

noise.co.uk Ltd

T+44(0)2476 545 397

F+44(0)2476 545 010

The Haybarn

Newnham Grounds

Kings Newnham Lane

Bretford

Warwickshire

CV23 0JU

Environmental Noise Assessment

Prepared: 11th May 2026

Report No	23448-1-R2
Client	Crest Nicholson South
Site	Scamps Hill Lindfield West Sussex

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1. Quality Management

Report Number	23448 – 1 – R2
Issue	Revision 2
Prepared	11 th May 2026
Prepared By	Baden Fitzmaurice MSc, MIOA
Authorised By	Bill Whitfield PhD, MSc, MIOA

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3. Executive Summary

3.1.1. An environmental noise assessment has been carried out for a proposed residential development at Scamps Hill, Lindfield, West Sussex ("Proposed Development").

3.2. Revision

3.2.1. R1: Site layout "*3416-A-1005-Pr-K Site Layout + Cons*" provided to be included in 3D noise model and assessment.

3.2.2. R2: Report updated to include site layout "*3416-A-1005-PL-A Site Layout*".

3.3. Measurement, Assessment and Evaluation

3.3.1. The survey was carried out to BS7445-1:2003,¹ BS7445-2:1991² and BS4142:2014³.

3.4. Scope

3.4.1. This report covers all aspects of the noise survey, including:

- the identification of acoustic design criteria;
- the identification of specific sound sources;
- an objective sound pressure level survey of the existing site;
- calculation of the specific sound levels;
- calculation of appropriate acoustic feature corrections and determination of the rating level;
- assessment of the specific sound sources based on guidance contained in BS4142:2014; and
- the design of any mitigation to meet the required internal noise criteria.

3.5. Results Summary

3.5.1. The commercial/industrial sources which are considered typical of operations on Lindfield Enterprise Park have been assessed. The numerical BS4142 assessment shows that the specific sound will have a low impact on proposed new residential receivers and, generally, the lower the rating level is relative to the background sound level, the less likely it is that the specific sound source will have an adverse impact.

3.5.2. In this context the new residential receivers are being introduced close to existing commercial/industrial sources. This is likely to result in reduced impact when compared to the situation where new sources are being introduced close to existing residential receivers. In this case there are also existing residents already in close proximity to the enterprise park.

¹ BS7445-1:2003 "Description and measurement of environmental noise – Part 1: Description of quantities and procedures"

² BS7445-2:1991 "Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use"

³ BS4142:2014 "Methods for rating and assessing industrial and commercial sound"

3.6. Required Mitigation

- 3.6.1. Facade sound insulation has been specified in order to mitigate and minimise the sound from all sources.
- 3.6.2. The facade sound insulation required to meet the guideline values from BS8233:2014 are summarised in Table 1. The glazing performance has been specified in terms of the road traffic corrected weighted sound reduction index, $R_w + C_{tr}$, and the ventilator performance has been specified in terms of the road traffic corrected element normalised level difference $D_{ne,w} + C_{tr}$.

	Living rooms	Bedrooms
	Specification 1	
Glazing Performance	30dB $R_w + C_{tr}$	30dB $R_w + C_{tr}$
Ventilator Performance	36dB $D_{ne,w} + C_{tr}$	36dB $D_{ne,w} + C_{tr}$
	Specification 2	
Glazing Performance	27dB $R_w + C_{tr}$	27dB $R_w + C_{tr}$
Ventilator Performance	33dB $D_{ne,w} + C_{tr}$	33dB $D_{ne,w} + C_{tr}$

Table 1 – Required facade sound insulation (Glazing/Ventilator)

4. Contents

1. Quality Management 2

2. Limitations 2

3. Executive Summary 3

4. Contents..... 5

5. Background 6

6. Introduction 9

7. Assessment Criteria 12

8. Survey 15

9. 3D Noise Model 18

10. BS4142 Assessment 22

11. Noise Risk Assessment..... 24

12. Mitigation 25

13. Conclusions 28

14. Appendix 29

5. Background

5.1. Noise Policy Statement for England

- 5.1.1. The Noise Policy Statement for England (NPSE), published 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”*.
- 5.1.2. This 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.
- 5.1.3. The intention is that the NPSE should apply to all types of noise apart from noise in the workplace (occupational noise).

5.2. National Planning Policy Framework

- 5.2.1. The National Planning Policy Framework (NPPF) was published on the 27th of March 2012 and is regularly updated, and sets out the Government’s planning policies for England and how these are expected to be applied. The framework states that the planning system should contribute to and enhance the natural and local environment by:
- “preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability”*.
- 5.2.2. The NPPF requires that new developments be appropriate to their locations such that the effects of pollution on health have been taken into account. Planning policies and decisions should aim to:
1. avoid noise giving rise to significant adverse impacts on health and the quality of life;
 2. mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development; and,
 3. identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value.
- 5.2.3. Existing businesses near to proposed development 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.

5.3. National Planning Practice Guidance

- 5.3.1. The National Planning Practice Guidance (PPG) is a web-based resource, launched by the Department for Communities and Local Government (DCLG) which was published on the 29th November 2016 and is regularly updated to reflect the changes made to the NPPF and make it more accessible.⁴

⁴ <http://planningguidance.communities.gov.uk/>

- 5.3.2. There are a number of factors that determine whether a noise could be a concern to a receptor. These include: the absolute level of the noise and when it occurs, whether it is existing or new to the area, temporal characteristics, spectral content and the acoustic absorption in the area.

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

Table 2 – Noise exposure hierarchy

- 5.3.3. It is emphasised in the PPG that the planning process should be used to mitigate and minimise the impact of noise. This could include: engineering the noise sources to be quiet, minimising the impact of noise through layout, using conditions/obligations to restrict activities, mitigating the impact in places where noise is likely to be experienced (e.g. using facade sound insulation).

PPG and Agent of Change

- 5.3.4. Where residential development is proposed close to existing commercial premises. Suitable mitigation measures may need to be put in place to avoid those activities having a significant adverse effect on future residents.
- 5.3.5. Where this is the case, the developer (or 'agent of change') would need to identify commercial premises that could cause a noise nuisance. This should include potential future noise sources that may not be present at the time a planning application is made. The agent of change will also need to mitigate and minimise noise to avoid potential significant adverse effects.

"Adopting this approach may not prevent all complaints from the new residents/users about noise or other effects, but can help to achieve a satisfactory living or working environment, and help to mitigate the risk of a statutory nuisance being found if the new development is used as designed (for example, keeping windows closed and using alternative ventilation systems when the noise or other effects are occurring)."

NPPG 009 Reference ID: 30-009-20190722 - Revision date: 22nd July 2019

- 5.3.6. What constitutes noise, as opposed to sound, is subjective and there is not a simple relationship between the level of a sound and the impact on those affected but could be dependent on:
- the source and absolute level of the noise;
 - the time of day it occurs;
 - how a new noise source and/or receiver relates to the existing sound environment; and,
 - the time and frequency characteristics of the noise
- 5.3.7. It is emphasised in the PPG that the planning process should be used to mitigate and minimise the impact of noise. This could include:
- engineering the noise sources to be quiet;
 - minimising the impact of noise through layout;
 - using conditions/obligations to restrict activities; and,
 - mitigating the impact in places where noise is likely to be experienced (e.g. using facade sound insulation).

"More specific factors to consider when relevant include:"

"whether any adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time (and the effect this may have on living conditions). In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations."

Paragraph: 006 Reference ID: 30-006-20190722 Revision date: 22nd July 2019

- 5.3.8. Care should be taken when considering mitigation to ensure the envisaged measures do not make for an unsatisfactory development.
- 5.3.9. It is possible that noise effects may be counteracted by providing: quiet facades containing habitable rooms, quiet private gardens or balconies, or quiet public amenity space within 5-minute walking distance.

6. Introduction

6.1.1. An environmental noise assessment has been carried out for a proposed residential development at Scamps Hill, Lindfield, West Sussex.

6.2. Proposed Development

6.2.1. The proposed development for the reserved matters application comprises the following description of development: *“A reserved matters application (access, appearance, layout, scale and landscaping) for 87 dwellings and associated infrastructure”*.

6.2.2. An image showing the location and layout of the Proposed Development is given in Figure 1.



Figure 1 - Plan showing the location and layout of the Proposed Development

6.3. Specific Sound Sources

- 6.3.1. During the survey visits it was noted that there were a number of specific sound sources associated with industrial or commercial businesses at Lindfield Enterprise Park, local to the Proposed Development.
- 6.3.2. The businesses on the enterprise park which directly overlook the development site and have identifiable noise sources or external fixed plant associated with them, and the likely operating times have been summarised in Table 3. Note there are other businesses also located on the enterprise park which are not expected to generate significant commercial or industrial noise, but whose operational hours may extend beyond those listed in the table below, e.g. Potential Personal Training (06:00 – 21:00).

Business	Illustration	Specific Sound Source
Fine Furnishings Unit 5 Opening Hours Mon-Thurs 08:00 – 17:00 Fri 08:00 – 16:30 Sat 09:00 – 12:00		Air Conditioning Unit Daikin Model assumed 4MKM80RVMA Data sheet found online $L_w = 60\text{dB(A)}$
Matmos Computer Systems Unit 11 Opening Hours Mon-Sat 08:00 – 18:00		Air Conditioning Unit Hitachi Model assumed RAC-E50YHAB Data sheet found online $L_w = 63\text{dB(A)}$
Sentinel Laboratories Opening hours Mon-Fri 09:00 – 17:00		Air Conditioning Unit Panasonic Model assumed CS-Z18RKR Data sheet found online $L_w = 62\text{dB(A)}$
ForceFX Unit 8 Opening Hours Mon-Sat 09:00 – 17:30		Air Conditioning Unit Fujitsu Model assumed ASYG09KPCA Data sheet found online $L_w = 59\text{dB(A)}$

ForceFX Unit 8 Opening Hours Mon-Sat 09:00 – 17:30		CO2 Machines/T-Shirt Gun
Multiple Businesses Assumed hours 08:00 to 18:00 Up to one hour for delivery and unloading of goods	  <i>*illustrative only</i>	Pallet Truck Sound power based on SoundPLAN™ library entry HGV Movement (top area of car park only) Sound power based on SoundPLAN™ library entry

Table 3 – Description of the specific sound sources local to the proposed development

- 6.3.3. It is understood that due to a lack of turning space for large vehicles on the lower part of the car park that all HGV deliveries are unloaded and transported to the units using manual pallet trucks. Deliveries are unloaded from the top area of the car park area or in some cases unloaded from the street along Lewes Road.
- 6.3.4. It was noted that Fine Furnishings carries out some manufacturing work on site, however this is carried out internally with purpose built sound insulation as mitigation already in place. It is understood that, as part of the lease agreement, sound insulation testing was carried out to verify that sound pressure levels during periods of tool and machinery use are below the existing background sound levels outside the unit. This has not been verified by noise.co.uk. For the purpose of this assessment internal manufacturing noise has not been included in the assessment.
- 6.3.5. An employee at ForceFX reported testing of CO2 machines and T-shirt guns (compressed air) is carried out on site. However, this was noted to occur 'occasionally, during summer months in preparation for music festival season' and was described as atypical from normal operations. Due to the reported irregular and atypical nature of the activity this has not been included in the assessment.

