



**Mozambique High Commission
21 Fitzroy Square, London W1T 6EL**

Plant Noise Assessment Report

10 June 2016

For
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EXECUTIVE SUMMARY

An extract fan has been installed at first floor level at the rear (south west) of the Mozambique High Commission at 21 Fitzroy Square in London.

The extract fan operates between 11:00 hours and 18:00 hours daily and noise sensitive (residential) properties are located nearby.

auricl has undertaken an assessment of noise emissions associated with the extract fan.

The specific extract fan sound level was found to exceed Camden Council's requirements, however the exceedance (1 dB) is considered insignificant.

In addition, by comparing the specific extract fan sound level with the noise impact criteria presented in BS 4142: 2014 "*Methods for rating and assessing industrial and commercial sound*", it has been concluded that noise levels associated with the extract fan give rise to a low noise impact.

1.0 Introduction

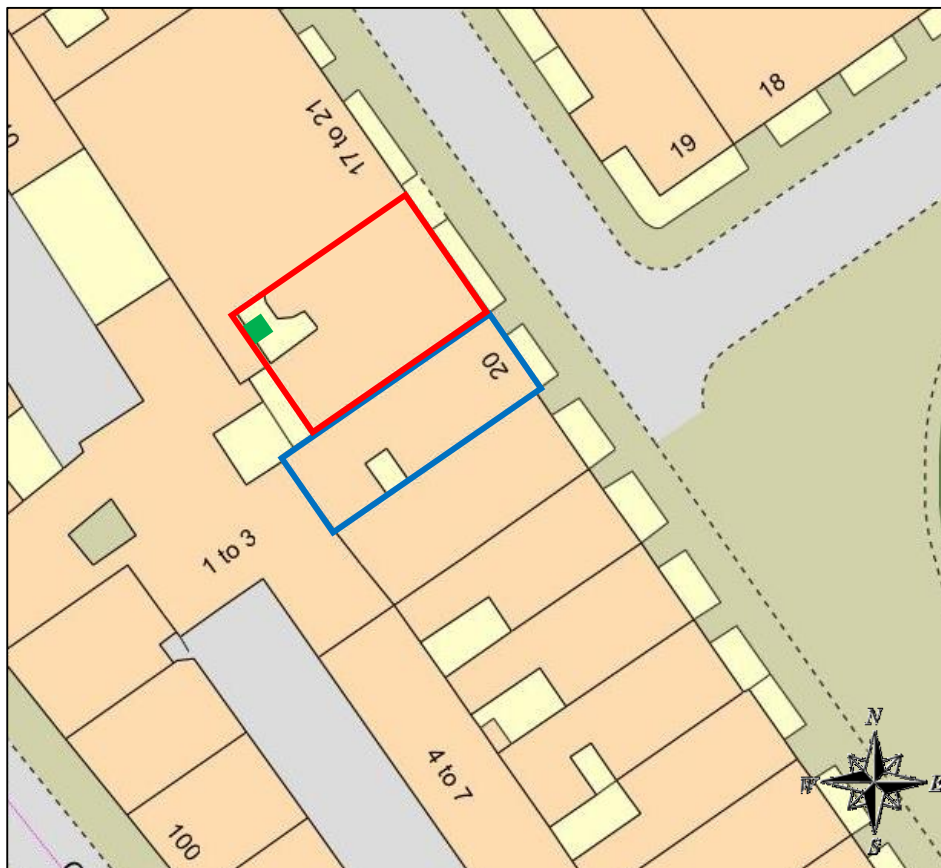
An extract fan has been installed in an acoustic enclosure at first floor level at the rear (south west) of the Mozambique High Commission at 21 Fitzroy Square in London.

The extract fan operates between 11:00 hours and 18:00 hours daily and noise sensitive (residential) properties are located nearby.

auricl has been appointed to undertake an assessment of noise emissions associated with the extract fan.

Figure 1.1 shows the site extent in **red**, with the approximate location of the extract fan indicated in **green** and the nearest noise sensitive property indicated in **blue**.

Figure 1.1 Site Extent and Surroundings



2.0 Measurement Methodology

Manned noise measurements were undertaken between 11:00 hours and 13:00 hours on Wednesday 25 May 2016.

The measurement period was considered to represent the lowest background noise levels during the plant's operational period, thereby yielding a worst-case noise impact assessment.

L_{Aeq} and L_{A90} noise levels were measured with the extract fan switched on and switched off over 5 minute periods. Noise from the extract fan and surroundings were noted to be relatively constant,

therefore the measurement periods are considered appropriate for assessing the noise impact of the extract fan.

The equipment used for the noise survey is summarised in Table 2.1.

