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PAMHS, Level 6, Southwood Building
Great Ormond Street Hospital

Acoustic Report

27 October 2021

For

Great Ormond Street Hospital for Children NHS Foundation Trust

Mezzanine Floor

40 Bernard Street

London

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Contents

SUMMARY

A new refurbishment is proposed to provide a new Psychological and Mental Health Services (PAHMS) unit on level 6 of the Southwood Building at Great Ormond Street Hospital.

New hospital buildings are required to meet the acoustic performance standards given in Health Technical Memorandum 08-01: Acoustics (HTM 08-01).

This report presents our review of the proposals in relation to the acoustic design criteria to be achieved in terms of:

- Internal sound insulation between adjacent areas
- Room Acoustics (i.e. reverberation)
- Internal ambient noise levels

Architectural acoustics advice, in order to achieve the acoustic design criteria, is provided in this report, relating to:

- The sound insulation performance of new partitions and doors
- Control of flanking sound transmission
- Sound absorptive treatments
- Internal noise from mechanical services and external noise intrusion

Project Number	14347	**Issue Date**	27 October 2021
Document Reference	R/A/1/211027	**Version**	01

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1.0 Introduction

The project involves a new Psychological and Mental Health Services (PAHMS) unit on level 6 of the Southwood Building at Great Ormond Street Hospital.

The proposals include new consultation rooms, patient bedrooms with en-suites, activity, dining and therapy rooms, offices and staff areas.

Acoustics will be an important consideration within and between the new areas to ensure they provide conditions commensurate with good communication and privacy, in accordance with the acoustic performance standards given in Health Technical Memorandum 08-01: Acoustics (referred to hereafter as HTM 08-01).

It should be noted that the HTM 08-01 standards only fully apply to new buildings, however these standards have been treated as minima for this project wherever possible.

This report presents our review of the proposals in relation to indoor ambient noise levels, internal sound insulation and room acoustics in the relevant areas. An explanation of the acoustic terminology used in this report is presented in Appendix A.

2.0 Internal Sound Insulation

2.1 Standards for Internal Sound Insulation

Airborne sound insulation standards for walls are specified in HTM 08-01 in terms of the minimum weighted standardised level difference ($D_{nT,w}$).

The HTM 08-01 standards for airborne sound insulation are on-site values, hence compliance is typically determined by on-site tests.

The objective of these standards is to attenuate sound transmitted between spaces, so as to provide appropriate levels of acoustic privacy between areas of varying activity noise and noise tolerance.

2.2 Sound Insulation of Internal Walls

Table 2.1 presents the HTM 08-01 airborne sound insulation performance standards which apply to the proposed areas.

Table 2.1 HTM 08-01 Airborne Sound Insulation Standards – Walls

Room	HTM 08-01 $D_{nT,w}$ Standard for Proposed Use (dB)
Bedrooms	> 47
Consultation/Examination/Therapy	> 47
Quiet Room	> 47
Dining/Activity/Study	> 42
Ward Office	> 42
Other Staff Areas	> 37
Toilets	> 37

We have reviewed the proposed separating wall constructions shown in drawings BE2001-DAY-XX-06-DR-A-22-0101 and BE2001-DAY-XX-06-DR-A-22-0102, attached in Appendix B.

The proposed partitions include the following:

- I-WT-01 between most rooms within the impatient wing including bedrooms, staff areas, ward office, dining/activity, study, and toilets
- I-WT-02 between quiet room in the impatient wing
- I-WT-03 between most rooms within the outpatient wing including consultation, therapy, examination, dining, and activity rooms

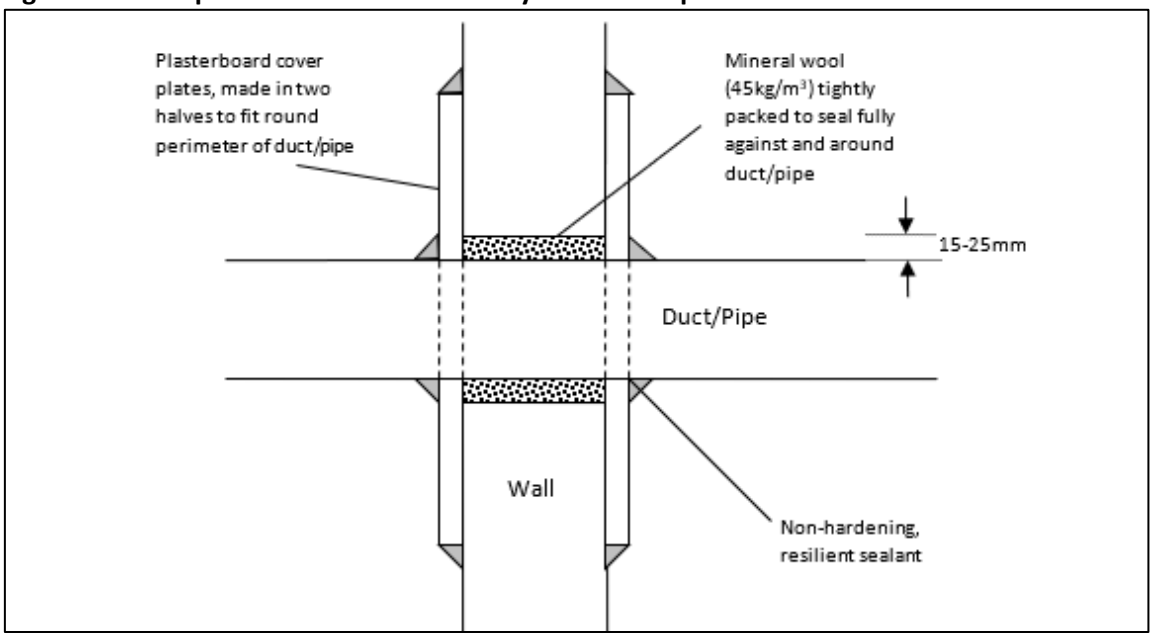
The proposed partitions should be capable of achieving the on-site performance standards presented in Table 2.1 subject to good standards of workmanship and suitable flanking construction details.

2.3 Flanking Construction Guidance

In order to realise the full sound insulation potential of the proposed separating constructions, we would recommend the following additional construction guidance:

- All partition linings shall have well-sealed, staggered, overlapping joints.
- Partitions should be full height i.e. slab to slab and should be sealed to the underside of the slab with non-hardening mastic.
- Internal wall linings (e.g. to external façades) should be discontinuous across the separating walls.
- All junctions between partitions and other structures (external façades, etc) should be thoroughly sealed to full height using dense, non-hardening mastic.
- Any services penetrations of partitions should be acoustically sleeved and well sealed. An example of a suitable acoustic sleeving detail is shown in Figure 2.1.

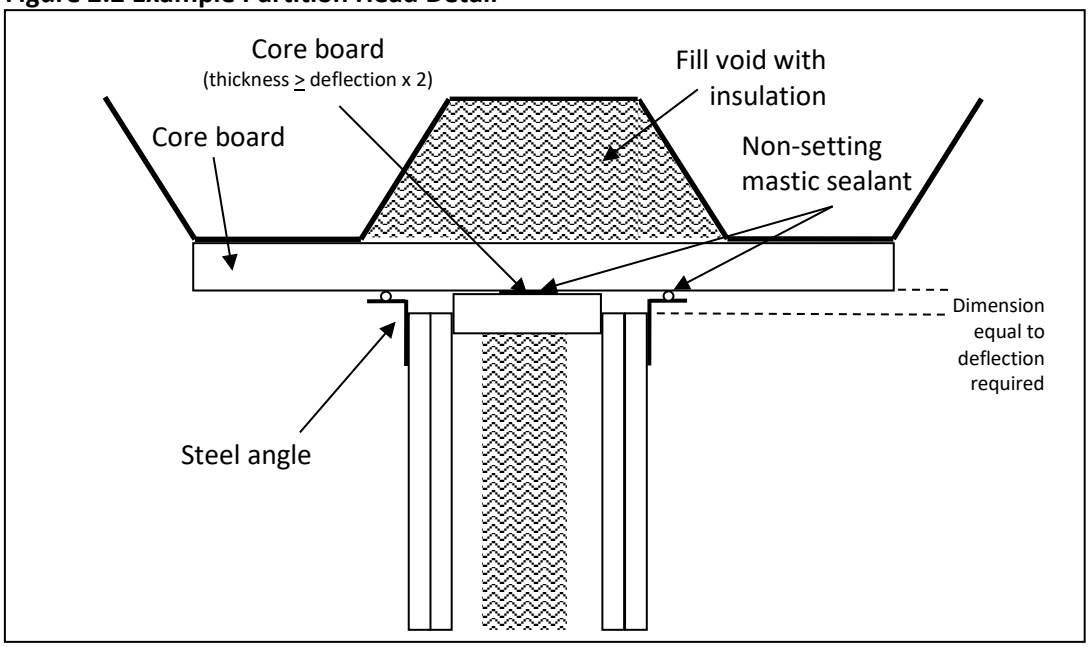
Figure 2.1 Example Partition Penetration by a Duct or Pipe



- Where a partition between two rooms abuts a column, the column should be enclosed with two layers of dense plasterboard and 50mm mineral wool, in order to maintain the sound insulation of the partition.

