

Technical Note A1973 TN02 rev a

Date: 11th February 2025
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Scheme: Barton Peveril College Arts Block: Roof Plant
Title: Roof Plant Noise Emissions Planning and BREEAM Pol 05 Assessment
Planning: Application for Roof Plant

1 Introduction

As part of the new Arts Block scheme at Barton Peveril Sixth Form College, Eastleigh there is a requirement to provide an air handling unit to ventilate the building. This is located on the roof. The original planning permission from Eastleigh Borough Council had a planning condition 13 relating to plant noise for which a noise impact assessment is required to discharge the condition. The plant however has been amended and a new planning application is being made for the changed plant. It is assumed that this would also need an equivalent noise assessment. This document is prepared to set out the noise emissions assessment for the plant which can be used for the new application (and could similarly be applicable for the original planning condition 13).

This document also provides evidence that the plant noise meets the requirement of BREEAM Pol 05.

The assessment finds that the proposed AHU noise levels at the nearest sensitive receptors are low and comfortably within the proposed noise limits and would have no unacceptable noise impact on the nearby residences.

2 Noise Emissions Requirements

2.1 Planning: F/22/94434

The original planning permission includes the following condition, which it is assumed would also apply for the new application:

13: No fixed plant shall be installed on the exterior of the building (or associated equipment) until the details have first been submitted to and approved in writing by the Local Planning Authority. The details shall include specifications of the fixed plant to be installed, their cumulative noise emissions and any mitigation necessary to ensure that the cumulative emission of such plant would not have any unacceptable impact on the nearby residential properties.

Condition 13 does not include a quantitative limit for what is not "unacceptable" regarding the impact on the nearby residents. However during discussion with the Local Authority (LA) environmental health team prior to the decision they requested for cumulative noise from plant to be at least 10dBA below the typical background noise level because of other earlier developments on the site. This is presumably to avoid noise creep however was not full confirmed

by the LA EHO. Eastleigh previously accepted limits set at 5dB below the typical background for the Business School scheme on the same site and guidance in BS 4142:2014 states that a limit at parity with the background would be low impact and hence clearly would be considered to not be “unacceptable impact”. As such whilst it is expected that 10dB below will be desired by the local authority higher noise limits would arguably also avoid unacceptable impact on the nearby residents. For the sake of clarity however, the plant emissions limits are proposed to be 10dBA below background at the residential receptors for planning purposes (except where background noise is low, in which case absolute noise limits are more appropriate as set out in BS4142).

Where background levels are already low BS 4142:2014 +A1: 2019 indicates that the absolute sound level should also be considered along with other factors such as context. Specifically, the standard 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."

Following this approach we have proposed that an absolute noise level assessment is more relevant during the evening and night than setting a relative limit 10 dB below. Setting a limit lower than 32 dB L_{Ar} does not provide any greater amenity at a receptor than any other lower value. Therefore, the limit does not need to be any lower than 32dB L_{Ar} .

We note that there has been a more recent application for new plant on the Hampshire building with a noise assessment by RBA. For that the planning report identified that noise limits were discussed with Eastleigh and a level of 35dB L_{Ar} was accepted. Therefore, the slightly more onerous limits of L_{Ar} 32dB or 10dB below background used here should be acceptable based on that precedent.

2.2 BREEAM Pol 05.

The scheme is also assessed against BREEAM 2018 which included a targeted credit for Pol 05, which relates to plant noise emissions. For the POL05 credit the assessment should show that cumulative noise from the assessed site should be at least 5dB below the background noise level (LA_{90}) at the nearest or most exposed noise sensitive development. This is less onerous than the planning requirement and therefore compliance with the planning limit would also meet the BREEAM Pol05 limit.

2.3 Plant Noise Emissions Limits

The original noise survey was reported in Ion Acoustics report A1973/R01 which was submitted with the planning documents. Further advice on preferred noise limits was then provided by Eastleigh Borough and the relevant noise limits derived are set out in Table 1.

The limits proposed in Table 1 are more onerous than the POL05 requirements at the residences and would avoid unacceptable impact on the nearby residential properties as required by condition 13. The plant is only proposed to operate during the day period and therefore can be compared with the limit of L_{Ar} 35dB.

Table 1 –Plant Noise Limits at Residential Receptors

Period	Representative Background Noise Level, L_{A90}	Limit Type	Proposed planning Plant Noise Limits, $L_{Ar,Tr}$	Relative Difference, dB
Day (07:00-19:00)	45dB	Relative	35dB	-10
Evening (19:00-23:00)	41dB	Absolute	32dB ¹	-9
Night (23:00-07:00)	39dB	Absolute	32dB ¹	-7

¹Absolute limit of 32dB L_{Ar} proposed.

