



AIRTIGHT & NOISECHECK LIMITED

236c Havant Road, Drayton, Hampshire, PO6 1PA

Phone: 08450 666966 Email: info@airtightnoisecheck.co.uk

24 HOUR ACOUSTIC TESTING REPORT FOR

**GRAND HOLDINGS LTD
UNIT R
FORT WALLINGTON
MILITARY ROAD
FAREHAM
HAMPSHIRE
PO16 8TT**

SITE ADDRESS

**PROPOSED DEVELOPMENT
BEDHAMPTON ARTS CENTRE
BEDHAMPTON ROAD
BEDHAMPTON
HAMPSHIRE**

Acoustic Engineer:

Michael Vine

Date: 29-30th Nov 2012

AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING

Contents

Customer Name.....	3
Site Address.....	3
Equipment Used.....	3
Measurement Procedure.....	3
Executive Summary.....	4
Objective.....	5
Calibration.....	5
Site Layout & Microphone Locations.....	5
Weather Conditions.....	5
Results Table.....	6
Results Conclusion.....	6
Mitigation Measures.....	7
Facade Detail.....	7
Roof Detail.....	7
Windows & Ventilation.....	7
Conclusion.....	8
Google Earth Image.....	9
Acoustic Definitions.....	10

Attached: Raw Data - Global, 1hour, 15minute values & 5minute Values



Test Engineer:

Michael Vine

Date: 29-30th Nov 2012

AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING

Customer Name:

Date: 29-30th Nov 2012

Grand Holdings Ltd
Unit R
Fort Wallington
Military Road
Fareham
Hampshire
PO16 8TT

Site Address:

Proposed Development
Bedhampton Arts Centre
Bedhampton Road
Bedhampton

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Nor121 Environmental Analyser – Serial No 29809, Calibration due June 2013.

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 S1.43 – 1997 type 1

ANSI S1.11 – 1986 order 3 type 1D

Norsonic production standard set for the Nor121

Measurement Microphone (Gras 40AF) – Serial No 51465, Cal due June 2013

Acoustic Calibrator – Class 1 (Nor 1251) – Serial No 29212, Cal due June 2013

Measurement Procedure:

The external ambient noise levels were recorded for a 24hour period between 1000hrs on Thursday 29th November 2012 to 1000hrs on Friday 30th November 2012 to ensure future residents of the proposed residential development will be protected from the external noise emissions. The parameters of the World Health Organisation - Guidelines for community Noise, 2000 were used. In addition the following requirements of the local authority were used.

LAeq16hour (0700-2300) of 35dB- Maximum internal noise level - daytime

LAeq8hour (2300-0700) of 30dB - Maximum internal noise level - night time

LAfmax8hour (2300-0700) of 45dB - Maximum internal noise level - night time



Acoustic Engineer:

Michael Vine

Test Date: 29-30th Nov 2012

AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING

Executive Summary:

Airtight & Noisecheck Ltd were instructed by Chris Flint Associated on behalf of Grand Holdings Ltd to undertake a 24hour noise assessment at Bedhampton Arts Centre, Bedhampton Road, Bedhampton, Hampshire. The assessment took place between 29th - 30th November 2012.

The external noise emissions were measured for the 24hour period to determine what mitigation measures will be required to ensure the residents of the proposed site are not adversely affected by the external noise emissions. A planning application has been made to form 4no residential dwellings on the existing footprint of the building.

The results of the noise assessment indicate that with careful internal design and the correct building specifications used on all facades of the building. The sound reductions required can easily be achieved by ensuring the correct building elements are used and thus ensuring a reasonable standard of living for the future residents of the proposed site.

Acoustic Engineer:



Michael Vine

Test Date: 29-30th Nov 2012

AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING

1 Objective:

1.1 To determine the existing external noise levels associated with the site address. The site is currently a disused commercial building located in close proximity to a mixture of other commercial buildings and many residential dwellings. A planning application has been made to form 4 residential dwellings formed by material change of use on the ground floor, the proposed development will use the existing footprint of the building. The acoustic procedure was undertaken to measure the external noise emissions produced predominantly by the local road network and ensure future residents of the dwellings are protected from such noise emissions.

