



Northaw Road East, Cufley

Noise Assessment

Bellway Homes

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1 Introduction

Background

- 1.1** Brookbanks is appointed by Bellway Homes to assess the noise environment in support of an outline planning application for a residential development on land to the east of Northaw Road East, Cuffley.
- 1.2** The proposed scheme comprises the approval of reserved matters (appearance, landscaping, layout, and scale) following outline planning permission S6/2015/1342/PP as varied by 6/2023/1352/VAR for residential development of 10 dwellings and associated infrastructure.
- 1.3** This report presents the findings of a detailed assessment of the potential impacts of the Proposed Development on the acoustic environment. It assesses the suitability of the Site for residential development with regards to exposure of future occupants to the future noise levels.

Description of the Site

- 1.4** The Site is located to the south of Cuffley, circa 5ha in size and is currently in agricultural use. It is bound by existing residential development to the north and north-west; the grounds of Cuffley Primary School also adjoin the Site along its northern boundary. The railway line and Northaw Road East (B156) form strong eastern and western boundaries respectively. The southern boundary is defined by a mature hedgerow and tree belt lining the Hertfordshire Way footpath. Beyond the footpath to the south west of the Site is King George V Playing Field, which contains three sports pavilions, a recreation area with hard surfaced Multi Use Games Areas (MUGA), sports pitches and a small area of formal play equipment.

Description of the Development

- 1.5** The proposed development has been subject to previous consideration through the planning application S6/2015/1342/PP and as varied by 6/2023/1352/VAR. This considered the delivery of 121 new homes within the site boundary. This planning application specifically considers amendment to ten residential homes.
 - 1.6** The wider development has been considered previously considered appropriate for residential development. The amendment will not have an impact on the previous conclusions identified.
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Figure 1-1: Site Layout

2 Regulatory and Policy Context

National Planning Policy Framework

- 2.1** The National Planning Policy Framework (NPPF) sets out the Government's National Planning Policies for England and how these can be applied by local communities when developing their local plans or deciding planning application to best reflect the needs and priorities of the local communities. Current planning law requires Local Authorities to determine planning applications in accordance with the local development plan unless there are material considerations which require them to reach a different decision.
- 2.2** NPPF indicates that 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:
- 2.3** Mitigate and reduce to a minimum potential adverse impact resulting from noise from new development and avoid noise giving rise to significant adverse impacts on health and the quality of life
- 2.4** Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason

Noise Policy Statement for England, 2010

- 2.5** The Noise Policy Statement for England of March 2010 (Defra 2010) provides a more overarching policy statement on the approach to noise in England. The NPSE provides guidance on the management of noise from sustainable development without placing unreasonable cost or time restraints on sustainable developments.
- 2.6** The explanatory note of NPSE defines the following terms:
- **NOEL:** No Observed Effect Level: This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
 - **LOAEL:** Lowest Observed Adverse Effect Level: This is the level above which adverse effects on health and quality of life can be detected.
 - **SOAEL:** Significant Observed Adverse Effect Level: This is the level above which significant adverse effects on health and quality of life occur.
- 2.7** The NPSE does not provide a numerical value for the SOAEL, stating at paragraph 2.22:
- "It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."*
- 2.8** The first aim of the NPSE is:
- "Avoid significant adverse impact on health and quality of life"*
- 2.9** To meet the first aim of the NPSE the resultant noise levels as a result of the proposed development should be below the Significant Observed Adverse Effect Level (SOAEL) at the noise sensitive properties.

2.10 The second aim of the NPSE is:

“Mitigate and minimise adverse impacts on health and quality of life”

2.11 To meet the second aim of the NPSE the resultant noise levels as a result of the proposed development should be below the Significant Observed Adverse Effect Level (SOAEL) but above the Lowest Observed Adverse Effect Level (LOAEL) at the nearest noise sensitive properties.

2.12 Third Aim of the NPSE is where possible, the noise levels as a result of the proposed development at the nearest residential property should be lower than the existing noise levels improving the noise climate for the local community.

National Planning Practice Guidance NPPG

2.13 In February 2014 National Planning Practice Guidance (NPPG) was first published and is regularly updated. The section entitled “Noise” provides the following general advice and relates to paragraph 123 of the NPPF.

2.14 The main objective is to:

“Identify whether the overall effect of noise exposure is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.”

2.15 A summary of the effects of noise exposure associated with both noise generating developments and noise sensitive developments is presented within the NPPG.

