

Southampton Road Alderbury

Noise Impact Assessment Report

Client:

Formula Land (Alderbury) Limited
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**JAMESON
ACOUSTICS**

Consultants in acoustics,
noise and vibration

Document Control

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0	13-12-2023	AJ	-
1	20-12-2023	AJ	Update to reflect minor comments
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5	22-04-2026	AJ	Incorporating final site plan

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Executive Summary

Outline planning permission is sought for a residential development of 28nr dwellings, along with associated public open space, landscaping and biodiversity enhancements on land off Southampton Road and Junction Road in Alderbury.

The site is subject to noise from road traffic on the A36 and Southampton Road as well as occasional train passbys.

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

The assessment finds that the site falls with the 'negligible' to 'low' noise risk category *wrt* ProPG.

Acceptable internal noise levels within new dwellings can be achieved through the appropriate specification of windows and appropriate ventilation solutions. For the vast majority of dwellings/facades, conventional double glazing and ventilation systems would suffice. For the front facades of the two dwellings on Southampton Road, slightly enhanced acoustic double glazing and acoustic trickle ventilators will be required.

The overheating strategy can assume windows may be opened day or night, in line with Building Regulations Part O, for all dwellings/facades except the front elevation of the two dwellings on Southampton Road.

Noise levels in back gardens are expected to achieve the desired target of 50 dB $L_{Aeq,16hr}$, with the exception of 6nr dwellings for which noise mitigation options, in the form of acoustic barriers, are advised.

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1.0 Introduction

Outline planning permission is sought for a residential development of 28nr dwellings, along with associated public open space, landscaping and biodiversity enhancements on land off Southampton Road and Junction Road in Alderbury.

The site is subject to noise from road traffic on the A36 and Southampton Road as well as occasional train passbys.

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

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

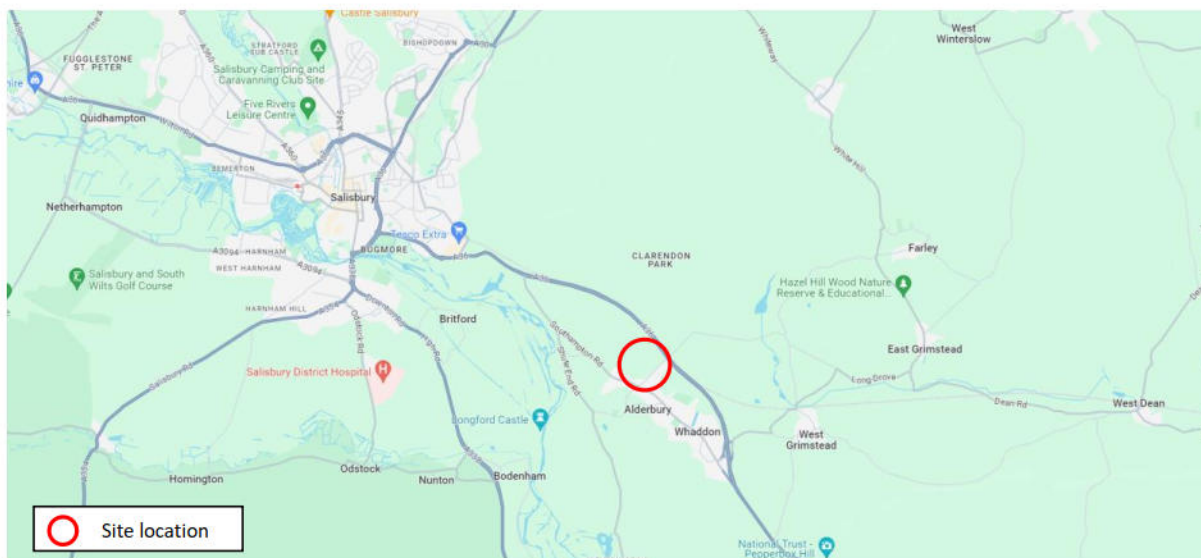
2.0 Objectives

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

3.0 Site Description

3.1 Location

The site is located on land off Southampton Road and Junction Road in Alderbury and falls under the jurisdiction of Wiltshire Council. See Location Plan below.



Location Plan (© maps.google.co.uk)

3.2 Description

The site is located on land off Southamptton Road and Junction Road in Alderbury. Southamptton Road is the main traffic route through Alderbury and passes the site to the south-west. Junction Road runs to the south-east and is a relatively minor access road serving several houses. The plot is currently greenfield which is bounded to the west by an existing housing estate, to the east by existing houses and playing fields, and to the north by the A36.

The A36 is a dual-carriageway and major thoroughfare for traffic into/out of Salisbury. Beyond this road lies railway lines linking Salisbury to Dunbridge stations.



Satellite Plan (© maps.google.co.uk)

The proposed development will see the creation of up to 28nr new houses, with associated highway works and landscaping. See below Proposed Site Plan (red line boundary).



Proposed Site Plan (c/o RHP Architects)

4.0 Planning Policy, Legislation & Assessment Guides

4.1 National Planning Policy

National planning policies are set out in the following:

- Noise Policy Statement for England [NPSE], 2010;
- National Planning Policy Framework [NPPF], 2024;
- National Planning Practice Guidance – Noise [PPGN], 2019.

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

4.2 Local Planning Requirements

4.2.1 Local Development Plan

Wiltshire Council's Development Plan documents act as a critical tool in guiding decisions about individual development proposals, acting as the starting point for considering whether applications can be approved.

In Wiltshire, the Development Plan includes the Wiltshire Core Strategy incorporating saved policies from district local plans, Chippenham Site Allocations Plan, Wiltshire Housing Site Allocations Plan, Minerals and Waste Plans and made Neighbourhood Plans.

The Core Strategy sets out core policies. Policy 57 concerns new developments, ensuring high quality design and place shaping. It requires a high standard of design for all new developments and requires applications to be accompanied by appropriate information. In relation to noise, the policies requires the design to have *"...regard to the compatibility of adjoining buildings and uses, the impact on the amenities of existing occupants, and ensuring that appropriate levels of amenity are achievable within the development itself, including the consideration of privacy, overshadowing, vibration, and pollution (e.g. light intrusion, **noise**, smoke, fumes, effluent, waste or litter)"*.

4.2.2 Specific Guidance on Noise

In relation to noise assessments for residential planning applications, guidance can be obtained from Wiltshire Council's Planning Consultation Guidance Note; Noise & Vibration (Version 1) dated 31-10-2023.

This document makes reference to good practice guidelines set out in BS 8233, ProPG and the World Health Organisation (WHO). Importantly, the document outlines a hierarchy of noise mitigation, as below.

- **Level 1:** Control of noise at source.
Reduction of the noise generated at source by redesign, relocation, control or containment
- **Level 2:** Site layout and design.
Maximise the distance between noise source and receptor, using existing topography or existing structures or purpose-built barriers to screen the proposed development site from significant sources of noise.
- **Level 3:** Dwelling layout and orientation.
Using the layout of the scheme and orientation of buildings to avoid location of noise sensitive rooms on adversely impacted facades.
- **Level 4:** Planning restrictions.
Using planning conditions/obligations to restrict activities allowed on the site at certain times and/or specifying permissible noise levels.
- **Level 5:** Building envelope.
Used for mitigation.