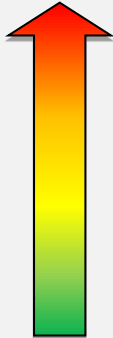
7. Assessment Criteria

7.1. Noise From Existing Transportation Sources

7.1.1. The Professional Practice Guidance (ProPG) was published in May 2017 refers specifically for the consideration of new residential developments that will be exposed predominantly to airborne noise from transport sources. The ProPG advocates a two stage risk based approach to noise when planning new residential developments:

- Stage 1 – an initial noise risk assessment of the site; and
- Stage 2 – a systematic consideration of the acoustic design.

7.1.2. An initial noise risk assessment is required to determine the prevailing sound pressure levels at the location of the Proposed Development to indicate whether the proposed site is at a negligible, low, medium or high risk from noise caused by transportation sources. The assessment is based on free-field levels on the existing site and, therefore, does not take into account any new treatment (such as bunds or fences) that will be introduced as part of the development. The guidance on negligible, low, medium and high risk levels has been summarised in Figure 2.

Risk	Day		Night	
High	≈ 70dB(A)		≈ 60 dB(A)	High noise levels indicate that there is a risk of refusal. High risk may be mitigated and minimised by following a good acoustic design process that is demonstrated in an ADS.
Medium	≈ 65dB(A)		≈ 55dB(A)	As noise levels increase the site is less suitable, from a noise perspective. Any application may be refused unless a good acoustic design process is illustrated in an ADS.
Low	≈ 55dB(A)		≈ 45dB(A)	At low noise levels the site is likely to be acceptable, from a noise perspective.
Negligible	<50dB(A)		<40dB(A)	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.

A. Indicative noise levels should be assessed without inclusion of the acoustic effect of any schem specific noise mitigation measures

B. 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”.

C. $L_{Aeq,16hr}$ is for daytime 0700-2300, $L_{Aeq,8hr}$ is for night-time 2300-0700

D. An indication that there may be more than 10 noise events at night (2300-0700) with $L_{AFMAX} > 60dB$ means the site should not be regarded as negligible risk.

Figure 2 – Stage 1 – Initial site noise risk assessment

7.1.3. The ProPG stresses that the assessment of noise risk at a proposed residential development site is not the basis for the eventual recommendation to the decision maker.

Element 1 – Good Acoustic Design Process

7.1.4. Good acoustic design should avoid ‘unreasonable’ acoustic conditions and prevent ‘unacceptable’ acoustic conditions. ProPG notes that good acoustic design does not mean over-engineering or ‘gold plating’ all new developments but instead should aim to provide an optimum acoustic outcome for a particular site.

Element 2 - Internal Noise Level Guidelines

7.1.5. The guideline values proposed are the same as those provided in BS 8233:2014 and WHO, including the recommendation that maximum noise levels should not exceed 45dB L_{Amax} more than 10 times per night.

Element 3 - External Amenity Area Noise Assessment

- 7.1.6. Sound pressure levels of 50 – 55 dB $L_{Aeq,16hr}$ in gardens and external amenity areas, where such areas are an intrinsic part of the overall design. If these values cannot be achieved in all areas, the development should be designed to achieve the lowest practicable noise levels. The provision of relatively quiet alternative publically accessible external amenity space may help to offset the noise impact in high noise areas.

Element 4 - Assessment of Other Relevant Issues

- 7.1.7. It is acknowledged that there may be other local issues affecting the ability to achieve the required acoustic design criteria

7.2. BS4142:2014

- 7.2.1. BS4142 provides methods for rating and assessing **specific sound sources** of an industrial and/or commercial nature, which includes: industrial and manufacturing processes, fixed services plant, sound generated by the loading/unloading of goods and sound from mobile plant/vehicles associated with industrial/commercial premises (e.g. fork-lift trucks). The **assessment location** is outside a residential receptor.
- 7.2.2. The standard is specifically precluded from being used to assess the likely impact inside a building or from the assessment of various sound sources for which other (more relevant) guidance exists, including: music/entertainment noise, noise from people and construction noise.
- 7.2.3. The foundation of the assessment is to establish the following quantities, either by measurement or prediction:
- **Ambient sound:** The overall sound at the assessment location
 - **Residual sound:** The ambient sound without the specific sound source operating
 - **Specific sound:** The ambient sound with the specific sound source operating, corrected for residual sound
 - **Background sound:** Residual sound present for 90% of the time
- 7.2.4. How these quantities relate to the sound that would be measured during a survey has been illustrated in Figure 3.

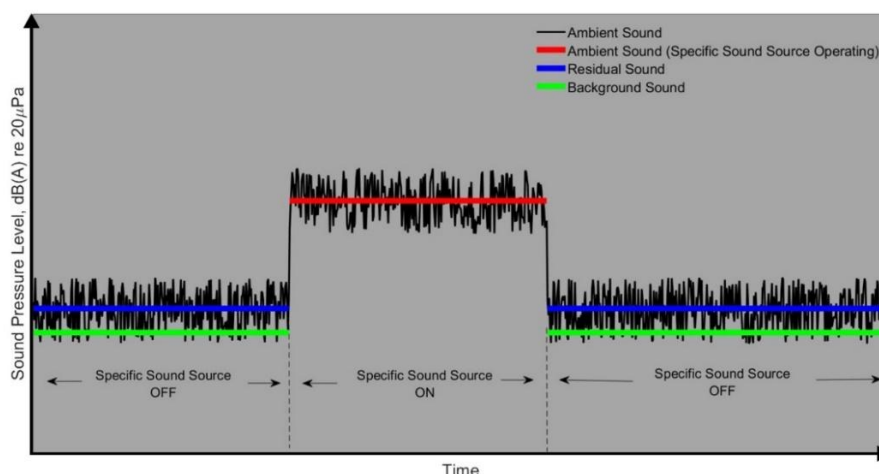


Figure 3 –
Diagrammatic
illustration of the
definitions of ambient,
residual, specific and
background sound

- 7.2.5. Once the specific sound level has been determined, this must be corrected for the presence of acoustic features that are audible at the assessment location to determine the **rating level**:

$$\text{Rating Level} = \text{Specific Sound Level} + \text{Character Corrections}$$

- 7.2.6. Normally it is possible to carry out a subjective assessment of characteristics, based on the following correction guidelines:
- Tonality: +2dB for a 'just perceptible' tone, +4dB for 'clearly perceptible', and rising to +6dB for 'highly perceptible' tones.
 - Impulsivity (rapidity of change and overall change in level): +3 dB for 'just perceptible' impulsivity, +6dB for 'clearly perceptible', rising to +9 dB for 'highly perceptible' impulsivity.
 - Intermittency: if the on/off-time of the specific sound is readily distinctive at the noise-sensitive receivers, +3dB.
- 7.2.7. It should be noted that, where one feature is clearly perceived as dominant, it may be appropriate to apply a single correction. Where multiple features are likely to affect perception and response, each should be added arithmetically.
- 7.2.8. An estimate of the magnitude of the impact is evaluated by subtracting the measured background sound level at the assessment location from the rating level

Assessment Level = Rating Level – Background Sound Level

- 7.2.9. Typically, the greater the difference between the background and rating level, the greater the magnitude of impact, although BS 4142 emphasises that this is highly context-specific. As an initial estimate, BS4142 states that:
- A difference (between the background and rating level) of around +10 dB or more is likely to be indicative of significant adverse impact, depending on context
 - A difference (between the background and rating level) of around +5 dB or more is likely to be indicative of adverse impact, depending on context
 - Where the rating level does not exceed the background level, this is an indication that the specific sound will have a low impact, depending on context
- 7.2.10. Where the initial estimate of the impact needs to be modified due to the context, other factors should be considered, including: absolute sound levels, the character and level of the residual sound and the sensitivity of the receiver, which includes the effect of building façade sound insulation.

8. Survey

8.1. Measurement Locations

- 8.1.1. Fixed position monitoring took place at 3 positions to account for the likely dominant noise sources and characterise the ambient and background sound levels at the site boundary. The monitoring equipment was located 1.5m from the ground and at least 3m from the next nearest reflecting surface. The monitoring position is shown in Figure 4.

