

THIS DRAWING IS THE PROPERTY OF MK CE Ltd AND AS SUCH MAY NOT BE COPIED OR COMMUNICATED TO A THIRD PARTY WITHOUT WRITTEN AUTHORISATION

- General Notes**
- 1.00 THE CONTRACTOR SHALL BE RESPONSIBLE FOR CO-ORDINATION, DESIGN OF BRACKETS, SUPPORT WORK AND BUILDERSWORK
  - 2.00 INSTALL AND CERTIFY THE WORKS IN ACCORDANCE WITH INDUSTRY STANDARD HEALTH & SAFETY & BUILDING CONTROL REQUIREMENTS
  - 3.00 THE MECHANICAL CONTRACTOR SHALL SET TO WORK THE WHOLE OF THE INSTALLATIONS, FULLY COMMISSION THE SYSTEMS, IN ACCORDANCE WITH ALL INDUSTRY STANDARDS, BUILDING CONTROL, CLIENT REQUIREMENTS AND GOOD PRACTICE
  - 4.00 THE CONTRACTOR SHALL SUBMIT RISK ASSESSMENTS AND METHOD STATEMENTS TO PROJECT MANAGER FOR ALL ELEMENTS OF THE WORKS PRIOR TO WORKS TAKING PLACE
  - 5.00 THE CONTRACTOR SHALL SUBMIT DIMENSIONED WORKING DRAWINGS & TECHNICAL SUBMISSIONS FOR APPROVAL TO THE PROJECT MANAGER FOR ALL ELEMENTS OF THE WORKS PRIOR TO PROCUREMENT AND INSTALLATION OF THE WORKS

- Contractors' Coordination Responsibility**
- THE INFORMATION ON THIS DRAWING IS FOR ACE LEVEL ABRIDGED DESIGN DUTY PURPOSES ONLY.
- THE CONTRACTOR SHALL PREPARE & SUBMIT DIMENSIONED & FULLY COORDINATED WORKING INSTALLATION DRAWINGS FOR APPROVAL PRIOR TO PROCUREMENT.
- THE CONTRACTOR IS RESPONSIBLE FOR FULL COORDINATION & SHALL COORDINATE MECHANICAL, ELECTRICAL, STRUCTURAL, REFLECTED CEILING PLAN & ARCHITECTURAL ELEMENTS OF THE PROJECT.
- ALL SERVICES ON WORKING DRAWINGS SHALL ALSO HAVE LEVEL INFORMATION DETERMINED BY CONTRACTOR

- Important Specification Note**
- READ ALL NOTES, SCHEDULES & INSTALLATION INSTRUCTIONS ON THIS DRAWING.
- NOTES, SCHEDULES AND INSTRUCTIONS FORM PART OF THE SPECIFICATION FOR THE WORKS, AND MAY NOT BE REPEATED IN THE WRITTEN SPECIFICATION.

ALL VRF AND VENTILATION PLANT EQUIPMENT TO BE MOUNTED ON RUBBER VIBRATION ISOLATION MOUNTS AND DROP RODS. NO NOISE AND VIBRATION FROM PLANT SHALL BE TOLETTED

WHERE SPIRAL ROUND BENDS CANNOT BE ACCOMMODATED THE CONTRACTOR SHALL FABRICATE SQUARE BENDS WITH TURNING VANES AND CIRCULAR SPIGOTS AS INDICATED. THE SQUARE BENDS SHALL BE MINIMUM OVERALL DIMENSION

