SPECIFICATION

for the

BUILDING SERVICES INSTALLATIONS

at

SAMPLE

Address:

SAMPLE ADDRESS

Client:

Client:

YOUR BUILDING PHOTO

Technical Support Associates Ltd
Building Services Design Consultants
1st Floor, 57b High Street
Bagshot, Surrey
GU19 5AH
Tel: 01276 476237

Website: www.tsaservices.co.uk

Issue Date: September-2021
Issue Number: 1

Building Services Consulting Engineers
Facilities Management
Authorising Engineers
Record Information

CONTENTS

1 GENERAL

				Issue No.
DATES:	Specification Issues	Monday, 20 September 2021	This issue	1
	Start on Site:	Dec-21	All dates indicative	
	Contract Completion	Mar-22	All dates indicative	
	Duration	12 weeks	All dates indicative	
Region:		London		
Building Sector:		Offices		
Building Area:		10,000 m2		
Architect:		Client		
Building Services Consultant:	MEPH	Technical Support Associates 1st Floor 57B High Street Bagshot Surrey GU19 5AH	01276 476237 www.tsaservices.co.uk	
		David Smith BSc(hons) CEng FIMechE FCIBSE Director	david.smith@tsaservices.co.uk	
Structural Engineer:		YOUR OTHER DESIGNERS/TEAM MEMBERS		
Principal Designer:		YOUR OTHER DESIGNERS/TEAM MEMBERS		
Interior Designer:		YOUR OTHER DESIGNERS/TEAM MEMBERS		
QS:		YOUR OTHER DESIGNERS/TEAM MEMBERS		
Contract Administrator:		YOUR OTHER DESIGNERS/TEAM MEMBERS		
Specialist	Lighting Designer	YOUR OTHER DESIGNERS/TEAM MEMBERS		
Specialist Fire & Security Contractor		YOUR OTHER DESIGNERS/TEAM MEMBERS		
↘	N/A			
Specialist Data & AV Contractor		YOUR OTHER DESIGNERS/TEAM MEMBERS		
↘	N/A			
Specialist	Building Control	YOUR OTHER DESIGNERS/TEAM MEMBERS		
Main Contractor:		YOUR OTHER DESIGNERS/TEAM MEMBERS		
SSW IN PLACE ON SITE:		HSG 150 Health and safety in construction		
CONTRACT:		Client Terms & Agreement		
SITE(s) COVERED BY THIS SPECIFICATION:		SAMPLE SAMPLE ADDRESS		

Reservation

This specification is based upon a design brief developed post discussions with the Client and the Design Team, where appropriate. Site inspections were random, or as directed on site, as required to form logical conclusions to meet the brief. The Contractor shall undertake detailed surveys and produce a developed scheme suitable for installation. Where options exist these shall be brought to the attention of TSA.
A SSW is a formal process which systematically examines the risks & defines the control measures necessary to minimise potential injury.

2 CONTRACT CONDITIONS

BUILDING SERVICES INSTALLATIONS

For detailed Contract Conditions refer to:

Client Terms & Agreement

Additional requirements to comply with:

HSG 150 Health and safety in construction

HSG 65: Managing for health and safety

3 SCOPE OF WORKS

BUILDING SERVICES INSTALLATIONS

General Scope of Works:

The contractor shall be responsible for the procurement, management installation and coordination of the Building Services installations including all shop drawings, pre commissioning, validation, coordination, labour, plant, materials and re- commissioning of all services in accordance with the following:-

- The Chartered Institute of Building Services Engineers
- The Building Regulations
- British Standards, European Standards IOP Standards
- Local Codes of Practice and Statutory Agreements
- CIBSE Guides
- HVAC Guides and Codes of Practice
- WRAS Regulations
- Manufacturer's installation requirements

Htg	HEATING/COOLING: The works comprise the installation of air to water heat pump system(s), feeding FCUs, radiators, UFH, plus pumping circuits and all mechanical services systems	H
Clg	None	I
PH	WATER SERVICES: All new water services including electric HWS calorifer plus above ground plumbing and water services distribution	J
Vent	VENTILATION: New catering canopies, filtration systems, silencing and make up air handling units	K
P	POWER: New ring main circuits, supplies to mechanical plant & catering equipment plus general power distribution	L
Ltg	LIGHTING: New lighting circuits & fittings serving all areas	M
FA	New Fire Alarm installation by specialist	N
AV	New Audio Visual installation by specialist	O
Sec	New Security installation by specialist	P

Utilities:

Gas	None
Water	To be modified
Electricity	To be provided
Drainage (above ground)	To be modified
Internet / Phone	None

Design Basis:	Fully designed by TSA, contractor to develop into a working scheme

The existing installations include:

Existing Calor gas installation	None
Existing CHW instalation	To be stripped out
Existing underfloor heating manifolds	To be stripped out
Existing heating Installation	To be stripped out
Existing hot water instalation	To be stripped out
Existing LTHW instalation	To be stripped out
Existing plumbing installations	To be enhanced
Existing Electrical Power Distribution	To be replaced

Existing incoming Gas Supply	None
Existing incoming Cold Water Main	To be modified
Existing gas fires boiler(s)	None
Existing Distribution Board	To be stripped out
Existing incoming Electrical Supply	To be replaced
Existing underfloor heating instalation	None

All services to be new except where stated

The new works include:

Air-Source Heat Pump installation	To be provided
Expansion Vessels	To be provided
Controls	To be installed
Refrigerant to Water Heat Exchanger(s)	None
Drawings	Mark up changes
Record Information	To be provided
Calorifier(s)	To be installed
Pipework Systems	To be installed
Builderswork	To be provided
FCU(s) - Chilled Water	None
Insulation	To be installed
Ductwork Installations	To be installed
Pump(s)	None
Radiator(s)	To be installed
Sanitary Ware	To be installed
Pipework Distribution	To be installed
Lighting installation	To be installed
Lightning protection	None
Distribution Boards	To be installed
Power Distribution	To be installed
Fire Alarm installation	To be installed
Security installation	To be installed
Further Information	Refer to other Consultant's information

4- SCHEDULE OF WORKS

SCHEDULE OF PARTICULAR WORKS

PROJECT: SAMPLE
ADDRESS: SAMPLE ADDRESS

Provide, install, test, commission, certify, set to work and provide accurate Working Drawings plus Reccord Information at completion of all works as shown on the drawings and as described within this specification and within the following Schedule of Works:

Lookup	SERVICE PROVIDED	DISCIPLINE	ELEMENT	Comments
	Provide, install, test, commission or modify the following equipment as detailed on the Equipment Data Sheets:			
EQUIPMENT DATA SHEETS (See Section 10)	AHUs Untreated			
	Calorifier			
	Distribution Boards			
	Fans			
	Grilles			
	Hoods			
	Luminaires			
	Pumps			
	Radiators			
	Sanitary			
	Silencers			
	Water Heater			
	Provide, install, test, commission or modify the following services as detailed on the drawings and Equipment Data Sheets:			
[Ven] AHUs: Provide & install the ventilation system as per Equipment Data Sheets and drawings	AHUs: Provide & install the ventilation system as per Equipment Data Sheets and drawings	Ventilation	Equipment	
[Ven] FANS: Provide, install, test & commission Hood Extract Fans as detailed on the drawings and data sheets	FANS: Provide, install, test & commission Hood Extract Fans as detailed on the drawings and data sheets	Ventilation	Equipment	
[Ven] HOODS: Provide, install, test & commission Catering Hoods as detailed on the drawings and data sheets	HOODS: Provide, install, test & commission Catering Hoods as detailed on the drawings and data sheets	Ventilation	Equipment	
[Ven] Ductwork to be mild steel installed in accordance with DW142 c/w access doors for cleaning	Ductwork to be mild steel installed in accordance with DW142 c/w access doors for cleaning	Ventilation	Equipment	
[Ven] TESTING: Test & commission all grilles, louvres, cowls, silencers, fire/smoke dampers, fans, AHUs, terminal equipment & assets where detailed on the drawings and Equipment Data Sheets	TESTING: Test & commission all grilles, louvres, cowls, sile e/smoke dampers, fans, AHUs, terminal equipment & assets where deta uipment Data Sheets	Ventilation	Equipment	
[Ven] TOILET EXTRACT fans to be Low Noise 20-30 db(A) wall mounted, accessible c/w controls / grilles	TOILET EXTRACT fans to be Low Noise 20-30 db e c/w controls / grilles	Ventilation	Ventilation	
[Aco] SILENCERS: Provide & install silencers within ductwork as shown on the drawings and schedules	SILENCERS: Provide & install silencers within duc e drawings and schedules	Acoustics	Equipment	
[Aco] Vibration - Any electrical conduit and services pipework that connects to an item of potential noise such as pumps, fans, compressors, AHUs etc shall incorporate flexible connections	Vibration - Any electrical conduit and services pipework connec an item of potential noise such as pumps, fans, compressors, AHUs etc shall incorporate flexible connections	Acoustics	BWIC	
[Hea] Provide & install electric radiators as shown on the drawings and schedules. Wiring by Electrical contractor	Provide & install electric radiators as shown on the drawings and schedules. Wiring by Electrical Contractor	Heating	Equipment	
[Ins] INSULATION All pipework to be insulated within plantrooms, risers, boxing & ceiling voids. Valve bags in plantrooms	INSULATION All pipework to be insulated within plantrooms, risers, boxing & ceiling voids. Valve bags in plantrooms	Insulation	Water	
[Ins] INSULATION Extract & Return air ductwork to be un-insulated	INSULATION: Extract & Return air ductwork to be un-insulated	Insulation	Ventilation	
[Ins] INSULATION DUCTWORK: Foil Faced Rigid Mineral Wool K<0.04 W/mk. 50mm thick taped plus aluminium bands at 500mm centres	INSULATION DUCTWORK: Foil Faced Rigid Mineral Wool K<0.04 W/mk. 50mm thick taped plus aluminium bands at 500mm centres	Insulation	Water	
[Ins] INSULATION PIPEWORK: HWS, CWS & LTHW Pipe: Foil Faced Rigid Mineral Wool K<0.04 W/mk. 20mm <25mm dia, 30mm <50mm dia, 40mm >50mm dia	INSULATION PIPEWORK: HWS, CWS & LTHW Pipe: Foil Faced Rigid Mineral Wool K<0.04 W/mk. 20mm <25mm dia, 30mm <50mm dia, 40mm >50mm dia	Insulation	Water	
[Pip] All WASTE PIPEWORK to be CAST IRON Timesaver to BS EN 877	All WASTE PIPEWORK to be CAST IRON Timesaver to BS EN 877	Pipework	Equipment	
[Pip] Chlorination: Provide & install quick fill connections, flushing loops, chlorination treatment & certification to all water services pipework	Chlorination: Provide & install quick fill connections, flushing loops, chlorination treatment & certification to all water services pipework	Pipework	Commissioning	
[Pip] Water Services PIPEWORK to be COPPER press-fit as Yorkshire Pegler each fitting marked before crimping. Any joints with non-visible marks to be removed	Water Services PIPEWORK to be COPPER press-fit as Yorkshire Pegler each fitting marked before crimping. Any joints with non-visible marks to be removed	Pipework	Heating/Cooling	
[Con] Controls - all equipment to be complete with manufacturer's controls. Employ controls specialist & interface controls system to all principal mechanical equipment plus phone compatible software	Controls - all equipment to be complete with manufacturer's controls. Employ controls specialist & interface controls system to all principal mechanical equipment plus phone compatible software	Controls	Equipment	
[Con] Calorifier - Control to 60C via electric immersion heater(s)	Calorifier - Control to 60C via electric immersion heater(s)	Controls	HWS	

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DETAILED EQUIPMENT DETAILS FOR