The Council has adopted the following noise limits for residential properties impacted by transport noise:

- Bedrooms (night-time - 23.00 - 07.00) 30 dB LAeq (individual noise events should not normally exceed 45 dB LAFmax by more than 10 times)
- Living Rooms (daytime - 07.00 - 23.00) 35 dB LAeq
- Gardens and terraces (daytime 07:00 – 23:00) 50 dB LAeq

Internal noise levels should be calculated using the methods provided in BS 8233 and/or BS EN 12354:3. In accordance with the ProPG and the hierarchy [above] the acoustic design scheme shall aim to achieve the internal noise levels with windows open.

4.3 Legislation (Building Regulations)

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

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

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

ADF states "*account should be taken of outside noise when considering whether openable windows are appropriate for purge ventilation*". Noise from mechanical ventilation systems under normal conditions should not exceed 30 dB LAeq,T for sensitive rooms (e.g. bedrooms) & 45 dB LAeq,T in less sensitive rooms.

ADO requires noise to be considered as part of the development's overheating strategy in locations where external noise may be an issue. It states that the overheating strategy should take account of the likelihood that windows will be closed during sleeping hours if noise within bedrooms exceeds the following limits.

- 40 dB LAeq,T, averaged over 8 hours (between 11pm and 7am).
- 55 dB LAFmax, more than 10 times a night (between 11pm and 7am).

4.4 Assessment Guides

For planning and noise, the following industry standards and assessment guides shall be considered. See Appendix B for a detailed description of each.

- ProPG: Planning & Noise, 2017;
- BS 8233: 2014 '*Guidance on sound insulation and noise reduction for buildings*';
- World Health Organisation [WHO] Environmental Noise Guidelines, 2018;
- Acoustics, Ventilation & Overheating [AVO] Residential Design Guide, 2020.

5.0 Baseline Environmental Noise Survey

5.1 Procedure

Automated noise level measurements were taken from 09:00 hours on Thursday 9 November 2023 to 09:00 hours on Friday 10 November 2023 at 2nr on-site positions as described below. The positions were selected in order to establish the prevailing noise levels at the north and south boundaries of the site, near to the two dominant noise sources influencing site noise levels (i.e. the A36 and Southampton Road).

Position	Type	Description
1	Automated	To the north-east corner of the site, approximately 100 metres from the A36 and 30 metres from Junction Road. Microphone was mounted to a pole and tied to a fence post circa 2 m above ground in free-field conditions.
2	Automated	To the south-west corner of the site, approximately 5 metres from the roadside edge of Southampton Road. Microphone was mounted to a pole and tied to a fence post circa 2 m above ground in free-field conditions.



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

The microphones were fitted with windshields.

The equipment was programme to continuously log all relevant A-weighted broadband (dBA) and linear spectral noise level indices, including L_{eq} , L_{90} , L_{10} and L_{max} , over 5-minute, 15-minute & 1-hour periods.

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

5.2 Instrumentation

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

Description	Equipment	Serial Nr	Lab Calibration Expiry	Lab Calibration Certificate Nr
Class 1 sound level meter	Svantek 971A (with Type 7152 microphone)	124663 (82835)	11 Aug 2024	12 Aug 2022
Class 1 sound level meter	Svantek 971A (with Type 7152 microphone)	131635 (85533)	1 Nov 2024	2 Nov 2022
Class 1 sound calibrator	Cirrus CR:515	57570	28 Nov 2024	1153776

5.3 Weather Conditions

Due to the nature of the survey, i.e. unmanned, it is not possible to describe the weather conditions throughout the duration of the survey period. However, on install and collection, weather conditions were considered suitable for obtaining representative readings. The sky was clear with patchy cloud cover, road surfaces were dry and wind speeds were low (below 5 m/s). Based on internet weather reports for the full duration of the survey, conditions generally remained suitable for obtaining representative readings. There were however some brief periods of rainfall during the night which may have unduly elevated noise levels between 01:00-02:00 hr and 03:00-03:30 hr.

5.4 Observed Noise Climate

Due to the nature of the survey, i.e. unmanned, it is not possible to describe the noise climate throughout the duration of the survey period. However, on install and collection the environmental noise climate was dominated by road traffic on the A36 (to the north of the site) and Southampton Road (to the south of the site). Train passbys do not appear to be influencing readings on site.

5.5 Results & Analysis

The results of the automated survey have been plotted on Time History Graphs 22049-1-G1 to G2 enclosed in Appendix C. The graphs present the 15-minute A-weighted (dBA) L_{90} , L_{eq} and L_{max} levels at each position throughout the duration of the survey.

A summary of the results, as used to inform subsequent assessments against current guidelines, is presented in the following tables.

L_{Aeq} Ambient Noise Levels

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

Position	Free-Field Ambient Noise Level (dB)	
	Daytime L _{Aeq,16hr} (07:00-23:00)	Night-time L _{Aeq,8hr} (23:00-07:00)
1	54	49
2	60	51

