

Liverpool Road Hotel Manchester

Ventilation Statement
P1824-POL-001 Rev A



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AMENDMENT HISTORY



REVISION	DESCRIPTION	DATE	AUTHOR	CHECKED
A	Client Issue	11.05.2023	C. Franks	B. Duckworth

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1 INTRODUCTION

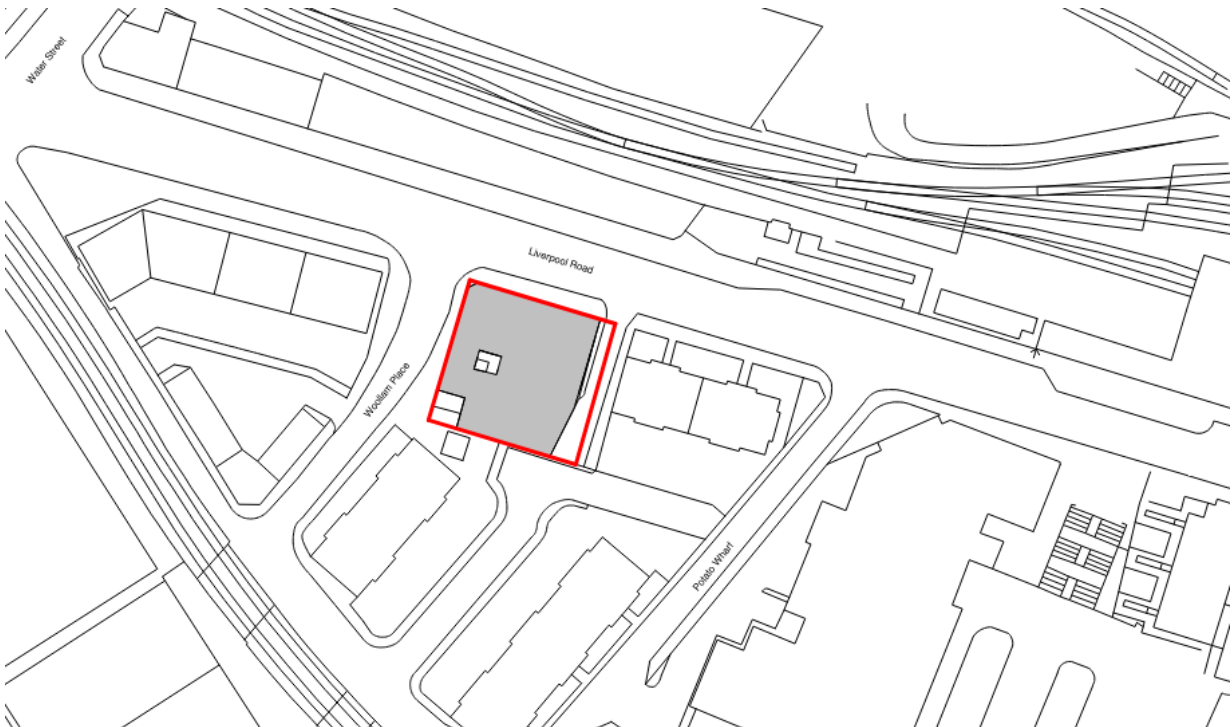
NOVO Integration Ltd are appointed by Domis Construction who have applied for full planning permission for a commercial development which is envisaged as a hotel, restaurant, kitchen and SPA facility.

The scheme consists the conversion and extension of the Medlock pub into a 4-storey hotel, restaurant, SPA and ancillary spaces.

The building is located on Liverpool Road in the Castlefield district of Manchester City Centre.

The development has proximity to amenity including retailers, cafes and restaurants. Figure 1 below shows a site plan/redline boundary displaying the development area and its situation within the city centre.

