MSP Greenheys.

Acoustic Commissioning Report - Pol 05 External Plant Noise

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BDP.

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1. Quality Information.

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3. Executive Summary

In line with the requirements of BREEAM Hea 05 and Planning Conditions 11 & 32 attached to the full planning permission associated with the MSP Greenheys scheme, this report outlines the verification assessment undertaken via measurement and computer modelling. Based on the verification exercise undertaken it is concluded that the installed equipment meets the acoustic requirements.

4. Introduction

BDP has undertaken acoustic commissioning tests to demonstrate compliance with the project acoustic criteria for the MSP Greenheys scheme.

The commissioning measurements and analysis referred to in this report relates to the external plant noise emissions only (BREEAM Pol 05), with internal acoustic commissioning (BREEAM Hea 05) covered in a separate report.

BDP Acoustics have formed part of the design team for the scheme throughout the RIBA work-stages 2-5.

Early in the design pre-development baseline noise surveys were undertaken to derive appropriate plant noise emissions criteria (detailed in the Environmental Noise Assessment report submitted to planning P3001624(REP)002 P02 April 2023, and the various RIBA work-stage reports).

The plant noise emissions criteria are detailed in the following section, adopted in line with BREEAM and Local Authority requirements.

5. Criteria

The external plant noise emissions criteria applied to the scheme is based on meeting the requirements of BREEAM 2018 Pol 05 & MCC's planning requirements, summarised below:

Pol 05

"The noise level from the assessed building, as measured in the locality of the nearest or most exposed noise-sensitive development, must be at least 5dB lower than the background noise throughout the day and night."

Planning Conditions

"11) a) Any plant and associated equipment including any MVHR system, externally mounted and ancillary equipment, lift equipment, substation associated with the development shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Prior to commencement of the use hereby approved the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.

b) Prior to the operation of the scheme a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of non-conformity with the recommendations in the verification report shall be detailed along with any measures required to be undertaken prior to operation of the scheme to ensure compliance with the agreed noise criteria."

"32)(a) The development (excluding plant and equipment) shall be implemented in accordance with the recommendations within the Greenheys, Manchester Science Park, Environmental Noise Assessment Report Rev PO2 April 2023 by BDP;

(b) Prior to occupation a post completion report to verify that all of the recommended mitigation measures have been installed and effectively mitigate any potential adverse noise impacts in adjacent residential accommodation arising directly from the proposed development shall be submitted and agreed in writing by the City Council as local planning authority. Prior to occupation any non compliance shall be suitably mitigated in accordance with an agreed scheme."

Adopted plant noise emissions criteria:

Table 1: Proposed nearest or most exposed noise sensitive receptor (NSR) noise limits for fixed plant and equipment installations associated with the new development

Nearest or most exposed noise sensitive receptor (NSR) location	Time Period	Lowest measured existing background noise level at NSR (dB $L_{A90,5min}$)	Non-standby plant external noise limits at the NSR façade location (dB $L_{Ar,Tr}$)	Standby plant* external noise limits at the NSR façade location (dB $L_{Ar,Tr}$)
Residential properties across Greenheys Lane	Daytime (07:00 – 23:00 hours)	51	46	61
	Evening (19:00 - 23:00 hours)	45	40	55
	Night-time (23:00 – 07:00 hours)	38	33	48
Residential properties across Burlington Street	Daytime (07:00 – 23:00 hours)	50	45	60
	Evening (19:00 - 23:00 hours)	45	40	55
	Night-time (23:00 – 07:00 hours)	40	35	50
Bright Building	Daytime (07:00 – 23:00 hours)	45	40	55

Nearest or most exposed noise sensitive receptor (NSR) location	Time Period	Lowest measured existing background noise level at NSR (dB $L_{A90,5min}$)	Non-standby plant external noise limits at the NSR façade location (dB $L_{Ar,Tr}$)	Standby plant* external noise limits at the NSR façade location (dB $L_{Ar,Tr}$)
Mosque McDougall Prayer Hall	Daytime (07:00 – 23:00 hours)	51	46	61
Base Building	Daytime (07:00 – 23:00 hours)	44	39	54
Darul Aman Mosque	Daytime (07:00 – 23:00 hours)	45	40	55

**Standby plant will only operate in the event of a mains power failure, or for other emergency life safety purposes, or when tested, with scheduled testing only taking place on a weekday in daytime hours.*

Based on the above, it is anticipated that this report will also verify compliance with the local planning authority's noise related planning conditions applicable to the scheme (i.e. *Condition 11, above)* the criterion of which align with the BREAAM Hea 05 requirement from an acoustic perspective.