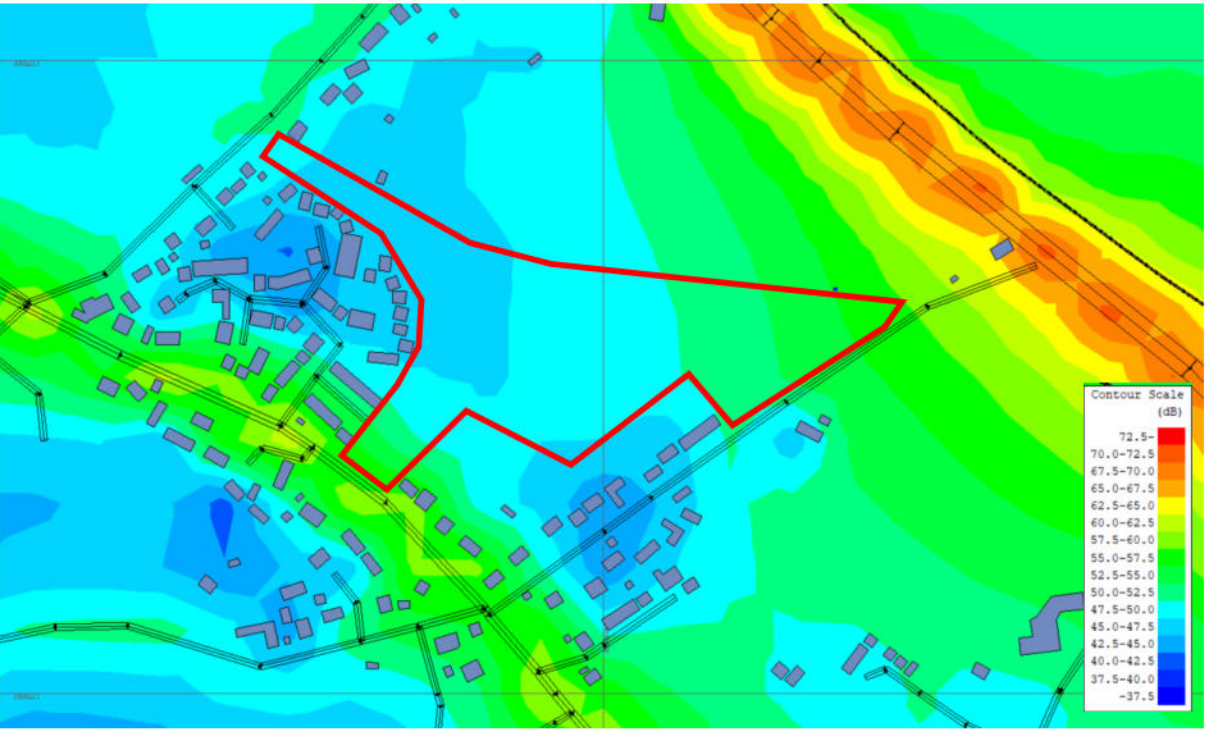
L_{Afmax} Maximum Noise Levels at Night

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

Position	Free-Field Maximum Noise Level (dB) At Night-time L _{Amax,5min} (23:00-07:00)
1	63
2	75

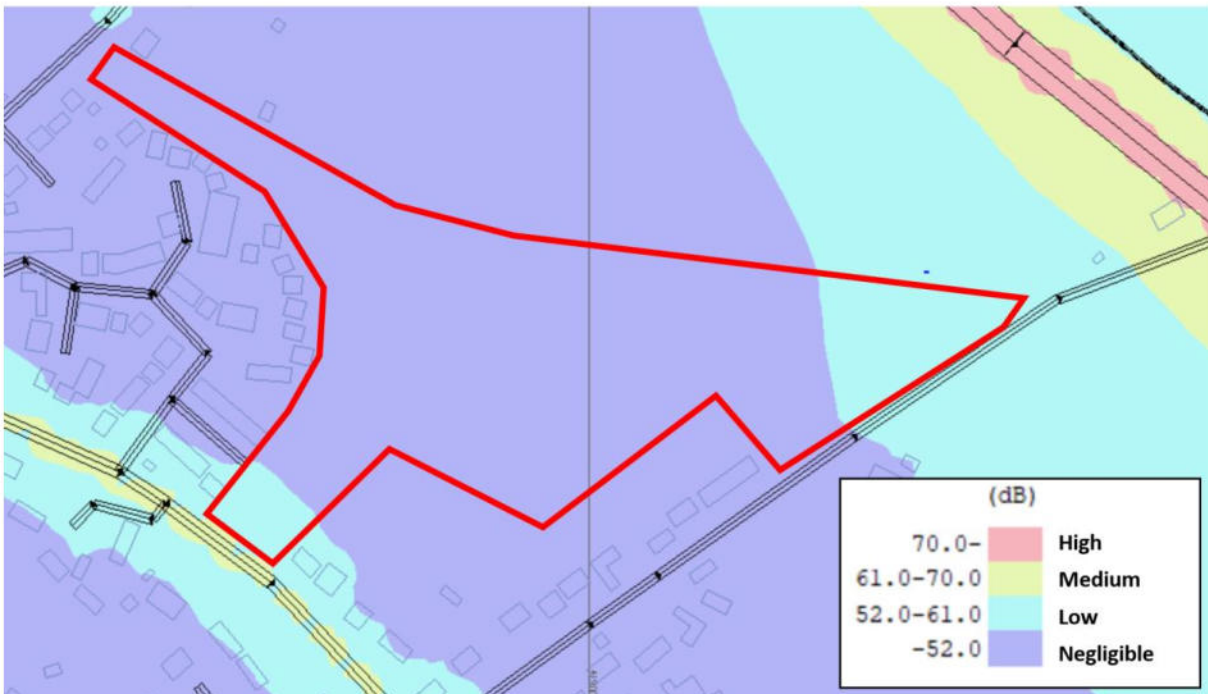
6.0 Incident Noise Levels

Incident road traffic noise levels onto each residential building façade have been analysed using 3D noise modelling software. The following plan illustrates the spread of daytime L_{Aeq,16hr} traffic noise levels across the existing site.

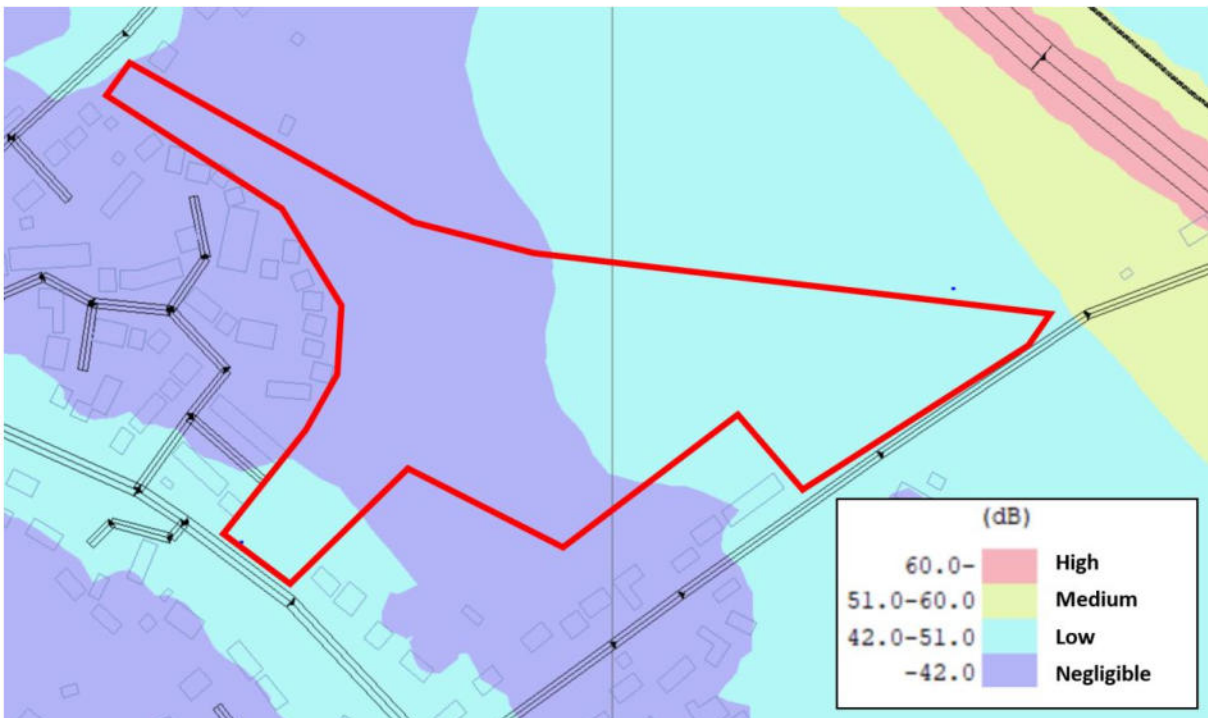


Noise Map of Existing Site – Daytime L_{Aeq,16hr} traffic noise levels (4 m above ground level)

The following plans illustrate the ProPG Stage 1 initial site noise risk assessment. It presents the daytime and night-time spread of $L_{Aeq,T}$ ambient noise levels across the existing site.



