Chartered Building Consultancy

Acoustic South East

Discharge of Condition 4 of DC/22/0695

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Date: 05/09/2024

Project: J3550

Issue 1

Site: **Chanctonbury Game Limited, Woodmans Farm, RH20 3AU**

Client: **Chanctonbury Game Limited**

Constructionline Part of Capita plc

CQMS Safety Scheme

ANC THE ASSOCIATION OF NOISE CONSULTANTS

ATTMA

Acoustic South East is a Trading Name of Acoustic Associates Sussex Ltd, Company Registration No: 5646519

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Issue 1	05/09/2024	Original Issue

1 Introduction and Executive Summary

Acoustic South East have been appointed to undertake a revisit to site to provide additional information in support of condition 4 of DC/22/0695.

The site was revisited on 3rd September 2024 with measurements taken to demonstrate the effectiveness of the newly introduced enclosure around the freezer condenser. This was required to be reduced in sound by at least 3dB.

The results were positive indicating that the 3-sided enclosure to allow sufficient air flow and prevent overheating achieves a reduction in the sound pressure levels from the required freezer condenser located on the South Wall of the stable building.

The original computer noise model was re-run with the attenuation provided by the enclosure and the results indicate that the freezer condenser has been reduced by the required amount and is now below the measured background sound pressure level for the daytime and night time periods.

It is therefore argued that the local planning authority can now discharge condition 4 of DC/22/0695.

2 Context

A previous report by Acoustic South East dated 23rd November 2022 (J3550) provided a detailed and thorough assessment for the site soundscape which allowed Horsham District Council to provide planning consent to the client.

A condition was placed (4) on the decision notice which required as follows

> 4 **Regulatory Condition**: Within 3 months of the date of this permission, a scheme for sound attenuation against external noise from the externally located plant shall be submitted to and approved by the Local Planning Authority. The scheme shall have regard to the recommendations set out in the submitted Noise Assessment reference J3550 Issue 1 by Acoustic Associates Sussex Ltd. The approved sound attenuation works shall be completed within 1 month of the details being approved and shall be retained thereafter.

In the original reporting, the author indicated that at least a 3dB improvement was needed to be made to the freezer condenser.

The rationale for a 3dB loss was to ensure that the unit was capable of running during the night time period, without causing an adverse impact at the nearest residential receptor.

3 Works Carried Out.

It is noted that a three-sided enclosure was added to the outside of the unit in approximately March/April 2024. The enclosure is significant and measures 2.2m from the stable building wall, 2.62m wide and 2.44m high. The walls are 200mm of timber construction.

In June 2024 a high sided barrier was also added to join the stable building and the adjacent barn and the latter barrier measured 2.25m above ground level.



Figure 1. New Barrier between Buildings

4 Measured Data

A visit was made during low windspeeds and dry conditions on 03/09/2024 to remeasure the freezer condenser. Given the construction of the enclosure, it was possible to measure at source inside the enclosure as well as either side of the walls. 5-minute readings were taken at representative locations as well as the unit being switched off in order to correct for background.



Figure 2. Measurement Positions

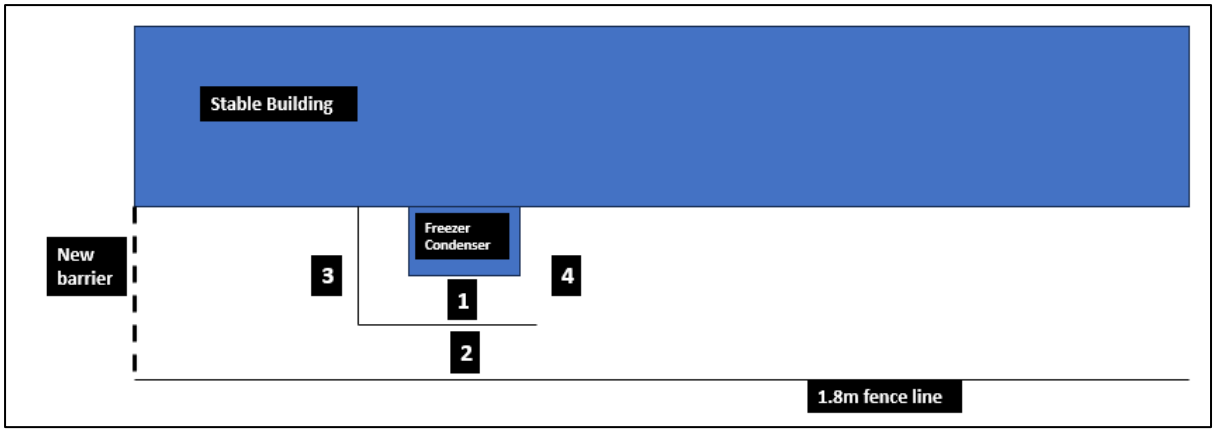


Figure 3. Plan View of Measurements Taken

The reverberant sound pressure level inside the enclosure (position 1) was 71.2dB $L_{Aeq,5minutes}$

