JKS RESTAURANTS LTD

31 WINDMILL STREET
LONDON, W1T 2JN

NOISE ASSESSMENT

JUNE 2016

KC environmental ltd

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Project: 1294	June 2016
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PREFACE

This report has been prepared by Ken Collins, a Director of KC Environmental Ltd. Prior to forming KC Environmental, Ken has been a Director of Addiscombe Environmental Ltd, of RPS Planning Transport and Environment, and of Ashdown Environmental Limited. He is a Member of the Institute of Acoustics and a Member of the Institute of Environmental Sciences. He has over 40 years research and project experience in acoustics, covering transport, industrial, commercial and residential developments, recreation, and building acoustics, both in the UK and abroad.

He was a committee member of the Environmental Noise Group of the Institute of Acoustics from its inception until 2011 (immediate past Chair). Since 1994 he has represented the Institute of Acoustics on the BSi Committee EH/1/3 "Industrial and Residential Noise", which deals with BS 4142 "Method for Rating Industrial Noise Affecting Residential and Industrial Areas. He was a member of the drafting committees which were responsible for the revisions to BS 4142 published in 1997 and November 2014.

Prior to forming Ashdown Environmental Limited, he worked for Travers Morgan from 1978 until 1988. His experience with them was primarily the assessment of environmental impacts of various transportation and industrial schemes, although he also undertook work on a number of other acoustic issues, unrelated to transport or industry.

Before his employment with Travers Morgan, he was employed in the Acoustics Unit of the National Physical Laboratory for eight years, where he was engaged in research into the prediction of transportation noise and was also responsible for the calibration of microphones used as National Standards.

CONTENTS

1. INTRODUCTION

1.1 JKS Restaurants Ltd are proposing to open a restaurant (Bao) at 31 Windmill Street, London W1T 2JN.

1.2 A planning application for alterations to the shopfront has been submitted and, as part of the alterations, it is proposed to change the louvres for internal plant for intake fans to the restaurant.

1.3 JKS Restaurants Ltd has commissioned KC Environmental Limited (KCEL) to undertake a noise assessment of the plant and louvres to accompany the planning application.

1.4 A noise assessment has been undertaken, including site visits and ambient noise monitoring have been undertaken, and a comparison of the predicted noise levels from the proposed plant has been made with Camden Council's noise criterion.

2. NOISE UNITS AND STANDARDS

Noise Units

2.1 Noise is defined as unwanted sound. The range of audible sound is from 0 dB to 140 dB. The frequency response of the ear is usually taken to be about 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

2.2 The "loudness" of a noise is a subjective parameter, but it is generally accepted that an increase/decrease of 10 dB(A) corresponds to a doubling/halving in perceived loudness.

2.3 External noise levels are rarely steady, but rise and fall according to activities within an area. In an attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is the "equivalent continuous A-weighted sound pressure level, in decibels", and is defined in British Standard BS 7445 [1] as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

Camden Council

2.4 Camden Council has a noise and vibration policy in their Development Policy, 2010 - 2025. Policy DP28 states:

"Policy DP28 - Noise and vibration

The Council will seek to ensure that noise and vibration is controlled and managed and will not grant planning permission for:
a) development likely to generate noise pollution; or
b) development sensitive to noise in locations with noise pollution, unless appropriate attenuation measures are provided.
Development that exceeds Camden's Noise and Vibration Thresholds will not be permitted.

The Council will only grant permission for plant or machinery if it can be operated without cause harm to amenity and does not exceed our noise thresholds.

The Council will seek to minimise the impact on local amenity from the demolition and construction phases of development. Where these phases are likely to cause harm, conditions and planning obligations may be used to minimise the impact."

