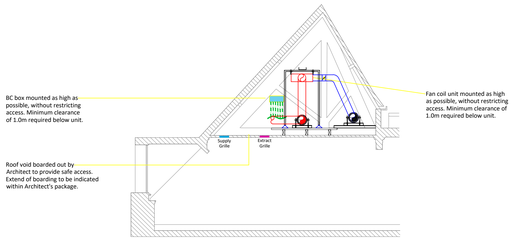
Notes:

1. This drawing shall be read in conjunction with all other drawings and specifications.
2. All new ductwork will contain air flow direction arrows. All fresh air intake ductwork shall be insulated.
3. All new plant will be supported independently
4. All ceiling diffusers will be swirl type (supply and extract) and co-ordinated with the light fittings.
5. Flexible connections will be no longer than 500mm.
6. All return ductwork will be hard-duct connected to fan coil units.
7. All services passing through fire compartments will contain fusible link fire dampers and have penetrations fire stopped.
8. Duct access panels for cleaning purposes will be located as per HVAC TR19.
9. All ductwork between MVHR and duct mounted attenuators will be acoustically lagged with Mufti-lag.
10. Attenuators selected based on MVHR operating at Speed 4 (highest speed setting).
11. All duct penetrations will be sealed.
12. All branches will contain a VCD, local to the main, not at the point of termination.
13. Master BC boxes will be mounted within the pitched roof void.
14. All fan coil units to be fitted with a plenum box on the intake (return air) and discharge (supply air), with circular spigot connections. Plenum boxes shall be insulated as per the ductwork. Plenum boxes will be sized to suit the fan coil unit flanges and minimum 300mm long.
15. All fan coil units and ductwork will be mounted/distributed within the pitched roof void and via unistrut frames & split rings.
16. All grilles/diffusers to be cut into the existing plasterboard ceilings. Co-coordinated with the roof joists and light fittings.
17. Access to all fan coil units, VCDs, etc will be via the pitched roof void. No access hatches shall be cut into the existing plasterboard ceiling.
18. All fan coil units and BC boxes to be accessed from the underside, ensuring that the units have a minimum of 1.0m clearance below for maintenance access.
19. All secondary ductwork will route at low level to/from grilles, with sets as necessary to connect to fan coil unit plenum boxes.
20. Services branches will generally distribute at low level
21. Bird Mesh ends installed into MVHR bellmouths located in Turret

Legend

- Fresh Air Duct
- Return Air Duct
- Secondary Supply Duct
- Secondary Extract Duct
- VCD
- SG/XX Supply Grille
- EG/XX Extract Grille
- RG/XX Return Air Grille
- AH Access Hatch
- Pitched Roof Void
- Drop to low level from FCU / Rise to FCU



Attic Detail
(NTS)

MVHR Schedule

MVHR reference	Location	Air flowrate (l/s)	Pressure drop (pa)	Dimensions (mm)	Running current (A)	Max fuse size (A)	Power Supply	Weight (kg)	Sound Pressure Level	Duct connection sizes (mm dia)
MVHR 05/01	Turret plant area	104	85	888W x 1016L x 331H	1.86	6	220V 1ph	33	35 dB(A)	200

Notes:
Unit selection based on Mitsubishi/Kooltech type LGH-50RVX3-E (75%/Speed 3).

