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FAO, Sim on Wood, Moor Park Capital Next Gen Ltd

163 - 167 Mill Road, Cambridge, Noise Impact Assessment Non-Technical Summary

This non-technical summary outlines the contents of the Noise Impact Assessment Report (230248-AcNIA-RP-MillRdCamb-ZZ-0.3 Noise Impact Assessment) issued in support of the planning application for a new healthcare development proposed at the above address.

The Noise Impact Assessment report derives overall cumulative day and night-time noise limits to be achieved at the location of the nearby noise sensitive receptors in accordance with the Cambridge City Council requirements. **Daytime and night-time noise limits of 36 and 30 dB L_{Ar}, T_r were set at the most exposed noise sensitive receptors. Such noise levels are considered to be low, the proposed plant and noise control measures detailed within the Noise Impact Assessment Report were developed such that their noise contribution was equal to or below the derived noise limits.**

The report also appraises the acoustic viability of the Proposed Scheme, based on the building services systems currently proposed. Cambridge City Council provided their noise requirements for new commercial plant; that being, the Rating Level (noise level + penalty corrections for acoustic features) of the proposed equipment should not exceed the pre-existing background sound level. This requirement is in alignment with industry best practice guidance, British Standard 4142:2014 *Methods for rating and assessing industrial and commercial sound*, which states the following:

“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.

NOTE 2 Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.”

Achieving Cambridge City Council’s requirements would likely result in the plant having a low impact. In addition, where background sound levels are low BS 4142 also 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.”

The measured background sound levels **are considered to be low** for the site area, therefore an assessment to achieve a Rating Level equal to the Background Sound Level is difficult to achieve. **In accordance with methodology given in BS 4142 Annex A, plant noise Rating Levels of 30 dB L_{Ar}, T_r are low and are likely to have little impact on residents using external amenity during evenings/night (outside of operational hours).**

It’s recommended that the cumulative noise limits are achieved within the external amenity (gardens) of the nearby residential dwellings or at their most exposed window, whichever is more onerous.

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Details of the likely plant equipment to be installed were provided by the mechanical engineer. Individual noise limits were derived for each plant item and **providing each item achieves its prescribed limit, and no additional equipment is included, it's anticipated that the Cambridge City Council's cumulative noise limit will be achieved.**

Noise emission from the proposed plant should be controlled and limited by an appropriately worded planning condition which defines the requisite evidence needed to demonstrate compliance. Separate reporting and evidence should be provided to demonstrate compliance from the to be installed equipment.

To characterise the pre-existing external noise environment, noise surveys were undertaken around the Development Site across multiple days through two distinct periods in the year.

The Noise Impact Assessment report details the type of plant equipment being proposed, these include:

- VRF Condensing Units;
- DX Air Conditioning Units;
- Internal Air Handling Unit;
- External Chiller;
- Substation Transformer;
- Rooftop Emergency Extract Fans.

In summary, through assessment it was demonstrated that the proposed scheme of plant identified in the Noise Impact Assessment Report is capable of achieving the derived noise limits through the robust application of noise control measures. The Proposed Development, plant and noise control measures should be designed using best practice methods to ensure the to be installed equipment meets the prescribed noise limits.

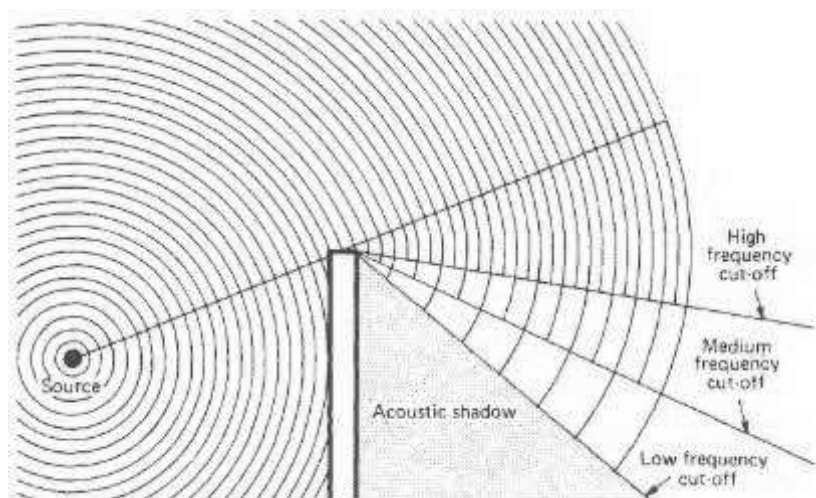


The following section describes the noise control methods implemented in the Noise Impact Assessment to achieve Cambridge City Council's noise requirements.