Figure 1 Site Location



1.1 PLANNING POLICY AND REGULATIONS

Our ventilation strategy will incorporate a summary from the entirety of the team's supporting technical work. It is critical that everyone ensures that their final report includes the following approach and content:

- Approved Document Part F 2021 Ventilation
- Approved Document Part J 2022 (Current version) Combustion appliances and fuel storage systems
- BS 6644:2011 Specification for the installation and maintenance of gas-fired hot water boilers of rated inputs between 70 kW (net) and 1.8 MW (net) (2nd and 3rd family gases)
- EMAQ titled 'Control of Odour and Noise from Commercial Kitchen Exhaust Systems' dated September 2018

2 POLLUTANTS

Global concern for environmental pollution has risen in recent years, as concentrations of harmful pollutants in the atmosphere are increasing. Buildings have the potential to create major pollution both from their construction and operation, largely through pollution to the air (dust emissions, NO_x emissions, ozone depletion and global warming) but also through pollution to watercourses and ground water.

Poor air quality has a detrimental effect on humans, fauna and flora. Gases such as nitrous oxides (NO_x) can react with other gases and environmental factors including sunlight to create substances that have a major impact on health and wellbeing. The resulting substances can be highly detrimental to human health. They can be carcinogenic, affect respiratory function (including asthma and other bronchial complaints), have a sensitising effect for allergy sufferers and increase instances of heart disease. Legislation covering the UK sets maximum acceptable limits for measured air pollutants.

The proposed development will aim to minimise the above impacts, both at the design stage and on- site.

2.1 OZONE DEPLETION

CFCs and HCFCs, compounds commonly used in insulation materials and refrigerants, can cause long- term damage to the Earth's stratospheric ozone layer, exposing living organisms to harmful radiation from the sun. They also significantly increase global warming if they leak into the atmosphere. Following the Montreal Protocol, production and use of CFCs is no longer permitted and EC regulations will require phasing out of HCFCs by 2015. However, products that replace these gases are often still potent global warming contributors. Where refrigerants are used for air-conditioning and comfort cooling, they will be CFC and HCFC-free.

2.2 INTERNAL POLLUTANTS

Volatile organic compounds (VOCs) are emitted as gases (commonly referred to as offgassing) from certain solids or liquids. VOCs include a variety of chemicals, some of which are known to have short- term and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products numbering in the thousands.



Examples include paints and lacquers, paintstrippers, cleaning supplies, pesticides, building materials, furnishings, adhesives, Urea-formaldehyde foam insulation (UFFI), pressed wood products (hardwood plywood wall panelling, particleboard, fibreboard) and furniture made with these pressed wood products. 'No' or 'low' VOC paints are available from most standard mainstream paint manufacturers. These 'eco-friendly' paints are made from organic plant sources and powdered milk-based products. The design team will seek to select internal finishes and fittings with low or no emissions of VOCs and comply with European best practice levels as a minimum.

2.3 NOX EMISSIONS FROM BOILERS

Nitrous oxides (NO_x) are emitted from the burning of fossil fuels and contribute to both acid rain and to global warming in the upper atmosphere. At ground level, they react to form ozone, a serious pollutant and irritant at low level. Burners in heating systems are a significant source of low-level NO_x while power stations (and therefore electric heating) are a significant source of NO_x in the upper atmosphere.

The spaces within the proposed development will incorporate air source heat pump, electric heating to ancillary areas and back of house areas which will emit no NO_x at the site.

The site will have a gas fired boiler system serving the pool plant and domestic hot water. The boilers will be fully condensing type and have a low NO_x emission of <40mg/kWh (Class 5). The flue gases will be discharged to atmosphere at roof level.

3 VENTILATION

3.1 RESTAURANT, BAR AREA

The ground floor area is designated as a restaurant and bar with a commercial kitchen area. The extract ventilation from the kitchen extract canopy shall be routed through the building to the roof where the extract fan system shall terminate on the roof of the building. Where required the respective fire compartmentation and ductwork shall be provided as well as attenuation.

Any kitchen ventilation shall be complete with fume, vapour and odour control. The strategy shall include risk assessments for odour and noise and be based on appropriate guidance such as that published by EMAQ titled ‘Control of Odour and Noise from Commercial Kitchen Exhaust Systems’ dated September 2018, to demonstrates that suitable mitigation measures will be installed between the kitchens and the extract point.

The kitchen ventilation make-up air shall be drawn from ground floor level from an external louvre located in the external façade and shall be detailed to mitigate any acoustic, odour and fire issues.

The kitchen shall have dedicated mechanical supply and extract units to meet the demand of the kitchen appliances as detailed by a kitchen specialist in line with DW 172.

