



AIRTIGHT & NOISECHECK LIMITED

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ACOUSTIC TESTING REPORT FOR

**CLOUD LIVING
UNIT 3 PARKLAND BUSINESS PARK
FOREST ROAD
DENMEAD
WATERLOOVILLE
HAMPSHIRE
PO7 6XP**

SITE ADDRESS

**314-318 LONDON ROAD
WATERLOOVILLE
HAMPSHIRE
PO7 7DU**



Acoustic Engineer:

Date: 14-15th June 2014

Michael Vine

AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING

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Test Engineer:


Michael Vine

Date: 14-15th June 2014

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Executive Summary:

Airtight & Noisecheck Ltd were instructed to carry out an acoustic assessment by Chris Flint Architects on behalf of Cloud Living to measure the current ambient noise levels associated with 314-318 London Road, Waterloooville to determine the extent of mitigation measures that will need to be implemented in order to protect the future residents from the external noise emissions. The noise levels were measured on both noise sensitive facades of the building (East & West)

A planning application has been made to convert the existing building with a mixed use development comprising of 4no commercial units on the ground floor and 15no residential units on the 1st, 2nd & 3rd floors. Two microphone locations were used for this measurement procedure, one at the front of the property facing London Road (Western Façade) and one at the rear of the property facing Curzon Road (Eastern Façade).

The site is located in a predominantly commercial with many commercial units located on London Road but there are both converted blocks and purpose built blocks of residential dwellings located immediately to the West & North of the proposed site. Hulbert Road is located approximately 50metres to the North of the site, with Curzon Road located approximately 20metres to the East. The Western facade directly faces the pedestrian area of London Road.

Based on the noise levels measured and the mitigation measures listed, there is no reason why the external noise emissions produced will adversely affect the future residents of the proposed site. If the correct mitigation measures are implemented then the future residents should enjoy a reasonable standard of living and noise should not prove to be a nuisance.

Acoustic Engineer:

Date: 14-15th June 2014

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Customer Name:

Cloud Living
Unit 3 Parklands Business Park
Forest Road
Denmead
Hampshire
PO7 6XP

Date: 14-15th June 2014

Site Address:

314-318 London Road
Waterlooville
Hampshire
PO7 7DU

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Norsonic Environmental Analyser 121 – Serial No 29809, Calibration due July 2015

Analyser complies with the following standards:

IEC 60651 type 1
IEC 60804 type 1
IEC 61260 class 1
IEC 225
ANSI S1.4-1985 type 1
ANSI 1.43 -1997 type 1
ANSI S1.11-1986 order 3 type 1D
DIN 45 657
Norsonic Production Standard set of the Nor121

Measurement Microphones (Gras 40AF) – Serial No 51465, Calibration due July 2015 & **(Nor 1225)** - Serial No 54968, Calibration due July 2015

Acoustic Calibrator - Class 1 (Nor 1251) - Serial No 29212, Calibration due July 2014

Measurement Procedure:

The external ambient noise levels were recorded for a 24hour period at the Eastern & Western facades of the proposed development between 0900hrs on 14th June 2014 to 0900hrs on 15th June 2014 to ascertain the external noise levels for proposed mixed use development at the proposed site address. This report will be written according to the requirements of World Health Organisation – guidelines for community noise. Other British Standards and documents may be referred to in this report.

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1 Objective:

1.1 To determine the existing external noise levels associated with Eastern & Western facades of the site as these facades overlook the local pedestrian area & road network. The site currently comprises of a vacant commercial building built over three floors. A planning application has been made to convert the existing building into a mixed use building comprising of 4no commercial units on the ground floor and 15no residential dwellings split over the 1st, 2nd & 3rd floors.

The objective of the testing is to ensure that the future residents of the proposed residential development will be protected from the external noise emissions produced at the site.

2 Calibration:

2.1 The measurement microphone was calibrated before and after testing in each measurement location and there were no drifts recorded during the assessments.

