

Land West of School Lane, Higham, Gravesham ME3 7HP

Noise Impact Assessment

Date: 4 February 2026

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Document Control

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Document Approvals

Role	Name	Signature	Date
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For Information

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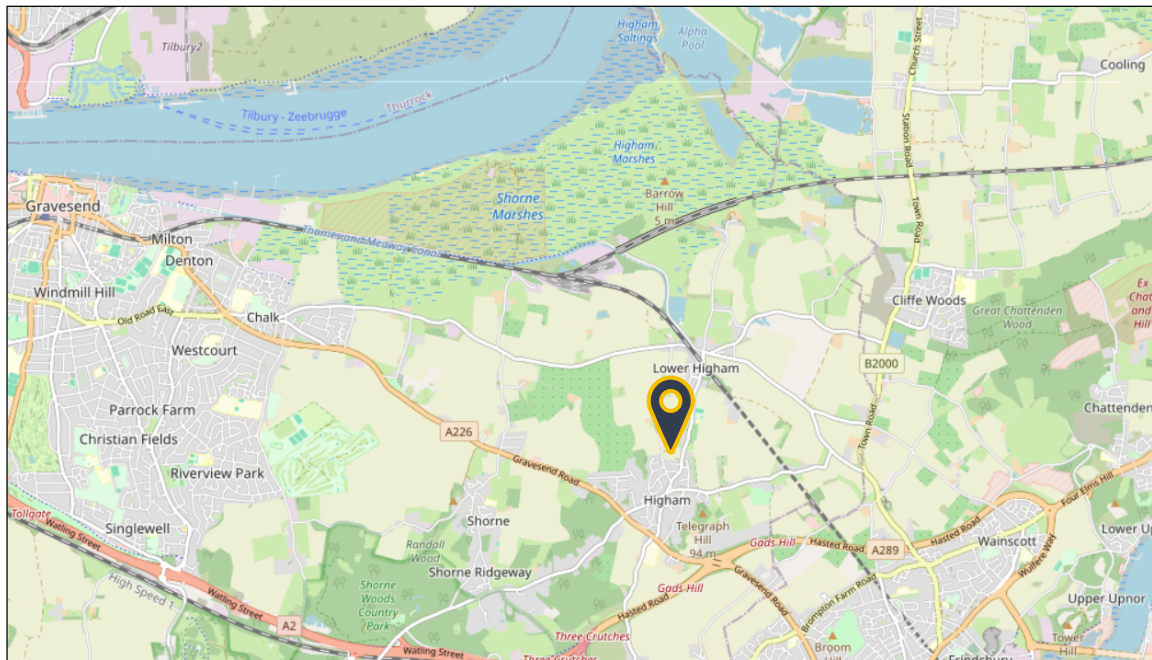
1.0 INTRODUCTION

- 1.1 Quantum Acoustics Ltd has been commissioned by M Scott Properties Ltd to prepare this Noise Assessment which accompanies an outline planning application for a residential development for up to 50 residential dwellings on land west of School Lane, Higham.
- 1.2 This report presents the results of noise monitoring undertaken at the site and considers the suitability of the proposed development in the context of national and local planning policy.
- 1.3 The approach to assessment and format of this report are aligned with the guidance set out in the ANC/IAO/CIEH publication *"ProPG: Planning and Noise: Professional Practice on Planning and Noise: New Residential Development"*. This guidance is directly referenced in the Government's *"Planning Practice Guidance"* on noise. Other industry standard design guidance is also referred to where appropriate.
- 1.4 This report is structured as follows:
 - Section 2 reviews the site location and neighbouring land uses;
 - Section 3 outlines the development proposals;
 - Section 4 reviews planning policy relevant to noise and other industry standard design guidance;
 - Section 5 presents the results of noise monitoring undertaken at the site to determine existing environmental noise levels;
 - Section 6 assesses the results of the noise monitoring in line with a *"ProPG Stage 1 Initial Site Noise Risk Assessment"*;
 - Sections 7 to 10 present a ProPG *"Stage 2 Full Assessment"* of the scheme design proposals, including an assessment of how the scheme embeds good acoustic design principles; assessments of indoor and external noise levels and an assessment of other considerations, including potential "agent of change" implications; and
 - Conclusions are presented in Section 11.

2.0 SITE LOCATION

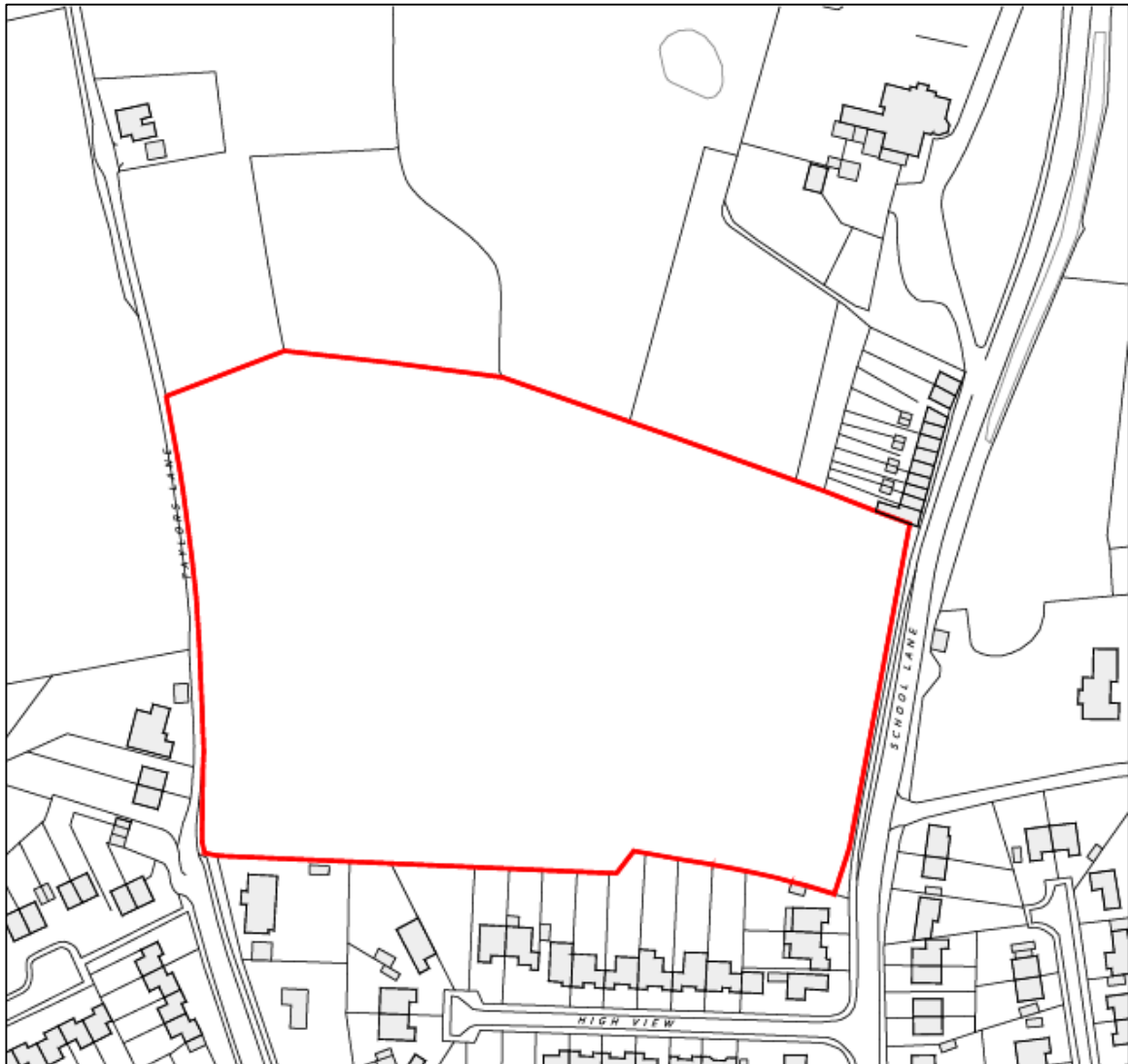
- 2.1 The site is located to the west of School Lane, Higham, Gravesham, as shown in Figure 2.1 below.

Figure 2.1: Site Location (Source: OpenStreetMap 2025)



- 2.2 The northern boundary of the site is largely formed with the ground fields of the Knowle Country House Wedding Venue. The main house and external amenity spaces of the venue are located approximately 100m to the north of the site boundary.
- 2.3 The north-east corner of the site is formed with the side boundary to no. 1, Vicarage Row. The property forms part of a terrace of similar style properties running north along School Lane.
- 2.4 To the east, the site is bounded by School Lane. There are existing dwellings houses on the eastern side of the road.
- 2.5 The southern boundary is formed with the rear gardens of dwellings on High View, which forms the existing settlement edge of Higham.
- 2.6 The western boundary of the site is formed with Taylor's Lane, on the opposing side of which are a number of dwellings and open agricultural fields.
- 2.7 The red line area of the site is shown in Figure 2.2 overleaf.

Figure 2.2: Red Line Boundary of Site and Neighbouring Land Uses (DHA Planning, ref: DHA/35718/01, October 2025)



3.0 PROPOSED DEVELOPMENT

- 3.1 The proposed development seeks outline planning permission for up to 50 residential dwellings, a communal play space and associated landscaping and infrastructure.
- 3.2 The illustrative framework masterplan for the scheme is shown in Figure 3.1 below.

Table 3.1: Illustrative Outline Masterplan (DHA Planning, January 2026)



4.0 PLANNING POLICY CONTEXT & DESIGN GUIDANCE

National

4.1 The following national planning policy is relevant to the proposed development:

- National Planning Policy Framework (2024);
- Planning Practice Guidance (Noise) (2019); and
- Noise Policy Statement for England (2010).

Local

4.2 Gravesham Borough Council's "*Gravesham Local Plan Core Strategy*" (adopted September 2014).

Guidance

4.3 The following guidance is relevant to the proposed development:

- ProPG: Professional Practice Guidance on Planning and Noise: New Residential Development. (2017);
- Acoustics Ventilation and Overheating: Residential Design Guide. Ver. 1.1. (2020);
- BS 8233: 2014: "*Guidance on sound insulation and noise reduction for buildings*"; and
- Approved Document O. The Building Regulations. (2010, as amended)

4.4 Set out below is a brief explanation of key national and local planning policies, which provide the key policy framework for determining whether the proposals meet the Government's overarching policy requirement for sustainable development.

National Planning Policy Framework (December 2024)

4.5 The overarching aim of the planning regime is to promote sustainable development. However, such development must be delivered in a manner that delivers compatibility with the location of the Site of land and existing neighbouring land uses. With regard to noise, the National Planning Policy Framework (NPPF) sets out two primary policies which (a) seek to ensure that new noise sensitive development is adequately protected from noise and impacts from new noise generating land uses are appropriately controlled and (b) existing commercial/industrial uses and community facilities do not have unreasonable restrictions imposed on them by new noise sensitive development:

Paragraph 198:

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

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

Paragraph 200:

"Planning policies and decisions should ensure 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 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."

