

## Technical Note

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## Responses to Comments on the Noise Impact Assessment

### 1 Introduction

Sweco UK have been commissioned by Ark Estates 4 Limited to review comments from Damaris Broad, Environmental Control and Protection Officer at Wiltshire Council (WC), on the noise impact assessment for the proposed data centre development. This document contains a summary of the comments received, and a response to address each concern separately.

### 2 Comments and Responses

#### 2.1 Methodology and Impact Levels

WC comment:

“The correct assessment tool, BS4142 has been used for the noise assessment. BS4142 provides penalties for tonal noise of up to +6dB which has not been added in this assessment. Air handling plant and generators are often associated with tonal noise and arguably this penalty should have been added. Data sheets that provide information on 1/3 octave bands is included but this would not necessarily give information on whether there is a tone present and doesn’t go down to 20Hz which is the bottom end of audibility for low frequency noise,”

Sweco response:

As stated above, with the 1/1 octave band data provided (1/3 above is understood to be typo) it is not possible to objectively assess the presence of tonality of the sources. It should be also noted that the noise sources, especially the ventilation systems and the AHUs are attenuated, as presented in sections 5.2.1.1, 5.2.1.2, 5.2.2.1, 5.2.2.2 and 5.2.2.3. The attenuation measures included in the design would reduce potential tonality at source.

Additionally, the penalties for tonality should be assessed at the receptor’s locations.

The tonality penalties in BS4142, based on subjective perception, ranges from +2 dB for a tone which is just perceptible at the noise receptor, +4 dB where it is clearly perceptible, and +6 dB where it is highly perceptible.

There is no evidence that the noise from the site would be tonal, and in case it is perceived as a low frequency noise, BS4142 include a penalty of +3 dB for sound

characteristics, when the noise is readily distinctive against the residual acoustic environment.

In light with the above, it is deemed that consider a +6 dB penalty would represent a very worst-case and there is no evidence to be adequate for this assessment.

WC comment:

“When a penalty of +6dB is included for Westwells Road (MP2 at 29 metres from the boundary) and Moore Green (MP3 at 10m from the boundary), the BS4142 rating level for each becomes +3 and +4 respectively. I have attached our Noise and Planning Guidance Document and the implications for this are that the noise would be classed as present and intrusive (see Table 3). The actions that should be taken to mitigate the noise and reduce it to the lowest level possible.

Sweco response:

As explained above, to use a +6 dB penalty would be an absolute worst case. It is more likely that a +3 dB penalty could be considered in case a low frequency character is perceived. There are several reasons to not include this type of penalty in the assessment, based on the overall noise levels predicted for the site, and the attenuation measures included in the design. All considered, the perception of noise at the receptors' locations, is likely to be minimal.

Considering the +3 dB penalty as a worst case for low frequency character of noise the BS4142 rating level for MP2 and MP3 becomes +0 and +1 respectively, and in reference to Noise and Planning Guidance Document (see Table 3) the noise would be on the lower bottom of the section to be classed as present and intrusive, minimizing the intrusiveness of the noise form the site.

It should also be considered the overall impact, as the definitions of effects within Table 3 are not representative for very low levels of noise. In general, the comments on Table 3 are for higher levels of noise than the overall predicted for this site at night. The overall noise level from the site is very low, 23 dB and 24 dB at MP2 and MP3 respectively, which means the perceptibility of the noise will be low, and therefore the noise will not be intrusive.

Even if considering the maximum +6 penalty, the noise levels affecting the site will still be low.

Additionally, extensive mitigations are already included in the current design and the noise has been reduced to the lowest level possible.

It should also be noted that the noise impact is only close to the background levels at night, when the background levels drop to very low levels. During the daytime periods, the noise from the site will be well below the background levels in the area. During the night, the noise from the site within bedrooms with windows open will be in order of 20 dB below the target Internal Ambient noise levels for bedrooms.

Considering all the above, we understand that the predicted noise from the proposed site shouldn't be considered as intrusive.

## 2.2 Mitigations

WC comment:

“The applicant should engage the noise consultant to look at further remediation measures especially regarding the low frequency noise. If the plant that is proposed duplicates the existing data centre, then maybe information on tonal noise could be gained from measurements of existing sources and further attenuation proposed regarding the new data centre.”

Sweco response:

The current design includes extensive mitigations which have been developed with the design team. The mitigation measures included in the proposed site are not within any of the existing buildings, and therefore actual noise measurements can't be carried out to evidence the presence of tonal noise.

In relation to the mitigations included in the design, the following is presented in the report:

- Reduction of the Ventilations Systems noise according to an 80% IT load (which is high).
- Acoustic attenuators (2800mm) included in the inlet for each module (data in Table 5 in the report reference 65204515-007-SWE-ZZ-XX-T-U-0001 Rev. C02 by Sweco).
- Acoustic louvres for the Outlets of each module (data in Table 6 in the report reference 65204515-007-SWE-ZZ-XX-T-U-0001 Rev. C02 by Sweco).
- Enclosure around the Outlet louvres, with acoustic absorptive Class A panels in the interior.
- Acoustic attenuators (2500x2800mm) at the top of the outlet chimney enclosure of each module (data in Table 6 in the report reference 65204515-007-SWE-ZZ-XX-T-U-0001 Rev. C02 by Sweco).
- Acoustic attenuators for all the AHUs in the ancillary plant room and roof (data in Table 8 in the report reference 65204515-007-SWE-ZZ-XX-T-U-0001 Rev. C02 by Sweco).
- Sound Reduction for night-time operation for CRAC External Condensers for lower temperatures.
- Sound Reduction for night-time operation for MMR External Condensers for lower temperatures.
- Sound Enclosures for Battery Room External Condensers.

The mitigations above have been maximized along with the MEP design team. Further mitigations will have a detrimental effect on the operation, functionality, and capacity of the site. Also, further mitigations may incur in ventilation systems forced producing higher levels of noise, based on the advice from the design team during the assessment at planning stage.

## 3 Conclusions

This technical note is deemed to have responded accurately and appropriately to the queries raised by WC. We would welcome further discussion should any queries remain outstanding.