- Wherever there is plasterboard enclosing one or both sides of a steel beam at high level, the cavity between the beam and the plasterboard should be filled with insulation.
- Where the partition runs perpendicular to a profiled underside of the slab, a typical head detail is shown in Figure 2.2 below.

Figure 2.2 Example Partition Head Detail



2.4 Cross Ventilation Paths

Crosstalk attenuators will be required on ventilation paths between noise sensitive spaces, in particular bedrooms. The ventilation services layout drawing shows the proposed locations of crosstalk attenuators.

A crosstalk attenuator will be required to the supply and extract ductwork either side of the partition separating each noise sensitive space (bedrooms, staff rooms etc) and should be located as close to the ventilation grilles as possible. The crosstalk attenuators should be at least 900mm long and achieve the insertion loss performance shown in Table 2.2 below.

Table 2.2 Crosstalk Attenuator Insertion Loss (Minimum 900mm Long)

Minimum Dynamic Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
63	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8K**
4	7	13	19	23	23	16	13

The above specification also applies crosstalk attenuators between non-sensitive spaces (i.e. WC's, storage, utility rooms etc) or where the duct enters a noise sensitive space over the room front from the corridor.

The recommendations above assume slab-to-slab partitions, a plasterboard partition in each room and all ductwork penetrations of partitions and ceilings being well-sealed.

2.5 Sound Insulation of Walls with Doors

The sound insulation performance of walls that contain a door will be dominated by the performance of the door.

In accordance with the guidance contained in HTM 08-01, solid-core door blanks should be used for doors to sensitive spaces, where they are accessed from a corridor.

These should be selected to achieve an acoustic performance in the range of 30 – 35 dB R_w and will require the incorporation of perimeter seals. Where doors have glazed vision panels, these should not reduce the sound insulation of the door.

Doors should be fitted with soft action closers when located in noise sensitive areas such as bedrooms, consultation rooms, and treatment areas.

Furthermore, doors should ideally be located as far apart as possible. If doors cannot be relocated then consideration should be given to increasing the acoustic performance of the doors to help mitigate flanking noise.

HTM 08-01 advises that for non-sensitive rooms, such as storerooms and utility rooms, the type of door is not acoustically important. This is also interpreted to apply to WC's.

For any glazed observation windows in walls separating noise sensitive rooms and corridors, the sound insulation performance will be dependent on the doors. Therefore, the airborne sound insulation performance of the glazing should be specified to at least 10 dB higher than the performance of the door i.e. R_w 40-45 dB.

3.0 Room Acoustics

3.1 Standards for Room Acoustics

HTM 08-01 states:

"*Sound-absorbent treatment should be provided in all areas (including all corridors), except acoustically unimportant rooms (for example storerooms, utility rooms etc), where cleaning, infection-control, patient-safety, clinical and maintenance requirements allow.*"

and

"*Acoustically absorbent materials should have a minimum absorption area equivalent to a Class C absorber (as defined in BS EN ISO 11654: 1997) covering at least 80 % of the area of the floor*"

HTM 08-01 also advises that, if a Class A or B absorber is used (i.e. better than Class C), then the required minimum surface area can be reduced.

In line with the guidance above, we would recommend that sound-absorbent treatment should be provided in all new areas, except storerooms, utility rooms, cleaner room and WC's.

As suggested in HTM 08-01, we would recommend that the most suitable form of sound absorption treatment would be a suspended ceiling. Alternatively, wall panels could also be considered.

3.2 Review of Proposals

We have reviewed drawing BE2001-DAY-XX-06-DR-A-35-0101 which shows the proposed ceiling types and areas, attached in Appendix B.

The following options may be used to achieve the HTM 08-01 standards:

Option 1

Where lay-in grid suspended ceilings (ceiling types A and B) cover at least 80% of the ceiling area within the space (excluding ceiling fittings such as lighting, ventilation grilles etc.), a Class C absorber acoustic ceiling tile would be acceptable.

Option 2

Instead of covering 80% of the ceiling area with a Class C absorber, our calculations indicate that the same amount of sound absorption could be provided by using a Class A acoustic ceiling tile covering at least 60% of the ceiling area (excluding ceiling fittings such as lighting, ventilation grilles etc.). This would be acceptable in areas where lay-in grid suspended ceilings (ceiling types A and B) cover less than 80% of the ceiling area within the space, for example, consultation rooms where ceiling type C covers more than 20% of the ceiling area.

Option 3 (Bedrooms, Quiet Room and Dining Room Only)

In accordance with HTM-08, sound absorbent treatment would also be required in the Bedrooms, Quiet Room and Dining Room. Proposals show the solid non-acoustic ceiling type C proposed in these areas. To meet the HTM-08 requirements, a Class A absorber covering an area equal to at least 60% of the floor area would be required. This could be achieved using class A acoustic panels positioned on the walls and/or ceiling. A perforated plasterboard acoustic ceiling could be used in the Quiet Room and Dining Room using a class C ceiling as described in Option 1 or a class A ceiling as described in Option 2. A solid ceiling will be required in the bedrooms in order to achieve the sound insulation targets and a perforated plasterboard acoustic ceiling would not therefore be appropriate in the bedrooms.

4.0 Indoor Ambient Noise Levels

4.1 External Noise Intrusion

The HTM 08-01 requirements for internal noise from external noise sources are presented in Table 4.1.

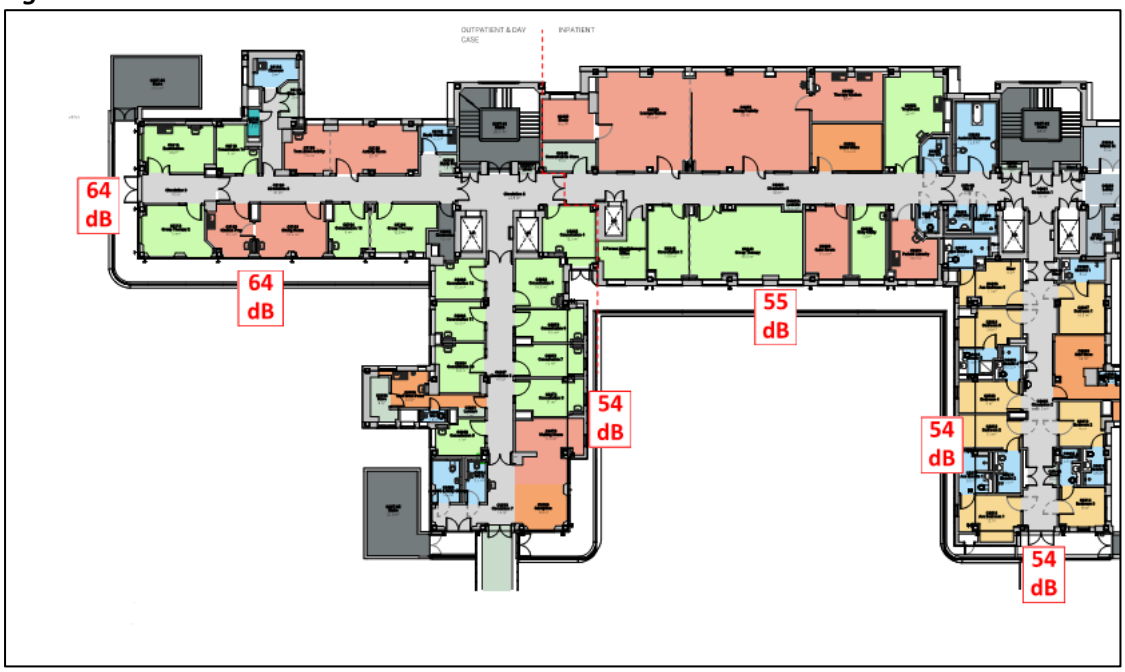
Table 4.1 Criteria for Noise from External Noise Sources

Room	Noise Level (dB)
Bedrooms	40 dB $L_{Aeq,1hour}$ Daytime 35 dB $L_{Aeq,1hour}$ Night-time 35 dB $L_{Amax,f}$ Night-time
Consultation/Examination/Therapy	40 dB $L_{Aeq,1hour}$
Study/Quiet Room	40 dB $L_{Aeq,1hour}$
Dining/Activity	50 dB $L_{Aeq,1hour}$

Attended daytime noise measurements were carried out on Tuesday 12 October 2021 to establish existing external noise levels at the various façade locations.