Noise Policy Statement for England

4.6 With regard to 'adverse' impacts and 'significant adverse' impacts, the NPPF directs the reader to the advice contained in DEFRA's "Noise Policy Statement for England" (NPSE). This Policy Statement introduces the concept of a "Significant Observed Adverse Effect Level" (SOAEL), "Lowest Observed Adverse Effect Level" (LOAEL) and "No Observed Effect Level" (NOEL). These are concepts aligned with toxicology outcomes derived from guidance given by the World Health Organisation.

- NOEL – No Observed Effect Level

This is 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

This is the level above which adverse effects on health and quality of life can be detected.

- SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

Planning Practice Guidance

4.7 The application of national planning policy is amplified in the Government's "Planning Practice Guidance" (PPG). This seeks to help clarify understanding the perception of noise effects, outcomes and actions that should be taken to align decision making with the NPPF. In line with the NPPF concept of basing decision making on the identification of "significant" or "other" impacts on health and quality of life, the NPPG aligns its guidance with the NPSE.

4.8 Table 4.1 overleaf summarises this guidance.

Table 4.1: Noise Exposure Hierarchy

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

Local Planning Policy

3.1 The Gravesham Local Plan Core Strategy (adopted September 2014) contains the following relevant policies:

"Policy CS19: Development and Design Principles

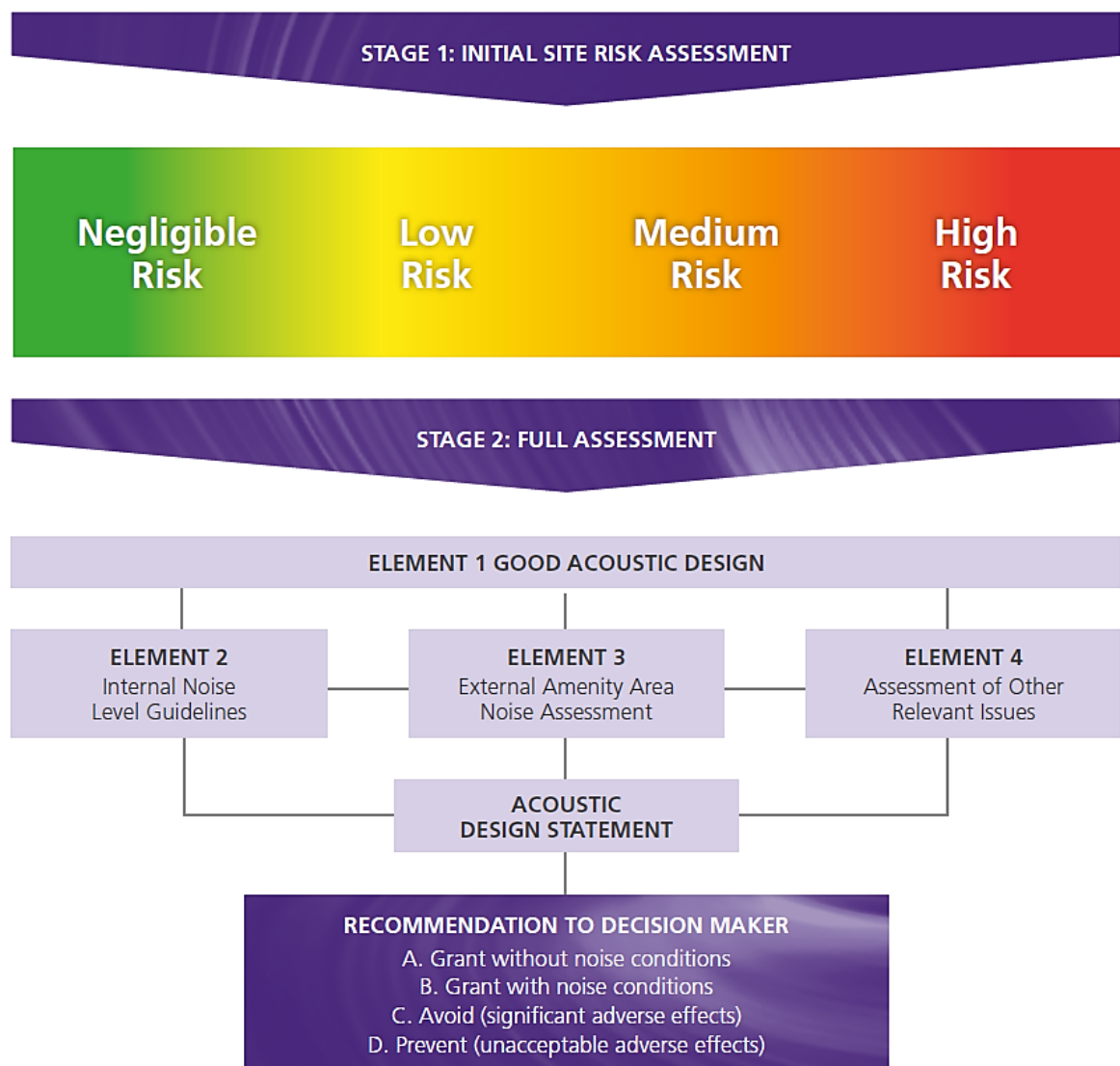
5.15.14 New development will be visually attractive, fit for purpose and locally distinctive. It will conserve and enhance the character of the local built, historic and natural environment, integrate well with the surrounding local area and meet anti-crime standards. The design and construction of new development will incorporate sustainable construction standards and techniques, be adaptable to reflect changing lifestyles, and be resilient to the effects of climate change. This will be achieved through the criteria set out below:

- *Using the collaborative approach advocated in Building for Life 12 and in line with the guidance set out in Kent Design, the design, layout and form of new development will be derived from a robust analysis of local context and character and will make a positive contribution to the street scene, the quality of the public realm and the character of the area. Account will be taken of the scale, height, building lines, layout, materials and other architectural features of adjoining buildings. Account will also be taken of the wider site context, including strategic views, site topography, the significance of heritage assets and features of townscape and landscape value which contribute to local character and sense of place;*
- *New development will encourage sustainable living and choice through a mix of compatible uses which are well connected to places that people want to use, including the public transport network, local services and community facilities; encourage sustainable travel; enhance Green Grid links and encourage healthier lifestyles;*
- *New development will be located, designed and constructed to:*
 - o *safeguard the amenity, including privacy, daylight and sunlight, of its occupants and those of neighbouring properties and land;*
 - o *avoid adverse environmental impacts from pollution, including noise, air, odour and light pollution, and land contamination; and**not pose an unacceptable risk or harm to the water environment, including the quality and/or quantity of ground waters, surface waters, wetlands and coastal water systems;..."*

Design Guidance

- 4.9 The approach to assessment presented in this report is aligned with the Association of Noise Consultants (ANC), Institute of Acoustics (IOA) and Chartered Institute of Environmental Health (CIEH) publication "*ProPG: Planning and Noise: Professional Practice Guidance on Planning and Noise: New Residential Development*". (2017). This builds on guidance given in BS 8233:2014 and BS 4142:2014 + A1: 2019.
- 4.10 ProPG provides two stages of assessment, the first being an initial Site risk assessment and the second being a full assessment, as illustrated in the figure below:

Figure 4.2: Summary of ProPG Approach to Assessment



- 4.11 Potential conflicts between acoustic ventilation and overheating have been assessed based on the guidance given in the ANC/IOA publication "*Acoustics Ventilation and Overheating: Residential Design Guide*" and the statutory requirements of Approved Documents F and O of the Building Regulations 2010 (as amended).

5.0 EXISTING BASELINE NOISE LEVELS

General

- 5.1 Automated noise monitoring at the site was undertaken over a notional 7-day period between 21 August 2025 and 27 August 2025 and a notional 4-day period between 16 September 2025 and 19 September 2025 in order to capture road traffic noise during school term time. Noise levels were monitoring at four locations, as shown in the figure below.
- 5.2 Noise levels were monitored at four monitoring locations, as shown in Figure 5.1 below and described in Table 5.1 overleaf.

Figure 5.1: Noise Monitoring Locations



Table 5.1: Description of Measurement Positions

Location	Description
A1	Approximately mid-way along the northern boundary of the site, to the west of School Lane. The microphone was positioned approximately 1.5m above local ground level, in free-field conditions.
A2	On the eastern boundary, overlooking School Lane. The microphone was positioned approximately 1.2m above local ground level, in free-field conditions.
A3	Located on the southern boundary of the site to the rear of the private gardens for dwellings on High View, to the west of School Lane. The microphone was positioned approximately 1.5m above local ground level, in free-field conditions
A4	Towards the south-western corner of the site, overlooking Taylors Lane. The microphone was positioned approximately 1.2m above local ground level, in free-field conditions.

Noise Monitoring Equipment

5.3 Details of the equipment used for the survey are summarised in the following table.

Table 5.2: Noise Monitoring Equipment

Measurement Instrumentation			
Position	Manufacturer	Type	Serial Number
A1, A2	Svantek	971A Type 1 Sound Level Meter	143557
A3	Convergence	Nsrt_mk4 Data Logger	CFr8j3W4UX89gBNwT4hZID
A4	Convergence	Nsrt_mk4 Data Logger	CtDUBIWYU30fijPyTyJRID
All	Svantek	SV 33B Acoustic Calibrator	125699

5.4 All instruments hold current laboratory calibration certificates (available on request).

5.5 A field calibration check on all equipment was made at the start of the survey and a further calibration check made on completion. No significant drift in the calibration of any instrument was observed.

Procedure

- 5.6 The noise monitoring equipment at positions A1 and A2 was configured to record the $L_{A90,T}$, $L_{Aeq,T}$, and $L_{Amax,fast}$ sound pressure levels over consecutive 15-minute periods to provide a detailed time history profile showing fluctuations in noise levels. The equipment was also configured to undertake higher resolution logging (100ms) to assist with the identification of noise events.
- 5.7 The equipment at positions A3 and A4 was configured to continuously log fast A-weighted sound pressure levels, which have been post-processed to determine $L_{A90,T}$, $L_{Aeq,T}$, and $L_{Amax,fast}$ sound pressure levels over consecutive 15-minute periods.
- 5.8 The noise measurement data from all positions has also been further processed to determine the $L_{Amax,fast}$ noise levels in consecutive 1 minute periods, which has been utilised to determine the effect of maximum noise levels at night.

Results

- 5.9 The results of the automated noise measurements are shown on the graphs presented in the following.

