

DX HEAT PUMP SYSTEM NOTES

DX Heat Pump Installation

The fixing of all air conditioning equipment. Installation of all refrigerant pipework and full commissioning shall be performed by a specialist refrigerant installer who shall be authorised to install Mitsubishi equipment (certificate of approval must be submitted prior to commencement on site).

The installation of all internal and external units. Refrigerant pipework, inter-connecting wiring, commissioning and testing shall be carried out by an approved refrigerant systems installer, from whom the sub Contractor shall obtain quotations. The sub Contractor shall clearly state on his tender submission the specialist contractor he intends to employ to carry out the work.

The Contractor shall seek the written authority of the engineer to the use of his proposed refrigerant systems installer.

Full access shall be afforded to site during the installations stage of the project to allow them to verify that installation methods are fully in accordance with Mitsubishi requirements and that the equipment warranties will not be invalidated.

Refrigerant pipework

Supply, install, test and commission all interconnecting refrigerant pipework between the outdoor and indoor units.

All pipework to be carried out in refrigerant quality soft/medium drawn copper tubing to BS2871 part 2:1972 and complete with the appropriate headers and joints. Pipe work should be carried out by an approved (certificate approval must be submitted prior to installation commencement) refrigerant engineer and accordance to BSEN 378 2000 specification and Mitsubishi design and installation instructions. All pipe work must be suitable for R32.

Longest possible lengths of copper pipe should be utilised to minimise joints on site. Appropriate refrigeration installation tools must be utilised. Dry nitrogen must be utilised at all times in the system during brazing.

All pipework (suction and liquid lines) to be insulated with slip on close cell elastomeric pipe insulation (as manufactured by Armaflex or equal and approved) with a fire performance class 0 of the 1985 building regulations, having a wall thickness of not less than 15mm after installation of pipe work, and prior to sealing of insulation joints and starting of equipment, pipe work should be pressure tested, 3 bar test for 3 minutes minimum, then 15 bar for 3 minutes, then 33 bar for 3 minutes minimum, then strength test to 41.5 bar check the system for leaks and deformation, then lower the pressure back to 33 bar and pressure test 24 hours and checked for leaks. Vacuumed/dehydrated to (-752mm fig) 2 TORR, and hold at that setting for 12 hours(minimum).

Refrigerant (R32) charge weight must be calculated, to the actual installed length of pipework in accordance to Mitsubishi recommendations. The charging should be carried out with an appropriate charging station. Pipe work to be properly fixed and supported at a minimum of 1.5 metres centres and where required should be run on galvanised trays. All pipe work to be labelled with ID number (condensing units ref.) at 3 metre intervals. Joints in copper pipe shall be brazed. Brazing shall be carried out to the requirements of the HVOA code of practice. Brazing and bronze welding of copper pipe and sheet.

NOTES

- All pipework in ceiling voids, floor ducts and enclosures to be fully insulated in accordance with BS 5422. Insulated pipework shall be fitted with identification labels to BS1710.
- All fittings, plant and equipment to be installed, regulated and tested in accordance with the manufacturers printed instructions.
- All valves to be fully accessible and provided with identification labels.
- Drain valve and air vents to be provided at all low and high points in the system respectively.
- Press-fit pipework must not be considered for this project.
- The Contractor shall include in his tender for the supply, installation, testing and commissioning of the proposed hot and cold water services as detailed opposite. The Contractor shall allow for all terminations to the water outlets on the proposed classroom furniture / sanitary ware. The Contractor shall also allow for stripping out and removal of redundant domestic services.
- All exposed domestic services pipework to be in chrome plated copper tube to BS EN 1057 (old table "x"), all fittings to be non-dezincifiable and comply with BS864. All capillary fittings to have lead free solder rings as Yorkshire potable range.
- All hot and cold water outlet connections to be fitted with a 'ball-o'-ix' type servicing valves.
- The Contractor shall include within his tender the full chlorination of all new domestic hot and cold water in accordance with BS6700 / BS858 / BS EN 806.
- All final connections to WHB/sinks shall be 15mm and hard piped. No flexible connections to be used.
- The Contractor shall include in his tender for the supply, installation, testing and commissioning of the proposed ventilation services as detailed on this drawing. The drawing shows the tender stage proposals which shall be site checked before fabrication of the ventilation ductwork.
- All ductwork, fittings and supports shall be to the requirements of DW144 - HVAC Specification for Sheet Metal Ductwork.
- Flexible ductwork - Low pressure flexible ductwork shall only be used for a maximum of 300mm where connecting to plenum boxes.
- Manually operated volume control dampers shall be supplied and installed in the locations indicated opposite and shall be of the opposed blade type for rectangular ductwork and butterfly type for circular ductwork. All dampers shall be complete with an approved locking device adjustment positions of open - half - shut on the quadrant.
- Damper size shall not be less than the duct size where thermal, insulation occurs the dampers shall have extended shafts and mounting lugs in the quadrant and sheet metal stools to make the control flush with the insulation.
- Service identification shall be provided which shall comprise colour coding and identification generally to DW144 at sufficient locations to ensure no confusion of services.

