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AC20145.01.01 Cherry Tree Court, School Close
Burgess Hill, RH15 9QF

External Noise Survey and Plant Assessment

September 2025



i. Contents

i. Contents.....	2
ii. Document History	3
1. Introduction	4
2. Relevant Standards and Guidance.....	4
3. Site Description	4
3.1. Site Description	4
3.2. Proposed Plant Installation	6
3.3. Nearest Noise-Sensitive Receptors.....	6
3.4. Survey Details	6
3.5. Survey Results	7
4. Requirements.....	8
4.1. British Standard 4142:2014.....	8
5. Assessment	9
5.1. Nearest noise-sensitive receptor.....	9
5.2. Proposed Mitigation.....	9
6. Conclusions	10
Appendix A Figure	11



ii. Document History

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1. Introduction

Trace has been appointed by David Miles & Partners Ltd to provide acoustic consultancy services to assist in the planning stages of replacing the pair of Heat Interface Units (HIU) at Cherry Tree Court, School Close, Burgess Hill, RH15 9QF (The Property). This was requested as it is understood the existing HIU are at the end of their life cycle and currently not in operation due to fault.

An assessment is required at The Property to establish the suitability of replacement Air-to-Water Heat Pump (AWHP) adjacent to pre-existing residential properties. In this report, external noise levels impinging upon The Property will be measured and used to assess the impact on prospective residents.

2. Relevant Standards and Guidance

The primary standards used in the preparation of this document are as follows:

- British Standard (BS) 7445: 2003 Part 1 Description and measurement of environmental noise. Guide to quantities and procedures
- British Standard (BS) 4142:2014 Methods for rating and assessing industrial and commercial sound
- Noise Policy Statement for England (NPSE)
- Professional Practice Guidance on Planning & Noise (ProPG)

3. Site Description

3.1. Site Description

The Properties are part of Burgess Hill in the administrative region of Mid Sussex Council. The Property is a 4-storey block of 22 apartments, situated on School Close and built 2011. The south boundary is the B2133 Queen Elizabeth Avenue which is an arterial road that dominates the soundscape. At the north boundary is a primary school which would have periods of noise during daytime hours on weekdays. To the west, across School Close is terraced housing. At the east boundary is a similar style three-storey block of apartments built as part of the development during the same period circa 2011.



Figure 3.1: Site location showing locality.



Figure 3.2: Proposed plant location and measurement location.



3.2. Proposed Plant Installation

It is understood that the project will install 2 No. Daikin EWYE070CZN-A2 AWHP units at ground level, at the position shown in Figure 3.2. The acoustic information (Sound Pressure Level, L_p) provided by the Daikin data sheet for 1 unit, with calculated adjustment for 2 installed units, is provided below in Table 3.3.

Octave Band Sound Pressure Level dB, L_p									
Specified AWHP unit	63	125	250	500	1k	2k	4k	8k	dBA
1 no. Daikin EWYE070CZN-A2	71	72	67	65	62	60	57	54	68
2 no. Daikin EWYE070CZN-A2	74	75	70	68	65	63	60	57	71

Table 3.3: Plant manufacturer's data sheet noise levels, with representative adjustment for 2 units.

3.3. Nearest Noise-Sensitive Receptors

Apartments that form part of The Property will be the nearest noise-sensitive receptors to the proposed plant location. The closest receptor within The Property would be the first-floor apartment window facing west, approximately 11 metres from the position of the AWHP plant installation.

The nearest residential properties beyond the boundary of The Property are located to the West, directly across School Close, at a distance of 20 metres.

3.4. Survey Details

An unattended acoustic survey was carried out by Trace between 12:00 on Thursday, 20 March, and 12:30 on Friday, 21 March 2025. The microphone was in a free field, at the roof edge, fastened to a safety rail. The survey aimed to establish the prevailing residual and background noise levels surrounding the site.

The sound level meter was set to log and store consecutive 15-minute L_{Aeq} , L_{Amax} , and L_{A90} sound levels. During the noise survey, the microphone was protected with a weather-protected windshield. Measurements were undertaken in general accordance with BS 7445-2:2003 '*Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use*'.

Weather conditions during the daytime 20 March survey were bright at 14 degrees Celsius, with no precipitation recorded throughout the survey. The weather is not expected to have had a detrimental effect on the collection of acoustical data.



The sound level meter had calibration checks before and after the measurement surveys to generate a calibration level of 94 dB at 1 kHz. The equipment calibration was verified before and after the survey and no significant calibration drift was observed (<0.5dB). The sound level meter used during the survey was compliant with the Class 1 standard as required by BS EN 61672-1:2013 *Electroacoustics. Sound level metres. Specifications*.

The equipment used is shown in Table 3.. The Microphone and Preamplifier were fitted inside a Svanetek Sa271a Outdoor Kit.

