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GREEK COFFEE LTD,
181 YORK WAY, LONDON
PLANNING COMPLIANCE REPORT

Report 15833.PCR.01

For:

Greek Coffee Ltd

181 York Way

London

N7 9LN

Site Address	Report Date	Revision History
Greek Coffee Ltd, 181 York Way, London	15/10/2021	

Registered in England Company No. 7947892
KP Acoustics is the Trading Name of KP Acoustics Limited

CONTENTS

List of Attachments

1.0 INTRODUCTION

KP Acoustics Ltd, Britannia House, 11 Glenthorne Road, London, W6 0LH, has been commissioned by Greek Coffee Ltd, 181 York Way, London, N7 9LN, to undertake an environmental noise survey at Greek Coffee Ltd, 181 York Way, London. The background noise levels measured will be used to determine daytime and night-time noise emission criteria for a plant unit installation in order to ensure that nearby noise sensitive receivers are not negatively impacted.

This report presents the overall methodology and results from the environmental survey followed by calculations to demonstrate the feasibility of the plant unit installation to satisfy the emissions criterion at the closest noise-sensitive receiver and outline mitigation measures as appropriate.

2.0 ENVIRONMENTAL NOISE SURVEY AND EQUIPMENT

2.1 Procedure

Automated noise monitoring was undertaken at the positions shown in Site Plan 15833.SP1. The choice of this position was based on security, accessibility and on collecting representative noise data in relation to the nearest noise sensitive receivers relative to the operations on site. The duration of the survey was between 05/10/2021 and 06/10/2021.

Initial inspection of the site revealed that the background noise profile at the monitoring locations was largely dominated by road traffic noise from the surrounding roads.

The weather during the course of the survey was generally dry with wind speeds within acceptable tolerances and therefore suitable for the measurement of environmental noise. The measurement procedure complied with ISO 1996-2:2007 Acoustics "*Description, measurement and assessment of environmental noise - Part 2: Determination of environmental noise levels*".

2.2 Equipment

The equipment calibration was verified before and after the survey and no calibration irregularities were observed.

The equipment used was as follows.

- 1 No. Svantek 958A Class One Sound Level Meter
- B&K Type 4231 Class 1 Calibrator

3.0 RESULTS

The results from the continuous noise monitoring are shown as a time history of L_{Aeq}, L_{Amax}, L_{A10} and L_{A90} averaged over 5 minute sample periods in Figures 15833.TH1.

Minimum background noise levels are shown in Table 3.1.

	Minimum background noise level $L_{A90:\,5min}$ dB(A)
Daytime (07:00-23:00)	53
Night-time (23:00-07:00)	43

Table 3.1: Minimum measured background noise levels

4.0 NOISE CRITERIA

The criterion the for noise emissions of new plant in this instance is in place in order to minimise the likelihood of complaints from nearby noise sensitive receivers. As such, noise received as a result of the newly installed plant unit should not exceed a level 10dB below the measured minimum background L_{A90}, in order to demonstrate inaudibility at the nearest receiver.

We therefore propose to set the noise criteria as shown in Table 4.1 in order to comply with the above requirement.

	Daytime (07:00 to 23:00)	Night-time (23:00 to 07:00)
Noise criterion at nearest residential receiver (10dB below minimum L_{A90})	43 dB(A)	33 dB(A)

Table 4.1: Proposed Noise Emissions Criteria

As the proposed plant unit would be used only during daytime hours, the criterion of 43dB(A) will be used to ensure the amenity of the closest residential receivers will be protected.

5.0 DISCUSSION

The location of the plant unit is as shown in indicative site plan 15833.SP1.

The kitchen extract fan is proposed to be installed internally, with the duct termination externally positioned, at roof level. The closest noise sensitive receiver to this location is the windows of the nearby residences at a minimum distance of 3m.

It is understood that the installation comprises the following unit:

- 1 No. Helios GBW500 Extract Fan

The sound power levels as provided by the manufacturer for the unit are shown in Table 5.1.

	Sound Power Level (dB) in each Frequency Band							
Unit	63Hz*	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Helios GBW500 Extract Fan (Exhaust)	72	72	75	76	78	75	71	67

Table 5.1: Manufacturer Sound Power Levels

***Note: No data provided for 63Hz, so value at 125Hz has been duplicated**

5.1 Objective overview

Taking all acoustic corrections into consideration, including distance and directivity corrections, the noise level expected at the closest noise sensitive windows would be as shown in Table 5.2. Detailed calculations are shown in Appendix B.

