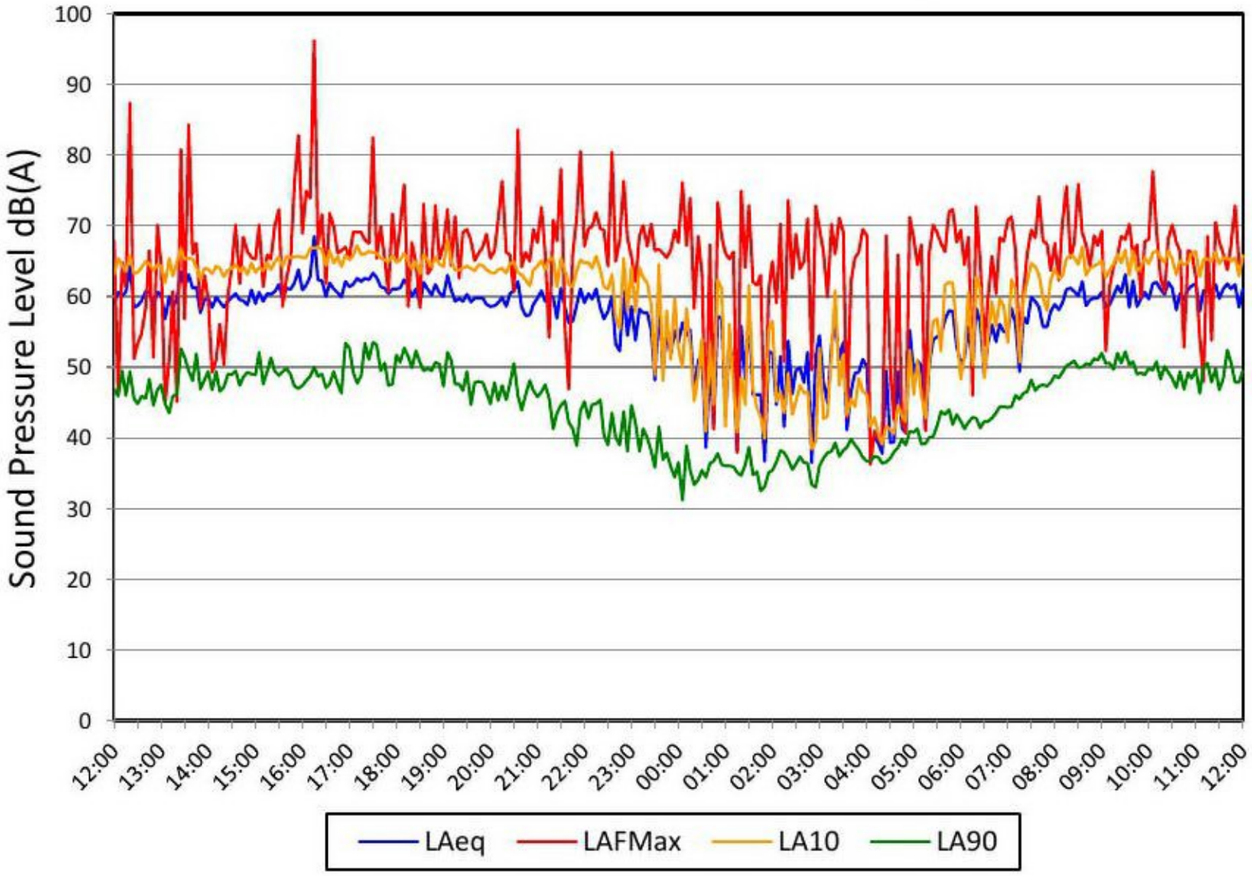
The noise climate at site is determined by road traffic noise from Camps Road, located at the southern boundary of the site. As such, noise levels decrease as the site extends northwards.

Noise levels are considered to represent a low-to-medium risk at the receptors closest to Camps Road, whilst those further away represent a negligible-to-low risk.

A detailed Acoustic Design Statement, outlining appropriate measures to mitigate the noise impact will be required in order to demonstrate that the site would be suitable for residential development.