3 Proposed Plant

The new AHU is located on the north side of the roof of the new Arts Block, with the location as indicated in Figure 1 and the layout on the roof shown in Figure 2.

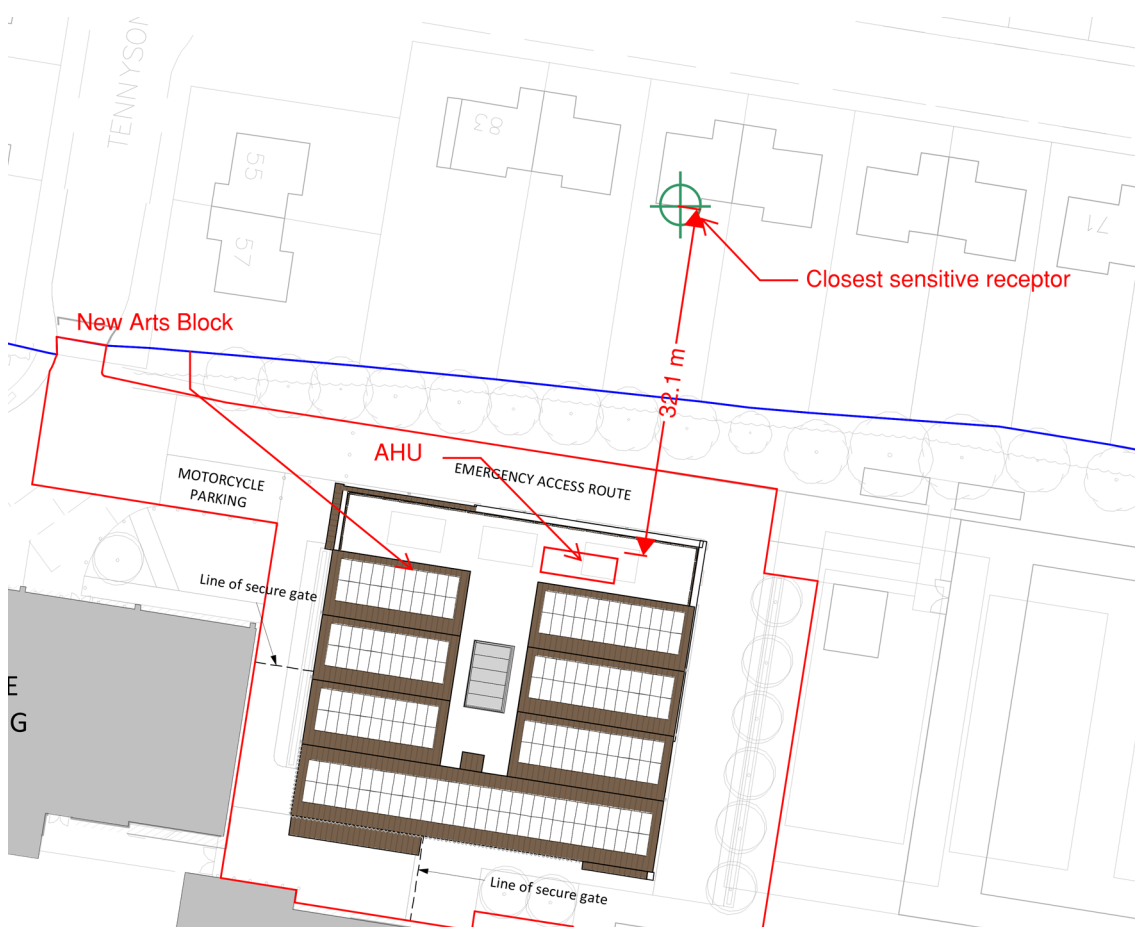


Figure 1: Location of Art Block, AHU and Nearest Residential receptors

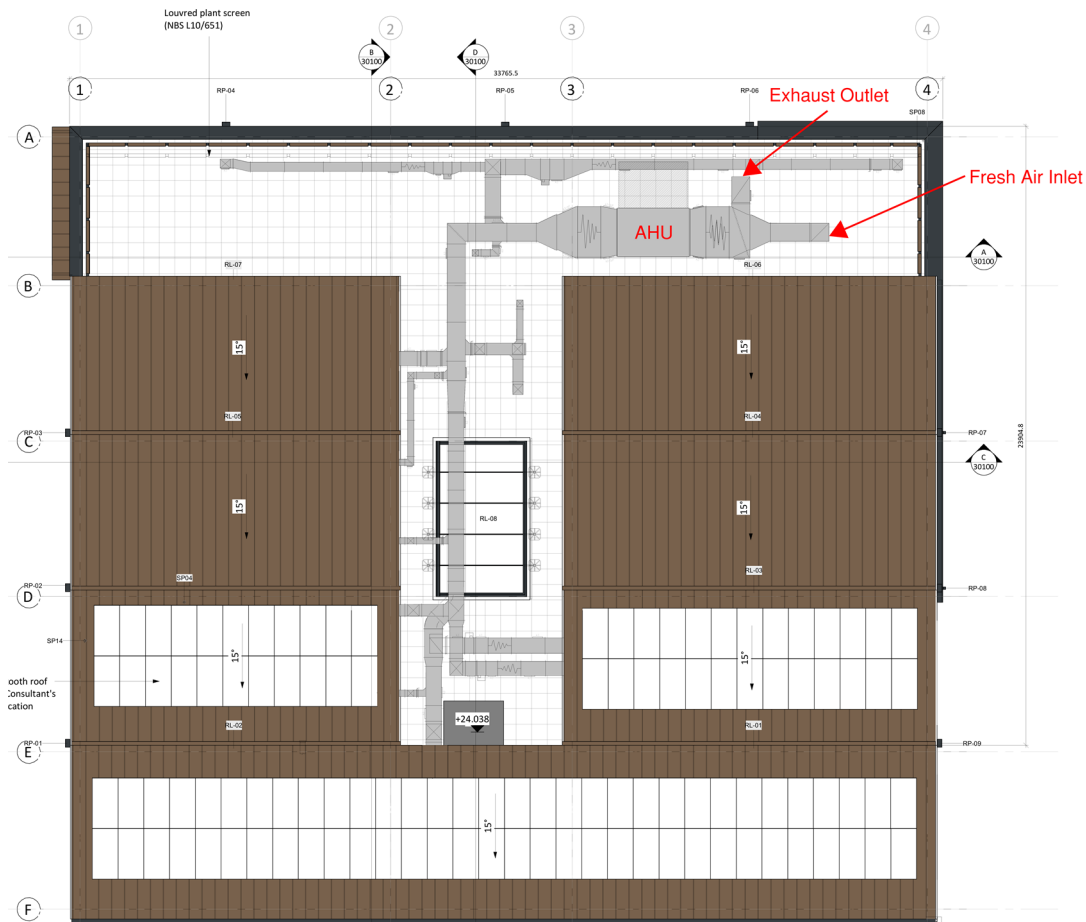


Figure 2: Location of AHU and Inlet/Outlet Grilles on Roof

The AHU is a Systemair Geniox 1 unit. We have been provided with the manufacturer's in duct and casing breakout sound power data as well as detailed layout and attenuator arrangement drawings. The sound power data provided is shown in the calculations attached. Additionally insertion losses of the atmosphere side attenuators have been provided by Allaway. These are used in the calculations along with assumptions regarding distance losses to the nearest sensitive receptor at around 32m away.

The housing is to the north and there is a weather louvre along the north side, however this has no acoustic attenuation values and we have assumed no shielding from this. Additionally there will be some parapet shielding to the AHU from the housing, but we have assumed that there is no shielding from the parapet.

4 Plant Noise Emissions Assessment

Based on the assumptions set out above and the noise data supplied for the unit, we have prepared noise emissions calculations to the closest sensitive receptor to the north, 79 Cherbourg Road.

The full calculation is attached at the end of this technical note. The result is summarised in Table 2.

Table 2: Plant Noise Emissions Assessment.

Description	Value	Index
Total Specific Level from AHU (FAI, exhaust and casing breakout)	19.8	dBA
Character correction (as defined in BS4142)	0	dB
Rating Level L_{AR}	20	dB
Plant noise limit L_{AR}	35	dB
Margin of compliance	-15	dB

The plant noise is therefore comfortably compliant with the noise limits, and is also at a very low absolute noise levels. Therefore, no further noise control measures except for the attenuators are required.

5 Conclusion

Ion Acoustics has carried out a noise assessment of the proposed AHU plant for the new Art Block at Barton Peveril College. The predicted noise levels are very low and also comfortably meet the noise limits derived in the planning noise assessment. This demonstrates that the noise is not significant and will not be an issue in respect of residential amenity. It therefore meets the requirements of the original Planning Condition 13. It also meets the requirements of BREEAM Pol 05.

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