CD1.13

Noise Screening Report:
Land off Scamps Hill, Walstead Grange, Lindfield

January 2024






Experts in noise and vibration assessment and management

Document Control

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1 Introduction

1.1 Noise Consultants Ltd (NCL) has been commissioned by Gladman Developments Ltd to provide a high-level noise screening assessment in connection with an outline proposed residential development (the 'Development') on land off Scamps Hill, Walstead Grange, Lindfield (the 'Site') that falls within the administrative boundary of Mid Sussex District Council (MSDC).

1.2 It has been agreed with MSDC that a full noise impact assessment is not required at this stage, and that the submission of a noise screening report in support of the proposed Development would be sufficient. Therefore, this noise screening report includes a desk-based review and assessment of existing environmental noise sources that have the potential to affect the amenity of the future residents of the proposed development, and an Acoustic Design Statement to ensure that any future Development layout fully considers noise impacts.

Existing Site and Environs

1.3 The Site is located in a semi-rural setting on the outskirts of Lindfield and is currently open fields. The Site location and application boundary are shown in **Figure 1.1**.

1.4 The Site is bounded to the south-west by Scamps Hill (B2111) which has a transitionary speed limit of 40mph along the majority of this boundary, reducing to 30mph at the junction with Gravelye Lane and towards Lindfield town centre to the north-west. The Site is bounded to the south-east by the existing Walstead Grange. The Site is bounded to the north-east and north-west by agricultural land. Further to the north-west is Scrase Stream.

Approximately 35m away from the Site, past Scrase Stream, are several commercial and industrial premises located within Lindfield Enterprise Park. These include, Aqua Artes Swim School, SFX Supplies & Hire, Force FX, Infigo, and Kaycee Veterinary Products. Aqua Artes Swim School closes at 20:00hrs on weekdays, at 16:30hrs on Sunday and is closed on Saturdays. The remaining premises trade in the daytime only, and close at 17:00hrs on weekdays and are not operational on weekends.

1.5 On land to the opposite side of Scamps Hill, is an approved and now fully built-out residential development (the 'Taylor Wimpey development', **Figure 1.1**). The planning application for this development (application reference DM/16/5648, approved with conditions on 7th March 2017) was supported by a noise and air quality assessment report[1] which demonstrated that satisfactory residential amenity could be secured for future occupants of the development, providing a good acoustic design process is followed. Condition 14, relating to noise was later discharged on 12 September 2019, although this report does not appear on MSDC's online planning register and is not, therefore available for review or reference.

[1] DM/16/5648 - AcousticAir Ltd. Report Ref: AA1016NAQ/R1, Dated February 2016

Proposed Development

1.6 The outline application (with all matters reserved except for access) seeks consent for up to 90 dwellings, public open space, tree/orchard planting and a Locally Equipped Area for Play (LEAP). Vehicular access to the Development will be from Scamps Hill.

Assessment Scope

1.7 This desktop noise screening assessment considers the potential noise impacts upon the Development from existing noise sources, and has been prepared with reference to the following policy, guidance and standards, as summarised in **Appendix A1** and **A2**;

- Noise Policy Statement for England (NPSE, 2010)[2]
- National Planning Policy Framework (NPPF, 2023)[3]
- ProPG Planning & Noise: New Residential Development (ProPG)[4]
- WHO Guidelines for Community Noise, 1999 (WHO GCN)[5]
- BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings (BS 8233:2014)[6]
- Acoustics, Ventilation and Overheating: Residential Design Guide (AVO Guide, 2020)[7]

[2] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019) *Planning Practice Guidance – Noise*
[3] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019) *National Planning Policy Framework*
[4] Association of Noise Consultants (ANC), Institute of Acoustics (IOA) and Chartered Institute of Environmental health (CIEH) (2017) *ProPG Planning & Noise: New Residential* Development
[5] World Health Organisation (WHO, 1999) Guidelines for Community Noise
[6] British Standards Institute (2014) BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings
[7] Association of Noise Consultants (ANC, 2020, v1.1) Acoustics, Ventilation and Overheating: Residential Design Guide

Figure 1.1: Application Boundary and Other Relevant Applications

2 Development Impact Appraisal

Development Generated Road Traffic Noise

2.1 The Development will result in additional road traffic on the local road network. However, the net increase in traffic flows on existing roads and the associated road traffic noise emissions will be very low, and any increase is unlikely to be perceptible at existing noise-sensitive receptors (NSRs). Furthermore, an assessment of development-generated road traffic was neither provided nor conditioned for the nearby residential planning application opposite Scamps Hill.

2.2 Therefore, noise from development-generated road traffic on the local road network will not result in unacceptable noise impacts at existing NSRs and should not be a determining factor in the outline application.

Existing Noise Sources Affecting the Development Site

Non-transport Sources

2.3 Noise from premises within Lindfield Enterprise Park (LEP) to the north is unlikely to be significant outside proposed dwellings due to the nature of the various uses, their daytime-only operations and the 35m separation distance between the closest existing unit(s) and the Site boundary. There are no other potentially significant sources of commercial or industrial noise in the vicinity of the Site.

2.4 Where further considering that existing dwellings are located adjacent to the northern and eastern boundaries of the LEP, it must be accepted that, in noise terms, the principal of noise-sensitive development on land exposed to potential noise from the LEP has already been established.

2.5 Consequently, it is expected the noise from LEP will not be at a level that would result in significant adverse noise impacts on the proposed Development.

2.6 Therefore, noise from the LEP is not considered a constraint to the proposed Development and should not be a determining factor in the outline application.

Road Traffic – Scamps Hill

2.7 The outline planning application for the Taylor Wimpey development to the south was supported by a noise assessment that included the measurement, calculation, and assessment of noise impacts from road traffic on Scamps Hill.

