



**Phases 4 and 5
Hogwood Farm
Finchampstead**

Planning Condition 15 Acoustic Report

24 March 2025

For
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SUMMARY

It is proposed to Phases 4 and 5 of the site at Hogwood Farm in Finchampstead to create residential dwellings.

auricl has undertaken an environmental noise survey to assess noise levels affecting the site and permit assessments to be undertaken in relation to the requirements of planning condition 15.

Based on the noise survey results, calculations have been undertaken to determine the acoustic requirements of the new façades, so as to achieve suitable internal noise levels within the residential properties.

Our calculations indicate that the internal noise standards should be easily achievable using standard, non-acoustic construction elements.

In addition, the proposed air source heat pumps have been assessed and are not predicted to give rise to an adverse noise impact.

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1.0 Introduction

It is proposed to develop Phases 4 and 5 of the site at Hogwood Farm in Finchampstead to create residential dwellings.

auricl has been instructed to undertake an environmental noise survey to assess noise levels affecting the site and undertake assessments in relation to the requirements of planning condition 15.

The following report presents the methodology and results of the environmental noise survey carried out at the site, and an assessment of noise affecting the proposed development.

The report is technical in nature therefore a description of the acoustic terminology used can be found in Appendix A.

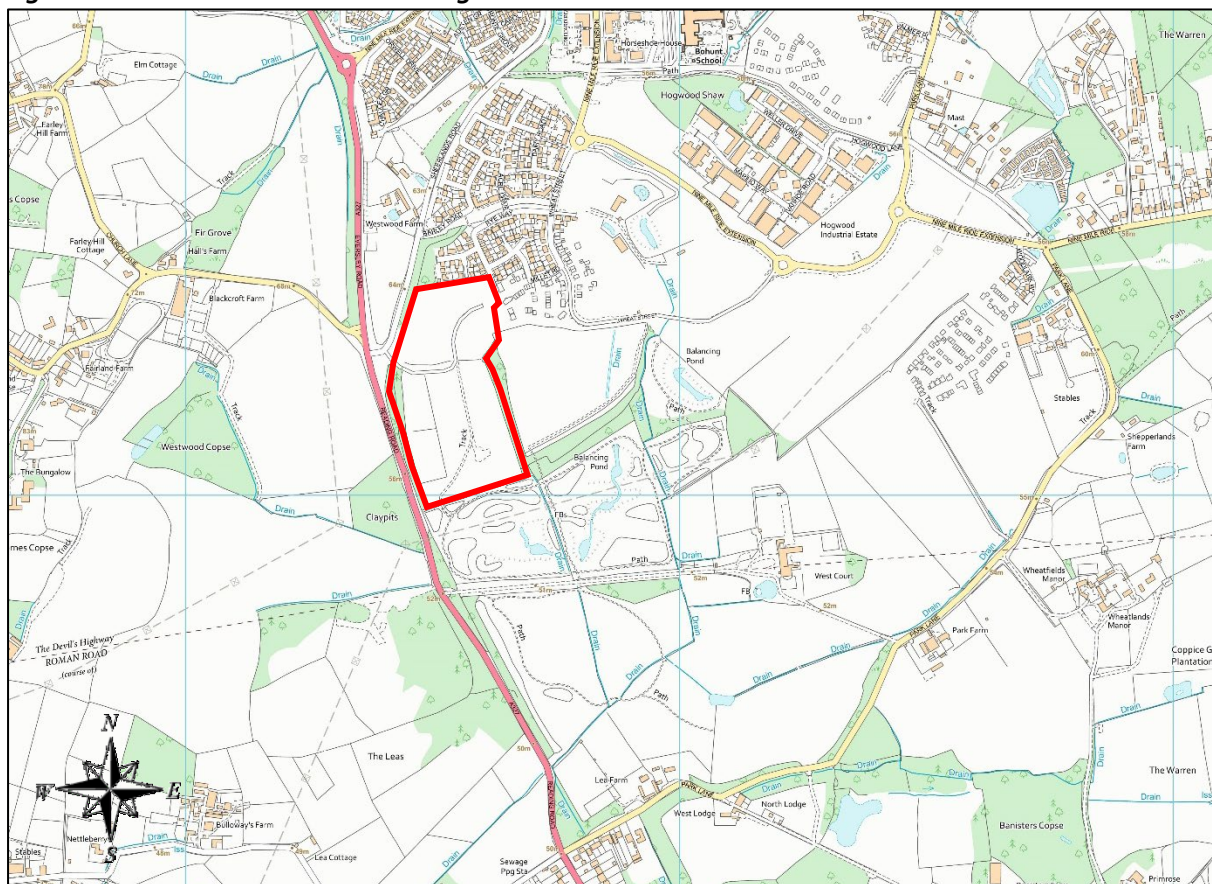
2.0 Description of Site and Proposals

