



Armstrong House
3 Bassett Avenue
Southampton
SO16 7DP

T: 02381 555 000

FINCHWOOD PARCEL 13
PLANT NOISE ASSESSMENT

Technical Report: R11060-3 Rev 0

Date: 16th April 2026

For: Vistry Thames Valley
550 Oracle Parkway,
Thames Valley Park,
Reading,
RG6 1PT

24 Acoustics Document Control Sheet

Project Title: Finchwood Parcel 13 – Plant Noise Assessment

Report Ref: R11060-3 Rev 0

Date: 16th April 2026

	Name	Position	Signature	Date
Prepared by	Kiel Edwards BSc MIOA	Senior Consultant		16/04/2026
Reviewed and Approved by	Neil McLeod BA (Hons) MIOA	Principal Consultant		16/04/2026
For and on behalf of 24 Acoustics Ltd				

Document Status and Approval Schedule

Revision	Description	Prepared By	Reviewed By	Approved By
0	Approved for issue	Kiel Edwards	Neil McLeod	Neil McLeod

DISCLAIMER

This report was completed by 24 Acoustics Ltd on the basis of a defined programme of work and terms and conditions agreed with the Client. The report has been prepared with all reasonable skill, care and diligence within the terms of the Contract with the Client and taking into account the project objectives, the agreed scope of works, prevailing site conditions and the degree of resources allocated to the project.

24 Acoustics Ltd accepts no responsibility whatsoever, following the issue of the report, for any matters arising outside the agreed scope of the works.

This report is issued in confidence to the Client and 24 Acoustics Ltd has no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk.

Unless specifically assigned or transferred within the terms of the agreement, 24 Acoustics Ltd retains all copyright and other intellectual property rights, on and over the report and its contents.

© 24 Acoustics Ltd 2026

CONTENTS		PAGE
1.0	INTRODUCTION	4
2.0	PLANNING CONDITION 14	4
3.0	CRITERIA	5
4.0	NOISE ASSESSMENT	6
5.0	CONCLUSIONS	8
FIGURE 1	SITE PLAN	9
APPENDIX A	ACOUSTIC TERMINOLOGY	10

1.0 INTRODUCTION

- 1.1 24 Acoustics Ltd has been instructed by Vistry Thames Valley to carry out a noise assessment in relation to a planning condition for their residential development site at Finchwood Park, Parcel 13.
- 1.2 24 Acoustics' report R11060-1 was submitted in response to Condition 12 of the reserved matters planning consent (reference 250819). Comments have been received from the Local Authority requesting an assessment of the noise impact from plant, including air source heat pumps (ASHP), which will serve individual houses across the site.
- 1.3 This report presents the results of the noise assessment.
- 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 μ Pa.

2.0 PLANNING CONDITION 12

- 2.1 Condition 12 of the planning consent states:

"12. Prior to above-ground construction of the development hereby approved, a Noise Assessment in accordance with BS4142 shall be submitted to and approved in writing by the Local Planning Authority. The assessment shall:

a) be carried out by a suitably qualified acoustic consultant/engineer and shall identify all noise sources (including air source heat pumps) affecting both internal and external areas of the development hereby approved;

b) ensure that all noise implications are mitigated so that internal ambient noise levels for dwellings shall not exceed 35 dB LAeq (16 hour) 07:00-23:00 during the daytime and 30 dB LAeq (8 hour) 23:00-07:00 during the night assuming full road traffic flows at the outset;

c) identify design and/or insulation measures required to ensure that ambient internal noise levels and the noise levels within usable external spaces for the dwellings meet the BS8233 sound insulation and noise reduction for buildings design range 'good' for living accommodation.

The approved mitigation measures shall be implemented prior to first occupation of the dwelling to which they relate and be permanently retained and maintained thereafter."

2.2 Two air source heat pump models will be used on this site, depending on the house size:

- 2 and 3 bed houses - Daikin EDLA04EV3 (58 dBA L_w)
- 4 bed houses - Daikin EDLA16D3v3 (62 dBA L_w)

2.3 This assessment focusses on plant noise levels affecting plots within the part of the site where the greatest density of ASHPs occurs. Site layout plans for these dwellings are shown in Figure 1.

