



Acoustic Report

Fire enclosure testing
Envelope design review
Acoustics

Air sealing
Thermographic surveying
Equipment supply

*BBS (Bespoke Builder Services) Ltd
4 and 14 Queensmead, London, NW8 6RE.*

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1 Introduction

- 1.1 Stroma Technology has been instructed by BBS (Bespoke Builder Services) Ltd to measure noise levels of air-conditioning units on and around the development of terraced houses at 4 and 14 Queensmead, London, NW8 6RE.
- 1.2 The buildings form part of an existing development of houses for refurbishment. 14 Queensmead has been completed and has 2 air-conditioning units type Mitsubishi R410A, Model FDC112KXEN6 installed, and situated close to the rear elevation. 4 Queensmead is yet to be refurbished, and it is understood that 2 units of the same air-conditioning type will be installed in a central location of the rear garden.
- 1.3 A noise assessment was originally requested for this site as part of the planning approval requirements to demonstrate the noise impact of the air-conditioning units on the residents. British Standard 4142 is a method for rating industrial noise affecting mixed residential and industrial areas. In particular, this provides an assessment of a specific noise source and its impact on the surrounding developments, residential or commercial. The nearest residential areas are the houses attached on either side to both 4 and 14 Queensmead.
- 1.4 The information requested is required to confirm the development site will not cause any substantial increase in ambient noise levels, with respect to nearby residential premises.
- 1.5 The following report constitutes a snapshot of the noise climate which exists at the site. The noise levels at 14 Queensmead were taken for However it is considered that the recorded noise levels represent a fair representation of the noise climate in the area
- 1.6 Subjectively the specific noise could just be heard above the regular local traffic on the surrounding roads during the day and evening from the measurements locations. Road traffic noise was the main contributing source of residual noise, as well as intermittent aircraft and pedestrian noise.

2 Measuring Conditions

- 2.1 The sound level meter was mounted on a tripod 1.2 m from the ground.
- 2.2 The climatic conditions during the measurement exercise were dry and light winds which fluctuated over the measurement period from 0.5 to 1.0m/s.
- 2.3 The sound level meter was calibrated before and after all measurement activities.
- 2.4 The measurements were taken first with the air-conditioning units switched on and then again with them switched off to record the residual noise at several times during the day and evening. It was possible to measure the background noise levels at 4 Queensmead and determine the noise impact of the air-conditioning units based on the measurements taken at 14 Queensmead.

3 Instrumentation

3.1 The sound level meter was a Bruel & Kjaer Type 2260 Type 1, Sound Level Meter with 1/3 octave filter set. Manufactured to BS EN 61260: 1996 base 2, Class 0. Serial No. 2447585. This instrument was factory calibrated in October 2012.

3.2 The onsite calibrator was a Bruel & Kjaer calibrator type 4231, serial No. 2594869. The calibrator was factory calibrated in May 2013.

3.3 Calibration Levels:

	dB
Reference Level of Calibrator	94.1
Meter Reading prior to measurements	94.1
Meter Reading after measurements	94.1

4 BS 4142 Calculation for 14 Queensmead Air-conditioning Units

Results Day Time			Relevant clause	Commentary
Measured Noise Level	L _{Aeq(60min)}	48 dB	6.3	<i>Specific noise on, could not be heard above the noise from nearby traffic.</i>
Residual Noise Level	L _{Aeq(15min)}	46 dB	6.3	<i>Temporary shutdown of plant was used to measure residual noise.</i>
Background Level Day	L _{A90(15min)}	43 dB	7.4	<i>Short period used as specific noise was constant.</i>
Assessment made during the day so reference time period is 1hr			6.2	
Correction from Table 1 of BS142		-3	Table 1	<i>Correction from table 1 is -3dB since measured level is 2dB different with specific noise present and absent.</i>
Specific Noise Level (i+iv)	L _{Aeq(60min)}	45 dB	6.3	<i>48dB - 3</i>
Acoustic Feature Correction		0	8.1	.
Rating Level (v+vi)		45 dB	8.3	
Excess of Rating Level (vii) Over Background Level (iii)		2	9	<i>45dB - 43dB</i>
Excess level lies between the boundaries of: A difference of around +5dB is of marginal significance & A difference of around +10dB or more indicates that complaints are likely			9	

This analysis relates to the day time measurement period, an excess value of 2 dB was calculated.

