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PROPOSED HOUSING DEVELOPMENT
CAMPSFIELDS, SOUTHWATER

NOISE ASSESSMENT

Technical Report: R10002-2 Rev 0

Date: 27th November 2024

For: Miller Homes
Unit 3, Faraday Office Park,
Rankine Road,
Basingstoke,
RG24 8QB

24 Acoustics Document Control Sheet

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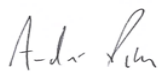
Prepared by	Andre Pires BEng MIOA	Senior Consultant		27/11/2024
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CONTENTS

1.0 INTRODUCTION

1.1 24 Acoustics Ltd has been instructed by Miller Homes, to undertake a noise assessment for a development located at Campsfields, Southwater to accompany an outline planning application. It is proposed to develop the site for a residential scheme.

1.2 The impact of traffic noise using the A24 dual carriageway has the potential to affect the proposed dwellings. Accordingly, this noise impact assessment has included:

- External environmental noise monitoring;
- Consideration of the noise arising from road traffic;
- Outline recommendations to feed into development of the site masterplan.

1.3 This report presents the results of the assessment, following site visits and environmental noise surveys undertaken between 4th and 12th of April 2023.

1.4 An explanation of acoustical terms used in this report is provided in Appendix A. All sound pressure levels in this report are given in dB re: 20 μPa.

2.0 SITE DESCRIPTION

2.0 The site is located south of Southwater and currently comprises open agricultural land. The north of the site is bounded by existing residential properties and the east of the site by the A24 dual carriageway. The west and south of the site is bounded by open agricultural land.

2.1 The existing site and noise survey locations are shown in Figure 1. An illustrative outline layout is shown in Figure 2.

3.0 CRITERIA

National Planning Policy Framework and Noise Policy Statement for England

3.1 The National Planning Policy Framework (NPPF) [Reference 1], revised in December 2023, states that planning policies and decisions should ensure that new development is appropriate for its location taking into account the likely 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 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

3.2 The NPPF also refers to the Noise Policy Statement for England (NPSE) [Reference 2] which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term 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' which is supported by the following aims:

- 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

3.3 The NPSE defines the concept of a 'significant observed adverse effect level' (SOAEL) as 'the level above which significant adverse effects on health and quality of life occur'.

3.4 The Planning Practice Guidance (PPG) [Reference 3] was written to support the NPPF with more specific planning guidance. The PPG reflects the NPSE and states that noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. It also states that opportunities should be taken, where practicable, to achieve improvements to the acoustic environment. The PPG states that noise can over-ride other planning concerns but should not be considered in isolation from the other economic, social and environmental dimensions of the proposed development.

3.5 The PPG expands upon the concept of SOAEL (together with Lowest Observable Adverse Effect Level, LOAEL and No Observed Effect Level, NOEL) as introduced in the NPSE and provides a table of noise exposure hierarchy for use in noise impact assessments in the planning system.

3.6 None of the documents referred to above provide specific noise criteria. The following guidance documents are considered appropriate (technically and objectively) to assess noise impact on the proposed development.

Professional Practice Guidance on Planning & Noise (ProPG)

3.7 The Professional Practice Guidance on Planning and Noise (ProPG) [Reference 4] was published jointly by the Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health in May 2017. The guidance relates to the consideration of existing sources of transportation noise upon proposed new residential development and strives to:

- Advocate full consideration of the acoustic environment from the earliest possible stage of the development control process;
- Encourage the process of good acoustic design in and around new residential developments;
- Outline what should be taken into account in deciding planning applications for new noise-sensitive developments;
- Improve understanding of how to determine the extent of potential noise impact and effect; and
- Assist the delivery of sustainable development.

3.8 The guidance describes a recommended approach for new residential development, which includes four key elements of the assessment process, identified below:

(i) Good acoustic design process;
(ii) Internal noise level guidelines;
(iii) External amenity area noise assessment;
(iv) Assessment of other relevant issues.

3.9 The guidance in ProPG does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy.

British Standard 8233: 2014

3.10 BS 8233: 2014 [Reference 5] provides design guidance for dwelling houses, flats and rooms in residential use and recommends that internal noise levels in dwellings do not exceed 35 dB $L_{Aeq,16\ hour}$ in living rooms and bedrooms during the day, 40 dB $L_{Aeq,\ 16\ hour}$ in dining rooms during the day and 30 dB $L_{Aeq,\ 8\ hour}$ in bedrooms at night.