2 Calibration:

2.1 The measurement microphone was calibrated both before and after testing and there was no drift recorded.

3 Site Layout & Microphone Position:

3.1 Bedhampton Arts Centre is a detached building which is listed. It is located on the corner of Bedhampton Road & Kings Croft Lane, with the centre of Bedhampton Road approximately 10metres to the North of the site and the centre of Kings Croft Lane approximately 8metres to the West. There is a tyre centre located to the East of the site and residential dwellings located beyond that. There are residential dwellings located on all sides of the site, indicating a predominantly residential area.

3.2 The proposed development is to be constructed on the same footprint as the existing building, it is currently a single storey building and it is listed so the extent of the works are limited. The major noise source apparent at the proposed site was the road traffic using Bedhampton Road, this is a busy road with cars, buses and HGV'S using the road network. The building is of a typical construction with what is believed to be a cavity wall facade system, tiled roof and windows on each facade. The final internal layout is unknown but it is thought that only one dwelling will face Bedhampton Road directly.

3.3 The area is predominantly residential with a large number of dwellings located in close proximity to the proposed site, in addition to the vast number of residential dwellings located on closer proximity to Bedhampton Road there are also some commercial units, including a car showrooms and a tyre centre. There is a public house and some shops located on the Northern edge of Bedhampton Road also.

3.3 The microphone was positioned on the Northern facade of the site, it was on a boom out of a high ground floor window, it was approximately 600mm from the facade so a -3dB correction has been taken off of the measured results due to the level of reflection from the facade.

4 Weather Conditions:

4.1 The weather was fair and cold, ranging between 0-8degrees celsius, there was no wind or rain during the measurement procedure.

Acoustic Engineer:



Michael Vine

Test Date: 29-30th Nov 2012

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

Time Period	L _{Aeq} value	Reduction needed to satisfy WHO document & Local Authority	L _A F max value	Reduction needed to satisfy WHO document & Local Authority
0700-2300hrs 29/11/12 (16hour external noise levels)	69dB(A)	34dB(A)	N/A	N/A
2300 -0700hrs 29&30/11/12 (8hour external noise levels)	60dB(A)	30dB(A)	80dB(A)	35dB(A)

(Results obtained using the environmental sound level meter and where needed taking a logarithmic average of different values)

5.1 The above results table show the L_{Aeq} values and the L_AFmax values as requested by the local authority, it also shows the reductions necessary for each time period to satisfy the requirements of the local authority and the WHO guidelines. A -3dB correction has been applied to the above values due to the reflection of the facade.

5.2 A reasonable standard of living can be achieved by future residents, this can be achieved by ensuring the necessary mitigation measures are implemented to the site and building fabric to show compliance to the noise levels set out in 'World Health Organisation (WHO) - guidelines for community noise'.

5.3 'World Health Organisation (WHO) - Guidelines for community noise', 2000 states the following internal ambient noise levels are to be met to ensure an adequate level of protection against noise:

- Within the habitable rooms a continuous equivalent noise level (L_{Aeq} 8hour) of 30dB(A) together with maximum instantaneous level of 45dB(A) (L_AFmax) between the hours of 2300-0700.
- Within the habitable rooms a continuous equivalent noise level (L_{Aeq} 16hour) of 35dB(A) between the hours of 0700-2300.

6 Results Conclusion:

6.1 The necessary reductions are listed within the table, it can be seen that the reductions needed are all equal to or less than 35dB(A) and the largest reduction needed is the night time L_AFmax value which requires a reduction of 35dB(A), therefore this is the worst case scenario and must be used as the minimum reduction needed.

6.2 The dominant noise source apparent at the development was the road traffic using Bedhampton Road, the results indicate that the vehicular traffic uses this route during the day time and night time so adequate mitigation is required during all hours.

6.3 The noise emissions were recorded continuously for a 24hour period in order to measure the noise levels throughout this period, the tables above indicate the level of protection needed to satisfy the necessary documents and ensure a reasonable standard of living for future residents.

6.4 The reduction necessary for all building elements is 35dB(A), therefore all components must have a sound reduction in excess of this figure. A typical double glazed window has a sound reduction of between 30-35dB. The windows to be installed must have a sound reduction equal to or more than 35dB.

Acoustic Engineer:



Michael Vine

Test Date: 29-30th Nov 2012

AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING

7 Some mitigation measures may be needed to certain aspects of the building fabric and elements in order to achieve the necessary reductions at each facade of the proposed development.

8 ***Façade Detail*** – The façade of the building on all aspects currently comprises of something similar to ‘a high dense concrete/brick cavity wall. 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: 1999, Page 46 – Table E.2 – 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*), therefore satisfying the required reductions necessary.