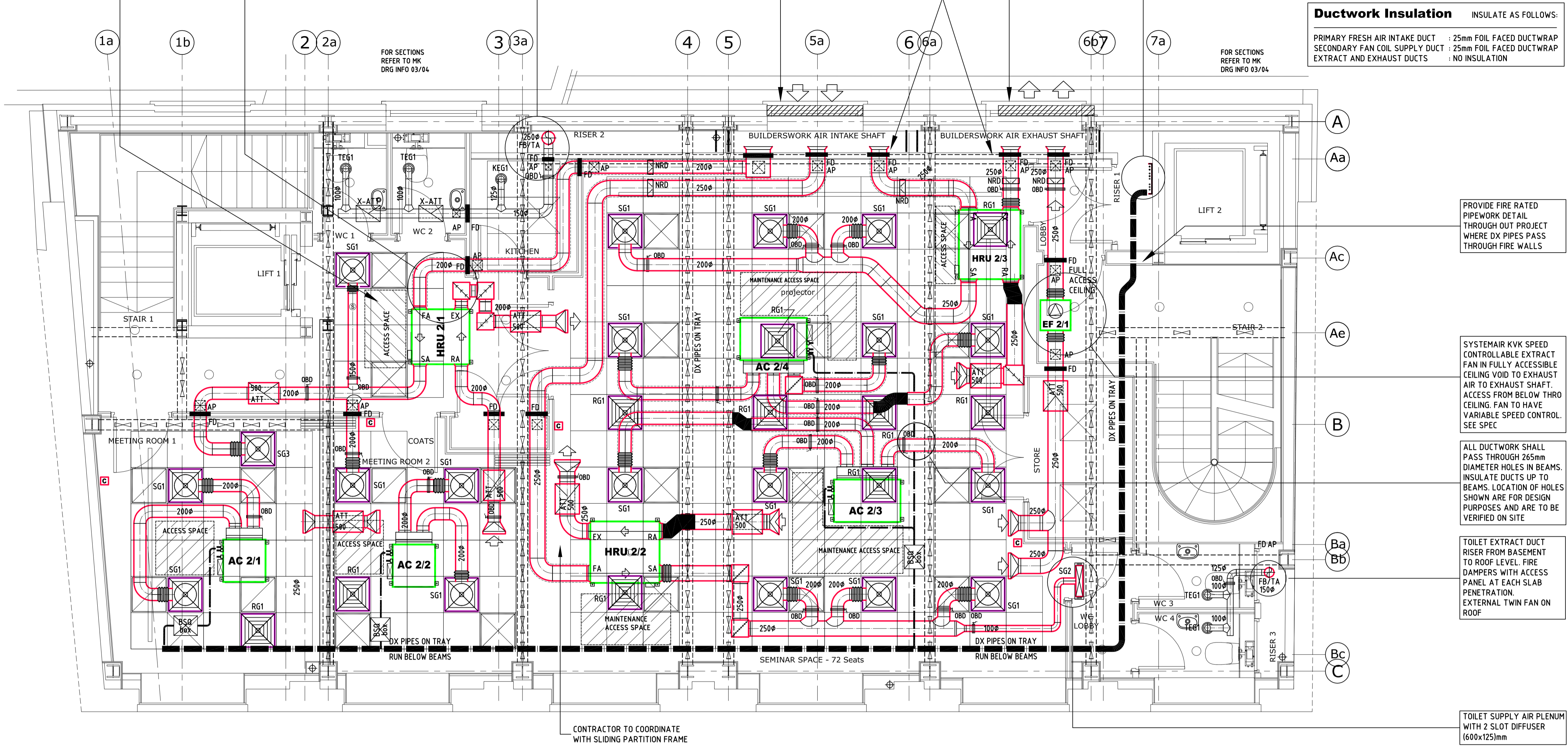
TOILET EXTRACT DUCT RISER FROM BASEMENT TO ROOF LEVEL. FIRE DAMPERS WITH ACCESS PANEL AT EACH SLAB PENETRATION

CONTRACTOR TO SUPPLY AND INSTALL EXTERNAL AIR INTAKE WEATHER LOUVRE (WITH BIRDMESH) IN EXISTING OPENING. APPROX 1500x1500mm. FREE AREA 50% Min. COLOUR TO ARCHITECT SPECIFICATION

CONTRACTOR TO TERMINATE INTAKE AND EXHAUST DUCT BRANCHES INSIDE AIR SHAFTS WITH DUCTWORK BELLMOUTH. FIRE DAMPERS TO BE ACCESSIBLE

CONTRACTOR TO SUPPLY AND INSTALL EXTERNAL EXHAUST AIR WEATHER LOUVRE (WITH BIRDMESH) IN EXISTING OPENING. APPROX 1500x1500mm. FREE AREA 50% Min. COLOUR TO ARCHITECT SPECIFICATION

DX PIPEWORK IN RISER ON TRAY TO/FROM ROOF PLANT SPACE AND TRAY REQUIRED FOR:  
 DX PIPEWORK FOR VRF SYSTEMS A AND B  
 CONTRACTOR TO COORDINATE WITH ELECTRICAL AND PUBLIC HEALTH SERVICES IN RISER.  
 SLEEVE ALL PIPES AND TRAY THROUGH FIRE RATED FLOOR SLABS