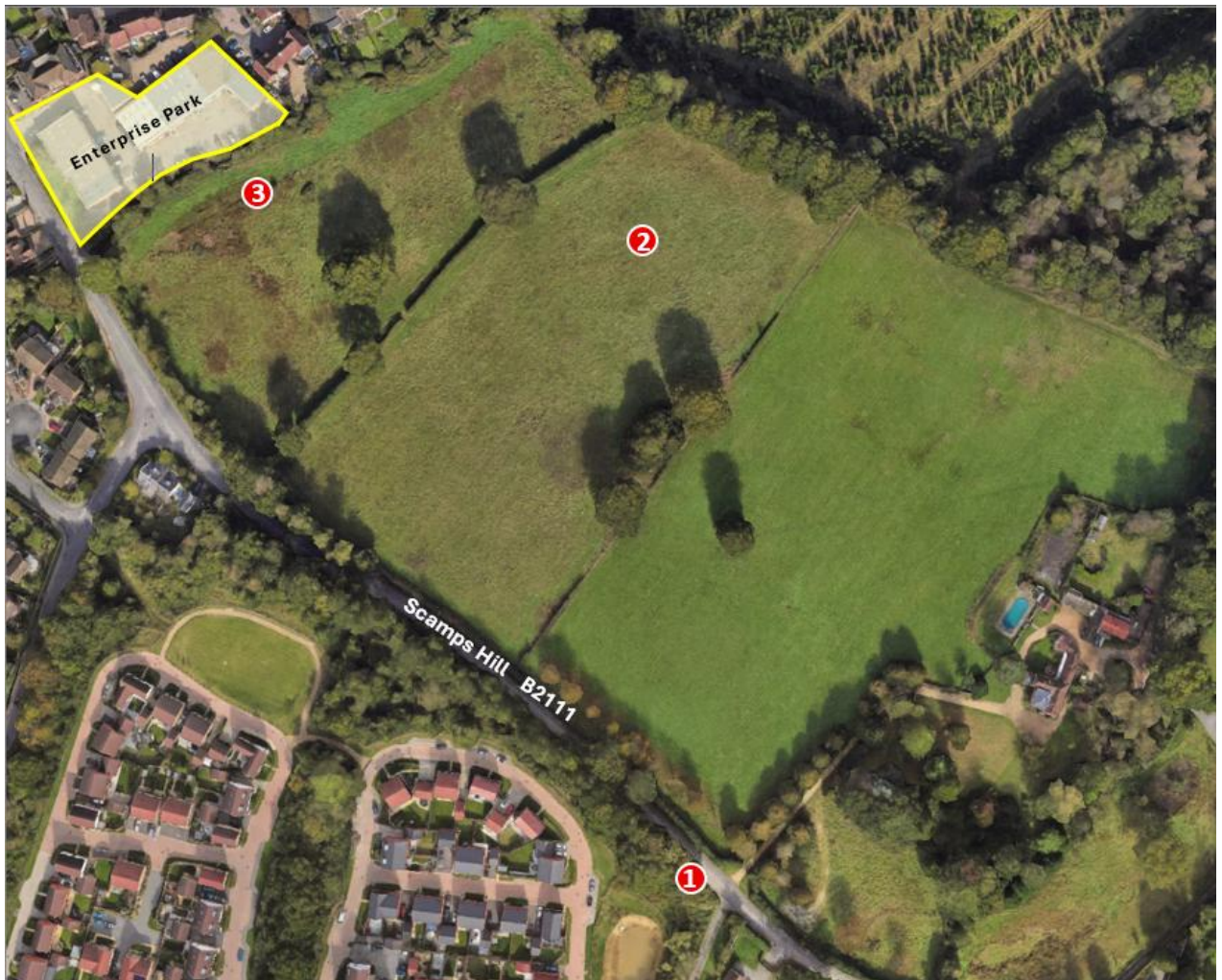


Figure 4 - Noise monitoring locations on site

- 8.1.2. The measurement instrumentation used during the survey is detailed in the appendix. The acoustic equipment was calibrated to comply with Section 4.2 of BS7445-1:2003⁵ before and after the surveys. The calibration details are also detailed in the appendix.

8.2. Noise Climate

- 8.2.1. At the time of the survey visits, the survey technicians noted the noise climate was generally dominated by continuous road traffic noise from Scamps Hill.

⁵ BS7445-1:2003 "Description and measurement of environmental noise – Part 1: Guide to quantities and procedures"

8.3. Meteorology

8.3.1. During the survey the weather information was noted. This is summarised in Table 4.

	7 th January 2026	12 th January 2026
Roads(Wet/Dry)	Wet	Wet
Wind Speed (ms ⁻¹)/Direction	4 / SW	3 / SW

Table 4 - Meteorological data noted during the survey

8.3.2. It was noted that whilst wind speeds were within an acceptable range during the survey visits, the area was adversely affected by storm winds from Storm Goretti from the evening of 9th January and on the 10th January.

8.4. Measurement and Timescale

8.4.1. Unattended monitoring was carried out between 7th January 2026 and 10th January 2026. The measurements that have been made are summarised in Table 5.

Monitoring position	Date	Type	Quantity
1	7 th January – 10 th January 2026	Unattended	L _{Aeq,5min}
2		Unattended	L _{Aeq,15min}
3		Unattended	L _{Aeq,1min}

Table 5 – Measurements made at the site of the Proposed Development

8.4.2. Sound pressure measurements were subsequently averaged into hourly, daytime and night-time periods. The acoustic measurements and their interpretation have been in accordance with BS 7445: Parts 1, and 2⁶. All sound pressure levels are in dB (re 20µPa).

8.5. Results Summary

Average Sound Pressure Levels

8.5.1. Due to storm conditions on 9th and 10th January, these days have been excluded for the purposes of this assessment.

8.5.2. The worst-case fixed position external measurement results are summarised in Table 6.

Measurement location	Daytime dB, L _{Aeq,16hr}	Night-time dB, L _{Aeq,8hr}
1	72.5	63.2
2	48.5	42.3
3	51.0	44.1

Table 6 - Summary of the external sound pressure levels measured

⁶ BS7445-2:1991 "Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use"

Background Sound Levels

8.5.3. Figure 5 shows the results of the data analysis in terms of the frequency of occurrence of each data value during the daytime and the night-time respectively.

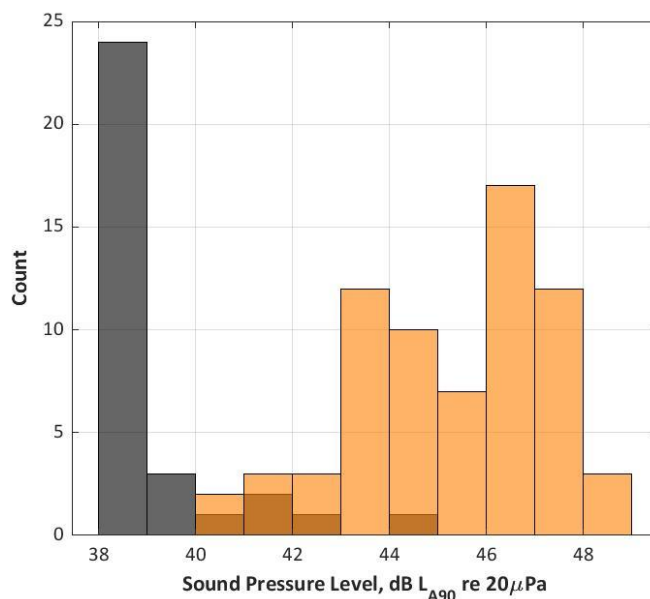


Figure 5 – Distribution of background sound levels on the development site during the daytime (07:00-23:00) and the night-time (23:00-07:00)

8.5.4. As can be seen in Figure 5 the background sound levels ranged between 40dB LA90,15min and 49dB LA90,15min during the daytime period and the background sound levels ranged between 38dB LA90,15min and 45dB LA90,15min during the night-time period.

8.5.5. The typical background sound level has been taken to be 47dB LA90,15min during the daytime and 38dB LA90,15min for the night-time.

8.6. Specific Sound Levels

Survey

8.6.1. An attended survey at the enterprise park was attempted on the 12th January 2026, approximately 12:00 to 14:45. However, conditions on site were unsuitable for undertaking attended measurements due to interference from continuous heavy rain and continuous noise from a Southern Water pump truck on Lewes Road, approximately 25m from the enterprise park.

8.6.2. The survey technician made subjective observations and was able to discuss typical operations with a number of business employees/owners. No identifiable noise events from the units occurred during the attended site visit.

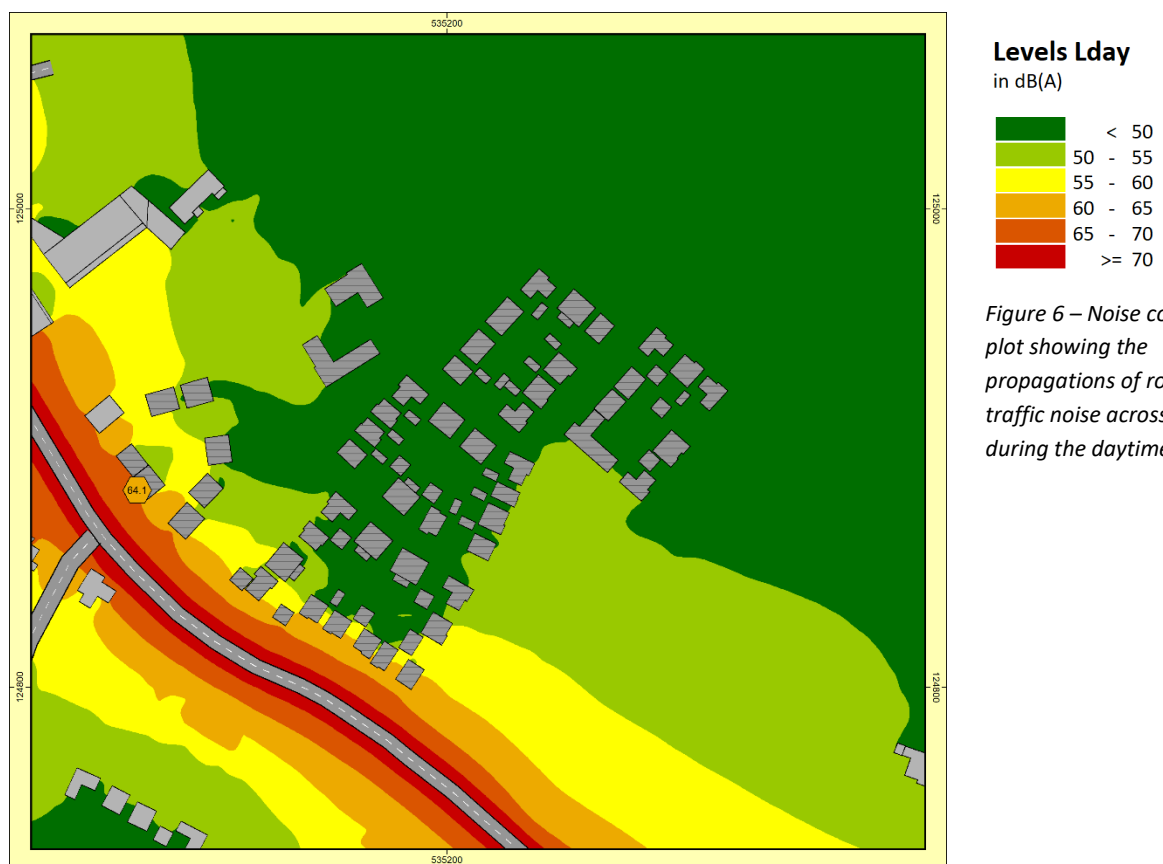
8.6.3. The likely sources of noise were noted (see Table 3) and are instead predicted using a 3D noise model.