2.8 The reported daytime and night-time road traffic noise exposure levels were 71dB $L_{Aeq,16hr}$ and 64dB $L_{Aeq,8hr}$ at a distance of 6m from the kerb of Scamps Hill (Position 1). Road traffic noise levels towards the centre of the site (around 100m back from Scamps Hill) were around 51 dB $L_{Aeq,T}$.

2.9 The daytime road traffic noise level measured at Position 1 and used in the assessment was based on a 3hr measurement between 07:00-10:00, and therefore not in accordance with the

shortened measurement procedure of CRTN. Consequently, road traffic noise levels over the full daytime period (07:00-23:0hrs) are expected to be lower. The assessment found that with dwellings set back 30m from Scamps Hill;

- Internal noise levels in habitable rooms within these and other dwellings set further back into the site would exceed BS 8233 criteria with windows open, however this is not unusual for residential areas in an urban environment where road traffic noise is prevalent.
- Acceptable internal noise amenity can be achieved with windows closed, utilising standard thermal double glazing and in/over-frame trickle ventilation.
- Acceptable external amenity in rear gardens can be achieved with appropriate screening of road traffic noise.

2.10 Consequently, it must be accepted that, in noise terms;

- Provided suitable noise mitigation measures are included in the design of the Development, noise impacts associated with road traffic on Scamps Hill are capable of being reduced to an acceptable level; and,
- The principal of noise-sensitive development on land exposed to road traffic noise from Scamps Hill has already been established.

Assessment Levels

2.11 Since Scamps Hill is not a major road and was not required to be included in the Round 3 strategic noise mapping exercise undertaken by the Department for Environment, Food & Rural Affairs (DEFRA) implemented under the Environmental Noise Directive (END) (Directive 2002/49/EC). Consequently, an initial ProPG Stage 1 site noise risk assessment cannot utilise the DEFRA strategic noise mapping data.

2.12 Therefore, the results of the AcousticAir report[1] (at Position 1) submitted in connection with the outline application for the Taylor Wimpey development to the south have been used to provide initial assessment levels for this screening assessment for areas of the Site most exposed to road traffic noise from Scamps Hill.

2.13 Assuming that dwelling will front Scamps Road and are set back no less than 20m from the kerb (to allow vehicular access to the dwellings), and self-screening by the dwellings and any garden fencing will reduce noise levels in rear gardens by 10dB, the following noise levels have been adopted. Road traffic noise levels further away from the Site boundary with Scamps Hill will be lower.

Table 2.1: Adopted Assessment Levels

Location	Daytime (07:00-23:00)	Night-time (23:00-07:00)
Dwelling Frontage Facing Scamps Hill, 20m back from kerb	66 dB $L_{Aeq, 8hr}$	59 dB $L_{Aeq, 8hr}$ 63 dB L_{Amax}
Rear Garden, 28m back from kerb of Scamps Hill	54 dB $L_{Aeq, 8hr}$	-

2.14 It is noted, however, that the ambient (L_{Aeq}) noise levels reported by AcousticAir are likely to be lower in practice outside proposed dwellings, particularly the daytime, due to the methodology by which the road traffic noise exposure levels have been determined.

ProPG Assessment

2.15 ProPG[8] supports wider Government planning, noise policy and guidance, including the NPPF, NPSE and PPG-Noise. It recommends that "*an initial site noise risk assessment should be undertaken for outline applications and that LPAs should not grant outline planning permission for new residential developments at sites considered to pose a medium or high noise risk without first being satisfied that good acoustic design will be able to overcome the acoustic challenges.*"

2.16 This screening assessment is based on the assessment levels summarised in **Table 2.1**. As shown in **Appendix A1**, ProPG site noise risk is a sliding scale that does not define precise noise exposure limits to site risk classification, but does provide an indication of the likely risk of adverse effects, in the absence of mitigation measures.

Stage 1

2.17 With respect to ProPG, the adopted assessment levels indicate that;

- Developable land closest to Scamps Hill is at 'medium risk' of adverse noise effects on human health in the daytime (07:00-23:00hrs) and the night-time (23:00-07:00hrs); and,
- land well back from Scamps Hill is likely at 'low risk' of adverse noise effects on human health in the day and night-time.

2.18 The outcome of this ProPG Stage 1 assessment aligns well with the assessment outcome of the noise assessment carried out for the Taylor Wimpey development on the opposite side of Scamps Hill.

2.19 Therefore, good acoustic design is required with respect to achieving suitable noise levels within the dwellings and external amenity spaces, and a Stage 2 assessment should be undertaken.

2.20 An Acoustic Design Statement (ADS) accompanying the Stage 2 assessment is required to demonstrate how a good acoustic design process can be followed during the detailed design of the development to overcome acoustic challenges at the Site.

[8] ProPG Planning & Noise: New Residential Development (2017), Paragraph 3.12

Stage 2

Element 1 – Good Acoustic Design

2.21 Good acoustic design should seek to deliver the optimum acoustic outcome of the Development without design compromises that will adversely affect living conditions and the quality of life of the inhabitants, and should be adopted during the evolution of the Development layout to be submitted in any future Reserved Matters Application.

Element 2 – Internal Noise Level Guidelines

2.22 At this stage it is not feasible to determine the sound insulation requirements of the building envelope (i.e. for glazing and ventilation) required to achieve the internal noise guideline criteria shown in **Table A.1.4** that is advocated by well established guidance (BS 8233:2014) and likely required by MSDC. However, based on the adopted assessment levels, slightly uprated thermal double glazing and in/over-frame trickle ventilation will likely be sufficient to achieve acceptable internal noise levels.

