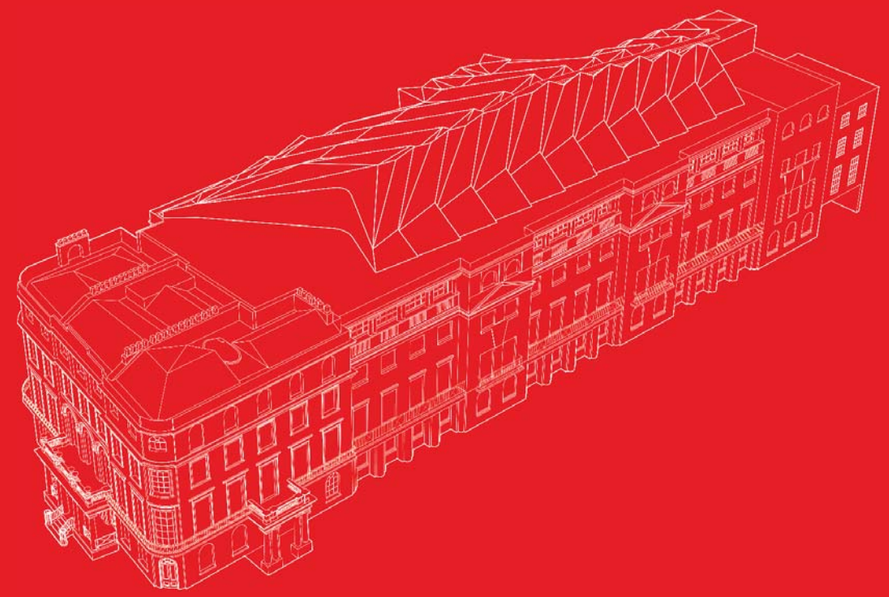
WHICH? HEADQUARTERS

2 MARYLEBONE ROAD AND 1-9 ALBANY STREET

NOISE REPORT

AUGUST 2013



CONTENTS

1 INTRODUCTION

Acoustic Logic Consultancy (UK) Ltd (ALC) has been commissioned by the Consumers' Association to carry out a noise survey suitable for planning submission to the London Borough of Camden, recording existing noise levels around the 2 Marylebone Road & 1-9 Albany Street property (the Which? Headquarters), in order to make recommendations on façade treatment to mitigate noise ingress and specify limiting levels for noise emitting equipment for the building (such as air discharge/intake at louvres and plant).

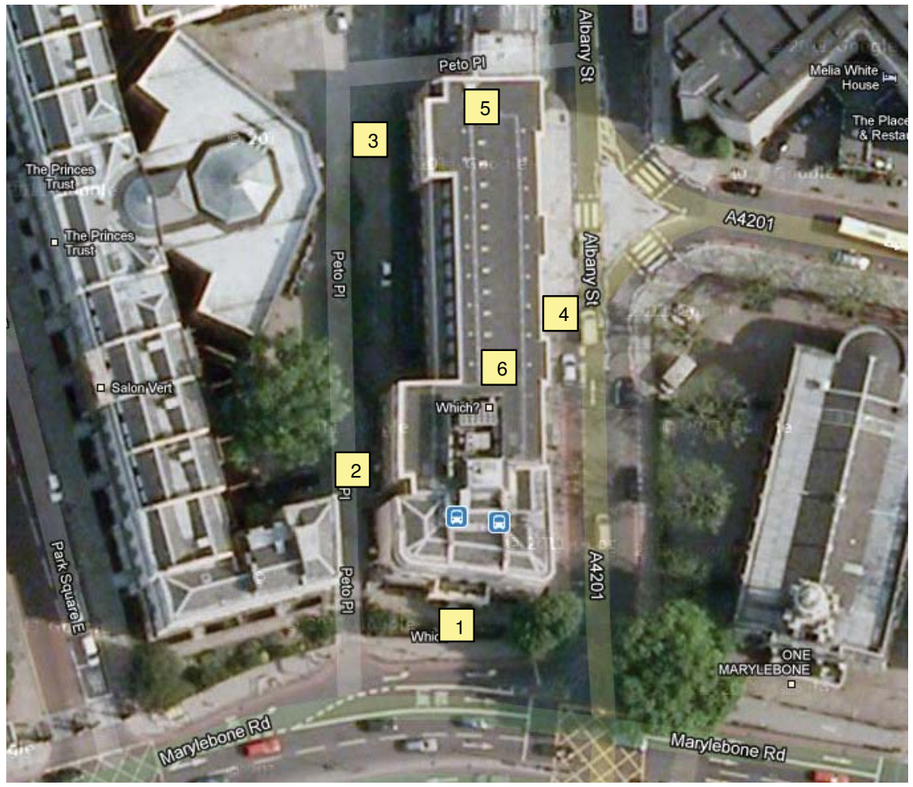
2 SITE DESCRIPTION AND MEASUREMENT LOCATIONS