3.11 BS 8233:2014 suggests an upper guideline value of 55 dB $L_{Aeq,16\ hour}$ for noise levels in external amenity spaces such as gardens. This is considered an aspirational limit and BS 8233 also states that development should not be prohibited on the basis of noise levels within external amenity areas.

Summary of Noise Criteria

3.12 The impact of transportation noise upon the proposed development has been assessed in accordance with the following methodology:

- BS 8233: 2014 and the WHO Guidelines for the following maximum noise levels inside the properties:
  - daytime level 35 dB $L_{Aeq,\ 16\ hour}$ in bedrooms and living rooms;
  - night-time level of 30 dB $L_{Aeq,\ 8\ hour}$ in bedrooms;
  - night-time internal level of 45 dB $L_{Amax,\ fast}$ in bedrooms for regular events.
- Aspirational target noise level of 55 dB $L_{Aeq,16\ hr}$ during the day in private amenity spaces.

4.0 ENVIRONMENTAL NOISE MEASUREMENTS

Measurement Instrumentation and Procedure

4.1 Environmental noise measurements were undertaken at the site between 4th and 12th of April 2023 in order to establish existing ambient noise levels using the following equipment:

- Rion (Class 1) precision sound level meter Type NL52;
- Rion (Class 1) precision sound level meter Type NL32;
- Brüel and Kjær acoustic calibrator Type 4231.

4.2 The noise measurement locations are shown in Figure 1 and described below:

- Location 1: Long Term monitoring location east of the site, approximately 20 m from the A24 at a height of 4 m above local ground level;
- Location 2: Short term monitoring location east of the site, approximately 30 m from the A24 at a height of 4 m above local ground level.

4.3 Noise measurements were undertaken in samples of 1 minute in terms of free-field A-weighted L_{eq}, L_{90} and $L_{max,f}$ parameters. Measurements were made in accordance with BS 7445:1991 "Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use" [Reference 6].

4.4 The instrumentation's calibration was checked before and after the surveys in accordance with the manufacturers' instructions. No significant drift in calibration was recorded. Microphones were fitted with environmental weather shields during the measurement periods.

4.5 The weather conditions during the survey period were generally fine and dry, with wind speeds less than 5 m/s.

Noise Measurement Results

4.6 The measured noise levels at Location 1 are shown in Table 2 below and are shown graphically in Appendix B.

Date	Sound Pressure Level (dB)		
	Daytime (07:00 to 23:00)	Night-time (23:00 to 07:00)	
	$L_{Aeq,\ 16\ hour}$	$L_{Aeq,\ 8\ hour}$	Typical $L_{Amax,\ f}$
Tuesday 4/4/2023	*72	68	81
Wednesday 5/4/2023	73	67	81
Thursday 6/4/2023	73	65	81
Friday 7/4/2023	72	63	79
Saturday 8/4/2023	72	63	79
Sunday 9/4/2023	72	62	79
Monday 10/4/2023	72	68	82
Tuesday 11/4/2023	73	68	82
Representative	**73**	**65**	**82 max**

Table 2: Measured Noise Levels at Location 1 (A24) (* = incomplete period)

4.7 The 1 hour attended noise results for measurement Location 2 are 64dB L_{Aeq} and 72dB $L_{Amax,\ f}$.

4.8 24 Acoustics considers the typical L_{Amax} event to be the 10th highest noise level during the relevant night-time period.

5.0 NOISE ASSESMENT

Road Traffic Impact

5.1 An acoustic model of the site has been developed to determine the noise levels across the undeveloped site from road traffic. The model has been produced using IMMI 2024 noise mapping software and has used the propagation methodology of CRTN [Reference 7] which takes into account the effects of geometric divergence, acoustic screening and ground and atmospheric absorption. The model has used 70% soft ground (G=0.7), ambient temperature of 10 degrees C and a relative humidity of 70%. Downwind propagation has been assumed to represent a worst case assessment.

Site Layout

5.2 Under the ProPG it is necessary to demonstrate that acoustic considerations have been taken into account in the design process for the proposed development. The following measures have been incorporated into the proposed development illustrative layout for the outline application:

- A 2 m high acoustic barrier will be installed along the eastern and southern boundary of the site as described in Figure 2. The barrier will be imperforate, double-boarded and comprise a minimum mass per unit area of 12 kg/m^2 as shown in Figure 3;
- All habitable rooms will be set back from the edge of A24 by at least 30 m;
- All gardens will be enclosed with a close-boarded fence, of minimum height of 1.8 m and a minimum surface density of 10 kg/m^2.