2.5 The text accompanying the policy states:

28.1 Noise and vibration can have a major effect on amenity and health and therefore quality of life. Camden's high density and mixed-use nature means that disturbance from noise and vibration is a particularly important issue in the borough. Camden's Core Strategy recognises the importance of this issue for Camden's residents and policy DP28 contributes to implementing a number of Core Strategy policies, including CS5 - Managing the impact of growth and development, CS9 - Achieving a successful Central London, CS11 - Promoting sustainable and efficient travel and CS16 – Improving Camden's health and well-being.

28.2 The effect of noise and vibration can be minimised by separating uses sensitive to noise from development that generates noise and by taking measures to reduce any impact. Noise sensitive development includes housing, schools and hospitals as well as offices, workshops and open spaces, while noise is generated by rail, road and air traffic, industry, entertainment (e.g. nightclubs, restaurants and bars) and other uses.

28.3 The Council will only grant planning permission for development sensitive to noise in locations that experience noise pollution, and for development likely to generate noise pollution, if appropriate attenuation measures are taken, such as double-glazing. Planning permission will not be granted for development sensitive to noise in locations that have unacceptable levels of noise. Where uses sensitive to noise are proposed close to an existing source of noise or when development that generates noise is proposed, the Council will require an acoustic report to ensure compliance with PPG24: Planning and noise. A condition will be imposed to require that the plant and equipment which may be a source of noise pollution is kept working efficiently and within the required noise limits and time restrictions. Conditions may also be imposed to ensure that attenuation measures are kept in place and effective throughout the life of the development.

28.4 In assessing applications, we will have regard to the Noise and Vibration

Thresholds, set out below. These represent an interpretation of the standards in PPG24 and include an evening period in addition to the day and night standards contained in the PPG, which provide a greater degree of control over noise and vibration during a period when noise is often an issue in the borough.

Table A: Noise levels on residential sites adjoining railways and roads at which planning permission will not be granted

Noise description and location of measurement	***Period***	***Time***	***Sites adjoining railways***	***Sites adjoining roads***
Noise at 1 metre external to a sensitive façade	*Day*	*0700-1900*	*74 dB L_{Aeq},12h*	*72 dB L_{Aeq},12h*
Noise at 1 metre external to a sensitive façade	*Evening*	*1900-2300*	*74 dB L_{Aeq},4h*	*72 dB L_{Aeq},4h*
Noise at 1 metre external to a sensitive façade	*Night*	*2300-0700*	*66 dB L_{Aeq},8h*	*66 dB L_{Aeq},8h*

Table B: Noise levels on residential streets adjoining railways and roads at and above which attenuation measures will be required

Noise description and location of measurement	***Period***	***Time***	***Sites adjoining railways***	***Sites adjoining roads***
Noise at 1 metre external to a sensitive façade	*Day*	*0700-1900*	*65 dB L_{Aeq},12h*	*62 dB L_{Aeq},12h*
Noise at 1 metre external to a sensitive façade	*Evening*	*1900-2300*	*60 dB L_{Aeq},4h*	*57 dB L_{Aeq},4h*
Noise at 1 metre external to a sensitive façade	*Night*	*2300-0700*	*55 dB L_{Aeq},1h*	*52 dB L_{Aeq},1h*
Individual noise events several times an hour	*Night*	*2300-0700*	*>82dB L_{Amax} (S time weighting)*	*>82dB L_{Amax} (S time weighting)*

Table C: Vibration levels on residential sites adjoining railways and roads at which planning permission will not be granted

Vibration description and location of measurement	***Period***	***Time***	***Vibration levels***
Vibration inside critical areas such as a hospital operating theatre	*Day, evening and night*	*0000-2400*	*0.1 VDV ms-1.75*
Vibration inside dwellings	*Day and evening*	*0700-2300*	*0.2 to 0.4 VDV ms-1.75*
Vibration inside dwellings	*Night*	*2300-0700*	*0.13 VDV ms-1.75*
Vibration inside offices	*Day, evening and night*	*0000-2400*	*0.4 VDV ms-1.75*
Vibration inside workshops	*Day, evening and night*	*0000-2400*	*0.8 VDV ms-1.75*
Where dwellings may be affected by ground-borne regenerated noise internally from, for example, railways or underground trains within tunnels, noise levels within the rooms should not be greater than 35dB(A)max			