2.23 The need to ensure acceptable internal noise conditions are achieved can be secured by a carefully worded planning condition.

Element 3 – External Amenity Area Noise Assessment

2.24 Based on the noise report for the development opposite Scamps Hill and the adopted assessment levels, daytime noise levels in external amenity spaces (i.e. rear gardens) are likely to be below the upper guideline values in **Table A.1.4** of 55dB $L_{Aeq,16hr}$ provided dwellings front Scamps Hill to provide self-screening to rear gardens.

2.25 Supplementary acoustic screening can be provided by garden fencing or other structures, such as screening walls and, ideally garages between dwellings.

2.26 The need to ensure acceptable external noise conditions are achieved can be secured by a carefully worded planning condition.

Element 4 – Other Relevant Issues

2.27 The Development will aim to meet all relevant national and local policies and comply with the guidance contained in ProPG as far as reasonably practicable. At this stage, NCL are not aware of any other non-trivial and unintended consequences that would arise from the need to incorporate noise mitigation measures into the Development design. For example, this is typically associated with the need to incorporate exceptionally high noise barriers or earth bunds that would provide impacts on landscaping.

2.28 Consequently, in noise-terms, the development is not considered to give rise to other issues at this stage.

Overheating

2.29 It has become increasingly common for residential properties to rely upon openable windows to assist in the control of overheating. To minimise the reliance upon openable windows, passive measures should be considered to reduce solar gain, for example using low g-value glazing.

2.30 As a baseline noise survey has not yet been undertaken, a Level 1 overheating risk assessment has been undertaken using the adopted assessment levels and by reference to the AVO Guide (**Appendix A1** and **A2**)

2.31 The adopted assessment levels indicate that developable areas of land along Scamps Hill the Site is at 'medium' to 'high risk' of overheating the in day and night-time respectively and consequently, open windows, particularly at night are likely to result in adverse effects.

2.32 Therefore, a Level 2 assessment is considered necessary at the reserved matters stage that considers provisions for mitigating overheating, whilst taking into account how frequently and for what duration the overheating condition is likely to occur. Potentially, this may require alternative or acoustic ventilation in dwellings closest and most exposed to Scamps Hill to obviate the need for open windows and achieving acceptable levels of thermal comfort for the dwelling occupants.

3 Acoustic Design Statement (ADS)

3.1 The ProPG assessment in **Section 2** demonstrates that good acoustic design of the proposed development is required. The following sections provide acoustic design information that should be considered during the detailed design of the development, prior to any reserved matters application.

External Amenity

Location of Dwellings

3.2 The separation distance between proposed dwellings and Scamps Hill should be maximised as far as reasonably practicable, and ideally be at least 20m to minimise the sound insulation requirements for glazing and ventilation.

Orientation of Dwellings and Buildings

3.3 Minimising daytime noise levels in gardens is best achieved by first considering the orientation of the dwellings so that the associated rear garden(s) are positioned to the less exposed (acoustically shielded) side of dwellings with respect to the dominant road traffic noise source(s). This will enable the dwellings to self-screen garden areas. Contiguous or closely spaced dwellings aligned in regimental fashion and around individual Development parcels will provide the highest level of acoustic screening.

3.4 Based on the adopted assessment levels (**Table 2.1**), daytime noise levels in rear gardens are capable of meetings the guideline values in **Table A.1.4** provided dwellings front Scamps Hill and provide self-screening to rear gardens.

3.5 Future iterations of the Development layout should be designed to ensure that dwellings provide self-screening of road traffic from Scamps Hill to their respective rear gardens, and unless a site-specific noise assessment indicates otherwise.

Acoustic Screening

3.6 For dwellings closest to Scamps Hill, further reductions of daytime noise levels are needed to meet the guideline noise criteria in **Table A.1.4** can be provided by suitable solid timber fencing or screen walls around the outer garden permitter, or by garages, all of which are considered feasible, but should not be relied upon in isolation, (i.e. the primary noise mitigation for rear gardens of these dwellings should be by self-screening by dwellings), and unless a site-specific noise assessment indicates otherwise.

3.7 As a minimum, any such acoustic screening should likely need to:

- be at least 1.8m high (min, relative to the centre of the gardens);
- be a closed-boarded (CB) timber fence or screening wall constructed to the outer the boundary of rear gardens with a line of sight to, and within c40m of Scamps Hill;

- be imperforate (i.e. have no holes or gaps);
- incorporate suitable gravel boards to seal the gap at the base of the fence;
- achieve a surface mass of at least 18kg/m^2 and be at least 18mm thick; and,
- have an appropriate life span.

Internal Amenity

Glazing and Ventilation

3.8 The sound insulation and ventilation requirements of the building envelope must be checked at the detailed design stage to ensure that acceptable internal noise amenity can be secured for the future residents of the Development.

3.9 It should be noted that consideration of other mitigation options such as internal building layout, as outlined below, will increase the likelihood that internal noise criteria can be achieved with open windows. This can be determined once details of the proposed development's final layout are available at the reserved matters stage.

Further Considerations for Mitigation

Reduction in Speed Limit

3.10 It may be necessary, or beneficial for reasons other than noise to reduce the speed limit on Scamps Hill (i.e. from 40mph to 30mph). This would likely reduce ambient (L_{Aeq}) road traffic noise emission from Scamps Hill by just under 2dB. Whilst, at face value this may not appear to be significant, it may permit a reduction in the sound insulation performance requirements of the building envelope of dwellings closest to Scamps Hill, and reduce the acoustic screening requirements for rear gardens set back from the road.