6. Design input and modelling

During the design process multiple iterations of acoustic assessment via 3D noise modelling have been undertaken, working with both the client and contractor teams to ensure that the detailed and delivered designs are capable of meeting the external noise criteria adopted for the scheme, based on BS 4142, BREEAM and LPA requirements.

As the designs progressed acoustic mitigation measures and appropriate equipment selections were adopted into the design specifications to allow the adopted noise criteria to be achieved at the nearby noise sensitive receptors.

Assessments were informed by the design engineers' communicated servicing strategy along with operational/loading strategies and assumptions during the buildings operation (day / night), reference can be made to Silcock Leedham's 'Acoustic Design Statement' ref. A1, appended to this document for a summary.

Based on the modelling exercises, the dominant noise sources were identified as the significant heat exchange equipment (Heat Pumps), Strobic fans, and large whole house air handling units (AHUs).

7. Verification

At this stage the building is not occupied, and correspondingly the building services equipment is not currently in day-to-day operation responding to the designed load of the building when occupied/fully occupied. As such it is not possible to undertake a standard BS 4142 assessment via measurement at the receptors.

To facilitate assessment, an approach of localised operational noise measurements has been undertaken, with the assistance of the mechanical services engineering contractors 'forcing' the main pieces of equipment to operate at future design duty to allow comparison with the acceptable noise levels which have been previously modelled in CadnaA proprietary noise propagation software.

On site measurements were carried out using the equipment shown in Table 2.

Table 2: Acoustic commission testing equipment used

Equipment Description	Manufacturer	Type Number
Sound Level Meter	Brüel & Kjær	2250
Microphone	Brüel & Kjær	4189
Pre-amp	Brüel & Kjær	ZC 0032
Calibrator	Brüel & Kjær	4231

Based on the measurements undertaken in-situ on 17th April 2026 by Lewis Herd MIOA, with the plant equipment operating as per the engineers' requirements when the building is occupied and in-use, a comparison of the measured noise level (SPL, dB) with that modelled in the same location is provided in Figure 1 and Figure 2.

As can be seen in the figures & table below, the measured in-situ noise level was either equal to or lower than that modelled, when factoring in simple acoustic corrections to account for multiple unit operation, where measurements were different from the designed operating conditions.

As such, it is inferred that the modelled results predicted at the receptor positions can be expected to be realised at the same receptors in-situ (refer Table 4 for predicted levels at NSR positions).

