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Architectural & Environmental Consultants

Noise | Vibration | Air Quality

Natalie Yaffe
3 Collard Place
London
NW1 8DU

Ref: LR02-23505-R0
Date: 23 October 2024

Dear Mrs Yaffe,

RE: PLANT NOISE IMPACT ASSESSMENT

Introduction

This report sets out the assessment and results of a noise impact assessment of the two external units associated with the air conditioning system serving 3 Collard Place. The air conditioning units are located at first floor level on the flat roof and external wall to the rear of the property and are approximately 3m and 4.5m from the nearest noise sensitive window of the adjacent residential property.

Assessment Criteria

BS4142:2014+A1:2019 – *Methods for rating and assessing industrial and commercial sound* (hereafter BS4142) can be used to assess the impact of noise from external mechanical plant noise sources on nearby sensitive receptors.

The BS4142 assessment methodology can be summarised as follows:

1. Measure the existing background noise levels (LA90,T dB) at the locations of nearby noise sensitive receptors during the quietest periods when the noise source(s) under investigation will operate
2. Predict or measure the noise emissions (LAeq,T dB) from the noise source(s) under investigation at the location(s) of the nearby sensitive receptors, and add corrections for any distinguishable acoustic features (e.g. tones, whines, screeches, hisses etc)
3. Subtract the measured background noise levels (item 1 above) with the measured or predicted rating noise levels (item 2 above) at each sensitive receptor. BS4142 states that:

a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant

adverse impact. 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 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.

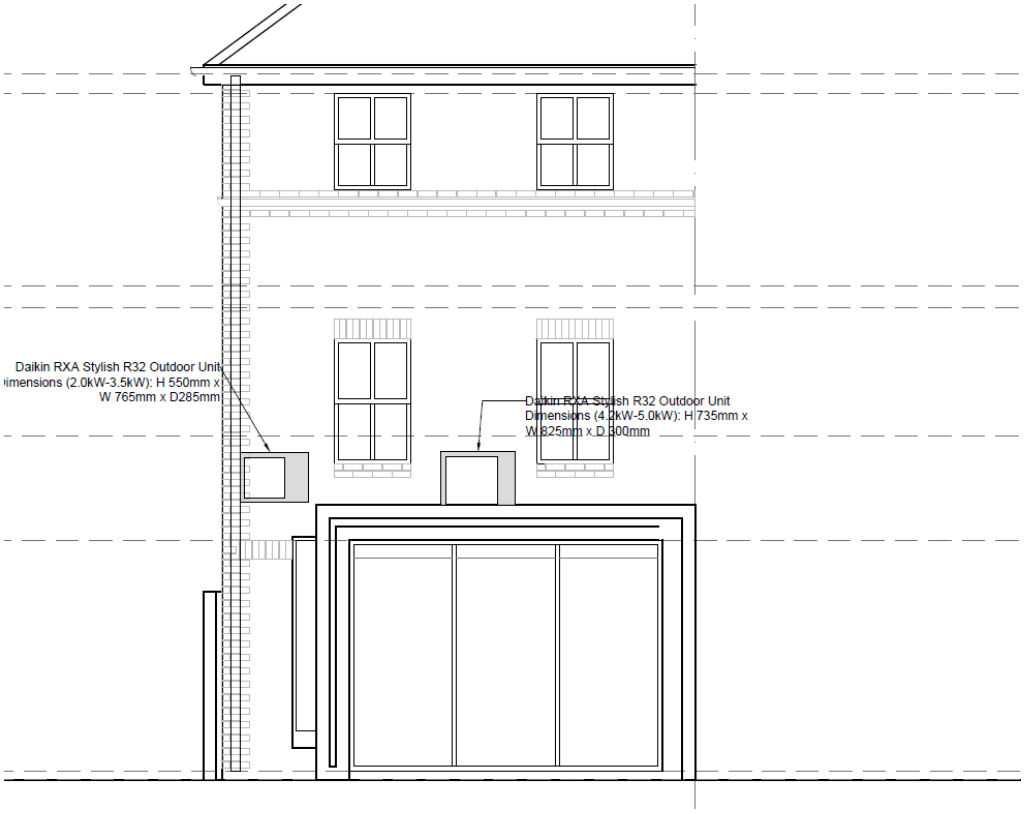
The above guidance has been taken into account in the assessment below.

Site Context and Noise Environment

Background noise levels (LA90) at the site were measured as part of the site noise survey undertaken from 15th to 19th September 2023. The measured background noise levels have been used as a basis of comparison against the measured plant noise levels in accordance with the BS4142 assessment methodology.

Plant noise levels were also measured as part of the site noise survey at a position representative of the nearest window of the adjacent noise sensitive receptor. Since that survey, one of the units has been relocated from the flat roof to the rear external wall of the property. Figure 1 below shows the new locations of the air conditioning units:

Figure 1 Air Conditioning Unit Locations



This new location is more distant to the nearest noise sensitive window than the previous and therefore total noise levels from the units are likely to be lower than previously measured. However, in order to assess a robust situation, the levels previously measured have been used to inform the assessment of likely impact and mitigation requirements.