The sound pressure level outside the enclosure (position 2) was 55.5dB $L_{Aeq, 5minutes}$

The sound pressure level outside the enclosure (position 3) was 54.3dB $L_{Aeq,5minutes.}$

The sound pressure level outside the enclosure (position 4) was 65.5dB $L_{Aeq, 5minutes.}$

The sound pressure level outside the enclosure with the plant switched off at position 4 was 50dB $L_{Aeq, 5minutes.}$

The plant in order to correct for background is 65.5 minus 50dB. ($10\log(10^{6.5}-10^{5.0})$=65.4 dB $L_{Aeq,5minutes}$.

The difference between inside the enclosure and outside the enclosure at position 2 =71.2-55.5 = 15.7dB

The difference between inside the enclosure and outside the enclosure at position 3 =71.2-54.3 = 16.9dB

5 Comparison with 2022 Data

The freezer condenser was reported in J3550 as being 66.3dB measured at 1.5m.

Inside the enclosure at 1.2m from the plant was measured at 71.2m. An inverse square law calculation to account for the fact that the measurement was taken closer to the sound source would account for 1.9dB for being added to the measured value. This would account for 68.3dB. The reflection caused by the new enclosure panel located at 50cm from the front of the plant would account for an additional 3dB reflection. This would increase 68.3dB to 71.3dB and be consistent with previously measured data in 2022. Similarly, position 4 at 1.5m from the plant to the side, was only 0.8dB different.

From the measured data it is possible to conclude as follows:

1. The plant is operating at the same sound pressure level as when it was measured in November 2022.

2. The newly erected timber enclosure accounts for between 16-17dB of attenuation considering the southern and western directions.
3. The requirement to reduce the freezer condenser by 3dB has been achieved at source.

6 Subjective Listening

It is important to be able to state subjectively what was heard. Stood at the Western side of the newly erected barrier (2.25m above ground level) between the stable building and the farm yard building where tractors are parked, the dominant sound is that of passing traffic on the A24, which is approximately 241m further West. The sound of the compressor was not subjectively audible.

7 Adjustments to the Computer Noise Model and BS4142:2014-A1:2019 Assessment

It is possible to revisit the computer noise model which was constructed for the previous assessment and to apply a subtraction to the freezer condenser. This was done by applying the lower of the two reductions (ie 15.7dB) into the model at source.

Historically, the combined Rating level of the fixed plant for the daytime was 38.6dB and 35.7dB for the night time period. This included a 9dB correction for tonality and façade as per Table 3 of the original report. The measured background for the daytime was 39dB LA90,15minutes and for the night time 33dB LA90,15minutes. Therefore, the nighttime element was 2.7dB above the measured background with the potential for a minor adverse impact.

The revised assessment indicates a specific sound pressure level for the daytime of 27.4 $L_{Aeq,T}$ and 20.6dB $L_{Aeq,T}$ for the night time period. Taking a worst-case scenario and applying character corrections of 9dB to each provides a Rating Level as follows:

Assessment of Fixed Plant		
Period	**Daytime**	**Night Time**
Specific Combined Sound Pressure Level (External)	27.4	20.6
Character Corrections	9	9
Rating Level	36.4	29.6
Measured Background ($L_{A90,15minutes}$)	39	33
Assessment of Rating Level over Background	-2.6	-3.4

Figure 4. BS4142:2014-A1:2019 Assessment

It is also relevant to note that BS4142 is not all about figures and calculations and a large component of the standard is around context. The fact that subjectively, the freezer condenser was not audible the other side of the wall separating the stable and barn is highly relevant.

8 Conclusion

The site was revisited on 3rd September 2024 with measurements taken to demonstrate the effectiveness of the newly introduced enclosure around the freezer condenser. This was required to be reduced in sound by at least 3dB.

The results were positive indicating that the 3-sided enclosure to allow sufficient air flow and prevent overheating achieves a reduction in the sound pressure levels from the required freezer condenser located on the South Wall of the stable building.

The original computer noise model was re-run with the attenuation provided by the enclosure and the results indicate that the freezer condenser has been reduced by the required amount and is now below the measured background sound pressure level for the daytime and night time periods.

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