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## **AIRTIGHT & NOISECHECK LIMITED**

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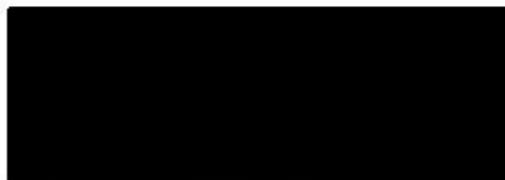
### **ACOUSTIC TESTING REPORT FOR**

**FUNFAYRE LEISURE LTD  
34 FRATTON ROAD  
PORTSMOUTH  
HAMPSHIRE  
PO1 5BX**

### **SITE ADDRESS**

**THE LORD GEORGE  
42 GREYWELL SHOPPING CENTRE  
GREYWELL ROAD  
HAVANT  
HAMPSHIRE**

Acoustic Engineer:



Date: 13/12/13

Date: 5/02/2014

**AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING**

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Raw Data can be sent upon request



**Test Engineer:**

**Date: 13/12/13**

**Michael Vine**

**AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING**

Customer Name:

Date: 13/12/13

Funfayre Leisure Ltd  
34 Fratton Road  
Portsmouth  
Hampshire  
PO1 5BX

Site Address:

38-40 Greywell Shopping Centre  
Greywell Road  
Havant  
Hampshire

Acoustic Engineer: Mr. Michael Vine

Equipment used:

**Nor118 Sound Level Meter** – Serial No 31633, Calibration due June 2014

Analyser complies with the following standards:

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

Measurement Microphones (Nor 1225) – Serial No 59993, Cal due Feb 2014

**Nor121 Environmental Analyser** – Serial No 31399, Calibration due March 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 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 54968, Cal due June 2015

**Acoustic Calibrator – (Nor 1251)** – serial No 31652, Cal due July 2014

Measurement Procedure:

The internal noise emissions were recorded inside the current adult gaming centre for a period of 1 hour during a 'happy hour'. Two measurement locations were used to establish the average inside the unit. The noise levels were measured to establish the noise levels associated with the site and prediction methods will be made to try and establish the noise associated with the site when it is relocated to the unit next door.



**Test Engineer:**

**Date: 13/12/13**

**Michael Vine**

**AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING**

*Executive Summary:*

Airtight & Noisecheck Ltd were instructed by Funfayre Leisure Ltd to undertake a noise impact assessment at 42 & 38-40 Greywell Shopping Centre to ascertain if the relocation of an adult gaming centre will adversely affect the local residents living in the residential dwellings located directly above the venue.

The noise levels were measured in the current venue to establish the noise emissions apparent. These levels were used to try and predict the noise levels in the proposed venue.

Based on the measured noise levels, the current separating floor apparent between the ground floor venue and the first floor residential dwellings is it apparent that the noise emissions produced from the new venue should not adversely affect the reasonable standard of living for the residents.

Increases have been made to the noise levels and this level has been assumed by:

The proposed number of patrons using the new venue  
The number of machines being used at any one time  
Decibel addition for the gaming machines  
Area of new building and space between the machines

The noise levels measured were done so during 'happy hour' and after a detailed conversation with the owner it is apparent that this level of use will not be common for the new venue. Therefore the noise levels measured should assume worst case scenario. The reductions offered by the separating floor should ensure that the residents will be protected by the internal noise levels produced in the new venue for the adult gaming centre.



**Acoustic Engineer:**

**Michael Vine**

**Test Date: 13/12/13**

## **AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING**

### **1 Objective:**

**1.1** To determine if the relocation of the Adult Gaming Centre will have any adverse impact on the residential dwellings located directly above the venue. Noise measurements were undertaken in the current venue to ascertain the internal noise emissions associated with such a venue.

A prediction method will then be adopted to predict the noise levels apparent in the new venue and calculations will be made to assume the sound reduction offered by the ceiling above the venue to establish the internal noise criteria in the residential dwellings above.

### **2 Calibration:**

**2.1** The microphones were calibrated before and after the testing procedure and no drift was recorded on either microphone.

### **3 Site Layout & Microphone Position:**

**3.1** Greywell Shopping Centre is a pedestrian road full of a mixed variety of shops ranging from supermarkets to kebab shops. The Lord George is the current venue being used for an adult gaming centre, it is located at 42 Greywell Road. It is approximately 75m<sup>2</sup> with a large number of adults games situated within it.

**3.2** The proposal is to close this venue down and relocate to the unit next door, 38-40 Greywell Road, this unit is larger than the current unit and it will hold more gaming machines, however it is not anticipated that the number of patrons will increase dramatically. This unit is approximately 150m<sup>2</sup> so it is double the size, but the machines will be evenly placed around the unit so that the patrons have more space to use the machines.

**3.3** The measurement procedure was undertaken during a 'happy hour' on a typical week day, after conversations with the owner this is the busiest time of the week and at all other times there are less people in the venue. There were between 10-15 people using the adult gaming centre during the happy hour but the owner has indicated that this number is high even for the new bigger venue.

**3.4** The noise levels measured during happy hour will be used for this assessment to assume worst case scenario for the site. There is a wide range of shops located in Greywell Shopping Centre and many of which will have similar or louder noise levels than the venue, and all of these venues have residential dwellings above.