3 Site Layout & Microphone Position:

3.1 314-318 London Road is located in the pedestrian area of Waterloo, a small town located North of Portsmouth. The building is located on the Eastern side of the pedestrian area with the Western facade of the building directly facing this area. This area has a public House and many other commercial units located in the immediate vicinity.

The local road network is located to the North (Hulbert Road & Maurepas Way) and Curzon Road located to the East. The local area is largely commercial & residential with many mixed use buildings located on London Road and also purpose built residential blocks located to the East & North of the proposed development.

3.2 The internal layout of the proposed development is listed in the site plan at the rear of this report.

3.3 The residential dwellings will be located on the 1st, 2nd & 3rd floor levels only, with commercial units on the Ground Floor.

3.4 Two microphone locations have been used for this measurement duration, microphone one was positioned at the Western façade of the proposed dwellings (1st floor), this was directly facing the pedestrian area of London Road. It was at least 4metres from ground floor level and 1metre from the facade and therefore a -3dB correction has been applied to the noise levels in order to take facade reflections into account.

Microphone Two was positioned at the Eastern façade of the proposed dwelling with Curzon Road located to the East and purpose built dwellings located beyond it. It was at least 4metres from ground floor level and also 1metre from the facade so the same corrections were applied to these noise levels also.

4 Weather Conditions:

4.1 The weather was dry during the measurement procedures, the temperatures ranged between 5-18degrees. There was no wind during the microphone procedures & a little rain.

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AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING**5 Results:**

5.1 The measured noise levels for the microphone location is listed in the table below.

Microphone Location One:

Time Period	LAeq	To Satisfy WHO Requirements	LAFMax 5min	LAFMax Reduction needed (WHO)
Day – 0700-2300	64dB(A)	29dB(A)	N/A	N/A
Night – 2300-0700	50dB(A)	20dB(A)	76dB(A)	31dB(A)

Microphone Location Two:

Time Period	LAeq	To Satisfy WHO Requirements	LAFMax 5min	LAFMax Reduction needed (WHO)
Day – 0700-2300	56dB(A)	21dB(A)	N/A	N/A
Night – 2300-0700	47dB(A)	17dB(A)	76dB(A)	31dB(A)

5.2 The noise levels apparent for the Southern facade of the site facing the road network indicate that the minimum reductions needed by the building materials and specifications is 31dB(A) to ensure the internal noise levels meet the requirements of the WHO document, which is an internal LAeq 16hour (0700-2300) of 35dB and an LAeq 8hour (2300-0700) of 30dB. The minimum reduction necessary for microphone location Two is also 31dB.

5.3 The WHO document along with BS8233 states that the internal LAFmax 8hour (2300-0700) should not exceed 45dB(A) therefore indicating a sound reduction of 31dB(A) being necessary for microphone location one and two. The average LAmx value has been used for the Eastern facade due to the dominant noise emissions in this location being road traffic. The LAmx 5minute values have been used for the Western facade due to the variety of noise sources apparent on this aspect.

5.4 The worst case scenario has been assumed in order to ensure that the future residents will be protected from the external noise emissions apparent at the site.

5.5 The results taken above were taken on a typical day so it is assumed that the results offer a fair representation of the daily noise emissions apparent at the proposed site. The noise levels were measured over a weeked period due to contractors being apparent on site and also in order to ensure the Public House on London Road will be busy and thus ensuring the worst case scenario for this location.

6 Results Conclusion:

6.1 The tables listed above clearly indicate the necessary reductions that must be met to ensure that the internal noise requirements are met, the noise levels measured have been compared to the requirements of the WHO document. This document clearly lists the required reductions of the building specifications for the microphone locations.

6.2 These reductions can be met by ensuring the adequate building specifications are being used, these include not only the windows, but also the facade and roof details. By using the adequate materials and specifications then the internal noise requirements should be met and thus ensure no sleep disturbance for the future residents of the development.