The proposed development site forms Phases 4 and 5 of the wider Hogwood Farm development and is located on the eastern side of the A327 Reading Road in Finchampstead. The site is bounded by open land to the south and east, as well as residential properties to the north.

As part of the wider development, further residential development is proposed to the east of the site whilst the land to the south will remain as open SANG land.

Figure 2.1 indicates the approximate existing site extent in **red** in relation to the surrounding area.

Figure 2.1 Site Extent and Surroundings



The approved site layout is shown in Figure 2.2.

Figure 2.2 Current Proposed Site Plan



3.0 Planning Condition 15 Requirements

Planning condition 15 for the proposed development states the following:

“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:

- (i) *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;*
- (ii) *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;*
- (iii) *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”*

British Standard 8233: 2014 “Guidance on sound insulation and noise reduction for buildings” is currently the industry standard specifying acceptable internal noise limits for residential dwellings, which are presented in Table 3.1.

Table 3.1. BS 8233: 2014 Internal Noise Limits

Activity	Location	07:00 – 23:00 hours	23:00 – 07:00 hours
Resting	Living room	35 dB LAeq, 16 hr	-
Sleeping / daytime resting	Bedroom	35 dB LAeq, 16 hr	30 dB LAeq, 8 hr

We have based our acoustic assessments on the above.

4.0 Noise Survey

4.1 Noise Survey Methodology

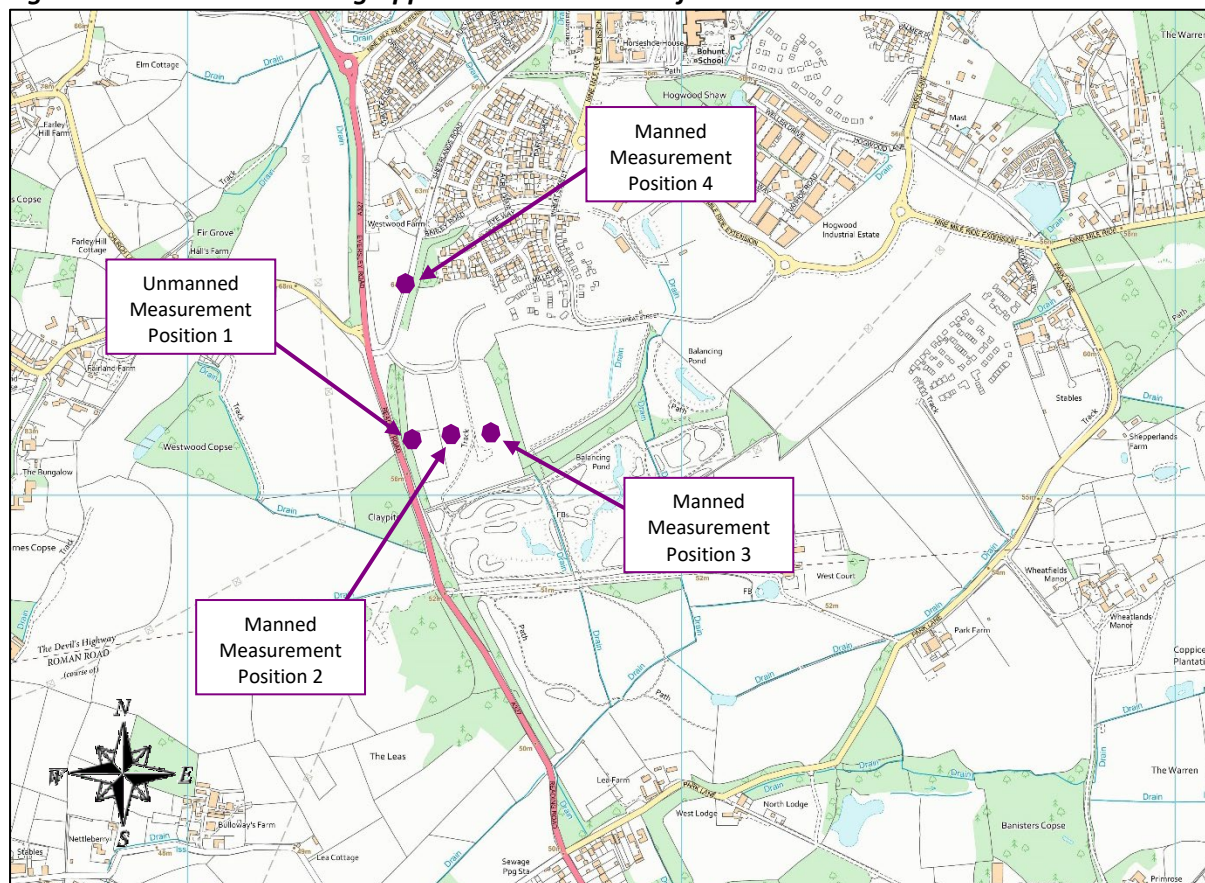
An unmanned environmental noise survey was undertaken at the proposed development site over a 5-day period between Friday 5 January 2024 and Wednesday 10 January 2024 to determine typical environmental noise levels over daytime and night-time periods.