9. 3D Noise Model

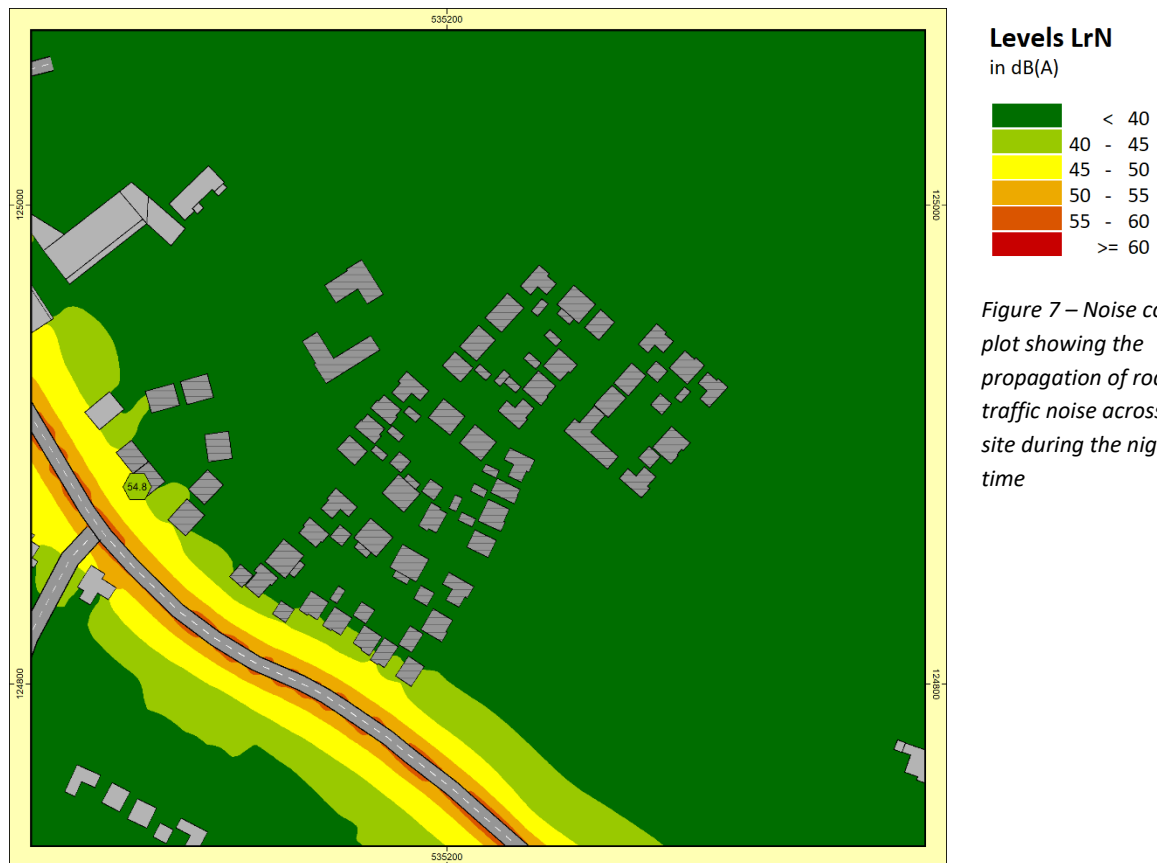
- 9.1.1. A 3D noise model has been constructed using SoundPLAN™ in order to predict the propagation of sound across the site of the Proposed Development. The calculation procedure has been used from ISO9613-2:2024⁷ to predict the propagation of sound from source to receiver, taking into account distance, screening, and atmospheric and ground conditions.
- 9.1.2. Google Maps data has been used to create the existing roads and buildings. Terrain data has been taken from the Department of Environment, Food and Rural Affairs (DEFRA) data services platform.

Road Traffic Noise

- 9.1.3. Lewes Road/Scamps Hill has been modelled as a line source and calibrated to the survey data from position 1.
- 9.1.4. The results of the model have been illustrated in noise contour maps in Figure 6 and Figure 7.



⁷ ISO9613-2:2024 "Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoor"



Commercial/Industrial Sound

- 9.1.5. The commercial/industrial sources included in the model are those which are considered as typical operation on the enterprise park. Sources which have been excluded from assessment have been highlighted in Section 6.3.
- 9.1.6. The AC units have been modelled as point sources. They are all attached to the façade of the building, 2.4m from the ground, and each point source uses the respective sound power level given in Table 3. The SoundPLAN™ frequency emission library entry 'Axial-flow fan' has been applied to the point sources.
- 9.1.7. A line source has been used to represent the pallet truck movement. The frequency emission and sound power data from SoundPLAN™ library entry 'Truck: loading pallet truck on loading ramp' has been applied to the line source ($L_w = 92\text{dB(A)}$). A point source has also been included at the top of the car park, and has the frequency emission and sound power data from SoundPLAN™ library entry 'Truck: loading general cargo' applied ($L_w = 80\text{dB(A)}$).
- 9.1.8. The acoustic character of the sound is not considered in the model, and corrections for acoustic character is discussed in Section 10.2.
- 9.1.9. The assessment location has been taken to be an external location at ground floor level at the site boundary. It is assumed for the purpose of this assessment that all sources are operating simultaneously.
- 9.1.10. The results of the model have been illustrated in noise contour map in Figure 8. The commercial/industrial sources are only operational during daytime hours, therefore only a daytime situation has been modelled.



- 9.1.11. The results of the 3D noise model show the predicted worst case sound pressure level at the façade of the nearest proposed dwelling due to typical commercial/industrial operation on the enterprise park is 37dB(A).

Noise from All Sources

9.1.12. A situation was created using the 3D noise model to include noise from all sources during the daytime. The results of the model are illustrated in Figure 9.

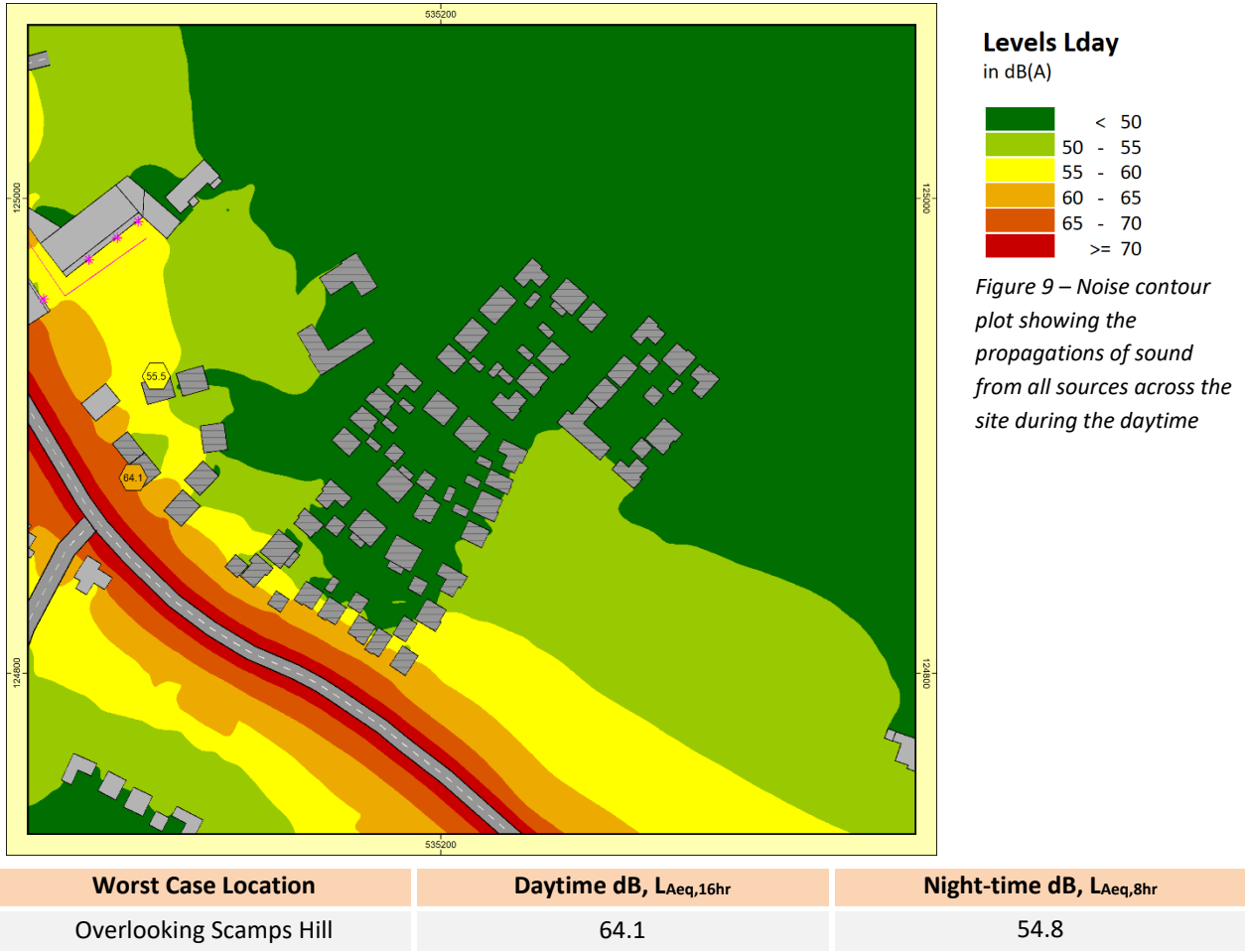


Table 7 – Summary of predicted worst case external façade levels

10. BS4142 Assessment

- 10.1.1. The commercial sound sources were not operating at the time of the attended survey; it was therefore not possible to make an objective judgment of the specific sound based on the character at the boundary with the proposed residential development. Subjective character corrections for these sources is based on experience of similar items of plant. The adjustments to the specific sound levels for acoustic features have been discussed in the following sections.