Figure 5.2: Noise Monitoring Results: Position A1

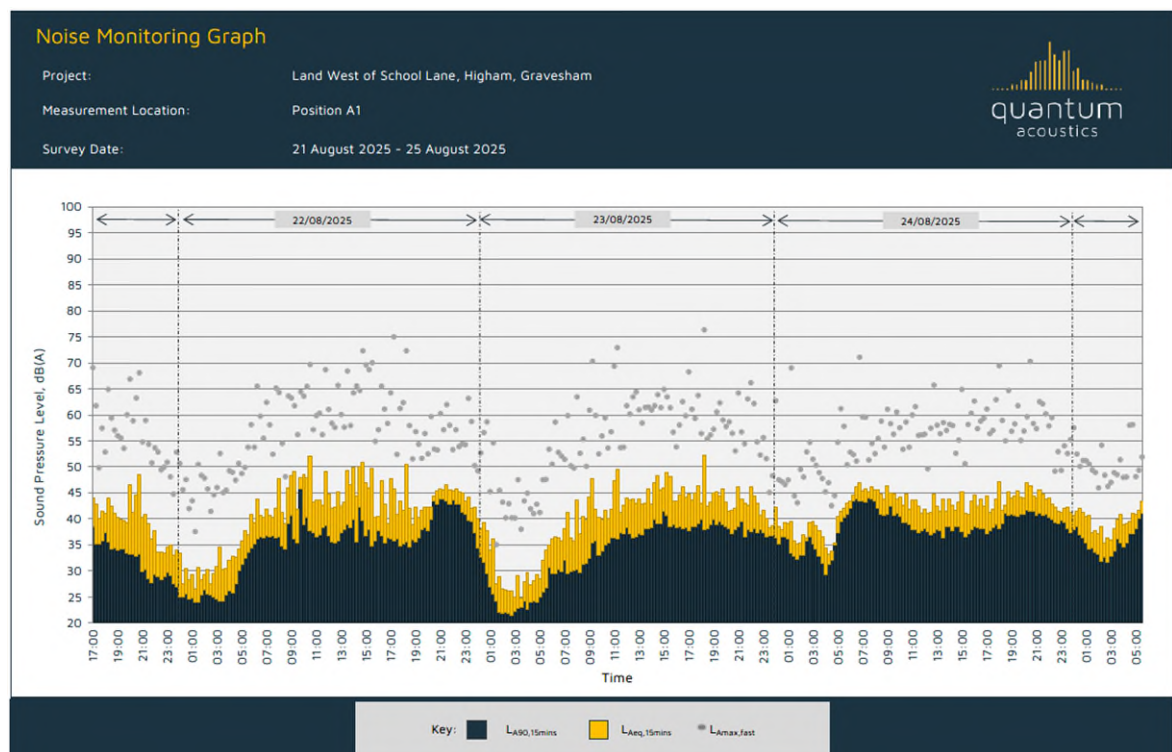


Figure 5.3: Noise Monitoring Results: Position A2

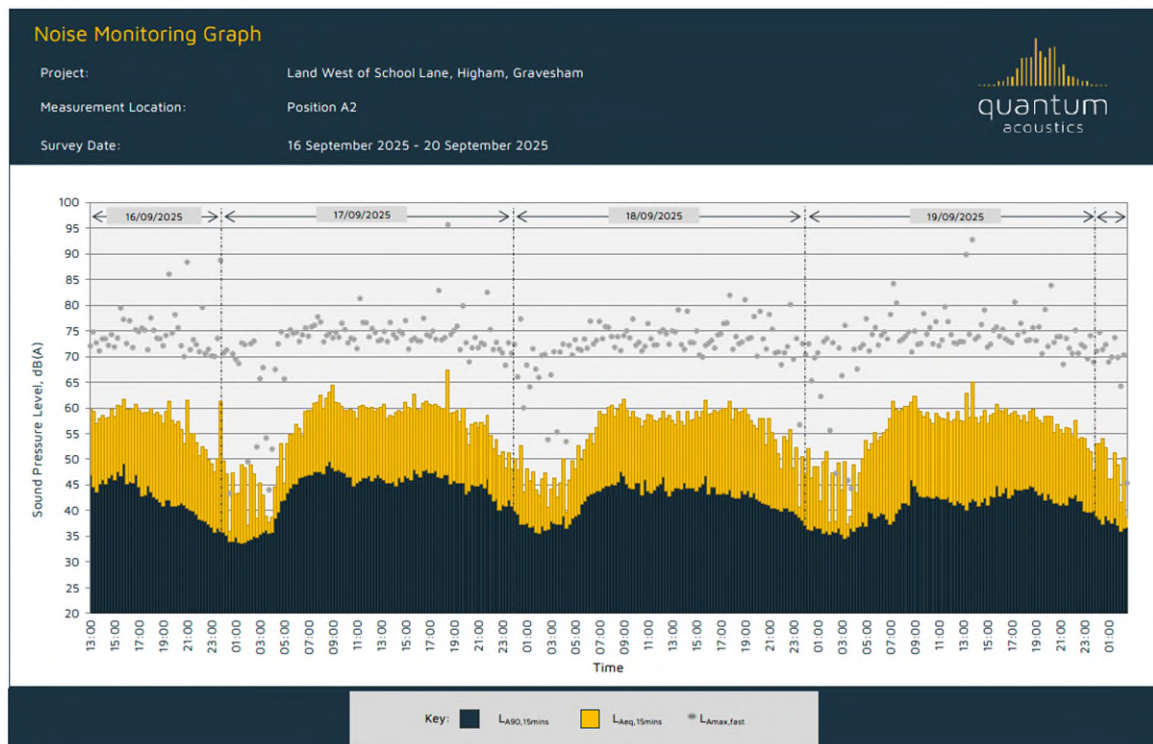


Figure 5.4: Noise Monitoring Results: Position A3

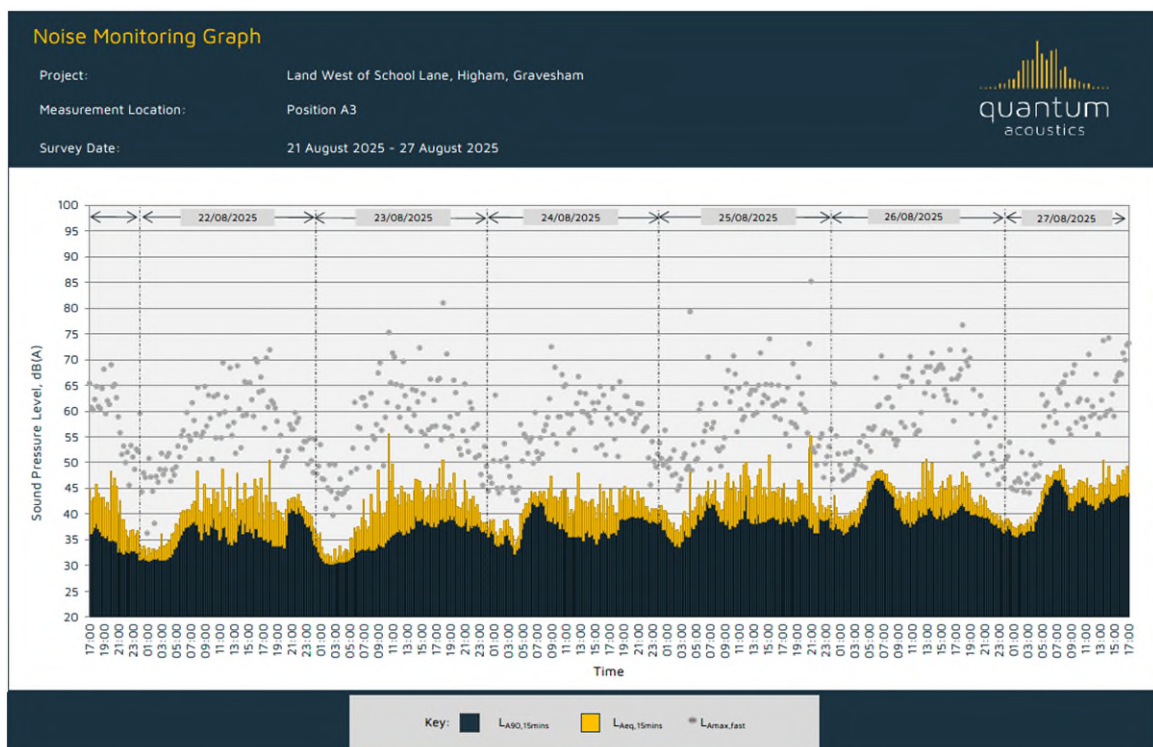
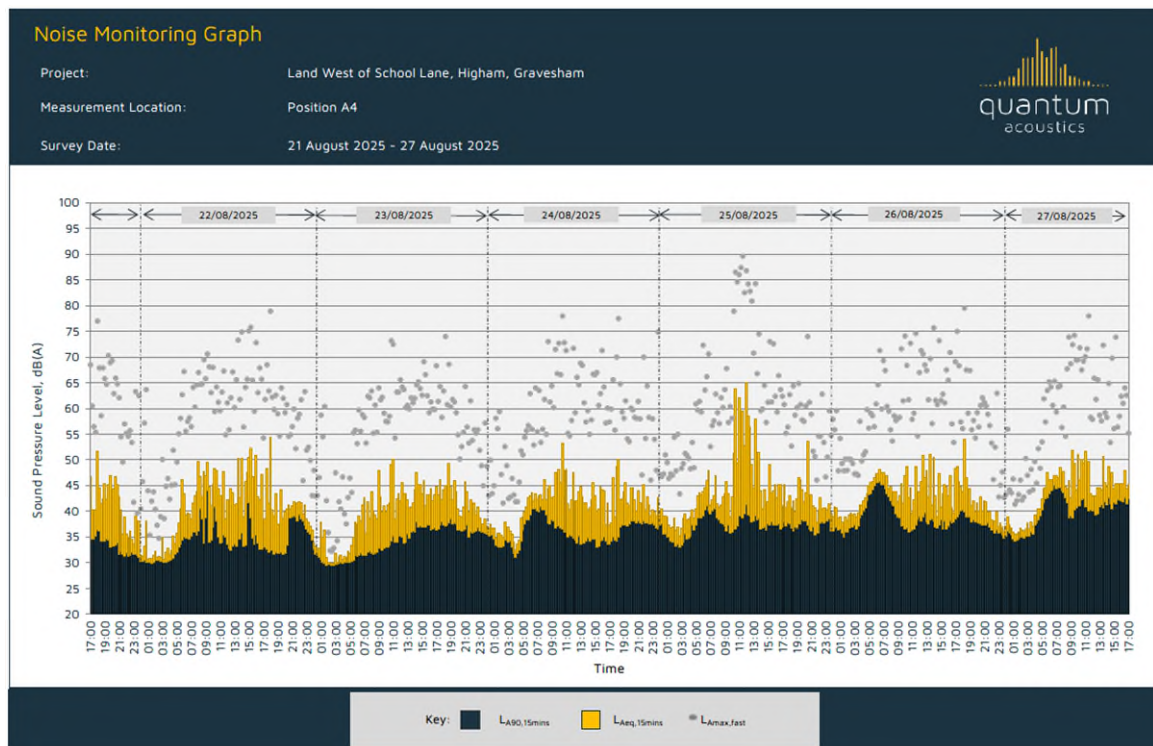


Figure 5.5: Noise Monitoring Results: Position A4



Weather

- 5.10 Whilst weather conditions during the survey were not actively measured, weather conditions at the time of site attendances were generally dry and sunny with little to no wind. Publicly available historic weather data for each survey period are summarised in Tables 5.3 and 5.4 overleaf.