Receiver - Nearest Noise Sensitive Windows	Criterion	Noise Level at Receiver
Residential Windows	43 dB(A)	43 dB(A)

Table 5.2: Predicted noise level and criterion at nearest noise sensitive location

As shown in Appendix B and Table 5.2, transmission of noise to the nearest sensitive windows due to the effects of the plant installations fully satisfy the emissions criterion. However, this is providing that the mitigation measures indicated in Section 5.2 are implemented.

5.2 Proposed Mitigation Measures for Plant

Kitchen Extract Fan

In order to ensure that the criterion is met, we would recommend the installation of a silencer for the extract fan unit, with insertion loss figures, as shown in Table 5.3.

	Insertion Loss (dB) in each Frequency Band							
Unit	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Proposed Silencer	-4	-7	-13	-24	-28	-28	-17	-24

Table 5.3: Minimum recommended insertion loss

5.3 BS8233 Assessment

It is the professional opinion of KP Acoustics that this level is not going to pose any negative impact on the amenity of nearby residential receivers. Furthermore, the value of 43 dB(A) for residential receivers is to be considered outside of the building. Windows may be closed or partially closed leading to further attenuation, as follows.

Further calculations have been undertaken to assess whether the noise emissions from the proposed unit installation would be expected to meet the recognised British Standard recommendations, in order to further ensure the amenity of nearby noise sensitive receivers.

British Standard 8233:2014 '*Sound insulation and noise reduction for buildings – Code of Practise*' gives recommendations for acceptable internal noise levels in residential properties. Assuming worst case conditions, of the closest window being for a bedroom, BS8233:2014 recommends 35dB(A) for internal resting/sleeping conditions during daytime.

With calculated external levels of 43 dB(A), the residential windows would need to provide 8dB additional attenuation, in order for recommended conditions to be achieved. According to BS8233:2014, even a partially open window offers 10-15dB attenuation, thus leading to an acceptable interior noise level that meets the criterion.

Receiver	Design Target – *For resting/sleeping conditions in a bedroom, in BS8233:2014*	Noise Level at Residential Receiver (due to plant installation)
Inside Nearest Residential Space	35 dB(A)	33 dB(A)

Table 5.3: Noise levels and criteria inside nearest residential space

Predicted levels are shown in Table 5.3, with detailed calculations shown in Appendix B. It can therefore be stated that, as well as complying with the criterion stipulated within this report, the emissions from the plant unit installation would be expected to comfortably meet the most stringent recommendations of the relevant British Standard, even with neighbouring windows partially open.