10.2. Assessment of Typical Operations

Tonality

- 10.2.1. Most items of heating, cooling and ventilation plant often generate broadband noise, which includes a wide range of frequencies rather than a single distinct tone. While some component of the unit could generate tonal components, this is generally due to mechanical imbalances or malfunctions. Such tonal noise is less common and is typically the result of specific issues rather than being a characteristic of the unit under normal operation.
- 10.2.2. No correction for tonality has been applied.

Impulsivity

- 10.2.3. The sudden 'onset' of a sound is defined as an impulse and occurs when the rate of increase in sound exceeds 10dB/s (e.g. metal hammering). Under normal operation conditions, it is expected that most items of heating, cooling and ventilation plant emit steady, continuous noise.
- 10.2.4. No correction for impulsivity has been applied.

Intermittency

- 10.2.5. It is not expected that the air conditioning plant will cycle through distinguishable on/off conditions multiple times within the reference time period⁸ under typical operation. Most items of heating or cooling fixed plant operating based on internal temperature demand and have a ramp up/ramp down process under typical operating conditions, opposed to an instant on/off condition, leading to a slower rate of change in sound as the equipment approaches its intended operating condition. This type of operation draws less attention than a short, sudden change in sound level.
- 10.2.6. No correction for intermittency has been applied.

Other

- 10.2.7. BS4142:2019 introduced penalty corrections for specific sound feature characteristics that are neither tonal nor impulsive, nor intermittent, yet otherwise are readily distinguishable against the residual acoustic environment. In this case, the pallet truck is considered likely to be distinguishable from the ambient noise, despite not being tonal, intermittent or impulsive.
- 10.2.8. A +3dB penalty has been applied.

⁸ Reference time interval T_r . BS4142:2014; typically, 1hour during the daytime 07:00 to 23:00, 15min during the night-time 12:00 to 07:00

10.3. Initial Assessment

- 10.3.1. The BS4142 assessment detailed in Table 8 considers typical noise sources observed at the enterprise park. The specific sound sources are only expected to be operational during daytime hours, therefore only a daytime assessment has been carried out.

	Level, dB
	Daytime (07:00-23:00)
Background sound level, dB $L_{A90,15min}$	47
Specific sound level, dB(A)	37
Acoustic feature corrections	
Tonality	0
Impulsivity	0
Intermittency	0
Other	+3
Rating level	
Specific sound level + corrections	40
Assessment Level	
Rating level – Background sound level	-7
<i>“Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context”</i>	

Table 8 - The assessment procedure from BS4142

10.4. Context

- 10.4.1. In this situation, the new residential receivers are being introduced close to the specific sound sources. The impact of the industrial/commercial sound is likely to be significantly reduced compared to the situation where new sound sources are being introduced close to existing residential receivers.
- 10.4.2. There are existing residents directly to the north and east of the enterprise park. In particular, it is noted that residents on East Wick share a boundary with the enterprise park. The existing residents are closer to the existing sources than the boundary of the proposed development.
- 10.4.3. A worst-case assessment has been made at the façade of the nearest proposed dwelling. Where the receivers are located inside their dwelling, they will be afforded some level of mitigation from existing façade sound insulation, even when windows are open. The amount of sound reduction is outside the scope of this assessment, but in general terms this should be considered as a downward modification of the initial rating level estimate to address the outside to inside level difference. This downward modification can often be significant, upwards of 10dB with partially open windows, or more where windows are closed.
- 10.4.4. Mitigation treatment for the new receivers is within the scope of the developer to allow reasonable internal ambient sound pressure level criteria to be achieved in habitable rooms, i.e. bedrooms and living rooms.
- 10.4.5. The results in Figure 6 (road traffic noise only) highlight that the location of the survey Monitor Position 3 (Figure 4) falls into the 55-60dB range, values which are higher than the sound pressure levels measured at that location. This is an indication that road traffic noise is dominant and highlights contextually there was little noise generating activity on the enterprise park. This is also in line with the survey technician's observations.

- 10.4.6. The sources were not operational at the time of the survey. This assessment is more likely to be representative of warmer months of the year when the air conditioning units are in use. During the colder months the air conditioning is less likely to be in use, therefore the impact can be reduced.

11. Noise Risk Assessment

11.1. Site Risk Assessment

- 11.1.1. The noise risk assessment should not be seen as the basis for the recommendation to the decision maker. The aim is that higher risk sites will be recognised at the earliest possible stage and the increasing importance of good acoustic design can be emphasised.
- 11.1.2. The approach taken by ProPG is also considered suitable where some industrial noise contributes to the acoustic environment, provided it is not dominant. This is the case for the proposed development.
- 11.1.3. The risk assessment for the site is summarised in Table 9.

Risk assessment	Comment
Low	<i>"At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design 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."</i>
Medium	<i>"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 impact will be avoided in the finished development."</i>
High	<i>"High noise levels indicate that there is an increased risk that the 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."</i>

Table 9 – Noise risk assessment for the Proposed Development site

- 11.1.4. The majority of the site presents low to medium risk areas, with small areas at the site boundary with the road presenting high risk.
- 11.1.5. The noise risk assessment indicates that a good acoustic design process, documented in an acoustic design statement, is required to ensure that the impacts of noise will be mitigated and minimised.

12. Mitigation

12.1. Element 1: Good Acoustic Design Process

- 12.1.1. The client has appointed an acoustics consultant at an early stage. It is recommended that the development is arranged so that dwellings are set back from the dominant noise source (road noise) and gardens are located behind their associated dwellings to provide screening. The orientation of buildings should be used to reduce the noise exposure of noise sensitive rooms, particularly for dwellings in orange and red contour bands.
- 12.1.2. This report revision includes a fixed layout, informed by the noise risk assessment previously carried out and appropriate design advice.

12.2. Element 2: Internal Noise Level Guidelines

- 12.2.1. Based on the measured and predicted free-field sound pressure levels at the worst affected facades, the simple calculation method from BS8233:2014 has been used to determine the necessary sound reduction to meet the guideline values. Standard forms of construction are assumed such that the glazing is likely to be the lowest performing facade element.

Required Mitigation

- 12.2.2. The single figure glazing and ventilator performance requirements in order to achieve the internal design criteria are summarised in Table 10. The mitigation is specified to minimise noise from all sources.
- 12.2.3. The glazing performance has been specified in terms of the road traffic corrected weighted sound reduction index, $R_w + C_{tr}$, and the ventilator performance has been specified in terms of the road traffic corrected element normalised level difference $D_{ne,w} + C_{tr}$.
- 12.2.4. Should penetrations be required for ventilation purposes, our recommended ventilator configurations have been calculated to work in conjunction with the glazing specifications. We recommend that a suitably qualified person should check the chosen ventilator specification meets the requirements in Approved Document F⁹. It is critical that any vent or total combination of vents should be specified to achieve the ventilator performance given in Table 10.
- 12.2.5. In this case the specification for the bedrooms is dictated by the daytime criteria.

	Living rooms	Bedrooms
	Specification 1	
Glazing Performance	30dB $R_w + C_{tr}$	30dB $R_w + C_{tr}$
Ventilator Performance	36dB $D_{ne,w} + C_{tr}$	36dB $D_{ne,w} + C_{tr}$
	Specification 2	
Glazing Performance	27dB $R_w + C_{tr}$	27dB $R_w + C_{tr}$
Ventilator Performance	33dB $D_{ne,w} + C_{tr}$	33dB $D_{ne,w} + C_{tr}$

Table 10 – Required facade sound insulation (Glazing/Ventilator)

- 12.2.6. It is generally expected that standard thermal double glazing can achieve 27dB $R_w + C_{tr}$.
- 12.2.7. A glazing markup showing where these specifications apply is provided in the appendix.

⁹ Approved Document F: Means of Ventilation (2021 Edition)

Glazing and Ventilator Specifications

- 12.2.8. The glazing performance has been specified based on the performance data provided by Saint-Gobain. These are suggested configurations and any other glazing and vent combination can be used provided it achieves the minimum performance levels given in Table 10. The recommended glazing specification is given in Table 11.

Living rooms and Bedrooms
Specification 1
4(6)6
Specification 2
4(12)4

Table 11 - Our recommended glazing configurations

- 12.2.9. Given the assumptions in this method the information in this section should be treated as general guidance only. The acoustic performance of third party products cannot be guaranteed by noise.co.uk.
- 12.2.10. It should be noted that, in order to meet the internal ambient noise windows may need to remain closed. This does not mean windows should be fixed shut, and they should be openable at the discretion of the occupant.