The design of the ventilation system shall be in line with the acoustic consultant’s recommendations to ensure compliance with MCC policy.

A Survey has been carried out by Hann Tucker to assess the noise in accordance with BS 4142:2014.

This requires the ventilation plant to achieve the following noise levels at the nearest residential property.

Plant Noise Emission Criteria (L _{Aeq,T} dB)	
Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
44	38

Figure 2 Extract of Acoustic Consultants report

The ventilation plant will be attenuated to suit the sites acoustic design criteria.

In addition, the ventilation plant shall be located so it is as far as possible away from the neighbouring residential property. Plant is to be located at roof level and within the level 3 roof area which provides an element of screening.

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3.2 KITCHEN EXTRACT SPECIFICATIONS

The kitchen extract fan, EF01 on the drawing above, has the following specification.

Reference: KEF01

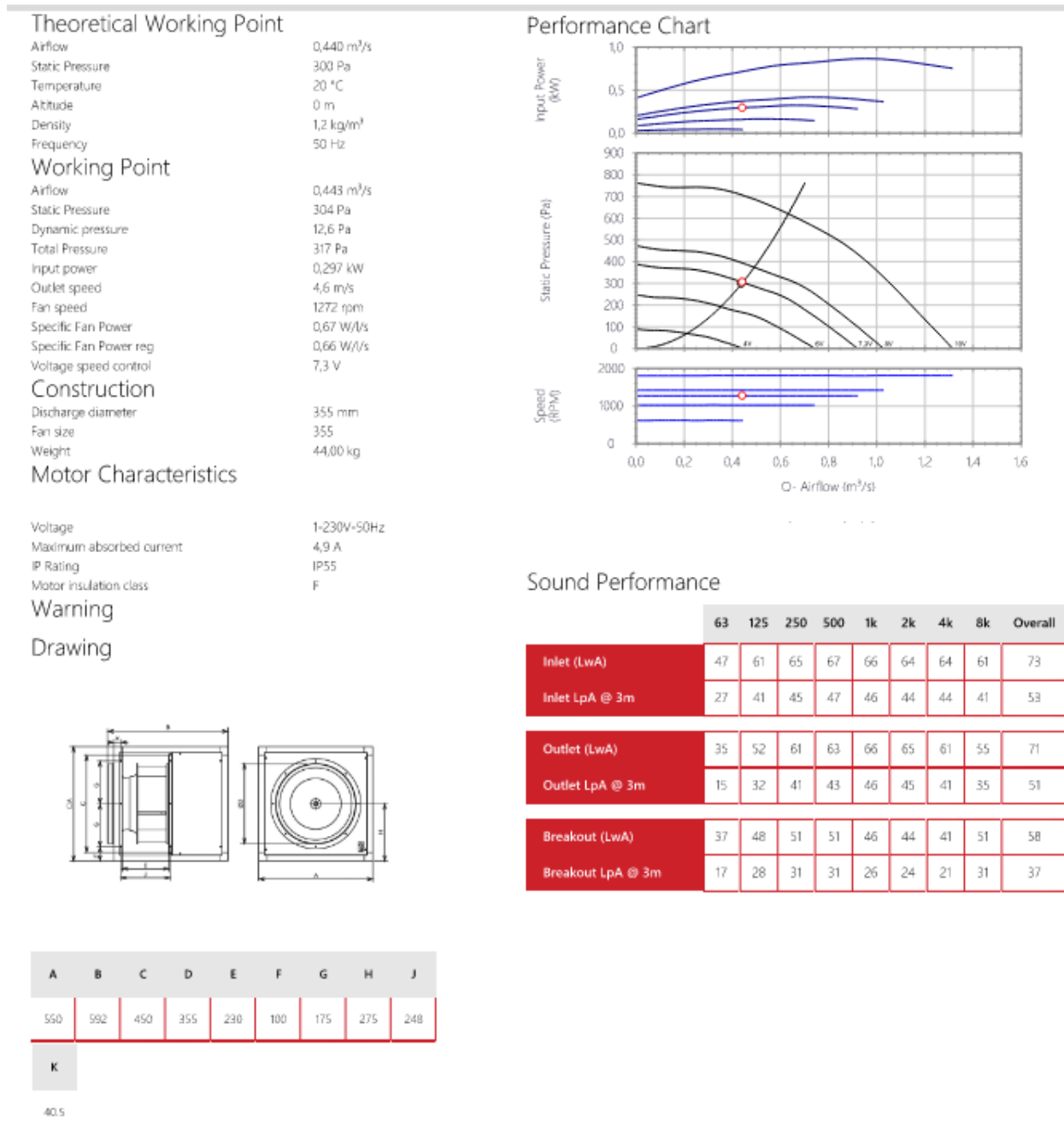


Figure 4 Indicative Kitchen Extract Fan Specification

The kitchen extract fan attenuators shall be selected at Stage 4 and shall be selected to meet the acousticians' requirements.

