

5 SOUTHAMPTON PLACE, LONDON

NOISE ASSESSMENT

On behalf of: Interactive Pro Limited

Report No. 31389.1v1 March 2013

5 SOUTHAMPTON PLACE, LONDON

NOISE ASSESSMENT

Report prepared by: Hepworth Acoustics Ltd Hamilton House Mabledon Place London WC1H 9BB

On behalf of: Interactive Pro Limited Belmont House Station Way Crawley West Sussex RH10 1JA

Report prepared by: Antonio Meireles MSc MIOA - Senior Consultant

Antinic Revell

Report checked by: Graham Bowland BSc MIOA - Principal Consultant

CONTENTS

		Page
1.0	INTRODUCTION	1
2.0	SITE DESCRIPTION	2
3.0	BACKGROUND NOISE SURVEY	3
4.0	ACOUSTIC CRITERIA	6
5.0	NOISE ASSESSMENT	8
6.0	SUMMARY AND CONCLUSIONS	10
Figure	1 – Ground level plan and approximate measurement locations	11
Appen	dix I – Noise units and indices	12
Appen	dix II – Results of Noise Surveys	14

1.0 INTRODUCTION

- 1.1 Hepworth Acoustics Ltd has been commissioned by Interactive Pro Limited to carry out a noise assessment of the proposed change of use of 5 Southampton Place, London WC1A 2DA .
- 1.2 The assessment is required in connection with the planning application for the proposed change of use from B1 Business into D1 non-residential institution, i.e. non residential education, in line with the requirements of London Borough of Camden.
- 1.3 The assessment has included:
 - A site inspection to identify the location of the nearest noise sensitive locations;
 - A 24 hours noise survey at a location representing the nearest noise sensitive windows;
 - A brief daytime noise survey of the existing ambient noise levels at the most exposed location on site;
 - An assessment of the noise impact from proposed development at the nearest noise sensitive windows; and
 - Outline recommendations for noise control measures where necessary.
- 1.4 Noise levels referred to in the text of this report have been rounded to the nearest decibel, as fractions of decibels are imperceptible. A description of noise units and noise characteristics is provided in Appendix I.

2.0 SITE DESCRIPTION

- 2.1 5 Southampton Place is a 5 storey building, including lower ground floor. It further includes an internal courtyard and a single storey extension to the back of the site. The premises are currently vacant but have been previously occupied by offices.
- 2.2 The proposal is to refurbish the existing building to receive lecture rooms as part of the London School of Business and Finance.
- 2.3 The surrounding area is mainly commercial in use, including the KAPLAN international colleges at 6 Southampton Place and offices at 4 Southampton Place.
- 2.4 The nearest noise sensitive windows are those to the rear elevations of 6 and 4 Southampton Place. The nearest residential windows are to the rear elevation of Vernon House, 23 Sicilian Avenue.

3.0 BACKGROUND NOISE SURVEY

- 3.1 Background noise levels at the site were measured on the rear courtyard at a location representative of the nearest dwellings, at Location 1 shown in Figure 1.
- 3.2 Continuous noise monitoring was undertaken at Location 1 over 24 hours commencing at 1100 hours on Monday 4 March 2013. Noise levels were measured in sequential fifteen-minute sample periods for the entire duration of the survey.
- 3.3 The continuous noise monitoring at Location 1 was carried out using a Rion NL-31 Type 1 sound level meter (serial no. 01120834). The calibration level of the meter was checked before and after the surveys with a Bruel & Kjaer Type 4203 sound calibrator (serial no. 1771163) with no variation in level observed. All noise measurements were recorded with the microphone fixed on a tripod at a height of approximately 1.5m above local ground level but not in free-field conditions. A windshield was fitted to the microphone during all noise measurements.
- 3.4 The weather conditions throughout the survey were dry, with little or no wind.
- 3.5 The noise survey results at Location 1 are detailed in Appendix II and are summarised in Table 1 below:

Decis 1		Noise level		
Period		L _{Amax}	L _{Aeq}	L _{A90}
Destine (0700-1000 hours)	Range	62-79	48-57	45-50
Daytime (0700-1900 hours)	Mean	71	51	47
Europie (1000-2200 hours)	Range		46-54	44-46
Evening (1900-2300 hours)	Mean	67	50	44
Night time (2200,0700 hours)	Range	51-67	42-49	41-45
Night-time (2300-0700 hours)	Mean	59	47	42

Table 1 – Summary of measured noise levels at Location 1 (dB)