Description	Name	Serial Number	Calibration Due
Sound level meter	Svantek 971	154266	03/12/2026
Microphone	Aco Pacific 7152	92800	03/12/2026
Preamplifier	Svantek Sv18a	155314	03/12/2026
Calibrator	Rion Nc-75	34935217	20/11/2025

Table 3.4 – Equipment Details

All noise equipment has been calibrated to traceable standards within the preceding two years and the acoustic calibrator within the preceding 12 months. Calibration certificates for all equipment used in the survey are available upon request.

3.5. Survey Results

The results of the unattended survey are presented in Table 3.5 below. The L_{A90} background sound level has been established using the most commonly occurring $L_{A90,15min}$ sound level during nighttime, and the most commonly occurring $L_{A90,1hr}$ period during the daytime. The L_{Amax} level is the 90th percentile of the measured $L_{Amax,15min}$ sound levels over the full monitoring period. $L_{Aeq,15min}$ sound levels have been logarithmically averaged to provide full daytime (16 hour) and nighttime (8 hour) sound levels.

Measurement period	Measured Noise Levels (dB re 2.0×10^{-5} Pa)			
	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
Daytime (07:00 - 23:00)	60	82	56	43
Night-time (23:00 - 07:00)	47	72	42	31

Table 3.5 Summary of measurement results



4. Requirements

4.1. British Standard 4142:2014

Based on the measurement results, a noise rating level is proposed in line with the methodology provided in BS 4142:2014 Methods for rating and assessing industrial and commercial sound. The proposed rating level is to be inclusive of any rating penalties deemed required, depending on the items of plant equipment installed. BS 4142 also provides guidance on the likely adverse impact from background noise exceedances:

Typically, the greater this difference, the greater the magnitude of the impact. ***Bold italics*** are added for clarity.

- ***High Impact*** - A difference of around +10 dB or more is likely to be an indication of significant adverse impact, depending on the context.
- ***Medium Impact*** - A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- ***Low impact*** - A difference of around 5 dB or under is indication of that noise emission will not cause adverse impact, depending on the context.
- ***Very Low impact*** - Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

The lower the rating level is relative to the measured L_{A90} background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.

Mid Sussex District Council provides specific guidance in its Planning Noise Advice Document: Sussex (November 2023). The document requires assessments to follow BS 4142 methodology, including the rating level of new plant noise to be at least 5 dB below the background sound level (L_{A90}) at the nearest noise-sensitive receptor. Table 5.1 shows the typical L_{A90} level measured at The Property.

Description	Typical Background Sound Level (dB L_{A90})
Daytime (07:00 - 23:00)	35
Night-time (23:00 - 07:00)	23

Table 4.1: Recommended external plant noise emission requirements.

Following BS4142:2014, if the plant noise level does not exceed the background sound level at the nearest noise-sensitive receptor, this will indicate a low impact. However, it is typical in such assessments to place a 30 dB lower limit on any external acoustic requirements. At this level internal ambient noise levels are expected to be inaudible.

5. Assessment

5.1. Nearest noise-sensitive receptor

As described in Section 3.3, the nearest noise-sensitive receptor would be the first-floor apartment directly south of the proposed plant location. The plant, located at ground level, will be approximately 15 metres from the residential window.

Description	Octave Band Sound Level (dB)								dBA
	63	125	250	500	1k	2k	4k	8k	
2 no. Daikin EWYE070CZN-A2	74	75	70	68	65	63	60	57	71
Distance to nearest window (11 metres) ' $L_p + 10 \cdot \log((2/(4 \cdot \pi)) \cdot 15^2)$ '	-32	-32	-32	-32	-32	-32	-32	-32	-
Unit Sound Pressure (Lp) at Receptor	42	43	38	36	33	31	28	25	39

Table 5.1: Plan noise level at nearest residential window

Based on the calculated noise level above an assessment against the projects criteria can be seen below in Table 5.2

Specified AWHP unit	Level at Window dB $L_{Aeq,T}$	Criteria dB $L_{Aeq,T}$	Required Reduction
2 no. Daikin EWYE070CZN-A2	39	30	-9 dB

Table 5.2: Required specification of acoustic enclosure.

5.2. Proposed Mitigation

The expected plant noise level exceeds the background sound level by around 9 dB. To maintain reasonable noise levels at the façade of The Property it is proposed that the plant be screened on all four sides such as to remove a light of sight to the units from the nearby sensitive receptors.

The Daikin EWYE070CZN-A2 units are around 1.9 m high, while a second-floor receptor window is typically 6.0–6.5 m above ground at a lateral distance of 15 m. A barrier tight around the units would need to be about 2.7 m high to interrupt line-of-sight. Allowing a margin for diffraction and any setback of the screen from the unit edges, a practical screen height of 3.0 m is recommended.

The screen should be of solid construction with a minimum surface density of 15–20 kg/m² (e.g. metal cassette, timber/composite board, or equivalent) and lined on the plant side with 50 mm mineral wool or similar absorptive treatment. This provides the necessary mass and absorption to limit reflections and achieve an insertion loss of around 10 dB.