2.16 The guidance identifies that the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation. These factors include:

- The source and absolute level of the noise together with the time of day it occurs.
- For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise.
- The spectral content of the noise (i.e. whether the noise contains particular high or low frequency content) and the general character of the noise.

2.17 In relation to how noise can be mitigated, this is dependent on the type of development being considered and the character of the proposed location. In general, for noise making developments, there are four broad types of mitigation:

- Engineering: reducing the noise generated at source and/or containing the noise generated.
- Layout: where possible, optimising the distance between the source and noise-sensitive receptors and/or incorporating good design to minimise noise transmission using screening by natural or purpose-built barriers, or other buildings.
- Using planning conditions/obligations to restrict activities allowed on the site at certain times and/or specifying permissible noise levels differentiating as appropriate between different times of day, such as evenings and late at night.
- Mitigating the impact on areas likely to be affected by noise including through noise insulation when the impact is on a building.

2.18 There are further considerations relating to mitigation of noise on residential developments. The noise impact may be partially off-set if the residents of those dwellings have access to:

- A relatively quiet facade (containing windows to habitable rooms) as part of their dwelling, and/or;

- A relatively quiet external amenity space for their sole use or a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings;
- A relatively quiet, protected, external publicly accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minute walking distance).

BS8233:2014 - Guidance on sound insulation and noise reduction for buildings

- 2.19** The BS8233:2014 gives recommendations for the control of noise in and around buildings and suggests appropriate criteria and internal noise limits for habitable rooms of residential dwellings.
- 2.20** The standard goes onto to provide details of the approach to be taken when assessing the design in terms of planning:
- Assess the site, identify significant existing and potential noise sources, measure or estimate noise levels and evaluate layout options
 - Determine design noise levels for spaces in and around the buildings
 - Determine sound insulation of the building envelope, including the ventilation strategy
 - Identify internal sound insulation requirements
 - Identify and design appropriate noise control measures
 - Establish quality control and ensure good workmanship
- 2.21** In accordance with the requirements of BS8233:2014, the following internal and daytime noise limits will need to be met within sensitive rooms of the residential dwellings:
- Living room - 35dB LAeq (16 hour 07:00 to 23:00)
 - Dining room - 40dB LAeq (16 hour 07:00 to 23:00)
 - Bedroom - 35dB LAeq (16 hour 07:00 to 23:00) & 30dB LAeq (8 hour 07:00 to 23:00)
 - External Amenity Space / Gardens - 55dB LAeq, T -
- 2.22** In considering the application of the outdoor criteria, it is important to take account of the feasibility of achieving such a level. A review of 'Health effect-based noise assessment methods: A review and feasibility study' (National Physics Laboratory report CMAM16 HMSO) reported the following:
- "Perhaps the main weakness is that they fail to consider the practicality of actually being able to achieve any of the stated values. From the recent national survey of noise exposure carried out in England and Wales that around 56% of the population are exposed to daytime noise levels receding 55dB. The percentage exposed above the guideline values could not be significantly reduced without drastic action to virtually eliminate road traffic noise from the vicinity of houses. The social and economic consequences of such action would be likely to be far greater than any environmental advantages of reducing the proportion of the population annoyed by noise. There is no evidence that anything other than a small minority of the population expose at such noise levels find them to be particularly onerous in the context of their daily lives."*
- 2.23** Due to the difficulty in satisfying the external criteria, the BS provides an over-arching consideration of how to treat outdoor areas:
- "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.”

Planning and Noise Professional Practise Guidance Planning and Noise

- 2.24** ProPG has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the English planning system in respect of new residential developments.
- 2.25** ProPG indicates that internal noise guidelines are not applicable under purge ventilation conditions, as defined by Building Regulations. However, should a development rely on open windows to mitigate overheating the potential noise impact should be considered.
- 2.26** It can be assumed that occupiers are willing to tolerate increased noise levels for short periods, provided the cause of such increases are under the control of the occupier and any mitigation that is proposed should not inhibit the choice for occupiers to open windows should they choose to. BS 8233 recommends that habitable rooms have background ventilation where openable windows cannot be relied upon for ventilation. Trickle ventilators can be used and sound attenuating types are available. However, windows may will remain openable for rapid / purge at the choice of the occupier.
- 2.27** ProPG identifies that once internal noise levels exceed the target levels by more than 10dB they are likely to be regarded as unacceptable by most people particularly if such levels occur more than occasionally.

