

Acoustics

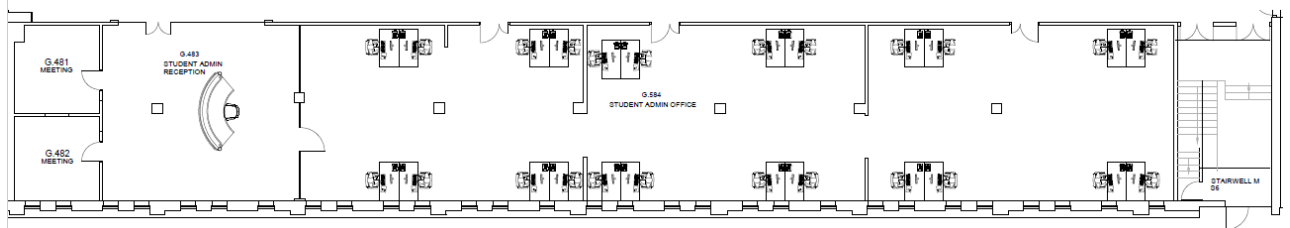
Project Reference:	7164
Project Description:	UoM Stopford Ground Floor PSS Acoustics
Client:	University of Manchester Stopford Building, Oxford Road, Manchester, M13 9PL
Date:	November 2024
Revision	-

Based on Manchester City Council and BS4142:2014 guidance, all plant, equipment and machinery associated with the development shall be controlled to ensure that the overall sound pressure levels at 1 m from the façade of the nearest noise sensitive premises do not exceed L_A,T 43 dB during the daytime (07:00 to 23:00 hrs) and L_A,T 42 dB during the night (23:00 to 07:00 hrs).

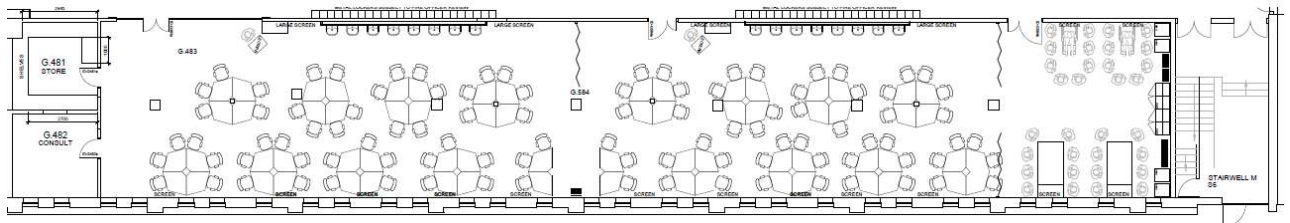


As noted in the photos document, the existing black infill panels which require the new louvres for ventilation are shown on the accompanying drawings, and can be seen above the windows in the image above.

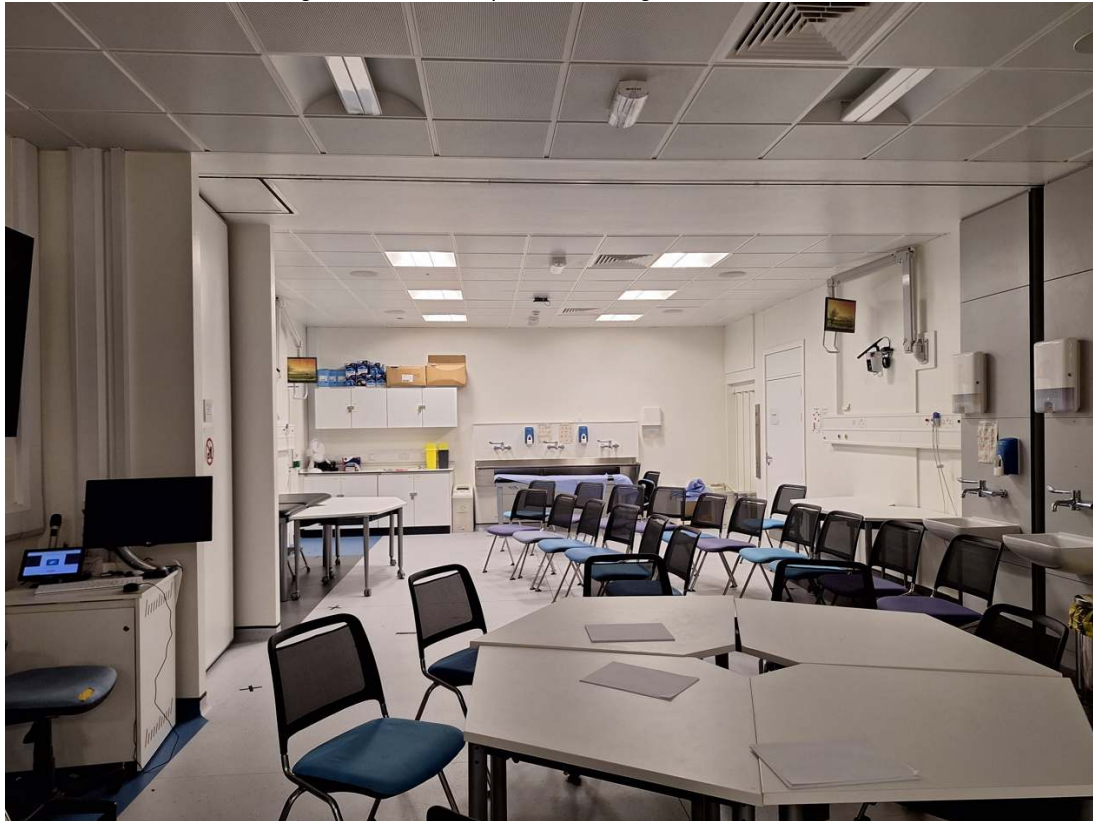
The existing room was used as a Student Support Office, with 24 occupants.



