ACOUSTIC DESIGN TECHNOLOGY
Noise and Vibration Consultants

ADT 1869

18/12/2012

The Fish Hut Ltd
27 Liverpool Road
Castlefield
MANCHESTER
M3 4NW

PROPOSED EXTENSION AND ALTERATION WORKS, THE FISH HUT

ENVIRONMENTAL NOISE IMPACT ASSESSMENT

ACOUSTIC CONSULTANCY REPORT ADT 1869/ENIA

Revision	Date	Issued By	Revision Notes
-	18/12/2012	Chris Middleton	-

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1.0 SUMMARY

An environmental noise impact assessment has been undertaken of the proposed extension and alterations to the Fish Hut, 27 Liverpool Road, Manchester.

A fully manned environmental noise survey has been undertaken over the last hour of proposed opening (22:00 to 23:00 hours) at a series of locations along Barton Street to establish the currently prevailing background noise levels.

The proposed replacement kitchen extract fan is the only significant environmental noise source. Resultant noise levels have been calculated at nearby noise sensitive properties and appropriate attenuation has been specified to ensure compliance with the normal Manchester City Council requirement of 5 dB below the existing background noise level in all octave bands.

The assessment therefore demonstrates that the development complies with the Manchester City Council requirements in respect of noise emissions.

2.0 BASIS OF ASSESSMENT

2.1 Site Location

The site is located at the corner of Liverpool Road and Barton Street in the centre of Manchester and is a two storey terraced property with a fish and chip shop on the ground floor.

No. 13 Liverpool Road adjoining the building to the east features the Bollywood Restaurant at ground level with apartments above. There is a range of two to four storey apartment buildings south of the site on Barton Street, with the Cask public house immediately opposite the site to the west.

The apartments at No. 4 Barton Street are the nearest noise sensitive properties with a clear line of sight to the proposed development.

2.2 Proposed Development

The proposal is to extend and refurbish the building to create a ground floor fish and chip servery, 1st floor coffee shop and 2nd floor seating area. There will be no amplified music and opening hours are to be limited to 09:00 to 23:00 hours Monday to Saturday, with no Sunday opening. As such, the only significant environmental noise source is the new extract fan serving the fish and chip servery.

2.3 Strategy for Noise Impact Assessment

The strategy for noise impact assessment can be broken down into two stages as follows:

i. undertake an environmental noise survey to measure the currently prevailing background noise levels outside the most affected noise sensitive properties.

ii. assess the noise impact of the proposed new plant installations on the nearby noise sensitive properties, against the Manchester City Council normal requirements.

3.0 ENVIRONMENTAL NOISE SURVEY

3.1 Instrumentation

The environmental noise survey was undertaken using the following instrumentation:-

i. 01dB Solo Class 1 Sound Level Meter
ii. 01dB MCE212 ½ inch Microphone and Windshield
iii. Norsonic Microphone Calibrator

The sound level meter was calibrated at the beginning of the survey period, and the calibration checked at the end. No significant drift occurred.

3.2 Procedure and Results

A fully manned manned environmental noise survey was undertaken between 22:00 hours and 23:00 hours on Thursday 13th December 2012.

Octave band and dB(A) sound pressure levels were recorded at a series of locations along Barton Street over 5 minute sample periods. The measurement positions are illustrated on the attached site plan 1869/SP1.

A summary of the locations, measurement times and the post processed octave band L_{90} results is set out in the following table:

Existing L_{90}									
Location / start time	Octave band centre frequency (Hz)								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Position 1 / 22:15	64	56	55	50	49	43	34	22	53
Position 2 / 22:18	57	54	50	47	46	40	28	15	50
Position 3 / 22:24	56	53	49	46	47	41	30	16	50
Position 2 / 22:44	56	55	50	46	46	39	28	16	50
Position 3 / 22:49	59	52	47	44	46	39	24	12	49

Please refer to Appendix A for explanation of the noise units and the A-weighting term used in this report.

