



LAND SOUTH EAST OF SPRING GARDENS, HORSHAM

KG DESIGNS

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NOISE IMPACT ASSESSMENT LAND SOUTH EAST OF SPRING GARDENS, HORSHAM

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CONTENTS

1	INTRODUCTION	5
2	PLANNING POLICY & GUIDANCE	6
3	SITE DESCRIPTION	12
4	BASELINE NOISE SURVEY	13
5	PREDICTING ON SITE NOISE LEVELS	15
6	PROPG STAGE 1 RISK ASSESSMENT	18
7	PROPG STAGE 2 RISK ASSESSMENT	19
8	SUMMARY	24

APPENDICES

APPENDIX A: ACOUSTIC TERMINOLOGY

APPENDIX B: SURVEY DATA

1 INTRODUCTION

Anderson Acoustics Ltd has been commissioned by KG Designs to provide a noise impact assessment to support a planning application for a new residential development located at Land South East of Spring Gardens, Horsham.

The development consists of a single detached dwelling house, alongside associated landscaping. The site is located within the administrative boundary of Horsham District Council (HDC).

To satisfy the requirements of local and national policy, a noise survey is required to determine the existing acoustic environment in the proposed development site and a noise impact assessment to determine the suitability of the site for residential development, alongside any outline façade mitigation requirements required.

The acoustic terminology used in this report is defined in Appendix A.

2 PLANNING POLICY & GUIDANCE

Assessment criteria for the proposed development are summarised below. These should be read in conjunction with the government's overarching planning principles with respect to noise including Noise Policy Statement for England (NPSE), National Planning Practice Framework (NPPF) and Planning Practice Guidance – Noise (PPG-N).

2.1 Planning Guidance

The noise impact assessment has been carried out with due regard for the following local and national policies.

- National Planning Policy Framework (NPPF);
- Noise Policy Statement for England (NSPE);
- Planning Noise Advice Document: Sussex
- Professional Practice Guidance on Planning & Noise (ProPG); and
- British Standard (BS) 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'.

2.2 Local Planning Guidance

The following sections of The Planning Noise Advisory Document: Sussex 2023 relate to assessment criteria for new noise sensitive development:

2.2.1 Planning Noise Advisory Document: Sussex 2023

"6.4 Assessment Methodology

6.4.1 The methodology for carrying out the assessment should follow the advice set out in Section 2.3 along with the following considerations

6.4.2 Development affected by transportation noise sources shall use the recommended acoustic approach set out in ProPG: Planning and Noise - Professional Practice Guidance on Planning and Noise – New Residential Development 2017.

6.4.3 When assessing the impact of transportation noise, be that from road, rail or air, then an Acoustic Design Statement shall be provided following the principles set out in the ProPG. A Good Acoustic Design process shall be followed to achieve appropriate internal and external acoustic conditions.

...

6.5 Design Criteria for Noise Sensitive Development

6.5.1 Where noise assessment has shown that habitable rooms will be exposed to noise levels likely to give rise to any adverse impact, noise mitigation will be required.

6.5.2 Design control measures should aim to meet the recommended standards set out in table 4 of BS 8233:2014 and regular night time noise events such as scheduled aircraft or passing trains which can cause sleep disturbance shall be minimized and assessed as (L_{AFmax}), as recommended in the World Health Organisation's (WHO) Night Noise Guidelines for Europe (2009), unless there are particular reasons why this is not considered appropriate. In such cases, a clear explanation of the reasons should be provided.

6.5.3 As the standards for BS 8233:2014 and the WHO relate only to anonymous noise, e.g., distant road traffic and noise without characteristics such as impulsivity, low frequency content or tones then, if these are present, additional discussion will be required with the LPA for the purpose of establishing suitable assessment techniques and standards to be achieved e.g., BS 4142:2014+A1:2019 for delivery noise.

6.5.4 While noise mitigation measures can be used to achieve suitable internal sound levels, preference is to be given to criteria based on windows being partially open.

6.5.5 Where the property is at risk of overheating an overheating assessment shall be conducted in accordance with Acoustics Ventilation and Overheating (AVO) Residential Design Guide (January 2020) and CIBSE's Design Methodology for the Assessment of Overheating Risk in Homes (TM59: 2017).

6.5.6 It is considered that the assessment of overheating and the provision of adequate ventilation and noise control are inextricably linked. Noise can be a material consideration at Planning. It is not accepted that an overheating assessment should be addressed post-planning. Overheating assessment and mitigation can have material impacts on design features, orientation of facades etc. As such, it should be incorporated into the design of a development and not as an afterthought.

6.5.7 Specific points for consideration include:

- Provide appropriate distances between noise sensitive developments and noise sources;
- Land zoning to separate noisy uses from noise sensitive uses, for example, avoiding the siting of children's playing areas next to accommodation for the elderly;
- Careful orientation of building layout, such as at right angles to the noise source;
- Introduction of single aspect buildings;
- Internal layout of dwellings, through the location of non-habitable rooms such as bathrooms, kitchens and circulation areas as buffers between the noise source and habitable rooms;
- Screening by non-noise sensitive structures or barrier blocks such as garages and walls;
- The introduction of acoustic screening such as bunding/embankments, fencing and walling;
- Protection of external residential amenity areas by positioning them towards the centre of the development sites.

6.5.8 The submission of details of layout and design should be supported by a scheme showing details of mitigation techniques. Computer modelling which shows the impact of the design measures should be produced."

Whilst only the most relevant sections of the Planning Noise Advisory Document have been included above, the following assessment and report will be conducted in accordance of all the guidance therein.

2.3 ProPG: Planning & Noise

The Professional Practice Guidance on Planning & Noise for New Residential Development was produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England.

The ProPG acknowledges and reflects the Government's overarching Noise Policy Statement for England (NPSE), the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance on Noise, as well as other authoritative sources of guidance.

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.

Where sites are deemed to be "negligible" risk under Stage 1, there would not normally be a need for a Stage 2 assessment.

The four key elements to be undertaken in parallel during Stage 2 of the recommended approach are:

- Element 1 – demonstrating a "Good Acoustic Design Process"
- Element 2 – observing internal "Noise Level Guidelines"
- Element 3 – undertaking an "External Amenity Area Noise Assessment"
- Element 4 – consideration of "Other Relevant Issues"

ProPG recommends that the details of the assessment(s) are presented in an Acoustic Design Statement (ADS). An ADS should not be necessary for a site assessed as negligible risk.