Figure 4.1 shows the measurement positions and corresponding measured $L_{Aeq,T}$ noise levels.

Figure 4.1 Measured External Noise Levels



At all of the above measurement positions the dominant noise source was observed to be existing building services plant operating continuously.

Internal noise measurements were also taken in Penguin On Call rooms 13 and 14 of the existing building to determine the typical performance of the exiting facades/glazing. Internal levels of 35/36 dB $L_{Aeq,T}$ were measured in rooms 13 and 14 respectively. Compared to the external noise level of 64 dB outside the rooms as shown in Figure 4.1 above the measurement results indicate a sound reduction of approximately 28 dB through the existing façades.

It is understood that in most areas the masonry walls and double-glazed windows that make up the existing external facades will be retained. It is also understood that existing wood-clad facades will be replaced and that all proposed areas will be mechanically ventilated with cooling thereby alleviating the need for natural ventilation openings in the external façade.

We have carried out calculations to predict worst case internal noise levels based on the existing measured noise levels and predicted worst case external noise levels from the proposed future building services plant.

Based on the total predicted future external noise levels our calculations indicate that the HTM-08 criteria presented in Table 4.1 should be achievable, subject to the following:

- Existing double glazing to be retained. Where new glazing is proposed we recommend standard double glazing (e.g. 4mm/12mm/4mm glazing) in all areas as a minimum.
- All new external wall constructions to provide sound reduction of at least R_w 52 dB e.g. brick/block cavity wall.
- All existing natural ventilation openings in the external façade to be closed with a suitable material achieving the same sound reduction as the remainder of the façade.

- All building services penetrations of the external façade should be acoustically sleeved and well-sealed. An example of a suitable acoustic sleeving detail is shown in Figure 2.1.
- AHU supply and extract atmospheric ductwork fitted with acoustic attenuators providing the insertion loss values presented in Table 4.2 as a minimum.

Table 4.2 AHU Atmospheric Attenuator Insertion Loss Performance (Minimum 900mm Long)

Minimum Dynamic Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8K
2	4	9	15	17	14	10	8

Our calculations of noise emissions associated with the proposed AHU are based on the noise data and ductwork layout drawings provided by Cudd Bentley. We have reviewed the AHU manufacturer's octave band noise data (included in Appendix C of this report), which appears to be linear rather than A-weighted, however this should be confirmed by the manufacturer.

4.2 Internal Noise from Mechanical Services

The HTM 08-01 requirements for internal noise from mechanical services are presented in Table 4.3.

Table 4.3 Criteria for Noise from Mechanical Services

Room	NR Level
Bedrooms	30
Consultation/Examination/Therapy	35
Study/Quiet Room	35
Dining/Activity/Waiting Room/Reception	40

The noise limits in Table 4.3 apply to plant operating at normal duty and shall include the total noise contribution from plant located in the area, plant serving the area and plant noise break-in from adjacent areas/ducts/shafts, etc.

The building services installation shall be appropriately isolated from the structure to ensure that the frequency and amplitude of structural borne vibration shall not exceed 0.01 m/s^2 within any internal areas, in accordance with Clause 3.3 of BS 6472: 2008.

4.3 Internal Noise from Mechanical Services – Air Handling Unit

We have carried out calculations of ventilation noise from the proposed AHU to determine the attenuator specification required to achieve NR30 in bedrooms.

Calculations are based on the noise data and ductwork layout drawings provided by Cudd Bentley.

We have reviewed the MVHR manufacturer's octave band noise data (included in Appendix C of this report), which appears to be linear rather than A-weighted, however this should be confirmed by the manufacturer.

Based on our calculations we recommend the room side attenuator specifications presented in Table 4.4.

Table 4.4 AHU Room Side Attenuator Insertion Loss Values

System	Attenuator Dimensions (mm)			Vol (m^3/s)	Maximum Pressure Drop (Pa)	Minimum Dynamic Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
	W	H	L			63	125	250	500	1k	2k	4k	8k
AHU Supply	500	480	1800	0.5	50	16	29	46	50	50	50	50	50
AHU Extract	500	480	1500	0.5	50	14	25	39	50	50	50	50	49

4.4 Internal Noise from Mechanical Services – MVHR Units

We have carried out calculations of ventilation noise from the proposed MVHR unit.

Calculations are based on the noise data and ductwork layout drawings provided by Cudd Bentley. We have reviewed the MVHR manufacturer's octave band noise data (included in Appendix C of this report), which appears to be linear rather than A-weighted, however this should be confirmed by the manufacturer.

Based on our calculations, we would recommend the roomside attenuator specifications presented in Table 4.5.

Table 4.5 MVHR Roomside Attenuators

System	Attenuator Dimensions (mm)			Vol (m^3/s)	Maximum Pressure Drop (Pa)	Minimum Dynamic Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
	W	H	L			63	125	250	500	1k	2k	4k	8k
Consultation Rooms Supply	300	100	900	0.066	50	9	16	24	37	48	50	50	38
Consultation Rooms Extract	300	100	600	0.066	50	7	11	14	25	40	45	44	32
Treatment Supply	300	300	900	0.18	50	9	16	24	37	48	50	50	38
Treatment Extract	300	300	900	0.18	50	9	16	24	37	48	50	50	38
Group Therapy (C6040) Supply	500	150	900	0.17	50	9	16	24	37	48	50	50	38

System	Attenuator Dimensions (mm)			Vol (m^3/s)	Maximum Pressure Drop (Pa)	Minimum Dynamic Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
	W	H	L			63	125	250	500	1k	2k	4k	8k
Group Therapy (C6040) Extract	500	150	600	0.17	50	7	11	14	25	40	45	44	32
Group Therapy (C6102) Supply	300	200	900	0.083	50	9	16	24	37	48	50	50	38
Group Therapy (C6102) Extract	300	200	600	0.083	50	7	11	14	25	40	45	44	32
Group Therapy (C6112) Supply	300	230	900	0.108	50	9	16	24	37	48	50	50	38
Group Therapy (C6112) Extract	300	230	600	0.108	50	7	11	14	25	40	45	44	32
Dining/ Activity Supply	500	300	900	0.18	50	9	16	24	37	48	50	50	38
Dining/ Activity Extract	500	300	600	0.18	50	7	11	14	25	40	45	44	32
Lounge/ Games Supply	500	150	900	0.166	50	9	16	24	37	48	50	50	38
Lounge/ Games Extract	500	150	600	0.166	50	7	11	14	25	40	45	44	32
Study Supply	300	100	900	0.057	50	9	16	24	37	48	50	50	38
Study Extract	300	100	600	0.057	50	7	11	14	25	40	45	44	32
Quiet Room Supply	300	100	900	0.053	50	9	16	24	37	48	50	50	38
Quiet Room Extract	300	100	600	0.053	50	7	11	14	25	40	45	44	32
Reception Supply	300	300	900	0.114	50	9	16	24	37	48	50	50	38

System	Attenuator Dimensions (mm)			Vol (m^3/s)	Maximum Pressure Drop (Pa)	Minimum Dynamic Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
	W	H	L			63	125	250	500	1k	2k	4k	8k
Reception Extract	300	300	600	0.114	50	7	11	14	25	40	45	44	32
Waiting Room Supply	300	200	900	0.076	50	9	16	24	37	48	50	50	38
Waiting Room Extract	300	200	600	0.076	50	7	11	14	25	40	45	44	32
Dining Room Supply	300	220	900	0.105	50	9	16	24	37	48	50	50	38
Dining Room Extract	300	220	600	0.105	50	7	11	14	25	40	45	44	32
Examination Supply	300	200	900	0.078	50	9	16	24	37	48	50	50	38
Examination Extract	300	200	600	0.078	50	7	11	14	25	40	45	44	32
Teen Zone Supply	300	200	900	0.073	50	9	16	24	37	48	50	50	38
Teen Zone Extract	300	200	600	0.073	50	7	11	14	25	40	45	44	32
Activity Room Supply	300	200	900	0.073	50	9	16	24	37	48	50	50	38
Activity Room Extract	300	200	600	0.073	50	7	11	14	25	40	45	44	32

To control noise breakout from the ductwork we would also recommend the atmospheric-side attenuator specifications presented in Table 4.6.

Table 4.6 MVHR Atmospheric Side Attenuator Insertion Loss Values

Attenuator Specification	Duct	Minimum Dynamic Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8K
600mm 20% Free Area	Supply and Extract	7	11	14	25	40	45	44	32

To control noise breakout from the ductwork we would recommend the following:

- Attenuators should ideally be located as close as possible to the MVHR unit and acoustically lagged to the end of the attenuator along with any ductwork between the unit and the attenuator.
- Where attenuators are not possible on the atmospheric side due space restrictions, we recommend that the ductwork be acoustically lagged (using 50mm acoustic lagging as a minimum e.g. Muftilag R102, Superlag 10 or approved equivalent) for the entire length of the ductwork.

