

Design Note.

To:	Bouygues Team
Cc:	-
From:	Sam Garne, Principal Acoustics Engineer
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Project:	Virtus LON14
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Virtus LON14 acoustics summary.

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
0	27/11/2024	For issue.	SG	AP	PM
1	05/12/2024	Updated following comments.	SG	AP	PM
2	05/12/2024	Minor amendment.	SG	AP	PM

1. Introduction.

Hoare Lea has been appointed to undertake an acoustic review of the external plant noise emissions associated with the proposed Virtus LON14 data centre.

A noise model has been produced of the development and locality to accurately calculate the sound levels acting on nearby noise-sensitive receptors from new plant equipment associated with the proposed development.

Hoare Lea has subsequently reviewed various means of mitigation, including a review of the proposed equipment, attenuation to the equipment, and acoustic screening to achieve suitable noise levels at the closest residential and commercial façades.

Suitable design targets have been established based on British standards guidance and discussions with the Local Authority and are based on the prevailing noise levels captured during an environmental noise survey at the site.

2. Equipment proposals.

- The key items of noise generating equipment proposed are as below:
- Air-cooled chiller units: 16 no. DCF132D2R-28T2E2E20 Airedale chillers
  - Generators: 16 no. Finning Generators in proprietary acoustic enclosures

### 3. Mitigation.

Based on the sound power levels provided by the equipment manufacturer for the chillers and generators, additional acoustic mitigation has been developed to reduce the noise output from the equipment and provide screening, in order to achieve compliant external noise levels at the nearby residential and commercial façades.

#### 3.1 Chillers.

A number of additional elements have been included within the design to control noise emissions from the proposed chiller units. These are detailed below:

- Attenuation to the chillers:
  - A 1100 mm acoustic shroud (including plenum and discharge attenuator) is to be fitted to all chiller units.
- Acoustic screening:
  - An extension to the solid screen formed of 'Caice' composite acoustic panels is proposed to the north, east and south elevation of the gantry, to 2600 mm above the previously consented gantry structure. This element has a sound absorbing inner face.
  - A solid 'lid' is proposed above the chiller units formed of 'Caice' composite acoustic panels. There are to be openings within the 'lid' for the attenuated discharges which are to be sealed.

These means of mitigation combined lead to a c. 16 dB(A) reduction in sound level at the worst-affected nearby receptor.

The performance of each of these elements has been optimised such that any reduction in performance, such as reduction in screen height or reduction in attenuator length, would lead to external levels at the nearby residential façades that exceed the design targets.

#### 3.2 Generators.

The following mitigation is proposed for the generators:

- Attenuation to the generators:
  - Acoustic enclosure to generator with attenuated air path to the intake and discharge sides.
  - Exhaust attenuator boxed in with acoustic panelling.
- Acoustic screening:
  - 6 mm galvanised Durbar steel plate with a Rockwool infill and 30% open mesh provided to three sides of the generator zone (above and to south and north sides), housing all 16 generators.
  - A solid acoustic boundary fence to the south facing boundary from ground to 6600 mm high (in the approved application this was originally 15 m in height).

With the addition of the Durbar steel plate to the top, north, and south sides of the generator compound, as well as the attenuation detailed, an acoustic boundary fence height of 6600 mm is sufficient to achieve compliance with the noise limits for the generators, and therefore the additional height is not necessary for acoustic purposes. This provides for improved visual amenity with the fence matching with the existing boundary acoustic fence height.

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