Daytime $L_{Aeq,16hr}$ noise levels across existing site, 4m height



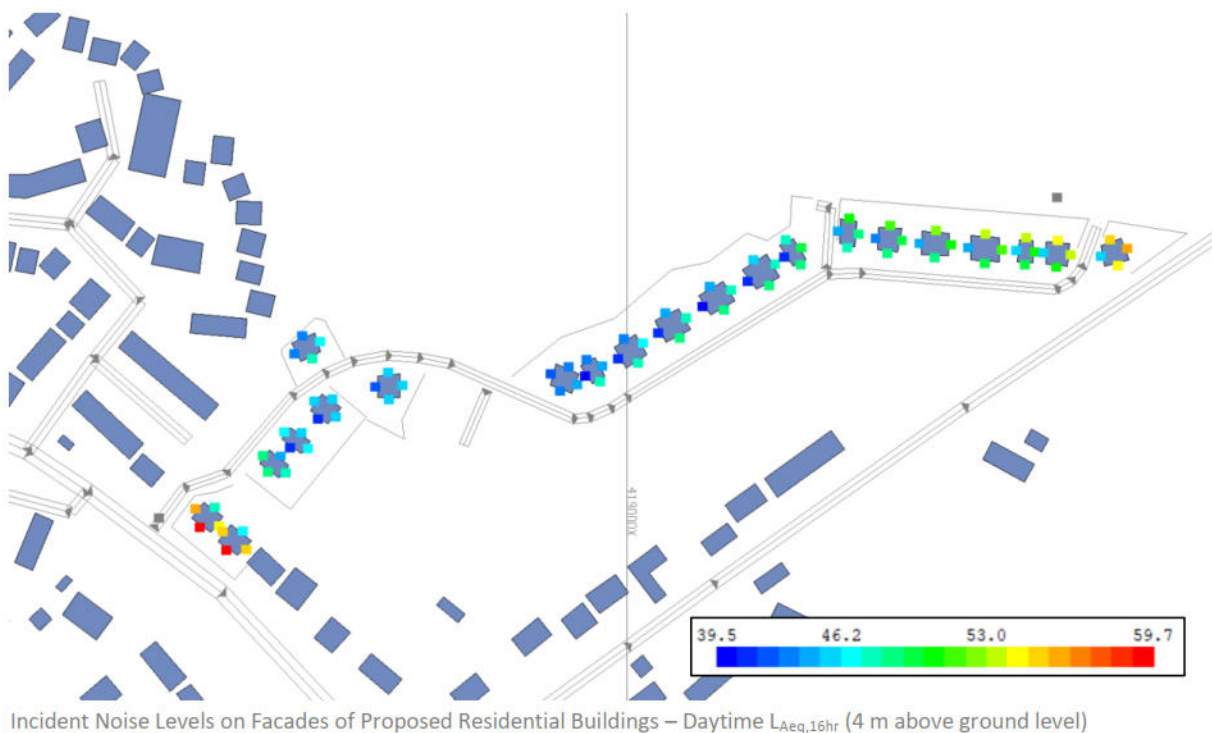
Night-time $L_{Aeq,8hr}$ noise levels across existing site, 4m height

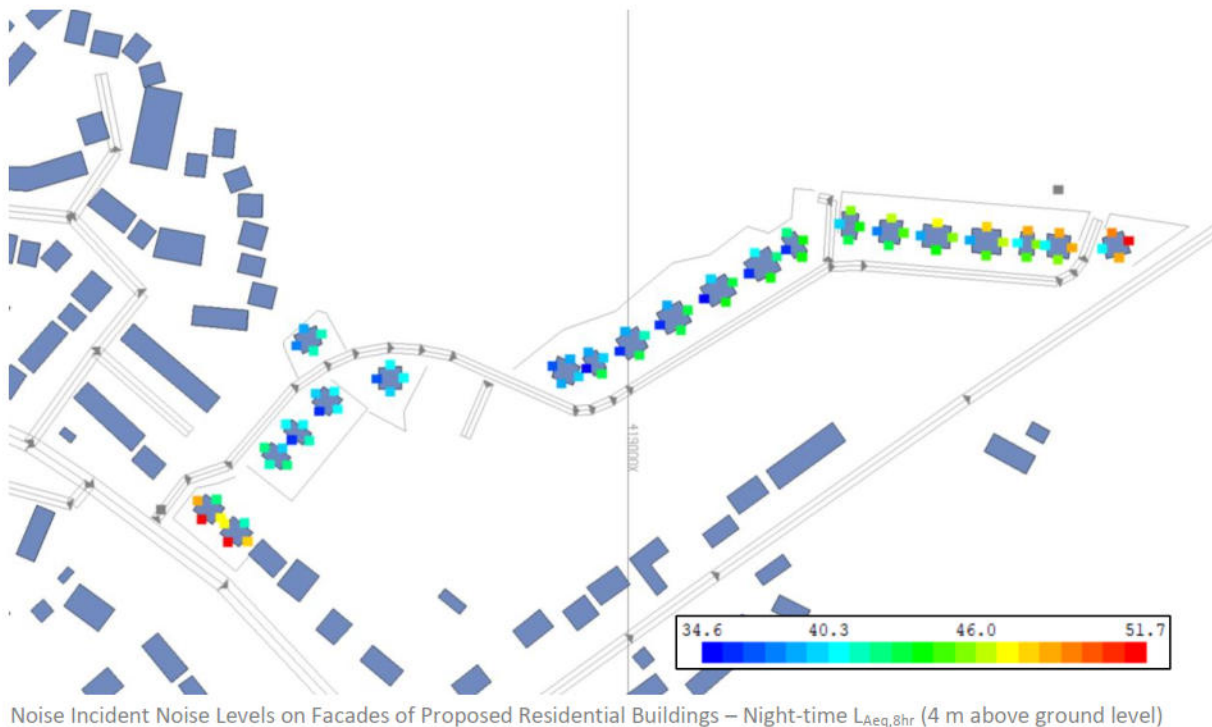
The 10th highest night-time L_{Amax} noise event levels do not exceed 60 dB for the majority of the site, which ProPG considers to be the threshold below which the site can be regarded as negligible risk. The levels only exceed 60 dB for the limited area to the south of the site near Southampton Road and to the north-east corner of the site.

The above plots provide a clear indication that the site falls within the 'low' to 'negligible' noise risk categories, with the vast majority of the site falling within the 'negligible' category.

In accordance with ProPG, *"these noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds"*. For the small areas of 'low' risk, ProPG states "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 ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development".

The following plans illustrate the incident daytime $L_{Aeq,16hr}$ and night-time $L_{Aeq,8hr}$ traffic noise levels across the site respectively.





Incident night-time L_{Amax} noise levels are calculated to be 72 dB on the front facing elevations of the 2nr houses directly on Southampton Road. For all other dwellings, peak night-time noise levels are calculated to be ≤ 63 dB L_{Amax} owing to screening and increased distance from the principal road traffic noise sources.