We have also carried out calculations to predict case breakout noise from the MVHR unit casings.

Mitigation of noise breakout from the units is limited to acoustic lagging around the unit. The full casing of the internal ceiling-mounted MVHR units should be located within ceiling voids and be acoustically lagged using a proprietary acoustic lagging product (using 50mm acoustic lagging as a minimum e.g. Muftilag R102, Superlag 10 or approved equivalent), up to and including any roomside and atmospheric attenuators.

Our calculations indicate that noise breakout from the units is likely to be the dominant noise source associated with the MVHR units (assuming in-duct attenuators are fitted) and that the NR limits are likely to be slightly exceeded in some areas (approximately NR 35-40 where there is an NR 35 limit) unless quieter alternative units are selected.

We therefore recommend a derogation to NR 40 for all rooms where the requirement would usually be NR 35 (see criteria in Table 4.3).

4.5 Attenuators – General

Attenuator specifications are based on the manufacturer's noise data for the selected units, together with the building services and architectural drawings and schematics produced up to the date of this report. Reselections or changes to any of this information will require the calculations and recommendations to be revisited.

The attenuator dimensions consider the spatial limitations on-site and are realistic for the insertion loss performance and maximum pressure drops shown, but please check to ensure the estimated dimensions (length and cross-section) can be accommodated. However, the final dimensions shall be determined by the attenuator supplier/manufacturer, based on the minimum insertion losses and maximum pressure drop.

Alternative attenuator dimensions are likely to be acoustically acceptable and it is usually possible to reduce the attenuator length by increasing the cross-sectional area (and vice versa), however any alterations should be reviewed by **auricl**.

Where the duct dimensions are not known, or where a larger duct cross-section is required to limit the attenuator face velocity and pressure drop, the maximum face velocity has been specified in the schedule to allow the duct/attenuator to be sized accordingly.

Where fans/AHUs are located in a plantroom, the ideal attenuator location is adjacent to the plantroom penetration (so that plantroom noise breaking into the ductwork is attenuated). For other locations, attenuators should be fitted as close to the fan/AHU as possible (in order to minimise noise break-out from the ductwork) with the intervening ductwork acoustically lagged up to and including the full length of the attenuator using a proprietary acoustic lagging product (e.g. Muftilag R102, Superlag 10 or acoustic equivalent).

Attenuator casings shall be construction from 0.8mm galvanized steel sheet to BS EN 10142, continuously lock-formed and mastic sealed. Splitters shall be constructed from 0.8mm perforated galvanized steel sheet to BS EN 10142, incorporating aerodynamic (not square) leading edges and trailing edges. Attenuators shall have regular splitter/airway dimensions and a half-width splitter fixed to each side wall of the casing. Where splitters are arranged horizontally, they shall be suitably stiffened to avoid flexing. Splitter infill materials shall be of inorganic mineral wool or glass fibre of a density suitable to achieve the specified acoustic performance, and shall be inert, vermin and moisture-proof. All internal surfaces shall be sealed against fibre release.

Attenuator insertion losses and pressure drops shall be determined in a compliant test laboratory in accordance with BS EN ISO 7235.

4.6 Air Generated Noise

Duct air velocities shall not exceed those specified in Table 7.1.

Table 7.1 Maximum Duct Velocities

Type	Duct Location	Duct Type	Maximum air velocity $m.s^{-1}$ for Noise Rating (NR) Level in adjacent space				
			NR25	NR30	NR35	NR40	NR45
Main Riser	Masonry Riser	Rectangular	n/a*	9	10.5	10.5	11
		Circular	n/a*	12.5	15	18.5	22
	Plasterboard Riser (min 2No layers 12.5mm plasterboard)	Rectangular	5	6	7	7	7.5
		Circular	7	8.5	10	12.5	15
Final Duct Runs	Above Full Plasterboard Ceiling	Rectangular	5	6	7	7	7.5
		Circular	7	8.5	10	12.5	15
	Above Tiled Suspended Ceiling	Rectangular	3	4	5	5.5	6
		Circular	5	6	7	8.5	10
Duct Terminals in Ceiling Void	Supply		1.5	2	2.5	2.5	3
	Return		2	2.5	3	3.5	4
	Fan coil unit flexible ductwork		1.5	2	2.5	2.5	3

Volume control dampers shall be selected so that the in-duct and casing radiated sound power levels are at least 10 dB less than those specified for fan coil units in Tables 4.1 to 4.3. Where this cannot be achieved, attenuation measures shall be included (e.g. attenuator on roomside of damper, acoustic lagging, etc.).

4.7 Vibration Isolation

All plant items shall be appropriately vibration isolated.

Flexible connectors should be fitted at all connections between the MVHRs/AHUs and internal/external ducts, being at least 75mm long with a density of at least 5 kg/m^3.

Any other plant not listed (pumps, boilers, pressurisation units, boosters, etc.) shall be appropriately vibration isolated.

It is important to consider vibration isolation of both the plant itself and any connected pipework and ductwork, as well as any other possible rigid connections to the building structure (e.g. cable trays, access platforms, steps, etc).

Flexible pipework connectors should not be relied upon as a means of controlling vibration transfer from plant into pipework. Instead, the pipework should be resiliently supported/suspended as per the plant itself.

Electrical connections to plant should be via a looped flexible conduit with a diameter of at least 300mm.

Appendix A – Acoustic Terminology

Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing ($20x10^{-6}$ Pascals).
Sound Pressure Level (L_p)	The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.
A-weighting (L_A or dBA)	The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.
$L_{Aeq,T}$	The A-weighted equivalent continuous noise level over the time period T (typically T= 16 hours for daytime periods, T = 8 hours for night-time periods). This is the sound level that is equivalent to the average energy of noise recorded over a given period.
$L_{n,T}$	The noise level exceeded for n% of the time over a given period T. L_{90}, the noise level exceeded for 90% of the time (background noise level).
L_{max}	The maximum noise level measured.
Sound Reduction Index, R	A measure of the ability of a material to reduce the passage of sound through the material, usually measured in octave or 1/3 octave bands. The higher the value, the better the sound reduction performance.
R_w	The weighted (w) sound reduction index (R), a single number indicator of the **laboratory** airborne sound insulation performance of a construction, usually measured across the frequency range 100-3150Hz. The higher the value of R_w, the greater the sound insulation, and the more onerous the requirement.
$D_{nT,w}$	The weighted (w), standardised (nT) sound level difference (D), a single number indicator of the **on-site** airborne sound insulation performance of a construction, usually measured across the frequency range 100-3150Hz. The higher the value of $D_{nT,w}$, the greater the sound insulation, and the more onerous the requirement.
NR	The Noise Rating level, a single number summary of a noise spectrum, usually applied to internal noise levels.
Absorption Coefficient	A numerical unit used to describe the ability of a material to absorb sound, ranging from 0 to 1 (0 representing 0% sound absorbed, 1 representing 100% absorption). The sound absorption performance of a material differs with frequency and is usually measured between 125Hz and 4kHz.

Appendix B – Partition and Ceiling Drawings

Inpatient - Proposed Partition Setting Out
1 : 50

WALL TYPES KEY

INPATIENTS

I-WT-01 British Gypsum - **GYPWALL ROBUST GB06A063F (EN)** (600 Centres)
- Gyproc SoundBloc (12.5) + Gyproc Duraline (15)
- **18mm Plywood**
- Gyptrame 70 AS 50 AcouStud
- 25mm Isover Acoustic Partition Roll (APR 1200)
- **18mm Plywood**
- Gyproc SoundBloc (12.5) + Gyproc Duraline (15)
  - Severe Duty
  - 4700mm max.
  - 57.9w dB (excl. 18mm Plywood)

FIRE RATING: UP TO 90 MINUTES

I-WT-02 British Gypsum - **GYPWALL EXTREME - X606A007 (EN)** (600 Centres)
- Gyproc SoundBloc (15) + Rigidur H (12.5)
- **18mm Plywood**
- Gyptrame 70 AS 50 AcouStud
- 25mm Isover Acoustic Partition Roll (APR 1200)
- **18mm Plywood**
- Gyproc SoundBloc (15) + Rigidur H (12.5)
  - Severe Duty
  - 4m max.
  - 58.9w dB (excl. 18mm Plywood)

FIRE RATING: UP TO 90 MINUTES

I-WT-04 British Gypsum - **GypLyner UNIVERSAL wall lining(600 Centres)**
- Gyptrame GL1 Lining Channel
- 1 x 15 mm Gyproc DuraLine
- 18mm patressing to one side
- Existing and new masonry overlaid with breather membrane

