Noise & Vibration Consultants
4 Mulberry Place, Pinnell Road, London, SE9 6AR
Tel: 020 8859 0303
Email: **info@acousticsplus.co.uk** Web: www.acousticsplus.co.uk

ACOUSTICS PLUS

Proposed Installation of Mechanical Plant

234 Bath Road, Heathrow, London, UB5 3AP.

Environmental Noise Assessment

Author: Andy Dodd B.Sc. (Hons) MIOA
Senior Consultant

Doc Ref: 104783.ad.Issue1

Company Registration Number: 4304440
VAT Registration Number: 788 2610 94

Proposed Installation of Mechanical Plant	
Project Address:	234 Bath Road Heathrow London UB3 5AP
Project Reference:	104783

Issue/Revision Record			
Issue:	**Date:**	**Remarks:**	**Author:**
1	14/10/2025	First Issue	Andy Dodd

	Print:	Title:	Date:
Author:	**Andy Dodd**	**Senior Consultant**	**14/10/2025**
Reviewer:	**Phil Huffer**	**Principal Consultant**	**14/10/2025**

1. INTRODUCTION

1.1 Acoustics Plus Ltd (APL) is an independent firm of multi-disciplinary acoustic engineers. APL is engaged by both private and public sector clients. APL is a registered member of The Association of Noise Consultants (ANC) and the author is a corporate member of The Institute of Acoustics (IOA).

1.2 APL has been instructed by the applicant's planning consultant, Total Planning, to consider and advise upon the noise implications of a proposed installation of mechanical plant.

1.3 The building services plant will be located within two dedicated roof top plant areas located on the eastern and western sides of the new hotel extension.

1.4 It is understood the Local Planning Authority (LPA) require further information on noise levels from the proposed installation in order to fully assess the noise impact upon the surrounding neighbourhood. This report provides the response to the LPA, on behalf of the Applicant.

1.5 This report has been prepared by Acoustics Plus Limited (APL) with all reasonable skill, care, and diligence in accordance with generally accepted acoustic consultancy principles and taking account the services and terms agreed between APL and our client.

1.6 Any information provided by third-parties and referred to herein may not have been checked or verified by APL unless expressly stated otherwise. Certain statements made in the report are predictions based on reasonable assumptions and good industry practice.

1.7 Such statements involve risk and uncertainty which could cause measured and predicted results to differ materially. APL does therefore not guarantee or warrant any prediction contained in this report.

2. BASELINE SITUATION

2.1 The Application Site (the "site") is situated at 234 Bath Road, Heathrow, London, UB3 5AP. The site is a four storey hotel extension. The site and its surroundings are shown in Figures 1 to 8 appended to this report.

2.2 It is understood that planning consent has been granted for the proposed development. The scheme comprises the construction of a four-storey hotel extension providing additional guest accommodation, linked to the existing building via a covered bridge structure, together with associated ancillary works. The development will incorporate mechanical plant comprising two air handling units (AHUs) and eight condenser units, to be distributed across two designated rooftop plant zones located on the western and eastern elevations of the proposed building. The site location plan is shown in Diagram 1 below.

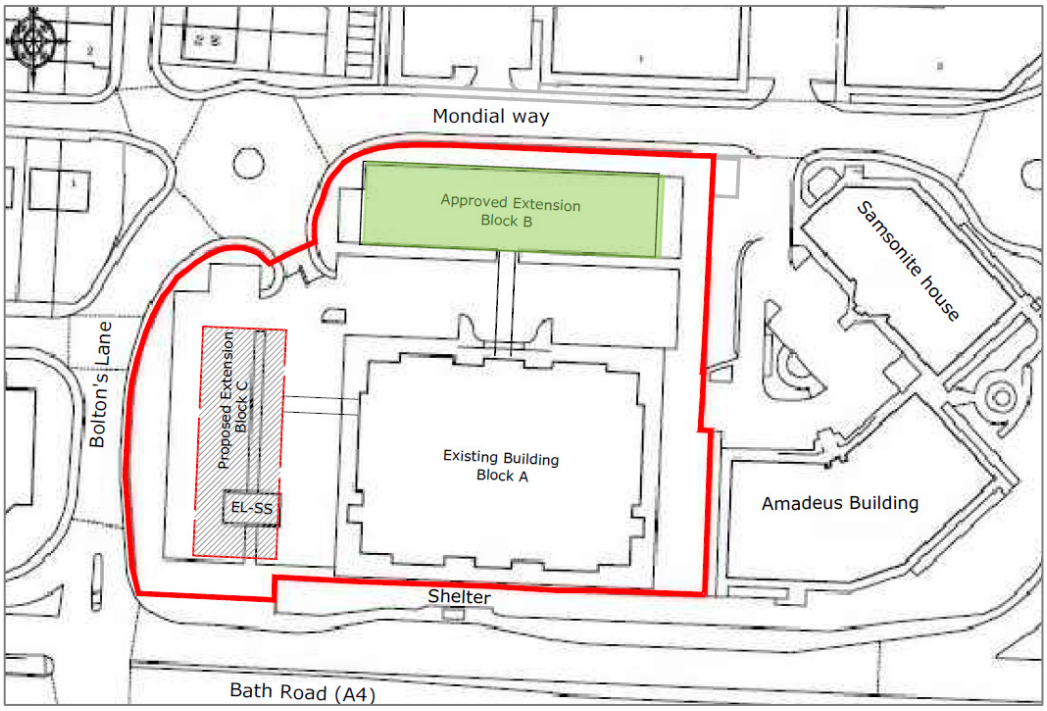


Diagram 1

2.3 The location of the new hotel extension building is highlighted in green within Diagram 1 above.

2.4 The nearest noise sensitive façade with line of sight to the location of the proposed AHU's intake and exhaust grilles will be the rear façade windows of the property located at no.22 Boltons Lane. No.22 Boltons Lane will not have line of sight of the condensers due to the positioning of the condensers within the two roof top light wells.

2.5 There are residential dwellings located west of the site but these properties are located at a greater distance, so there will be lower noise impact at these properties.

3. NOISE OUTLINE

3.1 In order to produce an environmental noise assessment, consideration must be given to the prevailing background noise in the locality of the installation.