3 VENTILATION



The kitchen extract fan mounted at roof level shall be fitted with a vertical discharge cowl typically as per the sketch below to comply Manchester City Council requests.

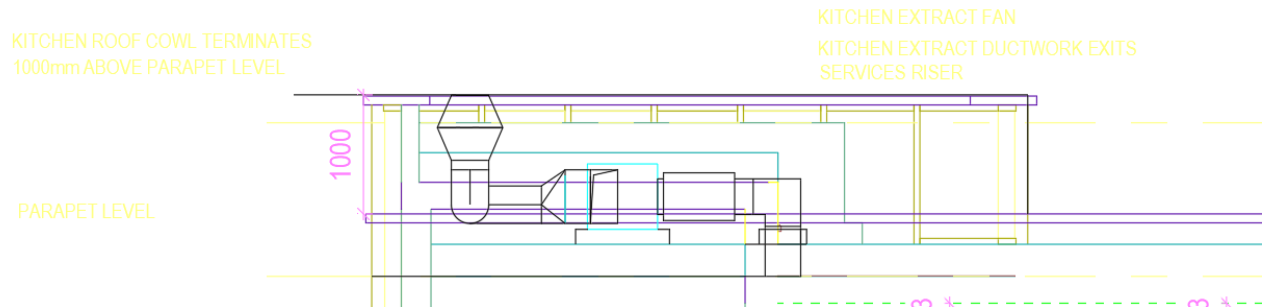


Figure 5 Indicative Kitchen Extract Discharge Arrangement

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The new build section of the hotel generally consists of bedroom accommodation. The bedrooms shall be ventilated through individual MVHR units located within each room. The units shall introduce fresh air into the rooms and extract stale air from the ensuites.

The existing building being remodelled is listed. To avoid any services penetrations through the façade a central air handling unit will provide supply and extract ventilation to the bedrooms.

[illegible]

11/05/2023
Change Authorisation: BD/GP

3 VENTILATION



3.4 INDICATIVE AIR CONDITIONING UNITS

Comfort cooling shall be provided to all front of house occupied spaces through a number of air conditioning systems combining heat recovery.

Preliminary selections are that these shall be the following units or equal and approved.