Table D: Noise levels from places of entertainment on adjoining residential sites at which planning permission will not be granted

Noise description and measurement location	***Period***	***Time***	***Sites adjoining places of entertainment***
Noise at 1 metre external to a sensitive façade	*Day and evening*	*0700-2300*	*L_{Aeq}, 5m shall not increase by more than 5dB**
Noise at 1 metre external to a sensitive façade	*Night*	*2300-0700*	*L_{Aeq}, 5m shall not increase by more than 3dB**
Noise inside any living room of any noise sensitive premises, with the windows open or closed	*Night*	*2300-0700*	*L_{Aeq}, 5m (in the 63Hz Octave band measured using the 'fast' time constant) should show no increase in dB**
** As compared to the same measure, from the same position, and over a comparable period, with no entertainment taking place*			

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

Noise description and location of measurement	***Period***	***Time***	***Noise level***
Noise at 1 metre external to a sensitive façade	*Day, evening and night*	*0000-2400*	*5dB(A) <LA90*
Noise that has a distinguishable discrete continuous note (whine, hiss, screech, hum) at 1 metre external to a sensitive façade.	*Day, evening and night*	*0000-2400*	*10dB(A) <LA90*
Noise that has distinct impulses (bangs, clicks, clatters, thumps) at 1 metre external to a sensitive façade.	*Day, evening and night*	*0000-2400*	*10dB(A) <LA90*
Noise at 1 metre external to sensitive façade where LA90>60dB	*Day, evening and night*	*0000-2400*	*55dB$_{LAeq}$*

Key references / evidence

- *Camden's Noise Strategy, 2002*
- *The London Plan (Consolidated with Alterations since 2004), 2008*
- *Planning Policy Guidance 24: Planning and noise*

2.6 The relevant criterion in this case is therefore that contained in Table E, above.

3. NOISE MEASUREMENTS

3.1 Noise monitoring was undertaken between 23:00 and 00:00hours on Wednesday 11 May 2016. The measurement period was selected as being the quietest period during the opening hours of the restaurant, and therefore the most sensitive.

3.2 Measurements were undertaken on the pavement in Whitfield Street, 1 metre in front of the restaurant in the approximate location of the proposed louvres, at a height of 1.5 metres. Measurement periods of fifteen minutes were recorded for the duration of the survey.

3.3 A CEL 480 type 1 logging sound level meter was used for the noise survey. Before and after the survey period, the sound level meter was calibrated using a CEL 284/2 class 1L acoustic calibrator, which showed that no drift had occurred. The sound level meter was calibrated in July 2014, and the calibrator was calibrated in October 2015, both by the manufacturer. The calibration certificates are shown in Appendix A.

3.4 During the survey, the weather was dry and calm and the meteorological conditions were suitable for noise measurements, with the wind speed being measured at less than 0.2 ms^{-1}, the temperature at 13 -15°C, and the relative humidity at 65 –74%. There was no rain, and the ground surfaces were dry. The L_{Aeq} and L_{A90} noise levels were measured, together with the L_{Amax} and L_{A10} levels.

3.5 A summary of the results of the measurements is given in Tables 3.1, and the full results are given in Appendix B.

Table 3.1: Summary of Measured Noise Levels

Start Time	L_{Amax} dB	L_{Aeq} dB	L_{A10} dB	L_{A90} dB
23:00	64.6	54.1	55.5	52.0
23:15	70.4	57.0	60.0	52.0
23:30	71.7	58.4	61.5	52.0
23:45	64.6	56.5	59.0	50.5

3.6 An L_{A90} background noise level of 50 dB has therefore been taken as representative of the lowest background noise level during the measurement period.