3.2 Measurements of background noise were obtained over a 24 hour period at a location deemed representative of background noise levels experienced at the northern boundary of the site. Measurements were obtained at the location seen in Photo 1 below:

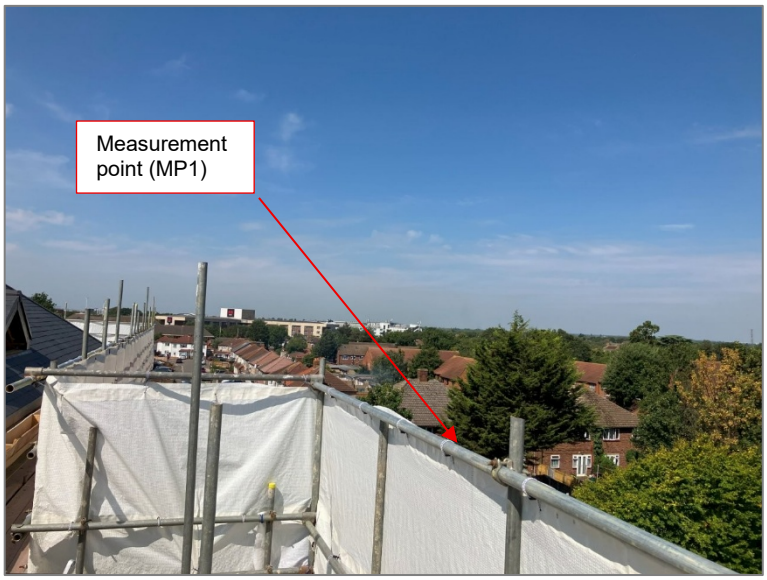


Photo 1

The measurements obtained at the northern boundary of site at 4th floor level were approximately 50m from no.22 Boltons Lane.

The daytime noise data obtained was coloured by the construction works taking place onsite between 08:00 to 17:30hrs

3.3 The particulars of the measurement exercise are recorded below. The weather conditions were considered appropriate to monitor environmental noise.

Date: 11th & 12th August 2025.
Start Time: 11:29 hrs.
Location: Northern boundary of site (MP1 - see Photo1).

3.4 Minimum background and average noise levels are shown in Table 1 below with the full 24 hour time history shown in Diagram 2 (L_{Aeq} and L_{A90}).

Time period	Lowest $L_{A90,15min}$	Average $L_{Aeq,T}$
07:00-23:00hrs	43dB	56dB
23:00-07:00hrs	40dB	52dB

Table 1

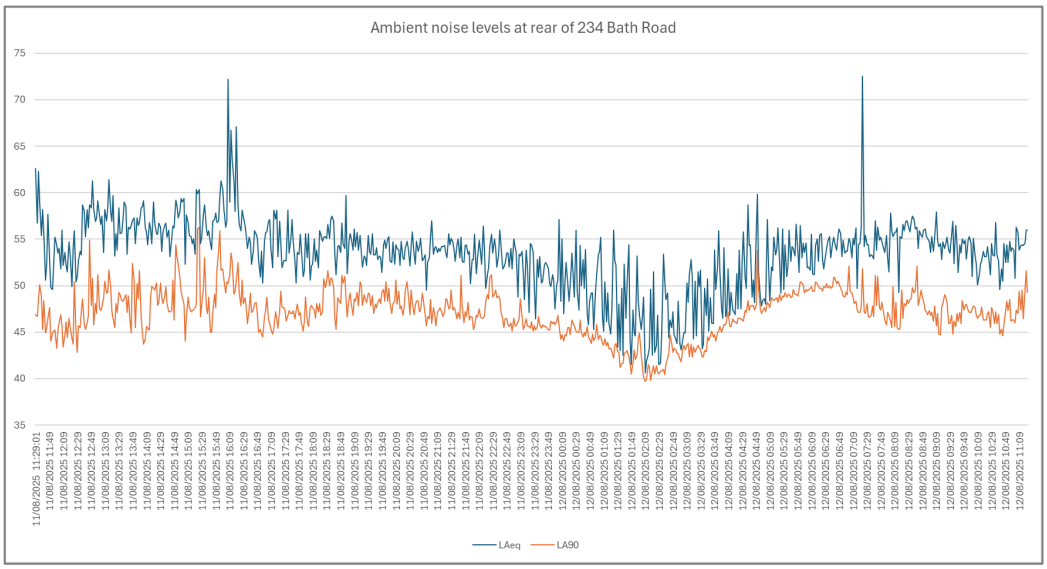


Diagram 2

4. DESIGN CRITERIA

4.1 Information regarding the noise levels not to be exceeded by the proposed installation was provided by London Borough of Hillingdon (Planning Permission reference 41331/APP/2016/1035).

Condition 6
"The rating level of the noise emitted from the site shall be at least 5dB below the existing background noise level. The noise levels shall be determined at the boundary of the nearest residential property. The measurements and assessment shall be made in accordance to the latest British Standard 4142, 'Method for rating industrial noise affecting mixed residential and industrial areas."

4.2 This assessment shall reference BS4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' to determine the noise impact.

4.3 The procedure contained in BS4142 is to quantify the "specific sound level", which is the measured or predicted level of sound from the source in question over a one hour period for the daytime and a 15 minute period for the night-time. Daytime is defined in the standard as 07:00 to 23:00 hours, and night-time as 23:00 to 07:00 hours.

4.4 The specific sound level is converted to a rating level by adding penalties to account for either tonality or impulsivity. The standard sets out objective methods for determining the presence of tones or impulsive elements, but notes that it is acceptable to subjectively determine these effects.

4.5 The penalty for tonal elements is between 0dB and 6dB, and the standard notes:

"Subjectively, this can be converted to a penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible."

4.6 The penalty for impulsive elements is between 0dB and 9dB, and the standard notes:

"Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible."

4.7 The background sound level should be established in terms of the LA90 noise index. The standard states that the background sound level should be measured over a period of sufficient length to obtain a representative value. This should not normally be less than 15 minute intervals. The standard states that:

"A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value."

4.8 The assessment outcome results from a comparison of the rating level with the background sound level. The standard states:

a) Typically, the greater this difference, the greater the magnitude of the impact.
b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

"Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."

4.9 The standard goes on to note that:

"*Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night."*

4.10 In addition to the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, the 2014 edition places emphasis upon an appreciation of the context, as follows:

"An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context."

4.11 The background noise levels were assessed using statistical analysis of the measured data, as directed in BS4142. The histogram for the more noise sensitive night time period can be seen in Diagram 3.