Internal Building Layout

3.11 Consideration of the internal building layout (where noise sensitive rooms such as bedrooms could be positioned to the least exposed elevations of the dwellings with respect to road traffic noise) could afford further reductions to internal noise levels, reducing the likelihood of the requirement to uprate the building envelope sound insulation, and increasing the likelihood that internal noise guideline criteria can be achieved with open windows.

Setback Distances

3.12 Slight increases of the setback distances of the first front row of dwellings and associated external amenity areas from Scamps Hill will have a negligible impact on the building envelope sound insulation requirements.

3.13 A buffer zone of 30m (or more) between the dwellings and kerb of Scamps Hill would, however, result in a reduction of the building envelope sound insulation requirements.

3.14 Where dwellings are significantly closer to adjacent roads, acoustic ventilation and/or glazing may be necessary.

Windows open

Purge ventilation

3.15 With regards to openable windows, it should be noted that Building Regulations Approved Document F – Ventilation (ADF) advises that "*purge ventilation"* is required *"to remove high concentrations of pollutants and water vapour. Purge ventilation is used intermittently and required only for pollutants produced by occasional activities (e.g. fumes from painting)*". Therefore "*purge ventilation*" is intermittent i.e., required only when such occasional activities occur.

Control of Overheating

3.16 It has, however, become increasingly common for residential properties to rely upon openable windows to assist in the control of overheating. To minimise the reliance upon openable windows, passive measures are recommended for the development to reduce solar gain, for example using low g-value glazing.

3.17 If necessary, the need to secure any mitigation measures into the design of the Development to control overheating can be secured by a suitable worded planning condition, pursuant to obtaining planning consent.

3.18 Consequently, a full noise impact assessment is not considered necessary at this stage. If required, any mitigation measures could then be confirmed at the detailed design stage when a fixed layout has been determined.

4 Conclusion

4.1 A high-level desk-based analysis has been undertaken to assess the potential impact of road traffic noise upon the outline proposed Development.

4.2 Any change in future noise from development-generated road traffic will not likely be perceptible at existing noise-sensitive receptors and will not result in adverse noise impacts.

4.3 Road traffic noise from Scamps Hill along the southern boundary is considered the main source of noise that may impact upon residential amenity of the proposed Development. However, it is considered that road traffic noise exposure within the Site can be reduced to acceptable levels, provided that a good acoustic design process is followed, as advocated in ProPG. Noise from various premises within the LEP to the north are not expected to be significant in the daytime and are unlikely to be present at night.

4.4 In any event, it must be accepted that, in noise terms, the principle of residential development close to and exposed to road traffic noise from Scamps Hill and noise from the LEP has already been established.

4.5 Consequently, a detailed noise impact assessment is not considered necessary at this stage, and the need to secure any mitigation measures into the design of the Development can be determined by a site-specific noise assessment, itself secured by way of a suitably worded planning condition.

4.6 Therefore, whilst noise is a material consideration in the planning process, it is not considered a constraint to residential development on the Site and should not be a determining factor in the outline application.

A1 Relevant Policy and Guidance

National Noise Policy

Noise Policy Statement for England (NPSE, 2010)

A1.1 The Noise Policy Statement for England (NPSE, 2010) sets out the Government's Noise Policy Vision 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".*

A1.2 This long-term vision is supported by three Noise Policy Aims that can be delivered through effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development. These aims are to:

1. *avoid significant adverse impacts on health and quality of life;*
2. *mitigate and minimise adverse impacts on health and quality of life; and*
3. *where possible, contribute to the improvement of health and quality of life.*

A1.3 The explanatory note to the NPSE sets out 'effect levels' which are aligned to the Policy Aims. Drawing upon established concepts from toxicology, the NPSE defines the following noise effect levels:

- NOEL - 'No Observed Effect Level';
- LOAEL - 'Lowest Observed Adverse Effect Level'; and
- SOAEL - 'Significant Observed Adverse Effect Level'.

A1.4 The explanatory note describes SOAEL as the effect level above which significant adverse effects on health and quality of life occur, aligning this level with the first policy aim above. NPSE states that it is not possible to have a single, numerical definition of the SOAEL that is applicable to all sources of noise in all situations, since the SOAEL is likely to be different for different noise sources, for different receptors and at different times.

A1.5 LOAEL is described as the level at which adverse effects begin and the second aim of the NPSE refers to a situation where the effect lies somewhere between LOAEL and SOAEL and aligns with the second policy aim. It requires all reasonable steps be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. However, this does not mean that such adverse effects cannot occur.

A1.6 NOEL is described as a level of noise exposure below which no effect can be detected - in simple terms, below this level, there is no detectable effect on health and quality of life.

A1.7 The third aim seeks, where possible, to positively improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.

A1.8 The setting of LOAELs and SOAELs for transportation sources has however reached a form of consensus following a number of high-profile infrastructure projects in England, namely HS2 and a series of Highways England road schemes which have been successful through the Government's Hybrid Bill and Development Consent Order (DCO) consenting processes.

A1.9 In these projects, the setting of SOAEL has been aligned to Government policy and legislation in relation to the provision of noise insulation where it has been argued that significant adverse effects can be avoided through these means. **Table A.1.1** provides a summary of the LOAEL and SOAEL values applied on these projects.