**3.5** Two microphone locations were used for this assessment, the microphones were positioned at each end of the venue and the results will be averaged to get a fair reflection of the noise levels. The microphones were positioned to get a fair reflection of the noise levels produced by the wide range of machines in the venue and the people using those machines.

### **4 Hours of Operation:**

**4.1** The new venue will be open:

- 0900-2200 Monday to Saturday
- 1000-1800 on Sunday

Therefore the venue will not be open during noise sensitive hours and will not cause any sleep disturbance.



**Acoustic Engineer:**

**Michael Vine**

**Test Date: 13/12/13**

**AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING****5 Results: Background Noise Levels**

| Time Period          | LAeq 1hour | Reduction Needed to satisfy WHO |
|----------------------|------------|---------------------------------|
| 1hour - Location One | 69dB(A)    |                                 |
| 1hour - Location Two | 71dB(A)    |                                 |
| Average              | 70dB(A)    | 35dB(A)                         |

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

5.1 Further calculations can be made to predict the noise levels in the same venue. If two areas produce the same noise level the overall value increases by 3dB, so based on the fact that the new unit is twice as big as the existing unit it can be assumed that the new noise levels will be +3dB higher than the average measured. However for the purpose of assuming worst case scenario a correction of +5dB(A) has been applied to the noise levels so the overall predicted noise level is listed below. Please note that an increase of 10dB indicates a doubling of the loudness, this will not be the case in this instance due to the number of people using the venue remaining the same and even though there will be more machines in the new venue they will not all be used at once and it is anticipated that the same number of machines will be used in the new unit as they are currently being used in the existing unit.

| Predicted Noise Level | Reduction necessary to satisfy WHO |
|-----------------------|------------------------------------|
| 75dB(A)               | 40dB(A)                            |

5.2 The above figure has been derived by averaging the existing noise levels and adding 5dB to this figure. World Health Organisation (WHO) states that the internal LAeq16hour noise value should be equal to or less than 35dB between 0700-2300, based on the measured noise levels the separating floor between the adult gaming centre and the residential dwelling above needs to offer a sound reduction value of 40dB to ensure the internal noise criteria is met.

5.3 The separating floor between the ground floor adult gaming centre and the first floor residential unit comprises of something similar to:

- Carpet & Underlay
- Floating floor or Concrete Screed
- 200-300mm concrete slab
- 1.3metre void
- Suspended grid tile ceiling

5.4 The above separating floor should offer a sound reduction of between 49-54 DnT,w. BS8233:1999, page 52, Table E.3 - Airborne & Impact sound insulation of floor constructions states that a floor comprising of 'A concrete floor having mass per unit not less than 365 Kg/m<sup>2</sup>, including any screed or ceiling finish directly bonded to the floor slab; together with a floating floor or resilient floor covering equivalent to rubber or sponge rubber underlay or thick cork tile (eg carpet and underlay or sponge rubber backed vinyl flooring) will have a weighted sound reduction (DnT,w) of between 49-54dB.

5.5 Based on the above paragraph and the apparent floor construction on site, it is fair to say that the separating floor should offer sound reduction values similar to those listed above.



Acoustic Engineer:

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**6 Results Conclusion:**

**6.1** The predicted noise level of the new unit and the sound reduction of the separating floor should ensure that the new venue will not adversely affect the reasonable standard of living for the residential dwellings located above the venue. The venue will only be open during the day time and it will not be in operation during the noise sensitive hours and therefore will not cause sleep disturbance.

**6.2** The new venue is larger than the existing venue and it will hold more machines, however these machines will be placed evenly over a larger area and the number of patrons are not expected to increase dramatically, the owner of the venue stated that he expects the number of people to remain the same.

**6.3** This report however, has assumed that there will be an increase in the noise output in the new venue so an addition of +5dB has been assumed. Even with this increase the sound reduction measured should easily be achieved by the separating floor insitu. The separating floor is similar to the one listed in this report and thus should offer sound reductions similar to those listed.

**6.4** The method behind the increase in the noise levels has been described; the increasing in the number of machines does not automatically mean an increase in the noise levels due to not all being in use at the same time. An increase of 10dB means that the loudness has been doubled, this level of increase will not be apparent in this venue so an increase of 5dB was assumed.

**6.5** However, even if the noise levels were increased by 10dB then the reduction necessary will be 45dB and based on the table in BS8233:1999 the separating floor should offer a minimum sound reduction of approximately 49dB thus meeting this level of reduction.

**6.6** Based on the noise levels measured at the venue, the relocation should not adversely affect the reasonable standard of living for the residents located in the residential dwellings directly above the venue. There are many other businesses located in Greywell Shopping Centre that will be in operation during the noise sensitive hours and the separating floor will be the same as that apparent above the venue, so based on the noise levels measured and the fact that the venue will cease trading no later than 2200hours the noise emissions should not adversely affect the reasonable standard of living currently enjoyed by the residents.

The proposed opening hours are:

9:00 – 22:00 Monday –Saturday

10:00 – 18:00 Sunday and Bank Holidays



**Acoustic Engineer:**

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7 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<sub>Amax</sub>** - 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 Organization (WHO) - Guidelines for Community Noise.

Acoustics & Noise Control – 2<sup>nd</sup> Edition, B J Smith, R J Peters & S Owen



**Acoustic Engineer:**

**Test Date: 13/12/13**

**Michael Vine**