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OAKFIELDS, FAIR OAK

NOISE ASSESSMENT

Technical Report: R8687-2 Rev 2

Date: 21st May 2025

For: Henry Denham-Harding
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1.0 INTRODUCTION

- 1.1 24 Acoustics Ltd has been instructed by Henry Denham-Harding to undertake an environmental noise assessment for land at Oakfields, Fair Oak.
- 1.2 Approval was granted (ref: F/23/96103) for the construction of eight residential dwellings, associated parking and landscaping at the site. Planning condition 13 requires an assessment of noise levels within the proposed dwellings.
- 1.3 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 μ Pa.

2.0 SITE DESCRIPTION

- 2.1 The site is located in a residential area of Fair Oak and currently comprises a large garden, associated with the property Oakfields on Winchester Road.
- 2.2 The B3353 (Winchester Road) follows the eastern site boundary with existing residential properties further to the east as well as to the south and west. A licenced premises, The Fox and Hounds, is located to the north, approximately 75m from the closest site boundary. Noise sources in the area include local and distant road traffic.
- 2.3 It is proposed to construct eight dwellings on the site, comprising a mix of three and four bedroom detached and semi-detached houses with associated garages, located approximately 32m from the B3353. The existing dwelling, Oakfields, is to be retained at the site with an additional garage unit.
- 2.4 The site location is shown in Figure 1. The proposed layout plan is provided in Figure 2.

3.0 ASSESSMENT CRITERIA

Condition 13

- 3.1 Planning condition 13 requires a noise assessment for the proposed dwellings and is reproduced below:

"No development above damp-proof-course level shall proceed until a noise assessment and a site specific scheme of acoustic remedial measures has been submitted to and approved in writing by the Local Planning Authority. The report shall demonstrate that the impact of noise from road traffic has been considered and shall include a scheme of mitigation measures for protecting the development from noise and vibration. The development must thereafter be carried out in full accordance with the approved details prior to the occupation of any dwelling."

- 3.2 It is relevant to note that there are no sources of vibration locally and, therefore, this element has not been considered further.
- 3.3 Following the above, suitable criteria for the assessment of noise within the proposed dwellings is summarised below.

Internal Noise Level Criteria

- 3.4 BS 8233:2014 provides desirable internal ambient noise levels for habitable rooms. Table 1 shows a summary of the levels recommended in BS 8233 for living rooms and bedrooms.

Activity	Location	Design Values, dB L _{Aeq, T}	
		Daytime	Night Time
Resting	Living Room	35 dB L _{Aeq, 16 hour}	-
Dining	Dining Room	40 dB L _{Aeq, 16 hour}	-
Sleeping	Bedroom	35 dB L _{Aeq, 16 hour}	30 dB L _{Aeq, 8 hour}

Table 1: Indoor Ambient Noise Levels

- 3.5 BS 8233 also notes that *"Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or L_{Amax,F}, depending on the character and number of events per night."*

- 3.6 The World Health Organisation (WHO) provides guidance on desirable internal noise levels to minimise the risk of sleep disturbance. The WHO 1999 guidelines suggest internal night-time noise levels not regularly (10 – 15 times per night) exceeding 45 dB $L_{Amax,f}$ for 'a good night's sleep'.

4.0 ENVIRONMENTAL NOISE MEASUREMENTS

- 4.1 Environmental noise measurements were undertaken over the period 11th to 14th May 2025. The following instrumentation was used during the surveys:

- Rion Class 1 sound level meter Type NL52
- Bruel and Kjaer Class 1 acoustic calibrator Type 4231

- 4.2 Calibration of all instrumentation was checked before and on completion of the measurements and no drift was found. The calibration of all 24 Acoustics' equipment is traceable to National Standards.

- 4.3 The weather throughout the survey period was fine and dry with wind speeds lower than 5m/s.

- 4.4 The sound level meter was configured to monitor in one minute sample periods and was set up to measure and store overall A-weighted statistical parameters including the L_{Aeq} , L_{A90} , and $L_{Amax,f}$ and unweighted octave band sound pressure levels. Noise measurements were made at a height of 1.5m and in accordance with BS 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use'.

- 4.5 The equipment was located to the boundary of the site overlooking the B3353, approximately 3 meters from the road edge, at a height of 2 meters. The measurement location is shown in Figure 1.

- 4.6 The measurement results are shown graphically in Appendix B and summarised in Table 2.