HITACHI

Technical Specifications

SET FREE SIGMA STANDARD SERIES

STANDARD SERIES					RAS 8FSXNSE	RAS 10FSXNSE	RAS 12FSXNSE	RAS 14FSXNSE	RAS 16FSXNSE
Nominal Cooling Capacity				kW	22,4	28,0	33,5	40,0	45,0
Nominal Heating Capacity				kW	25,0	31,5	37,5	45,0	50,0
EER					4,15	3,85	3,77	3,30	3,25
SEER					7,50	7,17	6,97	7,47	7,30
COP					4,75	4,57	4,10	3,74	3,37
SCOP					4,17	4,11	4,29	4,48	4,42
Scroll Compressor				type/n.	Inverter x 1	Inverter x 1	Inverter x 1	Inverter x 1	Inverter x 2
Connection Data	2 pipe	Gas	mm (in)	19,05 (3/4)	22,2 (7/8)	25,4 (1)	25,4 (1)	28,58 (1-1/8)	
		Liquid	mm (in)	9,52 (3/8)	9,52 (3/8)	12,7 (1/2)	12,7 (1/2)	12,7 (1/2)	
	3 pipe	Gas HP	mm (in)	15,88 (5/8)	19,05 (3/4)	22,2 (7/8)	22,2 (7/8)	22,2 (7/8)	
		Gas LP	mm (in)	19,05 (3/4)	22,2 (7/8)	25,4 (1)	25,4 (1)	28,58 (1-1/8)	
		Liquid	mm (in)	9,52 (3/8)	9,52 (3/8)	12,7 (1/2)	12,7 (1/2)	12,7 (1/2)	
Maximum no. indoor units				n	26	32	39	45	52
Load Index				% HP			50 + 130		
Sound Power (preliminary data)				dB(A)	80	82	82	85	85
Sound Pressure (preliminary data)				dB(A)	58	60	59	63	63
Dimensions (H x W x D)				mm	1725x959x784	1725x959x784	1725x959x784	1725x1219x784	1725x1219x784
Weight				kg	210	210	233	289	332
Power Supply				phase/V/Hz			3N / 400 / 50		
Operating Range		Heating	°C				-10 ÷ +48		
		Cooling	°C				-20 ÷ +15		
Air Flow				m3/min	165	170	190	239	256
Number of Fans				n°	1	1	1	2	2
Static Pressure		Pa (max)	Pa				80		

SET FREE SIGMA STANDARD SERIES

STANDARD SERIES				RAS 18FSXNSE	RAS 20FSXNSE	RAS 22FSXNSE	RAS 24FSXNSE	(RAS 12FSXNSE + RAS 14FSXNSE)
Nominal Cooling Capacity			kW	50,0	56,0	61,5	67,0	73,0
Nominal Heating Capacity			kW	56,0	63,0	69,0	77,5	82,5
EER				3,35	3,01	3,01	2,99	3,12
SEER				6,96	6,29	6,76	6,20	7,30
COP				3,29	3,35	3,19	3,40	3,90
SCOP				4,18	4,14	4,43	4,43	4,39
Scroll Compressor			type/n.	Inverter x 2	Inverter x 2	Inverter x 2	Inverter x 2	Inverter x 2
Connection Data	2 pipe	Gas	mm (in)	28,58 (1-1/8)	28,58 (1-1/8)	28,58 (1-1/8)	28,58 (1-1/8)	31,75 (1-1/4)
		Liquid	mm (in)	15,88 (5/8)	15,88 (5/8)	15,88 (5/8)	15,88 (5/8)	19,05 (3/4)
	3 pipe	Gas HP	mm (in)	22,2 (7/8)	22,2 (7/8)	25,4 (1)	25,4 (1)	25,4 (1)
		Gas LP	mm (in)	28,58 (1-1/8)	28,58 (1-1/8)	28,58 (1-1/8)	28,58 (1-1/8)	31,75 (1-1/4)
		Liquid	mm (in)	15,88 (5/8)	15,88 (5/8)	15,88 (5/8)	15,88 (5/8)	19,05 (3/4)
Maximum no. indoor units			n	58	64	64	64	64
Load Index			% HP	50 + 130				
Sound Power (preliminary data)			dB(A)	86	86	84	86	87
Sound Pressure (preliminary data)			dB(A)	65	65	64	66	64,5
Dimensions (H x W x D)			mm	1725x1219x784	1725x1609x784	1725x1609x784	1725x1609x784	1725x2198x784
Weight			kg	333	382	396	397	233+289
Power Supply			phase/V/Hz	3N / 400 / 50				
Operating Range	Heating	°C	-10 + +48					
	Cooling	°C	-20 + +15					
Air Flow			m3/min	256	329	329	348	190 + 239
Number of Fans			n°	2	2	2	2	3
Static Pressure		Pa (max)	Pa	80				

