

TO: Richard Frain, 60 Oldham Street Ltd

FROM: Adam Barr, JPM Acoustics Ltd

SUBJECT: 60 Oldham Street – Discharge of Planning Condition 14

DATE: 01 March 2022

Introduction

This note provides an assessment of noise emissions from fixed plant and equipment associated with the 60 Oldham Street, and appropriate mitigation measures, as required by Planning Condition 14.

The wording of Planning Condition 14 is as follows:

“14) Prior to occupation of the building a scheme for the acoustic insulation of any plant and externally mounted ancillary equipment to ensure that it achieves a background noise level of 5dB below the existing background (La90) in each octave band at the nearest noise sensitive location shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the equipment. The approved scheme shall be implemented prior to occupancy and shall remain operational thereafter.”

JPM requested clarity from the local authority regarding the requirements of the condition by e-mail on 14/02/2022 and it was confirmed by the dealing Environmental Health Officer (EHO) that the criteria to be achieved by the scheme of acoustic insulation are as follows:

“Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location”

It has been confirmed by the occupant of the bar and restaurant within the ground floor unit of 60 Oldham Street that the kitchen extract fan is the most significant noise generating fixed plant item.

Noise emission data for the kitchen extract and proposed attenuators has been provided by the building services engineer, and an assessment of noise emissions is provided in this note. It is understood that the bar and restaurant operates until 11 pm and that the kitchen extract fan will be turned off at 22:00. As such, the kitchen extract will not operate at night.

Background Noise Level Measurement

Background sound levels were measured in centre of the courtyard where the kitchen extract terminates, with the kitchen extract turned off. The nearest residential receptors are those that overlook the courtyard and the measurement was considered representative of the background sound levels at the nearest receptors.

The measurement was undertaken between 21:51 to 21:56 on 9th February 2022 to be representative of the quietest evening period when the kitchen extract is proposed to operate.

The background sound level measurement was undertaken with the equipment detailed in **Table 1**.

Table 1: Measurement Equipment

Equipment	Make and Model	Serial Number	Calibration Due Date
Sound Level Meter	Svantek 971A	113221	14/02/2024
Microphone	Aco Pacific 7152	80629	
Pre-amplifier	Svantek SV18A	113722	
Calibrator	B&K DB0311	449050	19/08/2022

The representative background sound level measured in the courtyard was 48 dB L_{A90} .

Noise Level Predictions

The datasheets for the kitchen extract fan and the proposed attenuators to control noise emissions are provided in **Appendix A**.

Table 2 details the noise emission data for the kitchen extract, the performance of the proposed attenuators and the resulting sound pressure level within ducting from the fan, after the attenuators.

Table 2: Noise Emission Data, Attenuator Performances and Resulting Sound Pressure Level

Description	Octave Band Centre Frequency, Hz								dB(A)
	63	125	250	500	1000	2000	4000	8000	
Sound Power level of Extract Fan, L_w dB [A]	53	65	72	78	79	78	73	65	84
Performance of First Attenuator, Insertion Loss dB [B]	14	28	39	35	30	32	32	40	
Performance of Second Attenuator, Insertion Loss dB [C]	2	5	8	13	12	9	7	8	
Sound Pressure Level Accounting for Attenuators [A]-[B]-[C]=[D]	37	32	25	30	37	37	34	17	42

It can be seen from **Table 2** that with the proposed attenuators, the noise level of the fan is reduced to 42 dB(A). The measured background sound level at the nearest receptors was 48 dB(A). Therefore, accounting for the performance of the proposed attenuators, the noise level from the fan is 6 dB below the background sound level.

The MCC criterion of an L_{Aeq} noise level achieving background minus 5 dB is therefore predicted to be achieved with the proposed attenuators. Therefore, the scheme of acoustic mitigation is considered to be appropriate and Planning Condition 14 should be discharged without delay.

Appendix A – Datasheets

CYLINDRICAL CASED AXIAL FLOW FANS COMPACT TCBB / TCBT Series - ALUMINIUM IMPELLERS



REFERENCE

T	C	B	T	/	4	-	4	0	0	/	H	-	B	4	0	0	V	5	0	Hz		
1	2	3	4		5		6				7		8	9				10			11	

- 1 - **T**: Cylindrical cased axial flow fan.
2 - **C**: Series designation.
3 - Impeller type:
B: Ø 250 - Ø 400 Fixed blade impeller manufactured from aluminium sheet.
Ø 450 - Ø 800 Adjustable blade aluminium impeller.
4 - Supply type:
B: Single phase.
T: Three phase.
5 - Number of poles:
2: (approx. 2800 rpm - 50 Hz)
4: (approx. 1400 rpm - 50 Hz)
6: (approx. 900 rpm - 50 Hz)
6 - Nominal diameter of fan in mm.
7 - Pitch angle.
8 - Direction of air:
A: Motor over Impeller.
B: Impeller over Motor.
9 - Voltage:
230 V (single phase).
230/400 V (three phase).
400 V (three phase).
10 - Frequency of service: 50 Hz
60 Hz
11 - Special versions:
2 V: Two speed motors.
4/8 poles of motor for models:
Ø 450 up to Ø 800 mm.
6/12 poles of motor for models from Ø 710 up to Ø 800 mm.
C: Condensation drain holes on motor.
EX: Explosion proof and flame proof versions.