Camps Road, Haverhill

Environmental Noise Time History: LT1

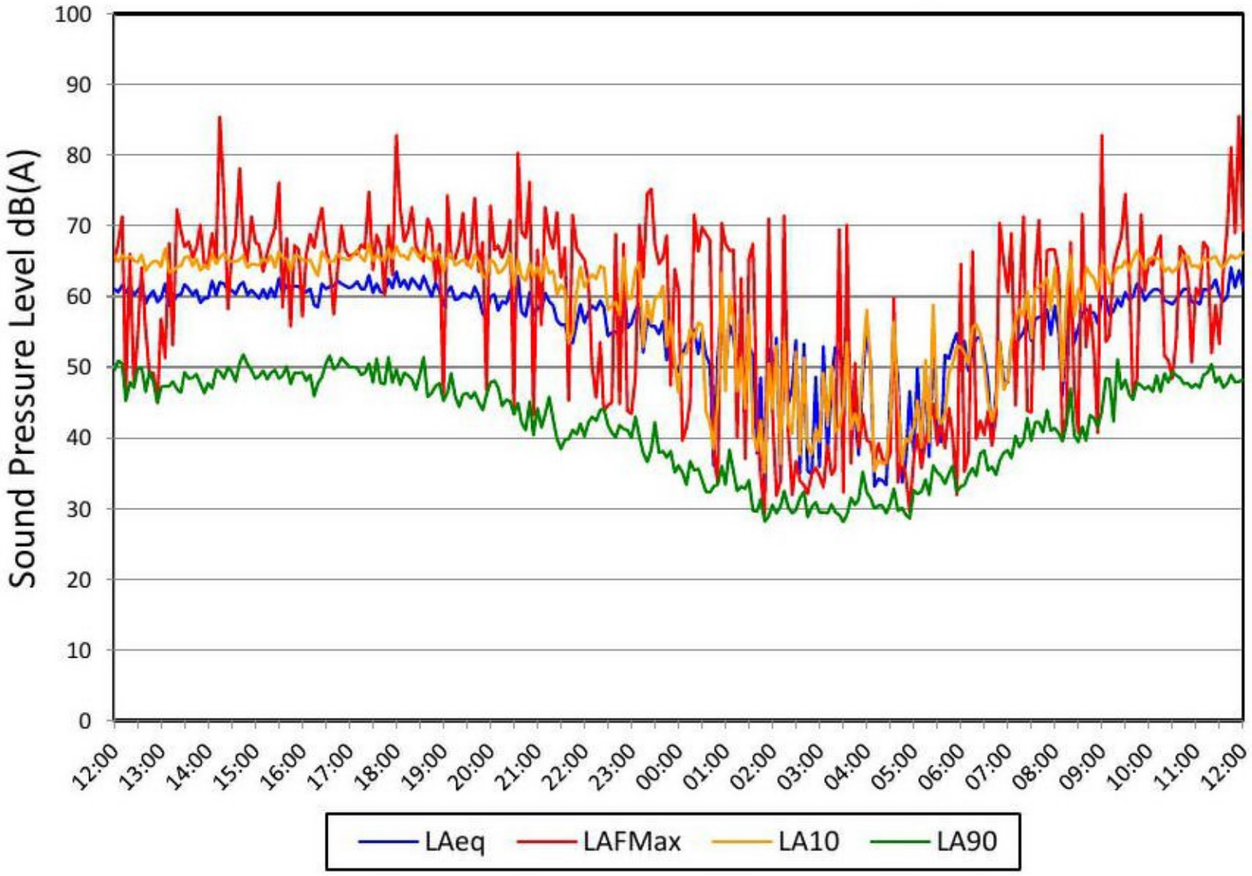


Friday 29 November to Saturday 30 November 2019

Figure AS11500/TH1

Camps Road, Haverhill

Environmental Noise Time History: LT1

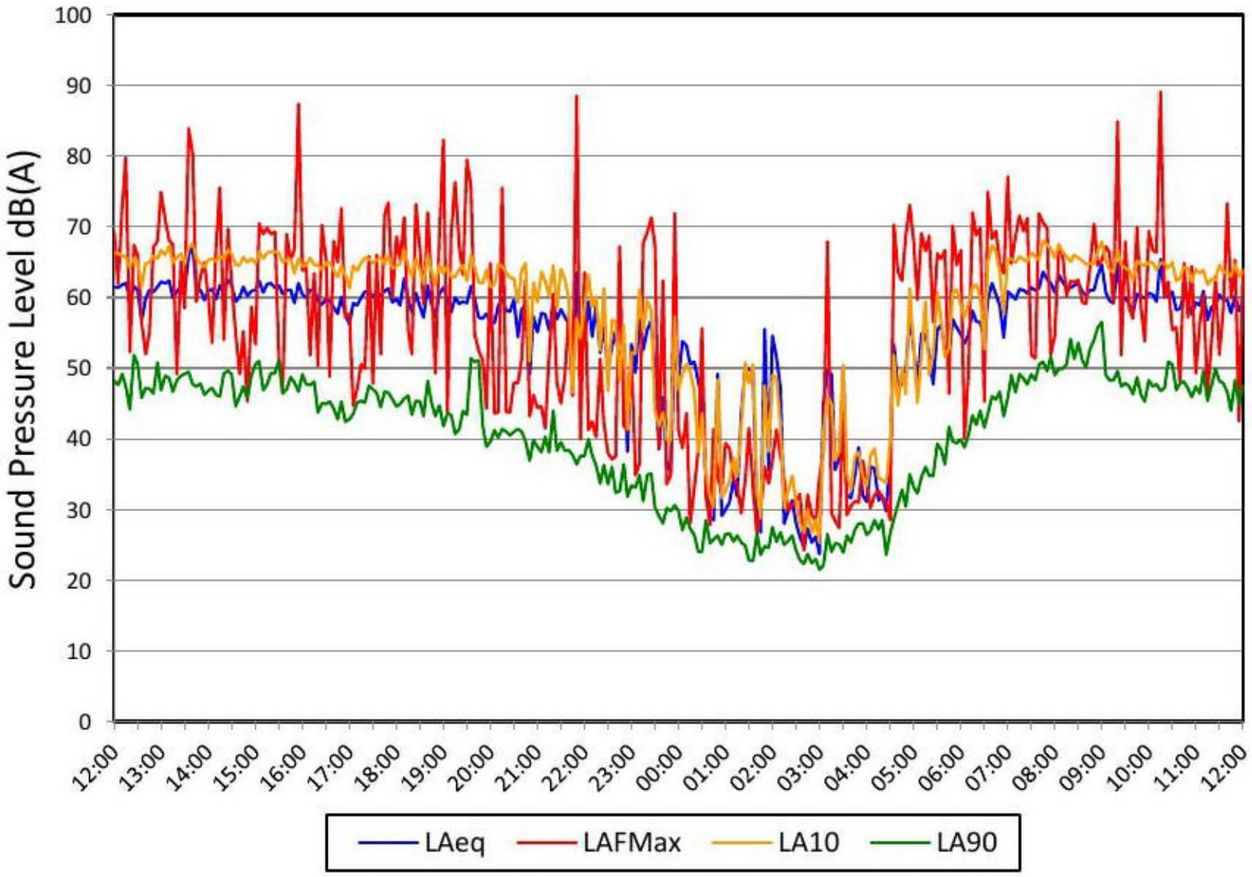


Saturday 30 November to Sunday 01 December 2019

Figure AS11500/TH2

Camps Road, Haverhill

Environmental Noise Time History: LT1

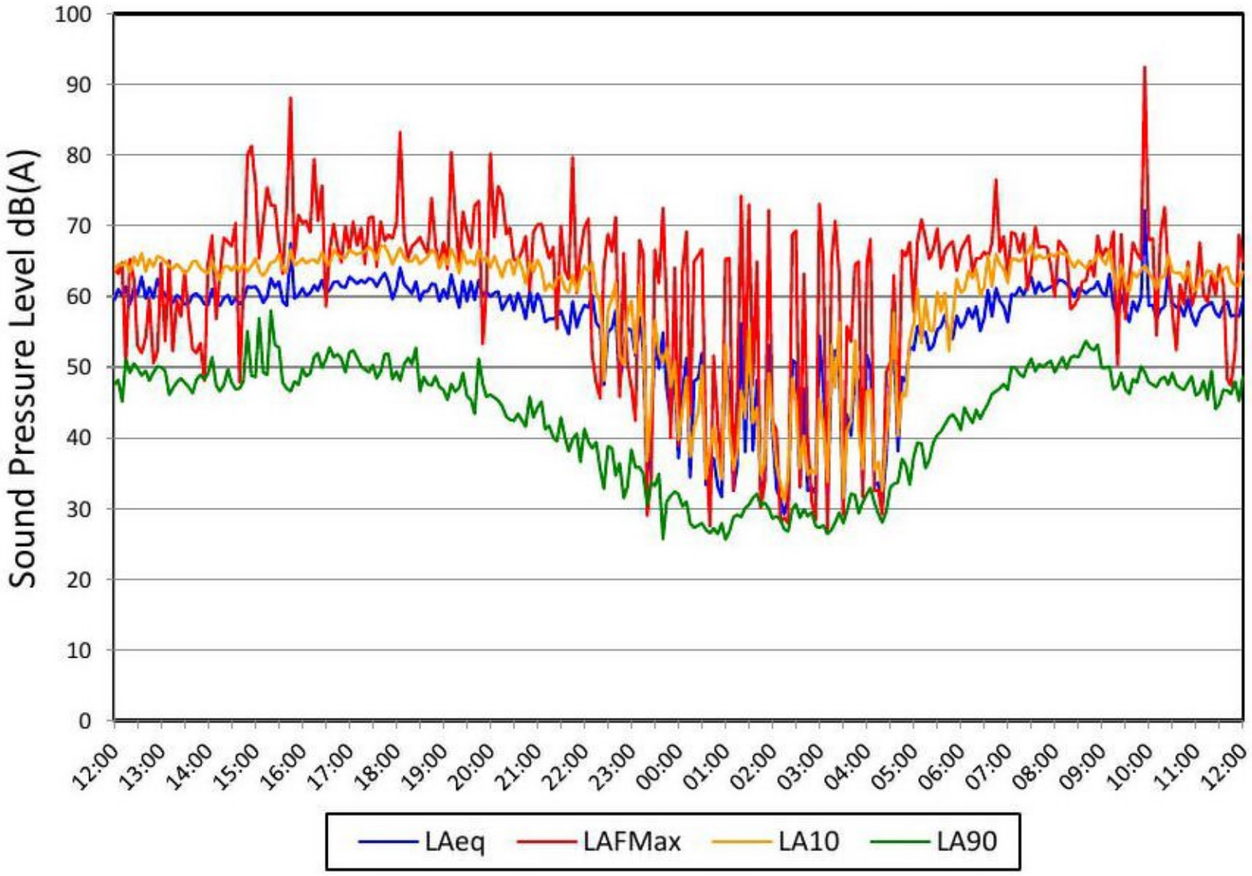


Sunday 01 December to Monday 02 December 2019

Figure AS11500/TH3

Camps Road, Haverhill

Environmental Noise Time History: LT1

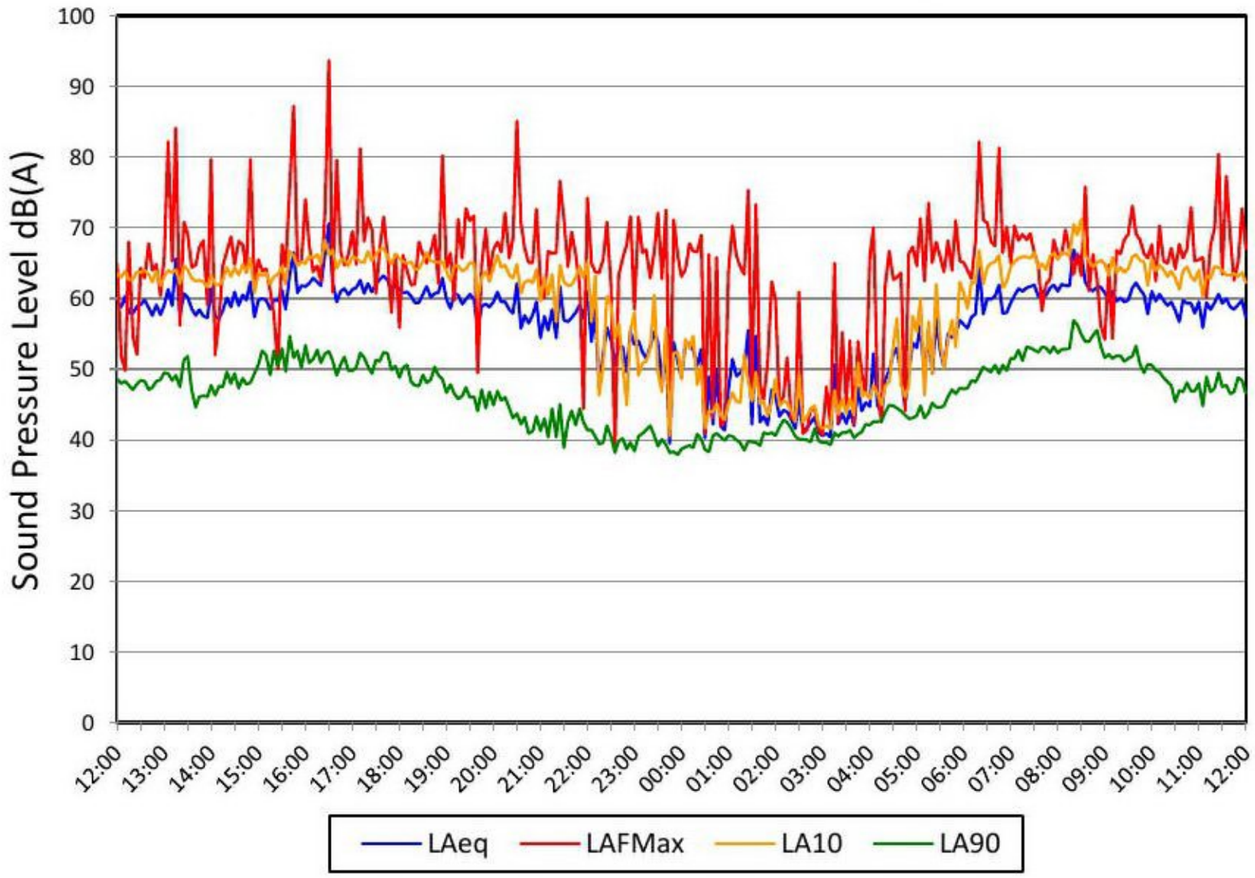


Monday 02 December to Tuesday 03 December 2019

Figure AS11500/TH4

Camps Road, Haverhill

Environmental Noise Time History: LT1

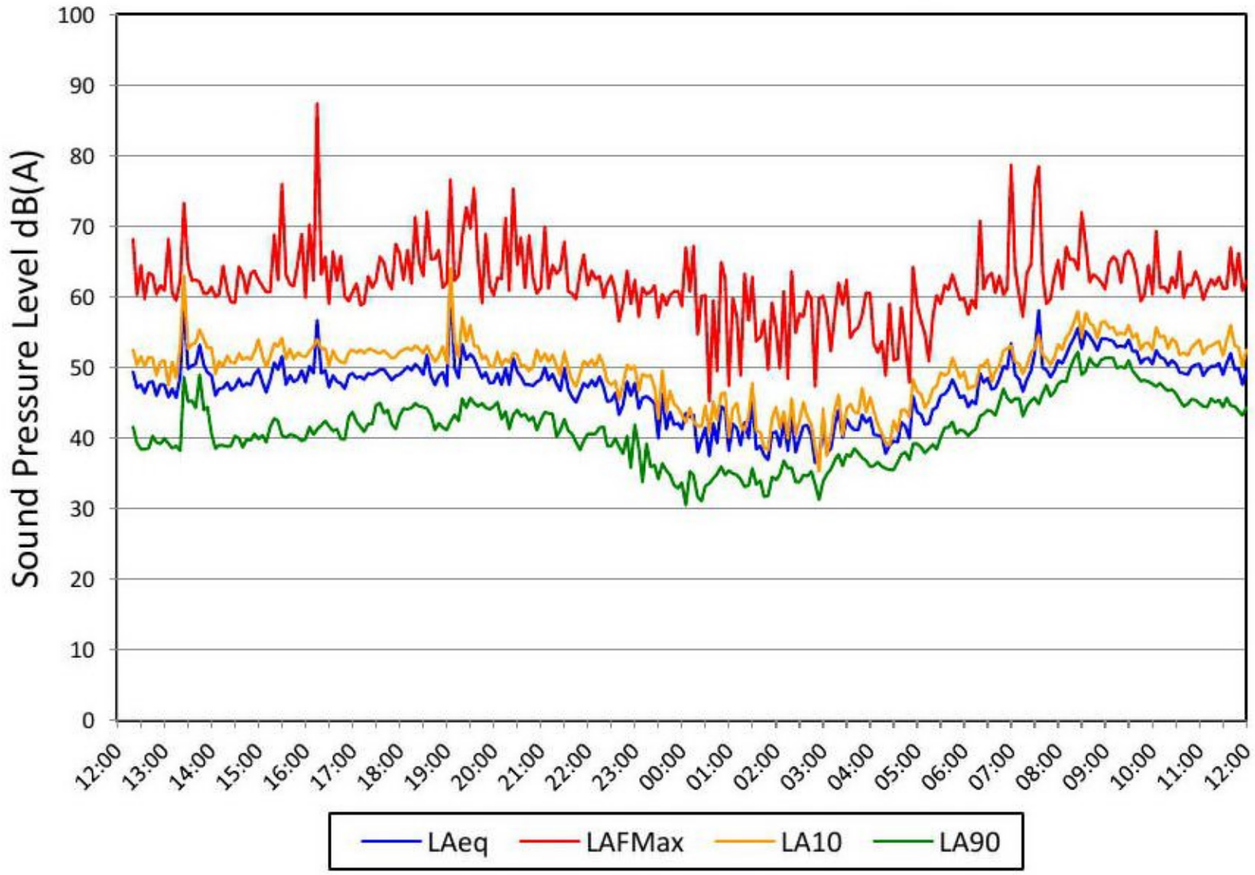