With due regard for Pro PG / WHO internal noise criteria for dwellings, incident L_{Amax} noise levels are not expected to influence façade acoustic performance requirements for all dwellings except the front façade of the two houses facing onto Southampton Road.

7.0 Good Acoustic Design Process

In line with ProPG 'good acoustic design' and the local authority's hierarchy of noise mitigation, the following sections review site wide mitigation before reverting to façade sound reduction. That said, the majority of the site falling into the 'negligible' noise risk category, meaning no specific noise mitigation would necessarily be required to these areas. Nevertheless, we present our review as follows.

7.1 Level 1, Control of Noise at Source

The dominant noise source for this site is road traffic. For the majority of the site, the noise is from A36 dual carriageway. The application site does not share a boundary with this road and we are therefore unable to attenuate it 'at source' as part of this development.

The option to introduce a noise barrier along the northern site boundary was considered. However, in order to create the required sound 'path difference' (screening) to achieve the required benefit for upper floor bedrooms, the barrier would need to be over 5 metres in height. This barrier could be formed by a mixture of earth bunding and fencing, but the site has ecological factors to consider along this boundary. There is an existing watercourse which is lined by trees which are covered by a Tree Protection Order and so need to be retained along this boundary.

The option to set a barrier a sufficient distance back from the vegetation would not be feasible either. The submitted ecology report has shown that the central wetland area of the site is a priority habitat and so must remain free from development. Therefore, any acoustic barrier would be precluded from running the width of the site by this undevelopable area, making any acoustic barrier ineffective due to it being a largely incomplete barrier.

This is not to mention the significant negative visual impact a large screen would have on the development generally and in wider views from outside of the site.

For dwellings on Southampton Road to the south of the site, there simply is not room to introduce a noise barrier of any great height so as to benefit upper floor windows. These roadside dwellings effectively form the entrance to the new development, and so the introduction of a barrier would be undesirable and unlikely to achieve planning approval. The buildings are set back from the highway at a distance that matches other existing dwellings along this road. It is worth noting that, comparatively, the two new dwellings on the roadside will be designed to far superior acoustic standards than the neighbouring dwellings, providing a higher standard of residential amenity.

7.2 Level 2 & 3, Site Layout & Design (Dwelling Layout & Orientation)

For dwellings in the 'negligible' category, there is no need to consider noise and the developer's preferred layout and design can take precedent. For 'low' category zones, consideration was given to the positioning and orientation of dwellings. However, any desirable dwelling would have windows to habitable rooms on the front and rear elevations, meaning there any reorientation of dwellings would bear no meaningful acoustic benefit to resultant internal noise levels.

The site layout has been set out with biodiversity factors taking precedence. The site includes large sections of wetlands which are priority habitats that limited options for road routing and the positioning of houses. Consideration was given to setting back (i.e. further south) the houses to the north-east corner and running the access road to the north side of the dwellings. This would increase the distance from the road and ensure gardens (outdoor living spaces) were to the rear of the dwelling, screened from road traffic by the buildings. However, this would have created a very unfavourable urban design with the open spaces having fences / hedgerows backing onto them, creating a poor urban environment which lacked natural surveillance for the public open space.

The additional distance obtained by moving the dwellings further south would have offered a less than 1 dB (negligible) benefit in terms of incident noise levels onto the north facing facades.

Given the 'low' risk noise category and the limited levels of noise reduction onto the north facing facades, it was considered reasonable to proceed with the superior proposed layout for the development, rather than create a much worse urban environment to address a noise issue which could be satisfactorily addressed by other mitigation means.

For the two dwellings to the south on Southampton Road, the orientation is favourable with gardens to the rear of the building, utilising screening from the buildings.

7.3 Level 4, Planning Restrictions

Not applicable.

7.4 Summary

Whilst it is accepted that some site-wide noise mitigation (noise barrier) or re-orientation options are available, any such measures would prove problematic to landscaping, biodiversity and amenity, and/or would have a significant cost implication, and of which would be disproportionate and unreasonable given the site falls into 'low' to 'negligible' noise risk categories. The negative consequence on other factors and the increased cost would all contradict the intention of ProPG. They would represent a disproportionate response in the context of the site and would not, therefore, constitute good acoustic design in this case.

8.0 Achieving Internal Noise Levels

8.1 Criteria

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

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

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

8.2 Building Envelope Acoustic Design

8.2.1 External Walls & Roofs

The façade design proposes brick/clad external walls, SFS or block inner layers with punched-in double glazed windows. This construction would be expected to provide ample sound reduction for this site, with an estimated sound reduction performance in excess of 50 dB $R'_w + C_{tr}$.

The roof elements are likely to be tiled insulated cavity roofs with plasterboard ceilings. This construction would again be expected to provide ample sound reduction for this site, with an estimated sound reduction performance in excess of 45 dB $R'_w + C_{tr}$ based on an average roof void depth of 500 mm, insulated with mineral wool and full plasterboard ceilings.

8.2.2 Framed External Windows/Door Systems

Preliminary sound insulation calculations have been carried out in order to specify the minimum sound insulation performance of the windows to achieve the internal noise criteria detailed in Section 7.1. Our calculations follow BS 8233 procedures, typical habitable room dimensions / window sizes and the above external wall/roof sound reduction performance.

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

Façade Zone (ref. Figure below)	Min. Required Sound Reduction $R_w + C_{tr}$ (dB)	Example Configuration
RED	30	6.8 [lam.] / 16 / 6 mm
GREEN	26	6 / 16 / 6 mm (conventional)



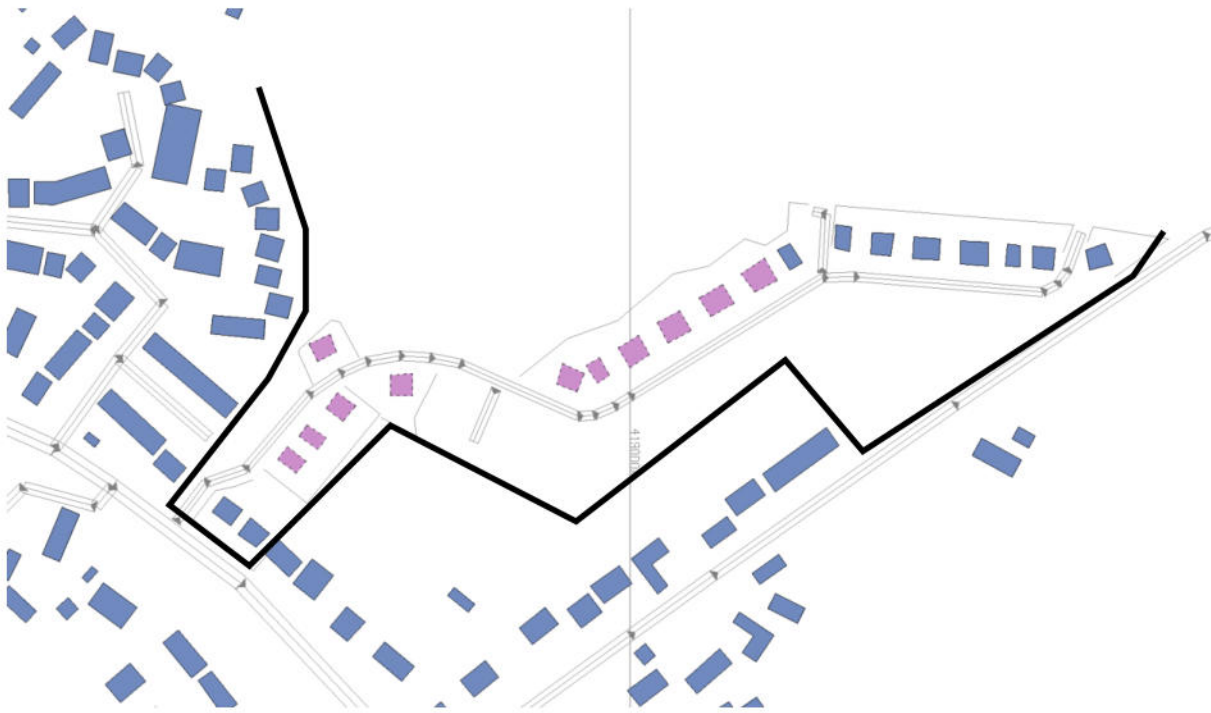
Façade acoustic specification zones (all levels)