12.3. Element 3: External Amenity Area Noise Assessment

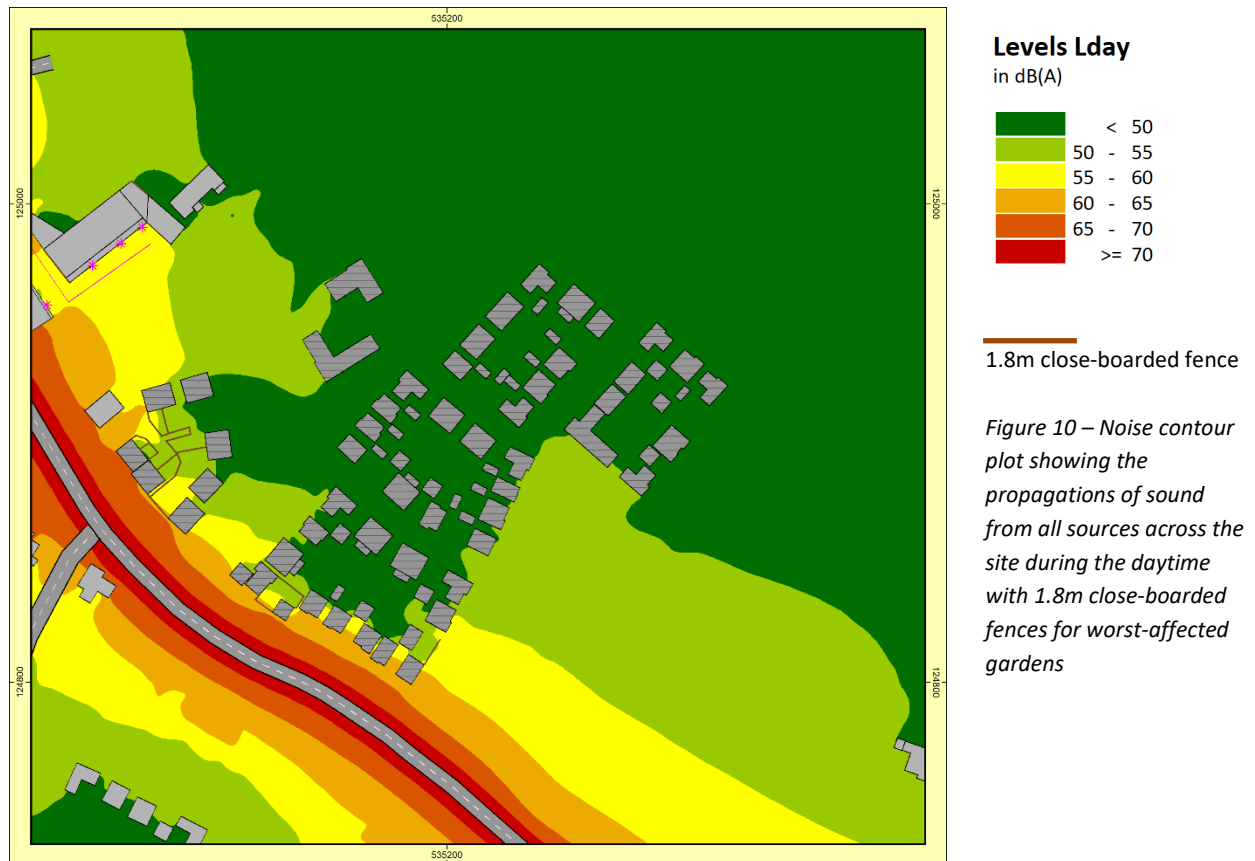
- 12.3.1. BS8223 states that it is desirable that the external noise level for amenity spaces, such as gardens and patios, does not exceed 50dB $L_{Aeq,T}$ with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments.
- 12.3.2. However, the standard acknowledges that there may be areas where development is desirable where these guideline values are not achievable. This will be true for higher noise areas such as city centres or urban areas adjoining the strategic transport network. In these situations, a compromise between elevated noise levels and other factors might be warranted, such as:
- the convenience of living in these locations; and/or,
 - making efficient use of land resources to ensure development needs can be met.
- 12.3.3. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.
- 12.3.4. Figure 9 (Section 9) illustrates that the majority of garden areas are predicted to achieve guideline values without further mitigation (gardens in green contour bands).

An additional situation has been created using the 3D noise model to include 1.8m close-boarded fences to the worst-affected garden areas overlooking the road which are predicted to exceed guideline values. The results are illustrated in

- 12.3.5. Figure 10.
- 12.3.6. The most significant property of the barrier that affects its sound insulation is the mass per unit area. The Department for Transport provides specific guidance on the specification of the minimum mass per unit area for such barriers.¹⁰

¹⁰ Department for Transport (1976) Noise Barriers – Standards and materials, Technical Memorandum H14/76

- 12.3.7. The fences that border residential private gardens can be basic, wooden, standard close boarded fences with no gaps between the panels and the ground or panels and the posts and have a minimum wooden panel mass of 10Kg/m^2 to optimise their barrier performance; for example the 10Kg/m^2 mass can simply be achieved by a fence constructed of 19mm thick treated pine¹¹.



12.4. Element 4: Assessment of Other Relevant Issues

- 12.4.1. To the best of our knowledge, at this current time, the design advice in this acoustic design statement does not conflict with any other local guidance and is not expected to affect amenity for future residents.

¹¹ Based on the density of treated pine at 550Kg/m^3

13. Conclusions

- 13.1.1. An environmental noise assessment has been carried out at the site of a proposed residential development at Scamps Hill, Lindfield, West Sussex to determine typical ambient sound and background sound levels.
- 13.1.2. Measured and predicted sound pressure levels have been used to calculate the required facade sound insulation to meet the guideline internal levels from BS8233:2014.
- 13.1.3. Table 10 Section 12 gives the required facade sound reduction by any glazing and ventilator combination to be compliant with the guideline values.
- 13.1.4. The commercial/industrial sources which are considered typical of operations on Lindfield Enterprise Park have been assessed. The numerical BS4142 assessment shows that the specific sound will have a low impact on proposed new residential receivers and, generally, the lower the rating level is relative to the background sound level, the less likely it is that the specific sound source will have an adverse impact.
- 13.1.5. In this context the new residential receivers are being introduced close to existing commercial/industrial sources. This is likely to result in reduced impact when compared to the situation where new sources are being introduced close to existing residential receivers. In this case there are also existing residents already in close proximity to the enterprise park.
- 13.1.6. We strongly recommend that this report be passed to the local planning authority for approval prior to any works being carried out.

14. Appendix

APPENDIX A: Summary Information

Required ISO Test Report Information (cross referenced where required)			
		Measurements carried out to:	Analysed to:
A	Standards	BS 7445-1: 2003 BS 7445-2: 1991 BS4142:2014	BS 8233:2014 BS4142:2014
B	Organisation performed the measurements	noise.co.uk Ltd, The Haybarn, Newnham Grounds, Kings Newnham Lane, Bretford, Coventry, CV23 0JU.	
C	Name of Client	Crest Nicholson South	
D	Full site address	Scamps Hill, Lindfield, West Sussex	
E	Date of surveys	Survey Date: 7 th January 2026 – 12 th January 2026	
F	Description & identification of Proposed Development	It is proposed to develop the site for residential use.	
G	Brief Description of details of Procedure & equipment	See Section 5 of this report.	

APPENDIX B: Technical Appendix

14.1.1. Measurements were made using the following equipment:

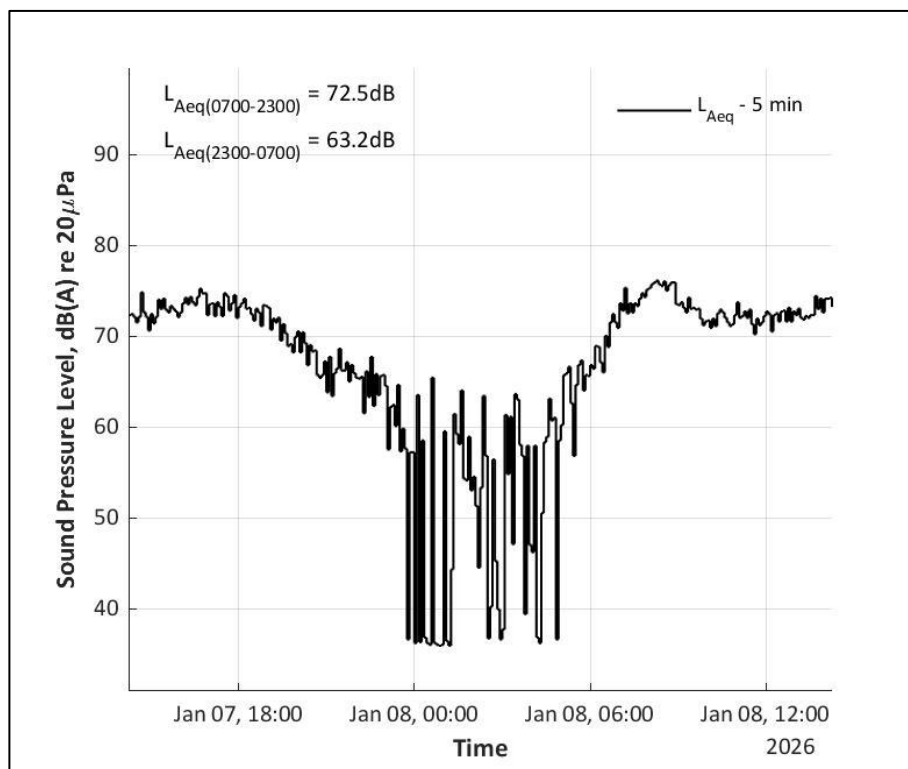
Monitoring Position	Sound Level Meter (Serial Number)	Calibrator (Serial Number)
1	SoftdB Piccolo 2 (P0222012806)	BSWA CA114 (590010)
2	SoftdB Piccolo 2 (P0223031610)	BSWA CA114 (590010)
3	SoftdB Piccolo 2 (P0221070104)	BSWA CA114 (590010)

14.1.2. The equipment has traceable calibration. The sound level meter was calibrated immediately prior to and immediately after the measurements were carried out.

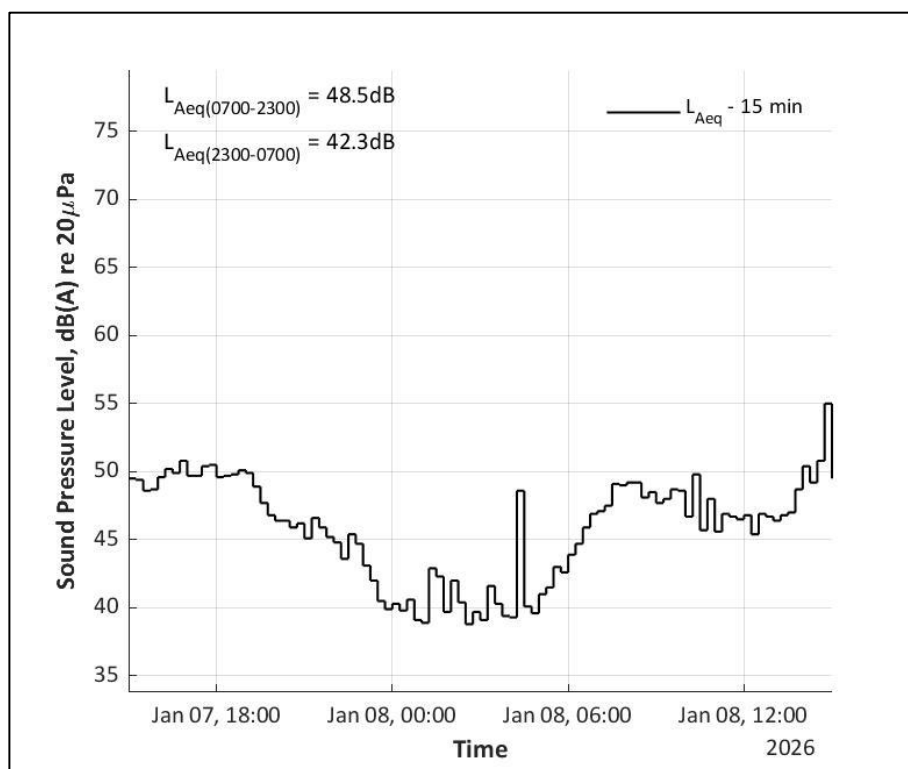
Sound Level Meter	Before	After
SoftdB Piccolo 2 (P0222012806)	94.0 dB	94.1 dB
SoftdB Piccolo 2 (P0223031610)	94.0 dB	94.1 dB
SoftdB Piccolo 2 (P0221070104)	94.0 dB	94.0 dB

