



AIRTIGHT & NOISECHECK LIMITED

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BS4142 ACOUSTIC TESTING REPORT FOR

**MR OZDEMIR
4 PURBROOK CHASE PRECINCT
CROOKHORN LANE
CROOKHORN
HAVANT
HAMPSHIRE
PO7 5QH**

SITE ADDRESS:

**4 PURBROOK CHASE PRECINCT
CROOKHORN LANE
CROOKHORN
HAVANT
HAMPSHIRE
PO7 5QH**



Acoustic Engineer:

Michael Vine

Date: 3rd March 2014

AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING

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Test Engineer:

Michael Vine

Date: 3rd March 2014

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Customer Name:

MR Ozdemir
4 Purbrook Chase Precinct
Crookhorn Lane
Crookhorn
Havant
Hampshire
PO7 5QH

Date: 3rd March 2014

Site Address:

4 Purbrook Chase Precinct
Crookhorn Lane
Crookhorn
Havant
Hampshire
PO7 5QH

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Nor121 Environmental Analyser – Serial No 29809, Calibration due June 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 51465, Cal due June 2015

Acoustic Calibrator (Nor 1251) - Serial No 29212, Cal due July 2014

Measurement Procedure:

The external ambient noise levels were measured for a period of 2 hours between the hours of 2055hrs to 2255hrs on Monday 3rd March 2014. This was performed to establish the specific noise produced by the extraction system (LAeq 1 hour) and also the lowest background noise levels (LA90 1 hour) once the plant had been switched off.



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Executive Summary:

Airtight & Noisecheck Ltd were instructed by Niall Tutton of Tutton Associates on behalf of Mr Ozdemir to undertake a noise assessment at 4 Purbrook Chase Precinct to establish if the extraction system that has already been installed will increase the likelihood of complaints for the residential dwellings located above.

A Retrospective planning application has been made for the erection and installation of the plant that is located at the rear of the building. The majority of the system is located internally in the shop but the duct and discharge point is located adjacent to the 1st & 2nd floor residential dwelling.

Based on the noise levels measured and the guidelines of BS4142 the installation of the plant will ensure complaints are of marginal significance, therefore some mitigation measures are required to reduce the noise emissions produced from the unit. The level of reductions are listed within this report but the client should consult the local authority to see what level of reduction they require.

The plant runs no later than 2200hrs so it shouldn't cause any sleep disturbance based on the hours of operation but to comply with BS4142 further attenuation measures are necessary.

Some measures have been listed in this report but specialist advice should be sought as to determine the type of products/silencers that should be used.

Once the necessary attenuation measures have been implemented then the noise levels produced by the extraction system should ensure that complaints will be unlikely.



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1 Objective:

1.1 The objective of the acoustic procedure is to see if the plant that has already been installed for the restaurant, for which a retrospective planning application has been made. The plant is an Kirenfo Frying Range extraction system comprising of an ESP unit and Fan CNA400 that are both located inside the ground floor shop, with the extraction vent located to the rear of the building. The vent is a 300mm circular system that terminates 1metre above the roof line of the building.

As the fan and the motor are placed internally, the only noise source apparent is the duct and discharge point which are located to the rear of the building and mounted to the building.

1.2 The plant is located on the Northern facade of the building and it is directly outside a residential dwelling.

1.3 It must be noted that there are other existing plant located on the buildings located in the vicinity of the site.

2 Calibration:

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

3 Site Layout & Microphone Position:

3.1 No4 Purbrook Chase Precinct is located at the Eastern end of a row of mixed use units on the Northern edge of the precinct, other buildings include an Indian restaurant and other commercial buildings. The ground floor unit is a fish & chip shop and the extraction system serves the kitchen of this shop. The actual precinct is a pedestrian area with residential dwellings located above the commercial units and in all other directions also.

Crookhorn Lane is located to the East of the site and this is the major road in the immediate area, the area is predominantly mixed use with a wide range of buildings.

3.2 The nearest noise sensitive dwelling is located immediately above the shop at 1st & 2nd floor. The entrance to the residential dwellings is located to the rear and this is where the extraction duct is located. The duct is situated on the Northern aspect of the building and on the left hand side of the actual building.