DESCRIPTIVE DETAILED OF WHAT IS

Lookup	SERVICE PROVIDED	DISCIPLINE	ELEMENT	Comments
[Con] Controls: Provide room thermostat(s) controlling the AHU electric heater batteries which shall be deactivated if the supply temperature >35C	Controls: Provide room thermostat(s) controlling the AHU electric heater batteries which shall be deactivated if the supply temperature >35C	Controls	Equipment	
[Con] Controls: Provide wall mounted 3 speed contol of hood extract and air make up systems	Controls: Provide wall mounted 3 speed contol of hood extract and air make up systems	Controls	Equipment	
[Con] AHUs and Extract Fans to be controlled in tandem via local controllers.	AHUs and Extract Fans to be controlled in tandem via local controllers.	Controls	Ventilation	
[Con] Time controls: provide independent adjustable 7-day time controls plus holiday periods and manual override	Time controls: provide independent adjustable 7-day time controls plus holiday periods and manual override	Controls	HVAC	
[Con] Toilet Extract Fans to be linked with either light switch operation or local PIR sensor and to include a 15 minutes overrun	Toilet Extract Fans to be linked with either light switch operation or local PIR sensor and to include a 15 minutes overrun	Controls	Ventilation	
[Con] FROST PROTECTION: Activate AHU heater battery if supply temperature <5C	FROST PROTECTION: Activate AHU heater battery if supply temperature <5C	Controls	Equipment	
[P&B] Calorifier: Provide & install c/w un-vented kit, expansion vessel, pressure relief valve, temp gauge, controls, & immersion(s)	Calorifier: Provide & install c/w un-vented kit, expansion vessel, pressure relief valve, temp gauge, controls, & immersion(s)	Public Health	Equipment	
[P&B] HWS Return: Provide & install pumped HWS return connecting <300mm from taps/appliances	HWS Return: Provide & install pumped HWS return connecting <300mm from taps/appliances	Public Health	HWS	
[P&B] Install connections to all sanitary appliances as shown on the drawings. Ironmongery free issued by others. Include all associated connections fittings for water services and drainage.	Install connections to all sanitary appliances as shown on the drawings. Ironmongery free issued by others. Include all associated connections fittings for water services and drainage.	Public Health	Drainage	
[P&B] Pipework: Provide & install all CWS, CWM, HWS F&R pipework	Pipework: Provide & install all CWS, CWM, HWS F&R pipework	Public Health	Equipment	
[P&B] Provide, install, test & commission all above ground plumbing & waste pipework from sanitary ware, sinks, basins, toilets, showers, washing machine etc. as shown on the drawings.	Provide, install, test & commission all above ground plumbing & waste pipework from sanitary ware, sinks, basins, toilets, showers, washing machine etc. as shown on the drawings.	Public Health	Drainage	
[P&B] Provide, install, test & commission Electric under-sink water heaters as detailed on the drawings and Equipment Data Sheets	Provide, install, test & commission Electric under-sink water heaters as detailed on the drawings and Equipment Data Sheets	Public Health	Water	
[P&B] Provide, install, test & commission all below ground drainage pipework as shown on the drawings. Pipework to be Vitrified Clay to BS EN 295	Provide, install, test & commission all below ground drainage pipework as shown on the drawings. Pipework to be Vitrified Clay to BS EN 295	Public Health	Drainage	
[Pow] All Distribution Boards including sub-mains cabling from main switchboard / incoming supply and all circuit wiring to ring mains, lighting circuits, kitchen appliances, supplies to Mechanical and Client equipment.	All Distribution Boards including sub-mains cabling from main switchboard / incoming supply and all circuit wiring to ring mains, lighting circuits, kitchen appliances, supplies to Mechanical and Client equipment.	Power	Electrical	
[Pow] Provide & install new ring main circuits as shown on the drawings and Distribution Board Schedules	Provide & install new ring main circuits as shown on the drawings and Distribution Board Schedules	Power	Power	
[Pow] Provide outlets from kitchen control switches to equipment as shown and coordinate position with the kitchen layout. Switches shall be engraved.	Provide outlets from kitchen control switches to equipment as shown and coordinate position with the kitchen layout. Switches shall be engraved.	Power	Electrical	
[Pow] Mechanical Services Power: Provide & install new distribution cabling, isolators and connections to mechanical plant	Mechanical Services Power: Provide & install new distribution cabling, isolators and connections to mechanical plant	Power	Power	
[Pow] All wiring shall be concealed throughout within risers, walls or ceilings. Wiring to wall-mounted outlets and lighting switches shall be run in concealed black enamelled conduit.	All wiring shall be concealed throughout within risers, walls or ceilings. Wiring to wall-mounted outlets and lighting switches shall be run in concealed black enamelled conduit.	Power	Power	
[Pow] Earthing and bonding shall be provided to comply with BS7671, IEE Wiring Regulations.	Earthing and bonding shall be provided to comply with BS7671, IEE Wiring Regulations.	Power	Power	
[Pow] All exposed cabling ie not contained within metal conduit/ trunking to be low smoke and flame	All exposed cabling ie not contained within metal conduit/ trunking to be low smoke and flame	Power	Electrical	
[Pow] Wiring to plantrooms, stores & technical areas shall be run on cable tray, within trunking or surface run within black enamelled conduit	Wiring to plantrooms, stores & technical areas shall be run on cable tray, within trunking or surface run within black enamelled conduit	Power	Power	
[Pow] Small power outlets shall be provided throughout as shown on the drawings for general power. The contractor shall allow to liaise with the client/architect to determine exact mounting heights and final location as agreed prior to works commencing	Small power outlets shall be provided throughout as shown on the drawings for general power. The contractor shall allow to liaise with the client/architect to determine exact mounting heights and final location as agreed prior to works commencing	Power	Power	
[Pow] SWITCH PLATES to be brushed steel, chrome or metal clad. Submit samples for Client approval	SWITCH PLATES to be brushed steel, chrome or metal clad. Submit samples for Client approval	Power	Power	
[Pow] Upon completion the entire electrical installation shall be tested in accordance with the current editions of BS7671 & BS5839. The contractor shall provide relevant test & commissioning certificates.	Upon completion the entire electrical installation shall be tested in accordance with the current editions of BS7671 & BS5839. The contractor shall provide relevant test & commissioning certificates.	Power	Electrical	
[Lig] Provide and install all luminaires as detailed on drawings and luminaire schedules. Liaise with the Architect re switching system, mounting height and final location prior to installation	Provide and install all luminaires as detailed on drawings and luminaire schedules. Liaise with the Architect re switching system, mounting height and final location prior to installation	Lighting	Lighting	
[Lig] Provide, install, test & commission all emergency lighting as detailed on the drawings. Include all associated wiring & cable drops.	Provide, install, test & commission all emergency lighting as detailed on the drawings. Include all associated wiring & cable drops.	Lighting	Lighting	
[A.V.] Provide & install security system comprising panel with internal siren, PIR detectors. Fire alarm input, WIFI Interface, & entrance Intercom	Provide & install security system comprising panel with internal siren, PIR detectors. Fire alarm input, WIFI Interface, & entrance Intercom	AV, Data, Security	Security	
[Fire] Provide, install, test & commission smoke and heat detection, break glasses, sounders as detailed on the drawings and Equipment Data Sheets. All cabling to be fire rated as FP200, Pyro or equal. All work to be in accordance with BS 5839-1:2017	Provide, install, test & commission smoke and heat detection, break glasses, sounders as detailed on the drawings and Equipment Data Sheets. All cabling to be fire rated as FP200, Pyro or equal. All work to be in accordance with BS 5839-1:2017	Fire	Fire Alarm	
[Uti] Provide and install new incoming electrical utility connection. The contractor shall arrange application with Utility Company. Provide and install new utility connection to Main Distribution Board.	Provide and install new incoming electrical utility connection. The contractor shall arrange application with Utility Company. Provide and install new utility connection to Main Distribution Board.	Utilities	Power	
[BWI] Builders work shall be undertaken by the Main Contractor with the exception of local drilling <150mm, services supports, including secondary steelwork, unistrut, U channel, & drop rods	Builders work shall be undertaken by the Main Contractor with the exception of local drilling <150mm, services supports, including secondary steelwork, unistrut, U channel, & drop rods	BWIC	BWIC	
[BWI] Strip out all existing services where not retained	Strip out all existing services where not retained	BWIC	BWIC	
[Con] All Water Fittings & Systems shall comply with the Water Fittings Act 1999. The contractor shall make appropriate Water Authority applications	All Water Fittings & Systems shall comply with the Water Fittings Act 1999. The contractor shall make appropriate Water Authority applications	Contractual	Water	
[Con] Drawings: Modify Working Drawings throughout the contract to pick up changes. Provide detailed "AS BUILT" drawings before handover	Drawings: Modify Working Drawings throughout the contract to pick up changes. Provide detailed "AS BUILT" drawings before handover	Contractual	Records	
[Con] Drawings: Tenders drawings are for pricing purposes only. Produce detailed Working Drawings developed by the specialist installer to develop the tender scheme into a fully complaint installation	Drawings: Tenders drawings are for pricing purposes only. Produce detailed Working Drawings developed by the specialist installer to develop the tender scheme into a fully complaint installation	Contractual	Installation	
[Con] Drawings: You may re-badge TSA Design drawings and modify to show installation specifics. Set up A3 site folder containing all Working Drawings which shall be hand marked by installers with specific changes	Drawings: You may re-badge TSA Design drawings and modify to show installation specifics. Set up A3 site folder containing all Working Drawings which shall be hand marked by installers with specific changes	Contractual	Records	
[Lab] LABELLING Provide traffolyte labels to switchpanels, distribution boards and switch fuses / isolators clearly showing circuit number and description of plant served	LABELLING Provide traffolyte labels to switchpanels, distribution boards and switch fuses / isolators clearly showing circuit number and description of plant served	Contractual	Records	
[Con] Samples: Submit samples of all visible products to Client/Design Team before ordering	Samples: Submit samples of all visible products to Client/Design Team before ordering	Contractual	Equipment	

Lookup		SERVICE PROVIDED	DISCIPLINE	ELEMENT	Comments

BUILDING SERVICES INSTALLATIONS

5.1 General Mechanical Specification

Please see our website for the General Mechanical Specification:

MECHANICAL SPECIFICATION

The project password is:

8ag5h0t_19

5.2 General Public Health Specification

Please see our website for the General Mechanical Specification:

PUBLIC HEALTH SPECIFICATION

The project password is:

8ag5h0t_19

5.2 General Requirements

This section defines the general requirements for the proposed works. Tenders for the works are to be submitted in accordance with the contract conditions as issued elsewhere and shall comply fully with all clauses contained therein.
The Specification sets out the principal requirements of the installation but does not relieve the Contractor of his responsibilities for any part of the installation to achieve the necessary performance. The works shall be complete, tested and commissioned in their entirety.
A Schedule of Rates shall be produced by the successful tenderer, which shall summate to his tender sum.
During the tender period any anomalies or discrepancies shall be brought to the attention of the Consultant Building Services Engineer, who shall issue a response as appropriate to all tendering Contractors. The Contractor is deemed to have allowed within his price for all items to ensure that the installation is complete in every respect and in accordance with the design intent.

5.2.1 Definitions

The following definitions, where applicable, shall apply in construing the conditions and descriptions referred to in his document.

AGREED, DIRECTED, SELECTED, REQUIRED and COMMENT means the agreement, direction, selection, requirement and comment of the Consultant Building Services Engineer.

PROVIDE means supply, install, connect, complete, test and commission.

ALLOW/ ALLOWANCE means the costs of the items referred to will be at the sole risk and expense of the Contractor.
NECESSARY means the cost of items referred to shall be carried out to the extent and by a method consistent with good practice.

