

CAIA PARK HEALTH CENTRE

Report on Attenuation to Air Handling Unit

PREPARED BY:



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SECTION 1

INTRODUCTION

A new Health Centre is being developed at Caia Park in Wrexham, this development includes an external air handling unit, which as part of the Planning Conditions, is to be controlled to a noise level to prevent noise pollution and disturbance to nearby residential properties.

In order to comply with the planning condition a noise impact assessment has been undertaken by Peninsular Acoustic Ltd to assess the requirement needed to control the noise level from the air handling unit.

This report describes the measures that are being taken to ensure the noise level is not exceeded.

SECTION 2

PLANNING CONDITION

Planning Condition 9 for the Caia Park Primary Resource Centre states the following:

The rating level of any noise generated by air-handling plant associated with the development shall not exceed the pre-existing background noise level by more than 5db(A) at any time. The noise sensitive premises and measurements and assessments shall be made in accordance with BS4142:1997 'Method of Rating Industrial Noise Affecting Mixed Residential and Industrial areas'

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SECTION 3

SUMMARY OF ACOUSTIC REPORT

The Acoustic Report provided by Peninsular Acoustics issued on the 20th September 2014 describes the maximum noise levels that are acceptable for two air handling units is 50dbA at 10 metres, which is one air handling unit no more than 47dbA at 10 metres.

SECTION 4

AIR HANDLING UNIT INSTALLATION

As the project design has developed the preliminary proposed installation has changed from two air handling units to a single unit located on the roof.

With the single air handling unit the unit noise control has been selected to ensure the level is no more than 47dbA at 10m, this has included the installation of sound attenuators on the fresh air intake and exhaust connections of the unit.

Attached are details of the air handling unit break out noise level, this is based on the standard construction of the unit with 25mm insulated panels. The unit is located on the roof of the ground floor as detailed on the first floor plan included as an appendix. Also the selection of the attenuators is included which ensures the noise level does not exceed the required level.

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SECTION 5

SUMMARY

The design of the air handling unit and its associated attenuators have been carried out to ensure the maximum noise level described in the acoustic report is not exceeded, which is set at 47dbA at 10m.

The air handling unit includes attenuators selected to achieve this level and the breakout from the unit casing is 31dbA at 10m, well within the maximum allowable noise level.

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SECTION 6

APPENDICIES

APPENDIX 6.1 AIR HANDLING UNIT NOISE DETAILS

14/11/2014 11:58

FREE FIELD NOISE BREAKOUT CALCULATOR															Reset
Job Reference :-															
Only enter data in blue boxes!!	63	125	250	500	1K	2K	4K	8K							
Fan Sound Power Level(dB re10-12 watts)	81	76	86	82	82	77	74	70							
Number of Fans.	1	0	0	0	0	0	0	0							
AHU Panel Type. 1. 25mm Standard 2. 50mm Standard Al Frame 3. 25mm Standard extra 16swg skin 4. 25mm Std + Barafire 5. 50mm Std Al Frame + Barafire 6. 25mm Std extra 16swg skin + barafire	1	17	14	24	33	37	40	36	41						
Distance To Listener. (Metres).	10	31	31	31	31	31	31	31	31						
Total Reductions	48	45	55	64	68	71	67	72							
Addition For Directivity. (Safety Factor).	6	8	8	9	9	9	9	9	9						
Sound Pressure Calc @ 10 Metres	39	39	39	27	23	15	16	7							
A' Weighting Correction.	-26	-16	-9	-3	0	1	1	-1							
	13	23	30	24	23	16	17	6							
	23.41		30.97		23.79		17.33								
	31.68				24.68										
dBA LEVEL @ 10 METRES WITHIN A FREE FIELD ENVIRONMENT	32														