- 3.6 The measured noise levels at Location 1 were influenced by local road traffic, aircraft and plant associated with the existing premises and other properties.
- 3.7 The lowest measured background noise levels at Location 1 were 47 dB L_{A90} during the daytime period (0700-1900 hours), 44 dB L_{A90} during the evening period (1900-2300 hours) and 41 dB L_{A90} during the night-time period (2300-0700 hours).
- 3.8 In addition, ambient noise levels at the site were measured on the pavement of Southampton Place, at Location 2 shown in Figure 1, which represents the most exposed elevation of 5 Southampton Place to road traffic noise on the surrounding highways.
- 3.9 Noise monitoring at Location 2 was undertaken between 1100-1130 hours on Monday 4 March 2013. Noise levels were measured in sequential five-minute sample periods for the entire duration of the survey.
- 3.10 Noise monitoring at Location 2 was carried out using a Brüel & Kjær 2260 'Type 1' Sound Analyser (serial no. 2520468). The calibration level of the meter was checked before and after the surveys with a Brüel & Kjaer Type 4203 sound calibrator (serial no. 1771163) with no variation in level observed.
- 3.11 The measurement microphone was fitted with a windshield and mounted at approximately 1m from the building facade and at a height of approximately 1.5 metres above local ground.
- 3.12 The weather conditions throughout the survey were dry, with little or no wind.
- 3.13 The noise survey results at Location 2 are detailed in Appendix II and are summarised in Table 2 below:

		Noise level		
Measurement period		L _{Amax}	L _{Aeq,T}	L _{A90,T}
1100-1130 hours on Monday 4	Range	79-82	63-66	55-59
March 2013	Average	80	64	58

Table 2 – Summary of measured noise levels at Location 2 (dB)

3.14 The measured noise levels at Location 2 were influenced by road traffic on Southampton Place as well as on the surrounding highways, mainly High Holborn and Vernon Place.

4.0 ACOUSTIC CRITERIA

- 4.1 PPG24 has been replaced by the National Planning Policy Framework (NPPF) 2012, which provides some general guidance to local authorities on taking noise in to account in planning policies and decisions. This includes guidance that local authorities should 'aim to avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development'. No specific guidance is given in the NPPF on acoustic criteria.
- 4.2 Building Bulletin 93: 'Acoustic Design of Schools' (BB93) sets out statutory performance standards for the acoustics of new school buildings. However, BB93 is not applicable to further education buildings, such as colleges of universities.
- 4.3 The principles and policies regarding noise are set out in the Camden Development Policies 2010-2025, which is part of the Camden's Local Development Framework adopted in November 2010.
- 4.4 Policy DP28 on Noise and Vibration states that:

'The Council will seek to ensure that noise and vibration is controlled and managed and will not grant 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.'

4.5 In addition, London Borough of Camden Local Development Framework includes a series of Tables which establish the Council's thresholds. A copy of Table E, which establishes noise levels from plant and machinery at which planning permission will not be granted, is presented in Table 3 below. Note that Table E is the only relevant to the recent planning application as the remaining Table refer to the Council's thresholds on noise and vibration to residential sites and from places of entertainment on adjoining residential sites. No mention is made to education sites.

 Table 3 – Noise levels from plant and machinery at above which planning permission will

 not be granted (apart from residential includes offices, workshops and open spaces)

Noise description and location of measurement	Period	Time	Noise level
Noise at 1 metre external to a sensitive façade	Day, evening and night	00:00-24:00	5dB(A) <l<sub>A90</l<sub>
Noise that has a distinguishable discrete continuous note (whine, hiss, screech, hum) at 1 metre external to a sensitive façade	Day, evening and night	00:00-24:00	10dB(A) <l<sub>A90</l<sub>
Noise that has distinct impulses (bangs, clicks, clatters, thumps) at 1 metre external to a sensitive façade	Day, evening and night	00:00-24:00	10dB(A) <l<sub>A90</l<sub>
Noise at 1 metre external to sensitive façade where L_{A90} >60dB	Day, evening and night	00:00-24:00	55dB L _{Aeq}

5.0 NOISE ASSESSMENT

- 5.1 Typical noise levels generated within college/university buildings are not anticipated to be high enough as to generate noise impact to noise sensitive premises from noise breakout from the proposed development.
- 5.2 Therefore, the proposed development is not likely to generate noise pollution, with the exception of any proposed plant.