9 ***Roof Detail*** – The exact specification of the existing roof detail is unknown but it is believed to be something similar to ‘*Tiles on felt pitched roof, lath and plaster ceiling*’ this type of roof should achieve a weighted sound reduction (R_w) of approximately 47dB (*Code of practice BS 8233: 1999, page 28*).

10 ***Windows*** – The existing windows are single pane glazed panels, with secondary glazing fixed to the inside, however these are not fixed appropriately and will need upgrading. A typical double glazed window should offer a weighted sound reduction (R_w) of between 30 - 35dB. The minimum reduction needed is 35dB so a standard double glazed may not suffice, however for the rooms to be naturally ventilated without diminishing the integrity of the windows, either acoustic trickle vents or mechanical ventilation may be required in the habitable rooms to ensure the minimum reductions are maintained. There are many varieties of windows that have a reduction value of 35dB or above. Secondary glazed units (6-100-6) should offer a weighted sound reduction index (R_w) of between 35-40dB therefore satisfying the requirements. However the building is listed so the windows will not be replaced, it may be a case of changing the glazed panels only. If this is the preferred option then the glazing must have a sound reduction equal to or more than 35dB. The glazing manufacturer will be able to offer advice on suitable options. If secondary glazing is the preferred option then below are some suitable options.

- Selectaglaze series 10 horizontal sliding – offers a sound reduction (R_w) of 46dB
- Selectaglaze series 80 horizontal sliding – offers a sound reduction (R_w) of 39dB.

10.1 Some acoustic trickle vents that should achieve the necessary reductions are Greenwood EAR42W, AWW39 etc, a list of these products can be found at http://www.greenwood.co.uk/acoustic_ventilation.asp

Please note that there is a wide range of products that will satisfy these reductions.

10.2 The client may be requested to show the window specification before they are installed. The sound reduction of all windows is dramatically reduced when the window is opened, it is anticipated that the sound attenuation may be reduced by approximately 10dB when the window is open, therefore if the client wishes to upgrade the windows and not install acoustic trickle vents then the minimum sound reduction needed by the windows will have to be in excess of 45dB.



Acoustic Engineer:

Michael Vine

Test Date: 29-30th Nov 2012

AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING

11 Conclusion:

11.1 The future residents of the proposed residential development should ensure a high standard of living with regards to noise if adequate building specification elements and careful design standards are applied to the development. The sound reductions necessary can be achieved using correct methods of construction and the correct glazing with the necessary levels of attenuation.

11.2 There are existing residential dwellings located in a very similar location and proximity of the road network, illustrating that people have been living in the area for a number of years.

11.3 The approved development comprising of 4no residential dwelling - flats formed by material change of use should not be affected by the noise emissions produced from the local road network and the neighbouring commercial units providing adequate mitigation measures are imposed. The noise levels produced from the vehicular traffic can be controlled by effective specifications and building elements being used on the necessary aspects, providing these schemes are implemented then noise should not prove a disruptive factor for this development.

11.4 It is unclear at present where the habitable rooms will be located at the development. The reductions of 35dB apply to the windows directly facing Bedhampton Road, which are approximately 10metres from the centre of the road, any windows located further away from that will require less sound reduction. Any windows located further than 30metres from the centre of the road will require a sound reduction of 30dB, this could be achieved by standard double glazing.

11.5 The further away the windows are from the centre of Bedhampton Road then the reductions necessary are reduced, also it is only the Northern facade that directly faces Bedhampton Road so it may be a case that the windows on all other facades only require standard double glazing with acoustic trickle vents due to them not being in the direct line of sight for the road network.

11.6 In addition to the above mitigation measures the dwellings can be designed in such a way that the habitable rooms are placed as far away from Bedhampton is practicable, if this is possible then the noise levels will be reduced further due to the location of the habitable rooms.



Acoustic Engineer:

Michael Vine

Test Date: 29-30th Nov 2012

AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING

12 Google Earth Image:



Acoustic Engineer:

Michael Vine.

Test Date: 29-30th Nov 2012

AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING

13 Acoustic Definitions:

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) — (1) Degree of loudness. (2) A unit for expressing the relative intensity of sounds on a scale from zero for the average least perceptible sound to about 130 for the average pain 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.

British Standards & associated documents:

Code of Practice: BS8233: 1999 - Sound Insulation and noise reduction for buildings.

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



Acoustic Engineer:

Michael Vine.

Test Date: 29-30th Nov 2012