3.3 Weather Conditions

The weather was dry with no more than a light breeze throughout the survey period, with no significant effect on the measured levels.

3.4 Description of Existing Noise Climate

The measured background noise levels were largely controlled by traffic on Liverpool Road and the other nearby roads, more noticeably at measurement position 1. Noise from plant at the rear of the adjoining restaurant at No. 13 Liverpool Road was audible at position 1 only.

4.0 NOISE IMPACT ASSESSMENT

4.1 Basis of Assessment

The fish and chip shop servery will be ventilated by a single extract fan as detailed on the attached plant noise schedule 1869/PNS. The location of the fan is set out on the Combined Catering Services Ltd drawings accompanying the planning application. The fan is to be ducted to 600mm x 315mm louvre on the Barton Street facade of the building, set around 3 metres above street level, via an atmospheric silencer as set out in the attached schedule 1869/SSA.

4.2 Noise Impact Assessment

Simple analysis of noise transmission from the extract louvre to the nearest and most affected dwellings at No. 4 Barton Street is set out in the following table:

	Octave band centre frequency (Hz)								dB(A)
	63	125	250	500	1k	2k	4k	8k	
L_w of fan (dB)	77	78	84	77	76	73	69	63	
Silencer insertion loss (dB)	2	4	7	7	10	12	15	10	
End reflection loss at grille	9	5	2	0	0	0	0	0	
Divergence loss to 15m distance, hemispherical radiation pattern	32	32	32	32	32	32	32	32	
Resultant L_p at flat	34	37	43	38	34	29	22	21	40
Existing L_{90} at position 2, 22:44 hours	56	55	50	46	46	39	28	16	50
Difference	-22	-18	-7	-8	-12	-10	-6	-5	

It should be apparent from the figures in the above table that the resultant noise level at the apartments is at least 5 dB below the otherwise prevailing background noise level in all octave bands.

Background noise levels are marginally lower further along Barton Street, represented by measurement position 3, although there would be an equal or greater reduction in plant noise levels as divergence increases.

On that basis it is reasonable to conclude that the environmental noise impact of the proposed fixed plant installation complies with the Manchester City Council normal requirements and the noise impact of the development as a whole should therefore be acceptable.

FOR ACOUSTIC DESIGN TECHNOLOGY

APPENDIX A

The annoyance produced by noise is dependent upon many complex interrelated factors such as 'loudness', its frequency (or pitch) and any variations in its level. In order to have some objective measure of the annoyance, scales have been derived to allow for these subjective factors.

dB(A) The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average person. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dB(A) level.

When the noise being measured has a variable amplitude, such as traffic noise, it is necessary to qualify the basic dB(A) unit. This may be done using a statistical index L_n dB(A), where n is an integer between 1 and 99, and is the percentage of the sample time for which the stated dB(A) level is exceeded. In defining the use of the index, both the value of n and the length of the sample period must be stated.