8.2.3 Ventilation

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

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

On this scheme, option a (traditional openable windows for background ventilation) would only be an acoustically acceptable solution for the dwellings highlighted pink on the below plan assuming a 13 dB outside to inside sound level difference with a partially opened window.



Pink houses = open window ventilation strategy acceptable

For all other dwellings, either Option b or Option c would be required for background ventilation. These two options would be viable for all dwellings.

With Option c – MVHR – no trickle ventilators or any other passive natural ventilation openings would be required in the facades and the acoustic integrity of the walls/windows (specified above) would be maintained.

If Option b is chosen, standard hit-and-miss trickle ventilators should be sufficient for all dwellings except the front facing rooms of the dwellings on Southampton Road (facades highlighted red on the Figure in Section 8.2.2). For these red facades, acoustically rated trickle ventilators are likely to be required. The chosen

ventilators would need to achieve the below minimum sound reduction performance figures. Example products are provided for guidance only.

Façade Zone (Ref. Figure in Section 7.2.2)	Min. Required Element Sound Level Difference Performance (vent open), $D_{n,e,w} + C_{tr}$ (dB)	Example Configuration
Red	35	Acoustic hit-miss trickle ventilator: e.g. Titon 2500EA TA5223 (V50) + TA5005 (SF 418)
Green	32	Standard hit-miss trickle ventilator: e.g. Titon 2500EA TA5220 + TA5005 (SF 418)

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

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

8.3 Overheating & Noise

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

In accordance with the Acoustics, Ventilation and Overheating Guide (AVO), the associated risk of noise levels been deemed unacceptably high with windows open would be when incident external noise levels exceed circa 65 dB $L_{Aeq,16hr}$ (day) and 55 dB $L_{Aeq,8hr}$ (night), with L_{Amax} levels at night exceeding 78 dB L_{Amax} . In addition, Building Regulations' Part O advises that the overheating strategy should assume windows will be closed throughout the night where incident façade noise levels exceed circa 49 dB $L_{Aeq,8hr}$ and 64 dB L_{Amax} .

Based on the Part O requirements, the overheating strategy shall assume windows will be closed throughout the night for rooms on the front (road facing) elevations of the two houses on Southampton Road. For all other dwellings/facades, noise levels are below the Part O threshold and the overheating strategy can assume windows can be opened during the night.

During the day, the overheating strategy can assume that *some* reliance on openable windows for overheating should be permitted based on the AVO guidance. This reliance should be limited to 'occasional' periods, e.g. not longer than half of the full daytime period on the hotter days of the year, for rooms on the front (road facing) elevations of the two houses on Southampton Road. For all other dwellings/facades, unrestricted reliance on openable windows through the day should be permissible acoustically.

9.0 Outdoor Living Space

For outdoor living spaces, BS 8233 states:

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

On this scheme, each dwelling will benefit from a back garden (outdoor living space). Based on the noise modelling results, daytime noise levels in all back gardens bar one are expected to fall below the 55 dB $L_{Aeq,16hr}$ upper limits as defined in BS 8233.

The local authority advise that efforts should be made to achieve 50 dB $L_{Aeq,16hr}$ in all gardens.

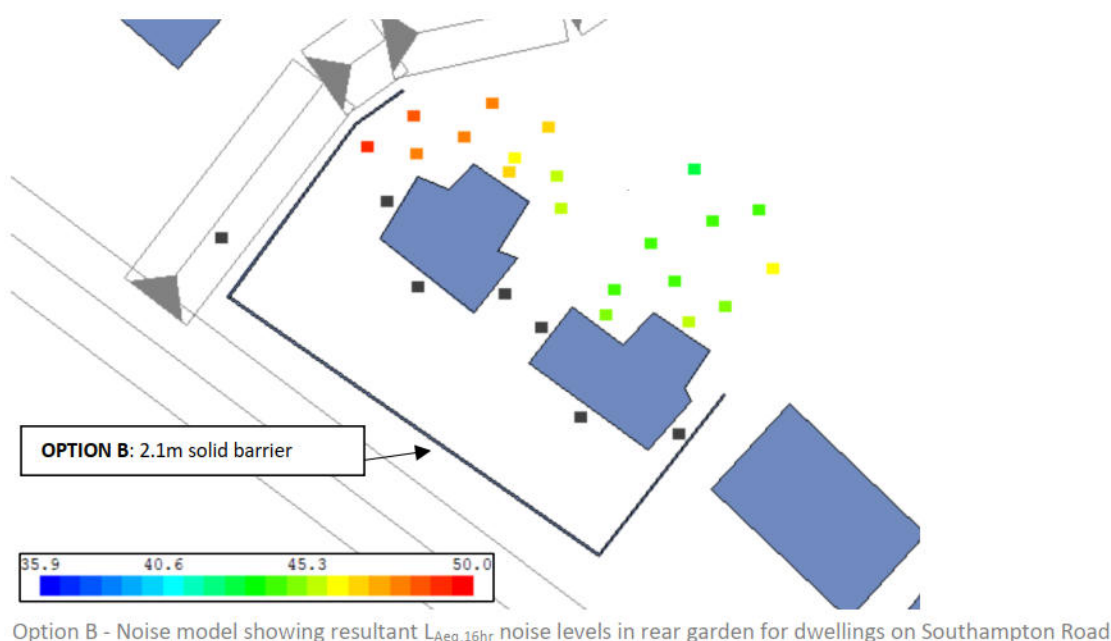
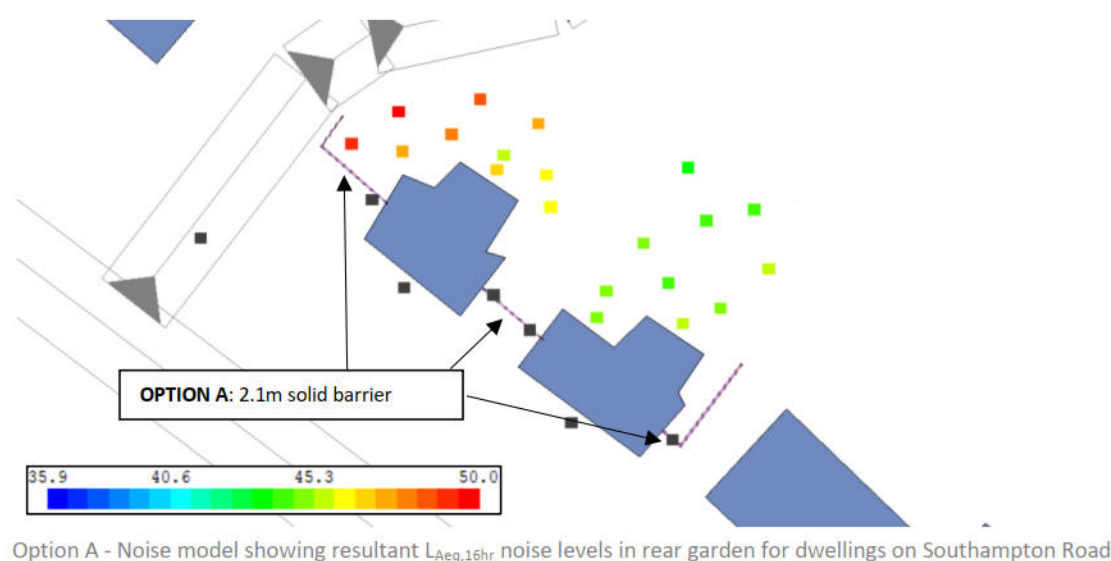
The following Figure presents the baseline (no solid barriers) noise model at a height of 1.7 metres above ground level (typical ear height when standing) to show which dwellings achieve or exceed this 50 dB $L_{Aeq,16hr}$ target.