4 Microphone Location (nearest noise sensitive facade):

4.1 The microphone was positioned at residential facade to the rear of the building at first floor level, it was positioned in excess of 3.5metres from the building facade to avoid reflections, 1.2metres from balcony level and approximately 4metres from the duct and 7metres from the discharge point of the duct.



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5 Hours of Operation:

5.1 The extraction system is in operation between 1700-2200hrs on Monday & Tuesday, 1200-1430 & 1700-2200hrs Wednesday to Saturday and closed on Sunday. So the systems is switched off before any noise sensitive hours and should not cause sleep disturbance based on these hours.

6 Description of Testing:

6.1 The ambient noise levels were measured at the nearest noise sensitive facade for a period of 2hours on a typical working night both whilst the units was in operation and once it had been switched off. The testing was performed at this time to determine the noise levels for the evening period when the shop will be opened latest. The LAeq and LA90 values (1hour for the daytime) in order to compare these values and assess them in accordance with BS4142: 1997.

6.2 BS4142: 1997 states that a difference between the rating level and the background noise level of +10dB or more indicates that complaints are likely, a difference of +5dB is of marginal significance and a difference of -10dB indicates that complaints are unlikely.

6.3 The rating level applies to the specific noise level (noise of plant) - the residual noise (the noise level apparent once the specific noise is switched off. The following table indicates the value to subtract dependent on the above values recorded.

Difference between noise level readings with specific noise present & absent dB	Correction to be subtracted from noise level reading with specific noise present dB
>9	0
6 to 9	1
4 to 5	2
3	3
< 3	See document

7 Background Noise Levels:

7.1 The background noise levels have been measured and the lowest LA90 values are listed in the table below. The background noise levels were measured between 2155-2255 once the shop had closed and the extraction system had been switched off.

Day Time LA90 - 1hour
49dB(A)

8 Noise levels of Plant: - Specific Noise

Extraction system - LAeq 1hour
57dB(A)



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AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING**8.1 BS4142 Noise Table - Rating Level:**

Specific Noise - LAeq 1hour	Residual Noise Level	Rating Noise Level	Correction	Lowest LA90 Value	Difference	Likelihood of complaints
57dB(A)	54dB(A)	54dB(A)	None	49dB(A)	+5dB(A)	Marginal Significance

The Noise is continuous and is not tonal, therefore no correction has been applied to the values. The rating Noise Level has been determined using the methods listed in BS4142: Method for Rating industrial noise affecting mixed residential and industrial areas. 1997.

9 Results Conclusion:

9.1 The above table indicates that the extraction system that has been installed will receive complaints of marginal significance. However the plant has been installed for a long period of time already and no complaints have been made. The system is switched off no later than 2200hrs so it should not cause sleep disturbance based on these hours alone.

9.2 To ensure that complaints are unlikely the noise needs to be reduced by 15dB, however seeing as the plant is not tonal a reduction of 10dB would ensure that the noise level is -5dB below the LA90 value and this levels of reduction may be adequate.

9.3 It would be prudent to liaise with the local authority and see what level of reduction they would require to approve the retrospective planning application, then the mitigation methods can be implemented.

9.4 The two areas of the system that are producing noise are the duct itself and the discharge. The noise produced from the discharge can be reduced by:

- Installing a silencer to the discharge point of the system

The noise produced from the duct can be reduced by either:

- Wrapping the duct in an acoustic jacket
- Isolate the duct with sound reducing material such as acoustic insulation, timber frame and acoustic boarding/ enclosure

The above mitigation measures would reduce the noise produced from the plant but specialist advice should be sought as to what silencer and acoustic jacket should be installed.

10 Mitigation Measures

10.1 The customer is to install a BDER 30-031-060 silencer to the bottom point of the extract duct, this product has a single figure reduction of 15dB, once this product is applied to the duct then the noise levels should be reduced adequately.