The units were not observed to feature any impulsivity, tonality or noticeable intermittency and so no rating corrections for these features are necessary. However due to the nature of the noise emissions when compared to the background noise environment it is considered that the units would be subject to the following guidance from BS4142:

"Where the specific sound features characteristics that are neither tonal nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied."

The unrated noise emissions from the units were measured to be 44 dB LAeq,T. Therefore the rating noise level is:

- 47 dB LAr,Tr – at nearest noise sensitive window

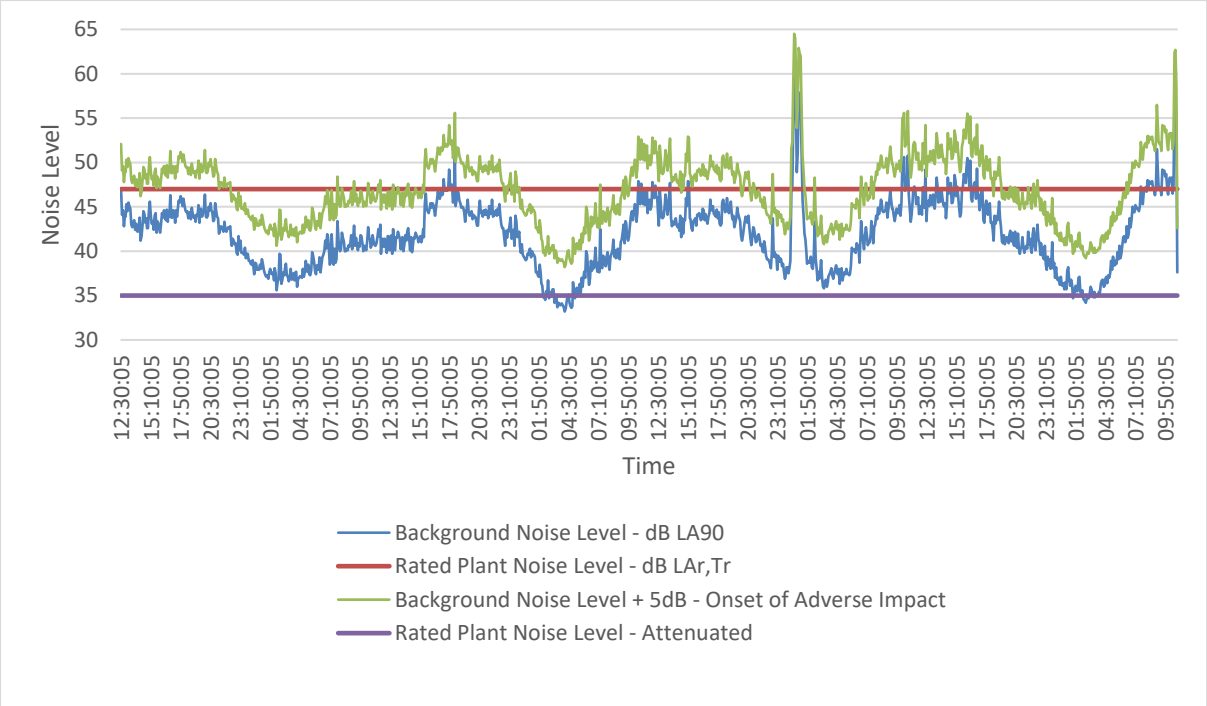
Due to the nature of the units it is envisaged that this noise level will be consistent throughout the day and is therefore equally applicable to night-time operations as daytime.

Plant Noise Impact Assessment

Figure 2 below presents the background noise levels (blue line) measured over the survey period along with a second green line representing a value 5 dB above the background noise levels which is, in accordance with BS4142 the level at which the onset of adverse impact (depending on context) would occur. Also presented is a straight red line representing the rating noise level of the units at the nearest noise sensitive window without any specific mitigation. The unmitigated plant noise level is seen to be generally below the line representing the onset of adverse impact between 0630 and 2230hrs however it is understood that 24 hour use of the air conditioning system is desired and therefore additional mitigation is required.

An investigation into currently available attenuation products suitable for this type of unit was therefore carried out. The investigation found that 12 dB of noise reduction is readily achievable (e.g. https://www.ambientacoustics.co.uk/enclosures.html). The purple line in Figure 1 below represents the plant noise level attenuated by that 12 dB.

Figure 2 Rated Plant and Background Noise Levels



It can be seen from the above that the attenuated rated plant noise levels are generally below the measured background noise levels during both the day and night-time periods. As such BS4142 indicates that this would result in “low impact” and hence no additional mitigation or restriction to hours of operation would be necessary.

Installation of suitable attenuation to achieve the levels stated above can be readily controlled through a suitably worded planning condition. It is therefore considered that there are no noise related reasons why permission should not be granted for the use of the air conditioning units.

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Quality Assurance

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