7.1. Comparison of measured and modelled levels

Figure 1: Annex roof, modelled & measured comparison

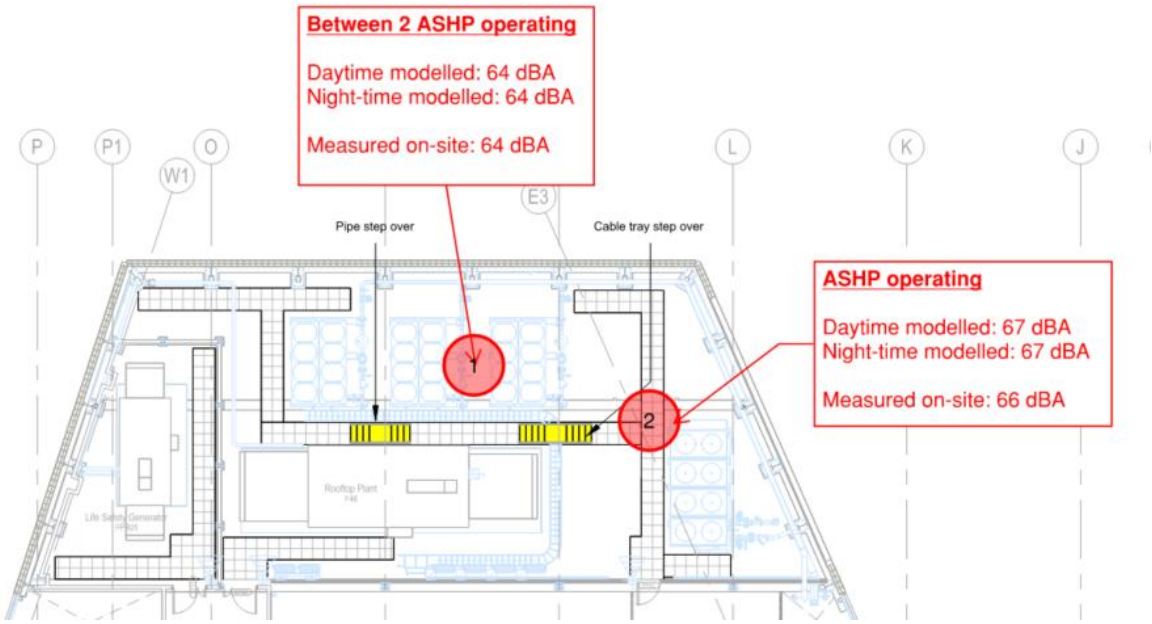
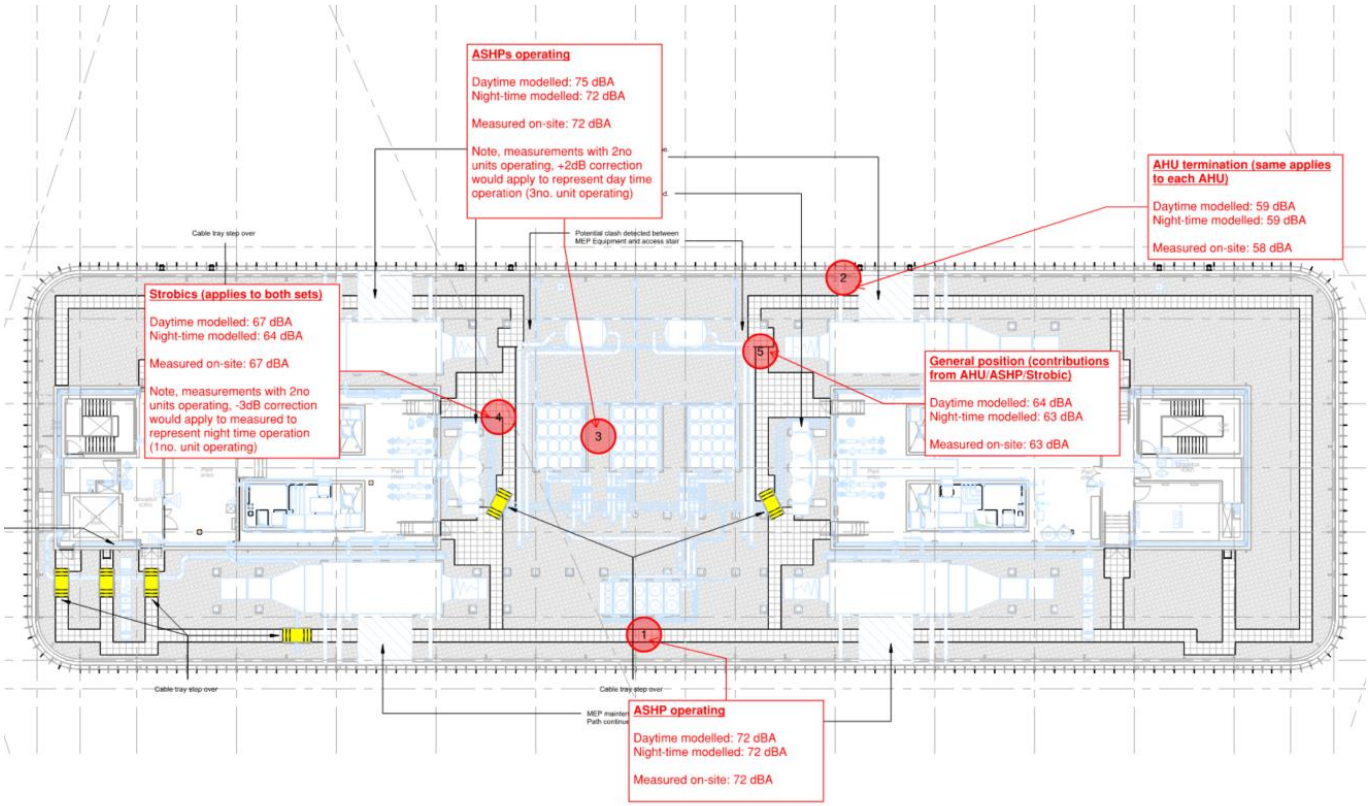


Figure 2: Main roof, modelled & measured comparison



All other atmospheric terminations were subject to limiting acoustic criteria, achieved via in-line ducted attenuation specified by the project engineers.

