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AIRTIGHT & NOISECHECK LIMITED

Unit 27 The Oakwood Centre, Downley Road, Havant, PO9 2NP
Phn: 08450 666966 Fax: 08450 666566

24 HOUR ACOUSTIC TESTING REPORT FOR

T WARE DEVELOPMENTS LTD
144 LONDON ROAD
PORTSMOUTH
HAMPSHIRE
PO2 9DQ

SITE ADDRESS

RAEBARN HOUSE
HULBERT ROAD
WATERLOOVILLE
HAMPSHIRE
PO7 7JT

Acoustic Engineer: **Michael Vine**

Date: 29-30 July 2010

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AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING

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Customer Name:

T Ware Developments Ltd
144 London Road
Portsmouth
Hampshire
PO2 9DQ

Date: 29-30 July 2010

Site Address:

Raebarn House
Hulbert Road
Waterlooville
Hampshire
PO7 7JT

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Integrating-averaging Sound Level Meter type118 – Serial No 31633, Calibration due March 2012

Analyser complies with the following standards:

IEC 60651 type 1
IEC 60804 type 1
IEC 61260 class 1
IEC 61672 class 1
ANSI S1.4 – 1997 type 1
ANSI S1.43 – 1997 type 1
ANSI S1.11 1986 type 1D

Measurement Microphones (Gras 40AF) – Serial No 51465, Calibration due June 2011

Measurement Procedure:

The external ambient noise levels were recorded in order to establish the works required by the proposed development to ensure that the future residents will be protected from the external noise emissions in relation to World Health Organisation guidelines. Also the guidelines within Planning Policy Guidance 24 – Planning & Noise: 1994 edition was used.

LAeq 16hour = 0700 -2300 hrs (external noise levels)
LAeq 8hour = 2300 -0700 hrs (external noise levels)

Acoustic Engineer:

Michael Vine

Test Date: 20-21 July 2010

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Objective:

To determine the existing external noise levels associated with the site address. A planning application has been made to form residential dwelling – flats on the 2nd & 3rd floor of the building. The building is currently an unused commercial building. Mitigation measures will also be listed within the report to ensure that the internal noise levels are within the guidelines of the World Health Organisation – guidelines for community noise, 2000 edition are met.

Calibration:

The measurement microphone was calibrated both before and after testing and the results were:

Pre Calibration level	Sensitivity	Post calibration Level	Sensitivity
114dB at 0650hrs 29th July 2010	-26.7	114dB at 0705hrs 30th July 2010	-26.7

Site Layout & Microphone Position:

Raebarn House is situated on the Southern side of Hulbert Road, Waterlooville. It is a very large building built over 4 floors. Hulbert Road is a 4 lane road with a busy roundabout running along the Northern aspect of the building at a distance of approximately 10metres. There are other commercial buildings and car parks located to the South of the building and other commercial and residential buildings are located to the West & East of the building. A local road network surrounds the building, with the major noise source being Hulbert Road running on the Northern aspect of the building; it is the main through road for Waterlooville.

There are many other residential dwellings in a similar vicinity to the road, therefore indicating that many local residents have lived in close proximity to the road.

The microphone was placed at 2nd floor level in direct line of sight of Hulbert Road, it was positioned close to the Western end of the building but was facing out of the Northern façade. It was at least 10metres from ground floor level and 2metres from the façade of the building.

It is understood that the residential dwelling – flats will be built on the 2nd & 3rd floors only therefore any remedial works will only have to be applied to these floors with regards to sound insulation for habitable rooms.

The remedial works should be applied to all aspects of the residential floors, in order to achieve the best sound attenuation and ensure the necessary reductions will be applied to the entire development.

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Results:

Time Period	LAeq value Recorded	Noise Exposure Category (NEC)	Reduction Needed to satisfy WHO	NEC C
0700-2300hrs 29th July 2010 (16hour external noise levels)	72dB	NEC C/D	37dB	63-72
2300 -0700hrs 29th & 30th July 2010 (1hour internal noise levels)	63dB	NEC C	33dB	57-66

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

Results Conclusion:
World Health Organisation – guidelines for community noise' 2000 edition states that to ensure a reasonable standard of living the during the day time (0700-2300hrs) the internal noise levels must be no more than 35dBA, therefore indicating a reduction of **37dB** will be required by the building fabric of the building. The same document also states that to ensure a reasonable standard of living during the night time period (2300-0700hrs) the internal noise levels must be no more than 30dBA, therefore a reduction of **33dB** will be required during this period.

Noise Exposure Category:
'Planning Policy Guidance 24 – Planning & Noise' 1994 edition states for sites which fall into NEC C *'planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise'*. This means that mitigation measures must be imposed on the development to ensure that the internal noise levels are at an acceptable level with regards to sound insulation.
The following mitigation measures should ensure that the internal noise levels are within the guidelines of the WHO document and that the necessary sound reductions are achieved.

Existing façade detail:
The current façade of the building on all aspects comprises of a high dense concrete 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 *'British Standard 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).*
Proposed Façade Detail **–** The façade of the building will not change and will remain as it is at present.

Roof Detail:
It is unclear as to the exact specification of the roof but it is believed to be of a concrete nature and therefore should have a reasonable level of sound attenuation. It is understood that the roof specification will not be changed during the works.

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Windows:
The existing windows comprise of single glazed elements, these offer a weighted sound reduction index of 22 – 30dB *'British Standard 8233: 1999, Page 27 – Table 10 – Sound insulation of typical windows'* with secondary glazing fitted to the inside of the single pane windows.
Proposed Windows – To satisfy the requirements of 'World Health Organisation – guidelines for community noise' 2000 edition and ensure that the necessary reductions are met the client will have to install windows with a sound reduction of at least 37dB. All of the windows for the residential dwellings should be upgraded to achieve a sound reduction equivalent to 37dB, this can be achieved by using windows such as the ones listed below or certain secondary glazing systems could offer this reduction. The client has not yet specified which windows will be used.

There are many varieties of windows that have a reduction value of 35dB or above, some systems are listed below.
- 33.1(6.4) SGG STADIP SILENCE/16 argon/6 = 40dB Rw
- 44.1(8.4) SGG STADIP SILENCE/16 argon/6 = 42dB Rw
- 10/12 air/44.2(8.8) SGG STADIP SILENCE = 42dB Rw
- 64.2(10.8) STADIP SILENCE/20 air/44.2(8.8) SGG STADIPSILENCE = 47dB Rw

All of the above windows are available from www.thelondonglass.co.uk

The client may be requested to show the window specification before they are installed. In addition to the windows being installed it may be necessary to install acoustic ventilation throughout the development so that the dwellings can be ventilated without having to open a window. One product that does this and will achieve the necessary sound reduction is Greenwood 'Hush' system which offers a sound reduction of 43dB and allows the dwelling to be ventilated without opening a window. *Please note that there are other windows and ventilation systems that will achieve the necessary sound reduction, however the client has yet to specify the products to be used.*

Conclusion:

The installation of the mitigation measures listed within this report should ensure that the future residents of the proposed development will be protected from the external noise emissions apparent at the site. The products listed within this report offer a sound reduction equivalent to or greater than the levels needed, therefore with a careful design criteria applied to the internal layout coupled with the mitigation measures listed the necessary sound reductions should be met.

Careful design criteria will include situating the habitable rooms (bedrooms etc) as far away fro the dominant noise source as possible, this will increase the distance between the noise source and habitable rooms so this will help to reduce the internal noise levels within the rooms. Even if this is not possible the mitigation measures listed should ensure that the necessary sound reductions are met.

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