6.3 It should not be necessary to install acoustic ventilation to the site due to the low reductions required, however if this is required then acoustic trickle vents should offer the adequate protection.

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7 Results Summary:

7.1 The results indicate that the external noise emissions should not pose a nuisance for future residents of the proposed dwelling. The sound reductions listed in this report all meet the requirements of the WHO document and if implemented then there is no reason why future residents can't have a reasonable standard of living at the proposed address.

7.2 Noise should not prove to be a nuisance for the future residents of the site if adequate mitigation measures and building elements are installed.

8 Façade Detail – The facade detail is believed to be something similar to - A cavity wall system comprising of - Dense aggregate concrete block cavity wall with 50mm cavity and wall ties of the butterfly wire type. Plaster finish on both sides. Joints in blockwork well filled. Overall mass per unit area not less than 415 Kg/m² should offer a sound reduction of between 54-60dBA '*Code of Practice BS8233: 2014, Page 59 – Table E.1A – Airborne sound insulation of walls and partitions*'. Also a cavity wall system comprising of 7N concrete blocks (two separate frames), have a sound reduction of approximately 53dB (*predicted weighted sound reduction index values of Celcon Blockwork – from H&H Celcon*).

9 Roof Detail – The proposed roof detail is something similar to: Flat Timber joist roof, asphalt on boarding, 12mm plasterboard ceiling, thermal insulation. This roof should offer a sound reduction of 45dB (*BS8233: 2014 - Table 8, The sound insulation of roofs, page 41*)

10 Windows – It is understood that typical UPVC double glazed windows are to be installed, these windows generally have a sound reduction of between 30-35dB. This level of sound reduction are in excess of the minimum sound reductions necessary at the proposed site thus these units should provide adequate attenuation.

11 Conclusion:

11.1 The noise levels have been measured to anticipate the existing emissions produced at the site. With adequate materials/specifications being used there is no reason why the future residents can't enjoy a reasonable standard of living in the proposed development.

11.2 This report clearly shows the reductions needed to protect the future residents from the noise emissions produced from the road network, and these measures should be adopted to the entire site, but the Eastern facade may not require these measures. If these methods are followed then there is no reason why noise would be a nuisance in the future.

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APPENDIX

Continuous equivalent noise level, LAeq — The steady noise level (usually in dBA) which, over the period of time under consideration, contains the same amount of sound energy as the time varying noise.

L_{Amax} - The maximum value that the A-weighted sound pressure level reaches during a measurement period.

dB (A) — The A-weighted sound pressure level.

Decibel (dB) — A unit used for many acoustic qualities to indicate the level of sound with respect to a reference level.

A-weighting — A frequency weighting that relates to the response of the human ear.

Background noise level — Prevailing noise level in a specified environment measured in the absence of the noise being studied.

Habitable Room – A room used for sleeping or recreation/relaxation

D_{ne,w} Weighted element normalised level difference – A single-number quantity which characterises the airborne sound insulation of a small building elements.

EPU – Environmental Protection Unit

R_w Weighted sound reduction index – A single-number quantity which characterises the airborne sound insulation of a material or building element measured in the laboratory.

LA10 – The A-weighted noise level exceeded for 10% of the measurement duration.

LA90 - The A-weighted noise level exceeded for 90% of the measurement duration.

British Standards & associated documents:

World Health Organization (WHO) - Guidelines for Community Noise.

Code of Practice: BS8233: 2014- Sound Insulation and noise reduction for buildings.