Table 3: Table of modelled & measured levels comparison

Location/equipment	Modelled level, dBA (Day/Night)	Measured level on-site, dBA
Annex roof level: between 2 operating 2pipe ASHP	64/64	64
Annex roof level: operating 4pipe ASHP	67/67	66
Roof level: Strobic fans (2no. operating)	67/64	67 *Note, measurement taken with 2no units operating, -3dB correction would apply to measured level to represent night-time operation (1no. unit operating)*
Roof level: between 2 operating 2pipe ASHP	75/72	72 *Note, Measurement taken with 2no units operating, +2dB correction would apply to represent daytime operation (3no. unit operating)*
Roof level: operating 4pipe ASHP	72/72	72
Roof level: AHU termination	59/59	58
Roof level: General position (contributions from ASHP/Strobic/AHU)	64/63	63

The following levels are predicted at the nearby residential receptors based on the CadnaA modelling of the scheme. Acoustic features will not be readily distinctive against the residual ambient noise at the receptor locations and therefore no character corrections have been added to establish the rating level.

Table 4: CadnaA predicted noise levels at NSR locations

Nearest or most exposed noise sensitive receptor (NSR) location	Time Period	Lowest measured existing background noise level at NSR (dB $L_{A90,5min}$)	Non-standby plant external noise limits at the NSR façade location (dB $L_{Ar,Tr}$)	Predicted external plant noise at the NSR façade location (dB $L_{Ar,Tr}$)
Residential properties across Greenheys Lane	Daytime (07:00 – 23:00 hours)	51	46	35
	Evening (19:00 - 23:00 hours)	45	40	33
	Night-time (23:00 – 07:00 hours)	38	33	32
Residential properties across Burlington Street	Daytime (07:00 – 23:00 hours)	50	45	39
	Evening (19:00 - 23:00 hours)	45	40	38

Nearest or most exposed noise sensitive receptor (NSR) location	Time Period	Lowest measured existing background noise level at NSR (dB $L_{A90,5min}$)	Non-standby plant external noise limits at the NSR façade location (dB $L_{Ar,Tr}$)	Predicted external plant noise at the NSR façade location (dB $L_{Ar,Tr}$)
	Night-time (23:00 – 07:00 hours)	40	35	35
Bright Building	Daytime (07:00 – 23:00 hours)	45	40	38
Mosque McDougall Prayer Hall	Daytime (07:00 – 23:00 hours)	51	46	44
Base Building	Daytime (07:00 – 23:00 hours)	44	39	39
Darul Aman Mosque	Daytime (07:00 – 23:00 hours)	45	40	26

8. Summary

In summary, BDP Acoustics has undertaken acoustic commissioning for the Greenheys MSP project.

Due to the building not being fully occupied and operational, the verification approach has based on localised in-situ measurements of the dominant plant equipment, to allow comparison to the predictions at the same locations in 3D noise modelling which predicts compliance with the adopted criteria (based on HEA 05 and LPA requirements).

Based on a comparison of the measured and modelled results, it is apparent that the localised measurements are equal to, or lower than, those modelled at the same locations. It is therefore considered that the measurements verify the previous noise modelling exercises completed during the design stages which predicted compliance with the BREEAM Pol 05 and LPA requirements. As such this demonstrates that the external plant noise emissions criteria set out in Table 1 can be expected to be compiled with at the nearby noise sensitive receptor locations.

Project:	Bruntwood SciTech Greenheys Development				
Note Ref:	A1	*Project No:*	3210105	*Date:*	April 2026
Title:	Acoustic Design Statement				

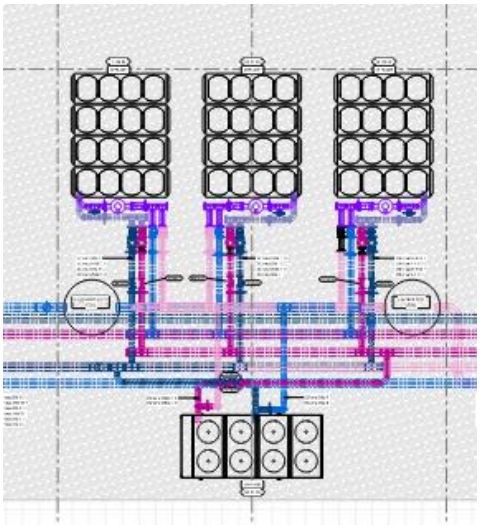
This statement has been produced to describe the design considerations incorporated to ensure that the Greenheys redevelopment does not exceed the maximum sound levels as described in the BDP Acoustic report.