I-BX-03 British Gypsum - (600 Centres) **(For ensuites/ WC's)**
- Gypsum Rigidur H (12.5)
- 18mm Marine Grade Plywood
- Gyptrame 70 I 50 Stud

IPS-01 Reference: VIRSEAL™
Range: **VIRSEAL™ Ultimate**
Carcass Material: One-piece Carcass: 0.9mm HPLaminate bonded to MRMDF core, corners to be fully postformed.
Access Panels: 12mm Compact Grade Laminate, mounted on Keku Lift-off system- amended to suit IPS elevations and anti ligature.
Finishes: (available from ABET / Formica/ Polyrey Washroom Ranges)

Currently under review - Trovex Hygenipod TBC

OUTPATIENTS

I-WT-03 British Gypsum **GYPWALL CLASSIC - A206199(EN)** (600 Centres)
- Gyproc SoundBloc (2 x 15)
- **18mm Plywood**
- Gyptrame 70 S 50 'C' Stud
- 25mm Isover Acoustic Partition Roll (APR 1200)
- **18mm Plywood**
- Gyproc SoundBloc (2 x 15)
  - Severe Duty
  - 4000mm max.
  - 54.9w dB (excl. 18mm Plywood)

FIRE RATING: UP TO 90 MINUTES

I-WT-04 British Gypsum - **GypLyner UNIVERSAL wall lining(600 Centres)**
- Gyptrame GL1 Lining Channel
- 1 x 15 mm Gyproc DuraLine
- 18mm patressing to one side
- Existing and new masonry overlaid with breather membrane

I-BX-03 British Gypsum - (600 Centres) **(For ensuites/ WC's)**
- Gypsum Rigidur H (12.5)
- 18mm Marine Grade Plywood
- Gyptrame 70 I 50 Stud

DIMENSIONS

Centre to Centre Dimension

Face to Face

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REV	DESCRIPTION	DATE	REV BY
P3	Updated layout	11.10.21	AC
P2	Updated in line with Stage 3 comments	16.09.21	SM
P1	STAGE 3 ISSUE	09.07.2021	HW

CLIENT: Great Ormond Street Hospital for Childrens NHS Foundation Trust

PROJECT: Psychological and Mental Health Services (PAMHS)

DRAWING: Inpatients - Proposed Internal Partitions and Setting Out

SCALE: 1 : 50 @ A0

FIRST ISSUED: 03/17/21

PROJECT	CLIENT REF	DRAWN BY	CHECKED BY
BE2001	GOSH	Author	LI

ORIGIN	VOLUME	LEVEL	TYPE	ROLE	NUMBER	REVISION
DAY	XX	06	DR	A	22-0102	P3

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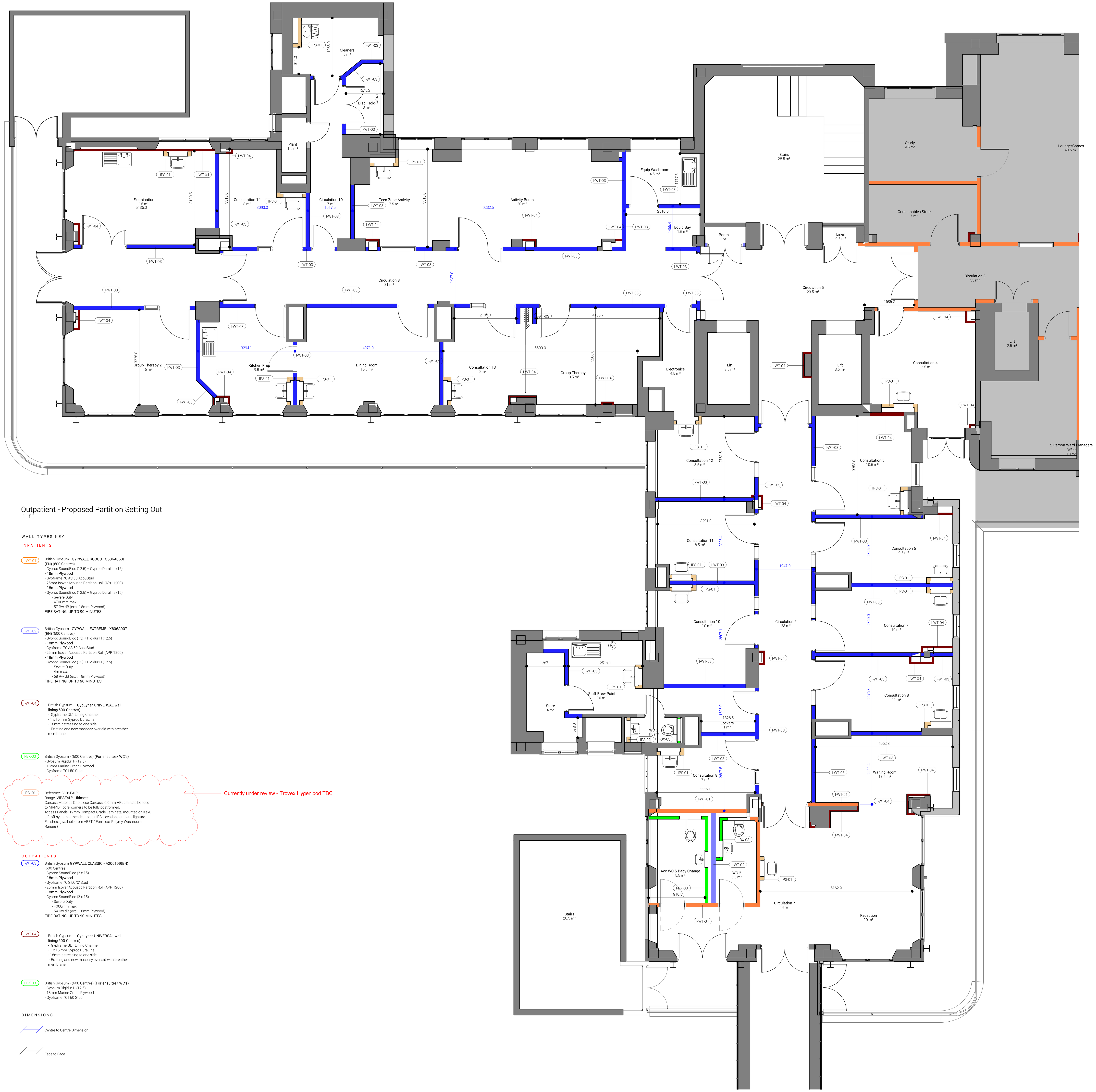

Outpatient - Proposed Partition Setting Out

1 : 50

WALL TYPES KEY

INPATIENTS

I-WT-01 British Gypsum - **GYPWALL ROBUST Q606A063F (EN)** (600 Centres)
- Gyproc SoundBloc (12.5) + Gyproc Duraline (15)
- **18mm Plywood**
- Gypframe 70 AS 50 AcouStud
- 25mm Isover Acoustic Partition Roll (APR 1200)
- **18mm Plywood**
- Gyproc SoundBloc (12.5) + Gyproc Duraline (15)
  - Severe Duty
  - 4700mm max.
  - 57 Rw dB (excl. 18mm Plywood)

FIRE RATING: UP TO 90 MINUTES

I-WT-02 British Gypsum - **GYPWALL EXTREME - X606A007 (EN)** (600 Centres)
- Gyproc SoundBloc (15) + Rigidur H (12.5)
- **18mm Plywood**
- Gypframe 70 AS 50 AcouStud
- 25mm Isover Acoustic Partition Roll (APR 1200)
- **18mm Plywood**
- Gyproc SoundBloc (15) + Rigidur H (12.5)
  - Severe Duty
  - 4m max.
  - 58 Rw dB (excl. 18mm Plywood)

FIRE RATING: UP TO 90 MINUTES

I-WT-04 British Gypsum - **GypLyner UNIVERSAL wall lining(600 Centres)**
- Gypframe GL1 Lining Channel
- 1 x 15 mm Gyproc DuraLine
- 18mm patressing to one side
- Existing and new masonry overlaid with breather membrane

I-BX-03 British Gypsum - (600 Centres) **(For ensuites/ WC's)**
- Gypsum Rigidur H (12.5)
- 18mm Marine Grade Plywood
- Gypframe 70 I 50 Stud

IPS -01 Reference: VIRSEAL™
Range: **VIRSEAL™ Ultimate**
Carcass Material: One-piece Carcass: 0.9mm HPLaminate bonded to MRMDF core, corners to be fully postformed.
Access Panels: 12mm Compact Grade Laminate, mounted on Keku Lift-off system- amended to suit IPS elevations and anti ligature.
Finishes: (available from ABET / Formica/ Polyrey Washroom Ranges)