Attenuator Schedule

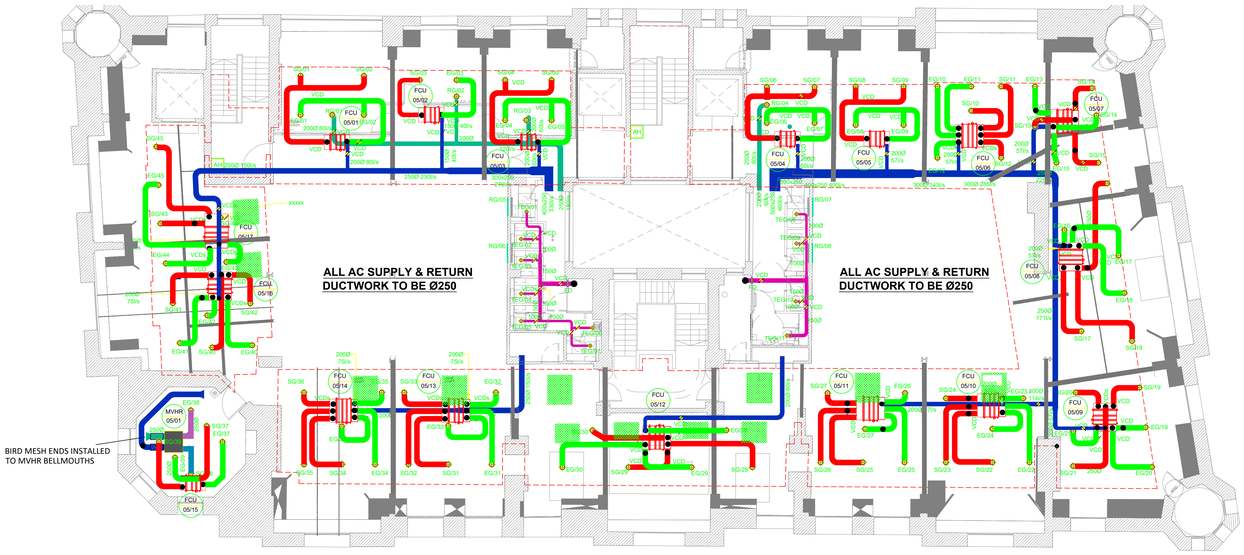
Attenuator reference	Location	HRU reference	Air flowrate (l/s)	Maximum pressure drop (Pa)	Dimensions (LxWxH mm)	Duct connection size (dia mm)	Selections based on Allaway type
ATT 05/01	Intake	HRU 05/01	104	20	200dia x 600	200	Circular
ATT 05/02	Supply	HRU 05/01	104	20	200dia x 900	200	Circular
ATT 05/03	Return	HRU 05/01	104	20	200dia x 900	200	Circular
ATT 05/04	Exhaust	HRU 05/01	104	20	200dia x 600	200	Circular
ATT RF/01	Exhaust	TEF/01	350	31	375x375x920	300	Rectangular
ATT RF/02	Exhaust	TEF/02	300	31	375x375x920	300	Rectangular