Potential noise sources from the building services are:

1. General Ventilation Plant and equipment on the 6th Floor external plant area
2. Heat Pumps on the 6th Floor external plant area
3. Laboratory ventilation on the 6th Floor external plant area
4. Stairway smoke clearance fans on the 6th Floor external Plant area
5. General ventilation plant and equipment in the First Floor Plant area
6. Heat pumps on the First Floor Roof
7. Life safety and critical system back – up generators on the First Floor Roof

The design, specification and installation of the above have been considered as described below. Note that all external plant areas are surrounded with acoustically rated screening panels to reduce sound break out.

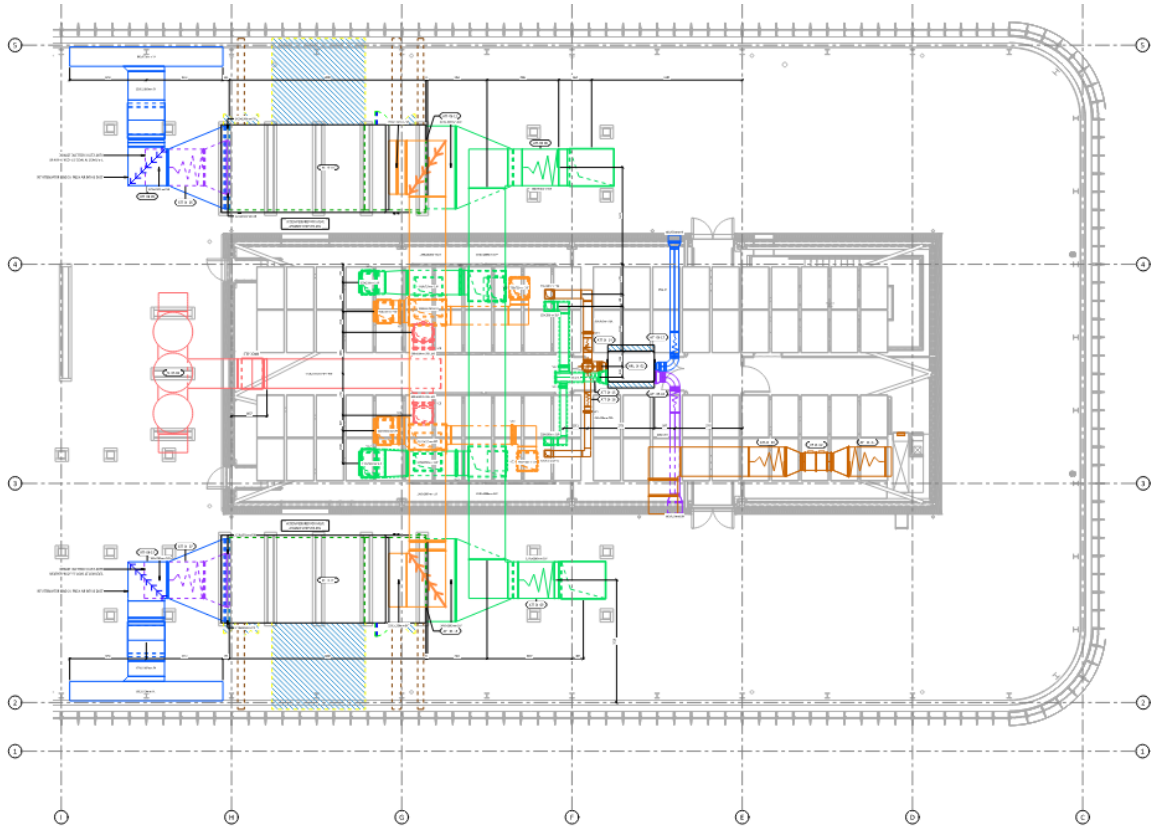
1. Heat pumps (HP) on the 6th Floor external plant area comprise 1 No. 4 – pipe HP capable of simultaneous heating and cooling supported by 3 No 2 – pipe HP's capable of heating or cooling. The 4 – pipe HP is fitted with the manufacturers Super Low Noise pack and bespoke attenuators designed by an acoustic specialist to limit the units to a maximum of 84dB at peak conditions. The 2 pipe HP can achieve this without external attenuation and also have the capacity to run at reduced speed to further reduce noise.