Currently under review - Trovex Hygenipod TBC

OUTPATIENTS

I-WT-03 British Gypsum **GYPWALL CLASSIC - A206199(EN)** (600 Centres)
- Gyproc SoundBloc (2 x 15)
- **18mm Plywood**
- Gypframe 70 S 50 'C' Stud
- 25mm Isover Acoustic Partition Roll (APR 1200)
- **18mm Plywood**
- Gyproc SoundBloc (2 x 15)
  - Severe Duty
  - 4000mm max.
  - 54 Rw dB (excl. 18mm Plywood)

FIRE RATING: UP TO 90 MINUTES

I-WT-04 British Gypsum - **GypLyner UNIVERSAL wall lining(600 Centres)**
- Gypframe GL1 Lining Channel
- 1 x 15 mm Gyproc DuraLine
- 18mm patressing to one side
- Existing and new masonry overlaid with breather membrane

I-BX-03 British Gypsum - (600 Centres) **(For ensuites/ WC's)**
- Gypsum Rigidur H (12.5)
- 18mm Marine Grade Plywood
- Gypframe 70 I 50 Stud

DIMENSIONS

Centre to Centre Dimension

Face to Face

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REV	DESCRIPTION	DATE	REV BY
P3	Updated layout	11.10.21	AC
P2	Updated in line with Stage 3 comments	16.09.21	SM
P1	STAGE 3 ISSUE	09.07.2021	HW

CLIENT
Great Ormond Street Hospital for Childrens NHS Foundation Trust

PROJECT
Psychological and Mental Health Services (PAMHS)

DRAWING
Outpatients - Proposed Internal Partitions and Setting Out

SCALE	FIRST ISSUED
1 : 50 @ A0	03/01/21

PROJECT	CLIENT REF	DRAWN BY	CHECKED BY
BE2001	GOSH	Author	LI

ORIGIN	VOLUME	LEVEL	TYPE	ROLE	NUMBER	REVISION
DAY	XX	06	DR	A	**22-0101**	P3

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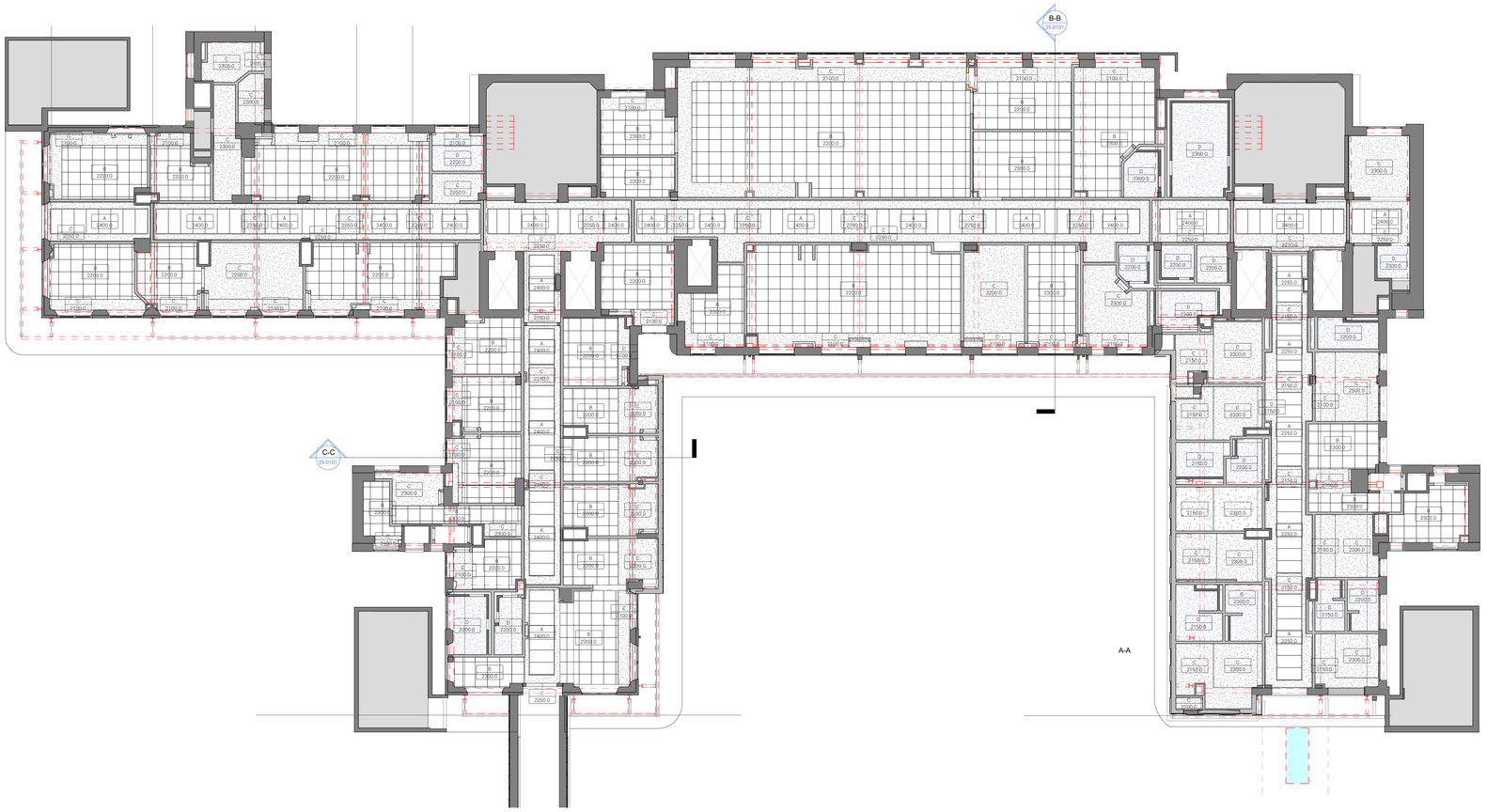


CEILING TYPES KEY

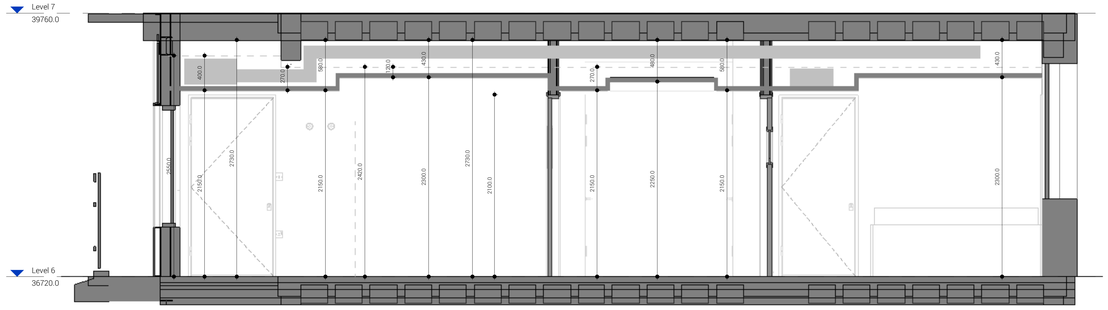
- A Height — Lay-in grid suspended ceiling system comprising 1200mm x 600mm mm clipped-in metal tiles.
- B Height — Lay-in grid suspended ceiling system comprising 600mm x 600mm clipped-in metal tiles.
- C Height — Suspended metal framed ceiling comprising inner layer of 12mm plywood and outer layer of 15mm Gyproc DuraLine on Caseline MF ceiling system by British Gypsum. Thistle DuraFinish applied to finished face.
- D Height — Suspended metal framed ceiling comprising inner layer of 12mm plywood and outer layer of 15mm Moisture resistant Gyproc DuraLine MR on Caseline MF ceiling system by British Gypsum. Thistle DuraFinish applied to finished face.
- X Height — Existing Ceiling to be retained and made good if required.

Potential AHU location - please refer to M&E information for further detail.

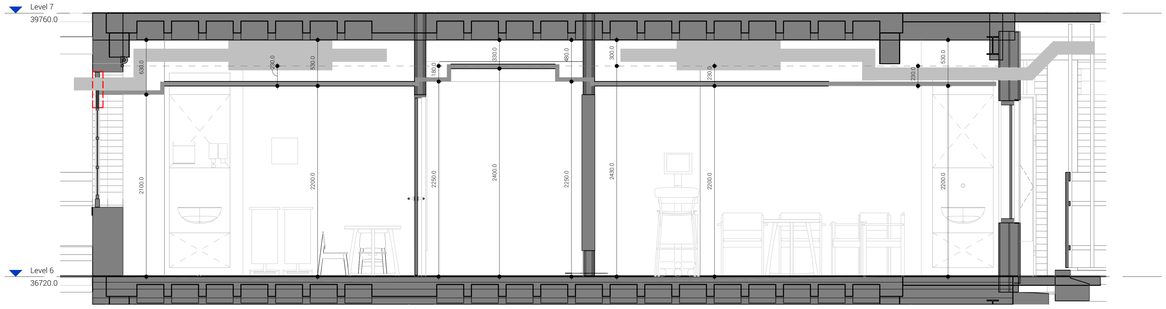
NOTE: All access hatches to be anti ligature, no. and locations TBC.