3 SoundPLAN Model

- 3.1** In order to predict the future noise environment across the site, a 3D noise model was generated through the SoundPLAN computer software package, in order to support the outline planning application.. This was established through the following steps:
- Production of a DTM ground profile based on LIDAR data
 - Confirming location of existing highways
 - Defining existing traffic levels
 - Confirming future traffic levels
 - Confirming location of development
 - Based on CRTN but correction to 'day' and 'night-time' levels via TRL guidance
- 3.2** The 3D SoundPLAN model was then used to predict noise levels across the site. The results of the sound monitoring survey were compared to the results of the SoundPLAN noise map. This demonstrated a close relationship between the SoundPLAN model and the current 24 hour recorded noise levels across the Site. Therefore, the SoundPLAN model was proven to be sufficiently reflective of the actual noise environment and suitable to use in modelling future scenarios.
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4 Residential Assessment

Background

- 4.1** As identified in the Planning Condition, the suitability of the Application Site in relation to noise will be based on the thresholds identified in BS8233. The SoundPLAN 3D noise model has been used to determine the external noise levels together with ground floor and first floor façade noise levels.
- 4.2** Traditional brick built façades having standard double glazing (identified as having 6mm thick glass separated by a 16mm air gap: 6/16/6) attenuates the façade noise levels by 33db. Based on the assessment contained in the Defra Report NANR116 (Open/Closed Window Research – Sound Insulation through Ventilated Domestic open Windows) a window that is partially open to provide background ventilation provides approximately 15 dB.
- 4.3** Therefore, based on the thresholds contained in BS8233 acceptable internal noise levels will be achievable with the following façade noise levels:
- Daytime resting with windows closed – 68dB LAeq (16 hour)
 - Daytime resting with windows open – 50dB LAeq (16 hour)
 - Night time sleeping with windows closed – 63dB LAeq (8 hour)
 - Night time sleeping with windows open – 45dB LAeq (8 hour)
 - External – 55dB LAeq (16 hour)
- 4.4** Where façade noise levels exceed the above criteria, habitable rooms (living rooms and bedrooms) may require suitable ventilation systems as an alternative to opening the windows.

BS8233:2014 Assessment of External Noise Levels

- 4.5** BS8233 indicates that for traditional external areas that are used for amenity space, such as gardens and patios, an upper guideline value of 55 dB LAeq,T is acceptable during the daytime. However, BS8233 also recognises that the guideline values are not achievable in all circumstances, such as city centres or urban areas adjoining the strategic transport network.
- 4.6** BS8233 identifies that in such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but external noise should not be prohibitive on development delivery.
- 4.7** In relation to external noise, the sensitive area of the site that needs to be considered is the area that borders the rail line and Northaw Road East with the remaining areas of the site being screened by the development buildings themselves. A review of the noise environment is indicated below.



Figure 4-1: External Noise Environment

- 4.8** This has indicated that the external noise levels in the amenity areas associated with housing on the eastern and western flanks exceed 55 dB. Therefore, noise screening is required to protect the outside amenity areas associated with the housing. A 2m high wooden close bordered fence having a density of 20kg/m³ has been examined. This demonstrates that following the inclusion of a 2m high fence adjacent to the rail line an acceptable noise environment can be provided.

BS8233:2014 Assessment of Day Time Noise Levels in Living Rooms

- 4.9** The day time noise levels are presented below.