Notes:
Unit selections based on Allaway

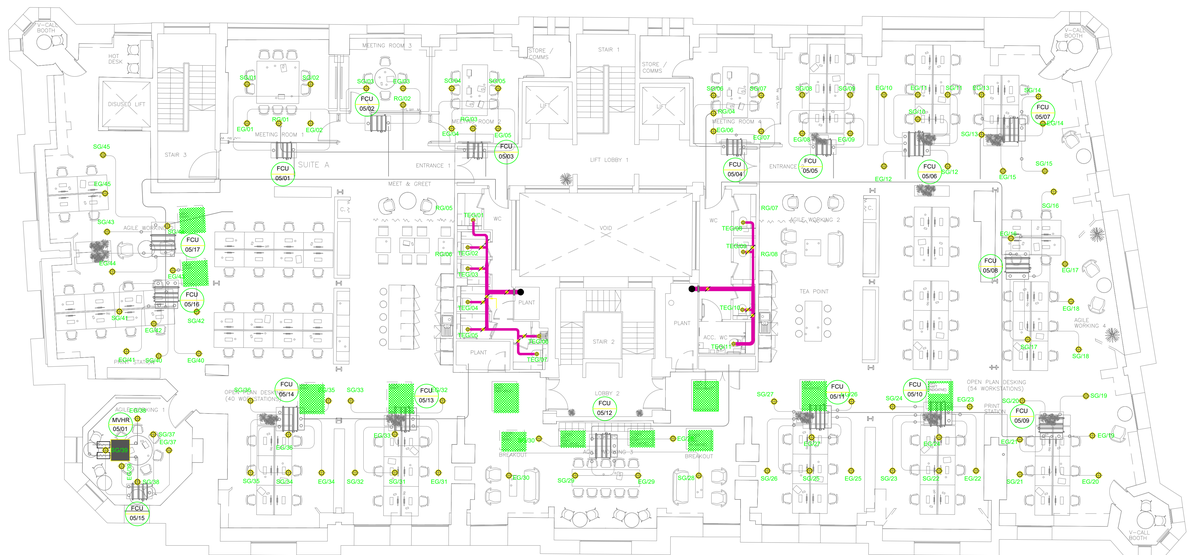
Toilet Grille Schedule

Grille reference	Type	RAL/finish	Air flowrate (l/s)	Maximum pressure drop (Pa)	Face size (mm)	Duct connection size (mm)	Spigot Velocity (m/s)	Comments	Selections based on Waterloo ref
TEG/01	Extract Valve	RAL 9010 Gloss	10	10	140dia	100dia	2	Circular air valve	VB/100
TEG/02	Extract Valve	RAL 9010 Gloss	10	10	140dia	100dia	2	Circular air valve	VB/100
TEG/03	Extract Valve	RAL 9010 Gloss	10	10	140dia	100dia	2	Circular air valve	VB/100
TEG/04	Extract Valve	RAL 9010 Gloss	10	10	140dia	100dia	2	Circular air valve	VB/100
TEG/05	Extract Valve	RAL 9010 Gloss	10	10	140dia	100dia	2	Circular air valve	VB/100
TEG/06	Extract Valve	RAL 9010 Gloss	10	10	140dia	100dia	2	Circular air valve	VB/100
TEG/07	Extract Valve	RAL 9010 Gloss	10	10	140dia	100dia	2	Circular air valve	VB/100
TEG/08	Extract Valve	RAL 9010 Gloss	10	10	140dia	100dia	2	Circular air valve	VB/100
TEG/09	Extract Valve	RAL 9010 Gloss	10	10	140dia	100dia	2	Circular air valve	VB/100
TEG/10	Extract Valve	RAL 9010 Gloss	10	10	140dia	100dia	2	Circular air valve	VB/100
TEG/11	Extract Valve	RAL 9010 Gloss	30	10	200dia	150dia	2	Circular air valve	VB/150

Notes:
Selections based on Waterloo



VOID LEVEL



5TH FLOOR LEVEL SHOWN TO ILLUSTRATE GRILLE POSITIONS WITHIN 5TH FLOOR DEMISE

Grille Schedule

Supply Grille Reference	Location	Type (supply)	RAL/finish	Air flowrate (l/s)	Maximum pressure drop (Pa)	Face size (mm)	Duct connection size (mm)	Throw (m)	Weight (kg)	Noise	Selections based on Waterloo ref
SG/01	Meeting room 1	High capacity fixed swirl	9010	75	14	330dia	250	1.3	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/02	Meeting room 1	High capacity fixed swirl	9010	75	14	330dia	250	1.3	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/03	Meeting room 3	High capacity fixed swirl	9010	63	8	330dia	250	1.1	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/04	Meeting room 2	High capacity fixed swirl	9010	63	8	330dia	250	1.1	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/05	Meeting room 2	High capacity fixed swirl	9010	63	8	330dia	250	1.1	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/06	Meeting room 4	High capacity fixed swirl	9010	63	8	330dia	250	1.1	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/07	Meeting room 4	High capacity fixed swirl	9010	63	8	330dia	250	1.1	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/08	Open plan	High capacity fixed swirl	9010	63	8	330dia	250	1.1	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/09	Open plan	High capacity fixed swirl	9010	63	8	330dia	250	1.1	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/10	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/11	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/12	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/13	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/14	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/15	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/16	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/17	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/18	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/19	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/20	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/21	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/22	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/23	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/24	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/25	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/26	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/27	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/28	Agile Working 3	High capacity fixed swirl	9010	88	20	330dia	250	1.5	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/29	Agile Working 3	High capacity fixed swirl	9010	88	20	330dia	250	1.5	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/30	Agile Working 3	High capacity fixed swirl	9010	88	20	330dia	250	1.5	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/31	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/32	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/33	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/34	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/35	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/36	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/37	Turret	High capacity fixed swirl	9010	84	20	330dia	250	1.5	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/38	Open plan	High capacity fixed swirl	9010	104	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/39	Turret	High capacity fixed swirl	9010	84	20	330dia	250	1.5	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/40	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/41	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/42	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/43	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/44	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)
SG/45	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	1.6	7	<30dB(A)	SOFCH/250 (no pleum box required)