Sketch showing 4 – pipe (bottom) and 3 No. modular 2 – pipe heat pumps in centre of 6th Floor external plant space

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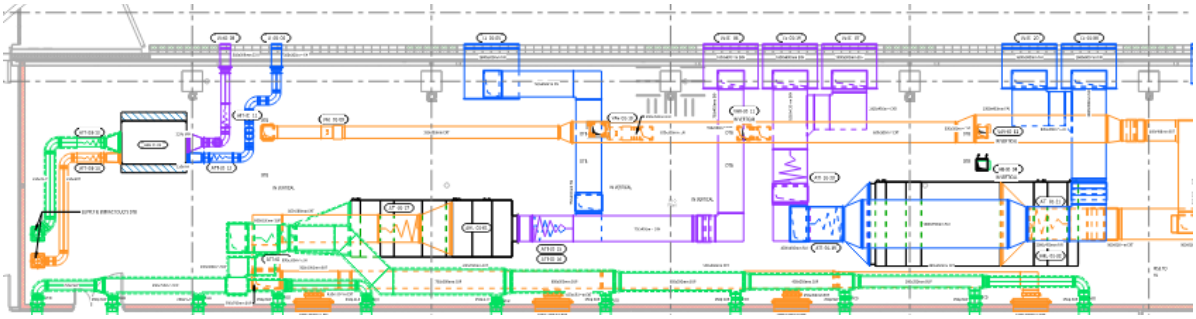
2. Air handling units on the 6th Floor Roof are of double – skinned panel construction incorporating heavy acoustic material to minimise the casing break out noise. Intake and exhaust ducts both incorporate attenuators to reduce noise at the louvre positions to 59dBa.
3. 2 No. Strobic LEV exhaust fans are located in the centre of the 6th Floor external plant area. Each one has 3 No. exhaust ducts (2 run, 1 standby, in case of fan failure) attenuated to a total SPL of 74dBA and 2 No. inlets attenuated to a total SPL of 77dBA
4. Stairway smoke clearance fans are located to the South side of the 2 No. Stairways serving the building. Note that these will only used under emergency conditions and weekly testing.



Sketch showing air handling units (top & bottom, intake in blue exhaust in purple), LEV (red)and Staircase Smoke Extract (brown) fans in Eastern side of 6th Floor External plant space. The West side is a mirror image. All air intakes and exhausts are attenuated and external air handling units are constructed to minimise break – out noise

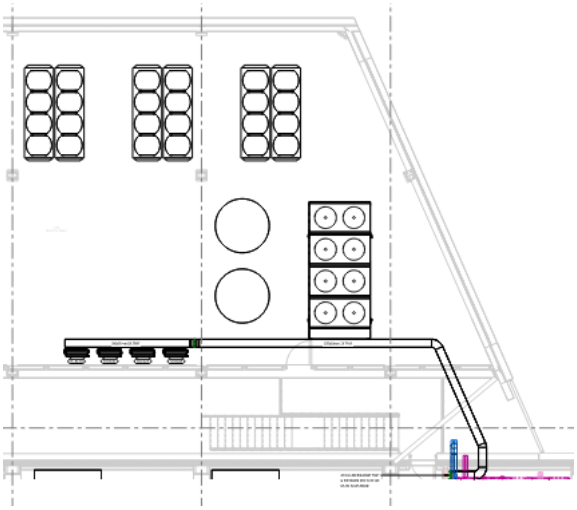
5. Air Intake and exhaust ducts connecting to the external louvres on the First Floor internal Plantroom are all attenuated to achieve a maximum of 49dB.

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Sketch showing 1st Floor internal plant area with attenuated intake and exhaust duct connecting to louvres on the North Façade of the building

6. The heat pumps on the 1st Floor external plant area comprise 1 No. 4 – pipe heat pump capable of simultaneous heating and cooling supported by 3 No 2 – pipe heat pumps capable of heating or cooling. The 4 – pipe heat pump is fitted with the manufacturers Super Low Noise pack and bespoke attenuators designed by an acoustic specialist to limit the units to a maximum of 70dB at peak conditions. The 2 pipe heat pumps can achieve this without external attenuation and have the capacity to run at reduced speed to further reduce noise. Outdoor units for the DX Split systems serving the Ground Floor Comms Room and UPS Room are also located in this area.



Sketch showing 2 – pipe heat pumps (top), 4 pipe heat pump (lower right) and Outdoor units for the split DX systems cooling the Comms Room and UPS Room (bottom) in 1st Floor Plant enclosure.

7. The life safety and critical systems emergency back – up diesel generators located in the first floor external plant area are each contained within their own acoustically rated enclosures to reduce noise break – out to 65dB @1m when in use. Note that they will only run during emergency conditions, and for testing purposes.

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