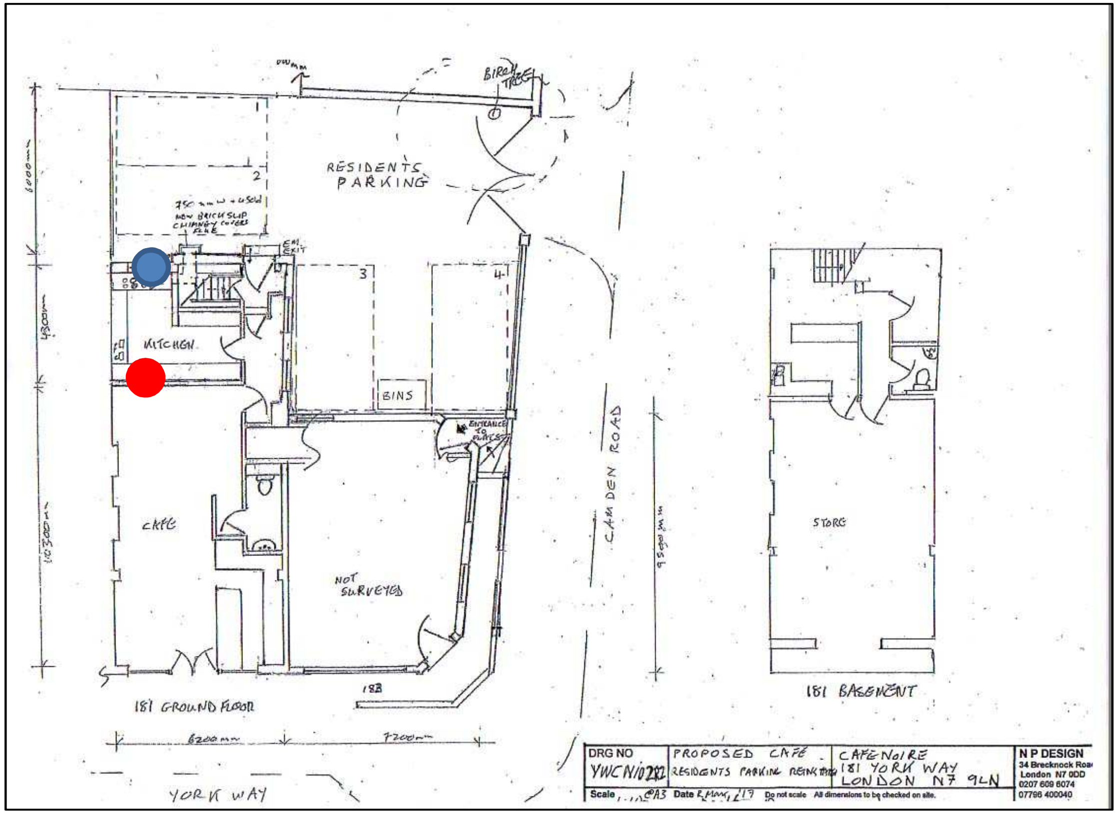
6.0 CONCLUSION

An environmental noise impact survey has been undertaken at Greek Coffee Ltd, 181 York Way, London, by KP Acoustics Ltd between 05/10/2021 and 06/10/2021. The results of the survey have enabled criteria to be set for noise emissions. Using manufacturer noise data, noise levels are predicted at the nearby noise sensitive receivers for compliance with current requirements.

Calculations show that noise emissions from the proposed unit installations would be sufficiently low as to cause no negative impact on nearby noise sensitive residential receivers, providing that the mitigation measures stipulated in Section 5.2 are implemented

Further calculations have been undertaken with regards to the relevant British Standard and it has been ensured that the amenity of nearby residential receivers will be protected.

Report by:	Checked by:
Kenny Macleod AMIOA	**Kyriakos Papanagiotou MIOA**
KP Acoustics Ltd.	**KP Acoustics Ltd.**



Closest noise sensitive receiver (2F)

Noise monitoring position (GF)

Title:

Indicative site plan showing closest noise sensitive receivers and proposed plant location

