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HOLMES ROAD, KENTISH TOWN

NOISE BREAK-IN ASSESMENT
PLANNING CONDITION 17

Technical Report: R6718-2 Rev 0

Date: 30th November 2017

For: Contemporary Design Solution LLP
46 Great Marlborough Street
London
W1F 7JW

24 Acoustics Document Control Sheet

Project Title: Holmes Road, Kentish Town – Noise Break-in Assessment

Report Ref: R6718-2 Rev 0

Date: 30th November 2017

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For and on behalf of 24 Acoustics Ltd				

Document Status and Approval Schedule

Revision	Description	Prepared By	Approved By
0	Approved for issue	Kiel Edwards	Stephen Gosling

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1.0 INTRODUCTION

1.1 Contemporary Design Solution LLP is seeking to discharge planning conditions relating to noise at a new development of student accommodation. 24 Acoustics has been appointed to undertake a noise break-in assessment for the development.

1.2 An explanation of acoustical terms used in this report is provided in Appendix A. All sound pressure levels in this report are given in dB re: 20 μPa.

2.0 SITE DESCRIPTION

2.1 The development is located on Holmes Road, Kentish Town. Road traffic from Holmes Road is the dominant noise source in the vicinity. Holmes Road is a single carriageway which provides access to a neighbouring school and nearby residential properties.

2.2 The former commercial site will comprise approximately 342 new build student accommodation units, as well as classrooms, offices and a gym. Pedestrian access will be via Holmes Road.

2.3 The western and southern boundary of the site is shared with neighbouring residential properties. Holmes Road is located to the north and Cathcart Street is located to the east. A school to the east overlooks Cathcart Street. The site location is shown in Figure 1.

3.0 PLANNING CONDITION 17

3.1 Planning Condition 17 states;

> *"Noise levels arising from external sources audible within all habitable rooms during the night period (23:00 - 07:00) shall not exceed 30dB LAeq (8 hours) nor 45dB LAmax (fast). Similarly, noise levels in habitable rooms shall not exceed 35 dB LAeq (16 hours) during the day time (07:00 - 23:00). Details of sound insulation measures for the student windows fronting Cathcart Street shall be submitted to and approved in writing by the Local Planning Authority. The approved sound insulation measures shall be installed prior to occupation of any of the student units, and retained thereafter."*

4.0 ENVIRONMENTAL NOISE MEASUREMENTS

Instrumentation and Procedure

4.1 Ambient noise measurements were undertaken between the 6th and 13th January 2017 at the locations shown in Figure 1.

4.2 Equipment was located to the north west (Location 1) and south (Location 2) boundary of the site (free field, approximately 4 metres above ground level). Measurement Location 1 is representative of the façades most affected by noise from road traffic using Holmes Road and Cathcart Street. Measurement Location 2 is representative of facades to the rear of the building.

4.3 The instrumentation was set up to monitor noise levels continuously and store the L_{eq}, L_{90} and L_{max} parameters in 5 minute intervals using fast time weighting. Single octave band frequency data was obtained to inform the acoustic design and the following instrumentation was used:

- 2 Nº Rion Type NL52 precision grade Class 1 sound level meter;
- Brüel & Kjær type 4231 acoustic calibrator.

4.4 Calibration of the equipment was verified before and on completion of the measurements and no drift was recorded. Noise measurements were made with reference to BS 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use' [Reference 1].

4.5 Weather during the surveys was fine and dry. Due to the sheltered location of the monitoring equipment wind speeds were generally lower than 5 m/s. Measurements influenced by site activities have been removed from the assessment.

Measurement Results

4.6 The results of the environmental noise measurements are described in Figure B and summarised in Table 1.

Location	**Measured Daytime Level (07:00 - 23:00) dB $L_{Aeq\ 16\ hour}$**	**Measured Night Time Level (23:00 - 07:00)**	
		dB $L_{Aeq,\ 8\ hour}$	**Typical dB $L_{Amax,\ f}$**
1	64	57	79
2	51	46	62

Table 1: Representative Noise Levels

4.7 24 Acoustics assumes the representative maximum (L_{Amax}) value as the tenth highest over the night-time period.