The following figure presents the site location and monitoring positions.

The site is bounded by Marylebone Road (A501) to the south, Albany Street (A4201) to the east and Peto Place to the west and north. The surrounding area is mixed use, consisting of offices and residential units, hotels, bars and restaurants.

The nearest sensitive receptors include neighbouring residential and office units.

Figure 1 – Site Map



3 SURVEY METHODOLOGY

Noise measurements were undertaken in accordance with BS 7445-2:1991[1]. This document defines parameters, procedures and instrumentation for noise measurement and analysis.

Noise measurements were undertaken using a Nor140 Type 1 sound level meter and a Norsonic Type 1 field calibrator (114.0 dB @ 1kHz). The sound level meter was calibrated before and after measurements and no significant calibration drift was detected (up to +0.2dB).

Table 1 – Survey Equipment

TYPE	MANUFACTURER	MODEL	SERIAL NUMBER	CALIBRATION DUE DATE
Sound Level Meter	Norsonic	Nor 140	1403728	09/2013
Calibrator	Norsonic	Nor1251	32492	09/2013

Noise measurements consisted of ambient (L_{Aeq}), background (L_{A90}) parameters. Measurements took place during daytime and night-time periods on the 24th January 2013. Daytime measurements consisted of 15-minute periods and night-time measurements consisted of 5-minute periods.

Short term attended noise measurements were conducted at ground level at positions 1-4 and at rooftop level at positions 5-6. The microphone was positioned at a height of 1.2m from local ground/rooftop level.

[1] British Standards Institute (BSI), (1991): 'BS 7445 - Description and Measurement of Environmental Noise. Part 2: Guide to the Acquisition of Data Pertinent to Land Use', BSI, London.

4 BASELINE SURVEY RESULTS

The noise environment at the site was dominated by road traffic along Marylebone Road (A501) and Albany Street (A4201).

During the site visits no noticeable levels of ambient vibration were encountered by the attending acoustic consultant.

Weather conditions for the duration of the survey were generally calm, with no heavy winds or precipitation.

The following table presents a summary of the noise survey results. The full set of results is presented in Appendix A.

Table 2 –Survey Results (Free-Field Values)

POSITION	AVERAGE AMBIENT NOISE LEVEL dB L_{Aeq}		LOWEST BACKGROUND NOISE LEVEL dB L_{A90}	
	Daytime 0700-2300 Hours	Night-time 2300-0700 Hours	Daytime 0700-2300 Hours	Night-time 2300-0700 Hours
1	72	71	65	61
2	60	60	56	55
3	60	59	53	50
4	70	69	61	59
5	58	56	56	52
6	67	56	67	52

5 FAÇADE ACOUSTIC PERFORMANCE

BS 8233:1999[2] provides indicative design range ambient noise levels in spaces dependant on their usage. These noise levels are details in Table 5 and 6 of BS 8233, and are summarised in the following table as per the proposed development uses.

Table 3 –BS 8233 Indoor Ambient Noise levels

CRITERIA	TYPICAL SITUATIONS	DESIGN RANGE dB $L_{Aeq,T}$
Reasonable conditions for study and work requiring concentration	Private office, Meeting room, Security office	35-40
Reasonable acoustic privacy in shared spaces	Reception area	35-40
	Open plan office, Internal Public Zone	45-50
Reasonable speech or telephone communications	Kitchen	50-55

In typical façades, windows are usually the weakest form of sound insulation; the remainder of the building envelope would typically provide a Weighted Sound Reduction Index (R_w) of up to R_w 50 dB. It is understood that mechanical ventilation is used in the building.