5.3 Based on the noise survey results and the above recommendations, external noise levels of 55 dB $L_{Aeq,\ T}$ or lower are likely to be achievable in all gardens and this is therefore considered acceptable.

5.4 For the properties fronting the A24, it will be necessary to consider mitigation to the building fabric of the dwellings to achieve acceptable internal noise levels with windows closed. Depending on the final layouts and elevations, it is anticipated that acoustically rated double glazing and acoustically rated trickle ventilators may be required to achieve the defined internal noise criteria (ref BS 8233 and WHO Guidelines).

5.5 Figures 3 and 4 show the predicted L_{Aeq} noise contours across the proposed development site for the daytime, at a height of 1.5 m above local grade, and night-time at a height of 4 m above local grade including the proposed mitigation barrier and the illustrative outline layout from The Corde Design and Consulting received in November 2024.

5.6 At the reserved matters stage, when the site layout is finalised a final noise assessment will be undertaken to specify requirements for noise mitigation to dwellings. Acoustic specifications for glazing and ventilation to dwellings will be provided, to ensure acceptable internal noise levels are achieved.

6.0 CONCLUSIONS

6.1 24 Acoustics Ltd has been instructed by Miller Homes, to undertake a noise assessment for a development located at Campsfields, Southwater to accompany an outline planning application. It is proposed to develop the site for a residential scheme.

6.2 Ambient noise surveys have been undertaken to determine the level of noise from the A24 dual carriageway affecting the site.

6.3 Based on the measured noise levels, agreed noise mitigation measures and proposed illustrative layout, acceptable noise criteria can be achieved within the new development.

6.4 On this basis, it is considered that an appropriate acoustic environment can be provided to the proposed residential properties and that the potential for noise impact from nearby noise sources will be suitably controlled.

REFERENCES

1. Ministry of Housing, Communities and Local Government. The National Planning Policy Framework (NPPF), 2023.

2. DEFRA. Noise Policy Statement for England, 2010.

3. Ministry of Housing, Communities and Local Government Planning Practice Guidance, July 2019.

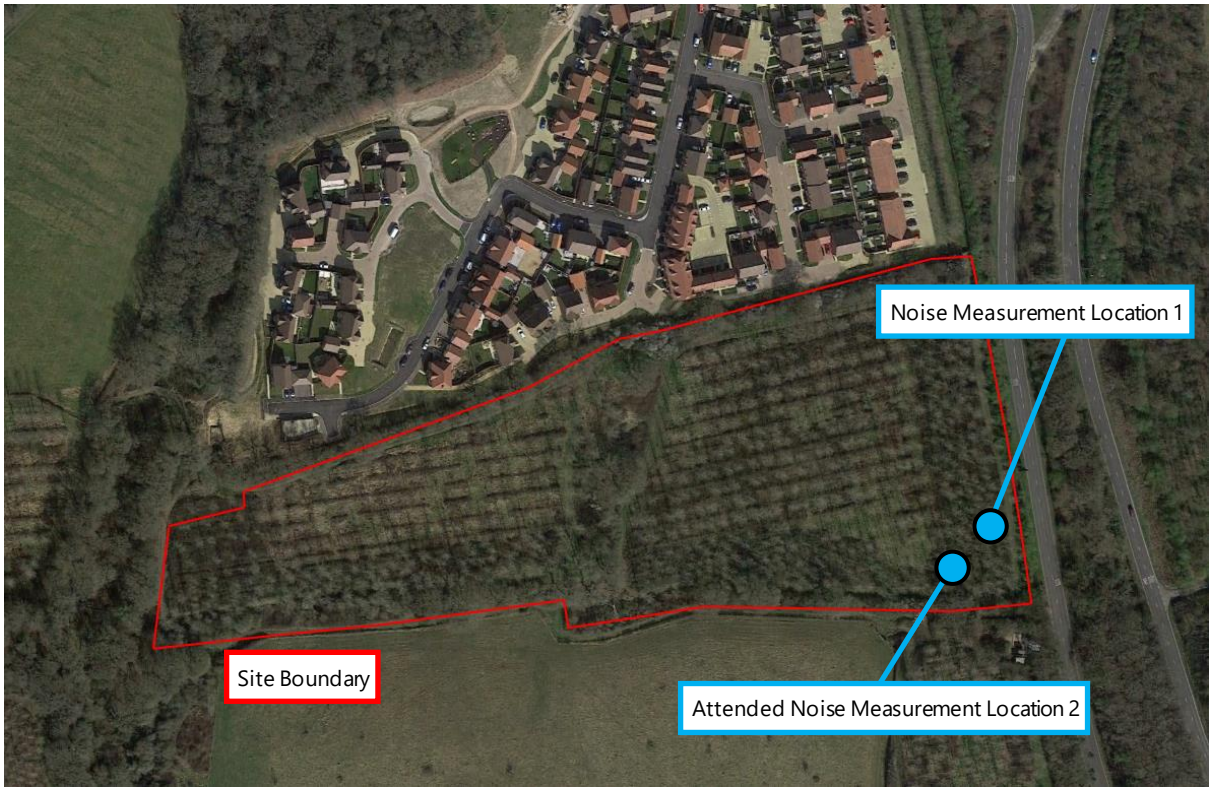
4. 2014. ProPG Professional Practice Guidance on Planning and Noise (ProPG), ANC, IOA, CIEH, May 2017.