5 BS 4142 Calculation for 14 Queensmead Air-conditioning Units

Results Evening Time			Relevant clause	Commentary
Measured Noise Level	L _{Aeq(60min)}	46 dB	6.3	<i>Specific noise on, could not be heard above the noise from nearby traffic.</i>
Residual Noise Level	L _{Aeq(15min)}	45 dB	6.3	<i>Temporary shutdown of plant was used to measure residual noise.</i>
Background Level Day	L _{A90(15min)}	41 dB	7.4	<i>Short period used as specific noise was constant.</i>
Assessment made during the day so reference time period is 1hr			6.2	
Correction from Table 1 of BS142		-3	Table 1	<i>Correction from table 1</i>
Specific Noise Level (i+iv)	L _{Aeq(60min)}	43 dB	6.3	<i>46dB - 3</i>
Acoustic Feature Correction		0	8.1	.
Rating Level (v+vi)		43 dB	8.3	
Excess of Rating Level (vii) Over Background Level (iii)		2	9	<i>43dB - 41dB</i>
Excess level lies between the boundaries of: A difference of around +5dB is of marginal significance & A difference of around +10dB or more indicates that complaints are likely			9	

This analysis relates to the evening time measurement period, an excess value of 2 dB was calculated.

6 BS 4142 Calculation for 4 Queensmead Air-conditioning Units

Results Day Time			Relevant clause	Commentary
Measured Noise Level	L _{Aeq(60min)}	48 dB	6.3	<i>Specific noise on, could just be heard above the noise from nearby traffic.</i>
Residual Noise Level	L _{Aeq(15min)}	45 dB	6.3	<i>Temporary shutdown of plant was not available so residual noise was calculated from measurement taken on far side of site at furthest distance from noise source in a location a similar distance from road.</i>
Background Level Day	L _{A90(15min)}	42 dB	7.4	<i>Short period used as specific noise was constant.</i>
Assessment made during the day so reference time period is 1hr			6.2	
Correction from Table 1 of BS142		-3	Table 1	<i>Correction from table 1 is -3dB since measured level is 3dB different with specific noise present and absent.</i>
Specific Noise Level (i+iv)	L _{Aeq(60min)}	45 dB	6.3	<i>48dB - 3</i>
Acoustic Feature Correction		0	8.1	.
Rating Level (v+vi)		45 dB	8.3	
Excess of Rating Level (vii) Over Background Level (iii)		3	9	<i>45dB - 42dB</i>
Excess level lies between the boundaries of: A difference of around +5dB is of marginal significance. A difference of around +10dB or more indicates that complaints are likely			9	

This analysis relates to the day time measurement period, an excess value of 3 dB was calculated.

7 BS 4142 Calculation for 4 Queensmead Air-conditioning Units

Results Evening Time			Relevant clause	Commentary
Measured Noise Level	L _{Aeq(60min)}	46 dB	6.3	<i>Specific noise on, could not be heard above the noise from nearby traffic.</i>
Residual Noise Level	L _{Aeq(15min)}	45 dB	6.3	<i>Temporary shutdown of plant was not available so residual noise was calculated from measurement taken on far side of site at furthest distance from noise source in a location a similar distance from road.</i>
Background Level Day	L _{A90(15min)}	40 dB	7.4	<i>Short period used as specific noise was constant.</i>
Assessment made during the day so reference time period is 1hr			6.2	
Correction from Table 1 of BS142		-3	Table 1	<i>Correction from table 1</i>
Specific Noise Level (i+iv)	L _{Aeq(60min)}	43 dB	6.3	<i>46dB - 3</i>
Acoustic Feature Correction		0	8.1	.
Rating Level (v+vi)		43 dB	8.3	
Excess of Rating Level (vii) Over Background Level (iii)		3	9	<i>43dB - 40dB</i>
Excess level lies between the boundaries of: A difference of around +5dB is of marginal significance & A difference of around +10dB or more indicates that complaints are likely			9	

This analysis relates to the evening time measurement period, an excess value of 3 dB was calculated.

8 Conclusions

- 8.1 Both day time and evening time analysis provide an excess rating of 2 and 3 . A rating between 0 to 5 indicates marginal significance, and complaints are not likely.
- 8.2 The marginal increase in noise levels may be due to other extraneous noises always present in Central London. The noise from the air conditioning units should not cause any disturbance to nearby residents.