ALC has provided the following recommendations for acoustic performance for glazing in order to achieve the BS 8233 indoor noise level design ranges:

East façade (facing Albany Street)

- Private offices, Meeting rooms – R_w 35 dB, e.g. 10mm single glazing or thermal insulating units (10-12-6)
- Open plan office, Internal public zone (4th floor) – R_w 31 dB, e.g. 4mm single glazing or thermal insulating units (6-12-6)

South façade (facing Marylebone Road)

- Private offices, Meeting rooms, Security office (ground floor), Reception area (ground floor) – R_w 35 dB, e.g. 10mm single glazing or thermal insulating units (10-12-6)
- Open plan office – R_w 31 dB, e.g. 4mm single glazing or thermal insulating units (6-12-6)

West façade (facing Peto Place)

- Meeting rooms, Open plan office, Kitchen – R_w 31 dB, e.g. 4mm single glazing or thermal insulating units (6-12-6)

The following tables present typical acoustic performance for the 4mm and 10mm single glazing option examples.

Table 4 – Example Glazing Performance

EXAMPLE GLAZING UNIT	WEIGHTED SOUND REDUCTION INDEX	SOUND REDUCTION INDEX AT EACH OCTAVE BAND CENTRE FREQUENCY (Hz)				
		125	250	500	1k	2k
4mm single glazing	R_w 31 dB	20	22	28	32	33
Thermal insulating units (6-12-6)	R_w 31 dB	20	19	29	38	34
10mm single glazing	R_w 35 dB	26	27	34	35	36
Thermal insulating units (10-12-6)	R_w 37 dB	26	27	34	40	38

[2] British Standards Institute (1999) British Standard BS 8233: Sound Insulation and Noise Reduction for Buildings - Code of Practice. BSI, London.

6 OPERATIONAL NOISE LIMITS

The London Borough of Camden Replacement Unitary Development Plan (Table E, Appendix 1) states the following operational limits for noise levels from plant and machinery.

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 facade	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 $_{LAeq}$

The following table presents recommended operational noise limits for building plant associated with the proposed development.

Table 5 – Building Services Plant Operational Noise Limits (at 1m External to a Sensitive Façade)

PERIOD	LOWEST MEASURED BACKGROUND LEVEL	OPERATIONAL LIMIT (NON-TONAL / NON-IMPULSIVE)	OPERATIONAL LIMIT (TONAL / IMPULSIVE)
	dB L_{A90}	dB L_{Aeq}	dB L_{Aeq}
Daytime 0700-2300	53	48	43
Night-time 2300-0700	50	45	40

To meet these operational noise limits it is recommended that rooftop plant be limited to a sound power level of 80 dB L_w (assuming noise emission is non-tonal).

7 CONCLUSION

ALC has been commissioned by Consumers' Association to carry out a noise survey suitable for planning submission to the London Borough of Camden, recording existing noise levels around the 2 Marylebone Road & 1-9 Albany Street property (the Which? Headquarters), in order to make recommendations on façade treatment to mitigate noise ingress and specify limiting levels for noise emitting equipment for the building (such as air discharge/intake at louvres and plant).

Noise measurements consisted of ambient (L_{Aeq}), background (L_{A90}) parameters. Measurements took place during daytime and night-time periods on the 24th January 2013.

The noise environment at the site was dominated road traffic along Marylebone Road (A501) and Albany Street (A4201).

During site visits no noticeable levels of ambient vibration were encountered by the attending acoustic consultant.