NB: Please note that the patient facing rooms demrogate away from the recommended height from HBN 03-01 and 03-02.

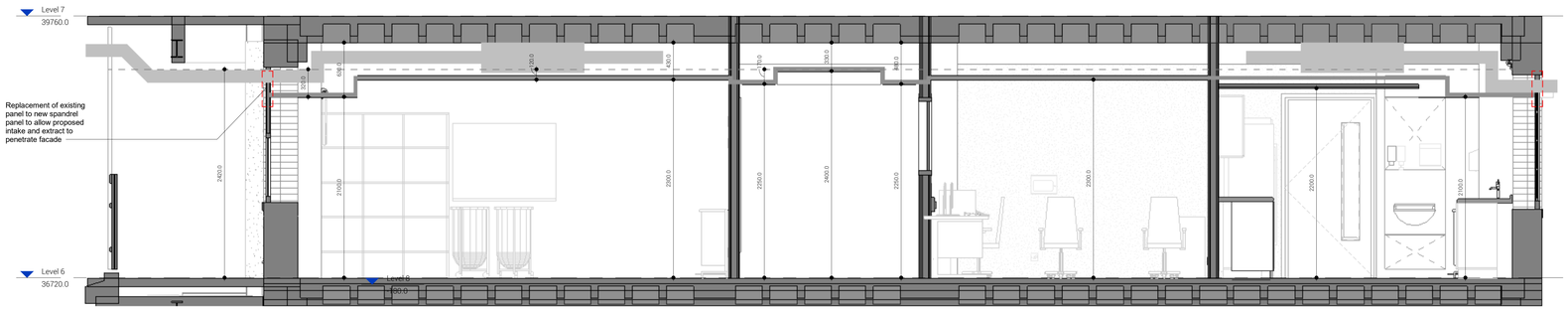
Further confirmation on exact column and beam location will be reviewed on site. Further co-ordination required with Structural Engineer.



Section A-A
1 : 25



Section C-C
1 : 25



Section B-B
1 : 25

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Please note all section's to be fully co-ordinated with Cudd Bentley - further co-ordination to be carried out in Stage 4.

REV	DESCRIPTION	DATE	REV BY
P7	Updated layout	11.10.21	AC
P6	RCP updated following Service strategy	04.10.21	AC
P5	Updated in line with Stage 3 comments	16.09.21	SM
P4	STAGE 3 ISSUE	09.07.2021	HW
P3	Revised in alignment with Greenhatch Survey and initial M&E Comments	01.04.21	SM
P2	Revised in line with M&E Comments, issued for further comment.	18.02.21	SM
P1	Issued for comment	02.02.21	SM

CLIENT: Great Ormond Street Hospital for Childrens NHS Foundation Trust

PROJECT: Psychological and Mental Health Services (PAMHS)

DRAWING: Proposed Ceiling Plan

SCALE: As indicated @ A0

FIRST ISSUED: 02.02.21

PROJECT	CLIENT REF	DRAWN BY	CHECKED BY
BE2001	GOSH	SM	CB

ORIGIN	VOLUME	LEVEL	TYPE	ROLE	NUMBER	REVISION
DAY	XX	06	DR	A	**35-0101**	P7

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Appendix C – MVHR and AHU Datasheets

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-01	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.053	m3/s	Air Volume	0.053	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	53	57	59	58	54	48	43
Supply Fan Outlet (dB)	58	62	64	63	59	53	48
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	28 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-02	**Revision**	0
Unit Model	AIR-HRU 2 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.170	m^3/s	Air Volume	0.170	m^3/s	1.1	W/l/s
Ext. Stat. Pressure	125	Pa	Ext. Stat. Pressure	125	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS	
Width	1,375	mm	Length	1,400	mm	Spigot WxH	450x212 mm
Height	312	mm	Weight	150	kg	Access	BR

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.4	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	89	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Supply Fan Inlet (dB)	61	65	64	62	58	54	49
Supply Fan Outlet (dB)	66	70	69	67	63	59	54
Extract Fan Inlet (dB)	59	61	60	59	55	50	45
Extract Fan Outlet (dB)	64	66	65	64	60	55	50

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	34 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet	Constant Volume/Constant Temp

SELECTED OPTIONS

Dampers	√	Heat Pump Coil	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.60	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-03	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.055	m3/s	Air Volume	0.055	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	53	57	59	58	54	48	43
Supply Fan Outlet (dB)	58	62	64	63	59	53	48
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	28 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-04	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.066	m3/s	Air Volume	0.066	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	55	59	61	61	57	52	48
Supply Fan Outlet (dB)	60	64	66	66	62	57	53
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	31 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-05	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.057	m3/s	Air Volume	0.057	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	53	57	59	58	54	48	43
Supply Fan Outlet (dB)	58	62	64	63	59	53	48
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	28 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-06	**Revision**	0
Unit Model	AIR-HRU 2 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.166	m^3/s	Air Volume	0.166	m^3/s	1.1	W/l/s
Ext. Stat. Pressure	125	Pa	Ext. Stat. Pressure	125	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	1,375	mm	Length	1,400	mm	Spigot WxH	450x212	mm
Height	312	mm	Weight	150	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.4	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	89	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Supply Fan Inlet (dB)	61	65	64	62	58	54	49
Supply Fan Outlet (dB)	66	70	69	67	63	59	54
Extract Fan Inlet (dB)	59	61	60	59	55	50	45
Extract Fan Outlet (dB)	64	66	65	64	60	55	50

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	34 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet	Constant Volume/Constant Temp

SELECTED OPTIONS

Dampers	√	Heat Pump Coil	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.60	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-07	**Revision**	0
Unit Model	AIR-HRU 2 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.180	m^3/s	Air Volume	0.180	m^3/s	1.1	W/l/s
Ext. Stat. Pressure	125	Pa	Ext. Stat. Pressure	125	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	1,375	mm	Length	1,400	mm	Spigot WxH	450x212	mm
Height	312	mm	Weight	150	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.4	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	89	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Supply Fan Inlet (dB)	61	65	64	62	58	54	49
Supply Fan Outlet (dB)	66	70	69	67	63	59	54
Extract Fan Inlet (dB)	59	61	60	59	55	50	45
Extract Fan Outlet (dB)	64	66	65	64	60	55	50

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	34 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet	Constant Volume/Constant Temp

SELECTED OPTIONS

Dampers	√	Heat Pump Coil	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.60	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-08	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.092	m3/s	Air Volume	0.092	m3/s	1.3	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.1	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	88	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	57	61	6	63	61	56	53
Supply Fan Outlet (dB)	62	66	68	68	66	61	58
Extract Fan Inlet (dB)	55	59	61	61	57	52	48
Extract Fan Outlet (dB)	60	64	66	66	62	57	53

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	33 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-09	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.099	m3/s	Air Volume	0.099	m3/s	1.3	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.1	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	88	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	57	61	6	63	61	56	53
Supply Fan Outlet (dB)	62	66	68	68	66	61	58
Extract Fan Inlet (dB)	55	59	61	61	57	52	48
Extract Fan Outlet (dB)	60	64	66	66	62	57	53

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	33 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-10	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.057	m3/s	Air Volume	0.057	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	53	57	59	58	54	48	43
Supply Fan Outlet (dB)	58	62	64	63	59	53	48
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	28 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-11	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.043	m3/s	Air Volume	0.043	m3/s	1.2	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	53	57	59	58	54	48	43
Supply Fan Outlet (dB)	58	62	64	63	59	53	48
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	28 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-12	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.051	m3/s	Air Volume	0.051	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	53	57	59	58	54	48	43
Supply Fan Outlet (dB)	58	62	64	63	59	53	48
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	28 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-13	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.052	m3/s	Air Volume	0.052	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	53	57	59	58	54	48	43
Supply Fan Outlet (dB)	58	62	64	63	59	53	48
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	28 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-14	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.050	m3/s	Air Volume	0.050	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	53	57	59	58	54	48	43
Supply Fan Outlet (dB)	58	62	64	63	59	53	48
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	28 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-15	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.076	m3/s	Air Volume	0.076	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	55	59	61	61	57	52	48
Supply Fan Outlet (dB)	60	64	66	66	62	57	53
Extract Fan Inlet (dB)	55	59	61	61	57	52	48
Extract Fan Outlet (dB)	60	64	66	66	62	57	53