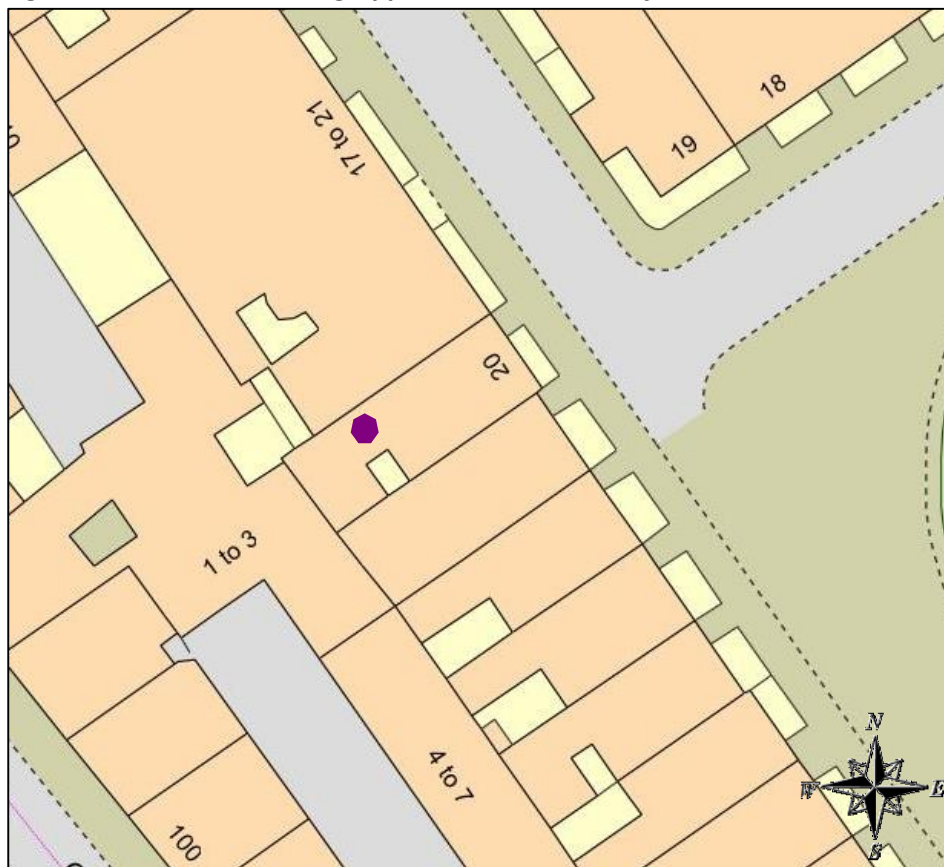
Table 2.1 Description of Equipment used for Noise Survey

Item	Make & Model	Serial Number
Type 1 sound level meter	01 dB Duo	10500
Type 1 ½" external microphone	GRAS 40CD	144989
Calibrator	01 dB CAL 21	35054817

The noise measurement equipment was calibrated before and after the measurement period. No significant change was found. Equipment calibration certificates can be provided upon request.

The sound level meter was held by hand at a distance of approximately 1m from the nearest noise sensitive (residential) window, which was located at ground floor level in the south western façade of 20 Fitzroy Square, as indicated in purple on Figure 2.1 below.

Figure 2.1 Site Plan Showing Approximate Location of Measurement Position



Throughout the measurement period, there was no rainfall, a clear sky and only light wind. These weather conditions are considered appropriate for undertaking environmental noise measurements.

3.0 Measurement Results

The measured L_{Aeq} and L_{A90} sound pressure levels are summarised in Table 3.1.

Table 3.1 Summary of Measurement Results

Scenario	Measured Sound Pressure Level (dB)	
	L_{Aeq}	L_{A90}
Extract Fan ON	45	44
Extract Fan OFF	44	42

The extract fan was just audible at the measurement position when switched on and the content of the sound was not noted to contain any distinguishable discrete continuous note or distinct impulses and is consistent in its nature (i.e. not intermittent).

When switched off, the noise climate at the measurement position was noted to be affected by distant road traffic noise (presumably associated with the busy A501 Euston Road approximately 100m to the north), which included frequent emergency vehicle sirens.

4.0 Extract Fan Acoustic Assessment

This section presents our assessment of noise emissions from the extract fan, in comparison to the measured background noise levels.