4. NOISE ASSESSMENT

4.1 As part of the alterations at 31 Windmill Street, it is proposed to change the louvres for internal plant for intake fans to the restaurant.

4.2 The dominant noise source in the area is from road traffic and general street noise: that from Tottenham Court Road affects the background noise, whilst individual events on Windmill Street and Whitfield Street affect the higher levels.

4.3 Based on the data and the nature of the ambient noise in the area, it is considered that noise from the plant does not contain any distinguishing characteristics, and therefore no correction has been added.

4.4 It is possible that the plant could operate at any time that the restaurant is open, and therefore use around closing time would be the most sensitive period for the plant.

4.5 The noise level due to the proposed internal plant venting through the louvres on the shopfront has been calculated for the nearest windows at the flats on the opposite side of Whitfield Street (32 Windmill Street). The calculations are given in Appendix D.

4.6 It has been calculated that the total noise level from all of the proposed new plant operating simultaneously would be 39 dB(A) at the nearest windows. This noise level would be 11 dB below the lowest measured L_{A90} background noise level during the proposed operating hours of 50 dB(A).

4.7 The noise level due to the proposed internal plant venting through the louvres on the shopfront has been calculated for the nearest windows at the flats on the same side of Whitfield Street, at the upper floors of number 2 - 4. The calculations are given in Appendix D.

4.8 It has been calculated that the total noise level from all of the proposed new plant operating simultaneously would be 44 dB(A) at the nearest windows. This noise level would be 6 dB below the lowest measured L_{A90} background noise level during the proposed operating hours of 50 dB(A).

4.9 Any other residential property in the area is more distant or more screened, and would therefore receive lower noise levels.

4.10 It is therefore considered the noise levels from the proposed plant would meet the Camden Council criteria and that there would be no noise impact on nearby residents.

5. CONCLUSIONS

5.1 JKS Restaurants Ltd are proposing to open a restaurant (Bao) at 31 Windmill Street, London W1T 2JN. As part of the alterations, it is proposed to change the louvres for internal plant for intake fans to the restaurant.

5.2 The ambient noise levels have been measured and the noise level due to the proposed plant has been calculated and assessed.

5.4 Based on the plan showing the location of the proposed plant and the associated mitigation, and manufacturer's data on the proposed plant, it has been calculated that the total noise level from the proposed plant would be more than 5 dB below the lowest measured background noise level at the nearest residential properties.

5.5 Any other residential property in the area is more distant or more screened, and would therefore receive lower noise levels. The noise level would therefore meet the Camden Council criteria at the nearest properties, and would not give rise to any noise impact to residents.

REFERENCES

1. British Standards Institution. British Standard 7445: Description and Measurement of Environmental Noise, Part 1. Guide to Quantities and Procedures, 1991.

APPENDIX A

Calibration Certificates

CASELLA CEL

Certificate of Conformity and Calibration

Customer	**KC Environmental Ltd**	**Log Number**	12140

Meter		**Pre-amp**	
Manufacturer	**Casella**	Manufacturer	**Casella**
Model Number	**480.C1**	Model Number	**495**
Serial Number	**032775**	Serial Number	**032776**
Firmware Revision	**2.01**		
Performance Class	**1**		

Microphone		**Calibrator**	
Manufacturer	**Casella**	Manufacturer	**Casella**
Model Number	**250**	Model Number	**284/2**
Serial Number	**4255**	Serial Number	**4/12023510**
		T/E Number	N/A
Accessories	None		

Certificate Number **12140**

Applicable Sound Level Meter Standards	IEC 60651 1994	IEC 60804 2000
Test Procedure	Cal 101	

Test Conditions

Temperature	**27.0**	°C		
Humidity	**40.0**	%RH		
Ambient Pressure	**1012.0**	mBar	101.2	kPa