**VRF System A - First & Second Floors**

**VRF Indoor A/C Plant Schedule**

| REF    | MODEL      | INDOOR UNIT | SIZE   | DUTY Uk Cooling | DUTY Uk Heating | Wt kg    | ELECTRICAL Phase | FUSE  | RC      | AIR FLOW l/sec Lo-Hi | STATIC (Pa) Lo-Hi | DIMS (mm) W D H |
|--------|------------|-------------|--------|-----------------|-----------------|----------|------------------|-------|---------|----------------------|-------------------|-----------------|
| AC 2/1 | FXDQ 32 P7 | 32          | 2.5 kW | 2.6 kW          | 23              | 1ph 240V | 5A               | 0.8 A | 107-133 | 30-10                | 700 620 200       |                 |
| AC 2/2 | FXDQ 32 P7 | 32          | 2.5 kW | 2.6 kW          | 23              | 1ph 240V | 5A               | 0.8 A | 107-133 | 30-10                | 700 620 200       |                 |
| AC 2/3 | FXSQ 80 P  | 80          | 6.1 kW | 7.8 kW          | 35              | 1ph 240V | 5A               | 1.3   | 333-417 | 40-100               | 1000 700 300      |                 |
| AC 2/4 | FXSQ 80 P  | 80          | 6.1 kW | 7.8 kW          | 35              | 1ph 240V | 5A               | 1.3   | 333-417 | 40-100               | 1000 700 300      |                 |

**Ventilation HRU Plant Schedule**

| REF     | MODEL | HEAT RECOVERY UNIT | SIZE | DUCT mm | Wt kg | ELECTRICAL Phase | FUSE | SC  | RC(Max) | AIR FLOW l/sec Lo-Med-Hi | STATIC (Pa) Lo-Med-Hi | DIMS (mm) W D H |
|---------|-------|--------------------|------|---------|-------|------------------|------|-----|---------|--------------------------|-----------------------|-----------------|
| HRU 2/1 | VAM   | 650 FA             | 650  | 200     | 48    | 1ph 240V         | 15A  | 4 A | 2.0 A   | 138 - 180 - 180          | 25 - 39 - 93          | 1004 868 364    |
| HRU 2/2 | VAM   | 800 FA             | 800  | 250     | 48    | 1ph 240V         | 15A  | 4 A | 3.0 A   | 186 - 222 - 222          | 249-98-137            | 1004 868 364    |
| HRU 2/3 | VAM   | 800 FA             | 800  | 250     | 48    | 1ph 240V         | 15A  | 4 A | 3.0 A   | 186 - 222 - 222          | 249-98-137            | 1004 868 364    |

- VRF System. Specification Notes**
- 1.0 SUPPLY, INSTALL, COMMISSION AND SET TO WORK, 2 No. DAIKIN (UK) Ltd, SIMULTANEOUS HEATING & COOLING, HEAT RECOVERY, R 410 A REFRIGERANT, INVERTER DRIVEN, HIGH COP. AIR CONDITIONING SYSTEMS.
  - 2.0 IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY REFRIGERANT PIPE SIZES WITH SUPPLIER PRIOR TO PROCUREMENT
  - 3.0 CONTRACTOR TO DESIGN AND INSTALL CONDENSATE DRAINAGE SYSTEM - AS INDICATED ON THIS DRAWING
  - 4.0 EACH AC UNIT TO BE SUPPLIED AND INSTALLED COMPLETE WITH CONDENSATE PUMP
  - 5.0 ALL DX PIPEWORK TO BE RUN AND SUPPORTED ON TRAY WORK
  - 6.0 INSTALLED BY APPROVED MITSUBISHI INSTALLER
  - 7.0 PROVIDE 5 YEAR WARRANTY
- Coordination Notes:**
- SOME SERVICES ROUTES ARE WORST CASE. SHORTER ROUTES WILL BE CONSIDERED DURING THE WORKING DWS APPROVAL PROCESS
- SERVICE CROSS OVERS ARE TO BE AVOIDED. SERVICE ZONES TO BE USED
- NO PLANT OR SERVICES SHALL PASS OVER LIGHT FITTINGS EXCEPT WHERE UNAVOIDABLE
- ADDITIONAL NOTES**
- 1.0 DO NOT INSTALL AC UNITS OR VENTILATION UNITS ABOVE LIGHT FITTINGS

**AC Condenser Plant Schedule** SUPPLIED / INSTALLED WITH PIPEWORK TWINNING KIT

| REF  | OUTDOOR UNIT MODEL | ELECTRICAL DATA (Amps) PH SC RC FUSE | DIMS (mm) L D Ht | WEIGHT kg | SOUND dBA | AIRFLOW l/s | COP/EER |
|------|--------------------|--------------------------------------|------------------|-----------|-----------|-------------|---------|
| CU A | REV Q 16 PB        | 3ph 4.0 216 4.0                      | 1300 680 1680    | 339       | 62        | 3000/3000   | 2.8/3.9 |