3.0 CRITERIA

BS 4142: 2014+A1:2019 - Methods for Rating Industrial and Commercial Sound

3.1 BS 4142: 2014+A1:2019 provides a method for rating the effects of industrial and commercial sound on residential areas. The standard advocates a comparison between the typical measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction of up to 15 dBA is applied.

3.2 The standard states that a difference between the rating level and the background level of around +10 dBA is an indication of a significant adverse impact, depending on the context and a difference of around +5 dBA is likely to be an indication of an adverse impact again depending on the context. Where the rating level does not exceed the background noise level, this is an indication of the specific sound source having a low impact (depending upon the context).

3.3 The standard also states:

Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

3.4 With the introduction of permitted development rights in 2011, noise from individual heat pumps, as proposed, are more typically assessed under the Microgeneration Certification Scheme Planning Standards (MCS 020), as discussed in the following sections. Although the ASHPs serving Parcel 13 do not fall within permitted development, heat pumps are recognised as a preferred source of heating for new housing, hence the MCS 020 streamlined approach to assessment is considered appropriate.

Permitted Development Rights for Air Source Heat Pumps

- 3.5 MCS 020 Planning Standards for Permitted Development Installations of Wind Turbines and Air Source Heat Pumps on Domestic Premises presents a simple methodology for assessing the noise impact from air source heat pumps. It determines the overall noise level at an assessment point 1 m from the centre of a window / door at a neighbouring property to where the ASHP is located.
- 3.6 To calculate the sound pressure from the ASHP the method takes into account the following parameters:
- Manufacturer's stated sound power level for the air source heat pump;
 - Directivity in relation to where the heat pump is located relative to nearby reflective surfaces,
 - Distance from the pump to the assessment location.
- 3.7 The method then logarithmically adds an assumed ambient noise level of 40 dB to the predicted ASHP noise level. This overall level is deemed a 'Pass' if it does not exceed 42 dBA.

IOA Heat Pumps Professional Advice Note

- 3.8 The Heat Pumps Professional Advice Note, updated jointly by the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH) in 2026, introduces tiered assessment pathways for responding to MCS 020a. For standard installations requiring planning permission, it recommends a "Level 1" desktop assessment. This route typically requires demonstrating, via calculation, that the sound rating level from the unit does not exceed 37 dBA at 1m from any noise sensitive façade of neighbouring residential premises, which generally avoids the need for a full background noise survey.

BS 8233: 2014

- 3.9 Planning condition also refers to BS 8233:2014, which 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 $L_{Aeq,16 \text{ hour}}$ in living rooms and bedrooms during the day and 30 dB $L_{Aeq,8 \text{ hour}}$ in bedrooms at night. These criteria typically apply for anonymous steady external noise sources.
- 3.10 Of relevance to the wording of condition 14, BS 8233 advises that:

"If partially open windows were relied upon for background ventilation, the insulation [of the façade] would be reduced to approximately 15 dB"

4.0 NOISE ASSESSMENT

4.1 The site layout has been reviewed and two example plots at the greatest density of neighbouring ASHPs (cumulative impact) have been identified (see Figure 1):

- Terraced plot 34 (2 bed): The ASHPs are located adjacent to the boundary garden fences
- Semi-Detached plot 8 (4 bed): The ASHP for the neighbouring plot is at the boundary fence

4.2 These two plots represent the worst-case scenarios for both ASHP types. All other plots will be subject to levels that are equal to or lower than those experienced by these two examples. Existing properties not associated with the wider development are sufficiently distant/screened from proposed ASHP units and have not been considered further.

4.3 The boundary fences are close-board or larch lap in construction and will provide acoustic screening between the heat pumps and nearest windows (at a minimum distance of 2.1m).

4.4 Calculations have been undertaken to establish the cumulative plant noise levels anticipated outside the most affected properties and take into account reflections, distance loss and acoustic screening.