Date: 5th October 2021

FIGURE 15833.SP1

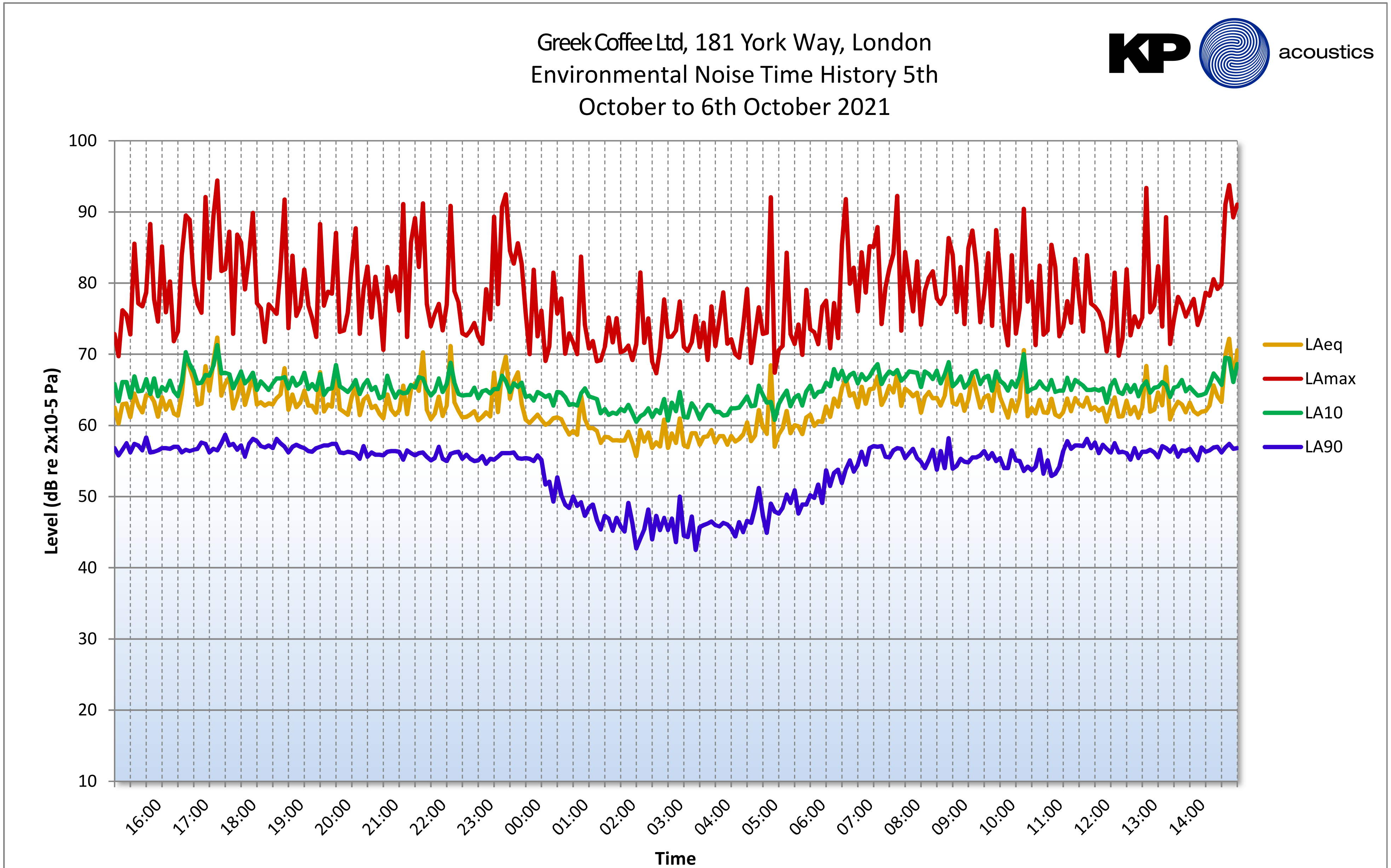


Figure 15833.TH1

APPENDIX A

GENERAL ACOUSTIC TERMINOLOGY

Decibel scale - dB

In practice, when sound intensity or sound pressure is measured, a logarithmic scale is used in which the unit is the 'decibel', dB. This is derived from the human auditory system, where the dynamic range of human hearing is so large, in the order of 10^{13} units, that only a logarithmic scale is the sensible solution for displaying such a range.

Decibel scale, 'A' weighted - dB(A)

The human ear is less sensitive at frequency extremes, below 125Hz and above 16Khz. A sound level meter models the ears variable sensitivity to sound at different frequencies. This is achieved by building a filter into the Sound Level Meter with a similar frequency response to that of the ear, an A-weighted filter where the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq}. The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for no more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise.

L_{90}

This is the level exceeded for no more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 11 such octave bands whose centre frequencies are defined in accordance with international standards. These centre frequencies are: 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 8000 and 16000 Hertz.

Environmental noise terms are defined in BS7445, *Description and Measurement of Environmental Noise*.

APPENDIX A

APPLIED ACOUSTIC TERMINOLOGY

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than a single source and 4 sources produce a 6dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3dB for each doubling of distance.

Subjective impression of noise

Hearing perception is highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a guide to explain increases or decreases in sound levels for many scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud

Transmission path(s)

The transmission path is the path the sound takes from the source to the receiver. Where multiple paths exist in parallel, the reduction in each path should be calculated and summed at the receiving point. Outdoor barriers can block transmission paths, for example traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and construction.

Ground-borne vibration

In addition to airborne noise levels caused by transportation, construction, and industrial sources there is also the generation of ground-borne vibration to consider. This can lead to structure-borne noise, perceptible vibration, or in rare cases, building damage.

Sound insulation - Absorption within porous materials

Upon encountering a porous material, sound energy is absorbed. Porous materials which are intended to absorb sound are known as absorbents, and usually absorb 50 to 90% of the energy and are frequency dependent. Some are designed to absorb low frequencies, some for high frequencies and more exotic designs being able to absorb very wide ranges of frequencies. The energy is converted into both mechanical movement and heat within the material; both the stiffness and mass of panels affect the sound insulation performance.

APPENDIX B

Greek Coffee Ltd, 181 York Way, London

Plant Unit Emissions Calculations

Source: Kitchen Extract Fan Receiver: Closest Residential Receiver	Frequency, Hz 63	125	250	500	1k	2k	4k	8k	dB(A)
Kitchen Extract Fan Sound Power Level (Exhaust)	72	72	75	76	78	75	71	67	83
Conversion to sound pressure level (at 1m)	-11	-11	-11	-11	-11	-11	-11	-11	
Attenuation provided by distance to receiver (min. 3m)	-10	-10	-10	-10	-10	-10	-10	-10	
Attenuation provided by directivity	0	0	0	-1	-5	-8	-8	-8	
Attenuation provided by screening	-6	-7	-9	-11	-12	-13	-13	-13	
Attenuation required by proposed silencer	-4	-7	-13	-24	-28	-28	-17	-24	
Sound pressure level 1m from nearest residential receiver	**41**	**37**	**33**	**20**	**13**	**6**	**13**	**2**	**43**
								Design Criterion	**43**

Receiver: Inside Nearest Residential Window

Source: Air Handling Unit	Frequency, Hz 63	125	250	500	1k	2k	4k	8k	dB(A)
Sound pressure level outside window									43
Minimum attenuation from partially open window, dB									-10
Sound pressure level inside nearest noise sensitive window									**33**