Tuesday 03 December to Wednesday 04 December 2019

Figure AS11500/TH5

Camps Road, Haverhill

Environmental Noise Time History: LT2

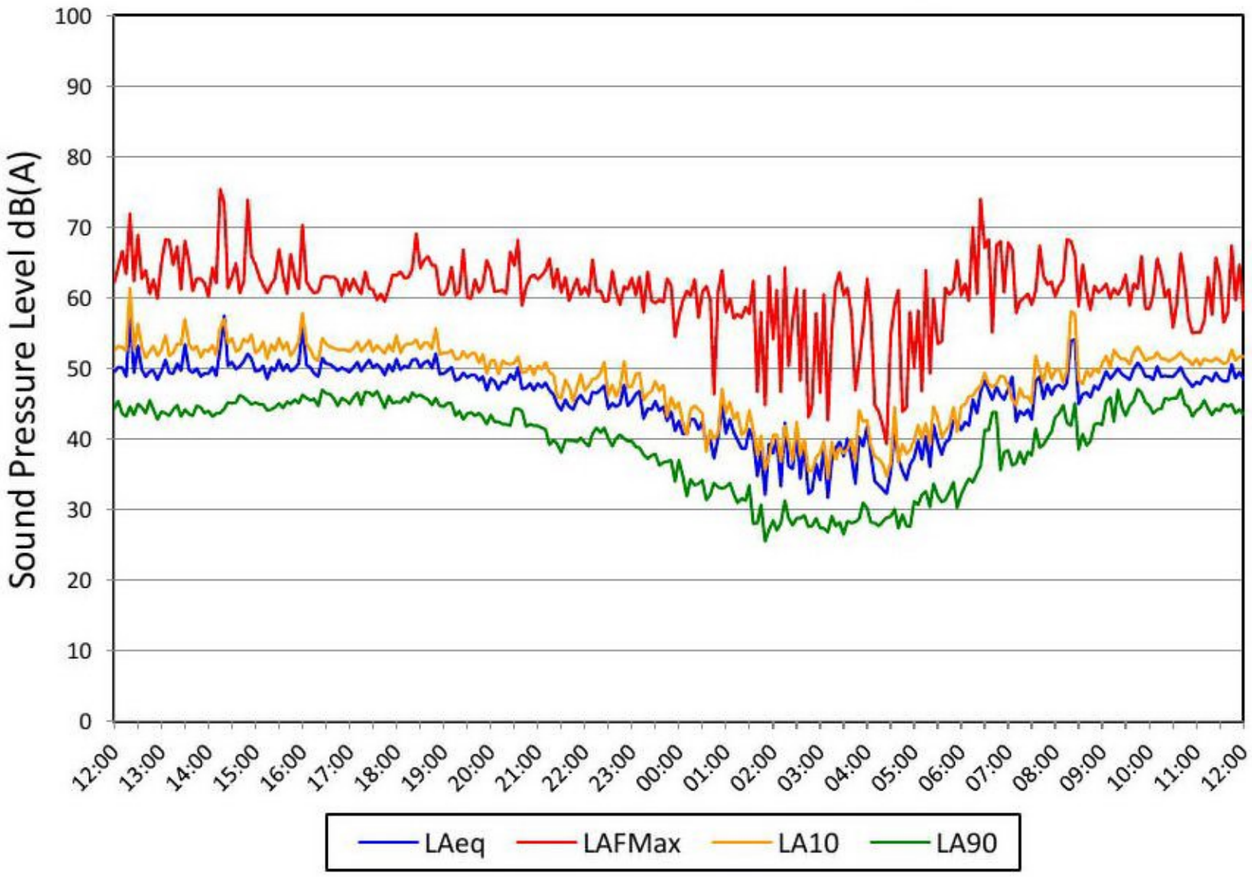


Friday 29 November to Saturday 30 November 2019

Figure AS11500/TH6

Camps Road, Haverhill

Environmental Noise Time History: LT2

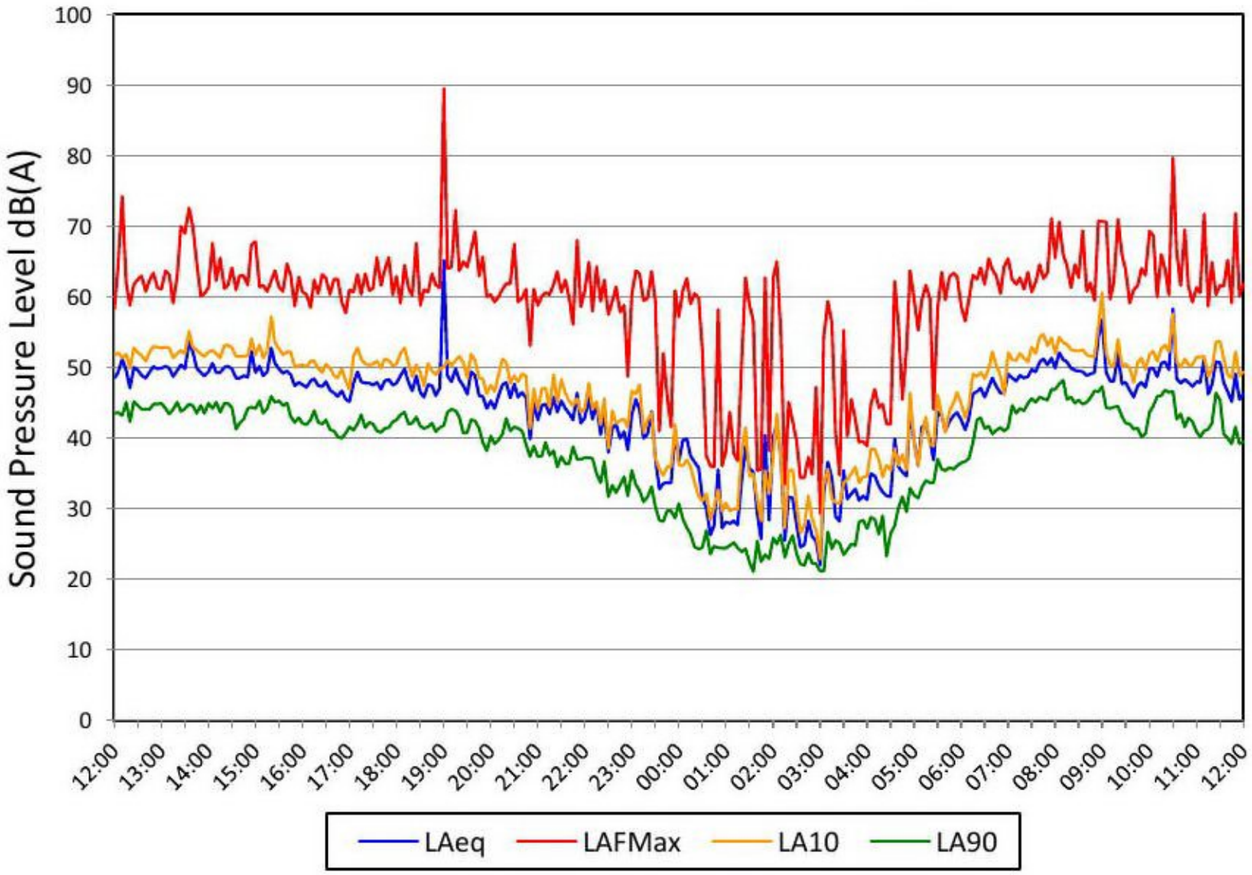


Saturday 30 November to Sunday 01 December 2019

Figure AS11500/TH7

Camps Road, Haverhill

Environmental Noise Time History: LT2

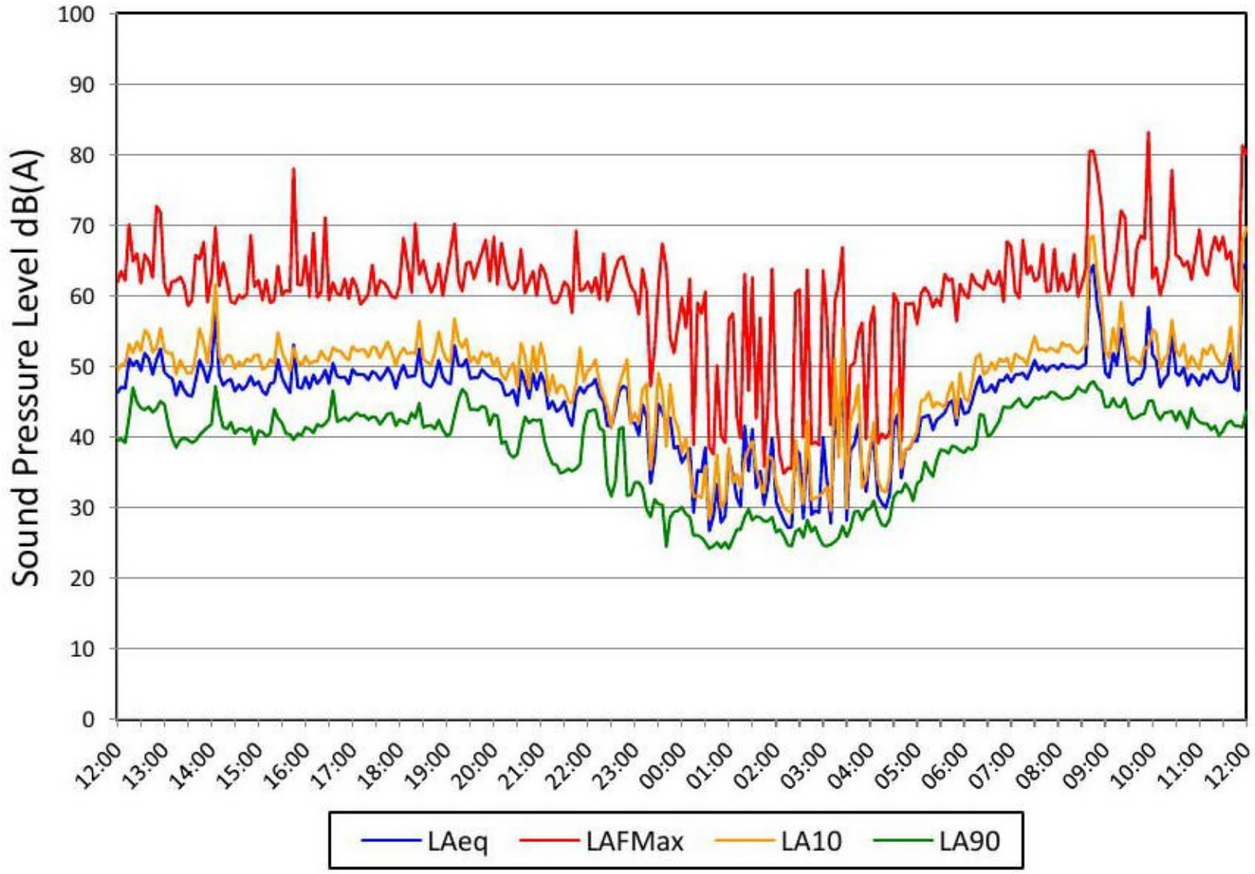


Sunday 01 December to Monday 02 December 2019

Figure AS11500/TH8

Camps Road, Haverhill

Environmental Noise Time History: LT2

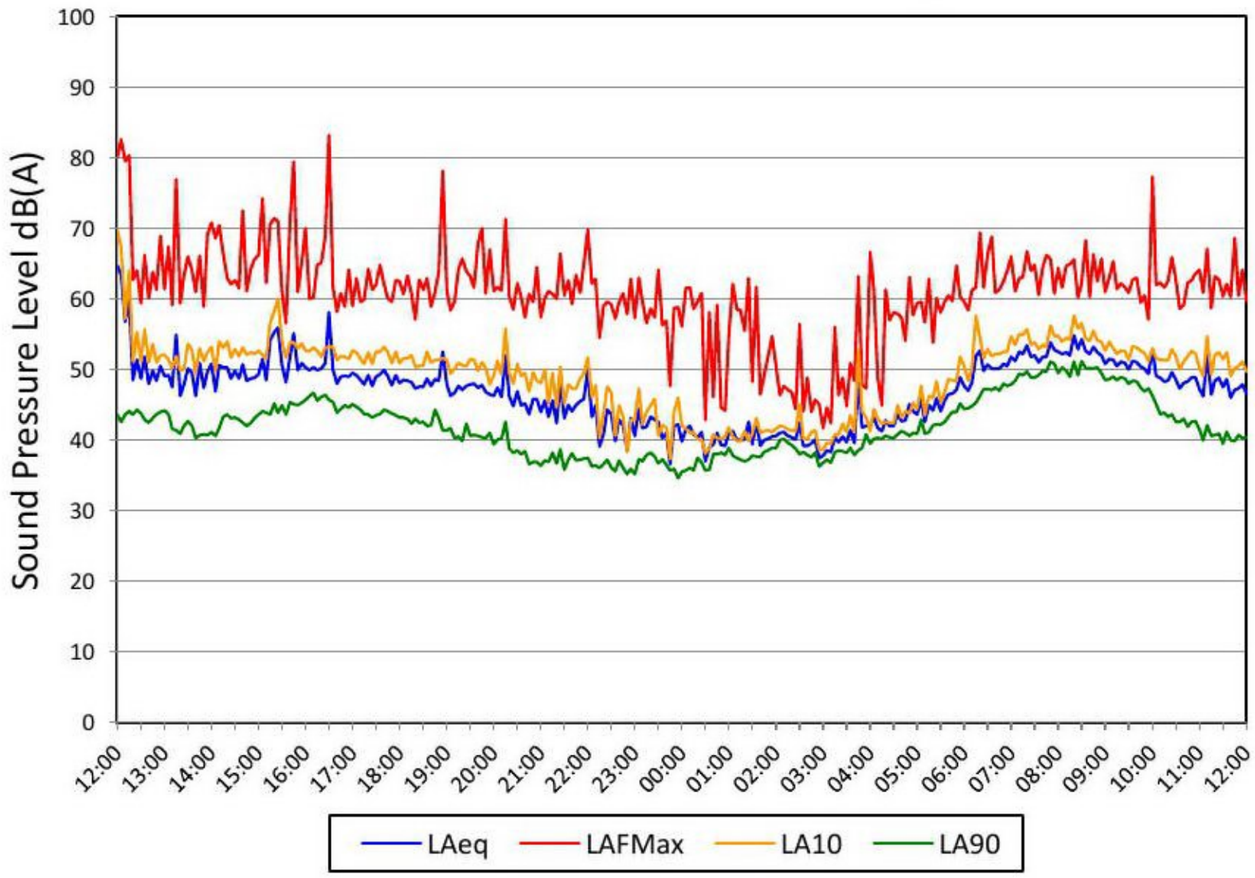


Monday 02 December to Tuesday 03 December 2019

Figure AS11500/TH9

Camps Road, Haverhill

Environmental Noise Time History: LT2