Stage 1: Initial Site Noise Risk Assessment

The noise risk assessment is intended to provide an indication of the likely risk of adverse effects from noise without any measures in place. It may be based on measurement or prediction (or a combination) as appropriate and should aim to describe noise levels over a “typical worst case” 24-hour day either now or in the foreseeable future.

The noise risk assessment categories are presented in Figure 1 of the ProPG, which is reproduced in below. It illustrates how an initial noise risk assessment is linked with an increasing risk of adverse effect from noise, and how this in turn is broadly associated with indicative noise levels derived from current guidance and experience.

The indicative noise levels are intended to provide a sense of the noise challenge at a potential residential development site. Whilst it is noted that they “...should be interpreted flexibly having regard to the locality, the project and the wider context...”, there is considered to be no need to amend them for the purposes of this assessment.

In the final column, the initial noise risk assessment is aligned with pre-planning application guidance that highlights the increasing importance of good acoustic design as the noise risk increases.

Table 2.1: Stage 1 initial site noise risk assessment (as per ProPG Figure 1)

Noise risk assessment		Potential effect without noise mitigation	Pre-planning application advice
Indicative Daytime Noise Levels $L_{Aeq,16h}$	Indicative Night-time Noise Levels $L_{Aeq,8h}$		
		Increasing risk of adverse effect	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice.
70 dB	60 dB		As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless 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, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development.
65 dB	55 dB		
60 dB	50 dB		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 ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.
55 dB	45 dB		
50 dB	40 dB	No adverse effect	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.

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".
- $L_{Aeq,16h}$ is for daytime 0700 – 2300, $L_{Aeq,8h}$ 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.

ProPG states that "It is important that the assessment of noise risk at a proposed residential development site is not the basis for the eventual recommendation to the decision maker". Though, presumably, this would be acceptable for sites/noise levels deemed negligible risk (when a Stage 2 assessment or ADS would not normally be required).

It is noted that the categories (negligible, low, medium, and high) do not necessarily correspond with a given threshold. This is perhaps understandable since these may vary in practice due to various acoustic and non-acoustic factors (which may vary from site to site); however, it is not helpful when it comes to consistently determining the degree of risk.

To establish appropriate thresholds, it is initially reasonable to use the table above, where 50 dB and 40 dB denote the thresholds between negligible and low for day and night-time periods, respectively. As elaborated later, a daytime level of 50 dB marks the lower limit of the criteria range applied to external amenity areas. The equivalent internal level, assuming a window is partially open (resulting in a 10-15 dB reduction), would be 35-40 dB, consistent with relevant criteria discussed subsequently. A similar rationale applies to the nighttime period; however, given that the day and night internal criteria differ by only 5 dB (as shown later), and the external thresholds differ by 10 dB, the external night threshold is relatively more stringent compared to the daytime equivalent.

Applying a banding of 10 dB results in the following thresholds in Table 2.2, which correspond well with the ProPG table reproduced above.

Table 2.2: Interpretation of the Level 1 initial site noise risk assessment thresholds

Noise risk category	$L_{Aeq,16h}$ (07-23)	$L_{Aeq,8h}$ (23-07)	L_{AFmax} (23-07)	Level 2 assessment?	Pre-planning application advice
High	> 70 dB	> 60 dB	> 10 events > 60 dB	Required	"...an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process..."
Medium	61 – 70 dB	51 – 60 dB			"...application may be refused unless a good acoustic design process is followed and is demonstrated... how the adverse impacts of noise will be mitigated and minimised, and... a significant adverse noise impact will be avoided..."
Low	51 – 60 dB	41 – 50 dB			"...the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed..."
Negligible	≤ 50 dB	≤ 40 dB	Less than the above	Not normally required	"...the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds."

As noted above, the rating or categorisation at this stage is not to be taken as the final word on the site, but rather an initial guide as to the degree of measures likely to be required to achieve an acceptable development.

ProPG defines 'Good Acoustic Design' as achieving internal target levels with open windows in most properties. If this is not possible, assess noise with windows closed, but ensure that any façade openings used for ventilation are assessed as "open" and meet internal L_{Aeq} target levels.

Note 7 allows relaxation of internal $L_{Aeq,T}$ target levels by up to 5 dB if development is necessary despite high external noise, while exceeding these levels by more than 10 dB is usually deemed unacceptable. Developers must minimize the number of affected rooms and avoid frequent "unacceptable" noise levels. If levels exceed WHO guidelines significantly, alternative ventilation or overheating control may be needed.

Stage 2: Full Assessment

The requirements of the ProPG Stage 2: Full Assessment are covered later on in this report.

2.4 British Standard 8233

British Standard BS 8233:2014: '*Guidance on sound insulation and noise reduction for buildings*' (The British Standards Institution, 2014) provides guideline values for internal noise levels within a number of building types including residential dwellings.

In general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values in Table 2.3:

Table 2.3: British Standard 8233 indoor noise levels

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

In respect of external noise levels, the guidance in BS 8233:2014 suggests that "it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments". BS 8233:2014 however acknowledges that "these guideline values are not achievable in all circumstances where development might be desirable", and that "...a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation,

development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited”.

In respect of balconies, roof gardens and terraces, BS 8233:2014 states that “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”.

BS 8233:2014 suggests that proposed development within noisy environments should be designed to ensure that the recommended internal design standards are achieved, and that noise levels in external amenity areas are designed to effectively control and reduce noise levels; although it acknowledges that in certain circumstances meeting the external design recommendations may not be feasible, or necessary, especially where the provision of such spaces is desirable for other technical, planning or policy reasons.

2.5 World Health Organisation Guidelines

The following guideline values for community ambient noise levels in specific environments are presented in the World Health Organization (WHO) Guidelines for Community Noise.

Table 2.4: WHO Guideline noise values

Specific Environment	Critical Health Effect(s)	dB $L_{Aeq,T}$	Time Base hours	dB $L_{Amax,F}$
Dwelling indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside bedrooms	Sleep disturbance, night-time	30	8	45

The 45 dB $L_{Amax,F}$ criterion applies to “single sound events” within bedrooms at night. This guideline is generally interpreted as the value that individual noise events should not normally exceed more than 10 times a night.

