Barnsley Academy

ASHP Plant Noise Verification Survey

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24040-R03-SW

Client: United Learning Trust

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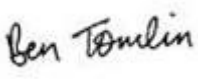
REVISION HISTORY

Revision	Date	Revision Details	Author	Checked
R03	15/01/2026	Original Issue	 Susan Witterick BSc MIOA	 Ben Tomlin BSc MIOA

1 INTRODUCTION

1.1 dBx Acoustics has been appointed by United Learning Trust to carry out a verification noise survey of the ASHP plant installed at the Barnsley Academy, Farm Road, Kendray S70 3DL.T.

1.2 The installed plant comprises three Clade Rowan SN 360/240 ASHPs and two Strebel S-ASX-VP 100 ASHPs are to be installed within a compound to the south west of the Academy building.

1.3 dBx Acoustics formerly undertook a noise survey and noise impact assessment for the proposed installation, presented in report reference *24040-R02B-JT* dated 18th July 2024.

1.4 Planning permission for the development was granted by Barnsley Council, reference 2024/0898. Planning condition 7, reproduced in the following section of this report, is related to noise emissions.

1.5 This report details the post-installation verification noise measurements made of the operational plant, to demonstrate compliance with Condition 4 as reproduced above.

1.6 A glossary of acoustic terminology has been supplied in Appendix A to assist the reader.

2 BASIS OF ASSESSMENT

Local Authority Requirements

2.1 The Site lies within the jurisdiction of Barnsley Metropolitan Borough Council (BMBC).

2.2 Condition 7 of permission reference 2024/0898 is reproduced as Figure 1, below.

Figure 1: Noise-Related Planning Condition

> 7 The rating level (LArTr) of the noise emitted from the proposed development shall not exceed the existing background noise level (LA90T). The rating level shall be determined by measurement or calculation at the boundary of the nearest noise sensitive premises or at another location that is agreed with the Local Planning Authority. Measurements shall be made in accordance with BS 4142: 2014 Methods for rating and assessing industrial and commercial sound. Where the background noise level shall be expressed as an LA90 1 hour and the ambient noise levels shall be expressed as an LAeq 1 hour during the daytime [07:00-23:00] and shall be expressed as an LA90 and LAeq 5 minutes during the night [23:00-07:00].
> **Reason: To reduce or remove adverse impacts on health and the quality of life, especially for people living and/or working nearby, in accordance with Local Plan Policy POLL1.**

2.3 dBx Acoustics formerly undertook a noise survey and noise impact assessment for the proposed installation, presented in report reference *24040-R02B-JT* dated 18th July 2024.

2.4 On the basis of the typical measured background noise level of 45dB$L_{A90,T}$ during both the daytime (07:00h-23:00h) and night-time (23:00h-07:00h) period, it was determined that the rating level of the noise emitted should not exceed 45dB$L_{Ar,Tr}$ at the nearest noise sensitive receptor.

BS 4142:2014 'Methods for Rating and Assessing Industrial and Commercial Sound'

2.5 BS 4142:2014 sets out a procedure for assessing noise impact whereby a Noise Rating Level is determined and compared with the existing local Background Sound Level.

2.6 The Rating Level (dB$L_{Ar,Tr}$) is evaluated from the Specific Noise Level by including cumulative corrections to account for factors such as distinguishable tone, impulsivity, intermittency or other readily distinguishable sound characteristics.

2.7 The assessment of the impact depends upon the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level. An initial estimate of the impact of the specific sound is made by subtracting the Background Sound Level from the Rating Level, while considering the following points:

a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.

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

3 VERIFICATION NOISE SURVEY

3.1 dBx Acoustics Ltd attended site between 10:30h and 11:30h on Wednesday 14th January 2026 to measure noise from the ASHP units in operation.

3.2 At the time of testing, all units were set to operate simultaneously to represent a worst-case for potential noise impact. The external temperature was 2°C and as such the ASHP can be assumed to be operating at full capacity.

3.3 Measurements were taken close to the plant as well as outside the nearest noise sensitive receptors at Monkspring.

3.4 Weather conditions during the measurement period were cloudy and dry. Wind speeds were within suitable parameters for the measurement of environmental noise (i.e., generally under $5ms^{-1}$). The microphone was protected with a windshield for the duration of the survey. The temperature was 2°C.