5. British Standards Institution. British Standard 8233: Guidance on sound insulation and noise reduction for buildings, 2014.

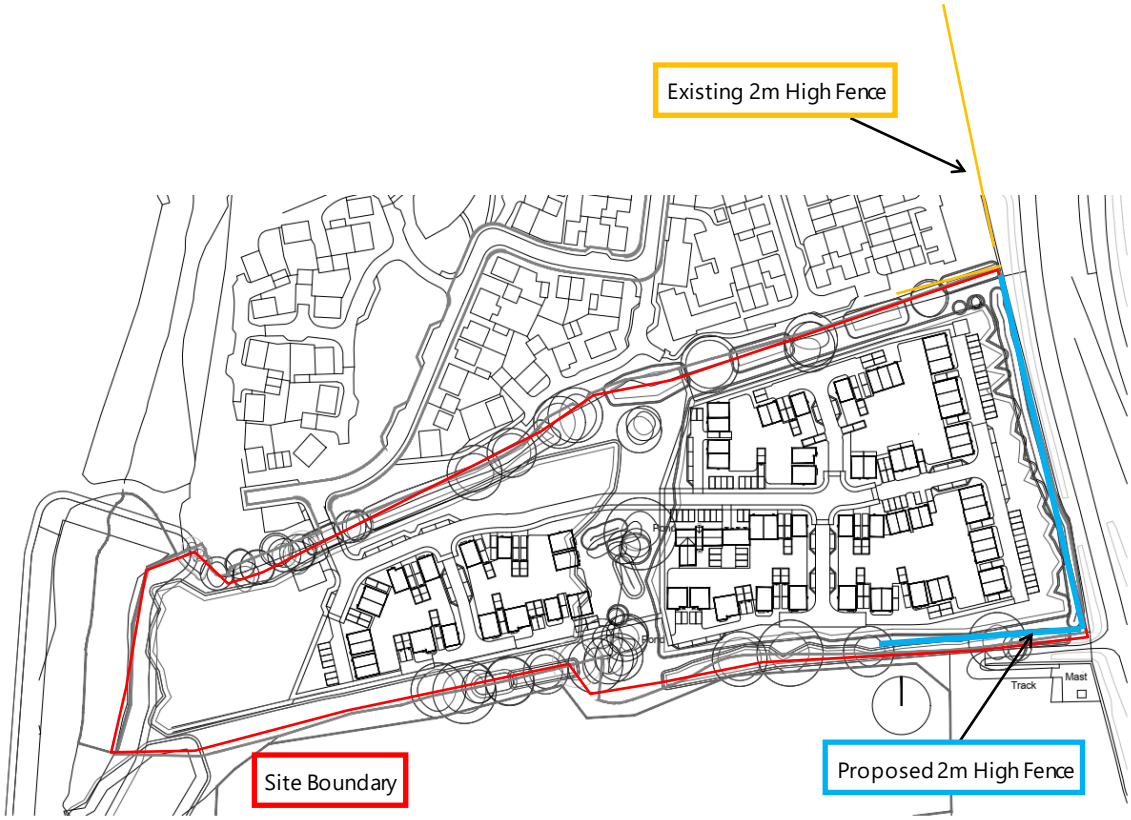
6. British Standards Institution. BS 7445: 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use' 1991.