Specific Noise - LAeq 1hour	Residual Noise Level	Rating Noise Level	Correction	BDER 30-031-060 silencer	Rating Noise Level	Lowest LA90 Value	Difference	Likelihood of complaints
57dB(A)	54dB(A)	54dB(A)	None	-15dB	39dB	49dB(A)	-10dB(A)	Unlikely

10.2 The above table indicates that using a single figure reduction, if the BDER 30-031-060 silencer is installed to the bottom of the duct then the rating level will be -10dB below the lowest LA90 value and as such complaints will be unlikely.

10.3 The noise reduction figures for the silencer are at the back of this report. The client has sought advice from the manufacturer and this silencer has been chosen based on the reduction requirements that were apparent.



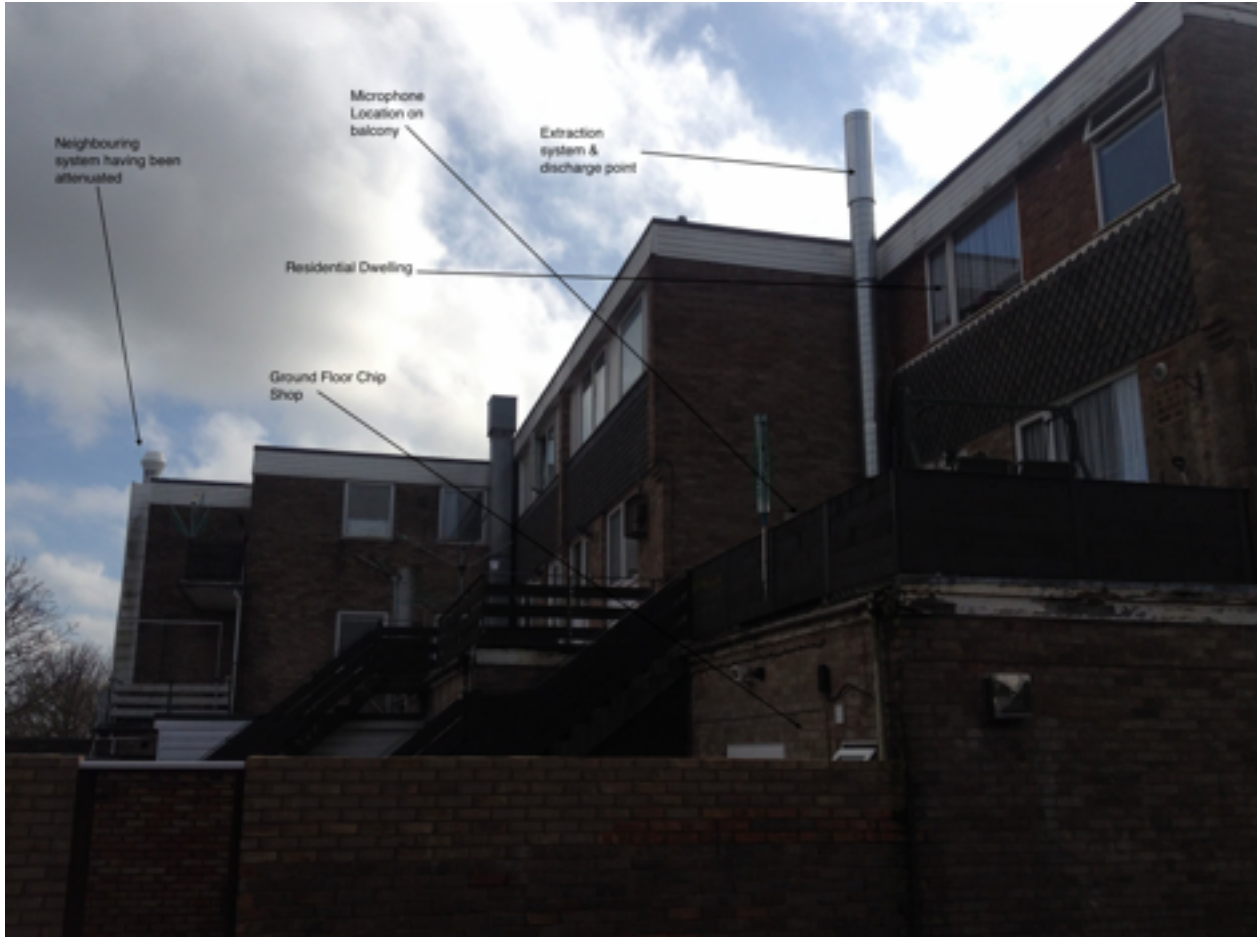
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***11* Site Photo:**