Table A.1.1: Summary LOAELs and SOAELs for Road and Railway Infrastructure Projects

Source / Project	Period	LOAEL	SOAEL
Road Traffic (Highway Agency A14 DCO)	Daytime	50 dB $L_{Aeq, 16hr}$	63 dB $L_{Aeq, 16hr}$
	Night-time	40 dB $L_{Aeq, 8hr}$	55 dB $L_{Aeq, 8hr}$
Rail (HS2)	Daytime	50 dB $L_{Aeq, 16hr}$	63 dB, $L_{Aeq\ 16hr}$
	Night-time	40 dB $L_{Aeq, 8hr}$ 60 dB L_{Amax}	55 dB $L_{Aeq, 8hr}$ 80/85 dB L_{Amax}

National Planning Policy

National Planning Policy Framework (NPPF, 2023)

A1.10 The National Planning Policy Framework (NPPF, 2023) sets out the Government's planning policies for England and how these should be applied. The NPPF provides a framework within which locally prepared plans for housing and other development can be produced. The NPPF includes policies on a wide range of issues, such as housing, design, the natural environment, and infrastructure. It also sets out the criteria that must be met for planning permission to be granted.

A1.11 In relation to noise, it states:

"180. Planning policies and decisions should contribute to and enhance the natural local environment by: …

- *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise*

pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and…"

A1.12 The NPPF includes policy which makes reference to 'significant adverse impacts on health and quality of life', as per the NPSE. NPPF policy states:

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

- *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and…"*

A1.13 NPPF has also recently introduced the agent of change principle as follows:

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

Local Planning Policy

4.7 Mid Sussex District Council adopted the "Mid Sussex District Plan 2014-2031" document for new developments in March 2018.

4.8 Policy DP29: Noise, Air and Light Pollution (p.80) provides the following guidance in terms of noise:

"The environment, including nationally designated environmental sites, nationally protected landscapes, areas of nature conservation or geological interest, wildlife habitats, and the quality of people's life will be protected from unacceptable levels of noise, light and air pollution by only permitting development where:

Noise pollution:

• It is designed, located and controlled to minimise the impact of noise on health and quality of life, neighbouring properties and the surrounding area;

• If it is likely to generate significant levels of noise it incorporates appropriate noise attenuation measures;

Noise sensitive development, such as residential, will not be permitted in close proximity to existing or proposed development generating high levels of noise unless adequate sound insulation measures, as supported by a noise assessment are incorporated within the development. In appropriate circumstances, the applicant will be required to provide:

• an assessment of the impact of noise generated by a proposed development; or

• an assessment of the effect of noise by an existing noise source upon a proposed development."

Guidance

Professional Practice Guidance (ProPG, 2017) on Planning & Noise – 'New Residential Development'

A1.14 Professional Practice Guidance: Planning & Noise – '*New Residential Development*' (ProPG, 2017) is a joint publication by the Chartered Institute of Environmental Health (CIEH), the Association of Noise Consultants (ANC) and the Institute of Acoustics (IoA). The primary goal of ProPG is "*to assist the delivery of sustainable development by promoting good health and wellbeing through the effective management of noise*". The guidance has been produced to assist practitioners in matters relating to noise and new residential development. It focuses on existing transportation noise sources and has been developed to consider the Government's overarching noise policy, planning policy and policy guidance. It has also been developed to take into account other authoritative sources of guidance such as British Standard 8233:2014 '*Guidance on Sound Insulation and Noise Reduction for Buildings*' (BS 8233:2014).

A1.15 The guidance provides advice for Local Planning Authorities (LPAs) and developers, and practitioners. ProPG aims to:

- *Advocate the full consideration of the acoustic environment from the earliest possible stage of the development control process;*
- *Promote and encourage the process of good acoustic design in and around new residential developments;*
- *Set out the considerations which should be taken into account in deciding planning applications for new noise-sensitive developments;*
- *Promoting the use of appropriate noise exposure standards and policies in assessment; and*
- *Provide assistance in the delivery of sustainable development.*

A1.16 ProPG advocates a two-stage assessment approach:

- **Stage 1** – an initial noise risk assessment of the proposed development site; and
- **Stage 2** – a systematic assessment considering four key elements.

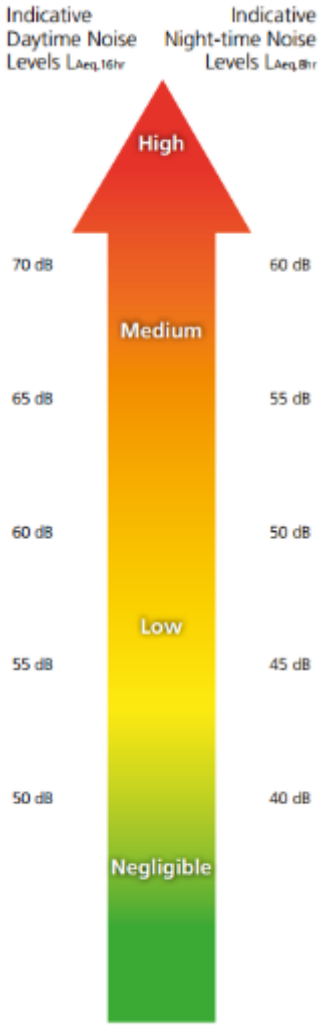
A1.17 ProPG is underpinned by the preparation and delivery of an Acoustic Design Statement (ADS).

Stage 1 – Initial Risk Assessment

A1.18 Stage 1 of ProPG provides guidance to practitioners as to whether the site poses a risk in terms of noise for any future site occupants. To identify this, ProPG sets out a number of considerations for inclusion within an 'initial risk assessment'. **Table A.1.2** reproduces Figure 1 from ProPG, which describes the initial site risk assessment.

A1.19 ProPG is clear that an Acoustic Design Statement should be included as part of a planning application where the risk is anything above 'negligible'.

Table A.1.2: ProPG – Stage 1 Initial Site Risk Assessment

Noise Risk Assessment	Potential Effect Without Noise Mitigation	Pre-Planning Application Advice
	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. 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. 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.
	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.