3 SITE DESCRIPTION

3.1 Existing Site

The proposed development site is located on Land South East of Spring Gardens, Horsham RH20 3BP. The site is predominately suburban in nature.

The site is bound by existing residences to the north-west and south-east, Spring Gardens (road) to the north east, London Road (A24) to the east, and a paddock to the south-west.

The nearby properties are residential in nature. The dominant noise source affecting the proposed redevelopment site is road traffic from London Road (A24).

3.2 Proposed Development

The proposed development consists of a single detached dwelling house. The proposed development can be seen on Figure 3.1 below. (KG Designs drawing ref.: 684-02-Rev.A).

Figure 3.1: Site plan drawing showing the proposed development (red) and measurement positions

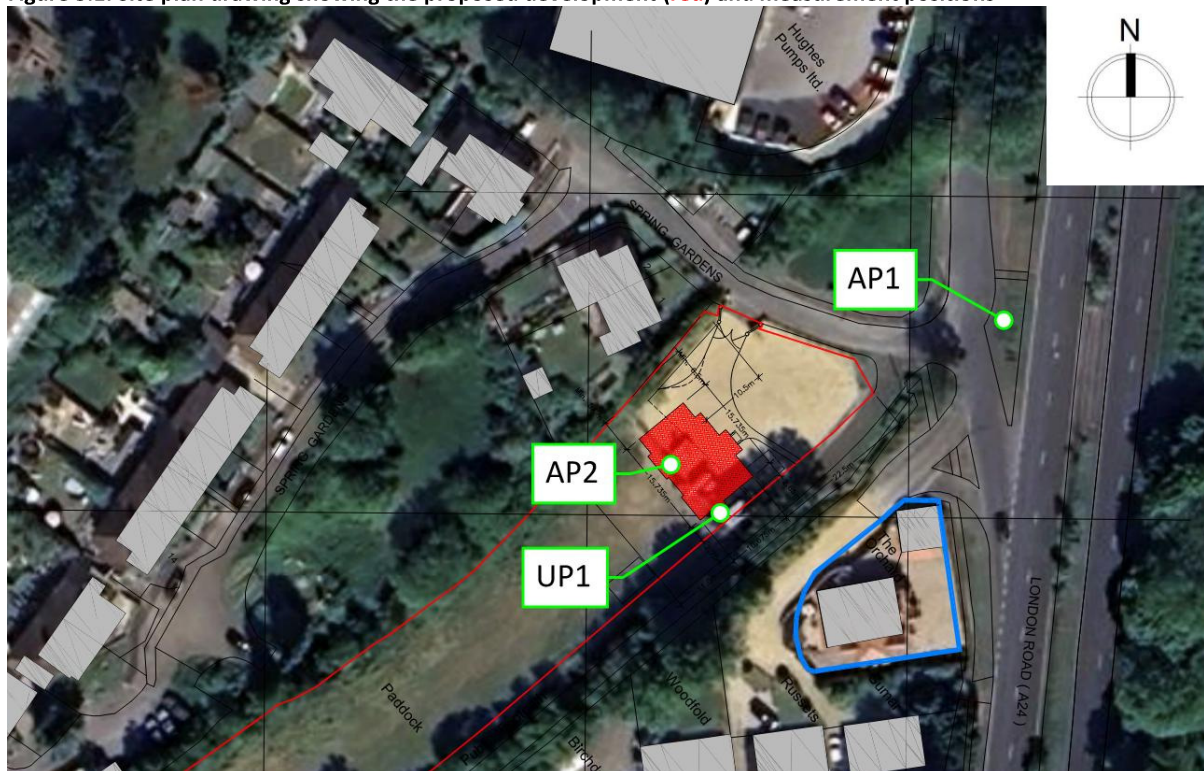


Image source: Google maps overlaid with KG Designs. Annotated by: Anderson Acoustics

4 BASELINE NOISE SURVEY

A baseline noise survey was conducted between 25/02/2026 – 03/03/2026 to assess the existing noise environment on site and the surrounding area. A single unattended sound level meter was deployed on the site and the location of this can be seen on Figure 3.1 **Error! Reference source not found.** (measurement ref.: UP1). This measurement position was selected to capture the noise levels from nearby road as well as assess the spatial spread of sound across the proposed development site. Two short-term attended measurements were also carried out (AP1 and AP2), the results of these measurements were used to assist in the calibration of the 3D environmental noise model.

The sound level meter was placed in free field conditions at all measurement locations (more than 3.5 m away from any reflecting surfaces, other than the ground). Data was collected in 1/3 octave bands in 15-minute and 100 ms intervals, and post-processed into all required noise indices.

4.1 Instrumentation

All measurements were undertaken by a consultant certified as competent in environmental monitoring. The sound level meters conform to the Class 1 requirements of BS EN 61672-1:2013. The calibrators used conformed to the Class 1 requirements of BS EN IEC 60942:2018. Details of the monitoring equipment, including calibration information, can be found in Table 4.1 below. All equipment's calibration certificates are available on request. Equipment was calibrated before and after the survey with no serious drift ($\geq \pm 0.5$ dB) detected.

Table 4.1: Survey equipment information

Equipment	Model	Serial Number	Calibration	
			Certificate number	Expiry Date
Sound Level Meter	Rion NL-52	00342836	TCRT25/1183	25/02/2027
Preamplifier	Rion UC-59	42864		
Microphone	Rion NH-25	06357		
Calibrator	Rion NC-75	34745932	TCRT25/1679	09/09/2026

4.2 Weather Conditions

Weather conditions were assessed on site during deployment and collection of all survey equipment. This showed that at time of deployment or collection there was no adverse meteorological conditions that could adversely affect the acoustic survey.

Meteorological data from the survey period was obtained from a nearby weather station (ID: Penlands Close - ISTEYN4) on Weather Underground (www.wunderground.com), an online historical data repository. This data was analysed for periods of rain or with windspeeds greater than 5 ms^{-1} which showed that there were light winds and very short periods of light rain. The weather was not expected to have adversely affected the measurement results.

4.3 On-Site Observations

During the setup of UP1, the noise climate was dominated by road traffic from London Road (A24). The traffic was fairly regular, travelling at a moderate speed and in the vicinity of the noise monitor. Bird song was also present, but only detectable during lulls in traffic flow. On collection, the noise sources were the same and levels similar.