Test Engineer **Mike Hill**

Date of Test **28-Jul-14** Date of last Calibration **Unknown**

This test certificate confirms that the instrument specified above has been successfully tested to comply with the manufacturer's published specifications.
Tests are performed using equipment traceable to national standards in accordance with Casella's ISO 9000:2008 quality procedures.
The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Test Summary

Linearity	**PASS**
Frequency Weightings	**PASS**
F and S Time Weightings	**PASS**
Time Weighting Impulse	**PASS**
RMS Detector Accuracy	**PASS**
Overload Indication	**PASS**
Time Averaging	**PASS**
Pulse Range	**PASS**
Sound Exposure Level	**PASS**
Peak Response	**PASS**
Acoustic Frequency Response	**PASS**

Certificate of Conformity and Calibration

CASELLA CEL

Customer:	KC Environmental Ltd
Instrument:	CEL-284/2
Serial Number:	4/12023510
Job Number:	13907
Date of Issue:	29-Oct-2015
Engineer:	M Hill

Traceable Equipment:

Reference Calibrator	EQ11084
DVM type Fluke 45	EQ00318

Test Conditions:

Ambient Temperature	23.0	°C
Ambient Humidity	51.0	%RH
Ambient Pressure	1007	mBar

Results:

	Level 1	Level 2	Frequency
Initial Reading	115.00 dB	99.90 mV	1.0007 kHz
Final Reading	113.96 dB	99.90 mV	1.0006 kHz

Uncertainty:

Level	±	0.15	dB
Frequency	±	0.5	Hz

This test certificate confirms that the instrument specified above has been successfully tested to comply with the manufacturer's published specifications.
Tests are performed using equipment traceable to national standards in accordance with Casella's ISO 9000:2008 quality procedures.
The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

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APPENDIX B

Calculated Noise Levels

Client: Bao
Job: 1294
Location: Windmill St
Subject: Noise from proposed plant
Receptor: Flats on opposite side of Whitfield St

Frequency	63	125	250	500	1k	2k	4k	8k	Linear	dB(A)
Wavelength	5.5	2.8	1.4	0.7	0.35	0.175	0.09	0.045		
A-wtg	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1		
Basement Fan	59.0	63.0	64.0	62.0	59.0	58.0	53.0	48.0	69.3	64.9
Distance	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		
Atten	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6		
Barrier pd	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Atten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Louvre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Level at receptor	29.4	33.4	34.4	32.4	29.4	28.4	23.4	18.4	39.7	35.3
Ground Floor Fan	68.0	63.0	59.0	56.0	50.0	46.0	45.0	41.0	69.9	57.5
Distance	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		
Atten	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6		
Barrier pd	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Atten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Louvre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Level at receptor	38.4	33.4	29.4	26.4	20.4	16.4	15.4	11.4	40.3	27.9
Façade	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Level	41.9	39.4	38.6	36.4	32.9	31.7	27.1	22.2	46.0	**39.0**

Client: Bao
Job: 1294
Location: Windmill St
Subject: Noise from proposed plant
Receptor: Upper floors next door

Frequency	63	125	250	500	1k	2k	4k	8k	Linear	dB(A)
Wavelength	5.5	2.8	1.4	0.7	0.35	0.175	0.09	0.045		
A-wtg	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1		
Basement Fan	59.0	63.0	64.0	62.0	59.0	58.0	53.0	48.0	69.3	64.9
Directivity	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
Distance	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Atten	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0		
Barrier pd	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Atten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Louvre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Level at receptor	34.0	38.0	39.0	37.0	34.0	33.0	28.0	23.0	44.3	39.8
Ground Floor Fan	68.0	63.0	59.0	56.0	50.0	46.0	45.0	41.0	69.9	57.5
Directivity	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
Distance	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Atten	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5		
Barrier pd	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Atten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Louvre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Level at receptor	45.5	40.5	36.5	33.5	27.5	23.5	22.5	18.5	47.3	35.0
Façade	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Level	48.8	45.4	43.9	41.6	37.8	36.4	32.0	27.3	52.1	**44.1**