Noise Risk Assessment	Potential Effect Without Noise Mitigation	Pre-Planning Application Advice
Notes: a. Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme 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 07:00 – 23:00, $L_{Aeq,8hr}$ is for night-time 23:00 – 07:00. d. An indication that there may be more than 10 noise events at night (23:00 – 07:00) with $L_{Amax,F}$ > 60 dB means the site should not be regarded as negligible risk.		

Stage 2 – Full Assessment

A1.20 Stage 2 of ProPG describes four elements required for a full assessment. These 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"; and
- **Element 4** – the consideration of "Other Relevant Issues".

A1.21 A summary of the considerations required in each of the four elements is provided in **Table A.1.3**.

Table A.1.3: ProPG Stage 2 – Summary of Four Key Elements

Element	Potential Effect Without Noise Mitigation
Element 1 Good Acoustic Design Process	Considerations include: • Good acoustic design is not just compliance with recommended internal and external noise exposure standards. Good acoustic design should provide an integrated solution whereby the optimum acoustic outcome is achieved, without design compromises that will adversely affect living conditions and the quality of life of the inhabitants or other sustainable design objectives and requirements. • Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents The Planning Application MUST: • Check the feasibility of relocating, or reducing noise levels from relevant sources. • Consider options for planning the site or building layout. • Consider the orientation of proposed building(s). • Select construction types and methods for meeting building performance requirements. • Examine the effects of noise control measures on ventilation, fire regulation, • health and safety, cost, CDM (construction, design and management) etc. • Assess the viability of alternative solutions. • Assess external amenity area noise.

Element	Potential Effect Without Noise Mitigation
Element 2 Internal Noise Level Guidelines	Considerations include: • Reference to BS 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' for internal noise level guidelines • Most residents value the ability to open windows at will, for a variety of reasons, and LPAs should therefore normally request that designers principally aim, through the use of good acoustic design, to achieve the internal noise level guidelines in noise-sensitive rooms with windows open. Where internal noise levels are assessed with windows closed the justification for this should be included in the ADS. In the case of sites exposed to industrial and/or commercial noise: • Where industrial and/or commercial noise is present on the site and is considered to be "dominant" (i.e. where the impact would be rated as adverse or greater (subject to context)) then this is outside the scope of this ProPG and regard should be had to the guidance in BS 4142:2014. • In the special case where industrial and/or commercial noise is present on the site but is "not dominant" (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS 4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 2 Internal Noise Level Guidelines (and if included, this should be clearly stated).
Element 3 External Amenity Area Noise Assessment	The assessment must provide and demonstrate: • Full details of the external amenity area noise assessment should be included in an Acoustic Design Statement. • The term "assessment" is deliberately used because this element concerns more than just the level of noise outside. • ProPG external amenity area noise assessment reflects and extends the advice contained in BS 8233:2014 and the current Government guidance in PPG-Noise Where external amenity areas are exposed to "dominant" industrial and/or commercial noise, the impact of the noise should be assessed in accordance with BS 4142:2014 over the time period that the amenity area is likely to be used. In the special case where industrial and/or commercial noise is present on the site but is "not dominant", its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 3 External Amenity Area Noise Assessment (and if included, this should be clearly stated).
Element 4 Assessment of Other Relevant Issues	Consideration should be given to: • Compliance with relevant national and local policy: i.e., NPSE, PPG-Noise and The Environmental Noise Regulations. • Magnitude and extent of compliance with ProPG • Likely occupants of the development • Acoustic design vs unintended adverse consequences: Examples include sealed up balconies that result in a lack of connection with the external environment, roadside barriers that remove views or prevent crossing roads, sealed facades that affect personal control over the internal environment etc. Wherever possible, such unintended adverse consequences should be obviated by good acoustic design. • Acoustic design vs wider planning objectives

Acoustic Design Statement (ADS)

A1.22 ProPG requires that the Acoustic Design Statement (ADS) provides sufficient evidence that the ProPG Stage 1 and Stage 2 Elements 1 – 4 have been followed. It also advises that the ADS should be proportionate to the scale of the development and the degree of noise risk at the proposed development site. In this context, ProPG states that the level of detail to be provided within the ADS should increase with the increasing level of risk.

Supporting Decision-Makers

A1.23 ProPG also provides advice and support to decision-makers when taking into account noise and new residential development. These recommendations are aligned to the outcomes of Stage 1 and Stage 2 of the assessment along with the considerations made within the Acoustic Design Statement. Section 3 of ProPG details the recommendations to decision-makers.

Sites Exposed to Industrial and/or Commercial Noise

A1.24 In the case of sites exposed to industrial and/or commercial noise, ProPG states that if the industrial and/or commercial noise is present but not dominant, then its contribution may be included in the noise level used to establish the degree of risk.

A1.25 If the industrial and/or commercial noise is considered to be dominant, then the risk assessment should not be applied to the industrial or commercial noise and instead the assessment should follow the methodology and guidance provided in British Standard 4142:2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound*' (BS 4142:2014+A1:2019).

A1.26 ProPG states that "[t]he judgement on whether or not to undertake a BS 4142:2014 assessment to determine dominance should be proportionate to the level of risk. In low risk cases a subjective judgement of dominance, based on audibility, would normally be sufficient."

Acoustics Ventilation and Overheating: Residential Design Guide

A1.27 The Acoustics Ventilation and Overheating: Residential Design Guide (AVO Guide, 2020) has been prepared with contributions from members of the ANC's AVO Group and committee members.