BS means the British Standard Specification current at the date of the tender.
CO-ORDINATED means with all related services, structure and architectural requirements, etc.
COMMENT or APPROVAL means that items shall be submitted to the Consultant Building Services Engineer for comment and until returned, endorsed 'No Comment' by the Consultant Building Services Engineer, shall not be incorporated in the Works.

5.2.2 **Extent of Work**

It will be the responsibility of the contractor to ensure that all works, whether described in this text or part of a separate instruction, are carried out in a professional manner and with experience from a responsible organisation that is experienced in the works.

5.2.3 **Installation Standards**

The entire installation and components shall, unless stated otherwise in the Particular Specification Section or the associated drawings issued by the Consultant Building Services Engineer, comply with the following:

· All related British Standard Specifications and British Standard Codes of Practice.
· The Chartered Institution of Building Services Guide including the commissioning codes, technical memoranda, practice notes and energy notes.
· Building Research Station Digest recommendations.
· Recommendations of the Health and Safety at Work Executive.
· Manufacturers' stipulations and recommendations for installation and testing.
· Local by-laws and regulations.
· Requirements of the County and local Fire Officers.
· The Employer's insurers.
· All other authorities having jurisdiction.
· The current edition of the Institution of Electrical Engineers Regulations for Electrical Installations, including all Amendments and Appendices contained therein.
· BSRIA Commissioning Guides.

5.2.4 **Regulations & Codes of Practice**

It will be necessary for the successful contractor to demonstrate that they are familiar with and perform within the following :-

· All relevant British Standard Codes of Practice.
· Approved Code of Practice " Work with Asbestos Insulation, Asbestos Coating and Asbestos Insulation Board" (Third Edition).
· Approved Code of Practice "The Control of Asbestos at Work" (Third Edition)
· British Compressed Air Society, Guide to the selection and installation of Compressed Air Systems.
· BS 7671 IEE Requirements for Electrical Installations .
· Building Regulations
· Carriage of Dangerous Goods (Classification, Packaging and Labelling) and Use of Transportable Pressure Receptacles Regulations 1996.
· Carriage of Dangerous Goods by Road and Rail Regulations 1996 (as amended).
· CDM Regulations
· Construction (Health, Safety & Welfare) Regulations 1996
· Control of Asbestos at Work (Amendment) Regulations 1998
· EH22 (Rev) Ventilation of the Work Place 1988
· EH44 Dust: General Principles of Protection. 2nd Rev Edition
· EH54 Assessment of Exposure To Fume from Welding and Allied Processes 1990
· Factories Act 1961.
· Fire Precautions Act 1971.
· Guidance Note HS (G) 53 "Selection, Use and Maintenance of Respiratory Protective Equipment".
· Guidance Note INDG 288 "Selection of Respiratory Protective for Work with Asbestos HSE 1999"
· Health & Safety (First Aid) Regulations 1981.
· Health & Safety at Work Act 1974 (and 1989 amendments).
· Health & Safety Executive Guidance L8 - The Control of Legionellosis bacteria in water systems

· Health & Safety Notices for Offices, Shops and Factories Act.
· Health and Safety - The Chemicals (Hazard Information and Packaging for supply) Regulations 2000.
· Health and Safety – The Control of Asbestos in the Air Regulations 1990
· Health and Safety (Display screen Equipment) Regulations 1992
· Health and Safety (First Aid) Regulations 1981. Approved Code of Practice and Guidance.
· Health and Safety (Safety Signs and Signals) Regulations 1996.
· Health and Safety Executive Guidance HSG189/1 “Controlled Asbestos Stripping Techniques for Work Requiring a License”
· Health and Safety Executive Guidance Note EH10 “Asbestos Exposure Limits and Measurement of Airborne Dust Concentrations” 1995.
· Health and Safety Executive Guidance Note EH47 “The Provision, Use and Maintenance of Hygiene Facilities for Works with Asbestos Insulation and Coatings”.
· Health and Safety Executive Guidance Note EH50 “Training Operatives and Supervisors for Work with Asbestos Insulation and Coatings” March 1988.
· Health and Safety Executive Guidance Note EH51 “Enclosures Provided for Work with Asbestos Insulation, Coatings and Insulation Board” January 1987
· Health and Safety Executive Guidance Note EH57 “The Problems of Asbestos Removal at High Temperatures”.
· Health and Safety Executive Guidance Note HSG173 “Monitoring Strategies for Toxic Substance 1997”.
· Health and Safety Executive Guidance Note HSG189/2 “Working with Asbestos cement”
· Health and Safety Executive Guidance Note PM5 (1985) Automatically controlled steam and hot water boilers
· Health and Safety Executive Guidance Note PM60 (1987) Steam boiler blowdown system.
· Health and Safety Executive Guidance Note PM7 Lifts
· Health and Safety Executive Method for the Determination of Hazardous Substances MDHS 39/4 “Asbestos Fibres in Air: sampling and evaluation by phase contrast microscopy (PCM) under the Control of Asbestos at Work Regulations” 1995.
· HS(G)108 Chip For Everyone. (Chemicals Hazard Information and Packaging) Regulations 1993
· HS(G)27 Substances For Use At Work: The Provision of Information
· HS(G)37 An Introduction To Local Exhaust Ventilation
· HS(G)51 The Storage of Flammable Liquids In Containers
· HS(G)54 The Maintenance, Examination and Testing of Local Exhaust Ventilation
· HS(G)97 A Step By Step Guide To COSHH Assessment
· HSE CIS 49 General access ladders and scaffolds
· HSE HS(G) 150 Health & Safety in Construction
· HSE L22 Safe use of work equipment
· Lifting Operations and Lifting Equipment Regulations 1998
· Local Byelaws and Regulations.
· Management of Health and Safety at Work Regulations 1999
· Manual Handling Operations Regulations 1992
· Noise at Work Regulations 1989
· Offices, Shops and Railway Premises Act 1963.
· Personal Protective Equipment at Work (PPE) Regulations 1992
· Pressure Systems Safety Regulations 2000
· Protection of Eyes Regulations 1974.
· Provision and Use of Work Equipment Regulations 1998.
· RIDDOR - Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1985.
· Safety Signs Regulations 1980.
· Special Waste (Amendment) Regulations 1996.
· The Asbestos (Licensing) (Amendment) Regulations 1998
· The Asbestos Prohibition (Amendment) Regulations 1999
· The Asbestos Prohibition Regulations 1992
· The Construction (Design and Management) Regulations 1999

- The Control of Asbestos at Work Regulations 1987 (as amended)
- The Control of Substances Hazardous to Health Regulations 1999.
- The Environmental Protection Act 1990.
- The Safety Representatives and Safety Committees Regulations 1977 (SI 1977 No. 500)
- The Special Waste Regulations 1996.
- The Waste Management (Licensing) Regulations 1994 (as amended).
- Water Supply Byelaw 30.

5.2.5 **Positions of Equipment**

The positions of all fittings, equipment, plant, apparatus etc., indicated in the Specification, are to be taken as approximate only and are intended to indicate generally the arrangement of the works under this contract. The MEPH services shall be set out and account shall be taken of all other trades. If during the progress of the work any error shall appear or arise in the positions, levels or dimensions of the several works, the work shall be altered at no extra cost and to the satisfaction of the Architect, Contract Administrator and Consultant Building Services Engineer, if required to do so.

5.2.6 **Builders' Work in Connection with Services Installation.**

The Contractor shall be responsible for providing details of all bases, curbs, built-in carrier beams, fixings etc.

5.2.7 **Craneage**

The Contractor shall include for any craneage requirements for the lifting and positioning of all plant, equipment, materials, tools and any other items as necessary for completion of the Works.

5.2.8 **Tender Drawings**

The tender drawings are those drawings scheduled within the Specification volumes and tender documents and are prepared to provide the Tenderer with sufficient detail and design intent to allow the Tenderer to provide a true and competitive PRICE for the Works.

5.2.9 **Contractor's Drawings & Record Information**

5.2.11 **Working Drawings**

Working drawings and builders' work drawings are to be prepared by the Contractor as defined in this Specification. Working Drawings develop the Tender design into a fully compliant installable scheme. The working drawings shall be updated to incorporate all design changes where required, based upon modified design information.

The Contractor shall be responsible for ensuring that his drawings are co-ordinated with the structure and interior details. The Contractor shall also be responsible for co-ordinating with all other trades and services.
In addition the Contractor shall be responsible for producing any further detailed drawings that will be necessary to complete the services installation in accordance with this Specification.
The Contractor shall be responsible for providing all builders' work and working drawings in adequate time to ensure that there is no delay in the programme for construction of the Works.
The Contractor shall be responsible for any error, discrepancy or omission in any drawing prepared by him or on his behalf, whether or not such drawing has been approved by the Consultant Building Services Engineer.
Working drawings to be supplied by the Contractor shall be as follows:-

a) Details of all bases for plant formed in concrete, brickwork or wood, to a scale of not less than 1/20.

b) Details of all builders' work, holes, chases, etc. for the installation or, or access to the services to a scale of not less than 1/50.

c) Details of all purpose-made brackets, hangers, guides, anchors, etc. to a scale of not less than 1/20.

d) Details of all purpose-made equipment, brackets, supports and mountings to a scale of not less than 1/20.

e) Details of all services layouts to a scale of not less than 1/100 and show the full width of the service (i.e. ductwork, tray routes, etc. shall be double-line). Mechanical ductwork, pipework, mains/sub-mains cable layouts shall though be to a scale not less than 1/50.

f) Detailed electrical wiring diagrams of all equipment supplied by the Contractor, showing all interconnections (suitably numbered) between equipment to enable the necessary wiring to be carried out.

All drawings shall be submitted for comment by the Consultant Building Services Engineer and Structural Engineer as applicable, before the Contractor starts on site.

All drawings shall be prepared from the latest issue detailed layouts to be obtained from the Contractor. Drawings shall be produced in Auto-CAD, release 2000 or later.

The Contractor shall be responsible for co-ordinating his detailed drawings with all other Contractors' information, along with the Consultant Building Services Engineer's drawings. The drawings shall be fully dimensioned ready for installation. Invert levels shall be shown along with setting out dimensions from building grid lines.

A set of working drawings shall be kept on site specifically marked up with any site amendments found during the Installation Works.

5.2.12 **Record Drawings**

The Contractor shall supply a comprehensive set of record drawings of the Works. The record drawings shall be based on the marked-up copies of the working drawings.
Two weeks before the anticipated contract completion date, the Contractor shall supply draft copies of all record drawings to the Consultant Building Services Engineer for comments.
The completed and approved drawings shall be signed by the Contractor as record drawings and shall be submitted to the Consultant Building Services Engineer at practical completion of the Works.
Full details shall be shown of the installation, including positions of all equipment and ancillary items as actually installed.
All drawings shall conform to the following standards:-

a) All drawings shall be Auto CAD, release 2000 or later.

b) All drawings shall be of the international A series; no other size will be accepted. The preferred maximum drawing size is A1.

c) All Title lettering shall be in a height of not less than 5mm.

d) All other lettering on the drawings shall be in a height of not less than 3mm.

Each drawing prepared by the Contractor shall have the following information on the drawing:-

- Name of the Sub-Contract and where appropriate, the phase number, zone or floor number.
- Description of drawing.
- Drawing number.
- Scale.
- Name and address of Contractor.

One complete set of A3 prints, together with a USB Drive/CD/Web Link, containing master Auto CAD and Backup files shall be provided by the Contractor, unless otherwise specified.
If the Contractor fails to comply with these requirements, the Consultant Building Services Engineer will have the right to arrange for the records to be prepared elsewhere and the whole of the costs involved in this, including all costs of surveying, printing, etc. shall be borne by the Contractor.
If during the defects liability period further discrepancies are found, these shall be amended on all appropriate copies at the Contractor's expense.