4.4 Survey Results

A summary of the site-wide noise survey results can be found in Table 4.2 below. The quoted $L_{Aeq,T}$ values are the logarithmic average of the daytime $L_{Aeq,16hr}$ and night-time $L_{Aeq,8hr}$ levels, respectively. The quoted 10^{th}

highest $L_{Amax,2min}$ levels are derived from a representative night-time period from the survey, in line with the guidance contained in the ProPG and BS 8233:2014.

Table 4.2: Summary of noise survey data results (free-field levels), dB

Date	Period	Ambient Noise Level $L_{Aeq,T}$, dB	Typical Night-time $L_{Amax,f}$ Level, dB	Modal Background Noise Level $L_{A90,15min}$, dB
Wednesday 25 February 2026	07:00 to 23:00	61	73	54
	23:00 to 07:00	56		37
Thursday 26 February 2026	07:00 to 23:00	62	77	57
	23:00 to 07:00	59		41
Friday 27 February 2026	07:00 to 23:00	65	75	60
	23:00 to 07:00	57		35
Saturday 28 February 2026	07:00 to 23:00	62	74	58
	23:00 to 07:00	54		33
Sunday 01 March 2026	07:00 to 23:00	62	75	58
	23:00 to 07:00	57		32
Monday 02 March 2026	07:00 to 23:00	63	74	58
	23:00 to 07:00	58		35
Tuesday 03 March 2026	07:00 to 23:00	65	-	63
	23:00 to 07:00	-		-
Overall	07:00 to 23:00	63	75	58
	23:00 to 07:00	57		34

4.5 Results of Attended Noise Measurements

A summary of the measured free-field attended measurements have been presented below.

Table 4.3: Attended noise survey results (free-field levels), dB

Location Ref	Date	Time	Ambient Noise Level $L_{Aeq,T}$, dB
AP1	25/02/2026	13:35 – 14:15	76
AP2	25/02/2026	13:10 – 13:30	59

5 PREDICTING ON SITE NOISE LEVELS

Representative sound levels across the site have been predicted using a combination of the noise data collected from the survey and a 3D noise model using DataKustik's CadnaA (2025) noise modelling software.

Using noise survey data from the measurement position closest to the road (UP1), noise levels from London Road (A24). This then allowed the prediction of noise levels across the proposed development site for each measurement period. The attended measurement positions AP1 and AP2 were used to assist in the validation of the model

Predicted on site noise levels for the day and night-time periods, and predicted 10th highest night-time maximum levels can be seen on Figure 5.1, Figure 5.2 and Figure 5.3, respectively.

Figure 5.1: Predicted daytime $L_{Aeq,16\text{-hour}}$ noise levels (ProPG risk categories) – free field

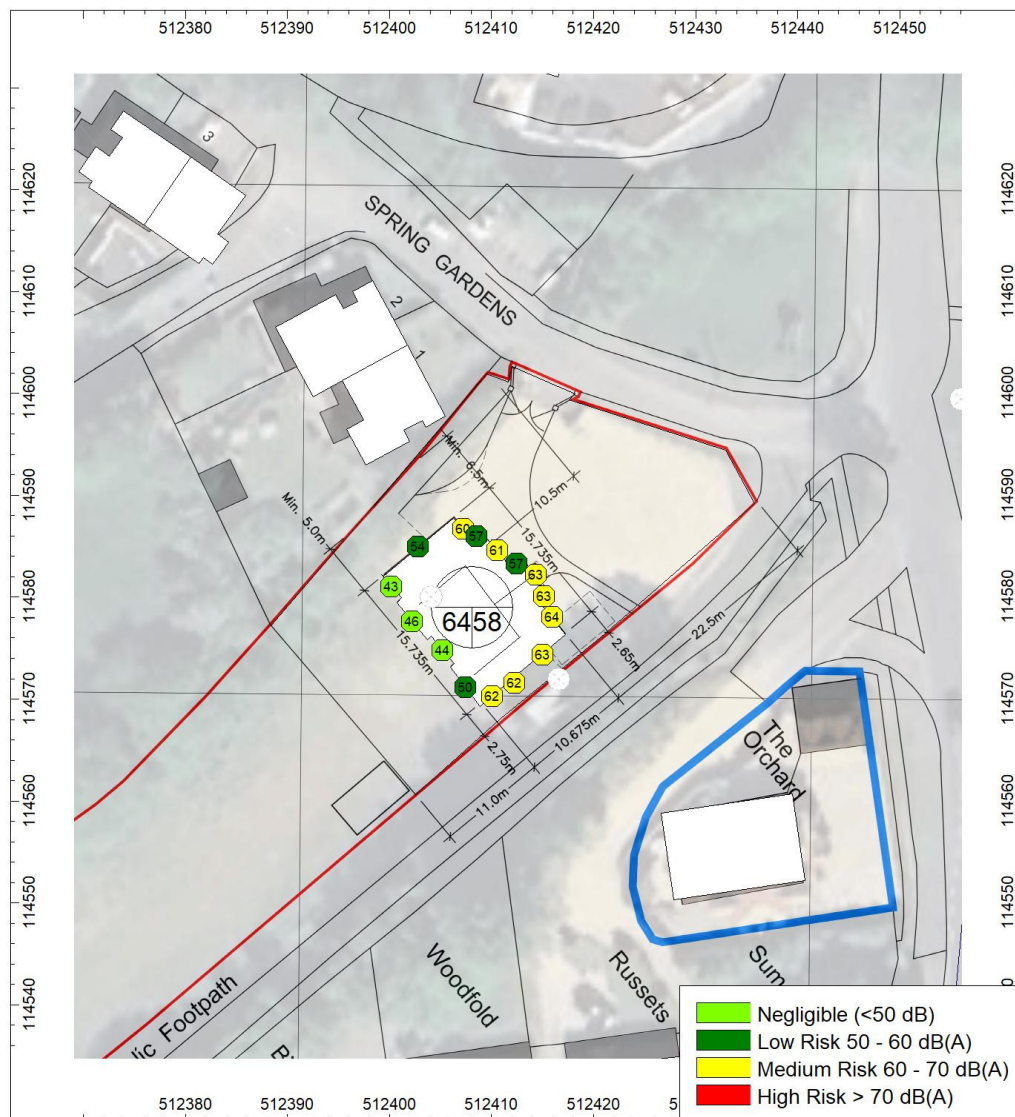


Figure 5.2: Predicted night-time $L_{Aeq,8\text{-hour}}$ noise levels (ProPG risk categories) – free field