Table 5.3: Summary of Weather Conditions: 21 – 27 August 2025

21 August 2025	22 August 2025
Temperature: 12 to 21°C Pressure: 1,001 – 1,008 hPa Humidity: 55 – 91% Max. wind speed: 11 km/h Average wind direction: NNE Precipitation: 0mm	Temperature: 12 to 26°C Pressure: 1,006 – 1,008 hPa Humidity: 35 – 94% Max. wind speed: 0.6 km/h Average wind direction: SE Precipitation: 0mm
23 August 2025	24 August 2025
Temperature: 13 to 26°C Pressure: 1,005 – 1,007 hPa Humidity: 44 – 86% Max. wind speed: 12.2 km/h Average wind direction: E Precipitation: 0mm	Temperature: 12 to 28°C Pressure: 1,005 – 1,008 hPa Humidity: 42 – 88% Max. wind speed: 2.4 km/h Average wind direction: SE Precipitation: 0mm
25 August 2025	26 August 2025
Temperature: 13to 29°C Pressure: 998 – 1,006 hPa Humidity: 33 – 94% Max. wind speed: 10.8 km/h Average wind direction: SE Precipitation: 0mm	Temperature: 16 to 27°C Pressure: 993 – 998 hPa Humidity: 49 – 92% Max. wind speed: 16.4 km/h Average wind direction: SSW Precipitation: 0mm
27 August 2025	
Temperature: 13 to 24°C Pressure: 991 – 994 hPa Humidity: 59 – 97% Max. wind speed: 18.3 km/h Average wind direction: SSW Precipitation: 16mm	

Table 5.4: Summary of Weather Conditions: 16 – 19 September 2025

16 September 2025	17 September 2025
Temperature: 19 to 12°C Pressure: 1013 – 1021 hPa Humidity: 49 – 84% Max. wind speed: 24.5 km/h Average wind direction: W Precipitation: 0mm	Temperature: 16 to 23°C Pressure: 1016 – 1,022 hPa Humidity: 72 – 92% Max. wind speed: 23 km/h Average wind direction: WSW Precipitation: 0mm
18 September 2025	19 September 2025
Temperature: 16 to 23°C Pressure: 1016 – 1022 hPa Humidity: 72 – 92% Max. wind speed: 12.2 km/h Average wind direction: WSW Precipitation: 0mm	Temperature: 15 to 29°C Pressure: 1,014 – 1,022 hPa Humidity: 46 – 96% Max. wind speed: 11.7 km/h Average wind direction: S Precipitation: 0mm

Discussion

- 5.11 Ambient noise levels characterising the site are generally dominated by local traffic on School Lane and occasional road traffic on Taylors Lane. Overheard aircraft was also audible at the site.

Data Analysis

- 5.12 The measurement results from the automated surveys have been averaged to determine typical daytime ($L_{Aeq,16\text{ hour}}$) and night-time ($L_{Aeq,8\text{ hour}}$ and $L_{Amax,fast}$) sound levels.
- 5.13 As noted above, the $L_{Amax,fast}$ noise levels have been determined from consecutive 1 minute time periods to obtain the typical 10th highest $L_{Amax,fast}$ noise level in accordance with the requirements of the ProPG.
- 5.14 The results of this analysis are summarised in the following table.

Table 5.5: Summary of Measured Noise Levels

Position	Daytime $L_{Aeq,16hour}$ (dB) (07:00 – 23:00)	Night-time $L_{Aeq,8hour}$ (dB) (23:00 – 07:00)	Night-time $L_{Amax,fast}$ (dB) (23:00 – 07:00)
A1	44	39	58
A2	59	51	74
A3	45	41	57
A4	48	40	60

6.0 INITIAL SITE NOISE RISK ASSESSMENT

Noise Modelling

- 6.1 The measurement results from the automated surveys have been used to develop and validate a computational noise model of the site using Datakustic CadnaA® noise modelling software. The input data and assumptions made in the modelling are set out in Table 6.1 below.

Table 6.1: Data and Assumption Used for Computational Noise Modelling

Parameter	Input Assumptions
Software Version	Datakustic CadnaA®, Version 2025, Build 209.5501
Calculation Methodology	CRTN, 1988
Source Inputs	Traffic noise levels from surrounding roads especially School Lane (the dominant noise source at the site) and from the marquee area at the rear of the Knowle Country House Wedding Venue have been validated against the results of the on-site noise monitoring.
Mapping	Design drawings provided by Client and Open Street Map data © OpenStreetMap Contributors 2025.
Topography	Existing height points taken from LIDAR digital terrain model, available at https://environment.data.gov.uk/DefraDataDownload/?Mode=survey available under DEFRA OGL licence at http://www.nationalarchives.gov.uk/doc/open-government-licence/version/1/open-government-licence.htm
Ground Absorption	Soft ground assumed to be absorptive ($G = 1$). Hard ground (including roads) assumed to be reflective ($G=0$)
Model Grid	The model grid is set at a spacing of 2m x 2m
Receptor Locations	Calculation grids set to 1.5m above ground level for ground floor and amenity area level assessments. Calculation grid set to 4m from 1 st floor receptors.
Building Heights	Two storey dwellings implemented with an assumed ridge height of 8m.
Model Output	The model produces “free-field” measurements. A façade correction is to be applied in subsequent analysis if required to yield façade levels.

ProPG Stage 1 Assessment

- 6.2 The output of the models has been assessed in line with the noise characterisation of the "PropG Stage 1 Initial Site Noise Risk Assessment" methodology, as reproduced in Figure 6.1 below.

Figure 6.1: ProPG Stage 1 Initial Site Noise Risk Assessment Methodology

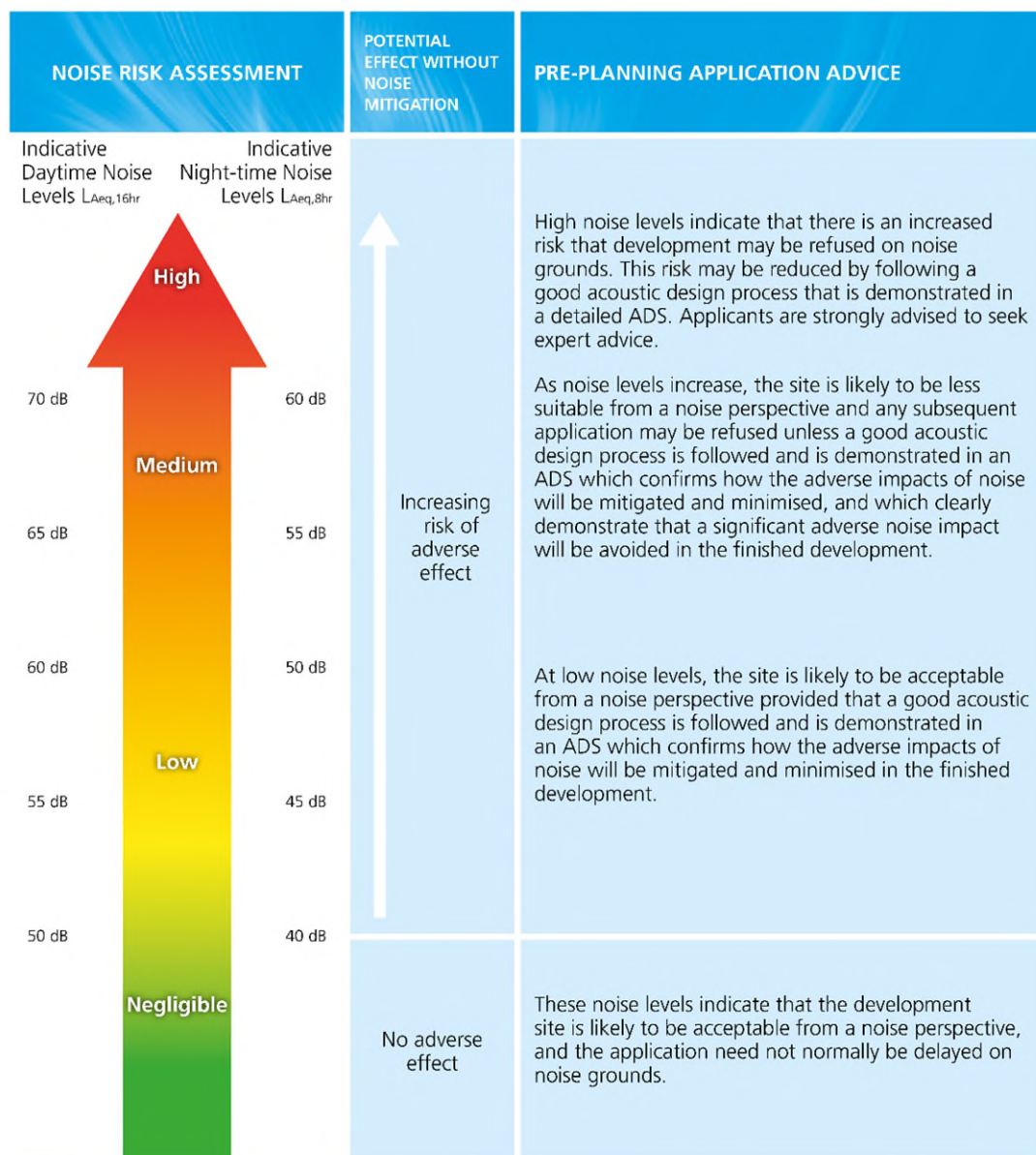


Figure 1 Notes:

- Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures.
- Indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is "not dominant".
- $L_{Aeq,16hr}$ is for daytime 0700 – 2300, $L_{Aeq,8hr}$ is for night-time 2300 – 0700.
- An indication that there may be more than 10 noise events at night (2300 – 0700) with $L_{Amax,F} > 60$ dB means the site should not be regarded as negligible risk.

6.3 Daytime and night-time assessments are presented in Figures 6.2 and 6.3 below.

Figure 6.2: ProPG Stage 1 Initial Site Noise Risk Assessment: Daytime



Figure 6.3: ProPG Stage 1 Initial Site Noise Risk Assessment: Night-time



6.4 The initial day time noise risk assessment indicates a “negligible” to “low” daytime noise risk across the proposed development area.

- 6.5 The initial night-time noise risk assessment indicates a “negligible” to “low/medium” night-time noise risk.
- 6.6 For “low” risk sites, the ProPG states:
- “At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an Acoustic Design Statement (ADS) which confirms how the adverse impacts on noise will be mitigated and minimised in the finished development.”*
- 6.7 For “negligible” risk sites, ProPG states:
- “These noise levels indicate that the site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.”*
- 6.8 In light of the above, it is clear that careful consideration will need to be given to noise mitigation of the site. A more detailed consideration of noise impacts for the site and potential mitigation strategies, in line with a ProPG “Stage 2” assessment (which constitutes an Acoustic Design Statement) is required.
- 6.9 A ProPG Stage 2 “Full Assessment” requires consideration of four key elements:
- Element 1 – Good Acoustic Design Process
 - Element 2 – Internal Noise Level Guidelines
 - Element 3 – External Amenity Area Noise Assessment
 - Element 4 – Assessment of Other Relevant Issues

7.0 ELEMENT 1: GOOD ACOUSTIC DESIGN

General

7.1 ProPG references a preferred hierarchy of strategies that represent a "*good acoustic design process*". These include the following:

- Reducing noise "at source" and or relocating the noise source;
- Providing "buffer" zones to maximise the spatial separation between noise source and receiver locations;
- Reducing noise propagation across the site by introducing acoustic screening (e.g. barriers, earth bunds, etc.)
- Optimise the acoustic screening provided by the proposed development by creating "barrier" blocks to reduce the noise propagation across the site and may assist in protecting external amenity areas;
- Optimising the orientation and internal layout of buildings to help minimise the noise exposure of noise sensitive rooms (for example, by positioning non-habitable rooms on elevations with a greater noise risk and noise sensitive rooms on quieter elevations);
- Designing the building envelope to mitigate noise intrusion; and
- Designing an appropriate strategy for minimising noise intrusion under all building ventilation modes (including the control of summertime overheating).