Daytime (07:00 - 23:00) dB L_{Aeq} 16 hour	Night-Time (23:00 - 07:00)	
	dB L_{Aeq} 8 hour	Typical dB $L_{Amax f}$
68	62	83

Table 2: Summary of Measured Noise Levels

- 4.7 24 Acoustics determines the typical night-time maximum level to be the tenth highest value during the relevant period.
- 4.8 Noise levels at the proposed facades would be in the order of 61 dB $L_{Aeq, 16 \text{ hour}}$ during daytime periods (07:00 to 23:00 hours) and 56 dB $L_{Aeq, 8 \text{ hour}}$ during night-time periods (23:00 to 07:00 hours) with typical night-time maximum noise levels of 69 dB $L_{Amax, f}$.
- 4.9 Measured noise levels during daytime and night-time periods were influenced by road traffic movements on the B3353.

5.0 CALCULATIONS AND RECOMMENDATIONS

- 5.1 The new properties will be designed to not exceed noise levels of 35 dB $L_{Aeq, 16 \text{ hour}}$ during the day, 30 dB $L_{Aeq, 8 \text{ hour}}$ at night and 45 dB $L_{Amax, f}$ for regular events at night, inside habitable rooms (living rooms/bedrooms).
- 5.2 Masonry external walls have been assumed in the calculations, achieving a minimum sound insulation performance of 52 dB R_w .
- 5.3 Calculations have been undertaken, based on drawings submitted at planning by T2 Architects and HDH Studio Design, and include corrections for distance and screening (where appropriate). The minimum acoustic requirements for the glazing, applicable to all habitable rooms throughout the development, are summarised in Table 3.

Description	Minimum SRI (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
Glazing	24	20	25	35	38	35

Table 3: Glazing Performances

- 5.4 In making a comparison with the values in Table 3, it is important that the glazing figures used are the result of tests in accordance with ISO 10140, Part 2: 2010 and that the quoted minimum sound reduction specifications are met by the entire glazing system as a whole, including frames, seals, any insulated panels and not just the glass. The requirements also apply to any glazed doors to habitable rooms.
- 5.5 For guidance, the following glazing configuration would be capable of achieving the required values in Table 3:

- 4mm glass (6mm-20mm cavity) 4mm glass – 31 dB R_w

5.6 The acoustic performance specifications for ventilators are shown in Table 4.

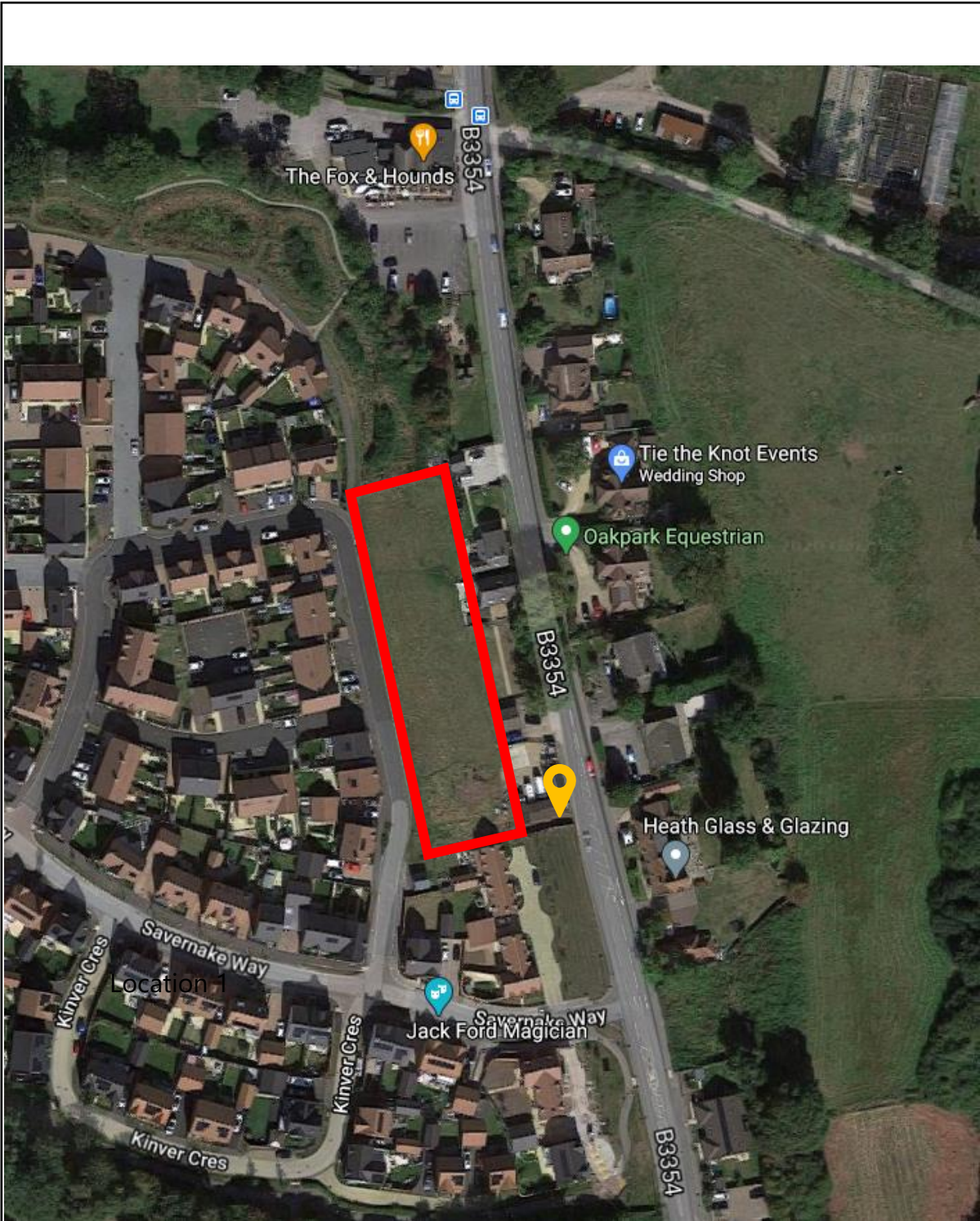
Description	Minimum Acoustic Performance $D_{n,e}$ (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
Vent Type 1	38	37	30	43	43	40
Vent Type 2	23	26	29	30	33	33