6. Conclusions

An environmental noise survey and plant noise assessment have been carried out by Trace Surveys Ltd in support of the proposed installation of Daikin Air Source Heat Pump units at Cherry Tree Court, School Close, Burgess Hill.

The survey measured prevailing noise levels at the site over a 24-hour period, with particular attention paid to the background sound levels at nearby residential properties. The typical background sound level was found to be 43 dB L_{A90} during the daytime and 31 dB L_{A90} during the night-time.

A detailed assessment has been conducted in accordance with the methodology outlined in BS 4142:2014. The unmitigated noise level from the plant is expected to be 9 dB above the project specific target of 30 dB $L_{Aeq,T}$ at the nearest noise sensitive property.

The use of A 3.0 m high acoustic screen of solid construction ($\geq 15\text{--}20 \text{ kg/m}^2$) with plant-side absorption (e.g. 50 mm mineral wool) to break line-of-sight to the nearby first and second-floor receptors and provide an insertion loss of around 10 dB has been recommended.

Specified AWHP unit	Level at Window dB $L_{Aeq,T}$	Criteria dB $L_{Aeq,T}$	Screen Insertion Loss dB	Mitigated Level dB $L_{Aeq,T}$
2 no. Daikin EWYE070CZN-A2	39	30	-10	29 dB

Table 6.2: Assessment Result

The proposed plant, if suitably screened, can operate at a level expected not to disrupt the residential amenity of nearby properties. Specifically, ensuring a source level of no more than 30 dB L_{Aeq} at 1 metre from the façade of the nearest noise-sensitive property.

Appendix A Figure

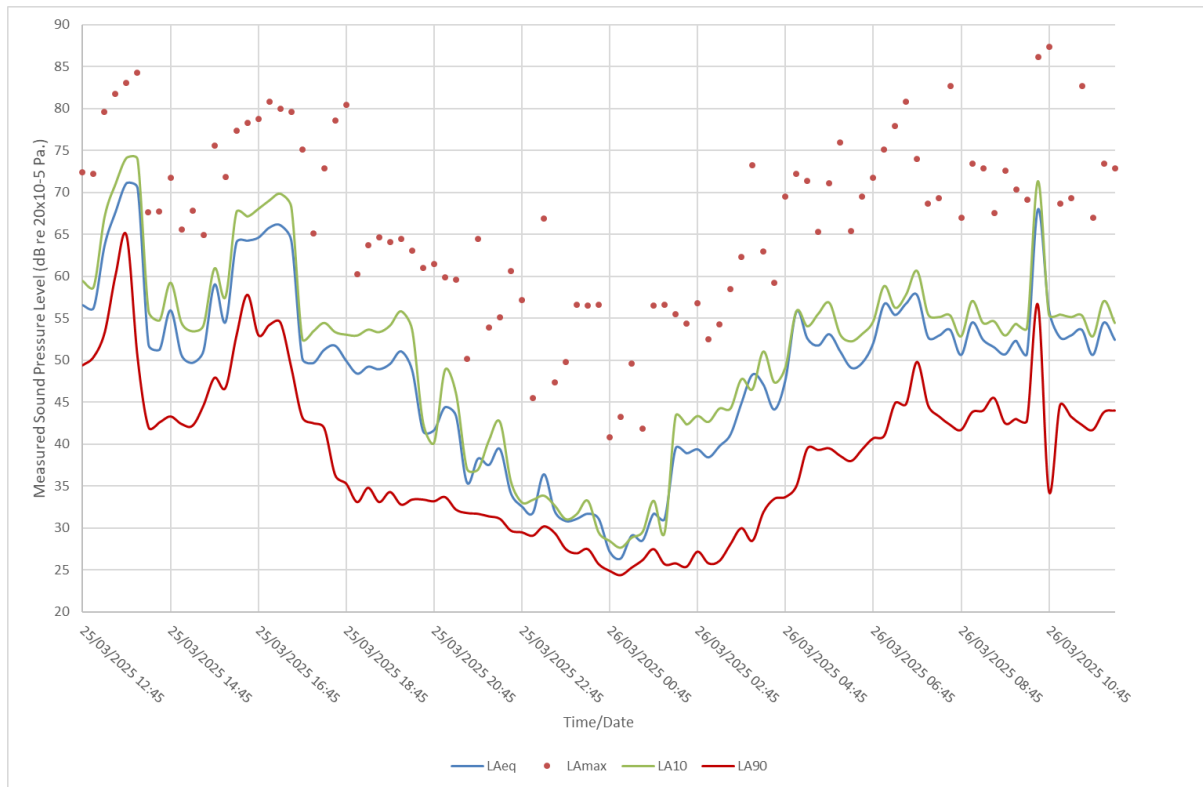


Figure A.1: Survey Data

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