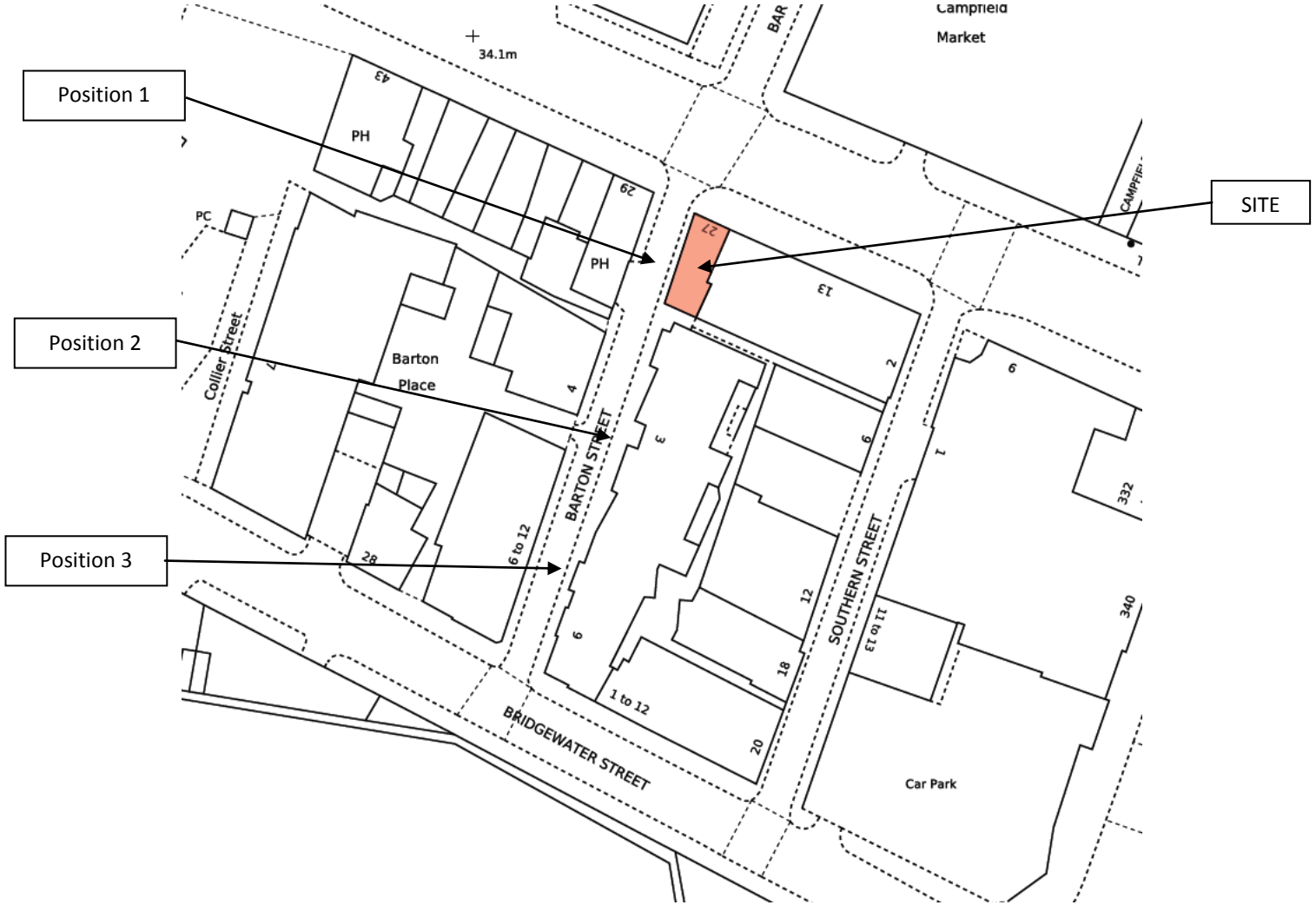
L_{10} L_{10}, being the dB(A) level exceeded for 10% of the time, has been shown to be a good indicator for traffic noise intrusion, and is used in assessing the effect of traffic noise on residential or commercial premises.

L_{90} L_{90} is the dB(A) level exceeded for 90% of the time, and is used as a measure of background noise level, as it excludes the effects of occasional transient levels, such as individual passing cars or aircraft.

In addition to the statistical noise indices defined above, the following noise units are also used to define variable amplitude noise sources:

L_{eq} The L_{eq} is defined as the notional steady sound pressure level which, over a stated period of time, would contain the same amount of acoustical energy as the actual fluctuating sound measured over the same period - i.e.: it is a measure of the "average" noise level

L_{max} The L_{max} is the maximum sound pressure level recorded over the measurement period.