SERVES FIRST AND SECOND FLOORS

**BSQ Connection Box Schedule**

| REF | LOCATION              | MODEL        | WT    | PHASE | POWER | RC    | FUSE | DIMS (mm) W D H |
|-----|-----------------------|--------------|-------|-------|-------|-------|------|-----------------|
| -   | ONE PER FAN COIL UNIT | BSVQ 100 PBB | 14 kg | 1ph   | 240V  | 0.1 A | 5A   | 388 x 207 x 326 |

**Local Controls** EACH VRF UNIT TO HAVE A WALL MOUNTED CONTROLLER AS: DAIKIN REF

**Central Controller** SEE DAIKIN QUOTE TOUCH SCREEN CENTRAL CONTROLLER

- Wiring & Controls**
- 1.00 WALL MOUNTED CONTROLLERS ARE REQUIRED FOR ALL INDOOR UNITS. ALL LOCAL CONTROL UNITS SHALL ALSO BE CONTROLLED CENTRALLY FROM CENTRAL CONTROLLER
  - 2.00 SUPPLY, INSTALL, TEST AND COMMISSION ONE DAIKIN Ltd CENTRAL CONTROLLER, AS SPECIFIED. LOCATION TO BE ADVISED.
  - 3.00 THE MECHANICAL CONTRACTOR SHALL ALLOW FOR SUPPLY AND INSTALL OF ALL AC SYSTEMS CONTROLS WIRING AND INTERCONNECTING WIRING FROM EXTERNAL UNIT TO INDOOR UNITS, AND WIRING TO/FROM CONTROLLERS AND AG150
  - 4.00 POWER WIRING TO EXTERNAL CONDENSER AND POWER SUPPLIES (1 x 13 A FSU PER AC UNIT) AND (1 x 13 A FSU PER BSQ BOX) INDOOR AC UNITS AND BC BOXES SHALL BE BY THE APPOINTED ELECTRICAL CONTRACTOR

**Auxilliary Plant Schedule**

| REF    | ITEM        | MODEL             | ELECTRICAL DATA (Amps) PH SC MOTOR FUSE | DIMS (mm) L D Ht | WEIGHT kg | SOUND dBA | DUTY l/s Pa |
|--------|-------------|-------------------|---|------------------|-----------|-----------|-------------|
| EF 1/1 | EXTRACT FAN | SYSTEMAIR KVK 250 | 1ph 3.0 0.3 kW                          | 6 500 380 380    | 21        | 35        | 270 100     |

WITH SYSTEMAIR SPEED CONTROLLER SC 3.0 WITH SYSTEMAIR ATTENUATOR LDC 250-900  
 WITH SYSTEMAIR SPEED AUTO TRANSFORMER CONTROLLER RTR 1.5

- Abbreviations**
- OBD OPPOSED BLADE DAMPER (MULTI-LEAF TYPE)
  - FD FIRE DAMPER (2 Hr Min) FUSIBLE LINK SHUTTER TYPE WITH INSTALLATION FRAME
  - AP DUCT ACCESS PANEL
  - NRD NON RETURN DAMPER
  - ATT DUCT SOUND ATTENUATOR
  - X-ATT CROSS TALK ATTENUATOR
  - TA TO ABOVE
  - TB TO BELOW
  - FA FROM ABOVE
  - FB FROM BELOW
  - FBG FROM BELOW EXTRACT VALVE
  - SA SUPPLY AIR
  - RA RETURN AIR
  - FA FRESH AIR IN
  - EX EXHAUST AIR OUT
  - Smoke Detector
  - Luminaire
  - PIR
- Legend**
- SUPPLY DIFFUSER, PERFORATED PLATE SWIRL TYPE COMPLETE WITH BACK PLENUM, BOX AND SPIGOT CONNECTION
  - RETURN AIR DIFFUSER, PERFORATED PLATE TYPE TO MATCH SUPPLY DIFFUSER COMPLETE WITH BACK PLENUM, BOX AND SPIGOT CONNECTION
  - SUPPLY OR EXTRACT AIR VALVE
  - SUPPLY DIFFUSER WITH PLENUM BOX, LINEAR 2 SLOT TYPE
  - FLEXIBLE DUCT CONNECTION MAX LENGTH 900mm. NO BENDS GREATER THAN 30 degrees
  - CEILING RECESSED SIMULTANEOUS HEATING & COOLING VRF AIR CONDITIONING UNIT, 4 WAY BLOW, WITH CONDENSATE PUMP.
  - SIMULTANEOUS HEATING AND COOLING SYSTEM PIPEWORK BSQ CONNECTION BOX WITH CEILING VOID, WITH 13 Amp POWER SUPPLY AND CONDENSATE DRAIN
  - DX PIPEWORK (GAS & LIQUID LINES) ON CONTINUOUS SUPPORT TRAY WORK
  - WALL MOUNTED CONTROLLER