Plant

- 5.3 Considering that the existing background noise levels on site already include plant, such that the introduction of further plant emitting noise of similar characteristics is unlikely to attract attention, it is considered that to comply with the Camden's policy, the L_{Aeq} noise level from the proposed plant is required to be 5 dB below the lowest background noise level measured during the daytime, evening and night-time. By reference to the measured background noise levels on site shown in Table 1, it is recommended that cumulative plant noise levels at the nearest noise-sensitive windows do not exceed $42L_{Aeq}$ during the daytime, $39 L_{Aeq}$ during the evening and $36 L_{Aeq}$ during the night-time.
- 5.4 It is further recommended that the above maximum plant noise levels are applicable to the nearest non-residential windows during the daytime and evening periods and at the nearest residential windows at all times.

We therefore recommend that all mechanical services plant is carefully chosen and designed to achieve the criteria outlined above, including careful orientation away form sensitive facades, localised screening and/or enclosures, or the inclusion of purpose built noise control apparatus, such as in-duct noise attenuators.

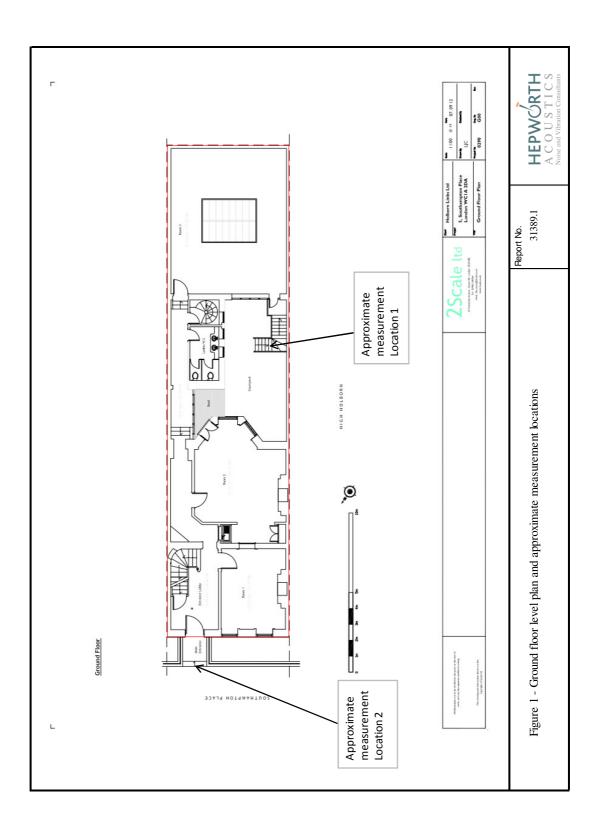
5.5 It is further recommended that all proposed plant should be installed using appropriate antivibration mounts to reduce structure-borne noise/vibration transmission to the building.

Lecture rooms

- 5.6 As mentioned in Section 4, BB93 is not applicable to further education buildings, such as colleges of universities, however the advice provided therein is commonly adopted for such buildings as best available guidance.
- 5.7 Our brief daytime noise survey demonstrates that subject to a careful design, adequate sound insulation measures can be readily incorporated within the scheme in order that noise levels within lecture rooms do not exceed the upper limit for ambient noise levels within lecture rooms recommended within BB93, 35 dB L_{Aeq} for classrooms/lecture rooms up to 50 people.
- 5.8 The principal method of noise mitigation will be appropriately specified glazing and ventilation systems. The exact specification of the external building fabric is not know but from our site inspection is appears to be cavity or double brick wall.
- 5.9 To account for other noise sources, such as mechanical ventilation systems, it is suggested that internal noise levels from noise break-in should not exceed 32 dB L_{Aeq} within lecture rooms. The recommended noise level will not be exceeded at lecture rooms overlooking Southampton Place by installing double glazing providing the a minimum Sound Reduction Index (SRI) of 35 dB, typically achievable using a system comprising one 6mm glass pane and one 4mm glass pane on a minimum 12mm air gap (i.e. minimum 6-12-4).
- 5.10 Lecture rooms to the rear of the site will be subjected to significantly lower noise levels, due to substantial acoustic screening provided by the intervening building and attenuation from additional distance to the road, as measured at Location 1. We recommend that standard thermal double glazing (i.e. 4mm glass/12mm cavity/4mm glass) will be adequate to achieve the recommended noise levels within lecture rooms at the rear elevation.