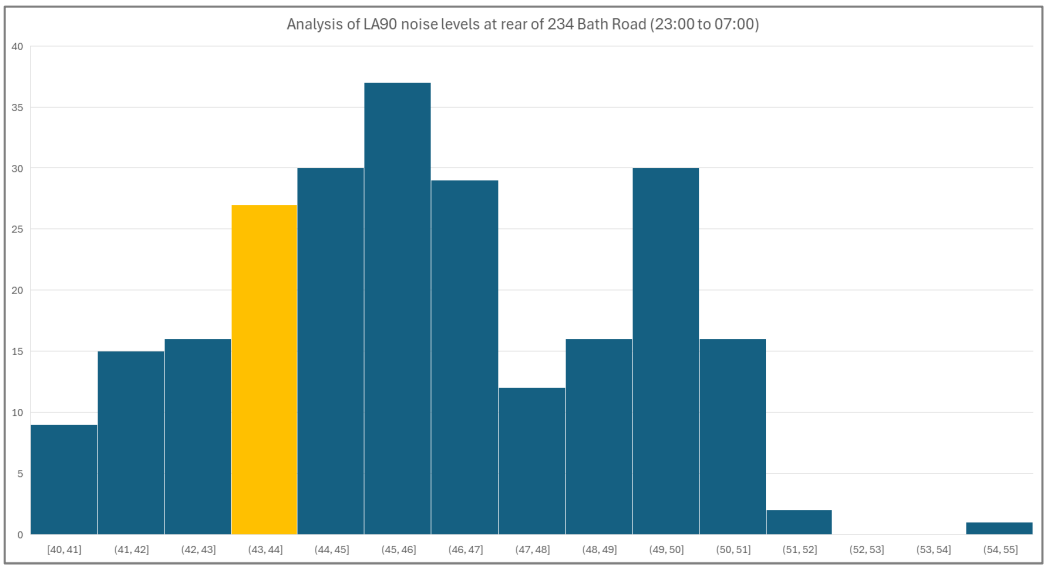


Diagram 3

4.12 The background noise level varied during the measurement period.. Given all plant could operate on demand during the day or night period, it is considered that a background sound level of 43dB L_{A90} obtained during the more noise sensitive night time period is deemed appropriate for the assessment.

4.13 The plant noise emission criteria that should not be exceeded is therefore as follows and represents 5dBA below the background noise level.

Noise emission limit for mechanical plant
L_{Aeq} 38dB

Table 2

4.14 The mechanical plant that is proposed to be installed is detailed below (data sheets provided in Appendix A):

- *2no. ASHP units – Aircraft Air Handling ACAH50 at L_{wA} 49dB*
- *8no. condensers – Mitsubishi PURY-M400YNW-A1 at 65dBA @1m (per unit)*

4.15 The location of the roof lightwells are highlighted within Diagram 4 below:

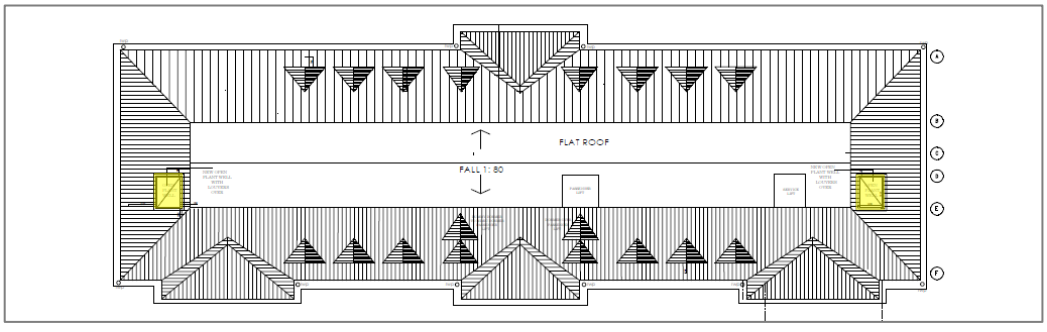


Diagram 4

4.16 One AHU unit and 4no. condensers will be located within each of the east and west plant rooms/lightwells. A section and plan drawing of the east plant room lightwell are provided below with the west plant room lightwell mirroring the same layout.

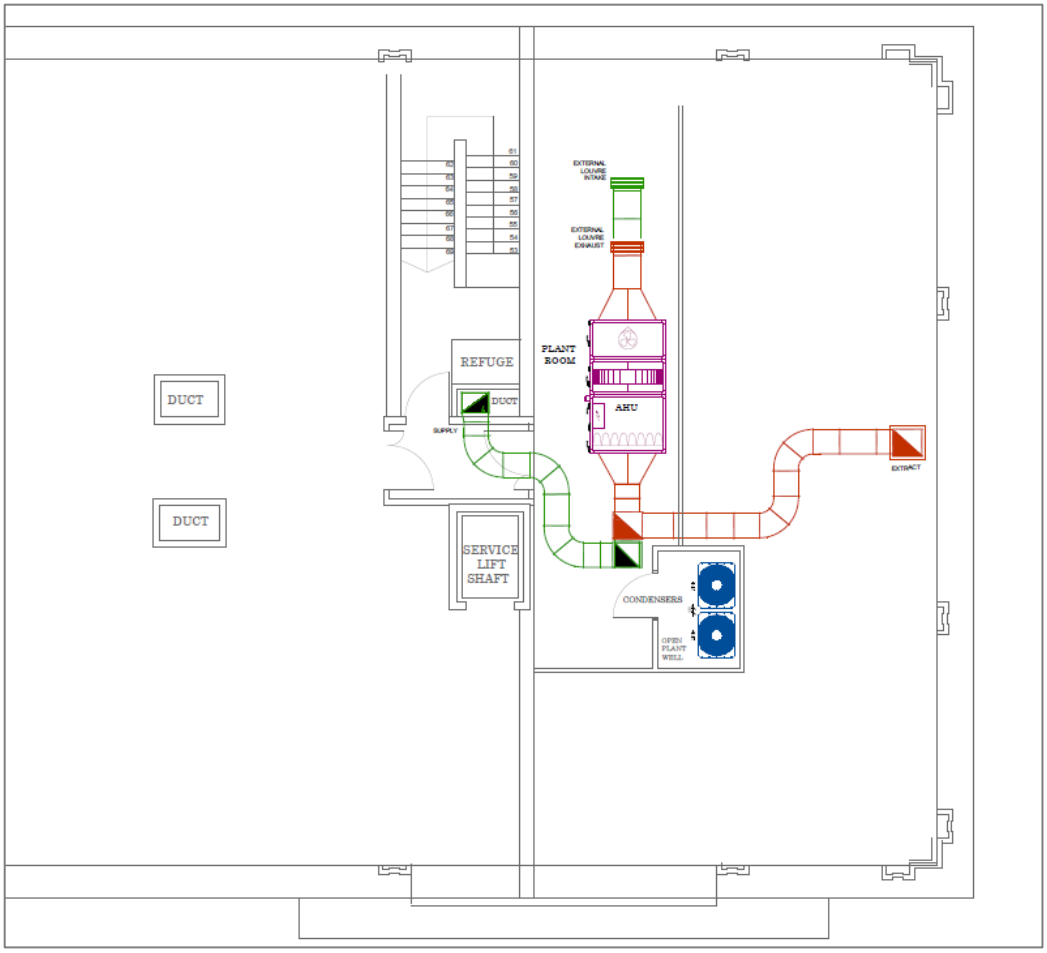


Diagram 5- east plant room/lightwell plan

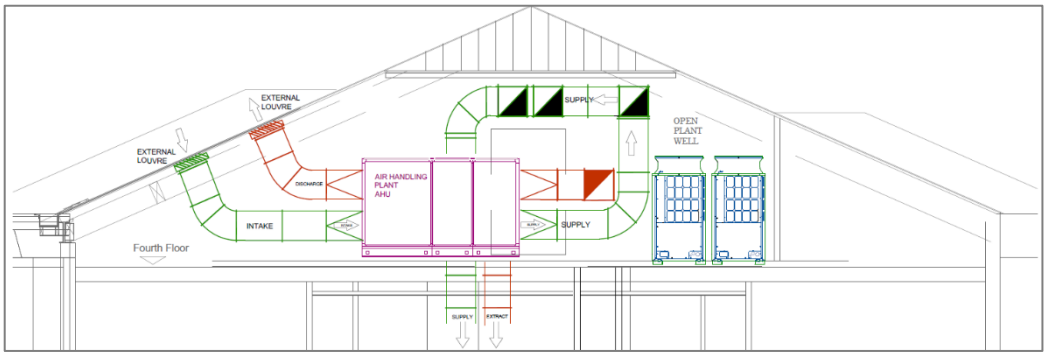


Diagram 6 – east plant room/lightwell section

5. EQUIPMENT

5.1 All background noise measurements were obtained using the following equipment:

- Rion NA-28 Class 1 Serial No. 00370311
- Rion Calibrator Type NC-74 Class 1 Serial No. 00410215

