AIRTIGHT & NOISECHECK LIMITED

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24 HOUR ACOUSTIC TESTING REPORT FOR

INTERLAKE HOMES LTD
26 WALDEN GARDENS
HORNDEAN
WATERLOOVILLE
HAMPSHIRE
PO8 9PP

SITE ADDRESS

PROPOSED DEVELOPMENT
132-136 LONDON ROAD
WATERLOOVILLE
HAMPSHIRE
PO7 5SU



Acoustic Engineer: **Michael Vine**

Date: 4-5 May 2012

AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING

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Attached: Raw Data - 15minute values
Detailed Site Plan



Test Engineer: **Date: 4-5 May 2012**

Michael Vine

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Customer Name: **Date: 4-5 May 2012**

Interlake Homes Ltd
26 Walden Gardens
Horndean
Waterlooville
PO8 9PP

Site Address:

132-136 London Road
Waterlooville
Hampshire
PO7 5SU

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Norsonic Environmental Analyser 121 – Serial No 29809, Calibration due June 2013

Analyser complies with the following standards:

IEC 60651 type 1
IEC 60804 type 1
IEC 61260 class 0

Measurement Microphones (Gras 40AF) – Serial No 51465, Calibration due June 2013

Measurement Procedure:

The external ambient noise levels were recorded for a 24hour period between 0700hrs on Friday 4th May 2012 to 0700hrs on Saturday 5th May 2012 to ensure future residents of the residential development will be protected from the external noise emissions. The parameters of Planning Policy Guidance 24: Planning & Noise, 1994 and also the World Health Organisation - Guidelines for community Noise, 2000 were used.

The Noise Exposure Categories were measured and necessary mitigation measures will be included to ensure an adequate level of protection against noise for future residents.

This report may also use guidelines and references from other British Standards & Codes of Practice; however the above parameters will be used as guidelines for noise levels.



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1 Objective:

1.1 To determine the existing external noise levels associated with the site address. The site is currently vacant having been a detached dwelling for many years, the building has been demolished. A planning application has been granted to form 5 purpose built residential dwelling - flats split over 3 floors in the same location as the old building, there are additional detached dwelling - houses located to the rear of the development but these will not be exposed to the major noise source apparent. The major noise source apparent at the site is the vehicular traffic using the local road network, especially the vehicles using London Road which runs to the West of the site at a distance of approximately 25metres (centre of road) from the facade of the building, there is a 40mph speed limit on this road. The detached dwellings will be situated approximately 100metres from the road and they will be protected by the flats and other existing dwellings.

2 Calibration:

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

Pre Calibration level	Sensitivity	Post calibration Level	Sensitivity
Mic 1 - 113.7dB	-26.5	113.7dB	-26.5

It can be seen that no drift was recorded on either microphone.

3 Site Layout & Microphone Position:

3.1 The site is located on the Eastern edge of London Road, Waterlooville, Hampshire. London Road is a very busy road that runs between Cosham and Waterlooville and is located approximately 6miles North of Portsmouth. London Road is a busy road with high levels of vehicular traffic evident through out the day and night. The vehicles that use the road are cars, buses, lorries and HGV'S. There are many existing residential dwellings in a similar proximity to the road network as those proposed. The centre of London Road is approximately 24metres from the proposed facade of the block. There are existing residential dwellings & gardens located on all other aspects of the development.

3.2 The proposed dwellings are to be situated in the same location as the previous dwelling; the development will consist of 5 purpose built dwellings - flats in a single block, with 2 flats on each of the ground & 1st floors and 1 dwelling on the 2nd floor. There are to be 6 detached dwellings also built on the site but these will be built approximately 100metres to the East of the road in a much quieter location, the building containing the flats along with other existing buildings will offer further screening and protection for these dwellings.

3.3 The microphone was positioned at the proposed Western facade of the purpose built block; it was positioned in direct line of sight to the road. The microphone was positioned at least 1.5metres from ground level and 3.5metres from any other reflective surface. The development is yet to be built and is only at footings stage.

4 Weather Conditions:

4.1 The weather was fair and mild, ranging between 8-12degrees celsius, there was very little wind during the measurement procedure.