14.1.3. There was no adverse deviation.

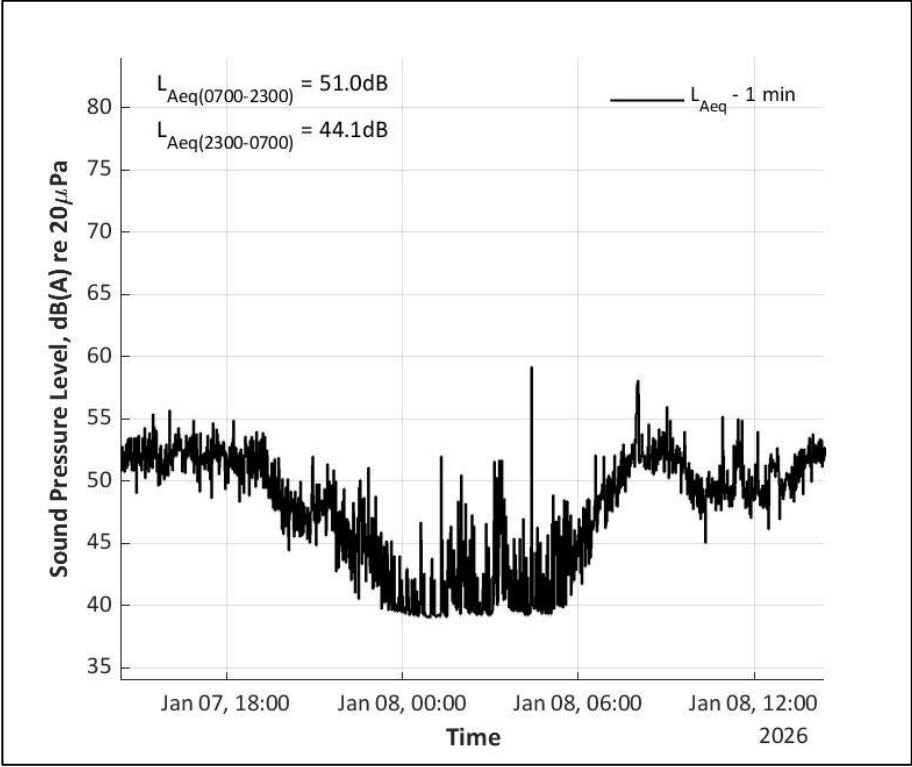
APPENDIX C: Raw Data



Position 1



Position 2



Position 3

APPENDIX D: Glazing Markup Plan



	Living rooms	Bedrooms
	Specification 1	
Glazing Performance	30dB $R_w + C_{tr}$	30dB $R_w + C_{tr}$
Ventilator Performance	36dB $D_{ne,w} + C_{tr}$	36dB $D_{ne,w} + C_{tr}$
	Specification 2	
Glazing Performance	27dB $R_w + C_{tr}$	27dB $R_w + C_{tr}$
Ventilator Performance	33dB $D_{ne,w} + C_{tr}$	33dB $D_{ne,w} + C_{tr}$

APPENDIX E : Manufacturer's Datasheets



AIR CONDITIONING

Product Data Sheet

AOYG09KPCA

Please visit our webstore for full product and technical documentation 

Nominal Cooling Capacity	(kW)	2.5
Nominal Heating Capacity	(kW)	2.8
Height	(mm)	541
Width	(mm)	663
Depth	(mm)	290
Weight	(kg)	23
Airflow Rate - Cooling - High	(m ³ /h)	1650
Airflow Rate - Heating - High	(m ³ /h)	1450
Sound Pressure Level - Cooling - High	(dB(A))	47
Sound Pressure Level - Heating - High	(dB(A))	47
Sound Power Level - Cooling - High	(dB(A))	59
Sound Power Level - Heating - High	(dB(A))	59
Refrigerant Type (Global Warming Potential)		R32 (675)
Liquid Pipe Size		1/4"
Gas Pipe Size		3/8"
Min - Max Pipe Length	(m)	3 - 20
Max Height Difference	(m)	15
Refrigerant Charge (kg)	(kg)	0.55
Refrigerant CO2eq-T		0.371
Precharged For	(m)	15
Additional Charge (g/m)	(g/m)	20
Unit Power Supply		1Ph-230V-50Hz
Suggested Fuse Size	(A)	10
Cooling Mode Minimum Ambient	(°C)	-10
Cooling Mode Maximum Ambient	(°C)	46
Heating Mode Minimum Ambient	(°C)	-15
Heating Mode Maximum Ambient	(°C)	24



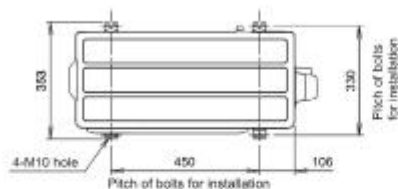
Document Downloads

[Accessories](#)
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Related Items

[AOYG09KPCA](#)

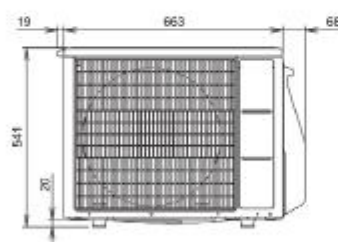
2.5kW Wall Mounted Indoor Unit - R32



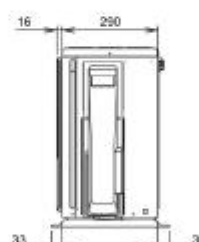
Top view



Side view



Front view



Side view

Units: mm

*Specifications and design are subject to change without notice for further improvement.
 *Actual products' colors may be different from the colors shown in this printed material.

FUJITSU GENERAL AIR CONDITIONING (UK) LIMITED

Unit 150, Centennial Park, Centennial Avenue, Elstree, Borehamwood, Herts, WD6 3SG

www.fujitsu-general.com/uk
sales@fgac.fujitsu-general.com

Tel: +44 (0) 208 731 3450 Fax: +44 (0) 208 731 3451

E-Series

Technical Data



MODEL						
Indoor	RAS-E25YHAB	RAS-E35YHAB	RAS-E50YHAB	RAS-E60YHAB	RAS-E70YHAB	RAS-E80YHAB
Outdoor	RAC-E25YHAB	RAC-E35YHAB	RAC-E50YHAB	RAC-E60YHAB	RAC-E70YHAB	RAC-E80YHAB
Capacity kW						
Nominal Cooling	2.5	3.5	5.0	6.0	7.0	8.0
Nominal Heating	3.2	4.0	5.3	7.0	8.0	9.0
Capacity (Range) kW						
Cooling	1.0 - 3.2	1.0 - 4.0	1.0 - 5.5	1.2 - 6.5	1.5 - 8.0	1.5 - 8.5
Heating	1.0 - 4.5	1.0 - 5.0	1.2 - 6.5	1.2 - 8.0	1.5 - 8.5	1.5 - 9.5
Air Flow l/sec						
High Cooling	142	189	210	250	320	340
High Heating	158	217	238	250	330	350
Energy Efficiency						
EER	4.55	8.85	8.62	3.33	8.41	8.27
COP	4.71	4.90	8.90	3.88	4.04	3.80
Sound Levels (dB(A))						
Indoor Unit (Sound Pressure)						
Cooling - Hi / Med / Lo / Sleep	40 / 33 / 24 / 22	43 / 36 / 26 / 25	47 / 39 / 33 / 26	49 / 42 / 33 / 30	49 / 44 / 39 / 33	50 / 44 / 39 / 33
Heating - Hi / Med / Lo / Sleep	41 / 34 / 23 / 20	44 / 36 / 27 / 26	47 / 39 / 33 / 26	49 / 42 / 34 / 33	49 / 44 / 39 / 33	49 / 44 / 39 / 33
Outdoor Unit						
Cooling / Heating (Sound Pressure)	46 / 47	47 / 48	50 / 52	50 / 53	51 / 53	52 / 54
Sound Power	60	61	63	63	64	65
Dimensions (mm)						
Indoor (W x H x D)	780 x 280 x 230	780 x 280 x 230	780 x 280 x 230	900 x 300 x 230	1100 x 300 x 260	1100 x 300 x 260
Outdoor (W x H x D)	750 x 548 x 288	750 x 548 x 288	792 x 600 x 299	850 x 750 x 298	850 x 800 x 298	850 x 800 x 298
Weights (kg)						
Indoor / Outdoor	8.5 / 34	8.5 / 34	8.5 / 38.5	11.5 / 50	15 / 52	15 / 52
Operating Range						
Outdoor Op. Temp. (Cooling)	-10°C to 46°C	-10°C to 46°C	-10°C to 46°C	-10°C to 46°C	-10°C to 46°C	-10°C to 46°C
Outdoor Op. Temp. (Heating)	-15°C to 24°C	-15°C to 24°C	-15°C to 24°C	-15°C to 24°C	-15°C to 24°C	-15°C to 24°C
Refrigerant Type	R32					
Pipe Sizes (mm)	Ø6.35 / Ø9.52	Ø6.35 / Ø9.52	Ø6.35 / Ø12.7	Ø6.35 / Ø12.7	Ø6.35 / Ø15.88	Ø6.35 / Ø15.88
Refrigerant charge length (m)	20	20	30	30	30	30
Min / Max Pipe Length / Lift (m)	3 / 20 / 10	3 / 20 / 10	3 / 30 / 10	3 / 30 / 20	3 / 30 / 20	3 / 30 / 20
Condensate Drain (mm (OD))	16					
Power						
Power Supply	230 - 240 Volt / 50 Hz / 1 Phase					
Rated Power Input - Cooling (kW)	0.55	0.91	1.38	1.80	2.05	2.45
Power Input Range - Cooling (kW)	0.25 ~ 1.29	0.25 ~ 1.46	0.5 ~ 2.1	0.3 ~ 2.6	0.3 ~ 2.7	0.3 ~ 2.7
Rated Power Input - Heating (kW)	0.68	0.93	1.36	1.83	1.98	2.37
Power Input Range - Heating (kW)	0.25 ~ 1.25	0.25 ~ 1.7	0.5 ~ 2.75	0.3 ~ 2.65	0.5 ~ 2.8	0.5 ~ 2.8
Running Current (C / H) (Amps)	1.04-5.86/1.04-5.68	1.04-6.63/1.04-7.73	2.10-11.19/2.27-9.67	2.31-8.55/1.67-9.66	2.50-9.79/2.19-10.72	2.50-9.79/2.19-10.72
Max Current (Amps)	7.0	8.1	10.5	10.5	12	12
Power supply To Interconnecting Wire	Outdoor Unit 3Core + E					