The unmanned measurement microphone was attached to a pole approximately 3m above ground level near the western site boundary. This position was selected as a worst-case position for assessing environmental noise levels affecting the site.

In addition, shorter-term manned noise measurements were undertaken on Wednesday 10 January 2024 at three further positions, to assess the variation in noise levels across the site.

The measurement positions are indicated on Figure 4.1.

Figure 4.1 Site Plan Indicating Approximate Locations of Measurement Positions



The equipment used for the noise survey is summarised in Table 4.1.

Table 4.1 Description of Equipment used for Noise Survey

Measurement Position	Item	Make & Model	Serial Number
1	Type 1 automated logging sound level meter	01dB FUSION	11388
	Type 1 ½" microphone	GRAS 40CE	292359
	Calibrator	01dB CAL21	34375252
2, 3 and 4	Type 1 automated logging sound level meter	01dB CUBE	12032
	Type 1 ½" microphone	GRAS 40CE	330829
	Calibrator	01dB CAL21	87267

L_{Amax} , L_{Aeq} and L_{A90} sound pressure levels were measured throughout the noise survey over contiguous 1-second intervals.

The noise monitoring equipment was calibrated before and after the noise survey period. No significant change was found. Laboratory equipment calibration certificates can be provided upon request.

Due to the nature of the noise survey, i.e. unmanned, we are unable to comment on the exact weather conditions throughout the entire noise survey period, however at the beginning and end of each survey period there was noted to be dry conditions with clear skies and only light wind. These conditions are considered appropriate for undertaking environmental noise measurements.

4.2 Noise Survey Results

Appendix B presents a time history graph showing the L_{Amax} and L_{Aeq} sound pressure levels measured throughout the noise survey at the unmanned measurement position (shown as 15-minute intervals).

A summary of the L_{Amax} and L_{Aeq} noise levels is presented in Table 4.2.

Table 4.2 Summary of Unmanned Noise Survey Results

Measured Noise Level (dB)		
Parameter	Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00 hours)
$L_{Aeq, T}$	62	53
$L_{Amax, 10th\ Highest}$	-	73

Noise levels at manned measurement position 2 were found to be approximately 8 dB less than the unmanned measurement position, and a further 5 dB less at manned measurement position 3. At position 4, the noise levels were found to be approximately 12 dB less than at the unmanned measurement position.

During our site visits, the ambient daytime noise climate at the site was noted to be dominated by road traffic noise emanating from the A327 to the west.

The measured noise levels are considered to be reasonable, taking into account the measurement positions and dominant nearby noise sources.

5.0 External Noise Intrusion

5.1 External Noise Levels

A 3D noise model of the development has been created in Predictor 2023.1 software to predict the variation in noise levels around the proposed development site.

The measured site noise levels have been corrected to account for increased road traffic flows along the A327 to the west of the site (dominant noise source) that have been predicted for the opening year in 2026, taken from the Transport Assessment for the wider Hogwood Garden Village hybrid planning application by Messrs Royal Haskoning DHV (report reference PB2112/RR01002/303814/Lond, dated October 2014).