Notes

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PROGRAMME SEQUENCE AND TIMING

The works shall be carried out within the period indicated in the main contract programme of works and make due allowance for any premium or overtime hours necessary to complete the works.

TESTING AND COMMISSIONING

All new mechanical services shall be fully tested and commissioned including:

- DX Heat Pump Heating and Cooling Systems
- Hot and Cold Water Systems
- Ventilation Systems
- Mechanical Controls

The commissioning shall generally be in accordance with the relevant CIBSE commissioning codes, the contractor shall include for all test instruments, equipment and supervision / labour required.

BUILDERS WORK

The Contractor shall make full provision off all builders work associated with the mechanical services installation.

The Contractor shall allow for making good redecorating of walls / ceilings / doors and frames after the installation of the mechanical services.

SUMMARY OF TENDER

The Contractor will be required to fully complete and return with the tender the 'Summary of tender' for the mechanical services included in the scheme.

INSTRUCTION IN THE USE OF INSTALLATIONS

On completion of the installation of the mechanical services the Contractor shall give to the employees designated representatives in charge together with key staff, detailed instructions and training in the operation and control of the entire services installation in accordance with the Soft Landing M&E checklist to be issued by Align Property Partners.

The Contractor shall complete training records and have them signed by the trainers and the personnel receiving the training.

DRAWINGS

The tender drawings are representative of the work to be done. It should be noted that the drawings are essentially diagrammatic and are not intended to indicate the precise location of the services relating to the building structure or other building services.

Therefore the Contractor shall make provision to provide fully co-ordinated installation drawings as defined within BSRIA guide 'BG6/2014' - A Design Framework for Building Services.