3.5 The equipment used in the measurements is detailed in Table 1, below;

Table 1: Equipment Used in the Survey

Equipment	Manufacturer & Part No	Serial Number
Sound Level Meter	NOR 140	1405619
Microphone	NOR 1225	168247
Calibrator	NOR 1251	33827

3.6 The sound level meter was calibrated before and after measurements, with no significant drift recorded. An accredited laboratory calibrated the equipment not more than two years prior to the measurements being made, except for the calibrator, which had been calibrated not more than one year prior to the survey.

4 VERIFICATION ASSESSMENT

4.1 All five ASHPs operate from Monday to Friday during the daytime (07:00h-23:00h). One or Two Clade Rowan SN 360/240 ASHPs operate from Monday to Friday during 06:30-07:00h as required.

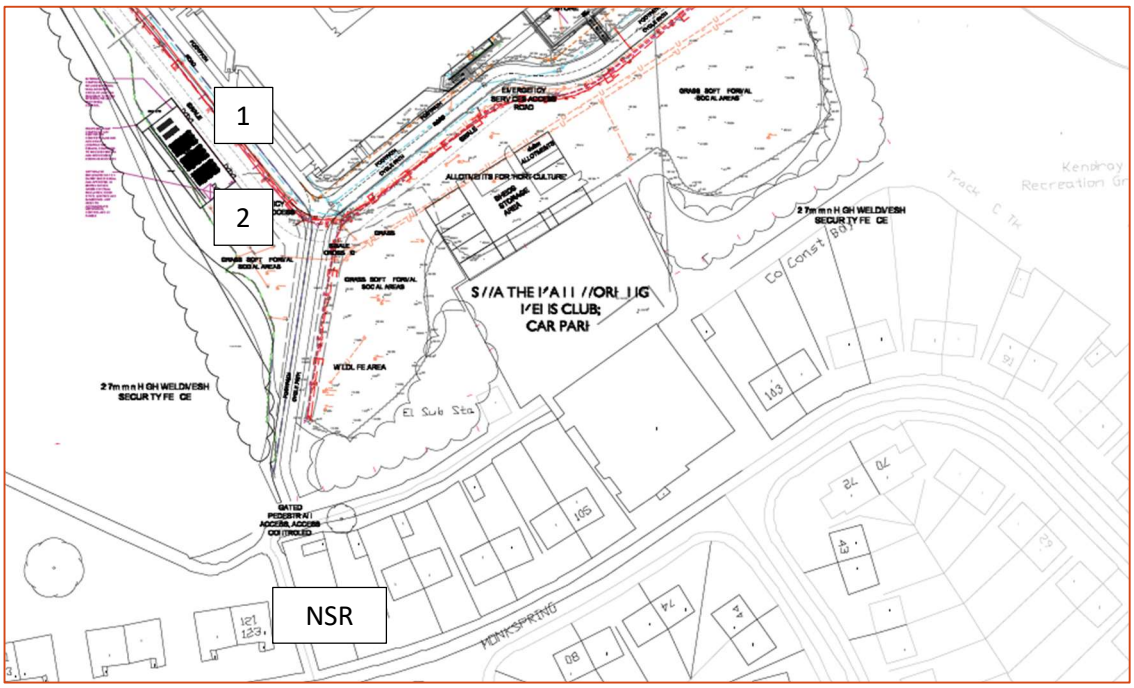
4.2 The units are not operational during the weekends.

Noise Measurements

4.3 Noise measurements were made at two locations in proximity to the equipment to accurately assess the level of noise generated without contribution from environmental noise sources.

4.4 The measurement locations are shown in Figure 2, below.

Figure 2: Verification Measurement Locations



4.5 The measured data are presented in Table 2, below.

4.6 Measurements were made with all units operating simultaneously, which represents a worst case for potential noise impact

Table 2: Measurement Results

Measurement Location	Description	Sound Pressure Level, $dBL_{Aeq,T}$
1	Side of enclosure, approx. 2m from Clade units	68
2	End of enclosure facing housing	68
NSR	Adjacent to rear façade of houses on footpath, includes ambient noise	43

Assessment

4.7 On the basis of the typical measured background noise level of 45dB$L_{A90,T}$ during both the daytime (07:00h-23:00h) and night-time (23:00h-07:00h) period, it was determined that the rating level of the noise emitted should not exceed a rating level of 45dB$L_{Ar,Tr}$ at the nearest noise sensitive receptor to comply with Planning Condition 7.