The Transport Assessment shows a predicted increase in traffic flow along the A327 of 12.59% (morning peak hour) and 12.79% (evening peak hour)– we have therefore used the latter as a worst-case, resulting in an increase in both daytime L_{Aeq} (16 hour) and night-time L_{Aeq} (8 hour) noise levels of 0.6 dB.

Taking the above into account, images of the model showing the predicted daytime L_{Aeq} (16 hour) and the night-time L_{Aeq} (8 hour) noise level variation around the proposed development site are shown in Figures 5.1 and 5.2.

Figure 5.1 Noise Model – Proposed Site – Daytime L_{Aeq} (16 hour)

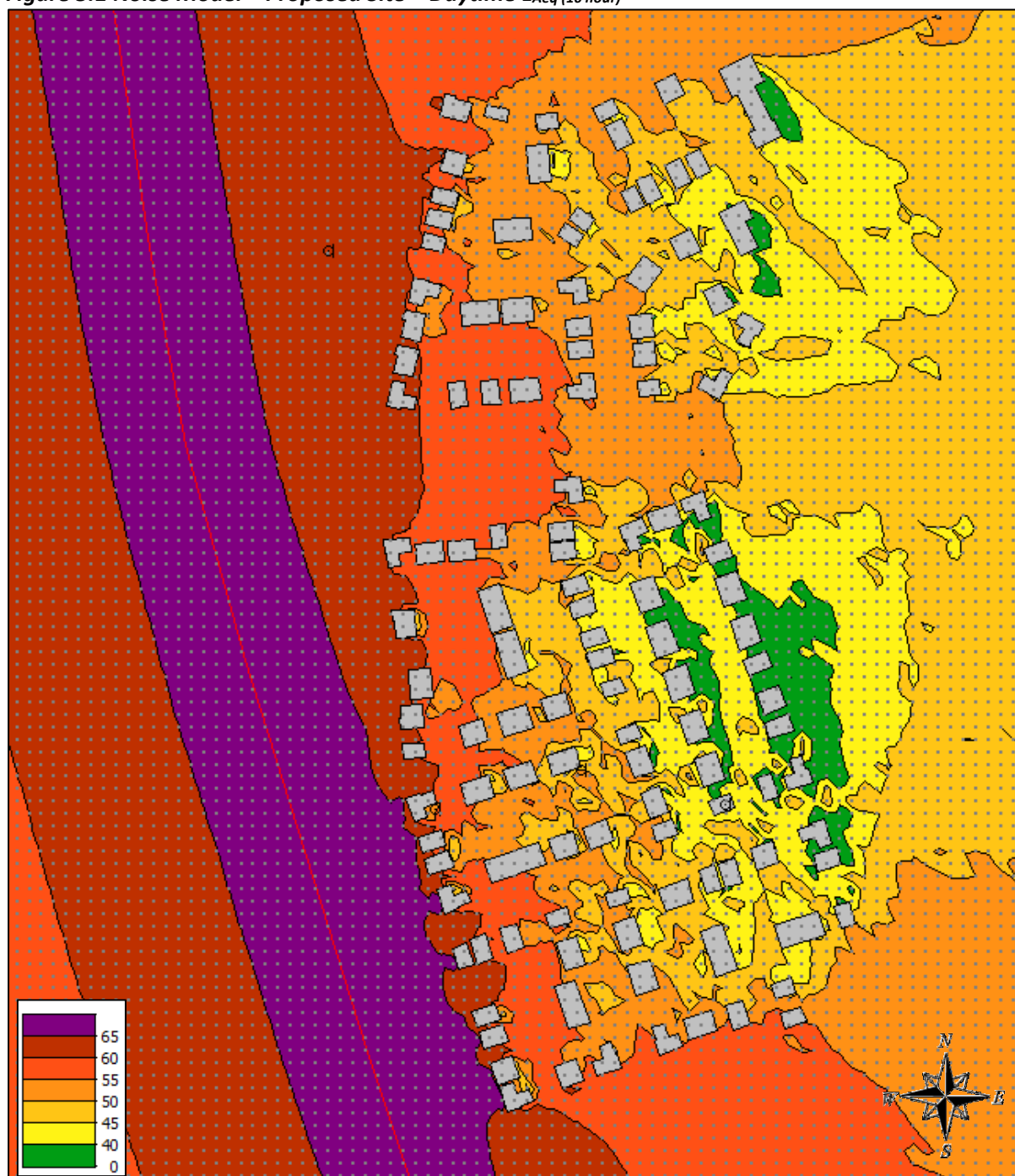
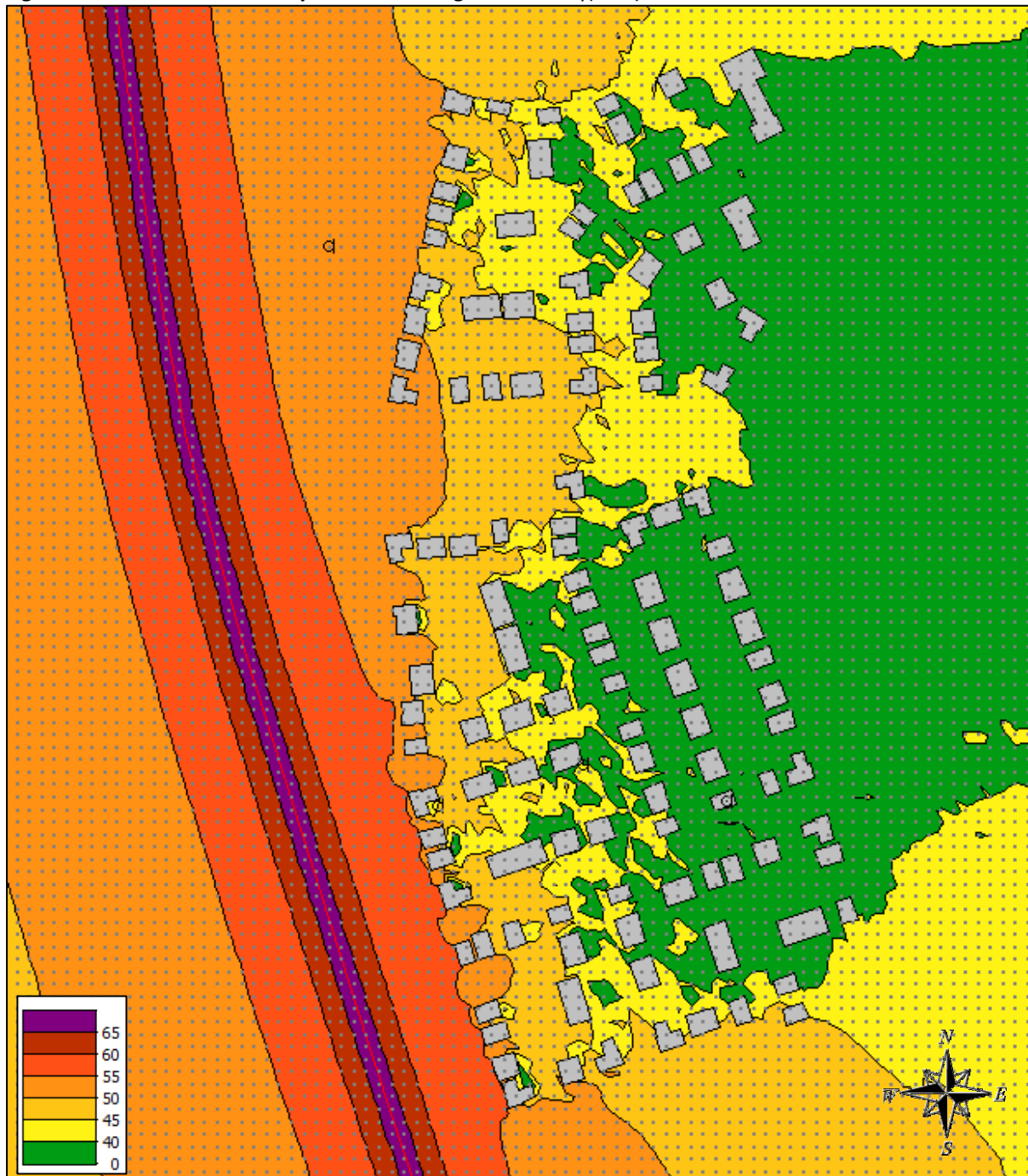


Figure 5.2 Noise Model – Proposed Site – Night-time L_{Aeq} (8 hour)



It can be seen that daytime noise levels affecting the proposed dwellings are predicted to range from 45-60 dB L_{Aeq} (16 hour) across the site, whilst night-time noise levels are predicted to range from 40-55 dB L_{Aeq} (8 hour).