"At Source" Noise Reduction

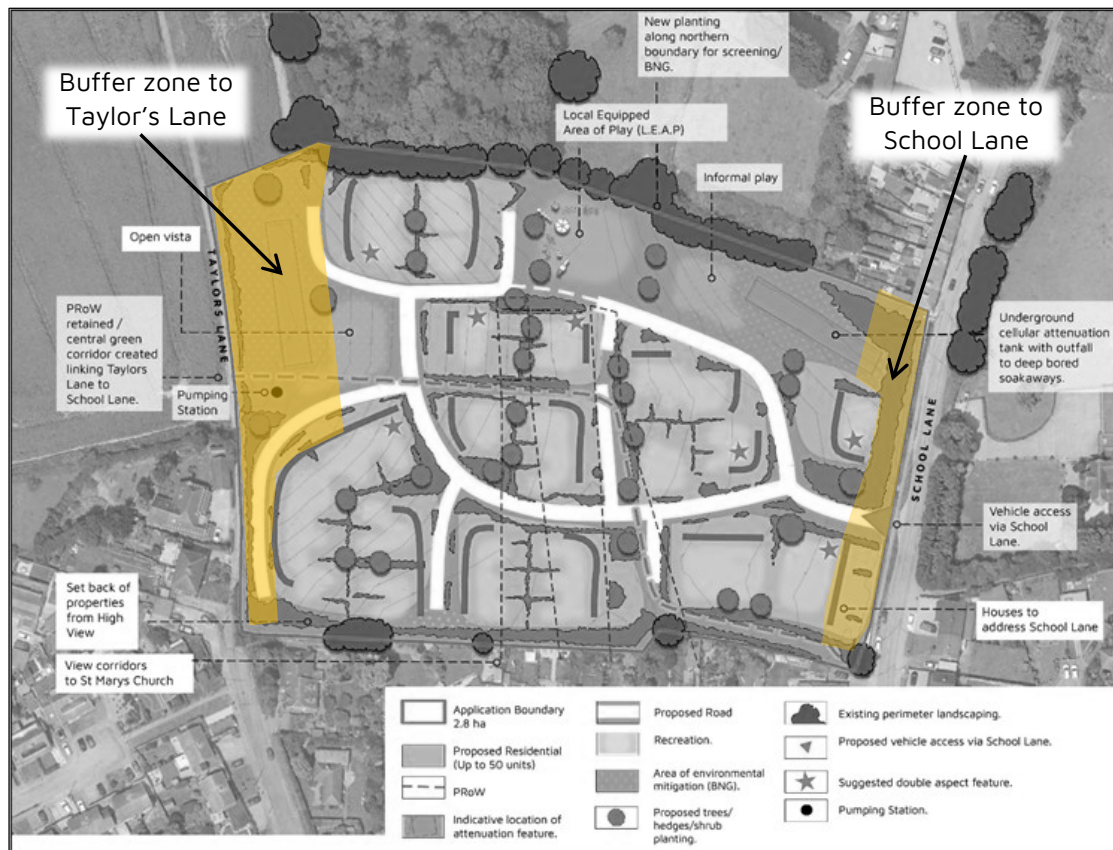
7.2 As noted previously, the dominant noise source affecting the site is road traffic noise from School Lane and other local roads. This noise source cannot be removed or relocated and any scope to provide "*at source*" mitigation (through the use of '*low noise*' road surface or a reduction of speed limit of the roads) would not fall within the control of the developer.

7.3 As such, there are not considered to be any practicable options for providing '*at source*' noise control.

Buffer Zones

7.4 The proposed illustrative framework masterplan has been developed to create a buffer zone along the eastern and western boundary, to help provide separation between proposed dwellings and School Lane and Taylor's Lane, as illustrated in Figure 7.1 overleaf.

Figure 7.1: Introduction of Buffer Zones



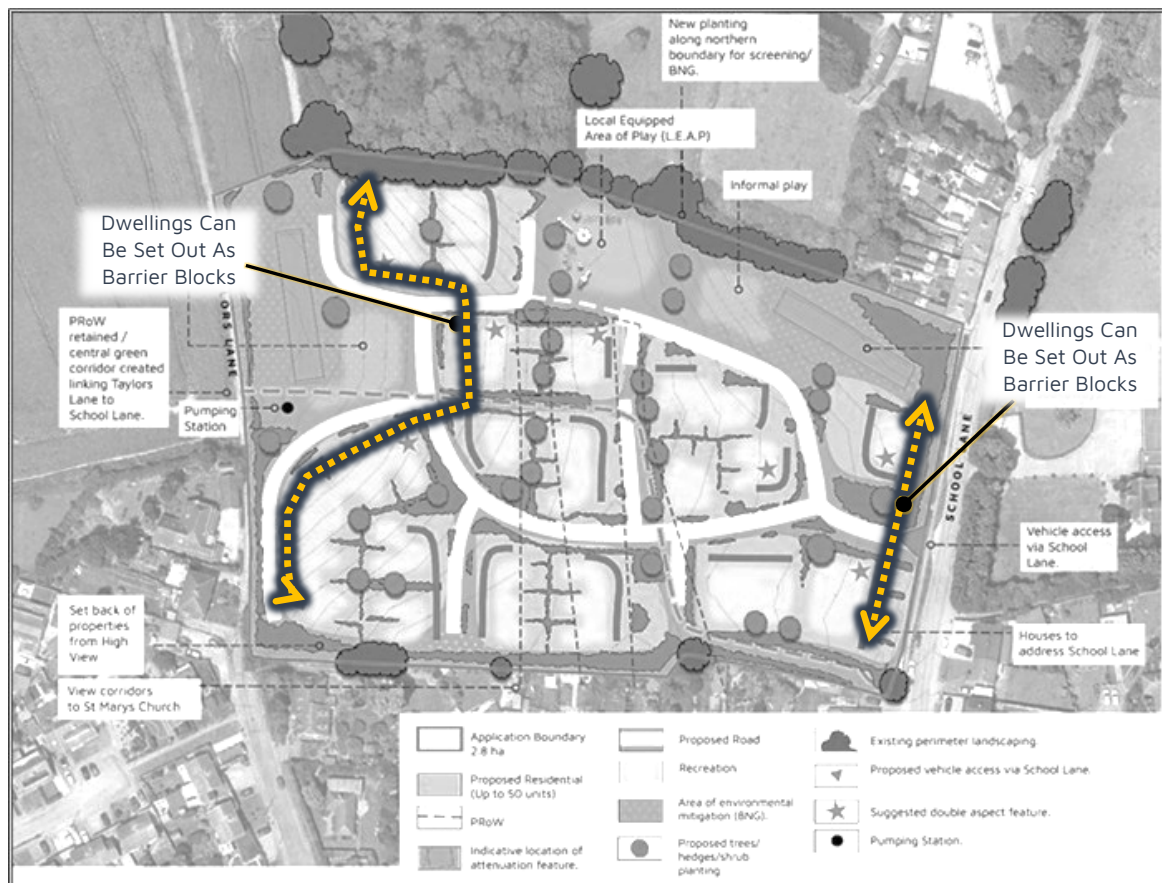
Acoustic Screening

- 7.5 Acoustic screens (such as bespoke noise barriers and earth bunds) can assist in minimising noise. Due to the relatively low noise levels on the site and buffer zones that can be implemented in the illustrative framework masterplan, the use of bespoke acoustic bunds or barriers is not considered to be a necessary design response for the site.

General Arrangement of Buildings

- 7.6 Notwithstanding the above, the judicious setting out of buildings can also help provide a screening benefit, e.g. buildings that are orientated parallel to a noise source such as a road, can help act as barrier blocks which will help to impede sound propagation into the internal areas of the site. The illustrative framework masterplan illustrates how such a design approach could be introduced, as shown in Figure 7.2 overleaf.

Figure 7.2: Buildings Orientated to Help Act as Barrier Blocks



Building Orientation / Internal Arrangements

- 7.7 The illustrative framework masterplan is orientated in such a way that private amenity areas are located behind the proposed buildings in relation to the main noise source (School Lane) and also to Taylor's Lane. This orientation enables the massing of the buildings to provide inherent acoustics protection to the gardens to the 'rear' of the property, whilst also giving residents an acoustically 'screened' façade that will optimise opportunities for residents to rely on natural ventilation and permit thermal control over their properties (e.g. allow the use of openable windows to provide ventilative cooling).

Conclusions

- 7.8 Based on the above, it is concluded that the current masterplan provides an appropriate and effective design response to the existing noise constraints, in accordance with the principles of 'good acoustic design'.

8.0 ELEMENT 2 - INDOOR AMBIENT NOISE LEVELS

Internal Acoustic Design Recommendations for Dwellings

- 8.1 Figure 2 in the ProPG outlines the following internal acoustic design recommendations for dwellings:

Table 8.1: ProPG Indoor Ambient Noise Level Design Guidance

Activity	Location	Daytime (07.00 to 23.00 hours)	Night-time (23.00 to 07.00 hours)
Resting	Living Room	35dB $L_{Aeq,16hour}$	--
Dining	Dining Room/Area	40dB $L_{Aeq,16hour}$	--
Sleeping	Bedroom	35dB $L_{Aeq,16hour}$	30dB $L_{Aeq,8hour}$ 45 dB $L_{Amax,F}$ (Note 4)

- 8.2 The above values are taken to be "*Lowest Observed Adverse Effect Levels*" in line with national planning practice guidance.

Sound Insulation

- 8.3 The proposed development will, as a matter of course, need to include the use of thermal double glazing (to comply with the statutory thermal requirements of Approved Document L1 of the Building Regulations 2010 (as amended)) and an appropriate scheme of ventilation (to comply with the statutory requirements of Approved Document F1 of the Building Regulations 2010 (as amended)).
- 8.4 Standard thermal double glazing will typically offer a sound reduction performance of R_w 29 dB, whilst standard "trickle" vents to provide background ventilation will typically provide a sound reduction performance of around $D_{ne,w}$ 32 dB. As such, the use of standard thermal double glazing and standard non-acoustic trickle ventilators will typically provide adequate sound insulation to

control intrusion into dwellings at daytime sound levels of up to 56 dB $L_{Aeq,16\text{hour}}$ and night-time sound levels of around 51 dB $L_{Aeq,8\text{hour}}$ ¹.

- 8.5 Based on the above, the use of standard thermal double glazing and standard trickle vents should be compatible with providing acceptable indoor ambient noise levels for most dwellings.
- 8.6 Notwithstanding the above, façades of dwellings overlooking School Lane may have an increased noise exposure from School Lane and may therefore require some degree of acoustical enhancement, e.g. slightly uprated glazing and the use of acoustically rated trickle ventilators.
- 8.7 Proprietary '*acoustic*' ventilators are available offering a sound reduction performance of up to around 41 dB, with higher performances achievable with '*through the wall*' type ventilators. Mechanical, ADF compliant ventilation solutions (such as MVHR) are also capable of providing intrinsically high levels of acoustic protection.
- 8.8 It therefore follows that internal noise levels with proposed dwellings should be readily controllable through the detailed specification of the external fabric of the proposed development and proposed ventilation strategies. The detailed design of any sound insulation scheme is a matter that can be directly controlled by the LPA, i.e. the setting out and general design of buildings can be approved through the Reserved Matters process and the use of a planning condition(s) providing operative control and/or requiring the submission and approval of the finalised design proposals, can retain control over any residual sound insulation required.
- 8.9 It is therefore concluded that the proposed development can readily provide acceptable indoor noise levels for future residents in line with industry standard good practice design recommendations.