5.2.13 **Operating and Maintenance Instructions**

The Contractor shall provide operating and maintenance instructions in the form of Word/Excel files, together with one printed, bound copy. All electronic information shall be stored in separate files, each descriptively named with the information contained. The manual shall already be approved by the Consultant Building Services Engineer prior to the final issue.
One draft copy shall be provided four weeks before practical completion for the Consultant Building Services Engineer's comments.
The arrangement of the manual shall be as follows:-

GENERAL INFORMATION
DESIGN CRITERIA
ASSET DATA
DESCRIPTIONS
CONTROLS/BEMS
OPERATING PROCEDURES
MAINTENANCE
INFORMATION SCHEDULES
CERTIFICATION

HEALTH AND SAFETY information
ENVIRONMENTAL
MANUFACTURERS LITERATURE
DRAWINGS
The Contractor shall include for instructing the Employer's or future Tenant's staff in the operation and maintenance of all equipment installed. This instruction shall include attendance by specialist suppliers and shall only be required to be performed once. The Contractor shall also allow for a guided tour of the installation for the Employer's benefit.
The operation and maintenance demonstration and guided tour shall be undertaken within three weeks following practical completion. However, the Employer can, at his discretion, postpone such instructions to a later date, provided the rearranged date is within the defects liability period.
If during the defects liability period, discrepancies are found within the documentation, then all manuals shall be amended at the Contractor's expense.
All costs incurred by the contractor in preparing their tender and any work in connection therewith, shall be solely at the expense of the contractor.

5.2.14 **Discrepancies**

If the Contractor detects any discrepancies or anomalies between the Drawings, Details, Specification or Schedules, he shall inform the Consultant Building Services Engineer immediately and request formal instructions on the course of actions to be taken.
After acceptance of the tender the Consultant Building Services Engineer's interpretation of the specification and drawings shall be binding.

5.2.15 **Setting Out**

The Contractor shall set out the Works and be responsible for the accuracy of the same and the positioning of all fittings.

The Contractor shall be deemed to have taken full account of the latest drawings, so as to ensure that the requirements of these other services do not conflict or vary the requirements or the particular setting out drawings.

The Contractor, at his own cost, shall amend any errors arising from his own inaccurate setting out unless the Consultant Building Services Engineer shall otherwise direct.
The Contractor shall be responsible for providing builders' work information in sufficient time for the progression of any element of Works. Any inaccuracies arising from the inaccurate setting out or late information shall be rectified at the Contractor's cost.

5.2.16 **Co-ordination of Services**

The Contractor shall be required to co-ordinate closely with all trades and ensure a planned approach to the installation of the Works.
All works shall be installed, so as to cause no hindrance or delay to other trades.
Any delays experienced, shall be reported to the Project Manager.

5.2.17 **Interference with Existing Services**

In the pursuance of this Contract, it may be necessary to modify or re-route existing services.
When it becomes apparent that the proposed Works affects an existing service, the attention of the Consultant Building Services Engineer should be drawn to this fact and his authorisation sought prior to the implementation of any action at site level to interfere with or divert such services.
The Consultant Building Services Engineer shall direct the Contractor with regard to the appropriate action to be taken, having due regard to the prevailing conditions of the time.

5.2.18 **Workmanship**

The materials and workmanship are to be of the best quality and executed in accordance with the Specification and Drawings, as supplied by the Consultant Building Services Engineer.
The Work is to be carried out by fully trained and qualified personnel. Only registered tradesmen may be employed on the installation of the Works, described in this Specification.
The Consultant Building Services Engineer shall require the Contractor to provide evidence of the respective certificates of training and/or ability, and will require the removal of any Tradesmen who does not possess valid certificates.
The Contractor is required to ensure that the whole of the installation complies with the working drawings and details, with full account being taken of any co-ordination drawings that may be issued.

The respective services shall be installed to true alignment and to the levels indicated on the drawings.
All services shall be supported in the manner described in the Specification, unless particular manufacturers' requirements for support are more stringent than this Specification; in which case the manufacturers' instructions shall be complied with.

5.2.19 **Samples of Workmanship**

The Contractor may be required to provide, free of charge, a sample of any of the specified materials. Elements of workmanship having been approved form the basis of the standard by which all other materials or workmanship are judged.
Should all or any part of the installation fail to comply with the standard or quality previously approved, then such work shall be rejected.
In the absence of specific samples being required, then the accepted standards of material and work ship laid down in the relevant British Standards or Codes of Practice shall apply.

5.2.20 **Redundant Materials**

The Contractor will be required to take down all obstructions and redundant materials to facilitate the installation of the Works. All redundant sections of the services installation shall be made safe and removed from site.
Materials removed shall be either:

- Re-used where their condition is equal to that specified (subject to approval by the Consultant Building Services Engineer and subject to potential cost savings)
- Recycled where reasonably practical, including all steel, aluminium etc.
- Disposed of in a manner which minimises potential environmental implications

5.2.21 Notice Prior to Cover

The Contractor shall give reasonable notice to the Consultant Building Services Engineer whenever any works materials are intended to be covered with earth, insulation or otherwise concealed and in default of so doing shall, if required by the Consultant Building Services Engineer, uncover and reinstate such work and materials at his own expense.

5.2.22 **Statutory Undertakings/Additional Requirements Under By-laws**

Notice of any requisition or complaint or any communication whatsoever affecting the Works shown or specified which is made to the Contractor or his Specialist Supplier by a Statutory of other competent Authority, shall be referred immediately to the Consultant Building Services Engineer and confirmed in writing. The Consultant Building Services Engineer's written instructions shall be awaited before proceeding further with any portion of such works referred to.
The Contractor shall be liable for any loss or cost of any subsequent other work found to be necessary by reason of his neglect to notify the Consultant Building Services Engineer at the time and in the manner herein prescribed.

5.2.23 **Guarantees**

The Contractor shall ensure that guarantees of equipment are given in the joint names of the Contractor and the Employer and that the benefit of any guarantees which run beyond the end of the Defects Liability Period are passed to the Employer.

5.2.24 **Sub-letting**

Where it is normal practice that certain sections of the Works shall be sub-let, the Contractor shall submit details at the time of tendering of any proposed sub-letting to the Consultant Building Services Engineer for approval.

5.2.25 **Defects Inspection**

The Contractor shall complete his own defects inspections and carry out remedial works prior to offering to the Consultant Building Services Engineer for inspection.

5.2.26 **Management of Installation Contracts**

General

The contractor will be required to demonstrate responsible management by effecting efficient operation of the contract.
It will be the responsibility of the contractor's personnel to liaise with The Client on all matters affecting the operation of services within the building and to keep them informed of the activities of themselves and their sub-contractors at all times.

Site Attendance

The contractor shall attend site prior to submitting his tender in order to be familiar with the general building requirements.

Dress and Conduct

The contractor shall ensure that staff attending site, both their own and sub-contractors', conform to high standards of dress and conduct, being clean, tidy and courteous at all times.

Meetings and Inspections

The contractor's contract manager shall attend meetings with The Client and/or their duly appointed representative at regular intervals throughout the contract installation.

COSHH Assessment

The contractor shall within 28 days of commencing the contract submit a copy of their COSHH assessment, in respect of their responsibilities on site, to The Client or their duly appointed representative.

Safety Policy Statement

The contractor shall provide a copy of their safety policy statement, including electrical safety, to The Client or their duly appointed representative.

Contractor’s and Sub-Contractors’ Portable Electrical Equipment

The periodic inspection/testing of portable electrical equipment used by the contractor or their sub-contractors will be their own responsibility.

6: HEALTH AND SAFETY

BUILDING SERVICES INSTALLATIONS

HAZARDS

Develop the hazards as identified on the pre-contract Design Risk Assessment

CONTROL MEASURES

Develop the Control Measures identified on the pre-contract Design Risk Assessment

Risk assessments must be undertaken by competent persons to assess and document (where necessary) potential risks that may occur during the work and to detail any control measures that may be necessary.

Regular inspections must be carried out to ensure that a safe and healthy working environment is maintained. The Contractor shall ensure for example that Plant Rooms are free from rubbish, floors are clean, cupboards are tidy, equipment is certified, and care is given to all Health & Safety aspects of work in progress.

All equipment used for, or as part of the process of work (i.e. tools, electrical equipment, ladders etc.) must:

> be suitable for the intended use

> include specific construction, information and training

> promote suitable and effective means of protection from danger i.e. guards, stop buttons etc.

> be adequately and property maintained

> be positioned and used to afford safe use and operation

Due consideration must be given to control the additional risks involved when working at high level (generally above 2m). Additional precautions include safety harnesses, access platforms etc.

PERMIT TO WORK SYSTEM

All Contractors must comply with the Health & Safety Requirements and administer a PTW system to control higher risk activities. This shall follow his specific risk assessments for the work and be detailed within his Safety Plan.

The Contractors shall provide staff, equipment and plant as necessary to lock off, isolate, cordon off, and make safe any equipment, plant or systems prior to any works commencing by his staff or sub-Contractors.

PPE

This include masks, footwear, hearing protection, high visability clothing & gloves all of which shall be provided and used to safeguard the operative.

COSHH

The Control of Substance Hazardous to Health Regulations are designed to control and prevent the exposure to hazardous substances, including chemical and microbiological hazards.

A risk assessment must be made prior to using any substances. The risk assessment must account for any dust, mists, fumes and vapours potentially given off. All control measures, including local exhaust ventilation, substitution, engineering controls and personal protective equipment, must be evaluated.

A material safety data sheet is required for each substance, in order to carry out a proper risk assessment.

ACCIDENTS & INCIDENTS

All accidents and dangerous occurrences must be recorded in the Accident Book and relevant procedures followed. Accidents occurring in areas allocated to contractors for project work must also be reported through the contractor's Health and Safety policies which are controlled by Client project audit.

WASTE DISPOSAL/MANAGEMENT

A Waste Management strategy shall be adopted and followed emphasising reduction, re-use, recycling and responsible disposal. Waste shall be categorised and segregated at source where practical.

CDM REGULATIONS

All project work including maintenance activities shall comply with CDM Regulations which apply where:

> Demolition is required
> Works exceeds 30 days or 500 man-days
> Design is involved

DELETERIOUS MATERIALS

The Contractor shall not use in the works any of the materials listed below, and shall use all reasonable endeavours to ensure that his Suppliers or Sub-Contractors use none of them in the Works. Upon practical completion of the Works or any part thereof, the Contractor shall provide written confirmation to this effect addressed to the Employer or to its successors in title and to those who derive title under it. This confirmation shall be included in the Operation and Maintenance Manuals. The materials referred to above are as follows:-

> High alumina cement in structural elements.
> Wood wool slabs in permanent formwork to concrete or in structural elements.
> Calcium chloride in admixtures for use in reinforced concrete.
> Asbestos or asbestos-containing products, as defined in the Asbestos Regulations, 1969 and 1987, or any statutory modification or re-enactment thereof.
> Aggregates for use in reinforced concrete which do not comply with British Standard Specification 882 and aggregates for use in concrete which do not comply with provisions of British Standard Specification 8110.
> Lead or any material containing lead which may be ingested, inhaled or absorbed, except where copper alloy fittings containing lead are specifically required in drinking water pipework by any relevant statutory requirements.
> Urea formaldehyde foam or materials which may release formaldehyde in quantities, which may be hazardous, with reference to the limits set from time to time by the Health & Safety Executive.
> Materials which are generally comprised of mineral fibres, either man-made or naturally occurring, which have a diameter of 3 microns or less and a length of 200 microns or less, or which contain any fibres not sealed or otherwise stabilised to ensure that fibre migration is prevented.
> Calcium silicate bricks or tiles.
> Other substances generally known to be deleterious at the time of use including, but without limitation, substances referred to as being hazardous to health and safety in 'Hazardous Building Materials : A Guide to the Selection of Alternatives', edited by S.R. Curwell and C.G. March, according to the then current edition.
> Refrigerant gases containing chlorine including CFCs and HCFCs.