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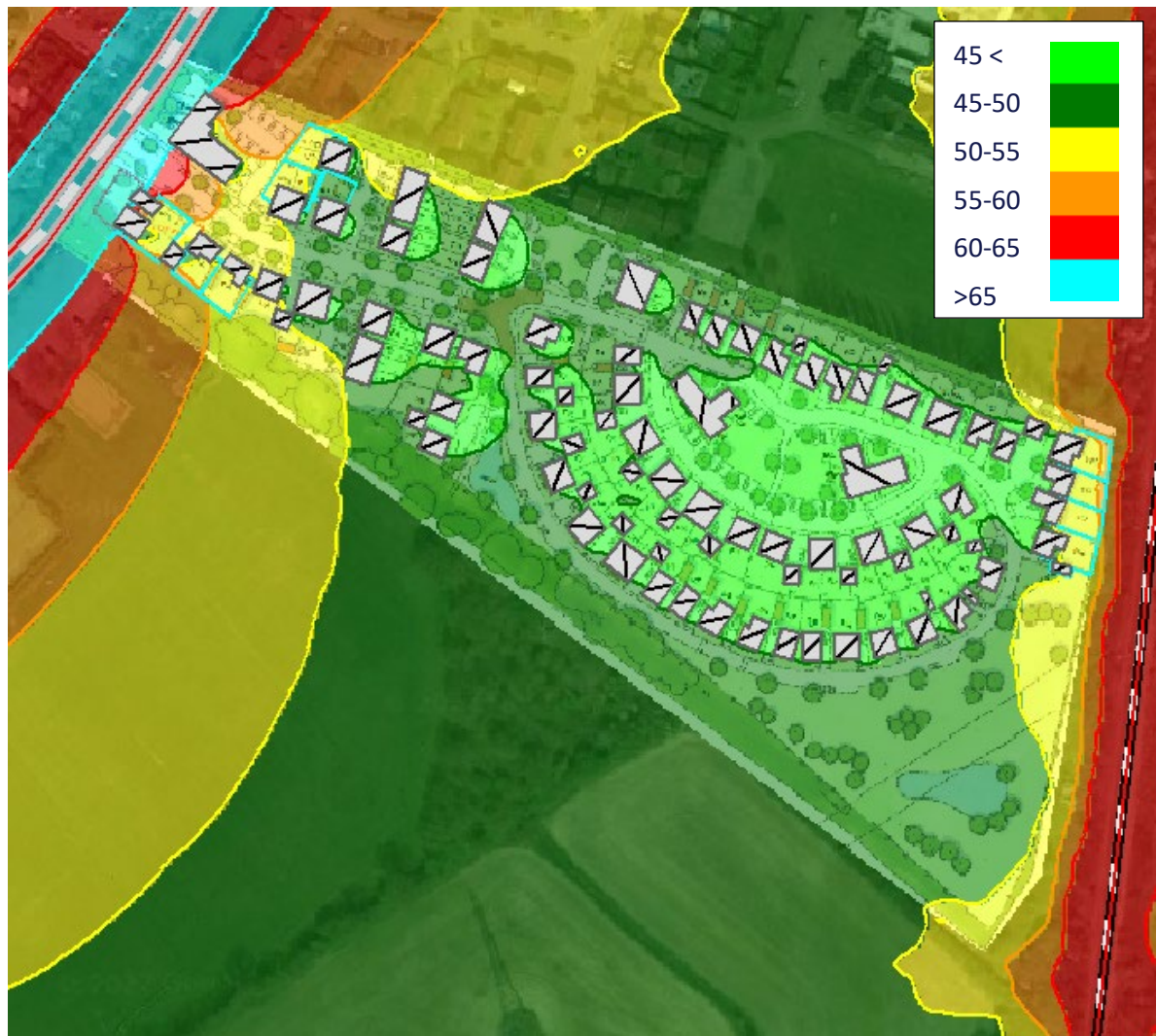


Figure 4-2: Day Time Noise Contours

- 4.10** BS8233 indicates that a daytime internal noise level of 35 dB LAeq represents the desirable noise standard. The calculated noise levels have been used to determine likely noise levels at the following locations. The required mitigation is based on the façade noise level minus the acceptable internal noise level (35db during day time).

Location	Façade level	Required Mitigation, R_w+C_{tr}
Fronting rail line	58db	23db
Fronting Northhaw Road East	62db	27db

Table 4-1: Daytime Noise Levels - Closed Windows

- 4.11** This indicates that the required mitigation for properties fronting the rail line is 23db, confirming that standard double glazing having a specification 4/16/4 will typically provide the necessary level of mitigation.
- 4.12** This indicates that the required mitigation for properties fronting Northhaw Road East is 27db, which can be achieved by standard double glazing.

- 4.13 However, opening windows for ventilation purposes will increase noise levels. Therefore, alternative means of ventilation will be required for properties fronting Northaw Road East.

BS8233:2014 Assessment of Night Time Noise Levels in Bedrooms

- 4.14 The nighttime noise levels are presented below.