A1.28 The AVO Guide "*is intended for the consideration of new residential development that will be exposed to*:

- *Predominantly to airborne sound from transport sources; and*
- *Sound from mechanical services that are serving the dwelling in question."*

A1.29 The AVO states that "*there is a need to address how:*

- *The ventilation strategy impacts on the acoustic conditions; and*
- *The strategy for mitigating overheating impacts on the acoustic conditions, and whether a more detailed overheating assessment is required to inform this."*

A1.30 The AVO Guide "*recommends an approach to acoustic assessment for new residential development that takes due regard of the interdependence of provisions for acoustics, ventilation, and overheating. Application of the AVO Guide is intended to demonstrate good acoustic design when considering internal noise level guidelines*."

Acoustics and Ventilation

A1.31 The AVO Guide provides guidance on the consideration of the effect of the proposed or potential ventilation strategies on the acoustic conditions in living rooms and bedrooms.

Acoustics and Overheating

A1.32 The AVO Guide details a two-level noise assessment procedure for consideration of the overheating condition. Level 1 assumes that overheating will be mitigated through use of a partially open window[9] and consists of a Site Risk Assessment based on external free-field noise levels (refer to **Table A.2.1** in **Appendix A2** for further details).

A1.33 Where a 'High' or 'Medium' risk is identified, it is recommended that a Level 2 assessment is undertaken. A Level 2 assessment includes consideration of provisions for mitigating overheating, whilst taking into account how frequently and for what duration the overheating condition is likely to occur, and is based on internal ambient noise levels (refer to **Table A.2.2** for further details).

A1.34 For an outline planning application, it is considered appropriate that a Level 1 assessment is considered to be appropriate to highlight the likely risk associated with a site and a Level 2 assessment may be undertaken at a later stage in the planning process if required.

WHO document '*Guidelines for Community Noise*' (WHO GCN, 1999)

A1.35 The WHO document '*Guidelines for Community Noise*' (WHO GCN, 1999) provides guidance to environmental health authorities and practitioners tasked with protecting people from the harmful effects of noise. WHO defines *'health'* as a '*state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'* and clearly states that *'the enjoyment of the highest attainable standard of health as one of the fundamental rights of every human being…'*

A1.36 The effects of noise in dwellings, typically, are sleep disturbance, annoyance, and speech interference. For bedrooms, the critical effect is sleep disturbance.

A1.37 For a reasonable degree of internal amenity in dwellings, Section 4.3.1 states that;

> *"In dwellings, the critical effects of noise are on sleep, annoyance and speech interference. To avoid sleep disturbance, indoor guideline values for bedrooms are 30 dB L_{Aeq} for continuous noise and 45 dB L_{AFmax} for single sound events.*
>
> *At night-time, outside sound levels about 1 metre from facades of living spaces should not exceed 45 dB L_{Aeq}, so that people may sleep with bedroom windows open.*
>
> *To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55dB L_{Aeq} on balconies, terraces and in outdoor living areas. To protect the majority of people from being*

[9] It is assumed that a partially open window will provide an outside to inside level difference of 13 dB

moderately annoyed during the daytime, the outdoor sound level should not exceed 50dB L_{Aeq}."

A1.38 The WHO guideline values are summarised in **Table A.1.4**.

Guidance on sound insulation and noise reduction for buildings (BS 8233:2014)

A1.39 BS 8233 carries the full weight of an adopted British Standard and provides guidance on the design and assessment of the sound insulation and noise reduction for new buildings (or refurbished buildings undergoing a change of use) and is supported by guidance contained within WHO GCN.

A1.40 The standard provides a series of recommended noise exposure levels to protect people from the harmful effects of noise. The Guidelines apply to external noise *'without a specific character'* (previously termed '*anonymous noise'*) such as that associated with road traffic which is expected to be the main source of noise at the Site.

A1.41 Overall, BS 8233:2014 is intended to ensure that buildings are designed and constructed with appropriate levels of sound insulation and noise reduction, for the benefit of their occupants.

Internal Amenity (Habitable Rooms)

A1.42 For dwellings, Table 4 of BS 8233:2014 provides desirable guideline values within habitable rooms that should not be exceed during daytime and night-time periods and these values are reproduced in **Table A.1.4**.

External Amenity (Private Rear Gardens)

A1.43 BS 8233:2014 provides guidance for the control of noise in and around buildings. It is applicable to the design of new buildings, or refurbished buildings undergoing a change of use.

A1.44 BS 8233:2014 provides noise guidance for buildings of different uses, however in respect to dwellings and habitable residential spaces, Table 4 of BS 8233:2014 provides guideline values that it is desirable not to exceed during daytime and night-time periods. These guideline values are reproduced in **Table A.1.4**.

Table A.1.4: Summary of Relevant Noise Design Criteria, Adapted from BS 8233:2014 and WHO GCN,1999)

Location	Daytime Guideline (07:00-23:00hrs)	Night-time Guideline (23:00-07:00hrs)
Living Room	35 dB $L_{Aeq, 16hr}$	-
Dining Room / Area	40 dB $L_{Aeq, 16hr}$	-
Bedroom	35 dB $L_{Aeq, 16hr}$	30 dB $L_{Aeq, 8hr}$ ≤45dB L_{AFmax}, no more than 10-15 times per night
External Amenity Spaces	Desirable - ≤50 dB $L_{Aeq,16hr}$ Upper guideline - ≤55 dB $L_{Aeq,16hr}$	-

A1.45 The guideline internal noise design criteria are not intended to be met with open windows, although BS 8223:2014 states that the internal noise levels should take account of the proposed ventilation strategy.

A1.46 BS 8233:2014 also notes that: "*Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved".*

A1.47 BS 8233:2014 does not provide specific guidance on noise levels for regular individual noise events, such as passing trains, which can cause sleep disturbance. Guidance on suitable noise levels for individual events is provided in ProPG, which states:

> *"'In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as source, number, distribution, predictability and regularity of noise events".*

A1.48 On this basis, it is typically considered appropriate to adopt the 10th highest $L_{Amax,F}$ noise event at night period for the purposes of the assessment.