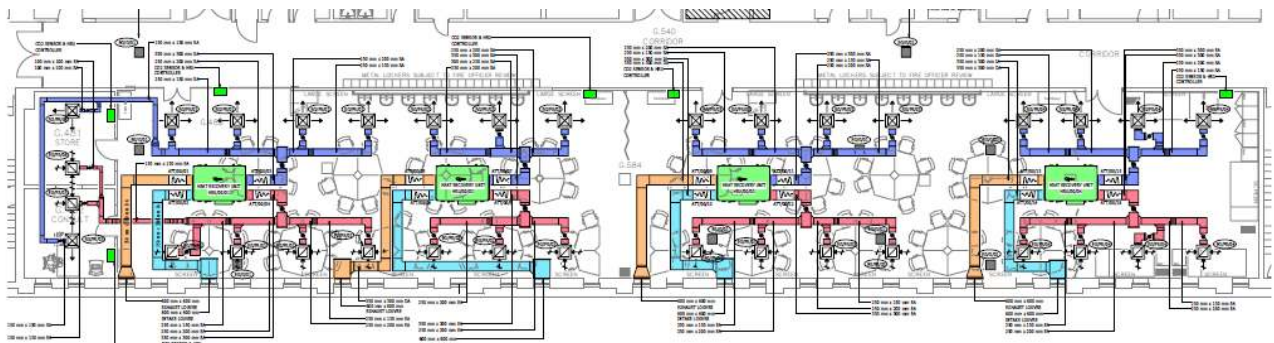
The proposed use is for a 102 person teaching space/laboratory.



The use will match existing facilities in Stopford Building



The existing ventilation system for this room is not sufficient for the new occupancy. The Mechanical designer has proposed a new system, with heat recovery.



LEGEND

	DISCHARGE AIR
	EXTRACT AIR
	INTAKE AIR
	SUPPLY AIR

The data sheet for the unit is below:

XBC+

Duty

Airflow:	Supply	Extract
Required duty:	280 l/s at 150 Pa	280 l/s at 150 Pa
Required duty (adjusted):	280 l/s at 150 Pa	280 l/s at 150 Pa
Actual duty:	280 l/s at 150 Pa	280 l/s at 150 Pa
Non-speed-controlled duty:	360 l/s at 248 Pa	360 l/s at 248 Pa
Speed control factor:	77.87%	77.87%

Electrical

Maximum fan speed:	3,740 RPM
Motor phase:	1
Motor frequency:	50 Hz
Motor voltage:	230 V
Motor rating:	1 kW
Starting current:	5.1 A
Motor current (full-load):	5.1 A
Heater power:	1.5 kW
Heater flc:	6.5 A
Max. operating temp:	60°C

Dimensions

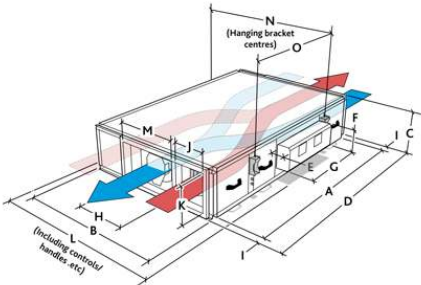
Length: 1773	Width: 1160
Height: 349	
A: 1713	B: 1160
C: 349	D: 1773
E: 130	F: 210
G: 640	H: 404
I: 30	J: 252
K: 270	L: 1369
M: 471	
Fan weight: 242.0 kg	

Power

Motor input power (speed controlled):	0.47 kW
Fan input power (speed controlled):	
SFP (speed-controlled):	1.7 W/(l/s)
Motor input power (full speed):	0.994 kW
Fan input power (full speed):	
SFP (full-speed):	2.8 W/(l/s)
Max fan input power:	

Sound

Sound power levels re 1 pWatts (Hz):									
dBA is spherical measured at 3 meters									
Hz	63	125	250	500	1k	2k	4k	8k	dBA dBA at 100%
Breakout	66	65	52	55	42	41	41	33	34 +6
Induct Intake	74	68	66	68	63	59	51	50	48 +6
Induct Supply	79	80	75	79	69	69	65	67	58 +6
Induct Discharge	80	81	75	78	69	69	67	68	57 +6
Induct Extract	73	67	65	68	62	59	51	51	47 +6
For 100% speed:	+6	+6	+6	+6	+6	+6	+6	+6	



The mechanical designer has noted that “we now have the maximum noise limits—43 dB during the day and 42 dB at night. We will ensure the attenuators are sized accordingly so that these limits are not exceeded.”