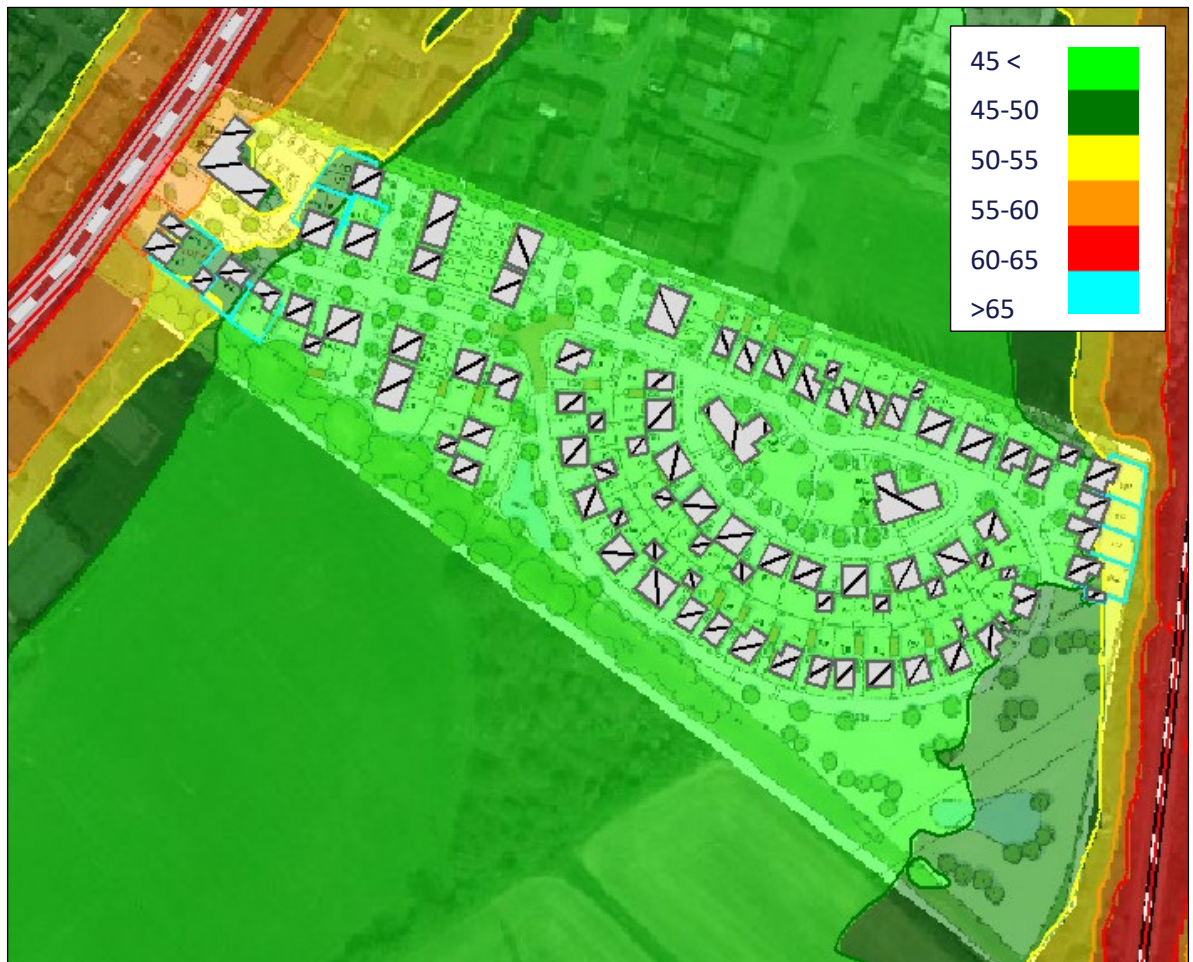


Figure 4-3: Night Time Noise Contours

- 4.15 BS8233 indicates that a night time internal noise level of 30 dB LAeq represents the desirable noise standard. The calculated noise levels have been used to determine likely noise levels at the following locations. The required mitigation is based on the façade noise level minus the acceptable internal noise level (30db during night time).

Location	Façade level	Required Mitigation, R_w+C_{tr}
Fronting rail line	52	22
Fronting Northaw Road East	57	27

Table 4-2: Night Time Noise Levels - Closed Windows

- 4.16** This indicates that the required mitigation is 27db, confirming that standard double glazing having a specification 4/16/4 will typically provide the necessary level of mitigation.

5 Summary

- 5.1** A noise assessment has been carried out for a proposed residential development to assess the acceptability of the site.
- 5.2** The assessment has demonstrated that the external noise levels can be achieved across the site with those plots identified on Figure 4-1 requiring plot protection measures, as indicated below.
- 2m high wooden close boarded fence having a density of 20kg/m³
- 5.3** This report has demonstrated that the target internal noise levels for bedroom and living/dining areas in accordance with internal ambient levels from the guidance in BS8233:2014 can be achieved. The window glazing needs to achieve the following standards:
- Window glazing for properties fronting rail line - 25db Rw+Ctr
 - Window glazing for properties fronting Northaw Road East- 27db Rw+Ctr
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