5.2 External Building Envelope

Based on the measured external noise levels, we have undertaken preliminary calculations to predict the internal noise levels in the proposed residential units. Results of the calculations show that the standards described in Section 3.1 could be achieved by using suitable external façade constructions.

Our calculations indicate that the internal noise level criteria proposed in Section 3.1 should be achievable throughout the site using the following standard non-acoustic construction elements:

- Thermal double glazing achieving sound insulation of at least R_w 34 dB (e.g. 6mm glass / 16mm cavity / 6mm glass)
- Standard non-acoustic trickle ventilators achieving sound insulation of at least $D_{ne,w}$ 37 dB
- Typical brick/block cavity external wall construction, or lightweight timber frame external wall construction, achieving sound insulation of at least R_w 45 dB

Room and window dimensions are yet to be finalised. We have therefore assumed typical dimensions in our calculations (i.e. based on bedrooms 30m³ with a 25% glazed façade area, living rooms 40m³ with a 50% glazed façade area).

The strategy above is to demonstrate viability for preliminary guidance only. Further modelling and assessment should be undertaken during the detailed project design stage to determine detailed acoustic specifications for the external façade elements.

6.0 Building Services Plant Noise Emissions

Each of the proposed properties is to be equipped with an air source heat pump, which is to be a Daikin Altherma 3 operating at a sound power level of 58 dB L_{WA} sound power level with a physical volume of 0.35m³.

The units are to be located on the rear wall of each property, at least 3.5m from the nearest neighbouring window. On this basis, our calculations to predict the air source heat pump noise level at the nearest neighbouring window are presented in Table 6.1.

Table 6.1 Air Source Heat Pump Noise Calculations

Element	Level (dB)
Unit Sound Power Level	58
Acoustic Reflections	+3
Distance Attenuation	-18
Predicted Sound Pressure Level at Nearest Neighbouring Window	43
Typical Open Window Attenuation	-13
Internal Noise Level	30

It can be seen that the air source heat pump noise level is not predicted to exceed the internal noise level limits specified in planning condition 15.

The proposed air source heat pumps are therefore not predicted to give rise to an adverse noise impact.

7.0 Conclusion

It is proposed to Phases 4 and 5 of the site at Hogwood Farm in Finchampstead to create residential dwellings.

auricl has undertaken an environmental noise survey to assess noise levels affecting the site and permit assessments to be undertaken in relation to current guidance documents.

Based on the noise survey results, calculations have been undertaken to determine the acoustic requirements of the new façades, so as to achieve suitable internal noise levels within the residential properties.

Our calculations indicate that the internal noise standards should be easily achievable using standard, non-acoustic construction elements.

In addition, the proposed air source heat pumps have been assessed and are not predicted to give rise to an adverse noise impact.

Appendix A – Acoustic Terminology

Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing (20×10^{-6} Pascals).
Sound Pressure Level (L_p)	The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.
A-weighting (L_A or dBA)	The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.
L_{Amax}	The A-weighted maximum noise level measured during the measurement period.
$L_{Aeq,T}$	The A-weighted equivalent continuous noise level over the time period T (typically T = 16 hours for daytime periods, T = 8 hours for night-time periods). This is the sound level that is equivalent to the average energy of noise recorded over a given period.
L_{A90} (15 min)	The noise level exceeded for 90% of the time (also referred to as the background noise level), measured over a 15-minute period
R_w	The weighted (w) sound reduction index (R), a single figure rating of the laboratory airborne sound insulation performance of a construction, usually measured across the frequency range 100-3150Hz. The higher the value, the greater the sound insulation, and the more onerous the requirement.
$D_{n,e,w}$	The weighted (w) element (e) normalised (n) level difference (D), a single figure indicator of the ability of a small building element (such as a trickle ventilator) to reduce sound. The higher the value, the greater the sound reduction, and vice versa.

Appendix B – Time History Graph