7 PRELIMINARIES

BUILDING SERVICES INSTALLATIONS

For detailed Contract Conditions refer to:

Client Terms & Agreement

8 TENDER RETURN

BUILDING SERVICES INSTALLATIONS

EXCEL VERSION

EQUIPMENT & ASSETS

		NUMBER OFF	£ COST EACH	£ TENDER
AHUs Untreated				
Calorifier				
Distribution Boards				
Fans				
Grilles				
Hoods				
Luminaires				
Pumps				
Radiators				
Sanitary				
Silencers				
Water Heater				

PARTICULAR REQUIREMENTS

AHUs: Provide & install the ventilation system as per Equipment Data Sheets and drawings	Ventilation			
FANS: Provide, install, test & commission Hood Extract Fans as detailed on the drawings and data sheets	Ventilation			
HOODS: Provide, install, test & commission Catering Hoods as detailed on the drawings and data sheets	Ventilation			
Ductwork to be mild steel installed in accordance with DW142 c/w access doors for cleaning	Ventilation			
TESTING: Test & commission all grilles, louvres, cowls, silencers, fire/smoke dampers, fans, AHUs, terminal equipment & assets where detailed on the drawings and Equipment Data Sheets	Ventilation			
TOILET EXTRACT fans to be Low Noise 20-30 dbA, Wall mounted, accessible c/w controls / grilles	Ventilation			
SILENCERS: Provide & install silencers within ductwork as shown on the drawings and schedules	Acoustics			
Vibration - Any electrical conduit and services pipework that connects to an item of potential noise such as pumps, fans, compressors, AHUs etc shall incorporate flexible connections	Acoustics			
Provide & install electric radiators as shown on the drawings and schedules. Wiring by Electrical Contractor	Heating			
INSULATION All pipework to be insulated within plantrooms, risers, boxing & ceiling voids. Valve bags in plantrooms	Insulation			
INSULATION: Extract & Return air ductwork to be un-insulated	Insulation			
INSULATION DUCTWORK: Foil Faced Rigid Mineral Wool K<0.04 W/mk. 50mm thick taped plus aluminium bands at 500mm centres	Insulation			
INSULATION PIPEWORK: HWS, CWS & LTHW Pipe: Foil Faced Rigid Mineral Wool K<0.04 W/mk. 20mm <25mm dia, 30mm <50mm dia, 40mm >50mm dia	Insulation			
All WASTE PIPEWORK to be CAST IRON Timesaver to BS EN 877	Pipework			
Chlorination: Provide & install quick fill connections, flushing loops, chlorination treatment & certification to all water services pipework	Pipework			
Water Services PIPEWORK to be COPPER press-fit as Yorkshire Pegler each fitting marked before crimping. Any joints with non-visible marks to be removed	Pipework			
Controls - all equipment to be complete with manufacturer's controls. Employ controls specialist & interface controls system to all principal mechanical equipment plus phone compatible software	Controls			
Calorifier - Control to 60C via electric immersion heater(s)	Controls			
Controls: Provide room thermostat(s) controlling the AHU electric heater batteries which shall be deactivated if the supply temperature >35C	Controls			
Controls: Provide wall mounted 3 speed contol of hood extract and air make up systems	Controls			
AHUs and Extract Fans to be controlled in tandem via local controllers.	Controls			
Time controls: provide independent adjustable 7-day time controls plus holiday periods and manual override	Controls			
Toilet Extract Fans to be linked with either light switch operation or local PIR sensor and to include a 15 minutes overrun	Controls			
FROST PROTECTION: Activate AHU heater battery if supply temperature <5C	Controls			
Calorifier: Provide & install c/w un-vented kit, expansion vessel, pressure relief valve, temp gauge, controls, & immersion(s)	Public Health			
HWS Return: Provide & install pumped HWS return connecting <300mm from taps/appliances	Public Health			
Install connections to all sanitary appliances as shown on the drawings. Ironmongery free issued by others. Include all associated connections fittings for water services and drainage.	Public Health			
Pipework: Provide & install all CWS, CWM, HWS F&R pipework	Public Health			
Provide, install, test & commission all above ground plumbing & waste pipework from sanitary ware, sinks, basins, toilets, showers, washing machine etc. as shown on the drawings.	Public Health			
Provide, install, test & commission Electric under-sink water heaters as detailed on the drawings and Equipment Data Sheets	Public Health			

Provide, install, test & commission all below ground drainage pipework as shown on the drawings. Pipework to be Vitrified Clay to BS EN 295	Public Health			
All Distribution Boards including sub-mains cabling from main switchboard / incoming supply and all circuit wiring to ring mains, lighting circuits, kitchen appliances, supplies to Mechanical and Client equipment.	Power			
Provide & install new ring main circuits as shown on the drawings and Distribution Board Schedules	Power			
Provide outlets from kitchen control switches to equipment as shown and coordinate position with the kitchen layout. Switches shall be engraved.	Power			
Mechanical Services Power: Provide & install new distribution cabling, isolators and connections to mechanical plant	Power			
All wiring shall be concealed throughout within risers, walls or ceilings. Wiring to wall-mounted outlets and lighting switches shall be run in concealed black enamelled conduit.	Power			
Earthing and bonding shall be provided to comply with BS7671, IEE Wiring Regulations.	Power			
All exposed cabling ie not contained within metal conduit/ trunking to be low smoke and flame	Power			
Wiring to plantrooms, stores & technical areas shall be run on cable tray, within trunking or surface run within black enamelled conduit	Power			
Small power outlets shall be provided throughout as shown on the drawings for general power. The contractor shall allow to liaise with the client/architect to determine exact mounting heights and final location as agreed prior to works commencing	Power			
SWITCH PLATES to be brushed steel, chrome or metal clad. Submit samples for Client approval	Power			
Upon completion the entire electrical installation shall be tested in accordance with the current editions of BS7671 & BS5839. The contractor shall provide relevant test & commissioning certificates.	Power			
Provide and install all luminaires as detailed on drawings and luminaire schedules. Liaise with the Architect re switching system, mounting height and final location prior to installation	Lighting			
Provide, install, test & commission all emergency lighting as detailed on the drawings. Include all associated wiring & cable drops.	Lighting			
Provide & install security system comprising panel with internal siren, PIR detectors. Fire alarm input, WIFI Interface, & entrance Intercom	AV, Data, Security			
Provide, install, test & commission smoke and heat detection, break glasses, sounders as detailed on the drawings and Equipment Data Sheets. All cabling to be fire rated as FP200, Pyro or equal. All work to be in accordance with BS 5839-1:2017	Fire			
Provide and install new incoming electrical utility connection. The contractor shall arrange application with Utility Company. Provide and install new utility connection to Main Distribution Board.	Utilities			
Builders work shall be undertaken by the Main Contractor with the exception of local drilling <150mm, services supports, including secondary steelwork, unistrut, U channel, & drop rods	BWIC			
Strip out all existing services where not retained	BWIC			
All Water Fittings & Systems shall comply with the Water Fittings Act 1999. The contractor shall make appropriate Water Authority applications	Contractual			
Drawings: Modify Working Drawings throughout the contract to pick up changes. Provide detailed "AS BUILT" drawings before handover	Contractual			
Drawings: Tenders drawings are for pricing purposes only. Produce detailed Working Drawings developed by the specialist installer to develop the tender scheme into a fully complaint installation	Contractual			
Drawings: You may re-badge TSA Design drawings and modify to show installation specifics. Set up A3 site folder containing all Working Drawings which shall be hand marked by installers with specific changes	Contractual			
LABELLING Provide traffolyte labels to switchpanels, distribution boards and switch fuses / isolators clearly showing circuit number and description of plant served	Contractual			
Samples: Submit samples of all visible products to Client/Design Team before ordering	Contractual			
OTHER (please clarify)				
Preliminaries				
OH&P				
Provisional Sums			Client Provision	£5,000.00
Upgrade incoming water supply			Utilities	£2,500.00
2nd Calorifier				£5,000.00
		SUB-TOTAL		£12,500.00
		Add 7.5% Contingencies:		£937.50
		TOTAL		£13,437.50

In words

Signed:

Company:
Address:
Date:

Should any extra work or variation be required at day work rates, we undertake to carry out the work at net cost plus the

Materials	%		
Labour			
Normal Working Hours	%		
Evenings	%		
Weekends	%		
Fares and Allowances	%		
Sub-Contract Work	%		
Plant	%		

The net cost of labour included in our Tender is based on the following rates:

Pipe Fitter	£/hr		
Ductwork Erector	£/hr		
Plumber	£/hr		
Lagger	£/hr		
Controls Engineer	£/hr		
Approved Electrician	£/hr		
Electrician	£/hr		
Test Engineer	£/hr		
Apprentice	£/hr		
Other	£/hr		
	£/hr		
	£/hr		
	£/hr		
	£/hr		
	£/hr		

Certificate of Bona Fide Tender

The essence of selective tendering is that the Purchaser shall receive bona fide competitive tenders from all firms tendering.

> Communicate to a person the amount or approximate amount of the proposed tender, except where the disclosure, in

> Entering into any agreement or arrangement with any other person that he shall refrain from tendering or as to the amount

> Offering or paying or giving or agreeing to pay or give any sum of money or valuable consideration directly or indirectly to

In this Certificate, the word 'person' includes any persons and anybody or association, corporate or unincorporated, and 'any

Signed:

Company:
Address:

Date:

PLEASE EMAIL YOUR TENDER RETURN TO TECHNICAL SUPPORT ASSOCIATES TO: david.smith@tsaservices.co.uk

9 DESIGN RISK ASSESSMENT

Project: PROJECT NAME

Address

DETAILS

Project / Work Description: KITCHEN DESIGN

RISK ASSESSMENT

TSA Technical Support Associates

INITIAL OVERALL RISK CLASSIFICATION:	12	Unacceptable except under strict supervision after specific trials, tests & training	POST CONTROL MEASURES RISK CLASSIFICATION:	6	Acceptable for persons with specific training & experience