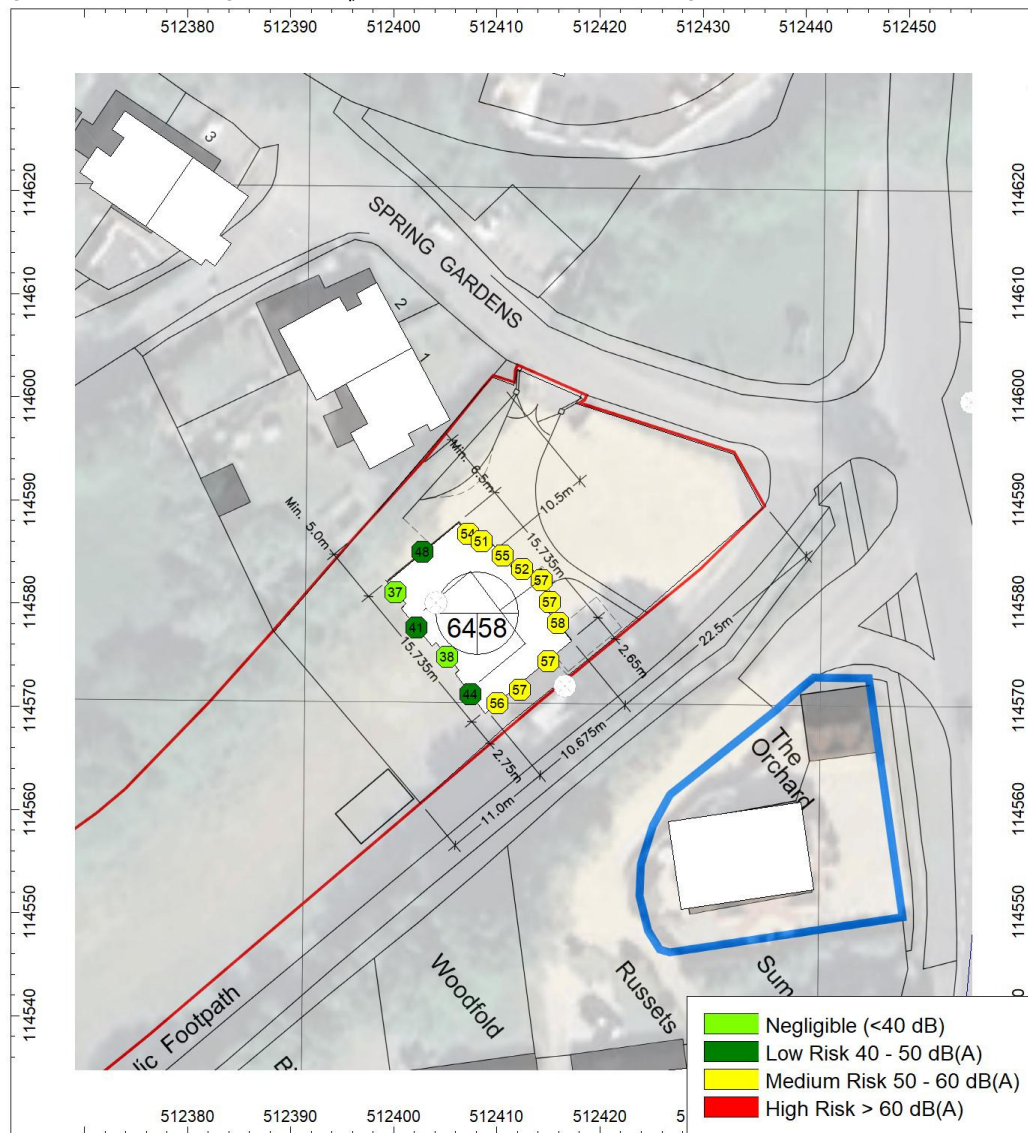
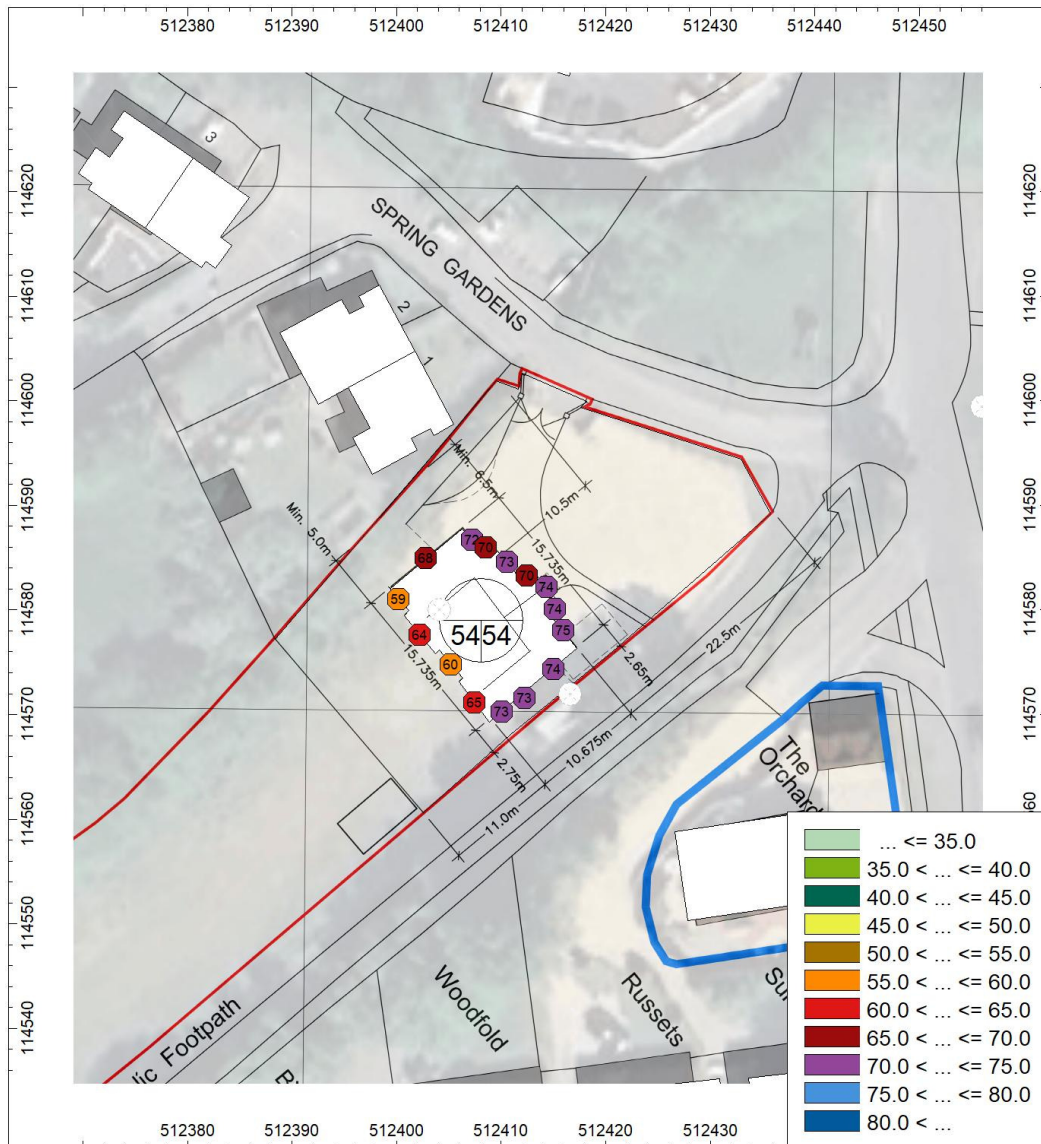