4.8 Correcting for distance from measurements made at the ASHP enclosure to the nearest noise sensitive receptors at Monkspring (approximately 80m from Location 2 which in turn was 4m from the nearest ASHP unit) provides a distance attenuation of -26dB.

4.9 On this basis, the specific noise level arising at Monkspring due to operation of the units, with no allowance for any screening provided by the residential boundary fence, is 42dB$L_{Aeq,T}$.

4.10 The measured ambient noise level at the rear of the NSRs was 43dB$L_{Aeq,T}$ which included ambient noise including birdsong and vehicle movements on the local road network.

4.11 To establish the rating level, a subjective assessment of the sound characteristics of the ASHP, observed at the NSRs, is used in accordance with Section 9.2 of BS4124:2014 + A1:2019.

4.12 The surveyor noted that the ASHP was audible at the rear of Monkspring, but was subjectively at a similar level to the ambient / environmental noise level and did not dominate the noise climate.

4.13 No tonality, impulsivity or intermittency was observed.

4.14 In accordance with BS4142:2014, *"where the specific sound features characteristics that are neither tonal nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied".*

4.15 Therefore, conservatively applying a +3dB penalty to the calculated specific noise level at the NSRs leads to a rating level of 45dB$L_{Ar,Tr}$.

4.16 This therefore does not exceed the measured daytime or night-time background noise level at the NSRs as previously reported, and as such compliance with Condition 7 of planning application reference 2024/0898 is demonstrated.

4.17 Compliance is demonstrated under a worst case operational scenario, with all units operating simultaneously and at high load due to low external temperatures, and with a conservative acoustic character correction.

5 ASSESSMENT AND CONCLUSION

5.1 Condition 7 of planning application reference 2024/0898 requires that the BS4142:2014 rating level should not exceed 45dB$L_{Ar,Tr}$ at the nearest noise sensitive receptors.

5.2 Measurements were made in close proximity to the plant with all units in operation and operating at full capacity.

5.3 These measurements have been corrected for distance to the nearest noise sensitive receptors at Monkspring and assessed conservatively with no allowance for acoustic screening provided by the residential boundary fence and with a +3dB correction to the specific noise level.

5.4 The assessment demonstrates compliance with Condition 7 which can therefore be discharged.

APPENDIX A – GLOSSARY OF ACOUSTIC TERMINOLOGY

Decibel, dB	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (Lp) the reference quantity is 2x10-5 N/m2. The sound pressure level existing when microphone measured pressure is 2x10-5 N/m2 is 0 dB, the threshold of hearing.
L	Instantaneous value of Sound Pressure Level (L_p) or Sound Power Level (L_w).
Frequency	Number of cycles per second, measured in hertz (Hz), related to sound pitch.
A-weighting	Arithmetic corrections applied to values of L_p according to frequency. When logarithmically summed for all frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source.
$L_{eq,T}$	Equivalent continuous level of sound pressure which, if it actually existed for the integration time period T of the measurement, would possess the same energy as the constantly varying values of L_p actually measured.
$L_{Aeq,T}$	Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time period, T, of the measurement would possess the same energy as the constantly varying values of L_p actually measured.
$L_{n,T}$	L_p which was exceeded for n% of time, T.
$L_{An,T}$	Level in dBA which was exceeded for n% of time, T.
L_{Fmax}	The instantaneous maximum sound pressure level which occurred during the measurement. F indicates that the fast time-weighting is used.
L_{AFmax}	The instantaneous maximum A weighted sound pressure level which occurred during the measurement. F indicates that the fast time-weighting is used.
$L_{Ar,Tr}$	The rating level: the equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise.
Insertion Loss, IL	The reduction of noise level due to the presence of a noise control device such as an attenuator, excluding any regeneration noise created by its presence.