5.2 The relevant equipment carries full and current traceable calibration. The equipment, where necessary, was calibrated prior to and after the measurements were carried out.

6. CALCULATIONS

6.1 A prediction exercise for the AHU's was undertaken. The calculation exercise utilised information provided by equipment manufacturer – Aircraft Air Handling (copy of the data sheet is provided in Appendix A).

6.2 Throughout the calculation exercise, guidance and formula were extracted from the publication *"Noise Control in Building Services"* (published by SRL).

6.3 The AHU attenuation was calculated by considering the stated sound energy produced by each component of the system. The AHU's will feature attenuation on the exhaust air outlet side of each unit to reduce the in-duct sound power levels. A 600mm long attenuator providing the following octave band performance levels will be required:

AHU exhaust side	Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
600mm long attenuator	6	8	12	22	28	27	21	14

Table 3

6.4 Noise leaving the AHU's was propagated to the nearest noise sensitive façade using point source propagation.

6.1 Detailed calculations identifying the air intake and exhaust air noise impacts are contained in Appendix B.

6.2 A prediction exercise was also undertaken for the noise output from the condenser units. The calculation exercise utilised information provided by the equipment manufacturer Mitsubishi.

6.3 The total attenuation was calculated by considering distance attenuation from the location of the plant. Noise leaving each unit was propagated over the relevant distance to the nearest noise sensitive façade using point source propagation.

6.4 No correction has been applied to account for any reflecting planes below or adjacent to the proposed condenser units as the plant room light well floor and walls housing the units will be treated with an absorbent material to control reflected sound. The system should provide Class A rated level absorption – suitable material providers can be found at:

- https://www.cmsdanskin.co.uk/industrial-construction/industrial-acoustic-wall-linings/plant-room-acoustic-wall-lining-panels/
- https://www.quietstone.co.uk/product/acoustic-panels/

6.5 A correction to account for building edge diffraction was assumed. This was extracted from the recently updated (20th March 2025) Microgeneration Certification Scheme MCS020 a) Issue1.0 (For Permitted Development Installations). The standard MCS020a states the following:

A correction shall be made for attenuation due to barriers between the heat pump and an assessment position. The construction of the barrier and the line of sight between the heat pump and assessment position shall both be taken into account to determine the attenuation of the barrier.

The following definitions of a barrier shall be used for the purposes of the assessment

***Barrier (Type 1)** - a solid brick/masonry wall or a solid fence that is at least 18mm thick. There should be no cracks or gaps in the barrier. The barrier should extend horizontally by 1m or more from either edge of the heat pump.*

***Barrier (Type 2)** – a solid fence that is less than 18mm thick. There should be no cracks or gaps in the barrier. The barrier should extend horizontally by 1m or more from either edge of the heat pump.*

***No barrier** – open fences, fences with gaps and cracks, and vegetation do not count as a barrier. Walls or fences in a poor state of repair (e.g. gaps or pieces missing) do not count as a barrier.*

The following definitions of line of sight shall be used for the purposes of the assessment.

- *No view – If a barrier that completely obscures the vision of an assessment position from the top edge of the heat pump.*
- *Partial view – If by moving up to 0.25m in any direction from the top edge of the heat pump the assessment position is visible.*
- *Full view – If the assessment position is visible from the top edge of the heat pump.*

The matrix table below shall be used in conjunction with the above definitions to determine the barrier attenuation.

Barrier Type	Line of Sight		
	No view	Partial View	Full view
Type 1	-10 dB	-5 dB	0 dB
Type 2	-5 dB	-2.5 dB	0 dB
No barrier	0 dB	0 dB	0 dB

Table 4

6.6 A Type 1 barrier will provide suitable screening such that the upper floor windows of the dwelling at 22 Boltons Lane will have no direct line of sight with the condenser units. For the purposes of this report it has been assumed that the additional 10dB attenuation provided by the roof construction (Type 1 barrier) would be of a type in line with this Standard.

6.7 Where relevant, the octave band sound levels of the proposed plant does not indicate any tonal components and as the condenser units are inverter driven there should not be any sharp onset of sound upon startup. All condenser units will be operated on demand basis at any time of the day or night, intermittent noise from their operation may be sufficient enough to attract attention.

6.8 The calculation exercise is shown in Tables 5-8 below.

AHU's noise impact	Octave Band Centre Frequency (Hz)								**L_p dBA**
	63	125	250	500	1k	2k	4k	8k	
Air inlet intake (east)	11	18	23	21	19	12	9	6	**23**
Exhaust air outlet (east)	10	18	19	11	8	6	8	12	**17**
Air inlet intake (west)	4	11	16	15	13	6	3	0	**17**
Exhaust air outlet (west)	3	12	12	5	2	0	2	6	**11**

Table 5

Calculation steps – east light well condensers	**L_p dBA**
1no. Mitsubishi PURY-M400YNW-A1 at 1m	65
4no. Mitsubishi PURY-M400YNW-A1 at 1m	71
Distance attenuation over 77m	-38
Reflecting plane correction	+0
Diffraction (no line of sight / type 1 barrier)	-10
BS4142 feature corrections (intermittency)	+3
Rating noise level at nearest noise sensitive façade	**26dBA**

Table 6

Calculation steps – west light well condensers	**L_p dBA**
1no. Mitsubishi PURY-M400YNW-A1 at 1m	65
4no. Mitsubishi PURY-M400YNW-A1 at 1m	71
Distance attenuation over 40m	-32
Reflecting plane correction	+0
Diffraction (no line of sight / type 1 barrier)	-10
BS4142 feature corrections (intermittency)	+3
Rating noise level at nearest noise sensitive façade	**32dBA**

Table 7

Calculation steps – all plant combined	**L_p dBA**
AHU air inlet east lightwell (Table 5)	23
AHU exhaust air outlet east lightwell (Table 5)	17
AHU air inlet west lightwell (Table 5)	17
AHU exhaust air outlet west lightwell (Table 5)	11
East lightwell condensers (Table 6)	26
West lightwell condensers (Table 7)	32
Rated noise level of all units at nearest noise sensitive façade	**34dBA**

Table 8

6.9 In order to comply with the requirements of the LPA, any noise from the proposed installation of mechanical plant should not exceed a rated level of 38dBA at 1m from the nearest noise sensitive façade.