4.5 The results are described below with indicative internal noise levels, assuming 10 to 15 dBA loss for an open window:

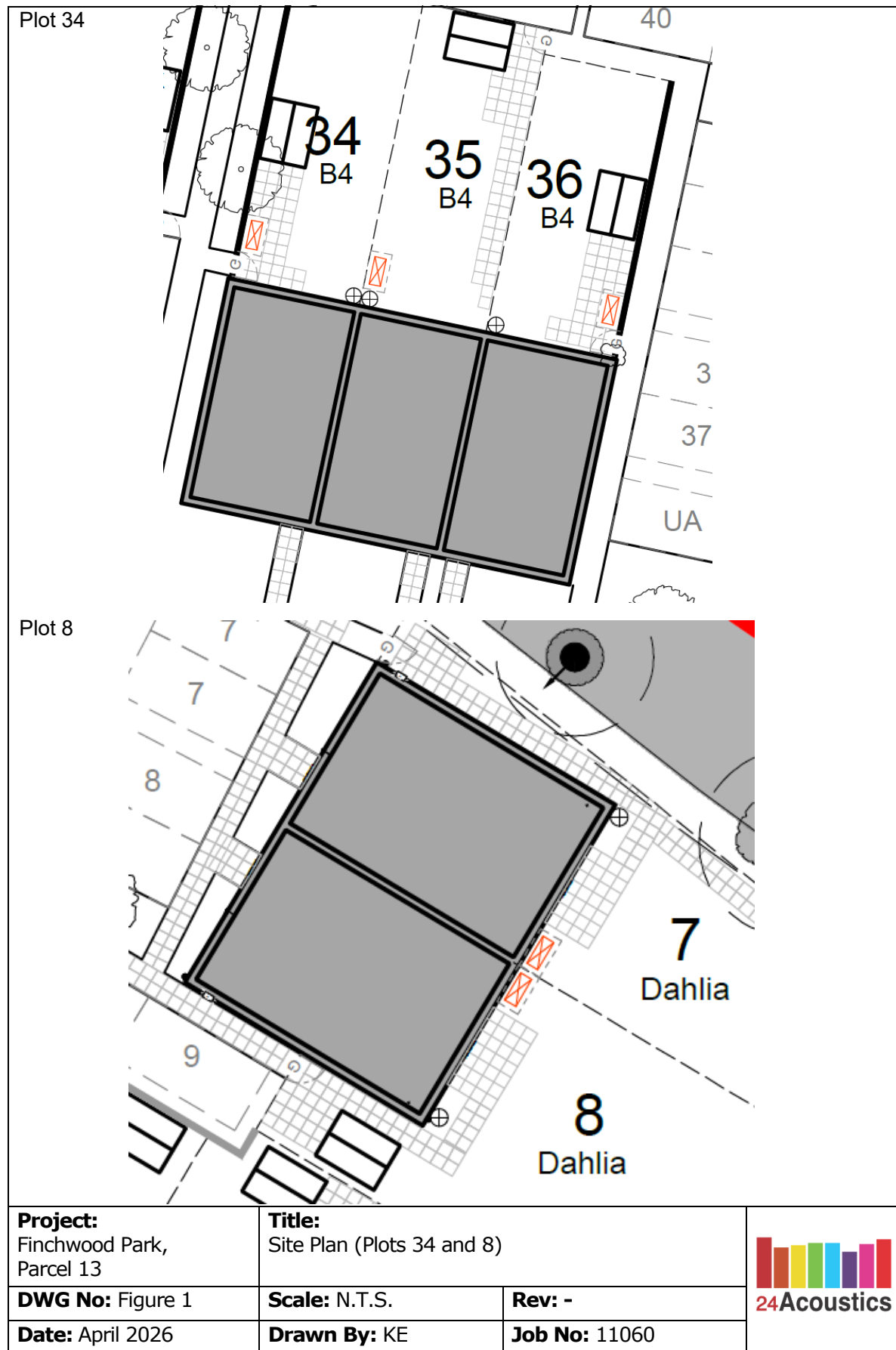
Plot No.	Predicted Plant Noise Level	
	Outside	Inside
34	37 dB $L_{Aeq, T}$	22 to 27 dB $L_{Aeq, T}$
8	36 dB $L_{Aeq, T}$	21 to 26 dB $L_{Aeq, T}$

Table 1 - ASHP Predicted Noise Levels at the Nearest Window

4.6 The calculation results conclude that external noise levels from ASHPs will not exceed 37 dB $L_{Aeq, T}$ and is therefore in line with the guidance set out in the Heat Pumps Professional Advice Note published by the Institute of Acoustics.