Comments	Source of Risk	Potential Hazard	Potential Consequence	Current Severity	Current Likelihood	Current Risk	Risk Classification (read Control Measures)	Persons Affected	CONTROL MEASURES: Specific Measures to create a Safe System of Work	Revised Likelihood	Revised Risk	Records to be kept	Specific Legislation Includes
Minimise time on site	Virus contamination on surfaces and airborne from people	Covid 19 site precautions	Coronavirus depending on various factors including age, susceptibility, hygiene and others	5	4	20	Unacceptable in all circumstances	Co-workers, other people in close proximity, associated families & friends	Follow site rules, social distancing, cleanliness of facilities, gloves, masks & published guidance	2	10	Activity logs, site sign-in register, RAMS & cleaning regimes	Working safely during COVID-19 in construction 2020, Test Track & Trace (suppliements
All work areas during Construction Phase	Use of hand tools	Cuts & injury from hand tools	Blood loss, broken blades severing wrists/arteries.	2	3	6	Acceptable with measures	Worker(s) and those close by	Toolbox talk, training, experience, gloves	1.5	3	Activity Dates, names, RAMS, Permits issued	MHSWR, PUWER, HSG150
All work areas during Construction Phase	Machinery	Danger from machinery / moving parts	Loss of limb / fingers	3	4	12	Unacceptable except under strict supervision after specific trials, tests & training	Worker(s)	Safety guards to eliminate access to any moving part	2	6	Activity dates, names, RAMS, training records, CE marking	MHSWR, PUWER Regs, HSG150
All work areas during Construction Phase	Falling objects	Dropping objects when working at height	Broken bones, death	4	4	16	Unacceptable in all circumstances	Worker(s) / Persons below work area	Cordon off affected areas, site induction re mobile tower use	2	8	Activity dates, names, RAMS, training & induction records	MHSWR, CHSWR, WAH Regs 05, HSG150
Work areas during Construction, maintenance areas, plantrooms, risers, roof & ceiling voids	Falling objects	Danger from falling objects	Broken bones, death	4	4	16	Unacceptable in all circumstances	Worker(s) / Persons below work area	Avoid & control access to area below. Add signage. PPE where construction is ongoing: Hard Hat, safety boots, gloves, safety glasses, high-viz	2	8	Activity Dates, names, RAMS, Permits issued	MHSWR, CHSWR, WAH Regs 05, HSG150
All work areas during Construction Phase & survey work in general	Electricity	Electricity 240/415v. Electric shock and or burns from live electrical services	Electrocution, burns, death	4	3	12	Unacceptable except under strict supervision after specific trials, tests & training	Worker(s)	No work on live services	1.5	6	Activity Dates, names, RAMS, Permits issued	MHSWR, Electricity at Work Regulations 1989
All work areas during Construction Phase	Slips trips & falls	Falling from scaffolding	Broken bones, death	4	4	16	Unacceptable in all circumstances	Worker(s) / Persons below work area	All scaffolding should be erected, dismantled and altered in accordance with either NASC guidance document SG4	2	8	Inspection dates, names, RAMS	MHSWR, CDM Regs, HSG150
All work areas during Construction Phase	Manual Handling	Lifting heavy objects	Broken bones, pulled muscles, back injuries	3	4	12	Unacceptable except under strict supervision after specific trials, tests & training	Worker(s)	Manual Handling training required. Lift for minimum duration. Use trolley, winch, lifting equipment where possible. PPE: Boots, hard hats, gloves, glasses, high viz	2	6	Activity Dates, names, RAMS, Induction	Manual Handling Regs, HSG150
Noisy areas, compressors, and plant	Potential hearing loss	Noisy Area	Temporary / Permanent Threshold Shift resulting in potential hearing loss	3	2	6	Acceptable with measures	Maintenance Worker(s)	Interface fan operation with access door entry. Add appropriate signage to wear ear defenders if fans are running	1	3	Activity Dates, names, RAMS, Permits issued	Control of Noise at Work Regulations 2005
Out of hours, increase pressure at 1 bar increments	High pressure water, eye injury, projectiles shot from pipework	Pipework Pressure Testing Water <12bar	Eye injury, cuts, bruises, broken bones, possible death	4	3	12	Unacceptable except under strict supervision after specific trials, tests & training	Site operatives, test personnel	Initial 0.5 bar air test, >5m exclusion zone, PPE, notices, all joints screwed, welded or flanged (no compression fittings or plastic pipework)	1.5	6	PTW (PSI), RAMS	MHSWR, CDM Regs, HSG 150, PSSR, HSE GS4
All work areas during Construction Phase & survey work in general	Cuts through footwear, trips, falls	Stepping on sharp objects	Scrapes, cuts, bruises, broken bones	3	3	9	Acceptable for persons with specific training & experience	Worker(s)	Keep areas clean & tidy, follow clear walkways, use PPE where construction work is undertaken. Boots, hard hats, gloves, glasses, high viz	1.5	4.5	Activity Dates, names, RAMS, Permits issued	MHSWR, CDM Regs
Plant areas housing high pressure hydraulic plant & equipment	Pressure Systems, high pressure jets, rain & debris	Water Services: high pressure >10 bar	Broken skin, blindness	3	4	12	Unacceptable except under strict supervision after specific trials, tests & training	Worker(s)	Adopt specific High Risk Mechanical Safety Rules. Utilise PTW system and LOTO devices. Appoint trained & competent APs and an AE to audit & manage the system	2	6	Activity Dates, names, RAMS, Permits issued	MHSWR, PSSR

Likelihood →

Severity of harm ↓	Unlikely	Plausible	Likely	Very Likely
Insignificant	Trivial	Trivial	Low	Low
Slight	Trivial	Low	Low	Medium
Moderate	Low	Low	Medium	High
Severe	Medium	Medium	High	Very High
Very Severe	Medium	High	Very High	Very High

10 EQUIPMENT DATA SHEETS

BUILDING SERVICES INSTALLATIONS

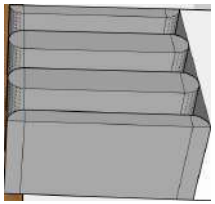
TSA produce EDS's for all principal assets which detail the "Technical Design Requirements" for the various assets uniquely cross referenced to the Design Drawings. Pictures are indicative only aimed at providing an approximate visual indication of the asset. All Tender Pricing shall be based on the specified equipment with alternatives provided with an appropriate cost adjustment where required. The appointed Contractor shall develop the scheme based on the specified assets into a full working scheme before installation starts. If any equipment changes during the contract the Contractor shall provide equivalent EDS's as part of the Record Information.

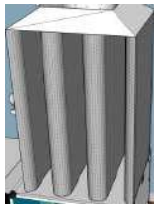
The following EDS's have been provided:

1. AHUs Untreated
2. Calorifier
3. Distribution Boards
4. Fans
5. Grilles
6. Hoods
7. Luminaires
8. Pumps
9. Radiators
10. Sanitary
11. Silencers
12. Water Heater

EDS

ATTENUATION

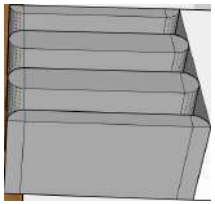


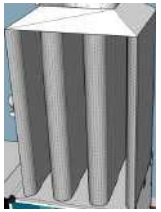


62, 70, 80, 75, 73, 70, 66, 62

	ASSET REFERENCE:	ATT 2-1 (AHU atmospheric)								ATT 2-2 (Hood atmospheric)								ATT 2-3 (Hood room)							
DESIGN INFORMATION	System	AHU 1								EF1								EF1							
	Rooms Include:									Range 1								Range 1							
	No off	1								1								2							
	Air Flow (m3/s)	0.41 m3/s								0.48 m3/s								0.24 m3/s							
	Frequency	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz
	Fan SWL (each)	80 dB	81 dB	73 dB	60 dB	56 dB	48 dB	40 dB	32 dB	62 dB	70 dB	80 dB	75 dB	73 dB	70 dB	66 dB	62 dB	62 dB	70 dB	80 dB	75 dB	73 dB	70 dB	66 dB	62 dB
	Fan SWL (combined)	80 dB	81 dB	73 dB	60 dB	56 dB	48 dB	40 dB	32 dB	62 dB	70 dB	80 dB	75 dB	73 dB	70 dB	66 dB	62 dB	65 dB	73 dB	83 dB	78 dB	76 dB	73 dB	69 dB	65 dB
PATH 1	Silencer 1 Details	Rec_Allaway Acoustics_AG02 SL_500W300H1200L_ FA								Rec_Allaway Acoustics_AG02 SP_670W670H900L_ FA								Cir_Allaway Acoustics_PL no pod_250WH600L_ FA							
	Silencer 1 I Loss	8 dB	17 dB	25 dB	40 dB	51 dB	46 dB	42 dB	31 dB	8 dB	17 dB	20 dB	31 dB	41 dB	35 dB	28 dB	24 dB	3 dB	11 dB	13 dB	19 dB	22 dB	21 dB	22 dB	21 dB
	Construction	Galvanised								Galvanised								Galvanised							
	Weight (kg)	38 kg								61 kg								14 kg							
	Height (mm)	300 mm								670 mm								0 mm							
	Width / Diameter (mm)	500 mm								670 mm								250 mm							
	Length (mm)	1,200 mm								900 mm								600 mm							
	Pressure Drop (Pa)	40 Pa								40 Pa								15 Pa							
	Face Velocity	1.1 m/s								0.8 m/s								2.4 m/s							
	Comments									Washable internal lining								Washable internal lining							
INSTALLATION	Manufacturers Name	Allaway Acoustics								Allaway Acoustics								Allaway Acoustics							
	Address	Old Police Station, 1 Queens Road, Hertford, SG14 1EN ☎ 01992 550825								Old Police Station, 1 Queens Road, Hertford, SG14 1EN ☎ 01992 550825								Old Police Station, 1 Queens Road, Hertford, SG14 1EN ☎ 01992 550825							
DATA	Model	Rectangular								Rectangular								Circular							
	Installation Date	2021								2021								2021							
	Life Expectancy (yrs)	40								40								40							
	Initial Value (£)																								
LOCATION	Building Name	Tachbrook Kitchen								Tachbrook Kitchen								Tachbrook Kitchen							
	Building Reference	42 Tachbrook St, SW1V 2LZ								42 Tachbrook St, SW1V 2LZ								42 Tachbrook St, SW1V 2LZ							
	Floor	1								B								B							
	Room Name	Loft Plantroom								Loft Plantroom								Loft Plantroom							

ATTENUATION





62, 70, 80, 75, 73, 70, 66, 62

	ASSET REFERENCE:	ATT 3-1 (AHU atmospheric)								ATT 3-2 (Hood atmospheric)								ATT 3-3 (Hood room)							
DESIGN INFORMATION	System	AHU 1								EF1								EF1							
	Rooms Include:									Range 1								Range 1							
	No off	1								1								2							
	Air Flow (m3/s)	0.41 m3/s								0.48 m3/s								0.24 m3/s							
	Frequency	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz
	Fan SWL (each)	80 dB	81 dB	73 dB	60 dB	56 dB	48 dB	40 dB	32 dB	62 dB	70 dB	80 dB	75 dB	73 dB	70 dB	66 dB	62 dB	62 dB	70 dB	80 dB	75 dB	73 dB	70 dB	66 dB	62 dB
	Fan SWL (combined)	80 dB	81 dB	73 dB	60 dB	56 dB	48 dB	40 dB	32 dB	62 dB	70 dB	80 dB	75 dB	73 dB	70 dB	66 dB	62 dB	65 dB	73 dB	83 dB	78 dB	76 dB	73 dB	69 dB	65 dB
PATH 1	Silencer 1 Details	Rec_Allaway Acoustics_AG02 SL_500W300H1200L_ FA								Rec_Allaway Acoustics_AG02 SP_670W670H900L_ FA								Cir_Allaway Acoustics_PL no pod_250WH600L_ FA							
	Silencer 1 I Loss	8 dB	17 dB	25 dB	40 dB	51 dB	46 dB	42 dB	31 dB	8 dB	17 dB	20 dB	31 dB	41 dB	35 dB	28 dB	24 dB	3 dB	11 dB	13 dB	19 dB	22 dB	21 dB	22 dB	21 dB
	Construction	Galvanised								Galvanised								Galvanised							
	Weight (kg)	38 kg								61 kg								14 kg							
	Height (mm)	300 mm								670 mm								0 mm							
	Width / Diameter (mm)	500 mm								670 mm								250 mm							
	Length (mm)	1,200 mm								900 mm								600 mm							
	Pressure Drop (Pa)	40 Pa								40 Pa								15 Pa							
	Face Velocity	1.1 m/s								0.8 m/s								2.4 m/s							
	Comments									Washable internal lining								Washable internal lining							
INSTALLATION	Manufacturers Name	Allaway Acoustics								Allaway Acoustics								Allaway Acoustics							
	Address	Old Police Station, 1 Queens Road, Hertford, SG14 1EN ☎ 01992 550825								Old Police Station, 1 Queens Road, Hertford, SG14 1EN ☎ 01992 550825								Old Police Station, 1 Queens Road, Hertford, SG14 1EN ☎ 01992 550825							
DATA	Model	Rectangular								Rectangular								Circular							
	Installation Date	2021								2021								2021							
	Life Expectancy (yrs)	40								40								40							
	Initial Value (£)																								
LOCATION	Building Name	Tachbrook Kitchen								Tachbrook Kitchen								Tachbrook Kitchen							
	Building Reference	42 Tachbrook St, SW1V 2LZ								42 Tachbrook St, SW1V 2LZ								42 Tachbrook St, SW1V 2LZ							
	Floor	1								B								B							
	Room Name	Loft Plantroom								Loft Plantroom								Loft Plantroom							