- Diffuser / Grille Schedule**
- SG1 SUPPLY DIFFUSER, PERFORATED PLATE SWIRL TYPE WITH BACK PLENUM BOX. DIFFUSER AS TROX MODEL: DCS - P - V - AK / 593x315 / 0 / P3 RAL 9010-20%
  - SG2 SUPPLY DIFFUSER, PERFORATED PLATE SWIRL TYPE WITH BACK PLENUM BOX. DIFFUSER AS TROX MODEL: DCS - P - V - AK / 593x315 / 0 / P3 RAL 9010-20%
  - SG3 SUPPLY DIFFUSER, PERFORATED PLATE SWIRL TYPE WITH BACK PLENUM BOX. DIFFUSER AS TROX MODEL: DCS - P - V - AK / 593x315 / 0 / P3 RAL 9010-20%
  - RG1 RETURN AIR DIFFUSER, PERFORATED PLATE TYPE WITH BACK PLENUM BOX. DIFFUSER AS TROX MODEL: AP - L - A - AK / 595x595 / P3 RAL 9010-20%
  - LINEAR SLOT SUPPLY DIFFUSER AND PLENUM BOX LINEAR 2 SLOT, 600mm Long AS TROX MODEL: VSD35-BF-2-20-A02/600/05/0/P3 RAL 9010/20% WH PLENUM BOX 500mm Long AS TROX MODEL: AKV - VSD35 - 2 - BF - D/600x198x297/0/0
  - TEG1 SUPPLY OR EXTRACT ADJUSTABLE VOLUME AIR VALVE AS TROX MODEL: SUPPLY - 2 - LSV / 200 / G1 WHITE
  - KEG1 AS TROX MODEL: EXTRACT - LSV / 200 / G1 WHITE
  - SG2 SUPPLY DIFFUSER, PERFORATED PLATE SWIRL TYPE WITH BACK PLENUM BOX. DIFFUSER AS TROX MODEL: DCS - P - V - AK / 593x315 / 0 / P3 RAL 9010-20%
  - SG3 SUPPLY DIFFUSER, PERFORATED PLATE SWIRL TYPE WITH BACK PLENUM BOX. DIFFUSER AS TROX MODEL: DCS - P - V - AK / 593x315 / 0 / P3 RAL 9010-20%
  - SG4 SUPPLY DIFFUSER, PERFORATED PLATE SWIRL TYPE WITH BACK PLENUM BOX. DIFFUSER AS TROX MODEL: DCS - P - V - AK / 593x315 / 0 / P3 RAL 9010-20%
  - ATT CIRCULAR SILENCER 500mm LONG, 200mm DIAMETER (NON-PODDED) AS NOICO Ltd MODEL (refer to Noico Ltd)
  - X-ATT CROSS TALK CIRCULAR SILENCER 350mm LONG, LINE SIZE DIAMETER AS NOICO Ltd MODEL (refer to Noico Ltd)
- Attenuator Legend / Schedule**
- ATT CIRCULAR SILENCER 500mm LONG, 200mm DIAMETER (NON-PODDED) AS NOICO Ltd MODEL (refer to Noico Ltd)
  - X-ATT CROSS TALK CIRCULAR SILENCER 350mm LONG, LINE SIZE DIAMETER AS NOICO Ltd MODEL (refer to Noico Ltd)

**SECOND FLOOR**

| C   | CONTRACT ISSUE | 1/11/2012  |
|-----|----------------|------------|
| T   | TENDER ISSUE   | 13/06/2011 |
| Rev | Description    | Date       |

**client** THE CHARTERED INSTITUTION OF WATER AND ENVIRONMENTAL MANAGEMENT

**project manager** CS2 Ltd

**architect** NASH Partnership

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**Drawing Title**  
 MECHANICAL SERVICES  
 SECOND FLOOR PLAN  
 VRF SYSTEM AND VENTILATION LAYOUT

|       |           |         |    |
|-------|-----------|---------|----|
| Scale | 1:40 @ A1 | Drawn   | AK |
| Date  | JUNE 2011 | Checked | AK |

**Drawing Number** MK/703/SAMPLE **Revision** C1

**Drawing Status** CONTRACT ISSUE

**VRF System and Ventilation System**

**Second Floor Scale 1:40 @ A1**