5.0 CONCLUSIONS

- 5.1 24 Acoustics Ltd has been instructed by Vistry Thames Valley to carry out a noise assessment in relation to a planning condition for their residential development site at Finchwood Park, Parcel 13.
- 5.2 An assessment of internal noise levels from air source heat pumps, which will serve individual houses across the site, has been requested by the Local Authority.
- 5.3 The results of plant noise calculations demonstrate that the proposed units will be acceptable, with no further mitigation measures required.
- 5.4 On the basis of the above, the development complies with relevant criteria/guidance.



APPENDIX A – SOUND INSULATION TERMINOLOGY

The Decibel, dB

The unit used to describe the magnitude of sound is the decibel (dB) and the quantity measured is the sound pressure level. The decibel scale is logarithmic and, as such, it ascribes equal values to proportional changes in sound pressure, which is a characteristic of the ear. Use of a logarithmic scale has the added advantage that it compresses the very wide range of sound pressures to which the ear may typically be exposed (0.0002Pa to 20Pa) to a more manageable range of numbers. The threshold of hearing occurs at approximately 0dB and the threshold of pain is around 120dB.

Airborne Sound Insulation

Voices, hi-fi systems, television and radio sound and musical instruments are all sources of airborne sound. They excite the air around them and the vibration in the air is transmitted to surrounding surfaces, such as walls, ceilings and floors. This sets these constructions into vibration and this vibration is re-radiated in neighbouring rooms as sound. Energy is lost in the transmission path and this is referred to as transmission loss or more generally, airborne sound insulation. The most simple measure of sound insulation between two rooms is the sound level difference, D , which is the arithmetic difference between the sound level, in dB, in the source room and the sound level in the receiving room.

Other measures of sound insulation include the sound reduction index (R , obtained by laboratory test), the apparent sound reduction index (R' , obtained in field tests) and the standardised level difference (D_{nT} , used mainly in the sound insulation of rooms in dwellings and other cellular rooms). The relevant test procedures are laid down in BS EN ISO 140. The results are obtained over a range of frequencies. A single-figure “weighted” result can be obtained from one-third octave band results measured over the frequency range 100 - 3150Hz by using a curve-fitting procedure laid down in BS EN ISO 717. The subscript “w” is added to the descriptors above, for example; $D_{nT,w}$. The C_{tr} value is a correction factor (normally negative) which takes additional account of low frequency performance of the structure tested.

Impact Sound Isolation

In the case of impact sound, the building construction is caused to vibrate as a result of a physical impact. Footsteps on floors are the most obvious example. The vibration is radiated as sound in neighbouring rooms. Impact insulation is measured using a standard tapping machine, which drops weights cyclically onto a floor. The sound pressure level is measured in the receiving room below and the result is known as the impact level, L_i . This test is used in the evaluation of domestic separating floors. As with airborne sound, the test procedures are set out in BS EN ISO 140 and the single-figure weighting of the results is described in BS EN ISO 717. The descriptor for the final result of a field test is $L'_{nT,w}$.

Reverberation time

The reverberation time is a measure of the rate of decay of sound in a room and this influences the sound pressure level of noise in that room. It is defined as the time taken, in seconds, for the level of sound in a room to decrease by 60 dB (a millionth of its original energy value) after the discontinuation of a sound. A reverberation time of 0.5s is used to standardise sound insulation test results in dwellings. Reverberation time is measured in accordance with the requirements of BS EN ISO 140.