DISTRIBUTION BOARD 1

NB: Pictures are diagrammatic only and may differ from actual asset details

Distribution Board Schedule	PIR DATE: N/A			Project:	Tachbrook Kitchen				
Ref:	DB1 General Lighting & Power			Location:-	Electrical Cupboard	MAX PHASE LOAD:	0.0 kW	0 amps	
Serving:-	Lighting & Power (Split-Load TPN)			Level:-	Gnd	CONNECTED LOAD:	#REF!	#REF!	
Dist. Bd Fed From:-	MDB	TP&N DB				DIVERSIFIED LOAD:	#REF!	#REF!	
No of Ways:-	4 Way Lighting & 4 Way Power		125A TPN Rated DB	Supplied with 5C 16mm² XLPE/SWA/LSZH (Integral CPC)	Steel Trunking 100mm x 100mm	DB c/w split-load meter and ESP			

Way No	Description	Serving	RCBO/MCB Rating	Cable			CPC		RCD Element
				Type	Installation Method	Size	Size	Type	
1L1	Range 1 Lighting		6A RCBO-C	LSZH Twin & Earth	In steel cable basket and pvc conduit drops.	1.5mm²	1mm²	Integral	30mA
1L2	Range 2 Lighting		6A RCBO-C	LSZH Twin & Earth	In steel cable basket and pvc conduit drops.	1.5mm²	1mm²	Integral	30mA
1L3	Range 3 Lighting		6A RCBO-C	LSZH Twin & Earth	In steel cable basket and pvc conduit drops.	1.5mm²	1mm²	Integral	30mA
2L1	WC's & Circulation Lighting		6A RCBO-C	LSZH Twin & Earth	In steel cable basket and pvc conduit drops.	1.5mm²	1mm²	Integral	30mA
2L2	Plantroom Lighting		6A RCBO-C	LSZH Twin & Earth	In steel cable basket and pvc conduit drops.	1.5mm²	1mm²	Integral	30mA
2L3	External Lighting		6A RCBO-C	LSZH Twin & Earth	In steel cable basket and pvc conduit drops.	1.5mm²	1mm²	Integral	30mA
3L1 to 4L3	SPARE		-	-	-	-	-	-	-
1L1	Intruder Alarm Panel		16A MCB-B	LSZH Twin & Earth	In steel cable basket and steel conduit drops.	2.5mm²	1.5mm²	Integral	-
1L2	Water Heater		16A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
1L3	DWC Alarm		16A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
2L1	Corridor Cleaner Socket Radial		16A RCBO-B	LSZH Twin & Earth	In steel cable basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
2L2	Water Softener		16A MCB-B	LSZH Singles	In steel trunking and steel conduit.	2.5mm²	2.5mm²	Separate	-
2L3	Calorifier		32A MCB-B	LSZH Singles	In steel trunking and steel conduit.	4mm²	4mm²	Separate	-
3L1	Fridges Circuit 1 Radial		16A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
3L2	Fridges Circuit 2 Radial		16A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
3L3 to 4L3	SPARE		-	-	-	-	-	-	-

MANUFACTURER: Schneider
TYPE: Metallic
MOUNTING HEIGHT: 1800mm to top AFFL

CONTRACTOR: Label areas served on a framed schedule, installed adj to the DB

DISTRIBUTION BOARD 2

#REF!

Distribution Board Sched	**PIR DATE:** N/A				**Project:**	**Tachbrook Kitchen**				
Ref:	**#REF! Catering Equipment**				**Location:-**	Range 1	**MAX PHASE LOAD:**	0.0 kW	0 amps	
Serving:-	Kicthen Power				**Level:-**	Gnd	**CONNECTED LOAD:**	0.0 kW	0 amps	
Dist. Bd Fed From:-	MDB		TP&N DB				**DIVERSIFIED LOAD:**	0.0 kW	0 amps	
No of Ways:-	8 Way Power	**Supply Cable Size & Type:**		125A TPN Rated DB	Supplied with 5C 50mm² XLPE/SWA/LSZH	Steel Trunking 100mm x 100mm				

Way No	Description Serving	RCBO/MCB Rating	Cable			CPC		RCD Element
			Type	Installation Method	Size	Size	Type	
1L1	Coffe Machine	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
1L2	Hob Induction	32A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	6mm²	2.5mm²	Integral	30mA
1L3	Range 1 Electric Panel Heater	20A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
2L1	-							
2L2	Oven	32A RCBO-B	5C XLPE/LSZH	In steel trunking basket and pvc conduit drops.	6mm²	6mm²	Integral	30mA
2L3	-							
3L1	Fryer	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
3L2	Griddle	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
3L3	Microwave Combi	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
4L1	Range 1 Wash Sockets Ring	32A RCBO-B	LSZH Twin & Earth	In steel cable basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
4L2	Range 1 Extraction Hood	16A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
4L3 to 8L3	SPARE							

MANUFACTUI Schneider
TYPE: Metallic
MOUNTING H 1800mm to top AFFL

CONTRACTOR: Label areas served on a framed schedule, installed adj to the DB

DISTRIBUTION BOARD 3

#REF!

Distribution Board Sched	PIR DATE: N/A			Project:	Tachbrook Kitchen				
Ref:	#REF! Catering Equipment			Location:-	Range 2	MAX PHASE LOAD:	0.0 kW	0 amps	
Serving:-	Kicthen Power			Level:-	Gnd	CONNECTED LOAD:	0.0 kW	0 amps	
Dist. Bd Fed From:-	MDB	TP&N DB				DIVERSIFIED LOAD:	0.0 kW	0 amps	
No of Ways:-	8 Way Power	Supply Cable Size & Type:	125A TPN Rated DB	Supplied with 5C 50mm² XLPE/SWA/LSZH	Steel Trunking 100mm x 100mm				

Way No	Description Serving	RCBO/MCB Rating	Cable			CPC		RCD Element
			Type	Installation Method	Size	Size	Type	
1L1	Coffe Machine	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
1L2	Hob Induction	32A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	6mm²	2.5mm²	Integral	30mA
1L3	Range 2 Electric Panel Heater	20A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
2L1	-							
2L2	Oven	32A RCBO-B	5C XLPE/LSZH	In steel trunking basket and pvc conduit drops.	6mm²	6mm²	Integral	30mA
2L3	-							
3L1	Fryer	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
3L2	Griddle	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
3L3	Microwave Combi	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
4L1	Range 2 Wash Sockets Ring	32A RCBO-B	LSZH Twin & Earth	In steel cable basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
4L2	Range 2 Extraction Hood	16A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
4L3 to 8L3	SPARE							

MANUFACTUI Schneider
TYPE: Metallic
MOUNTING H 1800mm to top AFFL

CONTRACTOR: Label areas served on a framed schedule, installed adj to the DB

DISTRIBUTION BOARD 4

#REF!

Distribution Board Sched	PIR DATE: N/A			Project:	Tachbrook Kitchen				
Ref:	#REF! Catering Equipment			Location:-	Range 3	MAX PHASE LOAD:	0.0 kW	0 amps	
Serving:-	Kicthen Power			Level:-	Gnd	CONNECTED LOAD:	0.0 kW	0 amps	
Dist. Bd Fed From:-	MDB	TP&N DB				DIVERSIFIED LOAD:	0.0 kW	0 amps	
No of Ways:-	8 Way Power	Supply Cable Size & Type:	125A TPN Rated DB	Supplied with 5C 50mm² XLPE/SWA/LSZH	Steel Trunking 100mm x 100mm				

Way No	Description Serving	RCBO/MCB Rating	Cable			CPC		RCD Element
			Type	Installation Method	Size	Size	Type	
1L1	Coffe Machine	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
1L2	Hob Induction	32A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	6mm²	2.5mm²	Integral	30mA
1L3	Range 3 Electric Panel Heater	20A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
2L1	-							
2L2	Oven	32A RCBO-B	5C XLPE/LSZH	In steel trunking basket and pvc conduit drops.	6mm²	6mm²	Integral	30mA
2L3	-							
3L1	Fryer	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
3L2	Griddle	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
3L3	Microwave Combi	50A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	10mm²	4mm²	Integral	30mA
4L1	Range 3 Wash Sockets Ring	32A RCBO-B	LSZH Twin & Earth	In steel cable basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
4L2	Range 3 Extraction Hood	16A RCBO-B	LSZH Twin & Earth	In steel trunking basket and pvc conduit drops.	2.5mm²	1.5mm²	Integral	30mA
4L3 to 8L3	SPARE							

MANUFACTUI Schneider
TYPE: Metallic
MOUNTING H 1800mm to top AFFL

CONTRACTOR: Label areas served on a framed schedule, installed adj to the DB

LUMINAIRE SCHEDULE

NB: Pictures are diagrammatic only and may differ from actual asset details

NB: Number of fittings on Drawins have precedent





	ASSET REFERENCE:	A	B	C	D	EX
DESIGN INFORMATION	Equipment Description	LED Kitchen & Plantroom lighting	LED DOWNLIGHT	LED EXTERNAL	LED DOWNLIGHT	Emergency Signage
	Circuit Ref					
	No off	As drawings	As drawings	As drawings	As drawings	As drawings
	Distribution Board	1	1	1	1	1
	Construction	Polycarbonate	Aluminium	Polycarbonate	Aluminium	Polycarbonate
	Rating	IP65	IP65	IP65	IP20	IP20
		Protected from total dust ingress.	Protected from total dust ingress.	Protected from total dust ingress.	Protected from touch by fingers and objects greater than 12 millimeters.	Protected from touch by fingers and objects greater than 12 millimeters.
		Protected from low pressure water jets from any direction.	Protected from low pressure water jets from any direction.	Protected from low pressure water jets from any direction.	Not protected from liquids.	Not protected from liquids.
	Shape	Batten	Circular	Circular	Circular	Rectangular
	Finish	White	White	White	White	White
	Operating Temp (°C)	24 C	24 C	35 C	24 C	24 C
	Output (lumens)	3,130 lumens	1,370 lumens	1,800 lumens	1,370 lumens	See supplier Info
	Output (lumens/W)	142 lumens/W	105 lumens/W	100 lumens/W	105 lumens/W	-
	Size l x d x h	1100 x 92 x 90	88 dia 44 H	316 x 74	88 dia 44 H	-
	Lamp life	30,000 hrs	30,000 hrs	20,000 hrs	30,000 hrs	-
	Colour	Cool White (4200K)	Daylight White (6000K)	Cool White (4200K)	Daylight White (6000K)	-
	Weight	3.0 kg	2.0 kg	2.0 kg	2.0 kg	2.0 kg
	Cable Connection	1.5mm²	1.5mm²	1.5mm²	1.5mm²	1.5mm²
	Emergency Pack	Some - see Drawings	Some - See Drawings	Some - See Drawings	Some - See Drawings	Yes
	Dimmable	No	No	No	No	No
	Controls	Manual Switch	PIR	PIR (Integral)	PIR	Test Keyswitch
	Comments					Non-Maintained
INSTALLATION DATA	Manufacturers Name	Thorn Lighting	Thorn Lighting	National Lighting	Thorn Lighting	Thorn Lighting
	Model /Type	Aquaforce Pro	Chalice	Hero-LED	Chalice	Voyager Sigma
	LINK	http://www.thornlighting.co.uk/en-gb/products/indoor-lighting/industrial-luminaires/Aquaforce_Pro	http://www.thornlighting.co.uk/en-gb/products/indoor-lighting/downlights/Chalice	https://www.nationallighting.co.uk/indoor-lighting/hero-cct-led-all-in-one-bulkhead-gloss-white-opal-polycarbonate-emergency-ip65	http://www.thornlighting.co.uk/en-gb/products/indoor-lighting/downlights/Chalice	http://www.thornlighting.co.uk/en-gb/products/controls-and-emergency-lighting/emergency-lighting-luminaires/Voyager_Sigma/voyager-sigma/96233813
	Installation Date	2021	2021	2021	2021	2021
	Life Expectancy (yrs)	15	15	15	15	15
	Initial Value (£)					
LOCATION	Building Name	Tachbrook Kitchen	Tachbrook Kitchen	Tachbrook Kitchen	Tachbrook Kitchen	Tachbrook Kitchen
	Building Reference	42 Tachbrook St, SW1V 2LZ	42 Tachbrook St, SW1V 2LZ	42 Tachbrook St, SW1V 2LZ	42 Tachbrook St, SW1V 2LZ	42 Tachbrook St, SW1V 2LZ
	Floor	Ground Floor	Ground Floor	Ground Floor	Ground Floor	Ground Floor
	Grid Ref x-y coord	As drawings	As drawings	As drawings	As drawings	As drawings
	Room Name	As drawings	As drawings	As drawings	As drawings	As drawings
POWER DATA	Electrical Supply	220v 1ph	220v 1ph	220v 1ph	220v 1ph	220v 1ph
W	Power (kW)	22 W	13 W	18 W	13 W	5 W