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APPENDIX 6.1 Cont'd

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FREE FIELD NOISE BREAKOUT CALCULATOR													Reset
Job Reference :-													
Only enter data in blue boxes!!													
01/12/2011													
63 125 250 500 1K 2K 4K 8K													
Fan Sound Power Level(dB re10-12 watts)													
81 76 86 82 82 77 74 70													
Number of Fans.													
1 0 0 0 0 0 0 0 0 0													
AHU Panel Type.													
1 17 14 24 33 37 40 36 41													
1. 25mm Standard													
2. 50mm Standard AI Frame													
3. 25mm Standard extra 16swg skin													
4. 25mm Std + Barafire.													
5. 50mm Std AI Frame + Barafire													
6. 25mm Std extra 16swg skin + barafire													
Distance To Listener. (Metres).													
3 21 21 21 21 21 21 21 21 21													
Total Reductions													
38 35 45 54 58 61 57 62													
Addition For Directivity. (Safety Factor).													
6 8 8 8 9 9 9 9 9 9													
Sound Pressure Calc @ 3 Metres													
49 49 49 49 37 33 25 26 17													
A* Weighting Correction.													
-26 -16 -9 -3 0 1 1 1 -1													
23 33 40 34 33 26 27 16													
33.41 40.97 33.79 27.33													
41.68 34.68													
dBA LEVEL @ 3 METRES													
42													
WITHIN A FREE FIELD ENVIRONMENT													

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APPENDIX 6.2 ATTENUATOR SELECTION

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CLIENT: PSD Limited
CONTACT: Colin Finley
PROJECT: Caia Park Primary Care
OUR REF: Q00804R1
DATE: 14.11.14

ITEM	DESCRIPTION	DIMENSIONS			L	TYPE	VOL m³/s	Pd Pa	QTY	PRICE EACH	PRICE TOTAL	APPROX UNIT WEIGHT	NOISE LEVEL	END FLANGE / CONNECTIONS
1	AHU FAI	1350	x	1000	x	900	A21 ASL	2.30	9	1	271.00	152 kg	47dBA at 10m	DM30
2	AHU Supply	1350	x	1000	x	1250	A21 GCW ASL	2.30	10	1	399.00	200 kg	NR35	DM30
3	AHU Return	1350	x	1000	x	900	A21 ASL	2.40	10	1	271.00	152 kg	NR35	DM30
4	AHU Exhaust	1350	x	1000	x	900	A21 ASL	2.40	10	1	271.00	152 kg	47dBA at 10m	DM30
Transfer Silencers														
5	TG 1-2	350	idla	450	odia	700	CAXT1 700	neg.	1	37.00	37.00	13 kg		Spigot
6	TG 2-3	350	idla	450	odia	700	CAXT1 700	neg.	1	37.00	37.00	13 kg		Spigot
7	TG 3-4	350	idla	450	odia	700	CAXT1 700	neg.	1	37.00	37.00	13 kg		Spigot
8	TG 5-6	350	idla	450	odia	700	CAXT1 700	neg.	1	37.00	37.00	13 kg		Spigot
9	TG 7-8	350	idla	450	odia	700	CAXT1 700	neg.	1	37.00	37.00	13 kg		Spigot
10	TG 9-10	350	idla	450	odia	700	CAXT1 700	neg.	1	37.00	37.00	13 kg		Spigot
TOTAL NETT EX-WORKS											£ 1,434.00			
CARRIAGE											£ 300.00			
TOTAL NETT DELIVERED											£ 1,734.00			

NOTES

- 1 Above quotation based upon the information provided.
- 2 All items shall be manufactured from pre-galvanised sheet steel to DW144 class B specification.
- 3 The pressure loss data shall comply with BS4718:1971 (ISO7225) for duct to duct air flow conditions.
- 4 Manufacture period is 2/3 weeks from receipt of order, subject to confirmation at time of order.
- 5 Our Terms and Conditions of sale apply.
- 6 All Silencers to be fitted to AHU

Galloway Group Ltd, Eighlands Well, Eighlands Road, Dewsbury, West Yorkshire, WF13 2PF
Tel: 01924 484848 Fax: 01924 484869

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APPENDIX 6.3 FIRST FLOOR VENTILATION LAYOUT