Notes	**Description** Site plan illustrating noise sensitive locations	
	Project Proposed extension and Alteration Works, The Fish Hut	
	Date 18/12/2012	**Drawing No.** 1869/SP1

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PROPOSED EXTENSION AND ALTERATION WORKS, THE FISH HUT

PLANT NOISE SCHEDUE ADT 1869/PNS

PRELIMINARY ISSUE

18/12/2012

Ref.	Plant Description	Location	Duty m^3/s : Pa	Data L_w / L_p	Octave Band Centre Frequency - Hz							
					63	125	250	500	1k	2k	4k	8k
EF1	Kitchen extract fan	Servery	0.66 : 208	L_w	77	78	84	77	76	73	69	63

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PROPOSED EXTENSION AND ALTERATION WORKS, THE FISH HUT

SILENCER SCHEDUE ADT 1869/SSA

PRELIMINARY ISSUE

ACOUSTIC DESIGN TECHNOLOGY
Noise and Vibration Consultants

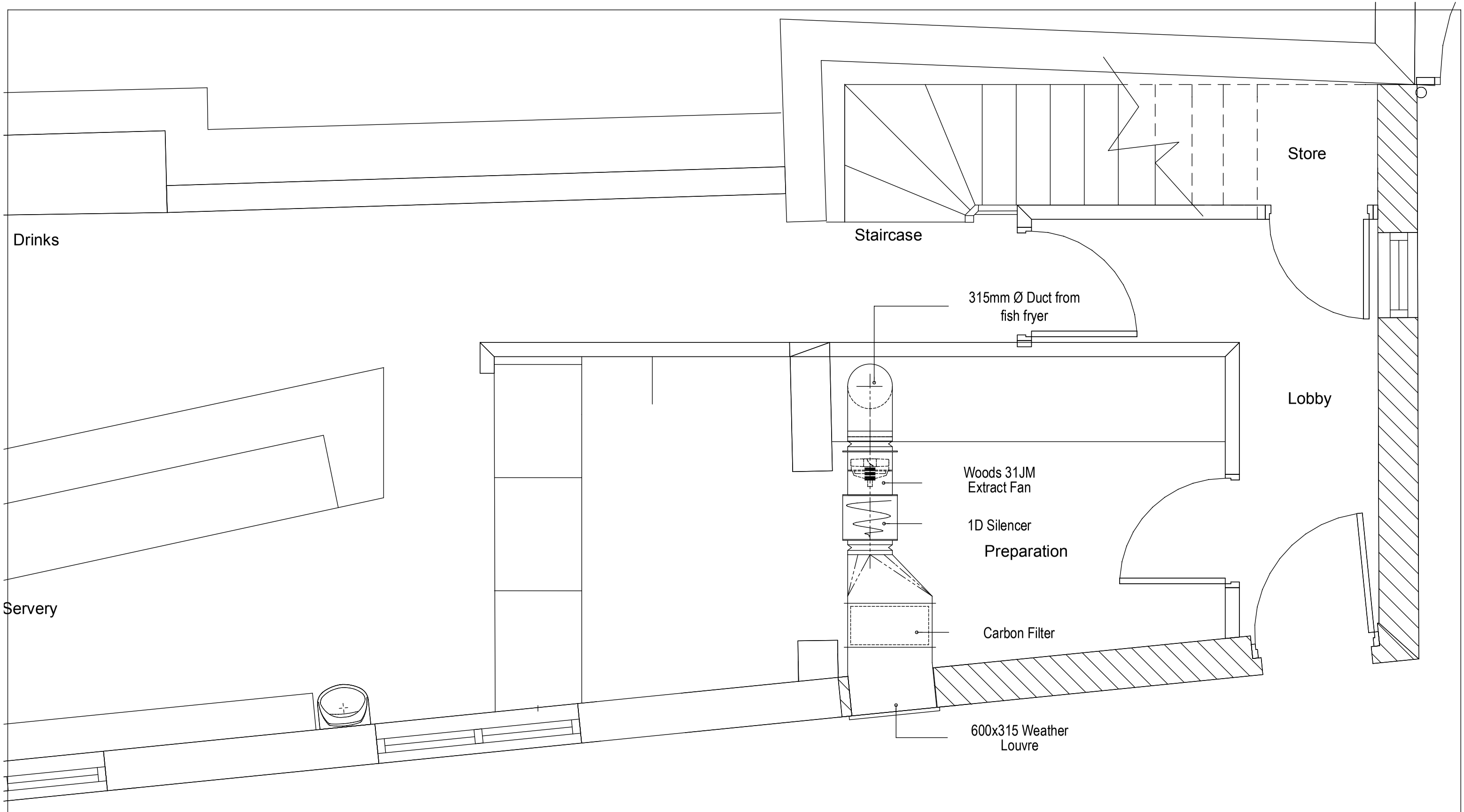
18/12/2012

Ref	Description	W	H	L	No. Off	Vol m^3/s	Max. Pa	Minimum insertion Loss (dB) at Centre Frequency - Hz							
								63	125	250	500	1k	2k	4k	8k
ATT/01	EF1 extract fan exhaust	315 dia.		315	1	0.66	50	2	4	7	7	10	12	15	10

PROPOSED EXTENSION AND ALTERATION WORKS, THE FISH HUT
ENVIRONMENTAL NOISE IMPACT ASSESSMENT
ACOUSTIC CONSULTANCY REPORT ADT 1869/ENIA

APPENDIX B

EXTRACT DUCT LAYOUT & FAN DATA



NOTES

This drawing is the sole property of Combined Catering Services Ltd and must not be reproduced in any form without the express written authorisation from combined catering services ltd