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5 **Results:**

Time Period	LAeq value	Noise Exposure Category	NEC Levels, LAeq, T	LAF max value	Reduction needed to satisfy WHO document
0700-2300hrs 4th May 2012 (16hour external noise levels)	59dB(A)	NEC B	55-63	55-63	24dB(A)
2300 -0700hrs 4-5th May 2012 (8hour external noise levels)	60dB(A)	NEC B	45-57	45-57	22dB(A)
2300-0700hrs 4-5th May 2012	N/A	N/A	N/A	71dB(A)	26dB(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 shows the noise levels apparent during the 24hour period, these results have been compared to the levels in PPG24 for road traffic noise, it indicates that the site falls into NEC B for the daytime and night time . The relevenat document states the following for sites that fall into NEC B *'Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise'*.

5.2 Based on the paragraph above it is necessary to show that a reasonable standard of living can be had by future residents, this can be achieved by ensuring the necessary mitigation measures are implemented to the site and buidling fabric to show compliance to the noise levels set out in 'World Health Organisation (WHO) - guidleines 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 (LAeq 8hour) of 30dB(A) together with maximum instantaneous level of 45dB(A) (LAFmax) between the hours of 2300-0700.
- Within the habitable rooms a continuous equivalent noise level (LAeq 16hour) of 35dB(A) between the hours of 0700-2300.

Time Period	LAeq value Recorded	Reduction needed	LAmax Value	Reduction Needed
0700-2300hrs 4th May 2012 (16hour external noise levels)	59dB(A)	24dB(A)	N/A	N/A
2300 -0700hrs 4-5th May 2012 (8hour external noise levels)	52dB(A)	22dB(A)	71dB(A)	26dB(A)

6 **Results Conclusion:**

6.2 The necessary reductions are listed within the table, it can be seen that the reductions needed are all below 35dB(A) and the largest reduction needed is the LAmax value which requires a reduction of 26dB(A), therefore this is the worst case scenario and must be used as the minimum reduction needed.

6.3 The dominant noise source apparent at the development was the road traffic using London Road, the rear of the development will be protected from the road traffic noise due to the screening offered by the building and the additional distance between the road and the dwellings, so these reductions only really apply to the facade facing the road.

6.4 The facades facing away from the road will not require such a level of attenuation, however between 30-35dB(A) could be offered by standard double glazing.



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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 will comprise 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).*

9 ***Roof Detail –*** *T*he proposed roof detail is believed to be something similar to: Tiles and felt on a timber joists, 100mm mineral wool insulation is placed within the void and 2 x 12.5mm plasterboard on underside of joists. This system will offer a sound reduction of 43dB (*Code of practice BS 8233: 1999, page 28).*

10 ***Windows –*** A typical double glazed window should offer a weighted sound reduction (Rw) of between 30 - 35dB. Depending on the actual reduction offered this should be enough as a reduction of 26dB(A) is required on the windows facing the road network.
There are many varieties of windows that have a reduction value of 26dB or above, standard double glazing should offer a sound reduction of 30-35dB(A) and therefore suffice, the manufacturer should have all of the necessary noise data. It is understood that the client is to use windows with a sound reduction of 36dB, and they have provisions of using attenuated trickle vents to the Western elevation of the building, this should ensure the minimum reductions are achieved.

10.1 A standard double glazed window should satisfy the requirements of the local authority for all windows located away from the road and to the rear of the development, as the building will offer high levels of screening, also the windows facing away from London Road may not need to have the same reduction.

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, however based on the noise levels measured and the site falling into NEC B it is anticipated that even if this were the case the noise impact wouldn't be too dramatic and the residents should still ensure a reasonable standard of living. It is understood that all windows will be fitted with attenuated trickle vents so these will allow the rooms to be ventilated without the windows being opened.

10.3 The client has stated that they will install attenuated trickle vents to the Western elevation of the building, there are many systems that will offer adequate reductions. Greenwood have a wide range of products that will provide the necessary attenuation, the client may be requested to list the exact product to be used on the Western elevation.



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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. The site has fallen into NEC B and this level of noise is deemed acceptable to residents if the necessary design and building specifications have been implemented. The noise levels will be reduced at the rear of the development based on the natural screening offered by the flats and other existing buildings.

11.2 There are many existing residential dwellings located in a very similar location and proximity of the road network, illustrating that people have been living next to London Road for a number of years. In addition to this there are many purpose built residential developments that have been granted planning permission by the local authority in a similar location to the proposed, in many cases the dwellings are situated closer to the road network.

11.3 The approved development comprising of 5no purpose built residential dwelling - flats and 6 detached dwelling - houses should not be affected by the noise emissions produced from London Road 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.