Figure 5.3: Predicted night-time $L_{AFmax,T}$ noise levels – free field



It can be seen from the above that the worst affected elevations are expected to be subject to façade-incident noise levels of up to 64 dB $L_{Aeq,16hour}$ during the daytime and 58 dB $L_{Aeq,8hour}$ during the night.

The assessment of typical night-time L_{AFmax} levels shows that the worst-affected façades will be subject to levels of up to 75 dB L_{AFmax} .

6 PROPG STAGE 1 RISK ASSESSMENT

An initial site noise risk assessment has been undertaken in line with the guidance contained in the ProPG and is detailed in Table 6.1 below.

Table 6.1: ProPG stage 1 risk assessment

Site Section (Representative Measurement Position)	Time Period	Noise Level, dB(A)	ProPG Noise Risk Category
North-west, north-east, and south-east elevations	Daytime $L_{Aeq,16hr}$ (07:00 – 23:00)	64	Medium
	Night-Time $L_{Aeq,8hr}$ (23:00 – 07:00)	58	Medium
	10 th Highest Night-Time $L_{Amax,2min}$ (23:00 – 07:00)	75	-
South-west elevation	Daytime $L_{Aeq,16hr}$ (07:00 – 23:00)	50	Low
	Night-Time $L_{Aeq,8hr}$ (23:00 – 07:00)	44	Low
	10 th Highest Night-Time $L_{Amax,2min}$ (23:00 – 07:00)	65	-

It can be seen from the above, that, as some of the site falls into the ‘medium’ risk category and as more than 10 No. L_{AFmax} events exceed 60 dB per night, a ProPG Stage 2 risk assessment is required.

7 PROPG STAGE 2 RISK ASSESSMENT

7.1 Element 1 – Good Acoustic Design Process

As presented in the ProPG, Section 5 of BS 8233:2014 contains guidance on the sequence of stages to be followed in the planning and early acoustic design of a new development. Section 5.4 of BS 8233:2014 outlines a general approach to determining appropriate noise control measures including the following suggested steps (which may be iterative):

- i. Check the feasibility of reducing noise levels and / or relocating noise sources;
- ii. Consider options for planning the site of building layout;
- iii. Consider the orientation of the proposed building(s);
- iv. Select construction types and methods for meeting building performance requirements;
- v. Examine the effects of noise control measures on the requirements for ventilation, fire regulation, health and safety, cost, DVM (Construction, design and management) etc.; and
- vi. Assess the viability of alternative solutions.

The designer should then decide which of the following options can be applied to reduce noise levels:

- i. Quietening or removing the source of noise;
- ii. Attenuating the sound on its path to the receiver;
- iii. Obstructing the sound path between source and receiver;
- iv. Improving the sound insulation of the building envelope; and
- v. Using agreements to manage noise.

The main noise source affecting the proposed development is road traffic. This sound source cannot be moved, removed or have their noise levels reduced easily and as such, good acoustic design should be achieved using the other methods listed above.

The proposed dwelling is set back from the site boundary adjacent to London Road (A24), in addition, a review of the general arrangement drawings show that efforts have been made to strategically locate a majority of the most noise-sensitive rooms (bedrooms and living room) so that they do not directly overlook London Road. Where a majority of the least sensitive rooms (kitchen, bathroom, dressing room and ground floor study) are located on the elevations subjected to the highest noise levels.

Noise levels due to road traffic could be reduced further still for the lower floor levels with the introduction of an acoustic boundary fencing along the north-west, north-east, and south-east site boundaries which are exposed to London Road. Any such fence should be a 1.8 m high, close boarded acoustic fence with a superficial mass of 15 kgm^{-2} with minimal perforations.

7.2 Element 2 – Internal Noise Level Guidelines

An assessment of the external building fabric elements has been undertaken. Based on information regarding the predicted façade-incident noise levels, proposed glazing, ventilation and external wall configurations; calculations have been undertaken following the general method set out in BS EN 12354-3:2017 [8] to determine whether the criteria is achieved within habitable rooms of the proposed dwellings.

7.2.1 External Noise Levels

The façade incident noise levels summarised in Table 6.1 have been used in this assessment.

7.2.2 Drawings Used

Our assessment has been based on the following drawings provided by KG Designs (architects).

Table 7.1: Assessment drawings

Drawing Title	Drawing Number	Revision	Date
Location Plan	68401	A	09/01/2026
Site Plan	68402	A	09/01/2026
GF Plan as Existing	68403	A	09/01/2026
GF Plan as Proposed	68404	A	09/01/2026
FF Plans Elevations	68405	B	14/01/2026
Landscape	68408	B	14/01/2026

7.2.3 Room Reverberation

In order to calculate internal ambient noise levels within habitable rooms, our analysis has assumed typical reverberation times in furnished bedrooms and living rooms, which have been based on a flat reverberation time of 0.5 seconds between 125 Hz and 4 kHz.

7.2.4 Façade Design

We understand that two different external wall constructions will be used, with cavity masonry at ground floor and a lightweight construction at first floor.