6.10 The noise impact from the proposed installation meets the rated noise requirements of the LPA.

7. CONCLUSION

7.1 The foregoing assessment indicates that the proposed installation will meet the requirements imposed by the LPA. Additional mitigation measures, other than those included in the design will not be required.

7.2 If an alternative AHU or condenser unit is installed, the acoustic performance should be checked prior to installation to ensure that the installation will still meet the requirements imposed by the LPA.

7.3 It is also recommended that the units are positioned on vibration isolation mounts to minimise structural borne vibration and re-radiated noise into the building.

Figures

234 Bath Road, Heathrow, London, UB3 5AP


Figure 1


Figure 2


Figure 3


Figure 4


Figure 5

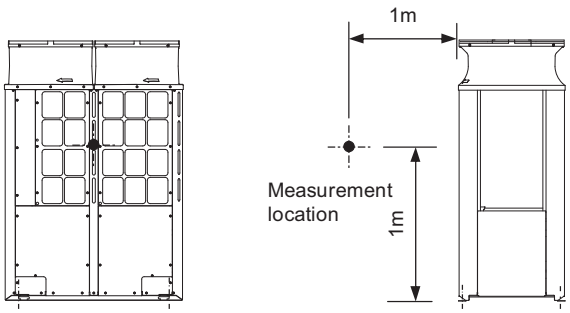

Figure 6


Figure 7

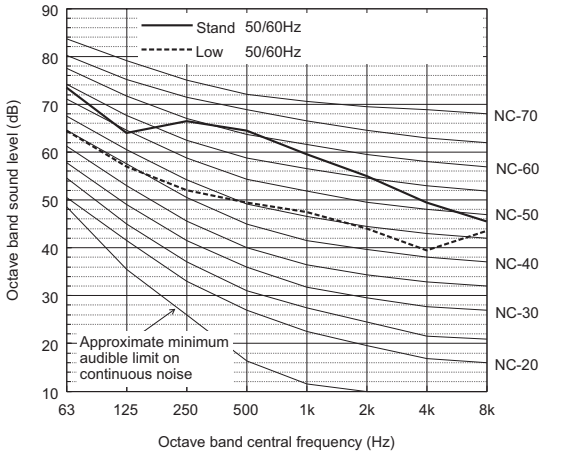

Figure 8

Appendix A

Measurement condition
PURY-M350, 400, 450YNW-A1(-BS)



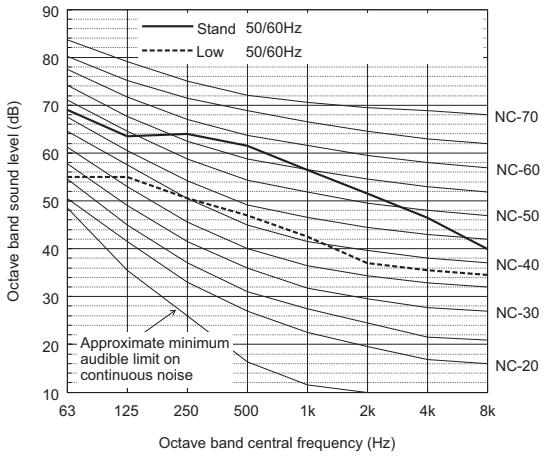
Sound level of PURY-M450YNW-A1(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	73.5	64.0	66.5	64.5	59.5	55.0	49.5	45.5	65.5
Low noise mode	50/60Hz	64.5	57.0	52.0	49.5	47.5	44.0	39.5	43.5	53.0

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

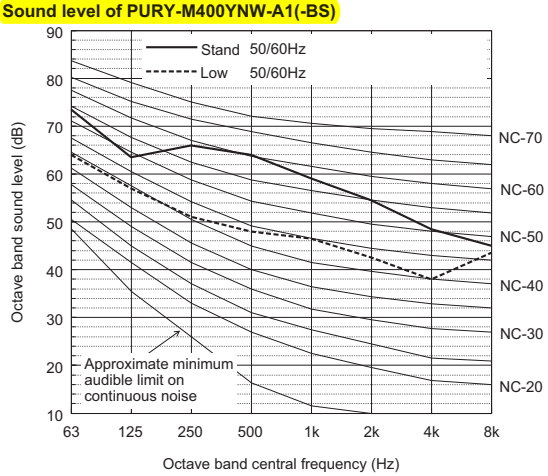
Sound level of PURY-M350YNW-A1(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	69.0	63.5	64.0	61.5	56.5	51.5	46.5	40.0	62.5
Low noise mode	50/60Hz	55.0	55.0	50.5	47.0	42.5	37.0	35.5	34.5	49.0

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PURY-M400YNW-A1(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	50/60Hz	73.5	63.5	66.0	64.0	59.0	54.5	48.5	45.0	65.0
Low noise mode	50/60Hz	64.0	57.0	51.0	48.0	46.5	42.5	38.0	43.5	52.0

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

- Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.
  For HBC controller, it is recommended to be installed in places such as ceilings of corridor, rest rooms and plant rooms.

AirCraft Air Handling

Quotation Reference : 25283-01A
Project Reference : Novotel Heathrow
Unit Reference : AHU 01 & 02
Date : 10 Sep 2025

TECHNICAL SCHEDULE

UNIT CONSTRUCTION			
Panel Thickness	**Panel Insulation**	**Framework**	**Profile**
45 mm	Rockwool 45mm 45kg/m3	Anodised Aluminium Tube	ACAH50
Panel External Sheet	**Panel Internal Sheet**	**Base Frame**	**Unit Location**
0.7mm Goosewing Grey Plastisol	0.9mm Galvanised Steel	Anodised Base Frame	External
Access Side	**Unit Model**	**Roof Type**	**Reinforced Floor**
Right	812	Cross Break	

SECTION WEIGHTS AND DIMENSIONS				
Section No.	**Length**	**Width**	**Height**	**Weight**
A	800 mm	1200 mm	800 mm	89 kg
B	1400 mm	1200 mm	1700 mm	274 kg
C	800 mm	1200 mm	900 mm	109 kg
D	800 mm	1200 mm	800 mm	79 kg
E	800 mm	1200 mm	900 mm	119 kg

OVERALL UNIT DIMENSIONS AND CENTRE OF GRAVITY				
Length	**Width**	**Height Incl.Base**	**Weight**	**COG X**
3000 mm	1200 mm	1700 mm	669 kg	1455 mm