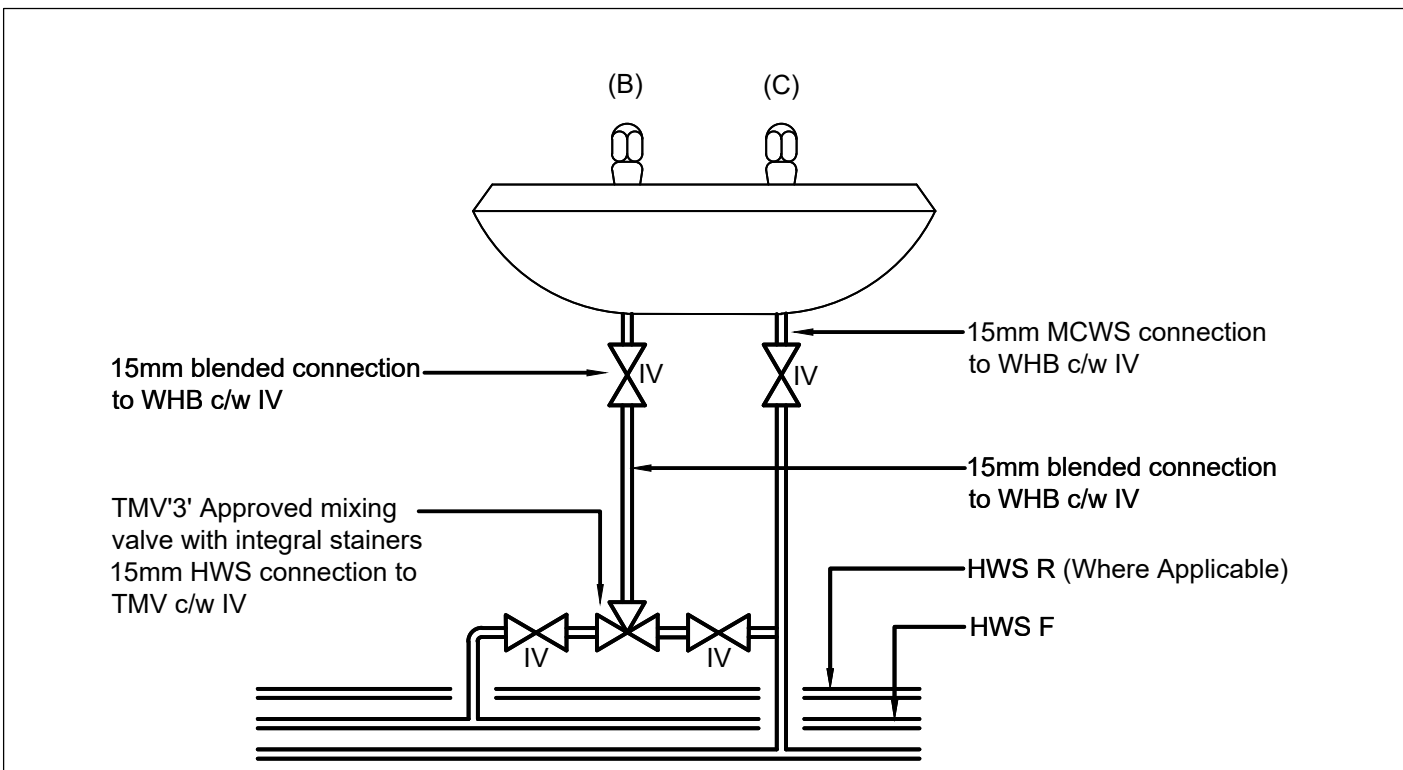
OPERATING AND MAINTENANCE MANUALS AND AS INSTALLED DRAWINGS

The Contractor shall be responsible for providing operating and maintenance manuals and as installed drawings for the installation. The documentation shall be provided at least 14 days before practical completion.

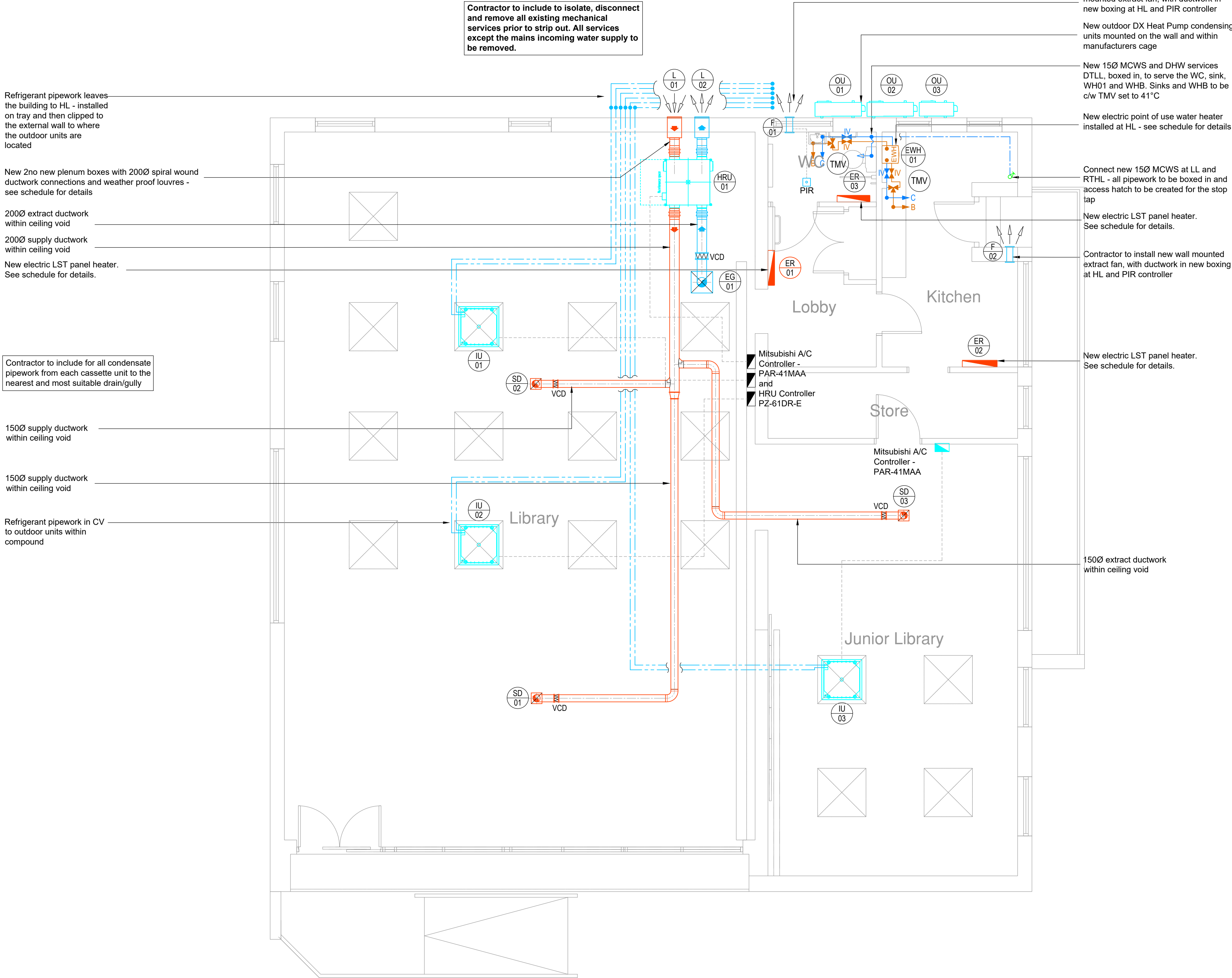
The operating and maintenance manuals shall be provided in accordance with CIBSE / BSRIA guidance.