Tuesday 03 December to Wednesday 04 December 2019

Figure AS11500/TH10

APPENDIX A

ACOUSTIC TERMINOLOGY AND HUMAN RESPONSE TO BROADBAND SOUND

1.1 Acoustic Terminology

The human impact of sounds is dependent upon many complex interrelated factors such as 'loudness', its frequency (or pitch) and variation in level. In order to have some objective measure of the annoyance, scales have been derived to allow for these subjective factors.

Sound Vibrations propagating through a medium (air, water, etc.) that are detectable by the auditory system.

Noise Sound that is unwanted by or disturbing to the perceiver.

Frequency The rate per second of vibration constituting a wave, measured in Hertz (Hz), where 1Hz = 1 vibration cycle per second. The human hearing can generally detect sound having frequencies in the range 20Hz to 20kHz. Frequency corresponds to the perception of 'pitch', with low frequencies producing low 'notes' and higher frequencies producing high 'notes'.

dB(A): Human hearing is more susceptible to mid-frequency sounds than those at high and low frequencies. To take account of this in measurements and predictions, the 'A' weighting scale is used so that the level of sound corresponds roughly to the level as it is typically discerned by humans. The measured or calculated 'A' weighted sound level is designated as dB(A) or L_A.

L_{eq}: A notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 8 hour, 1 hour, etc).

The concept of L_{eq} (equivalent continuous sound level) has primarily been used in assessing noise from industry, although its use is becoming more widespread in defining many other types of sounds, such as from amplified music and environmental sources such as aircraft and construction.