001 INLET SECTION			
Air Flow	**Damper**	**Operations**	**Inlet**
1.1 m^3/s	None	Motorised by Others	Weather Louvre
Air Velocity	**Damper Material**	**Damper depth**	**Motor Torque**
1.43 m/s	Aluminium	0 mm	3 N/m
Pressure Drop	**Damper Type**	**Dimension**	
4 Pa	Opposed	1130 x 750 mm	

002 BAG FILTER			
Type	**Class**	**Withdrawal**	**Velocity**
Synthetic Bag	ISO ePM2.5 65% / (F7 EN779)	Side	1.71 m/s
Clean Pressure Drop	**Mean Pressure Drop**	**Dirty Pressure Drop**	**Qty of Spare Sets of Filter**
55 Pa	120 Pa	185 Pa	0
Qty/Size1	**Qty/Size2**	**Qty/Size3**	**Qty/Size4**
1 x 592 x 592 x 380 mm	1 x 492 x 592 x 380 mm	N/A	N/A

002 ACCESSORIES
Magnehelic gauge (0-250pa) fitted

003 PLATE HEAT EXCHANGER				
Model	**Qty**	**Material**	**Bypass**	
AM AL 08 N 1100 C 1 AE SC DBBD120	1	1 Aluminum (AL)	5 BD Lateral with internal shaft	

WINTER														
Fresh Air								**Exhaust Air**						
m^3/h	**kW**	**Eff.%**	**Inlet**		**Outlet**		**Pa**	**m^3/h**	**kW**	**Eff.%**	**Inlet**		**Outlet**		**Pa**
			°C	%	°C	%					°C	%	°C	%	

AirCraft Air Handling Ltd
Moorfields Industrial Estate
Cotes Heath, Stafford
ST21 6QY

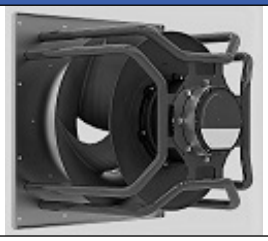
T: 01782 791 545
E: info@aircraftairhandling.com
W: aircraftairhandling.com

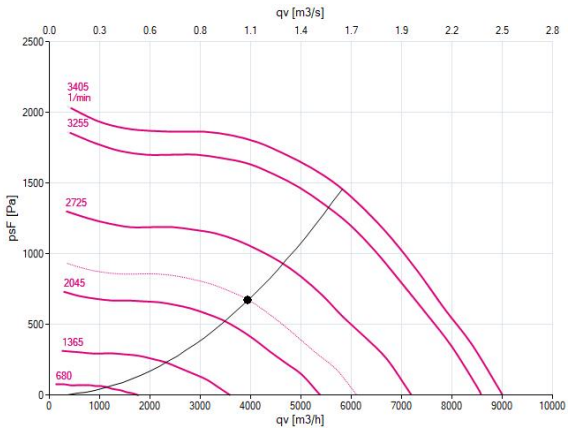
3960	25.85	75.00	-5.00	100.0	14.50	24.62	180	3960	25.85	75.00	21.00	50.0	6.13	98.90	187

003 DRAIN PAN	
Material	**Size**
Stainless Steel (304)	1100 mm

004 PLENUM FAN

Fan Type	**Wheel Type**	
Plenum	Backward Curve	
Model	**Impeller Diam.**	
GR35I-ZID.DG.CR-116893/A01	350 mm	
Quantity	**Duty % Per Fan**	
1	Single Fan	
Air Flow Volume	**Outlet Velocity**	**Motor Speed**
1.1 m^3/s	1.4 m/s	3410 rpm
Ext Static Pressure	**Fan Speed**	**Power**
350 Pa	2291 rpm	3.30 kW
Unit Static Pressure	**Static Efficiency**	**FLC**
654 Pa	67.94%	5.40 A
Fan Total Pressure	**VSD**	**Volts/Ph/Hz**
675 Pa	0-10v	400/3/50
Drive Type	**Abs Power**	**Poles**
Direct Drive	1.06 kW	





Frequency	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1k Hz**	**2k Hz**	**4k Hz**	**8k Hz**
Inlet (1)	66	68	71	69	64	61	58	57
Outlet (2)	67	73	76	74	74	71	66	63

(1) SWL INSIDE The Inlet Duct (dB) | **(2) SWL INSIDE The Outlet Duct (dB)**

004 ACCESSORIES
Inlet guard
Fan Seal
Fan Arrow right symbol

005 OUTLET SECTION

Air Flow	**Damper**	**Operations**	**Weatherhood**
3960 m^3/h	None	Motorised by Others	Hole
Air Velocity	**Damper Material**	**Damper Depth**	**Motor Torque**
1.43 m/s	Aluminium	0 mm	3 N/m
Pressure Drop	**Damper Type**	**Damper Dimension**	
0 Pa	Opposed	1130 x 750 mm	

006 INLET SECTION

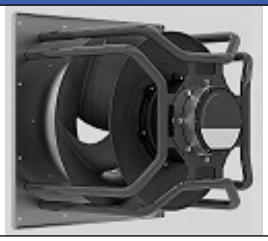
Air Flow	**Damper**	**Operations**	**Inlet**
1.1 m^3/s	None	Motorised by Others	Hole
Air Velocity	**Damper Material**	**Damper depth**	**Motor Torque**
1.43 m/s	Aluminium	0 mm	3 N/m
Pressure Drop	**Damper Type**	**Dimension**	
0 Pa	Opposed	1130 x 750 mm	

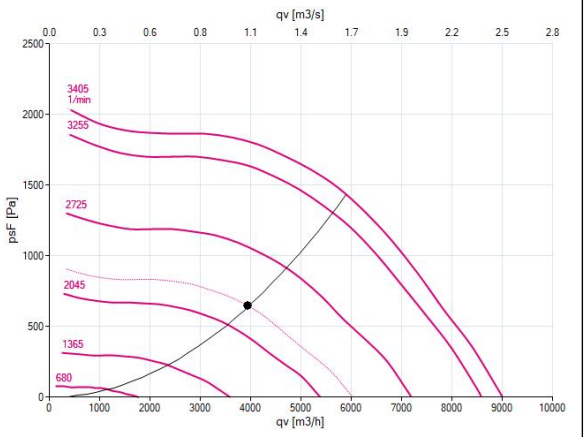
AirCraft Air Handling Ltd
Moorfields Industrial Estate
Cotes Heath, Stafford
ST21 6QY

T: 01782 791 545
E: info@aircraftairhandling.com
W: aircraftairhandling.com

007 BAG FILTER			
Type	**Class**	**Withdrawal**	**Velocity**
Synthetic Bag	ISO ePM10 60% / (M5 EN779)	Side	1.71 m/s
Clean Pressure Drop	**Mean Pressure Drop**	**Dirty Pressure Drop**	**Qty of Spare Sets of Filter**
26 Pa	83 Pa	140 Pa	0
Qty/Size1	**Qty/Size2**	**Qty/Size3**	**Qty/Size4**
1 x 592 x 592 x 380 mm	1 x 492 x 592 x 380 mm	N/A	N/A