Purge Ventilation

- 8.10 Approved Document F1 of the Building Regulations 2010 (as amended) requires that residential properties provide adequate "*purge*" ventilation. Purge ventilation is the process of removing high concentrations of pollutants and water vapour released from occasional activities (such as painting and decorating) or accidental releases (such as smoke from burnt food or spillage of water).
- 8.11 Since the need for purge ventilation is, by its definition "*occasional*" and of limited duration, this is normally achieved by giving residents the ability to open windows. Whilst noise intrusion may increase, as a result of windows being open, any increase will arise as a result of occupant choice

¹ See Table B-3 of IOA/ANC publication "Acoustics Ventilation and Overheating: Residential Design Guide" (January 2020)

and it is therefore concluded that any temporary increase in noise levels to deliver purge ventilation in accordance with Approved Document F1 is acceptable and compatible with the guidance of ProPG, BS 8233:2014 and ADF.

Thermal Comfort

- 8.12 The proposed dwellings will also need to implement appropriate strategies to address any potential for habitable rooms overheating during the summer. From a sustainability point of view, the preferred means of providing thermal control of the properties is through the use of openable windows to provide passive, ventilative cooling. It is, however, simple to appreciate that future occupants will experience increased noise intrusion when windows are open.
- 8.13 An AVOG "Level 1" risk assessment of the site has therefore been undertaken based on an illustrative masterplan for the site which implements the mitigation set out in Section 7. The results of this assessment are presented in Figure 8.1 below and Figure 8.2 overleaf.

Figure 8.1: AVOG "Level 1" Risk Assessment of Illustrative Masterplan: Daytime



Figure 8.2: AVOG "Level 1" Assessment of Illustrative Masterplan: Night-time



- 8.14 This initial AVOG Stage 1 assessment for daytime shows that, following the implementation of the mitigation set out within Section 7 within an intelligent, design led masterplan, the site generally should have a "*negligible*" noise risk across the majority of the site. As such, it is unlikely that any specific mitigation will be required to minimize the risk of overheating for the dwellings – most dwellings should be able to rely on a natural ventilation strategy for providing ventilative cooling to assist with the thermal control of their properties.
- 8.15 However, façades of future dwellings that may face directly towards School Lane will have a marginally increased risk which could require additional/alternative strategies for removing excess heat (subject to the final approved setting out and detailed design). This could include restricting the openable area of windows; providing additional passive ventilation; providing additional mechanical ventilation; a boosted rate of ventilation from MVHR systems or MVHR peak lopping.
- 8.16 The most appropriate solution will depend on the specific overheating risk and the detailed architectural design of the development, e.g. the design of the external fabric could be developed to intrinsically assist in reducing heat gains, whilst the orientation of buildings and internal arrangements can be used to minimise noise intrusion compared with the worst-case assessment indicated above; this may help increase the acoustic viability of relying on a natural ventilative strategy.

- 8.17 The control of overheating in bedrooms is a matter now statutorily controlled by Approved Document O of the Building Regulations and therefore controls outside of the planning system exist to ensure that the potentially conflicting requirements of acoustics and overheating are fully addressed.
- 8.18 Notwithstanding this, it is recommended that an overheating assessment is undertaken in accordance with the Chartered Institute of Building Services Engineer (CIBSE) "Design Methodology for the Assessment of Overheating Risk in Homes" (TM59:2017) during the detailed design phase of any proposed development to determine what additional strategy for controlling overheating may be required. The findings of this assessment could then form part of a holistic ventilation strategy for the development where dwellings are constrained by noise. As noted earlier, the LPA could retain control over the sound insulation implications of the overheating strategy by means of either an operative planning condition, or a condition requiring the submission and approval of the sound insulation scheme details.

Conclusions

- 8.19 It is concluded that the proposed development can readily be designed to deliver acceptable indoor noise levels for future residents, for all modes of ventilation and that the LPA could retain planning control over such matters at Reserved Matters stage and/or through the use of an appropriate planning condition.

9.0 ELEMENT 3: EXTERNAL AMENITY AREA NOISE LEVELS

- 9.1 As set out in Section 4 of this report a noise level of 50 dB $L_{Aeq,16hour}$ is a desirable target for noise in external amenity areas, with 55 dB $L_{Aeq,16hour}$ suggested as an upper target in ProPG /BS 8233:2014.
- 9.2 The Proposed Development provides a private rear garden for each house and a communal play area.
- 9.3 Figure 9.1 below presents an illustrative framework masterplan for the site developed in line with the “good acoustic design” principles set out in Section 7, which has been annotated to show areas that are above/ below 55 dB $L_{Aeq,16hour}$.

Figure 9.1: Illustrative Amenity Area Sound Level Assessment



- 9.4 Based on the above, it can be seen that an intelligent, design led response to the final setting out of the site (to be secured as a Reserved Matter) should be able to provide acceptable noise levels in all private external amenity areas and the proposed play space.

Conclusion

- 9.5 It is therefore concluded that the Proposed Development embeds the ability to provide access to good quality private and communal external amenity space for future residents.

10.0 ELEMENT 4: OTHER CONSIDERATIONS

Planning Policy Compliance

- 10.1 The conclusions of Elements 1 to 3 show that the development implements "*good acoustic design*" and both internal and external noise levels can be readily controlled in line with ProPG guidance.
- 10.2 The mitigation embedded within the proposed site layout and any residual mitigation that will be developed at the detailed design stage should not create a risk of any unintended adverse consequences for future residents the Proposed Development is therefore considered to comply fully with relevant national and local planning policy.

Compatibility With Neighbouring Land

- 10.3 Land usage around the site is predominantly residential with agricultural fields and does not therefore raise any intrinsic conflict with the principle of residential development on the site.
- 10.4 Notwithstanding the above and as noted earlier, Knowle Country House (which operates as a wedding venue) adjoins the northern boundary of the site with the main house and amenity areas located approximately 100m from the boundary. Information contained on the venues website² indicates that the site offers inside and outside ceremonies with a variety of indoor and outdoor guest areas, with facilities including a garden room for dancing.
- 10.5 The noise monitoring reported in Section 5 was undertaken over a period including the August Bank Holiday weekend, during which there would be a reasonable expectation that the venue will have hosted wedding ceremonies. In order to confirm this, the measurement data obtained for the measurement location on the northern site boundary has been analysed. The measurement data shows an increase in sound level between approximately 20.10 hours and 00.00 with characteristics consistent with entertainment noise. The finish time is also consistent with the terminal hour (midnight) for amplified music advertised on the venue's website.
- 10.6 More detailed scrutiny of the data indicates a typical sound level of 45dB $L_{Aeq,5mins}$ (between 20.10 and 23.00 hours) and 38dB $L_{Aeq,5mins}$ between 23.00 and 00.00 hours. It should be noted that this value is the combined level of any music noise contribution and the residual sound that otherwise characterises the site.

² <https://www.knowlecountryhouse.co.uk/>

- 10.7 It follows that whilst the propagation of entertainment noise from Knowle House is observable at the site, the magnitude of such noise is modest. To add some context to this, a sound level of 45dB(A) would be typical of whispered speech at a distance of 1m.
- 10.8 Based on guidance given in *"NANR116: Open / Closed Window Research: Sound Insulation Through Ventilated Domestic Windows"* (April 2007) prepared by the Building Performance Centre at Napier University of behalf of the Department for Environment Food and Rural Affairs (DEFRA), a partially open typical domestic window would attenuate entertainment noise (music) by around 15 to 20dB(A). It follows that the external sound levels measured during the noise monitoring could be expected to internal values of around 25 to 30dB $L_{Aeq,5mins}$ up to 23.00 hours and around 18 to 23 dB(A) between 23.00 to 00.00 hours within the most exposed dwellings to be created by the development (and with an assumption that windows were open).
- 10.9 DEFRA research project NANR 163: *"Noise from Pubs and Clubs (Phase II)"* (2006) prepared by the Building Research Establishment and Capita Symonds was aimed at trying to establish a set of criteria and methodologies best suited for the assessment of entertainment noise from pubs and clubs at night, to complement the application of the provisions of the Noise Act 1996. The research included consideration of a range of both absolute and relative noise metrics. Based on this research, the "best" available option was considered to be the use of an absolute $L_{Aeq,5minute}$ noise metric.
- 10.10 The research included extensive laboratory testing which sought to correlate the $L_{Aeq,5min}$ metric with a semantic descriptor of subjective "acceptability". The laboratory testing was also supported by field tests, leading to a value of 34dB $L_{Aeq,5mins}$ (coupled with a subjective assessment) subsequently being adopted for a night-time noise offence.
- 10.11 Table 4 of NANR163 provides the following more extensive research results showing semantic descriptors of absolute noise levels and an associated value of acceptability.

Figure 9.1: Illustrative Amenity Area Sound Level Assessment

Semantic Descriptor	Score	Absolute $L_{Aeq,5mins}$
Clearly acceptable	1	17.0
	2	20.4
	3	23.8
	4	27.2
Just acceptable	5	30.6
Just unacceptable	6	34.0
	7	37.4
	8	40.8
	9	44.2
Clearly unacceptable	10	47.5

- 10.12 It is important to note that the semantic descriptors outlined above are intended to reflect subjective acceptability of entertainment noise during the night-time (i.e. 23.00 to 07.00). It would normally be expected that higher noise levels would be acceptable during the daytime (07.00 to 23.00 hours), with an uplift of 5dB typically being applied in a number of other standards.
- 10.13 Based on the above, it can be concluded that levels of entertainment noise associated with events at Knowle House likely to be experienced by future residents of the scheme would not be considered to be unacceptable. As such, the presence of Knowle House is not considered to engage the "*agent of change*" principle developed in paragraph 200 of the NPPF, i.e. that, whilst present, noise associated with events held at Knowle House should not have a significant adverse impact on the proposed development that would require any specific additional mitigation.
- 10.14 Notwithstanding the above, the general imperative set out in paragraph 198 of the NPPF is for noise to be minimised as far as practicable. The assessment set out above assumes that residents windows would be open. It is clear that additional noise mitigation (to further reduce internal sound levels) could be achieved if residents closed their windows. If considered necessary, the implementation of an appropriate sound insulation scheme, including the provision of alternative means of ventilation to enable residents to have closed windows, to maximise protection for future occupants could be enforced and controlled through the Reserved Matters process and the use of planning conditions (e.g. the submission and approval of a sound insulation scheme).
- 10.15 It is also material to note that there are existing dwellings in similar or closer proximity to Knowle House, as shown in Figure 10.1 below.

Figure 10.1: Existing Dwellings Neighbouring Knowle House



- 10.16 It is considered likely that existing dwellings will already experience similar or greater levels of noise than measured at the proposed development site. Given that these existing residential receptors appear to already satisfactorily co-exist with the wedding venue, the proposed development should not alter the character of the area or impose any unreasonable restrictions on the existing use of the venue.
- 10.17 It is therefore concluded that the proposed development can be effectively integrated with existing businesses and community facilities as required by paragraph 200 of the NPPF.