12.4 The local authority have already approved the planning application providing the necessary mitigation measures are adopted to the necessary elements of the development, once these measures are implemented the future residents should ensure a reasonable standard of living.



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13 **Site Photograph:**



Brief Description of photograph
The above photograph was taken from the edge of the site, the photo indicates the footprint of the proposed development.

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14 **Site Plan**



The above site plan only shows the proposed residential dwelling. An attachment must be viewed with the report as this shows the microphone location and other notes.

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15 **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.

LAmax - 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:

Planning Policy Guidance 24: Planning and Noise

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

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



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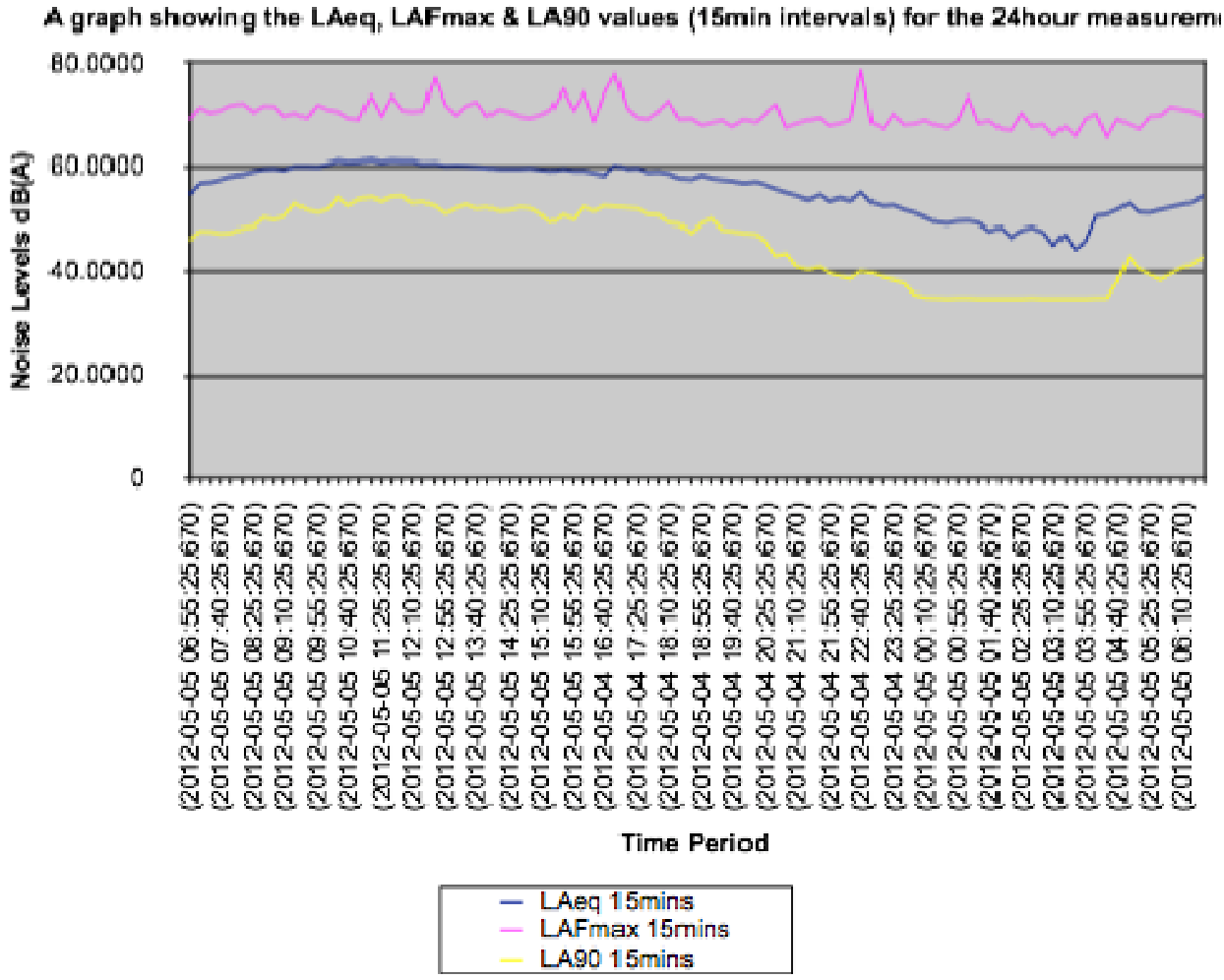

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