ALC has provided the following recommendations for acoustic performance for glazing in order to achieve the BS 8233 indoor noise level design ranges:

East façade (facing Albany Street)

- Private offices, Meeting rooms – R_w 35 dB, e.g. 10mm single glazing or thermal insulating units (10-12-6)
- Open plan office, Internal public zone (4th floor) – R_w 31 dB, e.g. 4mm single glazing or thermal insulating units (6-12-6)

South façade (facing Marylebone Road)

- Private offices, Meeting rooms, Security office (ground floor), Reception area (ground floor) – R_w 35 dB, e.g. 10mm single glazing or thermal insulating units (10-12-6)
- Open plan office – R_w 31 dB, e.g. 4mm single glazing or thermal insulating units (6-12-6)

West façade (facing Peto Place)

- Meeting rooms, Open plan office, Kitchen – R_w 31 dB, e.g. 4mm single glazing or thermal insulating units (6-12-6)

ALC has provided recommendations for operational noise limits and sound power levels for building plant associated with the proposed development in line with London Borough of Camden criteria.

APPENDIX A

DAYTIME SURVEY (FREE-FIELD VALUES)

Pre Calibration: 114dB @ 1kHz
Post Calibration: 114.2dB @ 1kHz

Location	Date	Time	Duration	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	Comments
5	24/01/2013	15:00	15mins	58.1	67.7	59.8	56.1	No tonal elements from noise plant. Low wind speed. Overcast/grey skies
6	24/01/2013	15:16	15mins	67.3	70.4	67.8	66.8	No tonal elements from Kitchen extract.
1	24/01/2013	15:45	15mins	70.8	88.9	73.6	64.5	Traffic: stationary traffic & flowing traffic, engines running, several buses waiting at traffic lights
2	24/01/2013	16:05	15mins	60.0	70.9	62.3	55.9	Side of building. Cobbled path. Few people walking by.
3	24/01/2013	16:24	15mins	60.4	73.8	64.7	52.7	Back of car park entrance. Few people walking by.
4	24/01/2013	16:44	15mins	70.8	84.3	74.5	62.2	Side façade. Moving traffic. Lots of buses passing by but not stopping. Cars stopping at zebra crossings
1	24/01/2013	17:02	15mins	72.0	90.2	74.2	65.7	Traffic: stationary traffic & flowing traffic, engines running, several buses waiting at traffic lights
4	24/01/2013	17:21	15mins	69.8	81.4	73.6	61.1	Side façade. Moving traffic. Lots of buses passing by but not stopping. Cars stopping at zebra crossings
1	24/01/2013	17:40	15mins	72.6	95.1	74.0	65.9	Traffic: predominantly stationary traffic. Several buses waiting at traffic lights.
4	24/01/2013	17:59	15mins	70.5	84.0	73.7	62.7	Side façade. Moving traffic. Lots of buses passing by but not stopping. Cars stopping at zebra crossings

NIGHT-TIME SURVEY (FREE-FIELD VALUES)

Pre Calibration: 114dB @ 1kHz
Post Calibration: 114.1dB @ 1kHz

Location	Date	Time	Duration	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	Comments
5	24/01/2013	23:02	5mins	56.3	67.5	58.7	51.7	Wind speed slightly higher than day measurement. Very cold.
6	24/01/2013	23:10	5mins	55.7	60.9	57.7	52.3	Kitchen extract off.
1	24/01/2013	23:21	5mins	70.7	80.0	73.8	62.4	Moderate traffic. Buses waiting at traffic lights regularly.
2	24/01/2013	23:28	5mins	60.1	65.7	62.7	54.7	Side of building. Cobbled path. No passers by.
3	24/01/2013	23:35	5mins	58.6	74.6	61.6	49.5	Back of car park entrance. No passers by.
4	24/01/2013	23:45	5mins	68.1	79.0	72.4	58.8	Moderate traffic. Fewer buses passing by. Occasional taxi stopping in rank nearby.
1	24/01/2013	23:53	5mins	70.6	78.5	73.8	61.2	Moderate moving traffic.
4	25/01/2013	00:00	5mins	69.9	81.3	74.1	59.0	Several taxis leaving the hotel opposite.
1	25/01/2013	00:11	5mins	71.3	84.4	74.0	64.1	Moderate moving traffic.
4	25/01/2013	00:20	5mins	68.7	78.1	72.6	60.9	Road traffic