Activity	Location	0700-2300	2300-0700
Resting	Living Rooms	35dB LAeq,16hour	-
Dining	Dining Room/Area	40dB LAeq,16hour	-
Sleeping (daytime resting)	Bedroom	35dB LAeq,16hour	30dB LAeq,8hour

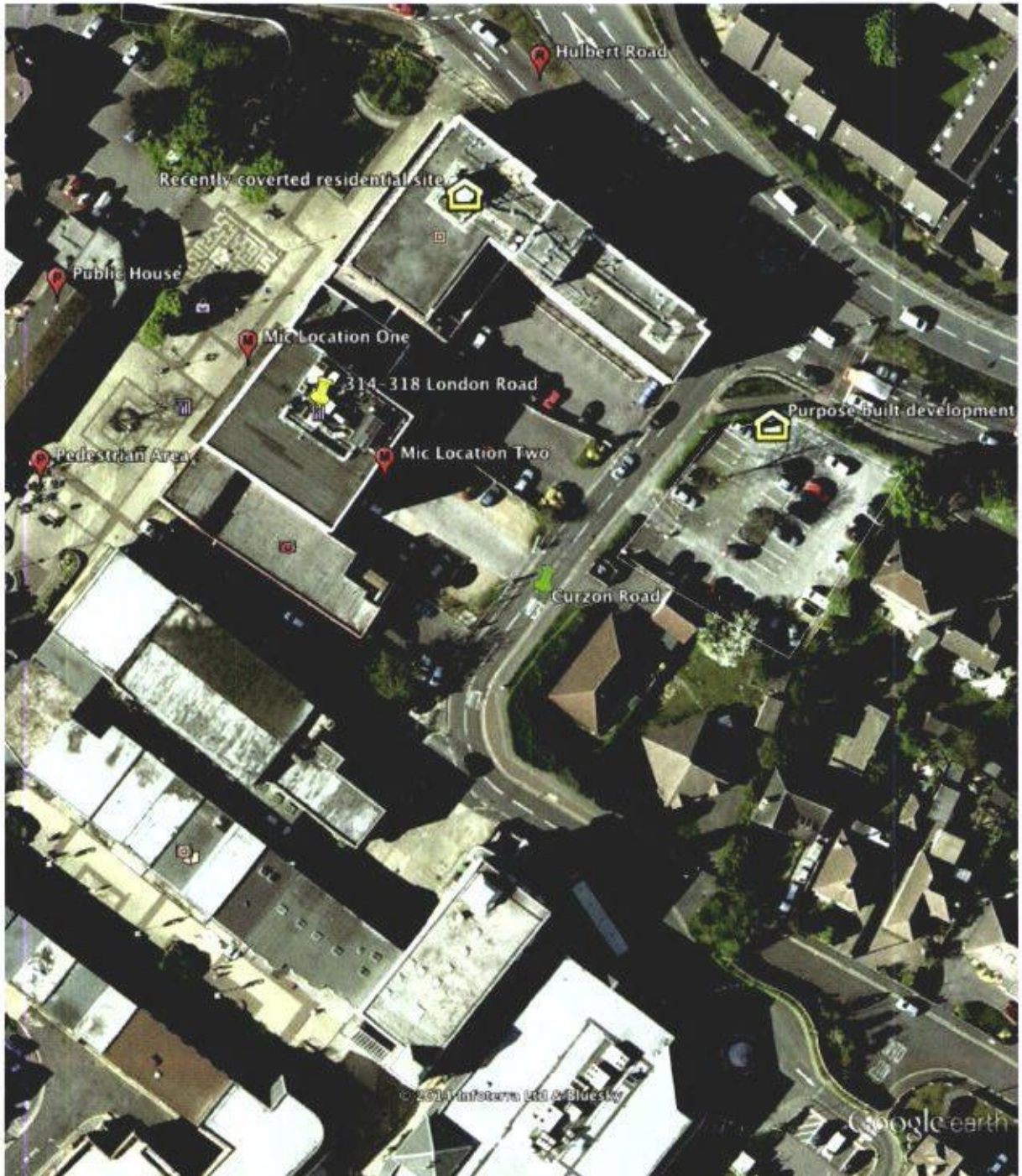
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13 Google Earth:



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14 Site Plan:



Acoustic Engineer:

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