Figure 7 Comfort Cooling Data Sheets

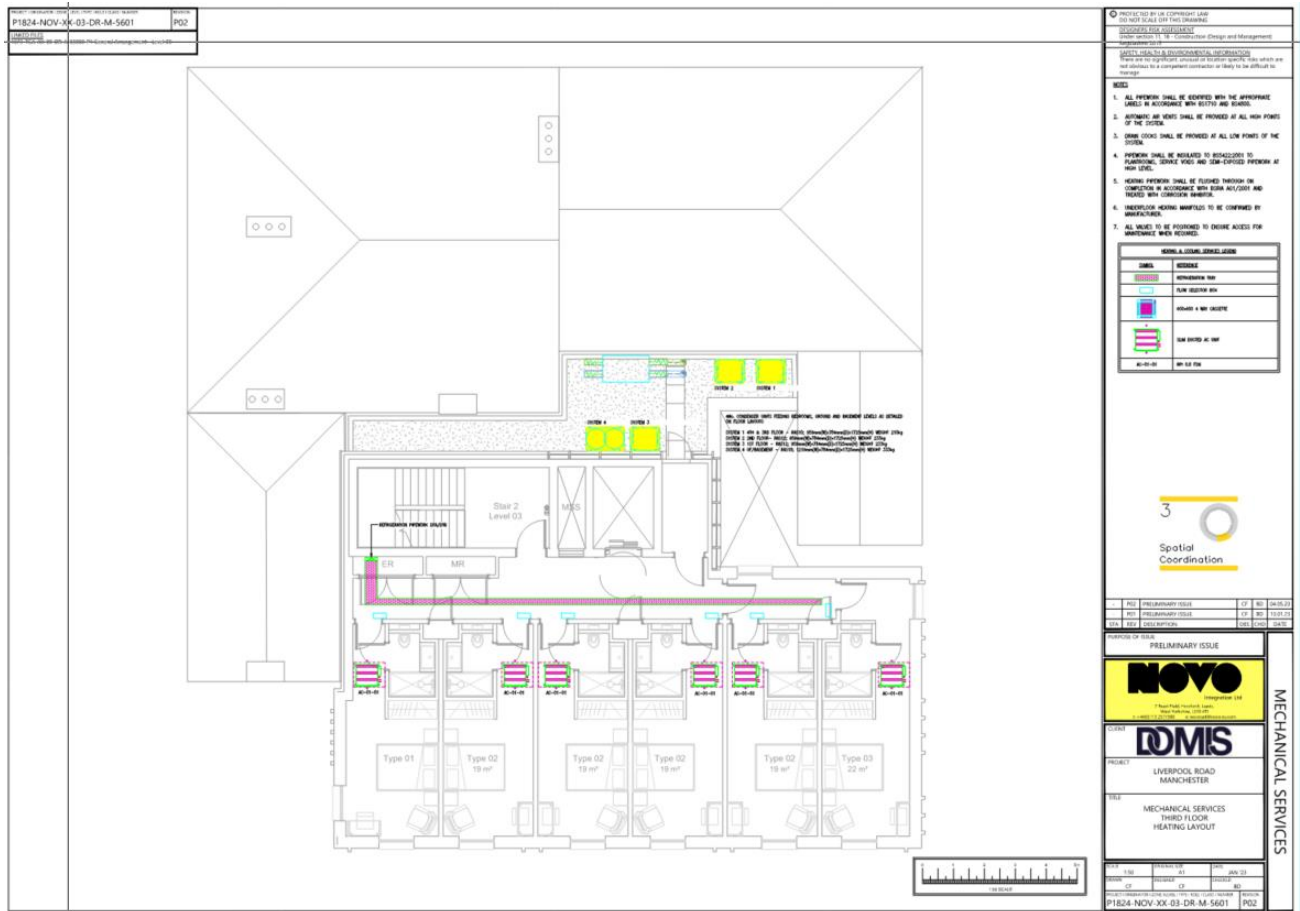


Figure 8 Proposed Position of External Condensers

3.5 LOCAL EXTRACT SYSTEMS

WC's, stores and cleaners' stores shall be provided with local extract mechanical ventilation to extract stale air that is created by the use of these spaces.

Air volumes shall be as minimum AD Part F requirements or higher to remove odours and fans shall be void mounted fans ducted to the external elevations of the building to extract to atmosphere. All ventilation plant shall be selected and attenuated to meet the acousticians' requirements.

3.6 PLANT AREAS

Plant areas shall be on the upper roof and external plant deck at level 3 as described in this report.

3.7 SMOKE EXTRACT

The fire strategy report for the building only requires a passive smoke extract system, there is no requirement for a mechanical extract system.