6.0 SUMMARY AND CONCLUSIONS

- 6.1 This report has assessed the noise impact of the proposed change of use at 5 Southampton Place, London WC1A.
- 6.2 A site noise survey has been undertaken at a location representing the nearest noise sensitive locations.
- 6.3 It is anticipated that the proposed development is not likely to generate noise pollution as required by the Local Authority, with the exception of any proposed plant.
- 6.4 Appropriate noise criteria for proposed mechanical services plant at the site have been recommended in line with London Borough of Camden acoustic criteria.
- 6.5 Appropriate noise mitigation measures have been recommended for the proposed lecture rooms which will ensure that internal noise levels will meet the acoustic criteria recommended within BB93.



Appendix I – Noise units and indices

a) Sound Pressure Level and the decibel (dB)

A sound wave is a small fluctuation of atmospheric pressure. The human ear responds to these variations in pressure, producing the sensation of hearing. The ear can detect a very wide range of pressure variations. In order to cope with this wide range of pressure variations, a logarithmic scale is used to convert the values into manageable numbers. Although it might seem unusual to use a logarithmic scale to measure a physical phenomenon, it has been found that human hearing also responds to sound in an approximately logarithmic fashion. The dB (decibel) is the logarithmic unit used to describe sound (or noise) levels. The usual range of sound pressure levels is from 0 dB (threshold of hearing) to 120 dB (threshold of pain).

b) Frequency and hertz (Hz)

As well as the loudness of a sound, the frequency content of a sound is also very important. Frequency is a measure of the rate of fluctuation of a sound wave. The unit used is cycles per second, or hertz (Hz). Sometimes large frequency values are written as kilohertz (kHz), where 1 kHz = 1000 Hz.

Young people with normal hearing can hear frequencies in the range 20 Hz to 20,000 Hz. However, the upper frequency limit gradually reduces as a person gets older.

c) Glossary of Terms

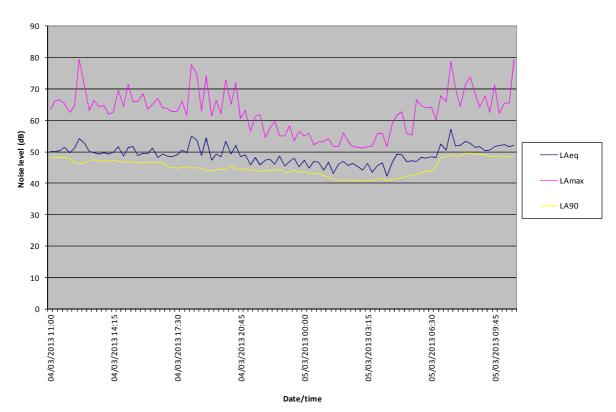
When a noise level is constant and does not fluctuate over time, it can be described adequately by measuring the dB(A) level. However, when the noise level varies with time, the measured dB(A) level will vary as well. In this case it is therefore not possible to represent the noise climate with a simple dB(A) value. In order to describe noise where the level is continuously varying, a number of other indices, including statistical parameters, are used. The indices used in this report are described below.

- L_{Aeq} This is the A-weighted 'equivalent continuous noise level' which is an average of the total sound energy measured over a specified time period. In other words, LAeq is the level of a continuous noise which has the same total (A-weighted) energy as the real fluctuating noise, measured over the same time period. It is increasingly being used as the preferred parameter for all forms of environmental noise.
- L_{Amax} This is the maximum A-weighted noise level that was recorded during the monitoring period.
- L_{A90} This is the A-weighted noise level exceeded for 90% of the time period. L_{A90} is used as a measure of background noise.

Appendix II – Results of Noise Surveys

Dates:	Between 11:00 hours on Monday 4 and 11:00 hours on Tuesday 5 March 2013
Equipment:	Rion NL-31 Type 1 integrating sound level meter
Weather:	Dry with wind below 5 m/s

Continuous Noise Measurements at Location 1



Continuous noise survey

Dates:	Monday 4 March 2013
Equipment:	Brüel & Kjær 2260 Type 1 integrating sound level meter
Weather:	Dry with little or no wind.

Table A1: Measured noise levels (dB) at Location 2

Time start	Time end	L _{Amax}	L _{Aeq}	L _{A90}
11:00	11:05	82.1	63.5	58.6
11:05	11:10	79.5	65.2	59.2
11:10	11:15	78.9	63.9	59.2
11:15	11:20	79.5	63.7	56.8
11:20	11:25	81.8	65.5	55.0
11:25	11:30	78.7	63.2	56.2