The mechanical engineer advised the diurnal and annual operational design loads for the proposed equipment and suppliers provided corresponding noise data for the indicative plant selections.

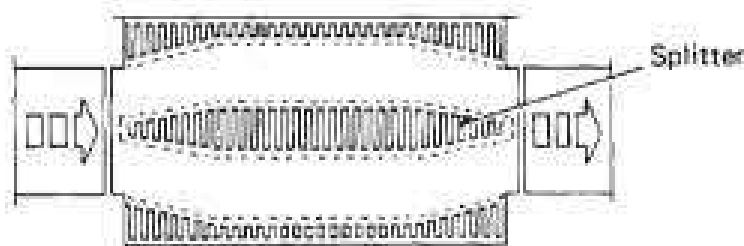
It was determined that noise control measures are likely to be needed for the advised plant equipment to achieve the derived noise limits. This is a typical procedure and allows the necessary spatial/architectural demands of the noise control measures to be incorporated at the planning stage. The following noise control measures were embedded into the scheme's design:

- Rooftop acoustic plant screen which acts as a barrier to the sound's propagation path resulting reduced horizontal noise propagation to the external side of the barrier (see below). In addition, the screen should have a porous lining to absorb sound energy (by converting sound energy to heat energy) further reducing the noise levels being propagated.



1

The assessed MRI Chiller is anticipated to require a packaged acoustic enclosure which encases the chiller with robust steel enclosure (roof and sides) and acoustic attenuators fixed to the air intake and exhausts. The enclosure will act to trap noise within and reduce noise radiating from the chiller body. The attenuators (dissipative type, see below) will act to trap & absorb sound energy (by converting to heat) via porous materials as air from the chiller’s fans passes through whilst leaving a free air passage for its function.

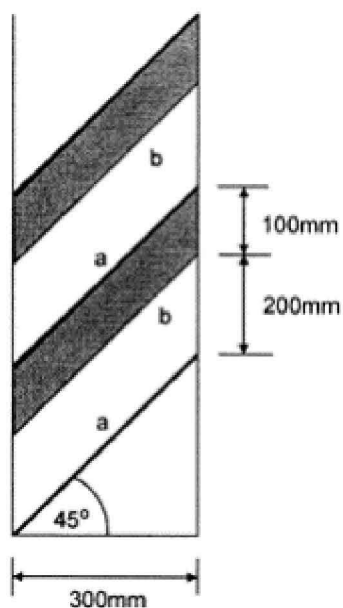


2

The substation is proposed to be housed within a brick structure with acoustic louvres for ventilation. The brick structure provides a more robust barrier to sound in comparison to lightweight substation structures. The acoustic louvres provide ventilation to the equipment within the substation but act to absorb sound energy that passes through the louvre.

¹ Sound Research Laboratories Ltd, E. & F.N. Spon, 1991 Third Edition, Noise Control In Industry

² Sound Research Laboratories Ltd, E. & F.N. Spon, 1991 Third Edition, Noise Control In Industry



A louvred inlet is shown in cross section in the figure at right, where sides (a) are rigid and impermeable whilst sides (b) are permeable and arranged to contain a porous material of your choice.

3

- The internal air handling unit will have air intake and discharge points at the building envelope. Attenuators will be fitted to the ductwork serving the air handling unit to absorb sound energy within the ventilation ductwork prior to it reaching the building envelope. In addition, at the building envelope discharge point acoustic louvres can be used to further reduce noise emission where appropriate.
- To control noise emission from the rooftop VRF plant, packaged attenuators should be fitted to the units. The assessed attenuators were those supplied by the identified VRF manufacturer which are standard off the shelf units for the product.
- To control noise emission from the proposed smoke extract fans, in-duct attenuation should be implemented where appropriate to achieve their designated noise limit.

We trust the above is clear, please do not hesitate to contact the undersigned, if you have any questions or require any additional details.

Yours sincerely



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For and on behalf of Couch Perry & Wilkes LLP

³ Colin Hansen, 2005, Noise Control, From Concept to Application