Recommendation to Decision Maker

- 10.18 Section 3 of ProPG identifies that following the Stage 1 and 2 guidance will lead to one of four possible recommendations from the noise practitioner to the decision maker:
- A. Planning consent may be granted without any need for noise conditions;
 - B. Planning consent may be granted subject to the inclusion of suitable noise conditions;
 - C. Planning consent should be refused on noise grounds in order to avoid significant adverse effects (*"avoid"*); or
 - D. Planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects (*"prevent"*).
- 10.19 The ProPG Stage 1 assessment demonstrates that the Site has a "low" to "negligible" noise risk. The Stage 2 assessments confirm that good acoustic design is implemented within the outline scheme proposals and that additional mitigation can be developed at during the detailed design stage of the development. As such, the appropriate recommendation to the decision maker is that:

"Planning consent may be granted subject to the inclusion of suitable noise conditions".

11.0 CONCLUSIONS

- 11.1 Quantum Acoustics has undertaken an environmental noise survey to establish the existing noise levels characterising the proposed development site. The measurement results indicate that noise levels are dominated by road traffic noise from School Lane (which runs along the eastern boundary of the site), with noise levels reducing with increasing distance from the road.
- 11.2 The potential risk of the site has been assessed in line ProPG Stage 1 and Stage 2 assessments.
- 11.3 The Stage 1 assessment concludes that the site has a *"negligible"* to *"low"* daytime noise risk and *"negligible"* to *"low/medium"* night-time noise risk.
- 11.4 The Stage 2 assessment concludes:
- The illustrative framework masterplan embeds good acoustic design principles to mitigate noise levels;
 - The proposed development can be designed to deliver appropriate internal noise levels for all modes of ventilation. Detailed design proposals will need to be developed at the detailed design stage of the scheme. The LPA can retain planning control over such proposals either through the Reserved Matters process or use an appropriate planning condition;
 - The illustrative land use parameter plans embed the ability to provide appropriate detailed design strategies for providing access to good quality external amenity space for future residents;
 - The required mitigation strategies should not create any unintended adverse consequences for future residents the proposed development is therefore considered to comply fully with relevant national and local planning policy; and
 - The proposed development does not raise any agent of change concerns in relation to existing neighbouring business or community use facilities.
- 11.5 It is concluded that the proposed development should not raise any residual significant adverse impacts on health and/or quality of life for future occupiers of the proposed development or existing neighbouring dwellings, and that the proposed development follows an intelligent, design led approach to reduce and minimise noise.
- 11.6 It is therefore concluded that the proposed development should comply fully with noise related national, and local planning policies.

APPENDIX A

Glossary of Acoustic Terminology

General

Vibrations in the air, water or other media cause pressure variations in the surrounding air. These pressure changes are perceived by the human ear as “sound”.

Measurement Units

Given the huge range of pressure fluctuations detectable or tolerated by the human ear, sound is quantified on a logarithmic scale with values expressed in “decibels”. Values are based on a reference sound pressure level of 20µPa, thus a sound pressure of 20µPa would equate to 0dB and a pressure of 200Pa would equate to 140dB.

Frequency

The number of cycles or vibrations per second, measured in Hertz (Hz). Higher frequencies are perceived as higher-pitched. Noise audible to the human ear typically covers a frequency range of 20Hz to 20,000Hz.

A-Weighting

The human ear is typically more sensitive to sound in towards the middle of the audible range and less sensitive to lower and higher frequencies. In order to take account of these differences, a frequency weighting is often applied to the sound measurement which adjusts the measurement value to reflect the way the human ear will perceive the sound. The use of “A-weighting” therefore gives a measure of subjective “loudness”. A-weighted sound levels are expressed in dB(A).

Comparison of Sound Levels

The subjective perception of sound is illustrated by reference to various relatable noise sources below:

Sound Pressure Level, dB(A)	Typical Noise Source
160	Space rocket taking off
140	Military jet taking off (at 30m)
100	Dancefloor of nightclub
90	Heavy goods vehicle driving past
80	Busy urban road
70	Vacuum cleaner
60	Busy office
55	Normal speech at 1m
40	Whispered conversation at 2m
30	Bedroom at night (BS 8233: 2014)
20	Remote country location
0	Threshold of hearing

Variation of Sound with Time

The magnitude of most sounds varies with time. Environmental noise is normally measured with a “fast” time weighting which best replicates the way sound fluctuations are perceived.

Acoustic Terminology

A number of noise metrics are routinely used to assist in characterising a noise environment. These include:

- L_{90} is the noise levels that is exceeded for 90% of the measurement period. It reflects the quiet periods during that time and is often referred to as the "background noise level". It is often used as a basis for setting noise emission criteria. The A-weighted value over time period (T) is written as $LA_{90,T}$.
- L_{eq} is the level of a notional continuous sound that would deliver the same sound energy as the actual fluctuating sound over the measurement period. This may be thought of as the "average" level during the measurement period. The A-weighted value over time period (T) is written as $LA_{90,T}$.
- L_{max} is the maximum noise level during the measurement period. For environmental noise purposes, L_{max} values are normally measured with a "fast" time response. The A-weighted value is then reported as $L_{Amax,fast}$ (or $L_{Amax,F}$)

Addition of Sound Levels

The use of a logarithmic scale does not allow the simple arithmetic addition of sound levels – they need to be added logarithmically. This means that two noise sources, each generating a sound level of 50dB(A) will generate a combined sound level of 53dB(A) – not 100dB(A),

Subjective Perception of Sound Level Changes

Subjectively, the human ear:

- Cannot perceive a sound level change of less than 3dB(A);
- Will perceive a sound level change of 4-5dB(A) as "noticeable";
- Will perceive a sound level change of 10dB(A) as a doubling (or halving) of loudness

Sound Insulation

The sound insulation performance of building constructions can be described using a number of metrics:

- R_w is the "weighted sound reduction index" and is an intrinsic measure of the sound reduction capabilities of a construction measured in an acoustics laboratory.
- D_w is the "weighted sound level difference". This is a measured of the in-situ performance of a construction, as installed in a building.
- $D_{nT,w} + C_{tr}$ is a weighted sound level difference to which further corrections (standardisation and the addition of "+ C_{tr} " correction). This descriptor forms the basis of the airborne sound insulation performance requirements of Approved Document E of the Building Regulations 2010 (as amended).
- $L'_{nT,w}$ is the standardised impact sound pressure level and forms the basis of the impact sound insulation performance requirements of Approved Document E of the Building Regulations 2010 (as amended).

Reverberation Time

This is the time taken for sound in a room to decay by 60dB. Reverberation times are lower in smaller rooms with lots of soft furnishings, and longer in large rooms with hard finishes.

Noise Rating Level

As an alternative to expressing a sound level in dB(A), noise from some sources (e.g. building services system) are quantified in terms of a Noise Rating (NR) level. This is achieved by comparing the frequency content of the sound against a series of curves defined in Annex A of BS 8233: 2014.