Please note with gas catering appliances, in accordance with bs-6173, it is now mandatory to install an interlock device between the incoming gas supply and the kitchen ventilation system

It is recommended that the water supply to the dishwash machine is treated to prevent possible damaged caused by hard water.
minimum pressure required = 25psi

All Equipotential Earth Bonding To Be Provided By Others

DRAWING STATUS :

ISSUED FOR APPROVAL

Revisions

Rev	Date	Description
A	14-12-12	DUCT RELOCATED
--	--	--
--	--	--
--	--	--

PROJECT:

THE FISH HUT

TITLE :

PROPOSED EXTRACT DUCT

Scale :	Date :	Drawing No
1-25 @ A3	10-12-12	CCS-FH-10

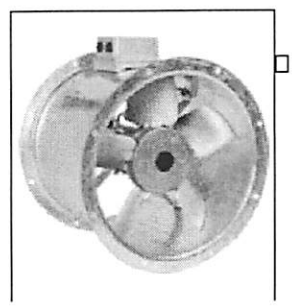
73 BREWSTER STREET
BOOTLE LIVERPOOL L20 9NG
Telephone 0151 922 4454 FAX 0151 922 5005
Email: office@combinedcatering.com

JM Aerofoil: 31JM/16/2/5

JM Aerofoil

Product Number: EE349282

Description



Diameters	315 mm to 1600 mm
Volumes	Up to 65 m3/s (234,000 m3/h)
Pressures	Up to 2000 Pa (Static)
Impeller	Adjustable Pitch
Case Style	Ducted, Long or Short
Case Coating	Hot dip galvanized
Installation	Horizontal or Vertical
Location	Internal or External
IP rating	IP55
Temperature	-40°C to +50°C
Emergency	200°C/2 to 400°C/2 (Optional)
Standards	EN12101-3-2002 & ATEX Available

Acoustics

Acoustics

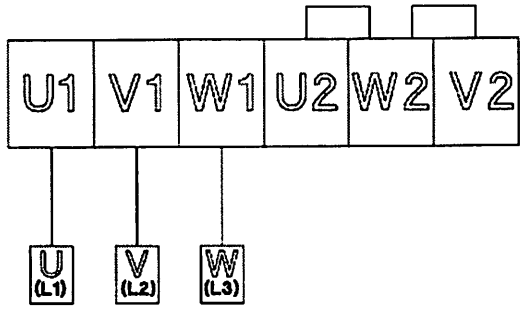
0.66m3/s @ 207.85Pa	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz	Lw	LpA
Inlet Spectrum	75dB	77dB	80dB	76dB	76dB	72dB	68dB	63dB	85dB	60dB
Outlet Spectrum	77dB	78dB	84dB	77dB	76dB	73dB	69dB	63dB	87dB	61dB
Sound Breakout	67dB	64dB	64dB	57dB	52dB	44dB	43dB	39dB	70dB	39dB