LEGEND

- Pipework in Floor
- Pipework at Low Level
- Pipework at High Level
- Pipework in Ceiling Void
- Pipework to be Stripped Out
- Dropper/Rise
- Isolating Valve
- Isolating Valve in Dropper/Rise
- Double Check Valve
- Low Level
- High Level
- Ceiling Void
- Drop to Lower Level
- Drop to Below
- Rise from Below
- Rise to Above
- Ceiling Mounted Extract Fan
- Wall Mounted Extract Fan
- Passive Infra-Red Sensor
- Fire Damper
- Supply Grille
- Extract Grille
- Existing Mechanical Services
- Heating Services
- Cold Water Services
- Hot Water Services
- Gas Services
- Extract Ventilation Services
- Supply Ventilation Services
- Refrigerant Pipework Services



T1	Tender Issue	RT	CH	SW
Ver	Details	Rev	Chk	Appr
		Author	Check	Approved
		& Date	& Date	& Date
align PROPERTY PARTNERS				
White Rose House (2nd Floor), Northallerton Business Park, Thirsk Road, Northallerton, DL20 2AK Tel: 01602 797373				
Client: BARNESLEY MB COUNCIL				
Project Name: Dartfield Library Internal Refurbishments				
Drawing Title: Mechanical Building Services - Existing and Proposed Layouts				
Tender				
Scale	Drawn	Checked	Approved	
1:50	ART	CH		
Original Size	Date	Date	Date	
A3	May 24	May 24	May 24	
Drawing Number: BCD406-APP-XX-XX-DR-M-601				Version: 11