007 ACCESSORIES
Magnehelic gauge (0-250pa) fitted

008 PLENUM FAN								
Fan Type	**Wheel Type**							
Plenum	Backward Curve							
Model	**Impeller Diam.**							
GR35I-ZID.DG.CR-116893/A01	350 mm							
Quantity	**Duty % Per Fan**							
1	Single Fan							
Air Flow Volume	**Outlet Velocity**	**Motor Speed**						
1.1 m³/s	1.4 m/s	3410 rpm						
Ext Static Pressure	**Fan Speed**	**Power**						
350 Pa	2259 rpm	3.30 kW						
Unit Static Pressure	**Static Efficiency**	**FLC**						
624 Pa	67.63%	5.40 A						
Fan Total Pressure	**VSD**	**Volts/Ph/Hz**						
644 Pa	0-10v	400/3/50						
Drive Type	**Abs Power**	**Poles**						
Direct Drive	1.01 kW							
Frequency	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1k Hz**	**2k Hz**	**4k Hz**	**8k Hz**
Inlet (1)	66	68	70	69	64	60	58	57
Outlet (2)	67	73	75	74	74	70	66	63
(1) SWL INSIDE The Inlet Duct (dB)					**(2) SWL INSIDE The Outlet Duct (dB)**			



008 ACCESSORIES
Inlet guard
Fan Seal
Fan Arrow left symbol

009 OUTLET SECTION			
Air Flow	**Damper**	**Operations**	**Weatherhood**
3960 m³/h	None	Motorised by Others	Weather Louvre
Air Velocity	**Damper Material**	**Damper Depth**	**Motor Torque**
1.43 m/s	Aluminium	0 mm	3 N/m
Pressure Drop	**Damper Type**	**Damper Dimension**	
4 Pa	Opposed	1130 x 750 mm	

AHU ACOUSTIC DATA SUPPLY SECTION									
Description	**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**	**Overall dB(A)**
Outlet Sound Power(dB)	65	69	70	69	71	68	63	60	75
Inlet Sound Power(dB)	62	62	62	57	54	46	43	40	59
Airborne sound power (dB)	49	50	47	45	47	38	30	30	49

AirCraft Air Handling Ltd
Moorfields Industrial Estate
Cotes Heath, Stafford
ST21 6QY

T: 01782 791 545
E: info@aircraftairhandling.com
W: aircraftairhandling.com

AHU ACOUSTIC DATA EXHAUST SECTION									
Description	**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**	**Overall dB(A)**
Outlet Sound Power(dB)	65	69	69	69	71	67	63	60	74
Inlet Sound Power(dB)	62	62	61	57	54	45	43	40	59
Airborne sound power (dB)	49	50	46	45	47	37	30	30	49

SPECIFIC FAN POWER			
Supply Fan		**Extract Fan**	
Filter Conditions	Clean	**Filter Conditions**	Clean
Absorbed Power	.96 kW	**Absorbed Power**	.93 kW
Drive Efficiency	100%	**Drive Efficiency**	100%
Inverter Efficiency	100%	**Inverter Efficiency**	100%
Motor Efficiency	100%	**Motor Efficiency**	100%
Air Volume	1.1 m^3/s	**Air Volume**	1.1 m^3/s
AHU SFP	1.72 w/l/s		

AirCraft Air Handling Ltd
Moorfields Industrial Estate
Cotes Heath, Stafford
ST21 6QY

T: 01782 791 545
E: info@aircraftairhandling.com
W: aircraftairhandling.com

Appendix B

ACOUSTICS PLUS

CONTRACT TITLE: 234 Bath Road
SOUND SOURCE: AHU 01 (west plantroom) supply inlet
Make and model Aircraft Air Handling ACAH50

					OCTAVE BAND CENTRE FREQUENCY (Hz)								
	OVERALL Lw				63	125	250	500	1k	2k	4k	8k	dBA
1		Lw			62	62	62	57	54	46	43	40	59
2		Grille area	1.000										
3		Lw entering grille			62	62	62	57	54	46	43	40	59
4													
5	LENGTH (m)	C or R	x (mm)	x (mm)									
6	3.50	R	400-800	400-800	5.74	4.62	2.31	1.12	1.12	1.12	1.12	1.12	
7													
8													
9													
10													
11													
12													
13													
14													
15													
16	BENDS												
17	NUMBER	TYPE	SIZE (mm)										
18	0	90	0600-0700		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
19													
20													
21													
22													
23													
24													
25	BRANCHES												
26	Size of branch 1		100		0	0	0	0	0	0	0	0	
27	Size of branch 2		0										
28	Size of branch 3		100		0	0	0	0	0	0	0	0	
29	Size of branch 4		0										
30	DUCT X-SECTIONAL AREAS												
31													
32													
33	OTHER ATTENUATION												
34													
35													
36													
37													
38	END REFLECTION SIZE (m)												
39	0.201 – 0.300				8	3	1	0	0	0	0	0	
40													
41				**Lw LEAVING SYSTEM**	48	54	59	56	53	45	42	39	57
42	Room Volume (m^3)		10000000		-56	-56	-56	-56	-56	-56	-56	-56	
43	Mid-Frequency RT (s)		0.01		-20	-20	-20	-20	-20	-20	-20	-20	
44				**REVERBERANT SPL**	-28	-22	-17	-20	-23	-31	-34	-37	-19
45	Distance to Listener		34		-42	-42	-42	-42	-42	-42	-42	-42	
46	Q=1 in free space		n/a		0	0	0	0	0	0	0	0	
47	Q=2 flush with surface		0.086 – 0.430		4	5	6	7	8	9	9	9	
48	Q=4 junction with 2 surfaces		n/a		0	0	0	0	0	0	0	0	
49				**DIRECT SPL**	11	18	23	21	19	12	9	6	23
50				**RESULTANT TOTAL SPL**	11	18	23	21	19	12	9	6	23
51	NR ACHIEVED/REQUIRED	19	35		63	52	45	39	35	32	30	28	
52	Additional Attenuation Required				0	0	0	0	0	0	0	0	

ACOUSTICS PLUS

CONTRACT TITLE: 234 Bath Road
SOUND SOURCE: AHU 01 (west plantroom) exhaust outlet
Make and model Aircraft Air Handling ACAH50