Table 4: Ventilator Performances

- 5.7 The Type 1 ventilator is applicable to first floor bedrooms facing Winchester Road, highlighted Figure 2. The Type 2 ventilator is applicable to all other habitable rooms.
- 5.8 In making a comparison with the specifications in Table 4, it is important that the figures used are the result of laboratory tests. The specific ventilation requirements (e.g. equivalent free area etc.) should be confirmed by others. The calculations assume two ventilators per habitable room. If additional ventilators are required, this assessment should be revised.
- 5.9 For guidance, acoustically attenuated trickle vents (e.g. Greenwood 5000EAW.AC1 vent) are capable of achieving the stated minimum performance for Vent Type 1 (minimum overall performance 39 dB $D_{n,e,w}$). Window frame vents with a minimum overall performance of 31 dB $D_{n,e,w}$ should be capable of meeting the Vent Type 2 requirement.
- 5.10 Assuming minimum 2m high close-boarded timber fencing to the properties' boundaries, noise levels in the external amenity areas (gardens) will be in the order of 50 dB $L_{Aeq, 16 \text{ hour}}$ or lower during daytime periods, which is considered acceptable in planning terms.

6.0 CONCLUSIONS

- 6.1 24 Acoustics Ltd has been appointed by Henry Denham-Harding to undertake a noise assessment at Oakfields, Fair Oak in line with the requirements of condition 13.
- 6.2 Ambient noise measurements have been carried out at the site to determine existing noise levels from road traffic.
- 6.3 Recommendations for glazing and alternative means of ventilation have been provided to ensure that noise within habitable rooms would comply with maximum internal levels of 35 dB L_{Aeq} during the daytime and 30 dB L_{Aeq} and 45 dB $L_{Amax,f}$ at night for regular events.
- 6.4 Calculations demonstrate that noise levels in external amenity areas will be acceptable.



Noise Measurement Location

Project: Oakfields, Fair Oak	Title: Site and Noise Measurement Location		
DWG No: Figure 1	Scale: N.T.S.	Rev: A	
Date: May 2025	Drawn By: KE	Job No: 8687-2	



Vent Type 1 –  (first floor bedrooms only)

Vent Type 2 – All unmarked façades (and all living rooms/dining rooms)

Project: Oakfields, Fair Oak	Title: Proposed Site Plan and Vent Type Locations		 24Acoustics
DWG No: Figure 2	Scale: N.T.S.	Rev: E	
Date: May 2025	Drawn By: KE	Job No: 8687-2	

APPENDIX A: ACOUSTIC 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 importance 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 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. 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 an 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 interval, 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.

iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B: NOISE SURVEY RESULTS