4.1 Camden Council Requirements

The proposed site lies within the boundary of Camden Council, whose typical requirements regarding plant noise are presented in Table E of Policy DP28 as follows:

Noise levels from plant and machinery at which planning permission will not be granted

Noise description and location of measurement	Period	Time	Noise Level
<i>Noise at 1 metre external to a sensitive façade</i>	<i>Day, evening and night</i>	<i>0000-2400</i>	<i>5dB(A) < L_{A90}</i>
<i>Noise that has a distinguishable discrete continuous note (whine, hiss, screech, hum) at 1 metre external to a sensitive façade</i>	<i>Day, evening and night</i>	<i>0000-2400</i>	<i>10dB(A) < L_{A90}</i>
<i>Noise that has distinct impulses (bangs, clicks, clatters, thumps) at 1 metre external to a sensitive façade</i>	<i>Day, evening and night</i>	<i>0000-2400</i>	<i>10dB(A) < L_{A90}</i>

Noise description and location of measurement	Period	Time	Noise Level
Noise at 1 metre external to a sensitive façade where $L_{A90} > 60\text{dB}$	Day, evening and night	0000-2400	55 dB L_{Aeq}

With reference to the above, Camden Council would therefore require the extract fan noise to be limited to a level 5 dB less than the background (L_{A90}) noise level, since the extract fan noise was not noted to have a distinguishable discrete continuous note or distinct impulses.

Our calculations to determine the extract fan noise level at the nearest noise sensitive window, in comparison to the background noise level, are shown in Table 4.1.

Table 4.1 Plant Noise Calculations

Component	Level (dB)
Ambient Noise Level – Extract Fan ON	45
Residual Noise Level – Extract Fan OFF	44
Specific Extract Fan Noise Level	38
Background L_{A90} Noise Level	42
Difference	-4

It can be seen that the specific extract fan noise level is 4 dB less than the background L_{A90} noise level. This represents a 1 dB exceedance of Camden Council’s requirements, however we would suggest that this is insignificant, since a 1 dB difference is generally imperceptible.

4.2 BS 4142: 2014

BS 4142: 2014 “Methods for rating and assessing industrial and commercial sound” is the latest British Standard that presents a methodology and criteria for assessing building services plant, and advises the following:

“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.”

With reference to the calculations in Table 4.1, it can therefore be concluded that the noise levels associated with the extract fan give rise to a low noise impact.

BS 4142: 2014 suggests that the context of the noise is also considered, as follows:

- **The Absolute Sound Level** – The specific extract fan sound level (38 dB L_{Aeq}) is relatively low in comparison to the existing measured residual level (44 dB L_{Aeq}).

The specific extract fan sound level (38 dB L_{Aeq}) is equivalent in level to the background noise level that would be experienced inside a quiet cellular office (typically 35-40 dB L_{Aeq}).

In addition, the specific extract fan sound level (38 dB L_{Aeq}) is only slightly greater than is recommended by BS 8233: 2014 “*Guidance on sound insulation and noise reduction for buildings*” for appropriate indoor ambient noise levels commensurate with resting inside a residential living room (35 dB L_{Aeq}).

Based on a typical outside-to-inside level difference of at least 10 dB for an open window, the resultant sound level inside the nearest noise sensitive property would be 28 dB L_{Aeq} , which is comfortably less than the BS 8233: 2014 recommended levels.

- **The Character of the Specific and Residual Sound** – Ambient noise levels in the area where the extract fan is located were noted to be affected by distant road traffic, including relatively frequent emergency vehicle sirens. The specific extract fan sound is broadband (i.e. contains no distinguishable discrete continuous note or distinct impulses) and is consistent in its nature (i.e. not intermittent).

Other plant items (dry air coolers and condenser units) were noted to be located on nearby buildings, which are generally more impulsive and more intermittent than the extract fan to the rear of 21 Fitzroy Square.

- **The Sensitivity of the Receptor** – The residential receptor at 20 Fitzroy Square is classed as noise sensitive, however it is unknown how frequently and for how long the property is actually occupied during the operational period of the extract fan i.e. 11:00 – 18:00 hours.

Taking into account the context of the extract fan and its surroundings, we conclude that the associated noise levels give rise to a low noise impact, in accordance with the BS 4142: 2014 guidance.

Appendix A – Acoustic Terminology

Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing (20×10^{-6} Pascals).
Sound Pressure Level (L_p)	The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.
A-weighting (L_A or dBA)	The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.
$L_{Aeq,T}$	<p>The A-weighted equivalent continuous noise level over the time period T (typically T= 16 hours for daytime periods, T = 8 hours for night-time periods).</p> <p>This is the sound level that is equivalent to the average energy of noise recorded over a given period.</p>
$L_{An,T}$	<p>The A-weighted noise level exceeded for n% of the time over a given period T.</p> <p>e.g. L_{90}, the noise level exceeded for 90% of the time (background noise level).</p>