SUPPLY VOLTAGES AND FREQUENCIES



Mains supply voltage	Motor type	Connection	Speed
SINGLE PHASE 220V-50Hz, 240V-50Hz	230V 50Hz	See wiring diagram	High
THREE PHASE 220V-50Hz 240V-50Hz	230/400V 50Hz		High
			Low*
THREE PHASE 380V-50Hz 415V-50Hz	230/400V 50Hz		High
	400V 50Hz		High
			Low*

* For models allowed by speed controller RMT.

ACOUSTIC CHARACTERISTICS

The sound levels shown in the technical characteristic chart and performance curves, correspond to the value of sound pressure dB(A), measured in free field conditions at a distance equivalent to three times the diameter of the impeller with a minimum of 1.5 meters.

Sound power level spectrum in dB(A) at the corresponding frequency band in Hz and the point of maximum flow.

Model	63	125	250	500	1000	2000	4000	8000	LwA
/2-250/H	31	44	59	65	74	70	64	56	76

Model	63	125	250	500	1000	2000	4000	8000	LwA
/4-250/H	24	37	41	47	52	52	47	41	57
/4-315/H	40	51	45	53	59	59	51	43	63
/4-355/H	24	40	45	55	58	58	49	42	62
/4-400/H	46	53	59	66	69	69	66	58	74
/4-450/H	46	58	65	71	73	71	67	59	77
/4-500/H	50	62	69	75	76	75	70	62	81
/4-560/L	52	64	71	77	78	77	72	64	83
/4-560/H	53	65	72	78	79	78	73	65	84
/4-630/L	56	67	75	80	82	81	76	68	87
/4-630/H	56	67	75	80	82	81	76	68	87
/4-710/L	53	69	79	85	86	84	78	70	91
/4-710/H	60	72	79	85	86	85	80	72	91
/4-800/L	57	73	83	90	91	88	82	74	95
/4-800/K	63	75	82	88	90	88	84	76	94
/4-800/G	64	76	83	89	90	89	84	76	95
/4-800/H	66	77	84	90	92	91	86	78	96

Model	63	125	250	500	1000	2000	4000	8000	LwA
/6-355/H	31	42	49	55	57	55	51	43	61
/6-400/H	33	44	51	57	59	58	53	45	64
/6-450/H	40	51	58	63	64	62	56	48	69
/6-500/H	43	53	61	66	66	64	58	50	71
/6-560/L	46	57	64	69	70	67	61	53	74
/6-560/H	46	56	64	69	69	67	61	53	74
/6-630/L	49	59	66	71	72	70	64	56	77
/6-630/H	51	61	68	73	74	72	66	58	79
/6-710/L	52	62	69	75	75	73	67	59	80
/6-710/H	53	64	71	76	77	75	69	61	82
/6-800/L	51	66	76	79	79	76	69	61	84
/6-800/K	51	66	76	79	79	76	69	61	84
/6-800/G	56	67	74	79	80	78	72	64	85
/6-800/H	58	69	76	81	82	79	73	65	86

Cylindrical cased axial flow fans COMPACT TCBB / TCBT

www.ducting-express.co.uk

To Attention Project Title Quote Ref. Date Prepared by Page				HGE Steven Nimbley 0 Q11002 28/02/2022 Bradley Taylor 1 of 1				Technical Data This quotation is valid for acceptance for 30 days and is subject to Acoustica Products Limited terms and conditions of sale. The products described below have parameters of recommended use and may be required to be positioned in certain configurations in relation to other equipment. Detailed specifications and Installation & Maintenance instructions are available on request, if in doubt we will be pleased to furnish the relevant data.				 2 Condor Way, Whitehall Industrial Estate Essex, CO2 8JN Tel 01206 848245 Fax 01206 700234 Email Btaylor@acoustica.co			
Reference	Model	Air Flow Vol. m³/s	Pressure Drop (Pa)	Weight	Melinex	Static Insertion Loss (dB) at Octave Band Centre Frequency									
						63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
ATT01	R02 2-2000	3.000	32	431 kg	Yes	14	28	39	35	30	32	32	40		
ATT02	CP03-CA-2D-560	3.000	Negligible	39 kg	Yes	2	5	8	13	12	9	7	8		

Notes

In order to achieve optimum performance, the ideal location of attenuators is inside the plantroom, adjacent to the penetration of the plant room structure. This ensures that noise breaking into the duct between the fan and the penetration is attenuated and also those noise levels in the ductwork outside the plantroom are at a minimum so that noise breakout is controlled. Where fans are not situated within a plantroom, attenuators should be fitted as close to the fan as possible, whilst allowing a suitable plenum space, in order to minimise noise breakout from the ductwork.

*Full Technical Analysis
Available - Please Enquire*