					OCTAVE BAND CENTRE FREQUENCY (Hz)								
	OVERALL Lw				63	125	250	500	1k	2k	4k	8k	dBA
1		Lw			65	69	69	69	71	67	63	60	74
2		Grille area	1.000										
3		Lw entering grille			65	69	69	69	71	67	63	60	74
4													
5	LENGTH (m)	C or R	x (mm)	x (mm)									
6	2.00	R	400-800	400-800	3.28	2.64	1.32	0.64	0.64	0.64	0.64	0.64	
7													
8													
9													
10													
11													
12													
13													
14													
15													
16	BENDS												
17	NUMBER	TYPE	SIZE (mm)										
18	0	90	0600-0700		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
19													
20													
21													
22													
23													
24													
25	BRANCHES												
26	Size of branch 1		100		0	0	0	0	0	0	0	0	
27	Size of branch 2		0										
28	Size of branch 3		100		0	0	0	0	0	0	0	0	
29	Size of branch 4		0										
30	DUCT X-SECTIONAL AREAS												
31													
32													
33	OTHER ATTENUATION												
34	600mm long attenuator				6	8	12	22	28	27	21	14	
35													
36													
37													
38	END REFLECTION SIZE (m)												
39	0.201 – 0.300				8	3	1	0	0	0	0	0	
40													
41				**Lw LEAVING SYSTEM**	48	55	55	46	42	39	41	45	52
42	Room Volume (m^3)		10000000		-56	-56	-56	-56	-56	-56	-56	-56	
43	Mid-Frequency RT (s)		0.01		-20	-20	-20	-20	-20	-20	-20	-20	
44				**REVERBERANT SPL**	-28	-21	-21	-30	-34	-37	-35	-31	-24
45	Distance to Listener		36		-42	-42	-42	-42	-42	-42	-42	-42	
46	Q=1 in free space		n/a		0	0	0	0	0	0	0	0	
47	Q=2 flush with surface		0.086 – 0.430		4	5	6	7	8	9	9	9	
48	Q=4 junction with 2 surfaces		n/a		0	0	0	0	0	0	0	0	
49				**DIRECT SPL**	10	18	19	11	8	6	8	12	17
50				**RESULTANT TOTAL SPL**	10	18	19	11	8	6	8	12	17
51	NR ACHIEVED/REQUIRED	20	35		63	52	45	39	35	32	30	28	
52	Additional Attenuation Required				0	0	0	0	0	0	0	0	

ACOUSTICS PLUS

CONTRACT TITLE: 234 Bath Road
SOUND SOURCE: AHU 02 (east plantroom) supply inlet
Make and model Aircraft Air Handling ACAH50

					OCTAVE BAND CENTRE FREQUENCY (Hz)								
	OVERALL Lw				63	125	250	500	1k	2k	4k	8k	dBA
1		Lw			62	62	62	57	54	46	43	40	59
2		Grille area	1.000										
3		Lw entering grille			62	62	62	57	54	46	43	40	59
4													
5	LENGTH (m)	C or R	x (mm)	x (mm)									
6	3.50	R	400-800	400-800	5.74	4.62	2.31	1.12	1.12	1.12	1.12	1.12	
7													
8													
9													
10													
11													
12													
13													
14													
15													
16	BENDS												
17	NUMBER	TYPE	SIZE (mm)										
18	0	90	0600-0700		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
19													
20													
21													
22													
23													
24													
25	BRANCHES												
26	Size of branch 1		100		0	0	0	0	0	0	0	0	
27	Size of branch 2		0										
28	Size of branch 3		100		0	0	0	0	0	0	0	0	
29	Size of branch 4		0										
30	DUCT X-SECTIONAL AREAS												
31													
32													
33	OTHER ATTENUATION												
34													
35													
36													
37													
38	END REFLECTION SIZE (m)												
39	0.201 – 0.300				8	3	1	0	0	0	0	0	
40													
41				**Lw LEAVING SYSTEM**	48	54	59	56	53	45	42	39	57
42	Room Volume (m^3)		10000000		-56	-56	-56	-56	-56	-56	-56	-56	
43	Mid-Frequency RT (s)		0.01		-20	-20	-20	-20	-20	-20	-20	-20	
44				**REVERBERANT SPL**	-28	-22	-17	-20	-23	-31	-34	-37	-19
45	Distance to Listener		74		-48	-48	-48	-48	-48	-48	-48	-48	
46	Q=1 in free space		n/a		0	0	0	0	0	0	0	0	
47	Q=2 flush with surface		0.086 – 0.430		4	5	6	7	8	9	9	9	
48	Q=4 junction with 2 surfaces		n/a		0	0	0	0	0	0	0	0	
49				**DIRECT SPL**	4	11	16	15	13	6	3	0	17
50				**RESULTANT TOTAL SPL**	4	11	16	15	13	6	3	0	17
51	NR ACHIEVED/REQUIRED	13	35		63	52	45	39	35	32	30	28	
52	Additional Attenuation Required				0	0	0	0	0	0	0	0	

ACOUSTICS PLUS

CONTRACT TITLE: 234 Bath Road
SOUND SOURCE: AHU 02 (east plantroom) exhaust outlet
Make and model Aircraft Air Handling ACAH50

					OCTAVE BAND CENTRE FREQUENCY (Hz)								
	OVERALL Lw				63	125	250	500	1k	2k	4k	8k	dBA
1		Lw			65	69	69	69	71	67	63	60	74
2		Grille area	1.000										
3		Lw entering grille			65	69	69	69	71	67	63	60	74
4													
5	LENGTH (m)	C or R	x (mm)	x (mm)									
6	2.00	R	400-800	400-800	3.28	2.64	1.32	0.64	0.64	0.64	0.64	0.64	
7													
8													
9													
10													
11													
12													
13													
14													
15													
16	BENDS												
17	NUMBER	TYPE	SIZE (mm)										
18	0	90	0600-0700		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
19													
20													
21													
22													
23													
24													
25	BRANCHES												
26	Size of branch 1		100		0	0	0	0	0	0	0	0	
27	Size of branch 2		0										
28	Size of branch 3		100		0	0	0	0	0	0	0	0	
29	Size of branch 4		0										
30	DUCT X-SECTIONAL AREAS												
31													
32													
33	OTHER ATTENUATION												
34	600mm long attenuator				6	8	12	22	28	27	21	14	
35													
36													
37													
38	END REFLECTION SIZE (m)												
39	0.201 – 0.300				8	3	1	0	0	0	0	0	
40													
41				**Lw LEAVING SYSTEM**	48	55	55	46	42	39	41	45	52
42	Room Volume (m^3)		10000000		-56	-56	-56	-56	-56	-56	-56	-56	
43	Mid-Frequency RT (s)		0.01		-20	-20	-20	-20	-20	-20	-20	-20	
44				**REVERBERANT SPL**	-28	-21	-21	-30	-34	-37	-35	-31	-24
45	Distance to Listener		76		-49	-49	-49	-49	-49	-49	-49	-49	
46	Q=1 in free space		n/a		0	0	0	0	0	0	0	0	
47	Q=2 flush with surface		0.086 – 0.430		4	5	6	7	8	9	9	9	
48	Q=4 junction with 2 surfaces		n/a		0	0	0	0	0	0	0	0	
49				**DIRECT SPL**	3	12	12	5	2	0	2	6	11
50				**RESULTANT TOTAL SPL**	3	12	12	5	2	0	2	6	11
51	NR ACHIEVED/REQUIRED	13	35		63	52	45	39	35	32	30	28	
52	Additional Attenuation Required				0	0	0	0	0	0	0	0	