Brochure

Technical JMHT_F300_Technical_EN.pdf

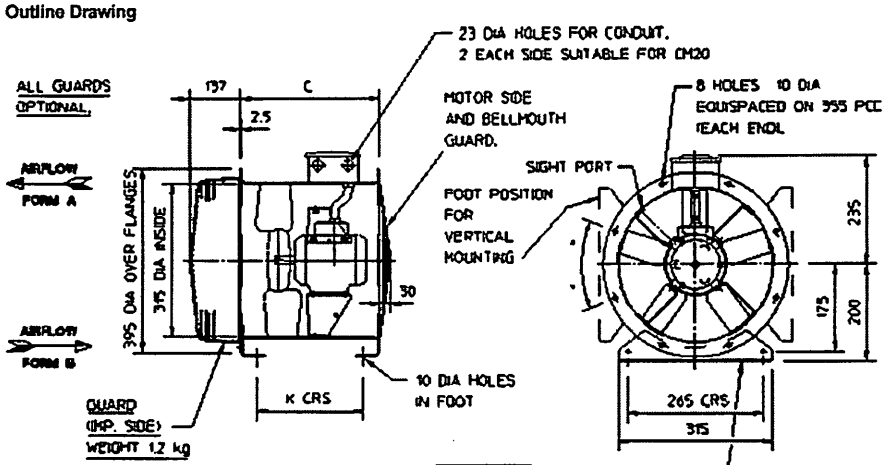
Diagram

Connection Diagram



Drawing

Outline Drawing

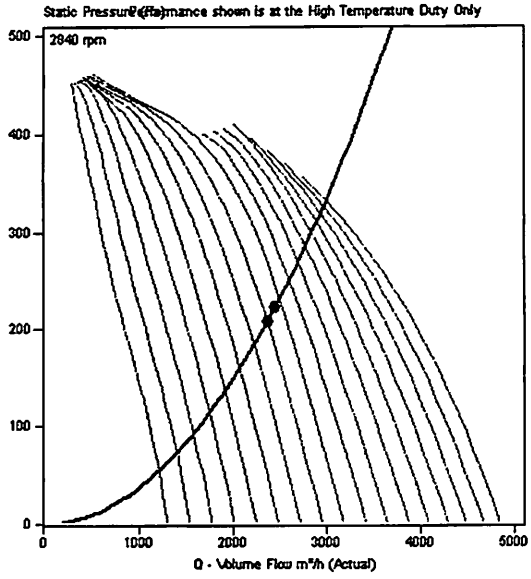


SIZE	FRAME	C	K	WEIGHT kg FAN
315	71	375	290	24
	80	375	290	31

Dimensions

Performance

Volume Pressure Chart



Technical

Blades	5
Fan Casing	Long cased
Electrical Supply	380-420v/50hz/3ph
Form of Running	B
High Temperature Category	300/2
Hub	160mm
Impeller Blade Orientation	JML
Full Load Current	1.900A
Starting Current	9.180A
Motor Frame	D80
Motor Mounting	Pad
Blade Angle	8°
Blade Angle (Max)	40°
Blade Angle (Min)	8°
Stages	1
Maximum Ambient Temperature	50°C
Minimum Ambient Temperature	-20°C
Maximum Voltage	420v
Minimum Voltage	380v
Frequency	50hz
Fan Speed	2840 rpm
Motor Rating	0.900kW
Start Type	DOL
Duty	0.66m3/s @ 207.85Pa
Fan Diameter / Size	315mm
Poles	2
Phase	Three phase
Fire Safety	Yes
E3	Yes