APPENDIX B

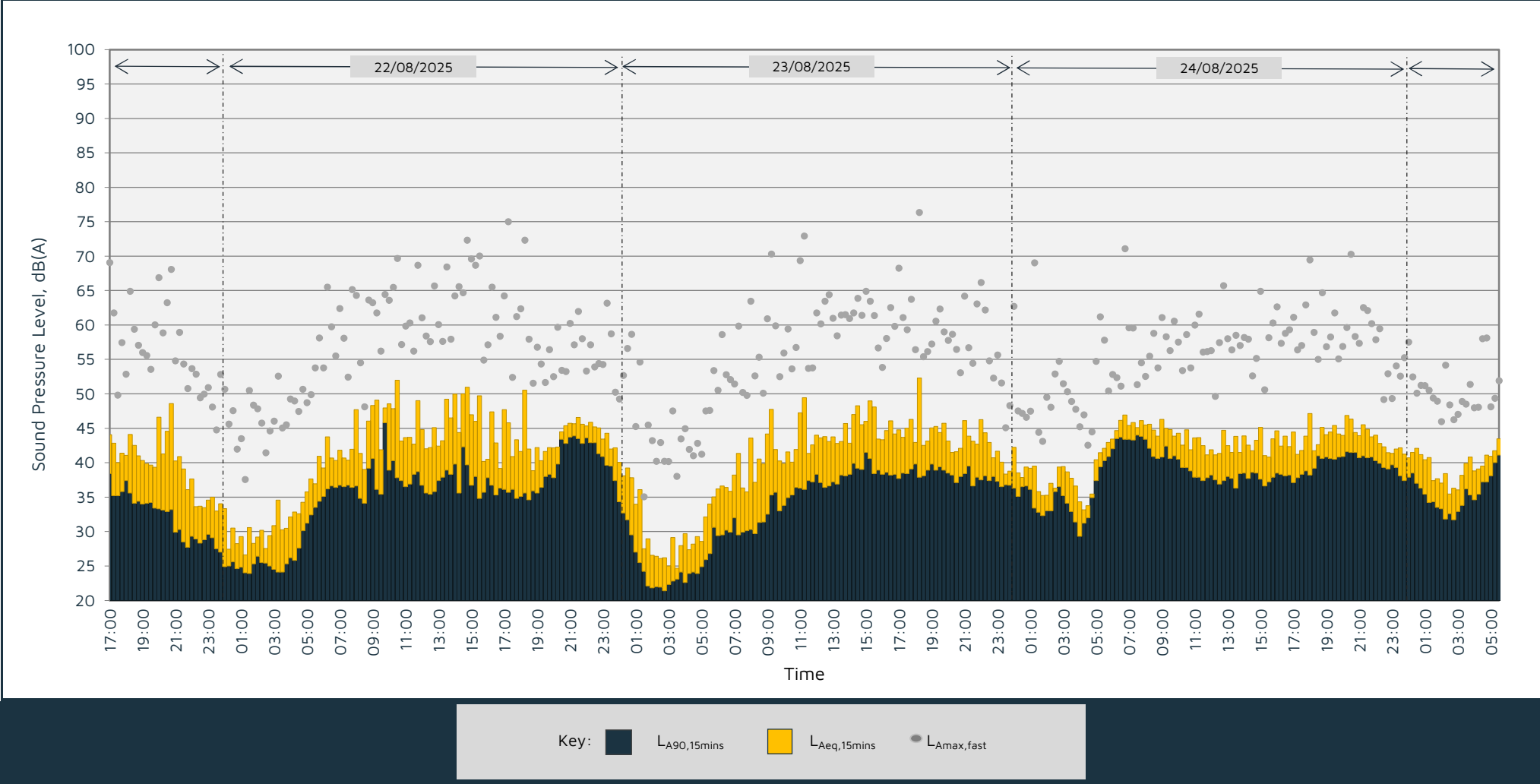
Noise Survey Results

Noise Monitoring Graph

Project: Land West of School Lane, Higham, Gravesham

Measurement Location: Position A1

Survey Date: 21 August 2025 - 25 August 2025

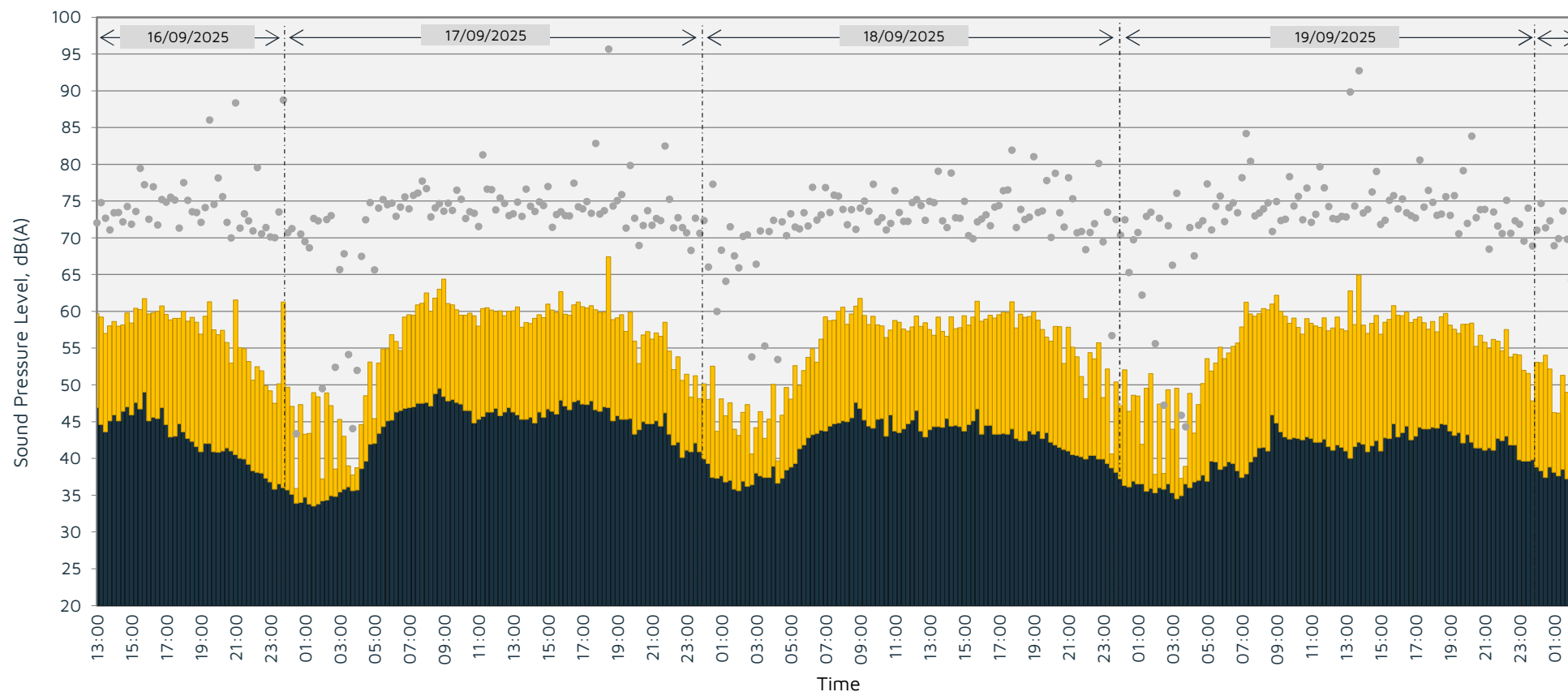


Noise Monitoring Graph

Project: Land West of School Lane, Higham, Gravesham

Measurement Location: Position A2

Survey Date: 16 September 2025 - 20 September 2025



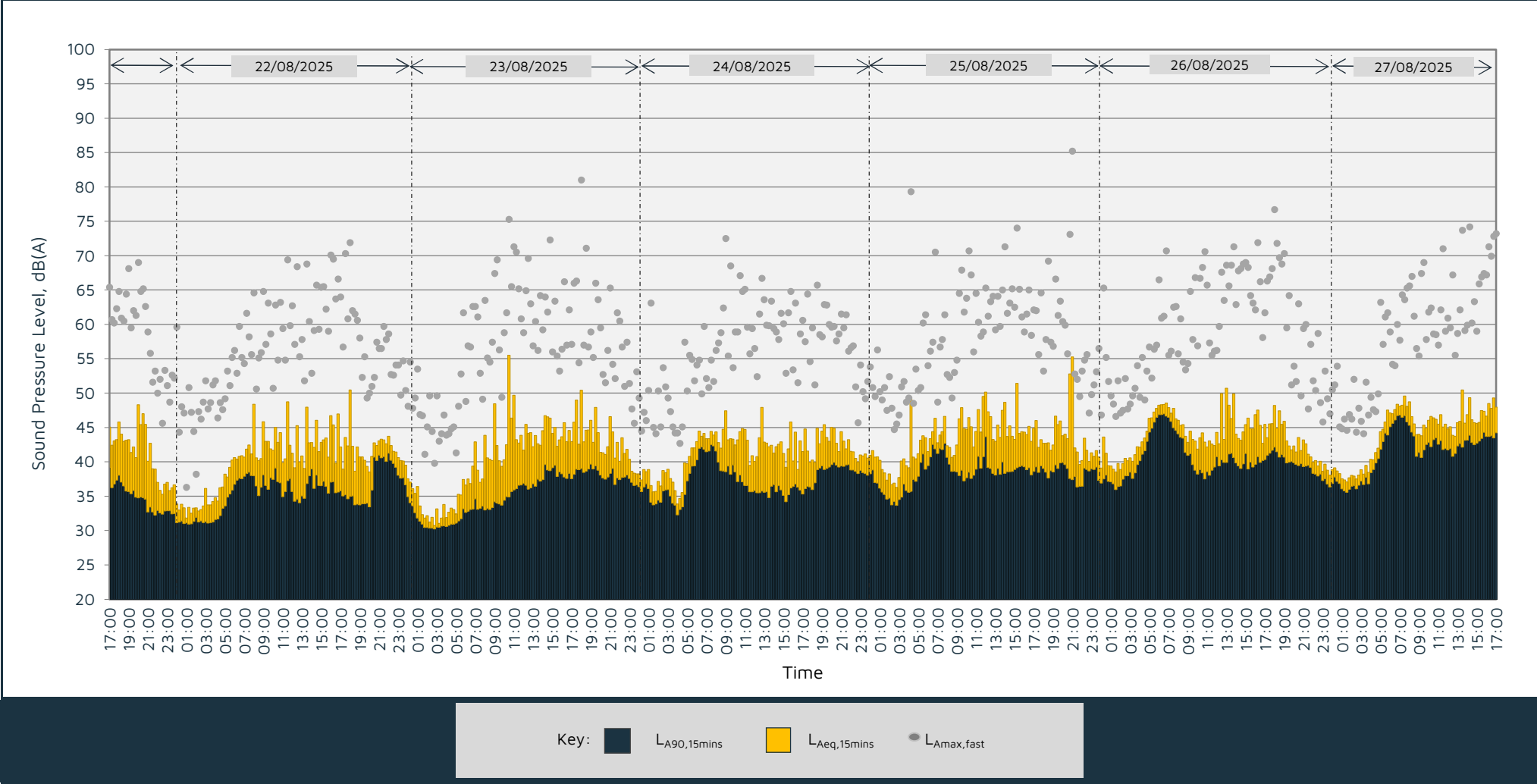
Key: $L_{A90,15mins}$ $L_{Aeq,15mins}$ $L_{Amax,fast}$

Noise Monitoring Graph

Project: Land West of School Lane, Higham, Gravesham

Measurement Location: Position A3

Survey Date: 21 August 2025 - 27 August 2025

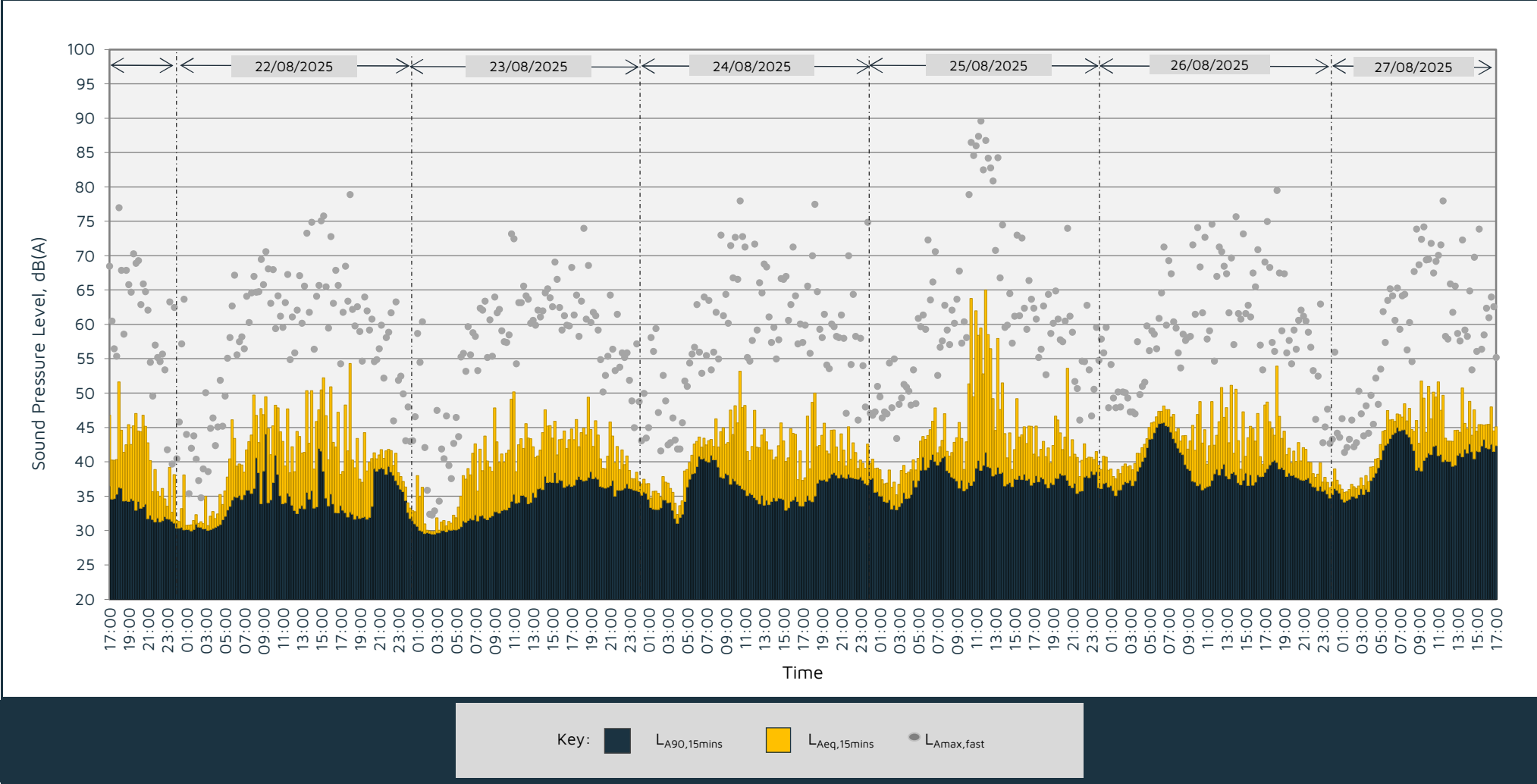


Noise Monitoring Graph

Project: Land West of School Lane, Higham, Gravesham

Measurement Location: Position A4

Survey Date: 21 August 2025 - 27 August 2025





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