Proposed Mechanical Building Services Layout
Scale - 1:50

Electric Heater Schedule						
Ref	Type	Model	Length (mm)	Height (mm)	Output (W)	Location
ER01 & 02	Electric LST Panel Heater	LST100	730	495	1000	Staff Areas
ER03	Electric LST Panel Heater	LST050	688	495	500	WC
New electric panel heaters to be manufactured by Dimplex Ltd or equal and approved and shall include touch-sense controls with pre-set timer modes, holiday mode, user timer, eco mode and frost protection. Installed using manufacturers metal wall bracket.						
Schedule of Extract Fans Detailed on this Drawing						
Ref	Location	Type	Model	Duty (m³/h)	Comments	
F01	WC	Wall Mounted Fan	Lo-Carbon Sillhouette 100	60	Fans to be controlled via manufacturers PIR in the WC, set to 5min overrun. C/w manufacturers wall termination kit	
F02	Tea Point	Wall Mounted Fan	Lo-Carbon VA100	60	Fans to be controlled via on/off switch located above kitchen units. C/w manufacturers wall termination kit	
Extract fans to be manufactured by Vent Axia or equal and approved. F01 in WC's to be enabled via manufacturers remote PIR or integral PIR and run on timer of 5 minute.						
Electric Water Heaters Schedule						
Ref	Type	Capacity (Litres)	Rating (kW)	Comments		
EW01	Speedflow 15	15	1.2	Water heater to be mounted at HL within store		
Water heaters to be manufactured by Hyco Ltd or equal and approved. Water heaters to be complete with following accessories - SF3 Kit (expansion vessel and check valve). C/w digital programmable timer/clock set to building occupation hours.						

Heat Recovery AHU Schedule							
Ref	Location	Type	Model	Duty (l/s)	Dimensions (L x W x H) mm		
HRU 01	Located in ceiling void above suspended ceiling	Lossnay	LGH-65RVX-E	100	908 x 954 x 404		
Heat recovery air handling units to be manufactured by Mitsubishi Ltd or equal and approved. All units to be controlled via Remote Controller PZ-61DR-E. Contractor to be responsible for hanging and siting all plant and ductwork to the steel frame / roof structure. Details of all supports to be detailed on ductwork Contractors fabrication / installation drawings.							
DX Heat Pump Indoor Unit Schedule							
Ref	Location	Model	Length (mm)	Width (mm)	Height (mm)	Heating Capacity	Cooling Capacity
IU01 & 02	Library	PLA-M100EA2 (Fed by Outdoor Unit)	840	840	258	11.2kW	9.5kW
IU03	Children's Library	PLA-M50EA2 (Fed by Outdoor Unit)	840	840	298	6kW	5.5kW
All indoor cassette units to be manufactured and supplied by Mitsubishi Ltd or equal and approved. Units to be enabled via local controller - PAR-41MAA in each room. Specialist Refrigeration Contractor shall be responsible for the installation and hanging of the cassette units. Details of proposed fixing techniques to be provided to Project Engineer prior to installation. Weight of indoor cassette unit is 19 & 24Kg. Condensate drain to terminate at suitable gully, to be discussed with the Project Engineer on site.							
DX Heat Pump Outdoor Unit Schedule							
Ref	Location	Model	Width (mm)	Depth (mm)	Height (mm)	Heating Capacity	Cooling Capacity
OU01 & 02	Outdoor Compound	SUZ-M100VAR2 (1 Phase)	1050	330	981	11.2kW	9.5kW
OU03	Outdoor Compound	SUZ-M50VAR2 (1 Phase)	800	285	714	6kW	5.5kW
All outdoor condensing units to be manufactured and supplied by Mitsubishi Ltd or equal and approved.							

External Louvre Schedule					
Ref	Location	Type	Duty (m³/s)	Size (WxH) mm	Comments
L01	Library	WGF-38	0.1	300x300	To be supplied with rear entry plenum box and 2000 circular spiral wound ductwork. Polyester Powder Coat, Colour TBC
L02	Library	WGF-38	0.1	300x300	To be supplied with rear entry plenum box and 2000 circular spiral wound ductwork. Polyester Powder Coat, Colour TBC
Weather Proof louvres to be manufactured by Gilberts Blackpool Ltd or equal and approved.					
Extract Grille Schedule					
Ref	Location	Type	Duty (m³/s)	Size (WxH) mm	Comments
EG01	Library	GECA-RCF	0.1	300x300	To be supplied with manufacturers side entry plenum box and 2000 circular spiral wound ductwork. Polyester Powder Coat White Ral 9010 20% Gloss
Extract grilles to be manufactured by Gilberts Blackpool Ltd or equal and approved.					
Diffuser Schedule					
Ref	Location	Type	Duty (m³/s)	Size (WxH) mm	Comments
SD01-03	Libraris	DGA-4	0.035	150x150	To be supplied with manufacturers side entry plenum box and 1500 circular spiral wound ductwork
Supply diffusers to be supplied by Gilberts Blackpool Ltd or equal and approved. Polyester Powder Coat White Ral 9010 20% Gloss					