Note:
Selections based on Waterloo

Extract Grille Reference	Location	Type (extract)	RAL/finish	Air flowrate (l/s)	Maximum pressure drop (Pa)	Face size (mm)	Duct connection size (mm)	Throw (m)	Weight (kg)	Noise	Selections based on Waterloo ref
EG/01	Meeting room 1	High capacity fixed swirl	9010	75	14	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/02	Meeting room 1	High capacity fixed swirl	9010	75	14	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/03	Meeting room 3	High capacity fixed swirl	9010	63	8	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/04	Meeting room 2	High capacity fixed swirl	9010	63	8	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/05	Meeting room 2	High capacity fixed swirl	9010	63	8	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/06	Meeting room 4	High capacity fixed swirl	9010	63	8	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/07	Meeting room 4	High capacity fixed swirl	9010	63	8	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/08	Open plan	High capacity fixed swirl	9010	63	8	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/09	Open plan	High capacity fixed swirl	9010	63	8	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/10	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/11	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/12	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/13	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/14	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/15	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/16	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/17	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/18	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/19	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/20	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/21	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/22	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/23	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/24	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/25	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/26	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/27	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/28	Agile Working 3	High capacity fixed swirl	9010	88	20	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/29	Agile Working 3	High capacity fixed swirl	9010	88	20	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/30	Agile Working 3	High capacity fixed swirl	9010	88	20	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/31	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/32	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/33	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/34	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/35	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/36	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/37	Turret	High capacity fixed swirl	9010	84	20	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/38	Open plan	High capacity fixed swirl	9010	104	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/39	Turret	High capacity fixed swirl	9010	84	20	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/40	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/41	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/42	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/43	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/44	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
EG/45	Open plan	High capacity fixed swirl	9010	100	22	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
RG/01	Meeting room 1	High capacity fixed swirl	9010	80	14	330dia	250	n/a	7	<30dB(A)	SOFCH/250 (no pleum box required)
RG/02	Meeting room 3	High capacity fixed swirl	9010	40	10	280dia	200	n/a	5.5	<30dB(A)	SOFCH/200 (no pleum box required)
RG/03	Meeting room 2	High capacity fixed swirl	9010	60	23	280dia	200	n/a	5.5	<30dB(A)	SOFCH/200 (no pleum box required)
RG/04	Meeting room 4	High capacity fixed swirl	9010	60	23	280dia	200	n/a	5.5	<30dB(A)	SOFCH/200 (no pleum box required)
RG/05	Open plan	Sidewall	9010	150	10	650x250	600x200	n/a	n/a	<30dB(A)	ALL/600/200/PPM9010/RZ5/SF
RG/06	Open plan	Sidewall	9010	150	10	650x250	600x200	n/a	n/a	<30dB(A)	ALL/600/200/PPM9010/RZ5/SF
RG/07	Open plan	Sidewall	9010	200	10	650x250	600x200	n/a	n/a	<30dB(A)	ALL/600/200/PPM9010/RZ5/SF
RG/08	Open plan	Sidewall	9010	200	10	650x250	600x200	n/a	n/a	<30dB(A)	ALL/600/200/PPM9010/RZ5/SF

Note:
Selections based on Waterloo

REVISION AMENDED FOLLOWING COMMENTS	DRAWN DH	DATE 25/11/24

DRAWING STATUS

SKETCH		BUILDING REGS	
PRELIMINARY		TENDER	
APPROVAL		CONSTRUCTION	
PLANNING		DRAFT AS BUILT	

ozone Cooling Solutions Ltd

OZONE COOLING SOLUTIONS LTD
| Unit D5, Gate 4 | Meltham Mills Ind Est | Huddersfield | HD9 4DS |

PROJECT
196 DEANSGATE

DRAWING
AIR CONDITIONING SERVICES

SCALE AT A1	DATE	DRAWN BY	CHECKED BY
1:50@A0	NOV/24	DMH	RD

DRAWING No.	CONTRACT No.	REVISION
M02	C2024-2367	A

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