5.0 ANALYSIS & RECCOMENDATIONS

5.1 Calculations have been undertaken to determine the sound insulation performance requirements to achieve the internal noise criteria given in Planning Condition 17.

5.2 Prefabricated glazing and ventilation systems are installed to the student accommodation units. The manufacturer states a glazing configuration of;

- 6 mm glass - 16 mm cavity - 6 mm glass; 1.1 mm adhesive; 6 mm glass (laminated)

5.3 With reference to library data, this configuration would typically be expected to achieve a sound insulation value of 36-38 dB R_w.

5.4 The external wall comprises the following construction:

- 25mm Knauf Fireboard (2 Layers)
- 0.5mm Polythene Vapour Control Layer
- 34mm Metal Stud/ Frame Cavity
- 34mm Rockwool
- 0.5mm Tyvek
- 120mm Kingspan K15
- 25mm Airgap
- 8mm Equitone Tectiva TEOO Calico

5.5 This facade construction would be expected to achieve 45 dB R_w.

Glazing

5.6 The assumed glazing performance, based on the manufacturer stated glazing configuration and library data for glass performance, is provided in Table 2.

Glazing Type	Minimum Octave (Hz) Band Sound Reduction Index, dB					
	125	250	500	1k	2k	4k
GL1	24	25	33	39	40	49

Table 2: Glazing Sound Insulation Performance

Ventilation Acoustic Specification

5.7 Calculations have been performed to determine the minimum sound reduction index required by the ventilation openings at all facades of the building.

5.8 The required ventilation types for habitable rooms are described on the site plans in Appendix C and the relevant ventilation specifications are provided in Table 3.

Vent Type	Minimum Octave (Hz) Band Sound Reduction Index, dB					
	125	250	500	1k	2k	4k
V1	40	36	34	35	44	40
V2	33	28	30	27	28	33

Table 3: Ventilation Sound Insulation Specification

5.9 In making a comparison with the ventilation acoustic specification in Table 3, it is important that the vent manufacturer's test data is the result of laboratory tests undertaken on the specific model, size, and free area of the proposed unit. The tests must be undertaken with the vent open and installed in a manner that is representative of the proposed installation. If multiple vents are required, it will be necessary to correct the test data to allow for the number of vents required in each room (please confirm if this is the case).

Predicted Internal Noise Levels

5.10 With the construction and ventilation specification above, the noise levels in habitable rooms would be expected to achieve the requirements of Condition 17.

5.11 Details of the trickle vents sound reduction performance (once known) should be sent to 24 Acoustics for review.

6.0 CONCLUSIONS

6.1 Contemporary Design Solution LLP has instructed 24 Acoustics Ltd to undertake a noise assessment for the development of new student accommodation at Holmes Road, Kentish Town. This report has addressed the impact of road traffic noise on the dwellings.

6.2 Environmental noise measurements have been undertaken at the site to determine existing noise levels during daytime and night-time periods.

6.3 Recommendations have been provided for ventilation performances to habitable rooms based on the assumed performance of the preinstalled glazing configuration. It is concluded that, with the recommended measures given, noise within habitable rooms would comply with the maximum internal levels established with reference to Planning Condition 17.

REFERENCES

1. British Standards Institution. British Standard 7445: 1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use.

Project: Holmes Road, Kentish Town	**Title:** Site and Measurement Location.		24Acoustics
DWG No: Figure 1	**Scale:** N.T.S.	**Rev:** A	
Date: November 2017	**Drawn By:** KE	**Job No:** 6718	

APPENDIX A: ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 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 dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dBA corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In 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 "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time internal, 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.