7. Department of Transport. Calculation of Road Traffic Noise, 1988

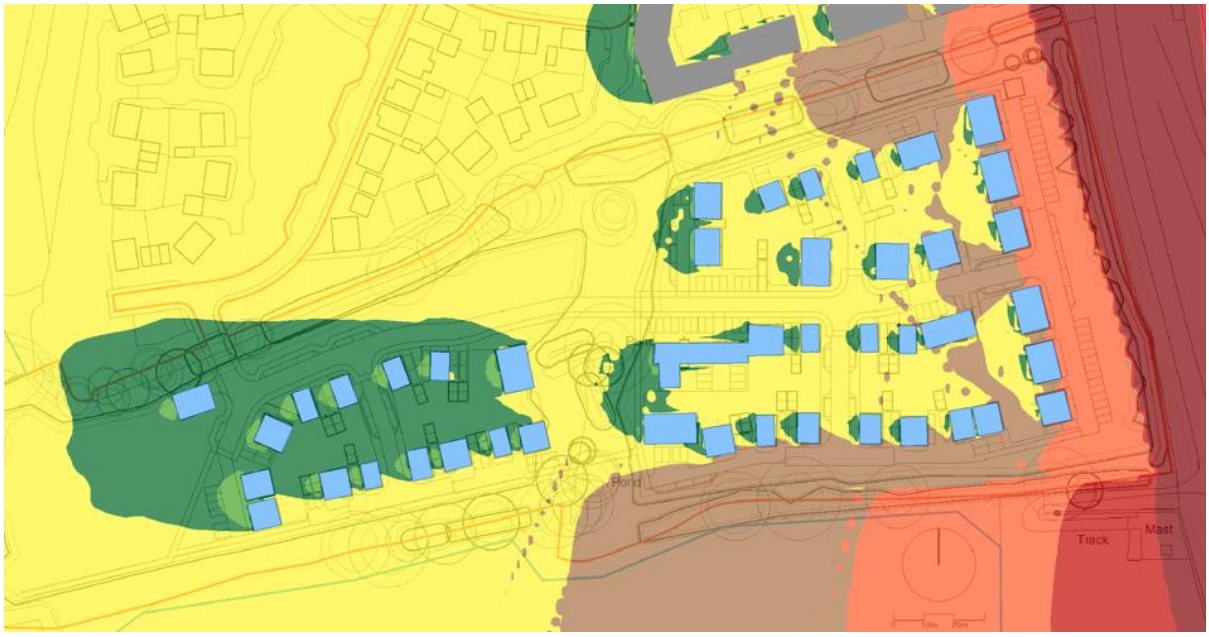
FIGURES

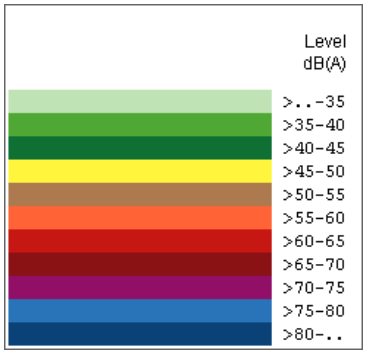


Project: Campsfields, Southwater	**Title:** Site Boundary and Noise Measurement Locations		24Acoustics
DWG No: Figure 1	**Scale:** N.T.S.	**Rev:** 0	
Date: November 2024	**Drawn By:** AP	**Job No:** 10002-2	

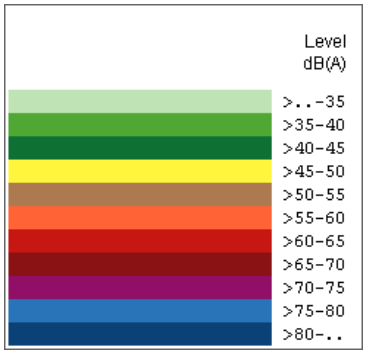


Project: Campsfields, Southwater	**Title:** Proposed illustrative layout and location of the 2 m high fence	
DWG No: Figure 2	**Scale:** N.T.S.	**Rev:** 0
Date: November 2024	**Drawn By:** AP	**Job No:** 10002-2





Project: Campsfields, Southwater	**Title:** Daytime (07:00–23:00) Noise Contours, dB $L_{Aeq, 16\,hr}$		24Acoustics
DWG No: Figure 3	**Scale:** N.T.S.	**Rev:** 0	
Date: November 2024	**Drawn By:** AP	**Job No:** 10002-2	



Project: Campsfields, Southwater	**Title:** Night time (23:00–07:00) Noise Contours, dB $L_{Aeq,\,8\,hr}$		24Acoustics
DWG No: Figure 4	**Scale:** N.T.S.	**Rev:** 0	
Date: November 2024	**Drawn By:** AP	**Job No:** 10002-2	

APPENDIX A NOISE TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in important by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dB(A) is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dB(A). The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dB(A) corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the " value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time internal, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

APPENDIX B: NOISE MEASUREMENT RESULTS