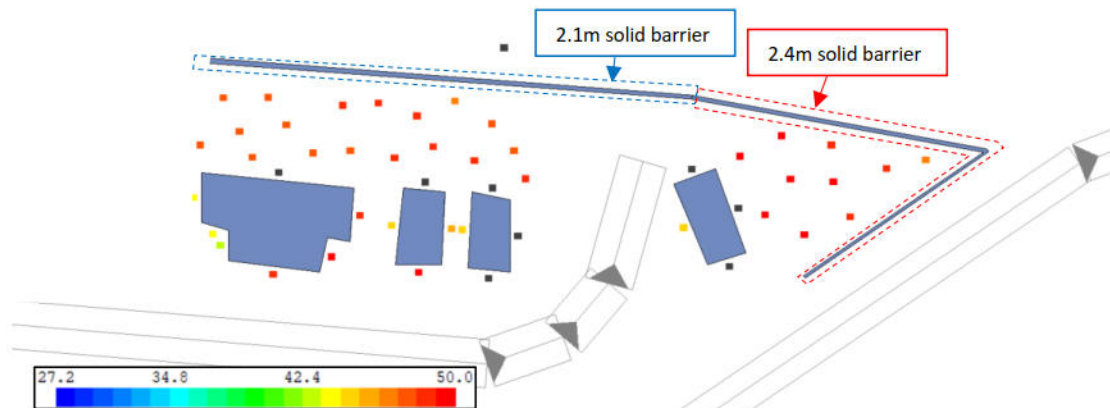
Baseline noise model of daytime $L_{Aeq,16hr}$ noise levels across site (no solid barriers)

The results demonstrate that potentially 7nr of the dwellings could experience noise levels greater than 50 dB $L_{Aeq,16hr}$ in rear gardens (the 2nr dwellings on Southampton Road to the south and the 5nr dwellings in the farthest north-east corner of the site).

For the two dwellings on Southampton Road to the south, we have modelled two location options for a 2.1-metre tall solid acoustic barrier to the extends as indicated below. The results of the noise model indicate that at typical ear height (when standing) noise levels in both rear gardens would satisfy the desired target of 50 dB $L_{Aeq,16hr}$.



For the six dwellings to the north-east corner of the site, we have modelled a 2.1-metre tall and a 2.4-metre solid barrier to the extends as indicated below. The results of the noise model indicate that at typical ear height (when standing) noise levels in all rear gardens would satisfy the desired target of 50 dB $L_{Aeq,16hr}$.



Noise model showing resultant $L_{Aeq,16hr}$ noise levels in rear garden for dwellings to north-east of site

The barrier could be formed from brickwork or a closed panel (imperforate), providing a minimum mass per unit area of 12 kg/m^2 (e.g. timber).

10.0 Conclusions

Outline planning permission is sought for a residential development of 28nr dwellings, along with associated public open space, landscaping and biodiversity enhancements on land off Southampton Road and Junction Road in Alderbury.

The site is subject to noise from road traffic on the A36 and Southampton Road as well as occasional train passbys.

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

The assessment finds that the site falls with the 'negligible' to 'low' noise risk category *wrt* ProPG.

Acceptable internal noise levels within new dwellings can be achieved through the appropriate specification of windows and appropriate ventilation solutions. For the vast majority of dwellings/facades, conventional double glazing and ventilation systems would suffice. For the front facades of the two dwellings on Southampton Road, slightly enhanced acoustic double glazing and acoustic trickle ventilators will be required.

The overheating strategy can assume windows may be opened day or night, in line with Building Regulations Part O, for all dwellings/facades except the front elevation of the two dwellings on Southampton Road.

Noise levels in back gardens are expected to achieve the desired target of $50 \text{ dB } L_{Aeq,16hr}$, with the exception of 6nr dwellings for which noise mitigation options, in the form of acoustic barriers, are advised.

Appendix A – Acoustic Terminology

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

Appendix B – Planning Policy & Assessment Guides

Planning Policy

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

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

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

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

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

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

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

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

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

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

The latest revision of the NPPF (December 2024) states that planning system should ensure that *“...developments will function well and add to the overall quality of the area. They should be sympathetic*

to local character and history, including the surrounding built environment while not preventing or discouraging appropriate innovation or change". Ref: Paragraph 135.

Paragraph 187 advises *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*

(a)-(d) [...]

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

(f) [...]"

Paragraph 198 advises *"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) [...]"

The NPPF recognises that *"...new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."* Ref. Paragraph 200.

"The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities." Ref. Paragraph 201.

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

The National Planning Practice Guidance (PPG) is a web-based resource, launched by the Department for Communities and Local Government (DCLG) in March 2014 to support the NPPF and make it more accessible. It advises on how planning can manage potential noise impacts in new development. The

guidance is regularly reviewed and updated and noise is listed as a specific category. The guidance is for ad hoc developments, as major infrastructure is covered by overarching National Policy Statements.

