1 Introduction

Proposals are in place to install a new substation into the lower ground floor of Block A2 of the Camden Lock Village (CLV) development. There is a condition stipulated within the planning decision notice for the scheme that is applicable to external noise emission from new building services plant, as below.

> *"Condition 53.*
>
> *Noise levels at a point 1 metre external to the sensitive facades shall be at least 5dB(A) less than the existing background measurement (L_{A90}), expressed in dB(A) when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum), then the noise levels from that piece of plant/equipment at any sensitive facade shall be at least 10dB(A) below the L_{A90}, expressed in dB(A).*
>
> *Reason: To safeguard the amenities of [adjoining] premises [and the area generally] in accordance with policy CS5 of the London Borough of Camden Local Development Framework Core Strategy and policies DP26 and DP28 of the London Borough of Camden Local Development Framework Development Policies."*

Hoare Lea have previously provided advice pertaining to the above condition, based on the results of an external noise survey they conducted. Their *Acoustics, Stage 3 Acoustic Report* (Revision 01 – 08.03.2018) states the following noise emission limits which have been established in line with Condition 53:

- Daytime (07:00-23:00): 42 dB $L_{Aeq,T}$
- Night (23:00-07:00): 40 dB $L_{Aeq,T}$

These limits apply at the façade of the nearest existing noise sensitive buildings (assumed to be a calculated theoretical free-field value). It has been assumed that these are based on plant that has no distinguishable, discrete continuous note. If any such note exists, then noise emission from that specific item of plant would need to be 5 dB lower still. Furthermore, Hoare Lea proposed that plant noise emission is controlled to not exceed a level of 45 dB $L_{Aeq,T}$ at 1m from any new residential facades built as part of the development (i.e. Building C, and D/E).

2 Proposed plant

The proposed substation is to house a new 1000 kVA (1MVA) transformer. The unit will be installed internally, accessible via a louvered external door set within the existing brick wall. It should be noted that there is an existing substation in proximity to the proposed new substation, that will be retained.

Manufacturer's noise data is currently unavailable for the proposed new transformer. Scotch Partners has a database of noise data for transformers, including several 1MVA units; this includes manufacturer's data and in-situ noise levels measured by Scotch Partners. The noise data indicates that noise levels can be expected to be up to c. 47 dB L_{pA} when measured at a distance of 1m from the new transformer installed in-situ.

Drawing showing the substation location in the context of the wider site are presented below.