We have assumed the following indicative elements for the ground floor external wall construction:

- 103mm brick outer leaf
- 50mm clear cavity
- 60mm Celotex partial fill cavity construction
- 100mm medium density blockwork

We have assumed the following indicative elements for the first floor external wall construction:

- Clay tiles on batten
- Breathable membrane on 9mm Ex. Grade plywood cladding
- 47x122mm timber stud partition with 90mm Celotex insulation
- 40mm Celotex lining to internal face of studwork
- 38mm timber battens
- 2 layers of dense plasterboard

We would expect the proposed external wall to achieve the following minimum sound reduction performance, based on experience of similar wall constructions and sound reduction performance estimated with specialist software Insul:

Table 7.2: Estimated sound reduction index (dB) of the proposed external wall constructions

External Wall Construction	125	250	500	1k	2k	4k	$R_w / R_w + C_{tr}$
Ground Floor (masonry)	41	45	45	54	58	58	52 / 48
First Floor (lightweight)	22	38	53	58	57	59	46 / 36

It should be noted that, in any case, the main contributor to noise break-in to apartments will generally be the glazing (as it is the weakest element in terms of sound reduction of the façade). However, Anderson Acoustics should be advised should the proposals summarised above are to change.

7.2.5 Roof Design

We understood that the roof construction will be of a tiled construction. An additional 50mm of mineral wool insulation will be added to the ceilings of the bedrooms. The expected sound reduction performance of this roof construction has been assumed to be as follows:

Table 7.3: Estimated sound reduction index (dB) of the proposed roof constructions

Roof construction	125	250	500	1k	2k	4k	$R_w / R_w + C_{tr}$
Tiled/slatted roof, roof void, 12mm plasterboard	21	26	33	33	35	35	34 / 30

7.2.6 Ventilation

We understand that the ventilation strategy for the development will use continuous mechanical supply and extract with heat recovery systems (MVHR) in all apartments of the development. Our calculations have therefore assumed that noise break-in through the selected ventilation system is negligible in all rooms.

7.2.7 Glazing

The sound insulation requirements of the glazing are applicable to the window system as a whole, including frames, mullions and panels. They are based on BS EN ISO 10140-2: 2021 “Acoustics - Laboratory measurement of sound insulation of building elements” [9] and rated in accordance with BS EN ISO 717-1:2020 “Acoustics – Rating of sound insulation in buildings and of building elements. Part 1. Airborne sound insulation” [10].

Based upon the drawings and elevations provided, detailed calculations have been undertaken in accordance with BS 12354-3 to determine the most suitable glazing specification, which will provide sufficient sound reduction to ensure appropriate internal noise levels in habitable rooms, during both daytime and night-time periods. These calculations have been taken in accordance with the proposed ventilation strategy (MVHR) and other building elements.

Table 7.4: Minimum sound reduction performance R (dB) for the glazed elements of the façade

Site Section	Example Glazing Configuration	125	250	500	1k	2k	4k	$R_w / R_w + C_{tr}$
North-west, north-east, and south-east elevations	10/12/4 mm Double Glazing	25	22	33	40	43	44	36 / 30
South-west elevation	4/12/6 mm Double Glazing	23	22	27	38	40	41	33 / 29

Notes:

It is recommended that double glazing configurations with differing pane thicknesses are used

7.3 Element 3 – External Amenity Area Noise Assessment

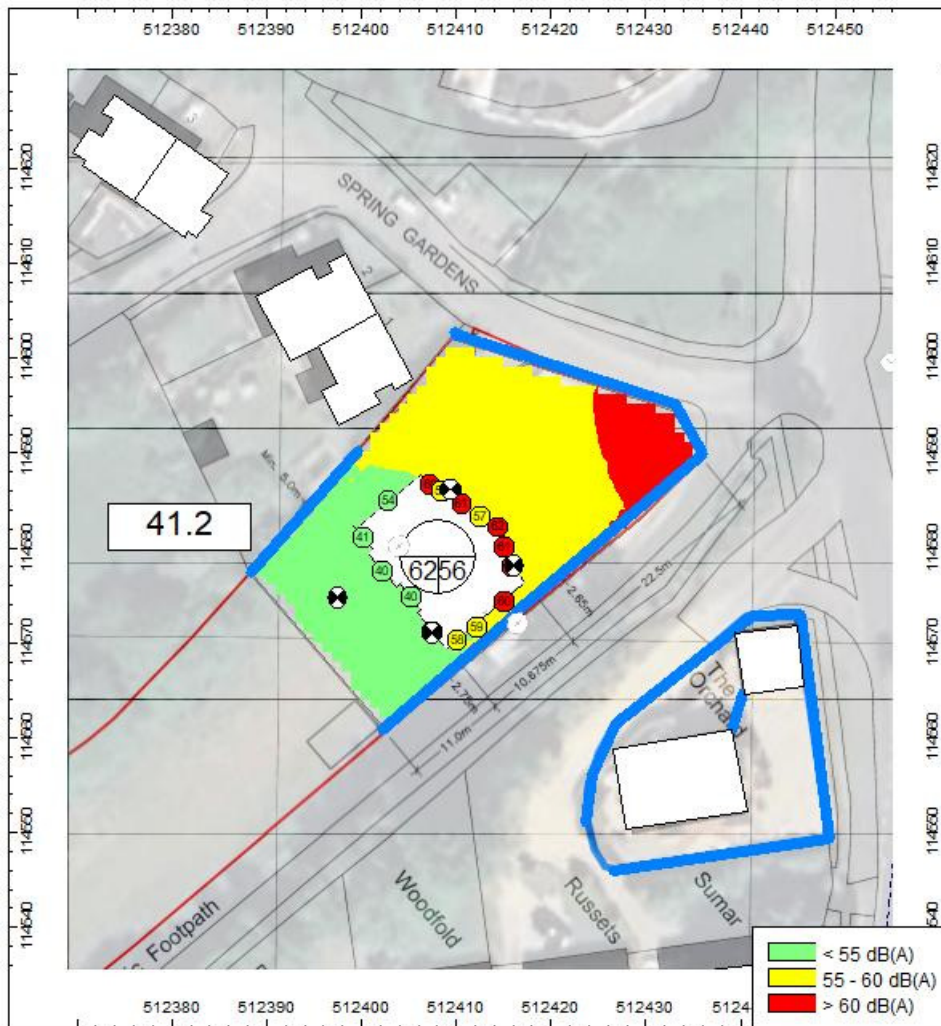
As detailed above, BS 8233:2014 states that:

“It is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments”.