Michael Vine

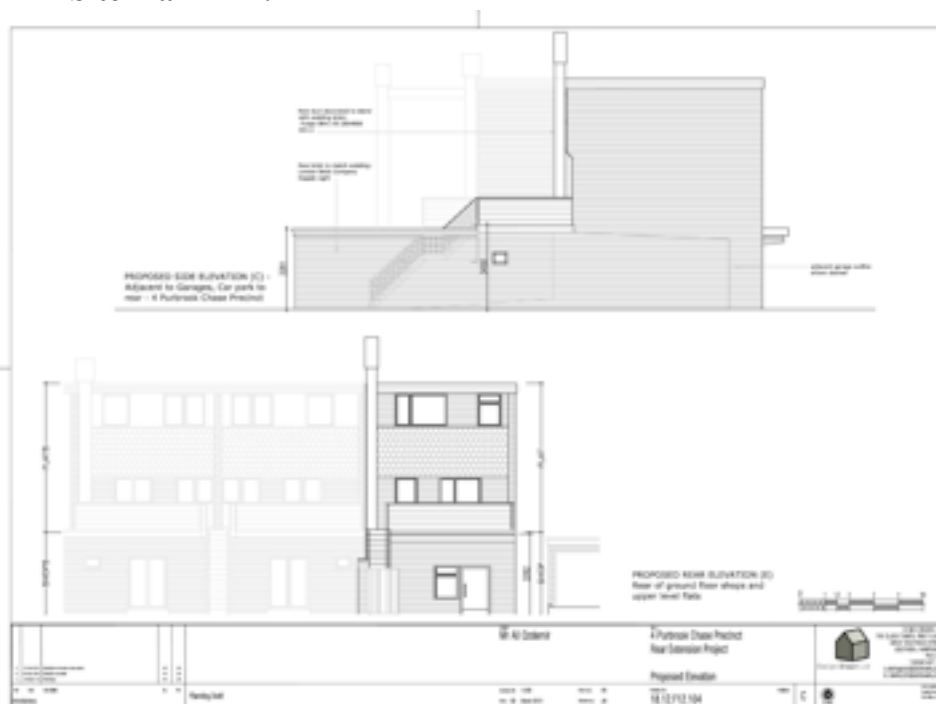
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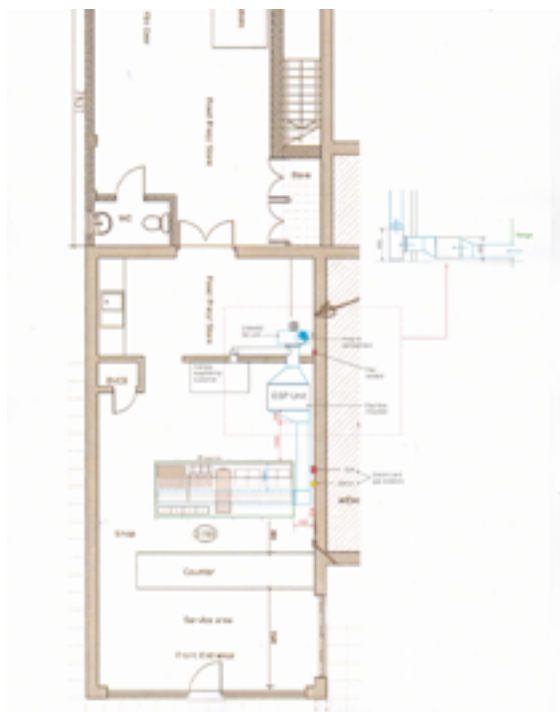
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12 Site Plan PDF:



PDF showing the external duct and residential window.



PDF showing the fan & Motor inside the shop

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13 Google Earth Image:



Michael Vine

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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:

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

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

BS4142: Method for Rating industrial noise affecting mixed residential and industrial areas: 1997



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