Rated capacity measured in accordance with AS/NZS 3823 conditions: Cooling: Indoor 27°C db / 19°C wb; Ambient 35°C db
 Heating: Indoor 20°C db; Ambient 7°C db / 6°C wb
 Mains power source - AC 230V and 50Hz
 Refer to temperature Warranty for full conditions.

Outdoor Unit

		Model name	Capacity class	Max. connected indoor unit capacity	Max. piping length	Max. level difference
Connectable to up to 3 indoor units	Cooling only	3MKM52RVMA	5.2 kW	9.0 kW	50 m	15 m
	Reverse cycle	3MXM52RVMA	5.2 kW	9.0 kW	50 m	15 m
Connectable to up to 4 indoor units	Cooling only	4MKM68RVMA	6.8 kW	11.0 kW	60 m	15 m
	Reverse cycle	4MXM68RVMA	6.8 kW	11.0 kW	60 m	15 m
	Cooling only	4MKM80RVMA	8.0 kW	14.5 kW	70 m	15 m
	Reverse cycle	4MXM80RVMA	8.0 kW	14.5 kW	70 m	15 m
Connectable to up to 5 indoor units	Cooling only	5MKM100RVMA	10.0 kW	15.6 kW	80 m	15 m
	Reverse cycle	5MXM100RVMA	10.0 kW	15.6 kW	80 m	15 m

Specifications

Outdoor Unit

Model name			Cooling only			
			3MKM52RVMA	4MKM68RVMA	4MKM80RVMA	5MKM100RVMA
Power supply			1 phase, 220-240 V, 50 Hz / 1 phase, 220-230 V, 60 Hz			
Max. connected indoor units capacity			9.0	11.0	14.5	15.6
Casing colour			Ivory white			
Compressor type			Hermetically sealed swing type			
Refrigerant type			R-32			
Outdoor sound pressure level**1	Rated/Quiet	dB(A)	45/43	47/44	48/45	48/46
Outdoor sound power level	H	dB(A)	57	59	60	
Dimensions	H x W x D	mm	695 x 930 x 350			990 x 940 x 320
Machine weight		kg	49	52	79	
Outdoor operating range			10 to 46			
Max. piping length			50 (total)	60 (total)	70 (total)	80 (total)
Additional charge			30 (for one room)			
Max. level difference			Chargeless			
			15 (between indoor and outdoor units) / 7.5 (between indoor units)			

Model name			Reverse cycle			
			3MXM52RVMA	4MXM68RVMA	4MXM80RVMA	5MXM100RVMA
Power supply			1 phase, 220-240 V, 50 Hz / 1 phase, 220-230 V, 60 Hz			
Max. connected indoor units capacity			9.0	11.0	14.5	15.6
Casing colour			Ivory white			
Compressor type			Hermetically sealed swing type			
Refrigerant type			R-32			
Outdoor sound pressure level**1	Rated/ Quiet	Cooling Heating dB(A)	45/43	47/44	48/45	48/46
			47/45	48/46	49/47	
Outdoor sound power level	H	Cooling Heating dB(A)	57	59	60	
			59	60	61	
Dimensions	H x W x D	mm	695 x 930 x 350			990 x 940 x 320
Machine weight		kg	53	56	61	83
Outdoor operating range	Cooling	°CDB	-10 to 46			
	Heating	°CWB	-15 to 18			
Max. piping length			50 (total)	60 (total)	70 (total)	80 (total)
Additional charge			30 (for one room)			
			20 (for over 40 m)			
Max. level difference			15 (between indoor and outdoor units) / 7.5 (between indoor units)			

Note: *1. The value to the left of the slash is for rated operation. The value to the right is when using Outdoor Unit Quiet Operation.



SPECIFICATIONS

Cooling (): Outdoor Unit EER : Cooling Efficiency
Heating COP: Heating Efficiency

Model		240V / 1 Phase / 50Hz	CS-Z9RKR (CU-Z9RKR)	CS-Z12RKR (CU-Z12RKR)	CS-Z15RKR (CU-Z15RKR)	CS-Z18RKR (CU-Z18RKR)	CS-Z21RKR (CU-Z21RKR)	CS-Z24RKR (CU-Z24RKR)	CS-Z28RKR (CU-Z28RKR)
Cooling/Heating** Capacity	kW		2.50 (0.90~3.00) 3.20 (0.80~4.55)	3.50 (0.90~4.00) 3.70 (0.80~5.10)	4.20 (0.90~5.00) 5.50 (0.90~5.60)	5.00 (0.90~6.00) 6.00 (0.90~6.40)	6.00 (1.70~7.10) 7.20 (1.70~7.70)	7.00 (1.70~8.10) 8.00 (1.70~8.56)	8.00 (2.30~8.60) 9.00 (2.20~11.00)
		Btu/h	8,530 (3,070~10,200) 10,900 (2,730~15,500)	11,900 (3,070~13,600) 12,600 (2,730~17,400)	14,300 (3,070~20,500) 18,800 (3,070~19,100)	17,100 (3,070~20,500) 20,500 (3,070~21,800)	20,500 (5,800~24,200) 24,600 (5,800~26,300)	23,900 (5,800~27,600) 27,300 (5,800~29,200)	27,300 (7,840~29,300) 30,700 (7,500~37,500)
Air Flow	L/s		203 215	220 227	248 245	295 302	285 265	312 317	328 327
Dehumid	L/h		1.5	2.0	2.4	2.8	3.3	4.0	4.7
Running Current	A		2.3 2.8	3.5 3.3	4.6 6.3	5.0 6.1	7.3 8.1	9.1 9.4	10.6 10.6
Power Input	kW / kW		0.50 (0.21~0.75) 0.62 (0.175~1.14)	0.80 (0.21~1.06) 0.76 (0.175~1.24)	1.07 (0.215~1.60) 1.47 (0.245~1.53)	1.16 (0.23~2.05) 1.39 (0.26~1.71)	1.58 (0.44~2.20) 1.78 (0.40~2.17)	1.97 (0.43~2.48) 2.11 (0.38~2.37)	2.32 (0.46~2.70) 2.41 (0.50~2.99)
AEER / EER ACOP / COP			4.87 / 5.00 5.05 / 5.16	4.30 / 4.38 4.78 / 4.87	3.88 / 3.93 3.71 / 3.74	4.26 / 4.31 4.27 / 4.32	3.77 / 3.80 4.01 / 4.04	3.53 / 3.55 3.77 / 3.79	3.45 3.73
Star Rating			5.0 5.5	4.0 5.0	3.0 2.5	4.0 4.0	3.0 3.5	2.5 3.0	2.0 2.5
Noise	Sound Pressure Level*1 dB (A)	Inside (Hi/Lo/S-Lo)	42/25/19 41/27/21	43/26/19 46/29/26	47/30/23 45/31/27	47/34/31 44/33/29	47/36/33 47/35/32	49/37/34 49/37/34	51/38/35 50/38/35
		Outside (Hi/S-Lo)	47/— 47/—	49/— 50/—	47/42 47/42	48/43 48/43	53/48 53/48	54/49 54/49	55/50 55/50
	Sound Power Level dB (A)	Outside (Hi/S-Lo)	62/— 62/—	64/— 65/—	62/57 62/57	62/57 62/57	67/62 67/62	68/63 68/63	71/66 71/66
			62/— 62/—	64/— 65/—	62/57 62/57	62/57 62/57	67/62 67/62	68/63 68/63	71/66 71/66
Net Weight (Outdoor)	kg		9 (33)	9 (33)	9 (46)	12 (49)	12 (53)	12 (53)	12 (70)
Dimensions	Indoor mm (H x W x D)		296 x 870 x 236 (542 x 780 x 289)	296 x 870 x 236 (542 x 780 x 289)	296 x 870 x 236 (695 x 875 x 320)	296 x 1070 x 241 (695 x 875 x 320)	296 x 1070 x 241 (695 x 875 x 320)	296 x 1070 x 241 (695 x 875 x 320)	296 x 1070 x 241 (999 x 940 x 340)
Refrigerant Pipe Diameter	Liquid Side mm/(inch)		6.35 (1/4)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)
	Gas Side mm/(inch)		9.52 (3/8)	9.52 (3/8)	12.7 (1/2)	12.7 (1/2)	12.7 (1/2)	15.88 (5/8)	15.88 (5/8)
Pipe Extension Length	Min~Max (m)		3~20	3~20	3~30	3~30	3~30	3~30	3~30
Pipe Length for Additional Gas	m		7.5	7.5	7.5	10	10	10	10
Additional Gas Amount	g/m		20	20	20	20	20	25	25
Power Supply			Outdoor	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor
Operating Range (Outdoor)	Cooling Degree (°C)		5~46	5~46	5~46	5~46	5~46	5~46	5~46
	Heating Degree (°C)		-15~24	-15~24	-15~24	-15~24	-15~24	-15~24	-15~24
Refrigerant Type			R32	R32	R32	R32	R32	R32	R32