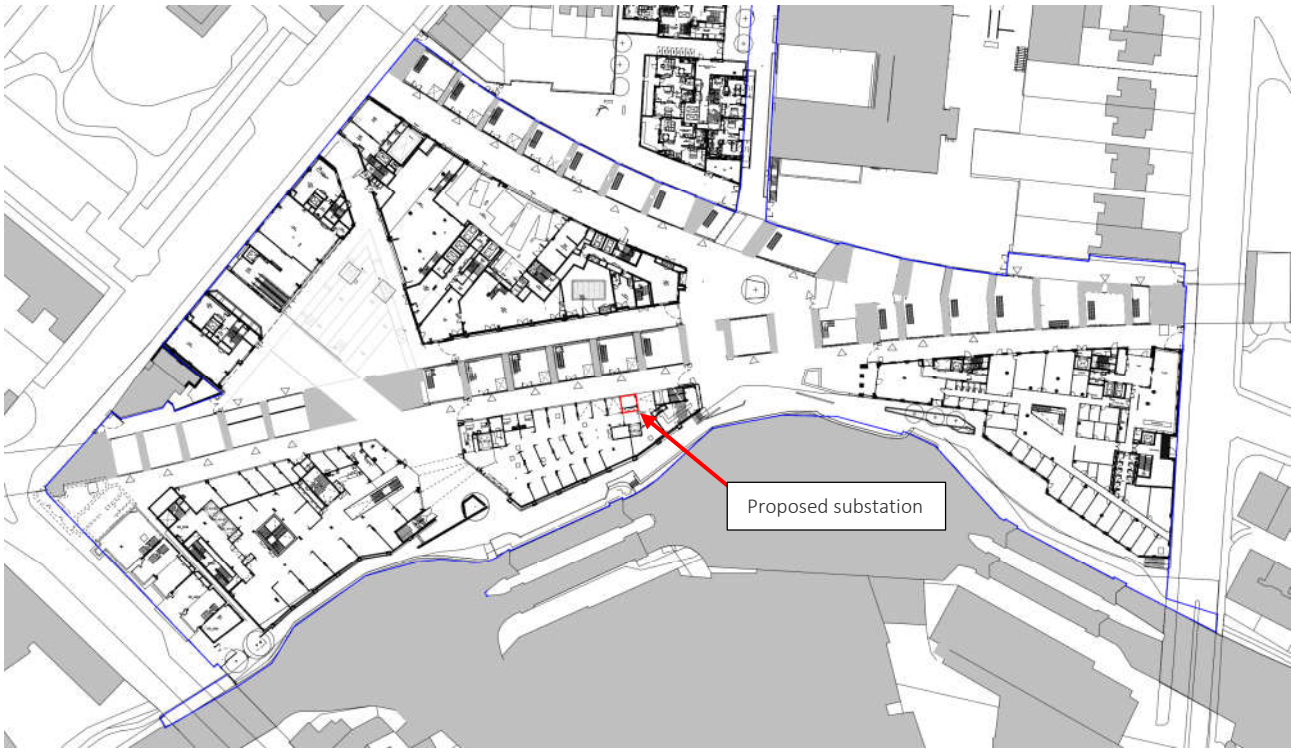

Figure 2-1: Proposed substation location within the wider site

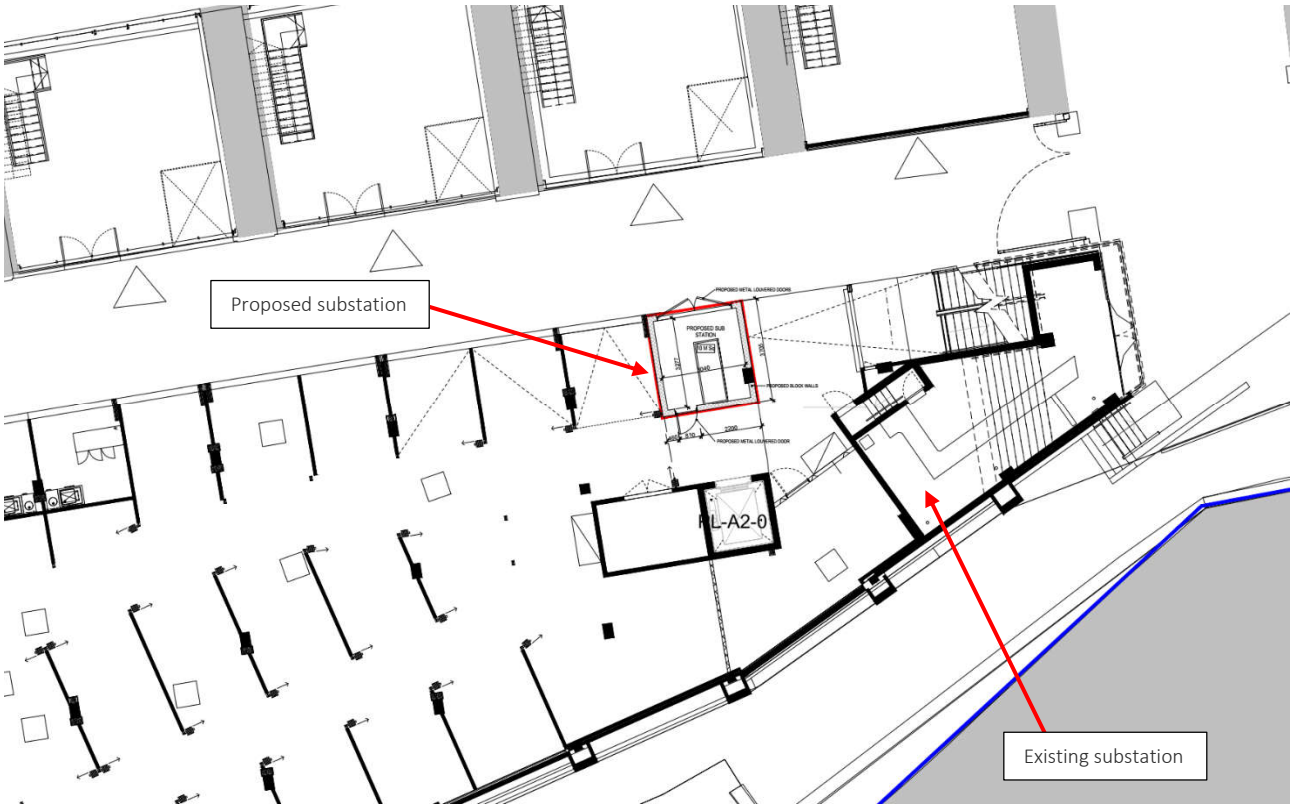

Figure 2-2: Proposed substation location in Block A2

3 Calculated noise emission

The nearest noise-sensitive receivers to the proposed new substation are the new residential apartments within the Camden Lock Village development, some 20m across the railway arches, to the north of the new substation. The windows of the nearest noise-sensitive properties are estimated to be about 30m from the new substation. Assuming point source propagation from the new substation would result in an attenuation of 26 dB to a point 1m just outside the windows of the nearest noise-sensitive receivers (as a theoretical free-field). This assumes no additional attenuation owing to screening, directivity etc, and so can be considered worst-case.

The nearest noise-sensitive receivers that are not within the Camden Lock Village development are considerably farther away, where noise attenuation owing to distance propagation from the new substation is expected to render the emitted noise to be significantly below the background noise level. Controlling noise adequately to the new residential apartments within the Camden Lock Village can also be expected to result in noise being adequately controlled to these other noise-sensitive receivers.

Based on the results of Scotch Partners' noise measurements of similar substations, a precautionary 5 dB penalty has been assumed, as the character of noise from a transformer may be considered to have a tonal component by some people. This is inline with the more onerous requirement of Condition 53, and so represents a worst-case.

It has been assumed that there is no acoustic lining material within the substation, and that the proposed louvered door does not have a specific acoustic rating (i.e. a standard weather louvre).

The noise level at the nearest noise-sensitive property has been predicted, based on the assumed transformer noise level, distance attenuation, and corrections for tonality presented above. The results are summarised below:

- Assumed transformer noise level: 47 dB L_{pA}
- Attenuation owing to distance propagation: -26 dB
- Calculated plant noise level at receiver: 21 dB L_{pA}
- Lowest noise emission limit: 40 dB $L_{Aeq,T}$
- Limit including 5 dB penalty: 35 dB $L_{Aeq,T}$
- Difference between plant noise level and background: 14 dB below

4 Conclusion

The results demonstrate that noise emission from the proposed new substation, at the nearest neighbouring noise-sensitive properties, is expected to be 14 dB below the noise emission limits stipulated by Hoare Lea. This would indicate that noise from the new substation can be expected to be compliant with the requirements of Condition 53.

Whilst there is some uncertainty within this assessment, the assumptions made are all considered to result in a worst-case scenario. Therefore, the level of noise emission from the new substation can be expected to be similar or lower than presented within this assessment.

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