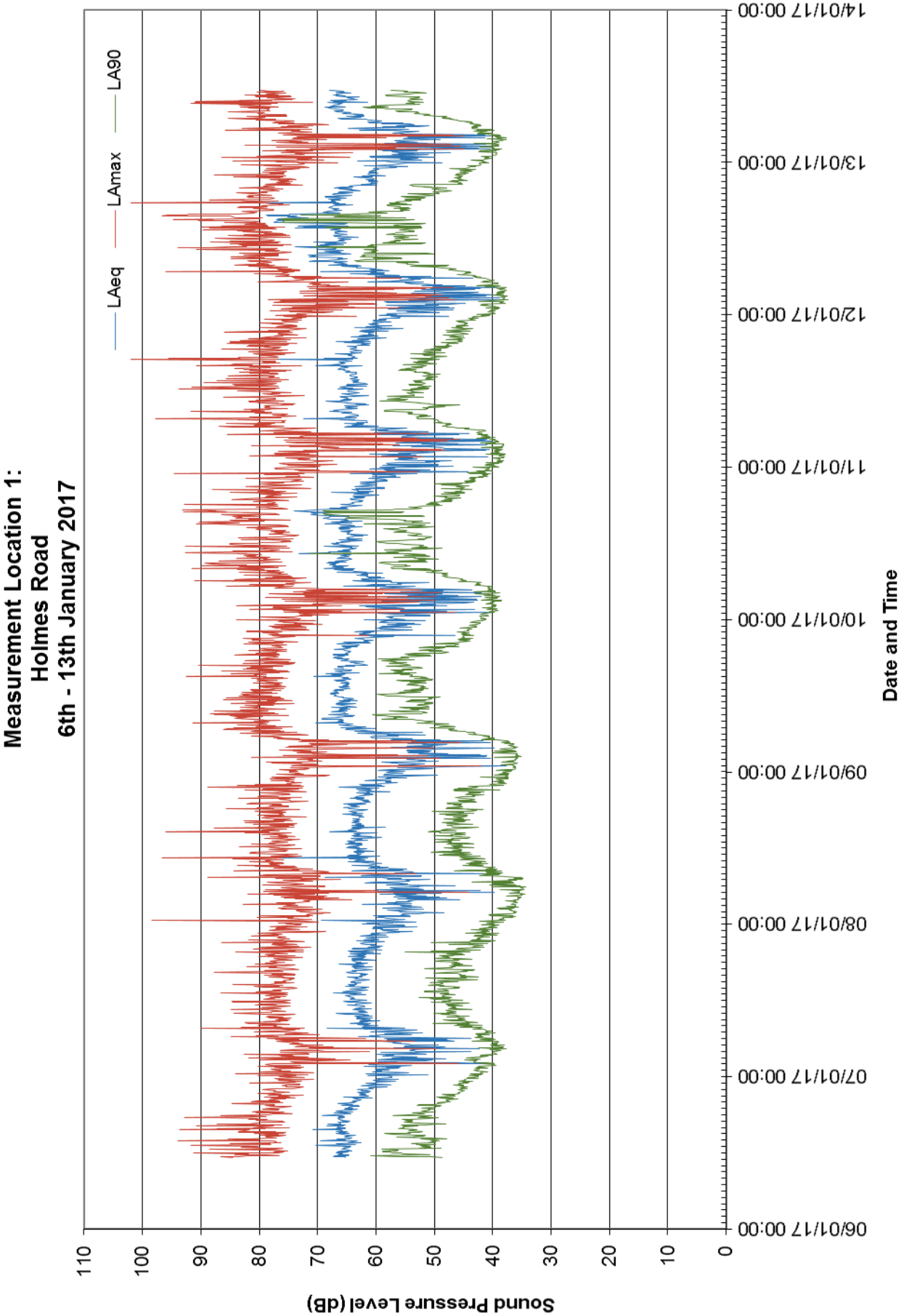
iii) The L_{A10} noise level

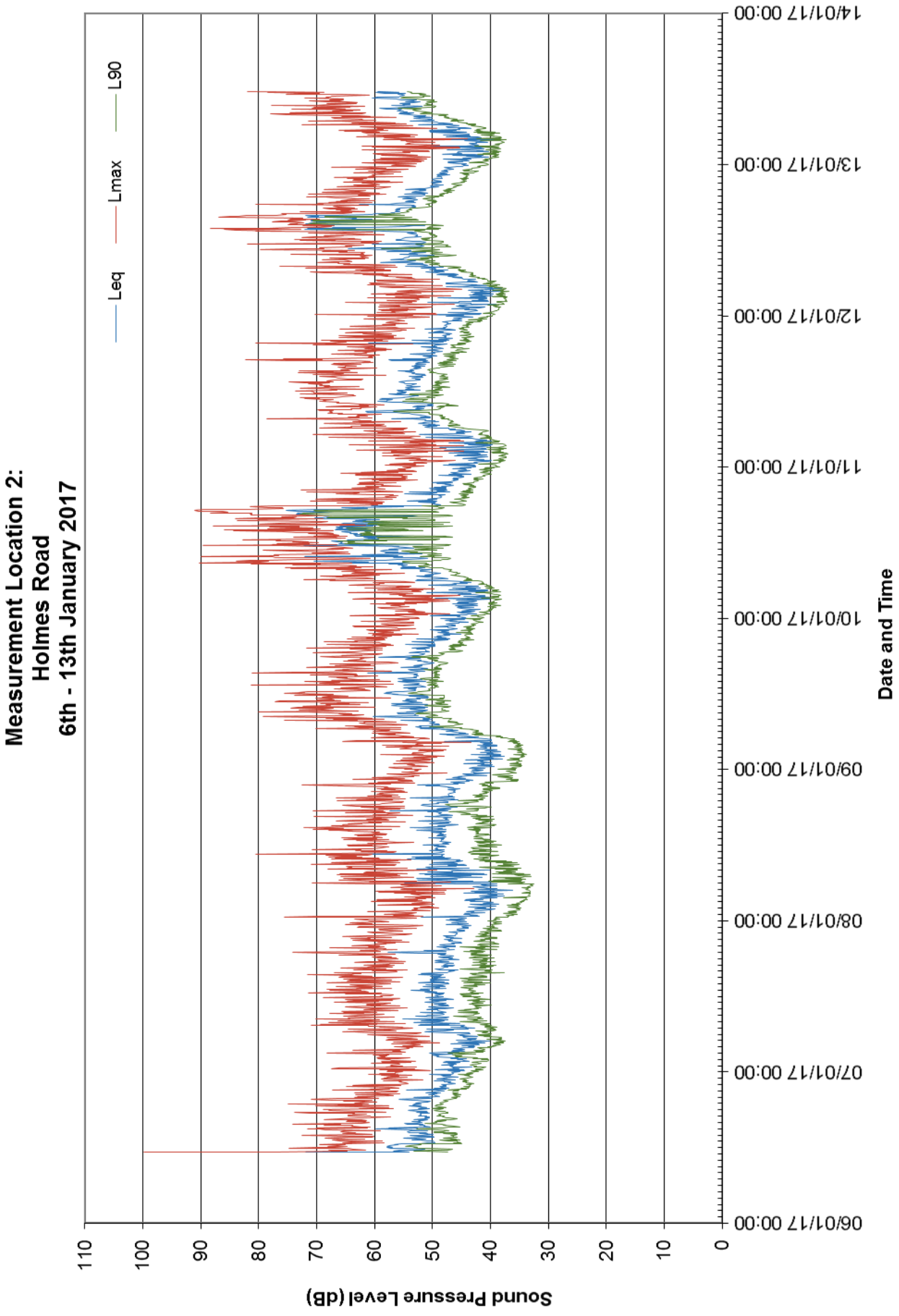
This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

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 the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B: ENVIRONMENTAL NOISE MEASUREMENTS




Measurement Location 2:
Holmes Road
6th - 13th January 2017
Leq
Lmax
L90
Sound Pressure Level (dB)
110
100
90
80
70
60
50
40
30
20
10
0
Date and Time
06/01/17 00:00
07/01/17 00:00
08/01/17 00:00
09/01/17 00:00
10/01/17 00:00
11/01/17 00:00
12/01/17 00:00
13/01/17 00:00
14/01/17 00:00

APPENDIX C: ACOUSTIC GLAZING SPECIFICATIONS

GL1 & V1 –
GL1 & V2 –