Because L_{eq} is effectively a summation of a number of events, it does not in itself limit the magnitude of any individual event, and this is frequently used in conjunction with an absolute sound limit.

L_{max}: The maximum sound pressure level recorded over a given period. L_{max} is sometimes used in assessing environmental noise, where occasional loud events occur which might not be adequately represented by a time-averaged L_{eq} value.

1.2 Octave Band Frequencies

In order to determine the way in which the energy of sound is distributed across the frequency range, the International Standards Organisation has agreed on "preferred" bands of frequency for sound measurement and analysis. The widest and most commonly used band for frequency measurement and analysis is the Octave Band. In these bands, the upper frequency limit is twice the lower frequency limit, with the band being described by its "centre frequency" which is the average (geometric mean) of the upper and lower limits, e.g. 250 Hz octave band extends from 176 Hz to 353 Hz. The most commonly used octave bands are:

Octave Band Centre Frequency Hz	63	125	250	500	1000	2000	4000	8000

1.3 Human Perception of Broadband Noise

APPENDIX A

ACOUSTIC TERMINOLOGY AND HUMAN RESPONSE TO BROADBAND SOUND

Because of the logarithmic nature of the decibel scale, it should be borne in mind that sound levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) sound level is not twice as loud as 50dB(A). It has been found experimentally that changes in the average level of fluctuating sound, such as from traffic, need to be of the order of 3dB before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10dB is perceived by the average listener as a doubling or halving of loudness. Using this information, a guide to the subjective interpretation of changes in environmental sound level can be given.

INTERPRETATION

Change in Sound Level dB	Subjective Impression	Human Response
0 to 2	Imperceptible change in loudness	Marginal
3 to 5	Perceptible change in loudness	Noticeable
6 to 10	Up to a doubling or halving of loudness	Significant
11 to 15	More than a doubling or halving of loudness	Substantial
16 to 20	Up to a quadrupling or quartering of loudness	Substantial
21 or more	More than a quadrupling or quartering of loudness	Very Substantial