A1.49 For noise in external amenity spaces:

> *"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, 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."*

A2 Acoustics, Ventilation and Overheating (AVO Guide) – Additional Information

Acoustics and Overheating

Table A.2.1: Guidance for Level 1 Site Risk Assessment of noise from transport noise sources relating to overheating condition (Table 3-2 of AVO Guide)

Risk category for Level 1 assessment [Note 5]	Potential Effect without Mitigation	Recommendation for Level 2 assessment
$L_{Aeq,\,T}$ [Note 3] during 07:00 - 23:00 / $L_{Aeq,\,8hr}$ during 23:00 - 07:00 High: 65 dB / 55 dB Medium: 60 dB / 50 dB Low: 55 dB / 45 dB Negligible: 50 dB	Increasing risk of adverse effect	Recommended Optional
	Use of opening windows as primary means of mitigating overheating is not likely to result in adverse effect	Not required

Note 1 The noise levels suggested assume a steady road traffic noise source but may be adapted for other types of transport. All levels are external free-field noise levels.

Note 2 The values presented in this table should not be regarded as fixed thresholds and reference can also be made to relevant dose-response relationships, [15, 17].

Note 3 A decision must be made regarding the appropriate averaging period to use. The averaging period should reflect the nature of the noise source, the occupancy profile and times at which overheating might be likely to occur. Further guidance can be found within the 2014 IEMA Guidelines [23].

Note 4 Refer also to references [1, 17, 18, 22] for further guidance regarding individual noise events. Where 78dB LAFmax is normally exceeded during the night-time period (23:00-07:00), a Level 2 assessment is recommended.

Note 5 The risk of an adverse effect occurring will also depend on how frequently and for what duration the overheating condition occurs. Refer to Figure 3-2.

Note 6 To evaluate the risk category for a dwelling, all three aspects of external noise exposure (i.e. daytime, night-time and individual noise events) should be evaluated. The highest risk category for any of the three aspects applies.

Table A.2.2: Guidance for Level 2 Assessment of noise from transport noise sources relating to overheating condition (Table 3-3 of AVO Guide)

Internal ambient noise level [Note 2]			Examples of Outcomes [Note 5]	
$L_{Aeq,T}$ [Note 3] during 07:00 – 23:00 [Note 6]	$L_{Aeq,8h}$ during 23:00 – 07:00	Individual noise events during 23:00 – 07:00 [Note 4]		
> 50 dB	> 42 dB	Normally exceeds 65 dB $L_{AF,max}$	Noise causes a material change in behaviour e.g. having to keep windows closed most of the time	Avoiding certain activities during periods of intrusion. 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.
			Increasing likelihood of impact on reliable speech communication during the day or sleep disturbance at night	At higher noise levels, more significant behavioural change is expected and may only be considered suitable if occurring for limited periods. As noise levels increase, small behaviour changes are expected e.g. turning up the volume on the television; speaking a little more loudly; having to close windows for certain activities, for example ones which require a high level of concentration. Potential for some reported sleep disturbance. Affects the acoustic environment inside the dwelling such that there is a perceived change in quality of life. At lower noise levels, limited behavioural change is expected unless conditions are prevalent for most of the time. [Note 8]
≤ 35 dB	≤ 30 dB	Do not normally exceed $L_{AF,max}$ 45 dB more than 10 times a night	Noise can be heard, but does not cause any change in behaviour	Noise can be heard, but does not cause any change in behaviour, attitude, or other physiological response[Note 9]. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.

Note 1	The noise levels suggested in Tables 3-2 and 3-3 assume a steady road traffic noise source but may be adapted for other types of transport.
Note 2	The values presented in this table should not be regarded as fixed thresholds and reference can also be made to relevant dose-response relationships such as those described in a DEFRA 2014 study [15, 21, 22]. With the exception of individual noise events, the references [15,21] are based on evidence drawn from *external* noise levels. There is currently very little robust evidence linking *internal* averaged noise levels with health outcomes and occupant behaviour. Internal ambient noise levels would normally be considered for living rooms and bedrooms during the daytime. At night, the levels would normally only be applicable to bedrooms.
Note 3	A decision must be made regarding the appropriate averaging period to use. The averaging period should reflect the nature of the noise source, the occupancy profile and times at which overheating might be likely to occur. Further guidance can be found within the 2014 IEMA Guidelines.
Note 4	Refer to references [1, 17, 18, 22] for further guidance regarding individual noise events. The $L_{AF,max}$ indicator associated with the upper category is intended for road traffic; it may be more appropriate to use the "one additional noise-induced awakening" method for noise from rail traffic or aircraft.
Note 5	The potential for adverse effect will also depend on how frequently and for what duration the overheating condition occurs. Refer to Figure 3-2.
Note 6	The daytime levels presented in this table may not be appropriate for residential care homes or other situations where conditions for daytime resting are known to be of particular importance.
Note 7	When evaluating the potential for adverse effect, all three aspects of noise exposure (i.e. daytime, night-time and individual noise events) should be evaluated.
Note 8	BS 8233 states that where development is considered necessary or desirable, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.
Note 9	It is known that physiological responses do occur at lower levels of L_{AFmax} than 45 dB.

A2.1 A more recently developed alternative to the systems above is a tempered fresh air system. These systems add a small amount of cooling to the whole dwelling ventilation supply system (e.g. to the MVHR). This provides a reduced temperature fresh air supply which can provide some cooling to a space. Unlike comfort cooling, these systems are not designed to achieve a specific temperature in a space.