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	31 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-16	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP
Air Volume	0.114	m3/s	Air Volume	0.114	m3/s	1.4 W/l/s
Ext. Stat. Pressure	125	Pa	Ext. Stat. Pressure	125	Pa	

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	16.9	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	87	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	57	61	6	63	61	56	53
Supply Fan Outlet (dB)	62	66	68	68	66	61	58
Extract Fan Inlet (dB)	57	61	6	63	61	56	53
Extract Fan Outlet (dB)	62	66	68	68	66	61	58

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	33 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-17	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.066	m3/s	Air Volume	0.066	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	55	59	61	61	57	52	48
Supply Fan Outlet (dB)	60	64	66	66	62	57	53
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	31 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-18	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.066	m3/s	Air Volume	0.066	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	55	59	61	61	57	52	48
Supply Fan Outlet (dB)	60	64	66	66	62	57	53
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	31 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-19	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.074	m3/s	Air Volume	0.074	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	55	59	61	61	57	52	48
Supply Fan Outlet (dB)	60	64	66	66	62	57	53
Extract Fan Inlet (dB)	55	59	61	61	57	52	48
Extract Fan Outlet (dB)	60	64	66	66	62	57	53

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	31 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-20	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.065	m3/s	Air Volume	0.065	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	55	59	61	61	57	52	48
Supply Fan Outlet (dB)	60	64	66	66	62	57	53
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	31 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-21	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.083	m3/s	Air Volume	0.083	m3/s	1.2	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.4	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	89	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	55	59	61	61	57	52	48
Supply Fan Outlet (dB)	60	64	66	66	62	57	53
Extract Fan Inlet (dB)	55	59	61	61	57	52	48
Extract Fan Outlet (dB)	60	64	66	66	62	57	53

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	31 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-22	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.048	m3/s	Air Volume	0.048	m3/s	1.2	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	53	57	59	58	54	48	43
Supply Fan Outlet (dB)	58	62	64	63	59	53	48
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	28 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-23	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.105	m3/s	Air Volume	0.105	m3/s	1.2	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.1	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	88	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	57	61	6	63	61	56	53
Supply Fan Outlet (dB)	62	66	68	68	66	61	58
Extract Fan Inlet (dB)	55	59	61	61	57	52	48
Extract Fan Outlet (dB)	60	64	66	66	62	57	53

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	33 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-24	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.108	m3/s	Air Volume	0.108	m3/s	1.2	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.1	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	88	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	57	61	6	63	61	56	53
Supply Fan Outlet (dB)	62	66	68	68	66	61	58
Extract Fan Inlet (dB)	55	59	61	61	57	52	48
Extract Fan Outlet (dB)	60	64	66	66	62	57	53

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	33 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-25	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.078	m3/s	Air Volume	0.078	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	55	59	61	61	57	52	48
Supply Fan Outlet (dB)	60	64	66	66	62	57	53
Extract Fan Inlet (dB)	55	59	61	61	57	52	48
Extract Fan Outlet (dB)	60	64	66	66	62	57	53

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	31 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-26	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.047	m3/s	Air Volume	0.047	m3/s	1.2	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	53	57	59	58	54	48	43
Supply Fan Outlet (dB)	58	62	64	63	59	53	48
Extract Fan Inlet (dB)	53	57	59	58	54	48	43
Extract Fan Outlet (dB)	58	62	64	63	59	53	48

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	28 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-27	**Revision**	0
Unit Model	AIR-HRU 1 / BR / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.073	m3/s	Air Volume	0.073	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BR	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	55	59	61	61	57	52	48
Supply Fan Outlet (dB)	60	64	66	66	62	57	53
Extract Fan Inlet (dB)	55	59	61	61	57	52	48
Extract Fan Outlet (dB)	60	64	66	66	62	57	53

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	31 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	GOSH - PAMHS Southwood Building	**Quote No.**	22521
Unit Reference	MVHR-28	**Revision**	0
Unit Model	AIR-HRU 1 / BL / IM / BAC / X / HP / D / F7	**Date**	06/10/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP	
Air Volume	0.073	m3/s	Air Volume	0.073	m3/s	1.1	W/l/s
Ext. Stat. Pressure	100	Pa	Ext. Stat. Pressure	100	Pa		

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS		
Width	770	mm	Length	1,300	mm	Spigot WxH	235x212	mm
Height	312	mm	Weight	95	kg	Access	BL	

COUNTERFLOW HEAT EXCHANGER

INLET			OUTLET			STANDARD OPTIONS	
Air On	-4.0	°C	Air Off	17.6	°C	Bypass Damper	YES
Return Air	20.0	°C	Efficiency (EN308)	90	%	Drain Tray	YES

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	55	59	61	61	57	52	48
Supply Fan Outlet (dB)	60	64	66	66	62	57	53
Extract Fan Inlet (dB)	55	59	61	61	57	52	48
Extract Fan Outlet (dB)	60	64	66	66	62	57	53

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	31 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp

SELECTED OPTIONS

Heat Pump Coil	√	Dampers	√	F7 Supply Filter	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	230V/1PH	F.L.C.	4.50	A	Protection Level	IP54

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

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TECHNICAL SPECIFICATION

PROJECT DETAILS

Project Name	**GOSH - Mildred Creek Unit & Panda Day Care**	**Quote No.**	22521
Unit Reference	**External AHU**	**Revision**	0
Unit Model	**AIR-HRU 31** / SL / EP / BAC / HP / D / X / X / X	**Date**	16/07/2021

PERFORMANCE DATA

SUPPLY			EXTRACT			SFP
Air Volume	0.500	m3/s	Air Volume	0.500	m3/s	1.65 W/l/s
Ext. Stat. Pressure	250	Pa	Ext. Stat. Pressure	250	Pa	

UNIT DIMENSIONS

O/ALL			O/ALL			CONNECTIONS	
Width	950	mm	Length	2850	mm	Spigot WxH	750 x 438
Height	1425	mm	Weight	900	kg	Access	SL

COUNTERFLOW PLATE HEAT EXCHANGER

WINTER			SUMMER			PHX DATA		
Air On	-4.0	°C	Air On	30.0	°C	Efficiency (EN308)	86	%
Return Air	21.0	°C	Return Air	24.0	°C	Dry Efficiency (ErP)	77	%
Air Off	17.5	°C	Air Off	25.4	°C	Bypass Damper	Included	

ACOUSTICS

Sound Power Levels (Lw)	125	250	500	1000	2000	4000	8000
Supply Fan Inlet (dB)	80	73	69	64	62	57	52
Supply Fan Outlet (dB)	87	85	73	74	72	66	62
Extract Fan Inlet (dB)	80	73	69	64	62	57	52
Extract Fan Outlet (dB)	87	85	73	74	72	66	62

BREAKOUT NOISE			ROOM SIDE ATTENUATORS	AIR SIDE ATTENUATORS
Free Field SPL	39 dbA	@3m	Excluded	Excluded

CONTROLS

Controller	BACnet Over IP	Constant Volume/Constant Temp	WIFI Connectivity

SELECTED OPTIONS

Pitched Roof	√	Heat Pump Coil	√	Dampers	√

ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply	400V/3PH	F.L.C.	10.80	A	Protection Level	IP54	

PLEASE NOTE : All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicitive purposes only.

SUPPLY PATH

FILTER SECTION

MAIN FILTER

Bag Grade	F7

COUNTERFLOW PLATE HEAT EXCHANGER

WINTER			SUMMER			PHX DATA		
Air On	-4.0	°C	Air On	30.0	°C	Efficiency (EN308)	86	%
Return Air	21.0	°C	Return Air	24.0	°C	Dry Efficiency (ErP)	77	%
Air Off	17.5	°C	Air Off	25.4	°C	Bypass Damper	Included	

SUPPLY FAN SECTION

DETAILS			FAN		STANDARD OPTIONS	
Air Volume	0.500	m^3/s	No. of Fans	1 x Duty	Inverter	Integrated
External Static	250	Pa	Fan Type	EC Plug Fan		

HEAT PUMP COIL SECTION

AIR SIDE			DETAILS		REFRIGERANT	
Air On	17.5	°C	Duty (kW)	8.5	Type / No. Circuits	R410A / 1

EXTRACT PATH

FILTER SECTION

MAIN FILTER

Panel Grade	M5

EXTRACT FAN SECTION

DETAILS			FAN		STANDARD OPTIONS	
Air Volume	0.500	m^3/s	No. of Fans	1 x Duty	Inverter	Integrated
External Static	250	Pa	Fan Type	EC Plug Fan		