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

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

Assessment Guides

- ProPG: Planning & Noise**

ProPG: Planning & Noise 'Professional Practice Guidance on Planning & Noise' was issued in May 2017 with the primary goal of assisting the delivery of sustainable residential development by promoting good health and well-being through the effective management of noise. It seeks to do that through encouraging

a good acoustic design process in and around proposed new residential development having regard to national policy on planning and noise.

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

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

The two sequential stages of the overall approach are:

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

Stage 2 – a systematic consideration of four key elements.

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

Element 2 – observing internal “Noise Level Guidelines”;

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

Element 4 – consideration of “Other Relevant Issues”.

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

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

- **BS 8233: 2014**

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

Activity	Location	Desirable Internal Ambient Noise Level	
		07:00 – 23:00	23:00 – 07:00
Resting	Living Rooms	35 dB $L_{Aeq,16hour}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq,16hour}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

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

For outdoor living spaces, BS 8233 states:

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

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

- **World Health Organisation (WHO)**

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

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

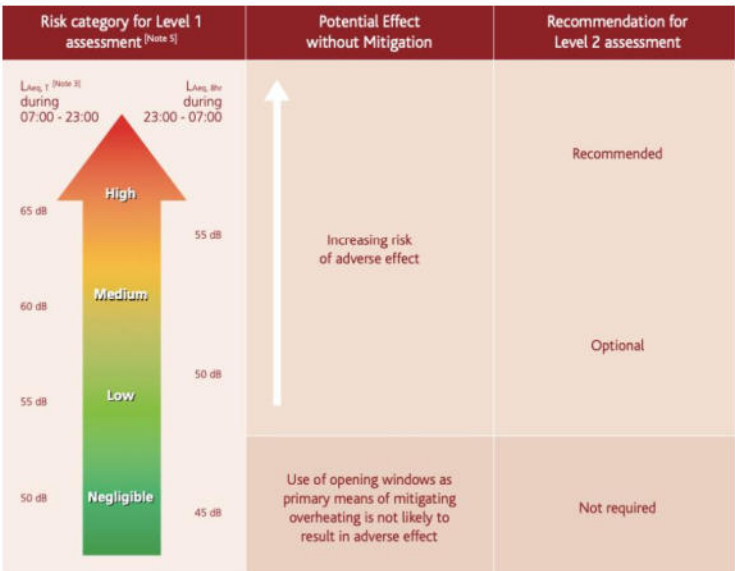
With regard to night-time noise “events”, WHO states “In many situations, average noise levels like the L_{den} or L_{night} indicators may not be the best to explain a particular noise effect. Single-event noise indicators – such as the maximum sound pressure level (L_{Amax}) and its frequency distribution – are warranted in specific situations, such as in the context of night-time railway or aircraft noise events that can clearly elicit

awakenings and other physiological reactions that are mostly determined by $L_{A,max}$. Nevertheless, the assessment of the relationship between different types of single-event noise indicators and long-term health outcomes at the population level remains tentative. The guidelines therefore make no recommendations for single-event noise indicators.”

- **Acoustics, Ventilation & Overheating Residential Design Guide**

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

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



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

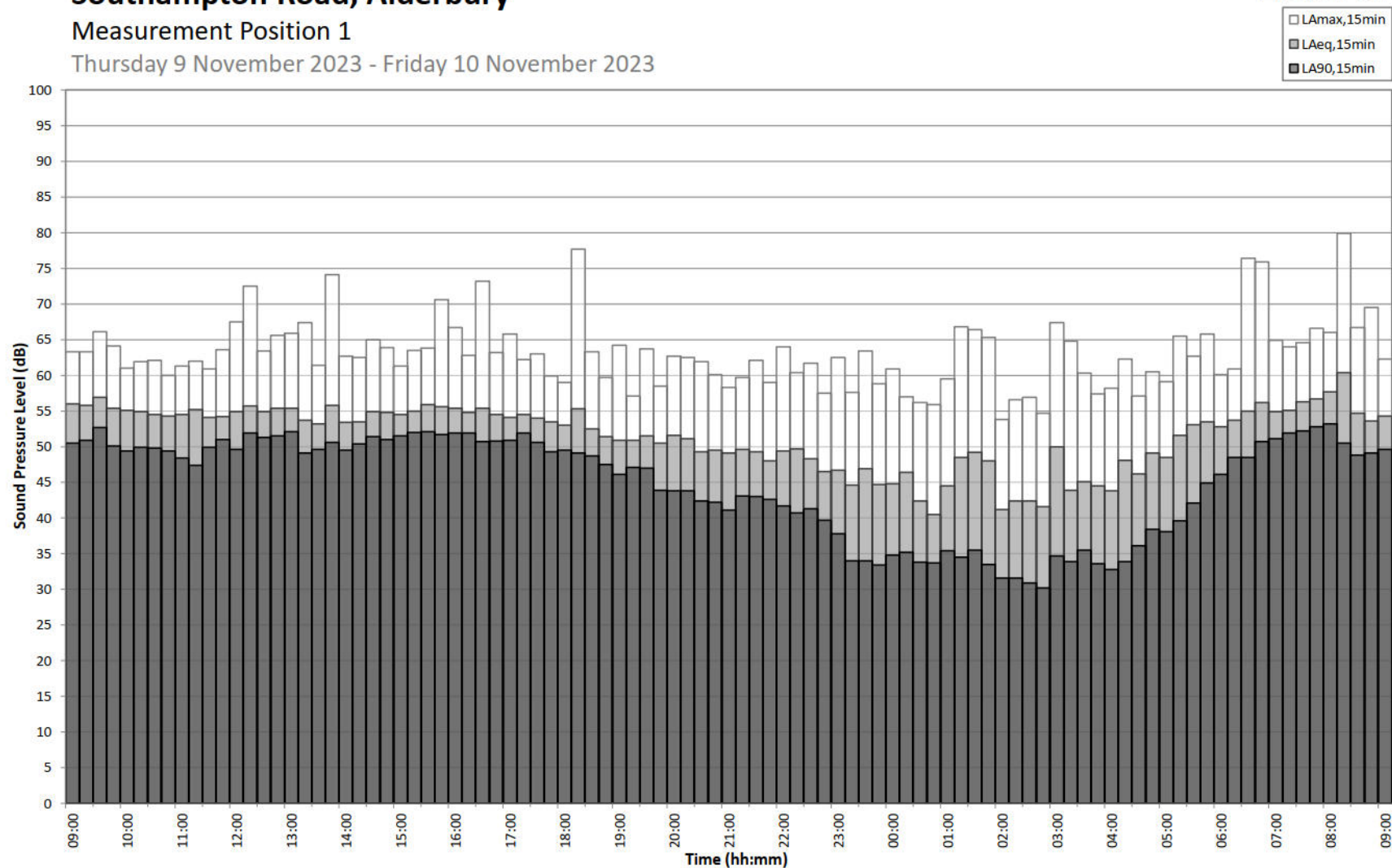
Appendix C – Noise Survey Time History Graphs

Southampton Road, Alderbury

Measurement Position 1

Thursday 9 November 2023 - Friday 10 November 2023

22049-1-G1



Southampton Road, Alderbury

Measurement Position 2

Thursday 9 November 2023 - Friday 10 November 2023

22049-1-G2