Proposals have been made to install a 1.8m high acoustic fence to the south-east and north-west boundary of the rear garden. The front garden will be enclosed to the north-east and south-east with a 1.5m high acoustic fence, along with a 1.5m high solid oak gate. In addition to this a beech hedge will be planted to the outer face of the proposed acoustic fencing on the north-east and south-east boundaries.

As can be seen in Figure 7.1 below, the rear garden will be subjected to noise levels below the upper guideline value of 55 dB $L_{Aeq,16hr}$ with the acoustic fencing in place.

Figure 7.1: External amenity area noise levels (calculation area at 1.5 m height above ground level)



7.4 Element 4 – Assessment of Other Relevant Issues: Overheating

7.4.1 Overheating: Approved Document O

Overheating: Approved Document O (AD-O) of the Building Regulations has been used to set appropriate acoustic criteria for bedrooms during the overheating condition, as defined by the regulations. AD-O provides the following guidance where open windows are used to mitigate the overheating condition:

“Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits:

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

7.4.2 Façade Incident Noise Levels

For the purposes of this assessment we have assumed the sound reduction provided by a partially open bedroom window used for cooling is 10 dB.

Therefore, it can be reasonably assumed that windows should be closed during the night-time period when the façade incident noise levels of the proposed development are greater than 50 dB $L_{Aeq,8hr}$ and 65 dB L_{AFmax} more than 10 times a night.

As shown in Table 7.5 below, the most exposed elevations exceed the noise limits stipulated in Approved Document O. Therefore, alternative ventilative solutions will be need to be adopted to control overheating and noise.

Table 7.5: ADO assessment

Site Section (Representative Measurement Position)	Time Period	External Noise Level, dB(A)	Internal Noise Level, dB(A) (with open window)	Meets ADO Requirements?
North-west, north-east, and south-east elevations	Night-Time $L_{Aeq,8hr}$ (23:00 – 07:00)	58	48	No
	10 th Highest Night-Time $L_{Amax,2min}$ (23:00 – 07:00)	75	65	No
South-west elevation	Night-Time $L_{Aeq,8hr}$ (23:00 – 07:00)	44	34	Yes
	10 th Highest Night-Time $L_{Amax,2min}$ (23:00 – 07:00)	65	55	Yes

7.4.3 Overheating Mitigation Strategy

Further to our discussions with the KG Designs (architects), it is understand that proposals will include cooling strategies to mitigate the overheating condition for this development in bedrooms. MVHRs are proposed with boost and cooling modules.

It is recommended that an overheating consultant is appointed during the detailed design stages to confirm and finalise the overheating strategy for Building Control approval.

7.4.4 Noise Generated by MVHR Cooling Mode

Noise generated by domestic MVHR units within the dwelling should not exceed the internal noise levels summarised in Table 7.6.

Table 7.6: Maximum internal noise levels in dwellings due to mechanical services

Ventilation Condition	Desirable Internal Ambient Noise Levels from Mechanical Services	
ADF – Whole Dwelling Ventilation (fresh air provision)	Bedrooms	$\leq L_{Aeq}$ 26 to 30 dB
	Living Rooms	$\leq L_{Aeq}$ 30 dB
ADF – Extract Ventilation (removal of vapour or air pollutants from a room)	Bedrooms	$\leq L_{Aeq}$ 26 or 30 dB
	Living / Dining Rooms	$\leq L_{Aeq}$ 35 dB
	Bathroom / WC / Kitchen	$\leq L_{Aeq}$ 45 dB

7.4.5 Cooling Mode

Where MVHR units are set to operate in cooling mode, the cumulative noise level generated by these systems and the level of external noise break-in should be designed to not exceed the noise limits stipulated in Approved Document O.

In order to ensure the cumulative noise levels in bedrooms during the night-time overheating condition do not exceed the limits stipulated in AD-O, noise breakout from the mechanical systems should be designed such that the reverberant sound pressure level in bedrooms does not exceed 30 (± 5) dBA $L_{eq,T}$, when the equipment is operating at its intended design duty. Therefore, the provision for in-duct attenuators and the selection of a suitably quiet units should be allowed for.

8 SUMMARY

Anderson Acoustics Ltd was commissioned by KG Designs to provide acoustic consultancy services in support of a planning application for a new dwelling located on Land South East of Spring Gardens, Horsham.

A baseline noise survey was undertaken to assess on-site noise conditions, identify noise sources and determine noise levels affecting the proposed development. The findings of this survey were then used to inform an assessment of the suitability of the site for residential development and determine the appropriate acoustic process to ensure the residential amenity of the future residents are not negatively impacted by local noise sources, in line with the guidance contained in ProPG and local planning policy.

In terms of the ProPG Stage 1 - Initial Site Risk Assessment the majority of the site (on 3 elevations) falls into the medium risk category. Following this, a Stage 2 – Full Assessment has been undertaken, the key points being:

- The external building fabric proposals should be sufficient to control external noise ingress to habitable spaces, providing glazing units to achieve a minimum sound insulation performance of $30 R_w + C_{tr}$ are installed on the most exposed elevations (north-west, north-east, and south-east elevations) and $29 R_w + C_{tr}$ on the least exposed elevation (south-west elevation). This assumes that MVHR units are installed and there will be no trickle vents.
- Provided a 1.8 m fence is installed (as proposed) then the rear private garden will be subjected to daytime noise levels lower than the lower guideline value of 50 dB $L_{Aeq,T,16\text{-hour}}$ in a majority of its area.
- Our assessment shows the bedrooms located on the most exposed elevations (north-west, north-east, and south-east elevations) will require alternative ventilative solutions to provide suitable thermal comfort with windows closed at night during the hottest periods of the year. Proposals have been made to install MVHR units with boost and cooling modules which should suitably control thermal comfort.
- The overheating control strategy for the least exposed elevation (south-west) will accept operable windows.

APPENDIX A

ACOUSTIC TERMINOLOGY

Please visit: <https://andersonacoustics.co.uk/resources/acoustics-glossary>

APPENDIX B

SURVEY DATA

Sound Survey Time History Graph

Measurement Position UP1 - Wednesday 25 February 2026 to Monday 02 March 2026