NB: Pictures are diagrammatic only and may differ from actual asset details

PUMPS

ASSET REFERENCE:		P2
DESIGN INFORMATION	Equipment Description	**HWS circulation**
	System	HWS
	No off	1
	Pump Type	HWS Return
	Design Flow Rate	0.2 l/s
	Pump Capability	0.23 l/s
	Design Pressure Drop	10 kPa
	Outlet pipe size	25 mm
	Pressure Rating (bar)	6
	Design Impeller Speed	
	Comments	
INSTALLATION DATA	Manufacturers Name	Grundfos
	Model /Type	Comfort UP15-148 PM
	Weight kg	5 kg
	Dimensions	
	Installation Date	2021
	Life Expectancy	15 yrs
	Initial Value (£)	
LOCATION	Building Name	Tachbrook Kitchen
	Building Reference	42 Tachbrook St, SW1V 2LZ
	Floor	1
	Room Name	Loft Plantroom
ELECTRICAL DATA	Electrical Supply	1ph 240v
	Power (W)	100 W
	FLC (amps)	
	Starting Method	DOL
0.1 kW Total	Speed Controller	No

FANS

NB: Pictures are diagrammatic only and may differ from actual asset details

	ASSET REFERENCE:	EF1	EF2
DESIGN	System (including)	Range 1	Range 2
INFORMATION	No of	1	1
	Fan Type	Mixed Flow	Mixed Flow
	Design Air Flow (l/s)	480 l/s	480 l/s
	Fan Air Flow (l/s)	470 l/s	470 l/s
	Fan External Pressure	423 Pa	423 Pa
	Design Impeller Speed (rpm)		
	Drive Type	Inverter	Inverter
	SPL (at 3m)	55 dB	55 dB
	Noise Spectrum (dBA)	36 54 71 72 73 71 67 61	36 54 71 72 73 71 67 61
	SFP	2.1 W/ls	2.1 W/ls
	Connections	585x586	Controller
	Comments	c/w speed controller linked to AHU	c/w speed controller linked to AHU
INSTALLATION	Manufacturers Name	Systemair	Systemair
DATA	Model /Type	Systemair-MUB/T 042 400EC20	Systemair-MUB/T 042 400EC20
	Size	MUB/T 042 400EC20	MUB/T 042 400EC20
	Dimensions (LxWxH)	670x670x670	670x670x670
	Connection	585x586	585x586
	Weight	53 kg	53 kg
	Installation Date	2021	2021
	Life Expectancy (yrs)	15	15
	Initial Value (£)		
LOCATION	Building Name	Tachbrook Kitchen	Tachbrook Kitchen
	Location	42 Tachbrook St, SW1V 2LZ	42 Tachbrook St, SW1V 2LZ
	Floor	G	G
	Grid Ref (x-y coord)		
	Room Name	Range 1	Range 2
		Range 1	Range 2
ELECTRICAL	Electrical Supply	220v 1ph	220v 1ph
	Power (kW)	0.54 kW	0.54 kW
	FLC (amps)		
	Starting Current (amps)		
	Starting Method	Inverter	Inverter
1.7 kW Total	Power Factor		

FANS

ASSET REFERENCE:	EF3	EF4	EF5
System (including)	Range 3	Toilet	Disabled Toilet
No of	1	1	1
Fan Type	Mixed Flow	Wall Fan	Wall Fan
Design Air Flow (l/s)	480 l/s	7 l/s	7 l/s
Fan Air Flow (l/s)	470 l/s	30 l/s	30 l/s
Fan External Pressure	423 Pa	20 Pa	20 Pa
Design Impeller Speed (rpm)			
Drive Type	Inverter	Direct Drive	Direct Drive
SPL (at 3m)	55 dB	38 dB	38 dB
Noise Spectrum (dBA)	36 54 71 72 73 71 67 61		
SFP	2.1 W/ls	0.1 W/ls	0.1 W/ls
Connections	Controller	Controller	Controller
Comments	c/w speed controller linked to AHU		
Manufacturers Name	Systemair	Vent-Axia	Vent-Axia
Model /Type	Systemair-MUB/T 042 400EC20	Vent-Axia-Eclipse 100	Vent-Axia-Eclipse 100
Size	MUB/T 042 400EC20	Eclipse 100	Eclipse 100
Dimensions (LxWxH)	670x670x670	xx157	xx157
Connection	585x586	100 mm	100 mm
Weight	53 kg		
Installation Date	2021	2021	2021
Life Expectancy (yrs)	15	15	15
Initial Value (£)			
Building Name	Tachbrook Kitchen	Tachbrook Kitchen	Tachbrook Kitchen
Location	42 Tachbrook St, SW1V 2LZ	42 Tachbrook St, SW1V 2LZ	42 Tachbrook St, SW1V 2LZ
Floor	G	G	G
Grid Ref (x-y coord)			
Room Name	Range 3	Toilet	Disabled Toilet
	Range 3	Toilet	Disabled Toilet
Electrical Supply	220v 1ph	220v 1ph	220v 1ph
Power (kW)	0.54 kW	0.02 kW	0.02 kW
FLC (amps)			
Starting Current (amps)			
Starting Method	Inverter	DOL	DOL
Power Factor			

AIR HANDLING UNITS

FA HEAT RECOVERY ONLY

NB: Pictures are diagrammatic only and may differ from actual asset details

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		ASSET REFERENCE:	AHU 1	AHU 2	AHU 3
DESIGN INFORMATION		System	Fresh Air	Fresh Air	Fresh Air
			Hood Makeup	Hood Makeup	Hood Makeup
		No off	1	1	1
Access Handing		Viewed in direction of supply air			
		Finish / Colour	Standard	Standard	Standard
		Duct Connections - Height	250 mm	250 mm	250 mm
		Width	500 mm	500 mm	500 mm
		Diameter	0 mm	0 mm	0 mm
		Velocity:	3.3 m/s	3.3 m/s	3.3 m/s
		Design Airflow	0.41 m3/s	0.41 m3/s	0.41 m3/s
		Supply External Pressure Drop	125 Pa	125 Pa	125 Pa
		Supply Fan Ability (Specified)	0.4 m3/s 450 Pa	0.4 m3/s 450 Pa	0.4 m3/s 450 Pa
		Supply Fan Motor Power	W	W	W
		SFP	0.625	0.625	0.625
		Speed Control	Inverter Drive	Inverter Drive	Inverter Drive
		Fresh Air Volume	413 l/s	413 l/s	413 l/s
			63 Hz | 125 Hz | 250 Hz | 500 Hz | 1 KHz | 2 KHz | 4 KHz | 8 KHz	63 Hz | 125 Hz | 250 Hz | 500 Hz | 1 KHz | 2 KHz | 4 KHz | 8 KHz	63 Hz | 125 Hz | 250 Hz | 500 Hz | 1 KHz | 2 KHz | 4 KHz | 8 KHz
		Fan SWL	80 81 73 60 56 48 40 32	80 81 73 60 56 48 40 32	80 81 73 60 56 48 40 32
			80 dB | 81 dB | 73 dB | 60 dB | 56 dB | 48 dB | 49 dB | 32 dB	80 dB | 81 dB | 73 dB | 60 dB | 56 dB | 48 dB | 49 dB | 32 dB	80 dB | 81 dB | 73 dB | 60 dB | 56 dB | 48 dB | 49 dB | 32 dB
Extract Fan		Extract Fan Airflow (m3/s)	0.45 m3/s	0.45 m3/s	0.45 m3/s
Design		Extract External Pressure Drop			
		Extract Fan Motor Power (kW)	W	W	W
		Speed Control			
		Minimum Airflow	83 l/s	83 l/s	83 l/s
Filters		**Pre-filter type**	None	None	None
		Extract filter Type	0	0	0
		Main filter Type	F5 Bag	F5 Bag	F5 Bag
Dampers		Type	Motorised on Fresh / Exhaust	Motorised on Fresh / Exhaust	Motorised on Fresh / Exhaust
Silencers		Type	Atmospheric Silencer (1 no)	Atmospheric Silencer (1 no)	Atmospheric Silencer (1 no)
Louvres		Type	Weather Louvres on FA/Spill	Weather Louvres on FA/Spill	Weather Louvres on FA/Spill
Heat Recovery		Heat Recovery Type	0	0	0
		Minimum Efficiency	0%	0%	0%
Winter		Outside Air	-2.0 °C	-2.0 °C	-2.0 °C
Heater Battery		Type	Electric	Electric	Electric
Heating		Heating Capacity (min)	8.43 kW	8.43 kW	8.43 kW
Cooler Battery		Type	None	None	None
Other		Comments	C/W heater battery controls via room stat. Dampers to close when AHU is off	C/W heater battery controls via room stat. Dampers to close when AHU is off	C/W heater battery controls via room stat. Dampers to close when AHU is off
INSTALLATION DATA		Manufacturers Name	Systemair	Systemair	Systemair
		Model /Type	Topvex SF06	Topvex SF06	Topvex SF06
		Size (W x L x H)	849 mm x 1,497 mm x 441 mm	849 mm x 1,497 mm x 441 mm	849 mm x 1,497 mm x 441 mm
		Weight	72 kg	72 kg	72 kg
		Installation Date	2021	2021	1900
		Life Expectancy (yrs)	25	25	25
LOCATION		Building Name	Tachbrook Kitchen	Tachbrook Kitchen	Tachbrook Kitchen
		Building Reference	42 Tachbrook St, SW1V 2LZ	42 Tachbrook St, SW1V 2LZ	42 Tachbrook St, SW1V 2LZ
		Floor	1	1	1
		Grid Ref x-y coord			
		Room Name	Loft Plantroom	Loft Plantroom	Loft Plantroom
ELECTRICAL DATA		Electrical Supply	415v 3ph	415v 3ph	415v 3ph
		Power	10,500 W	10,500 W	10,500 W
31.5 kW Total		FLC (Amps)	3 x 20amp	3 x 20amp	3 x 20amp
		Starting Method	Inverter Drive	Inverter Drive	Inverter Drive

WATER HEATERS

NB: Pictures are diagrammatic only and may differ from actual asset details

ASSET REFERENCE:		WH 1
DESIGN INFORMA	Equipment Description	Water Heater Unvented
	System	Toilet
	No off	1
	Natural Gas Flow Rate (l/s)	N/A
	Construction	Titanium Enamell
	Finish	White
	Pressure Rating (bar)	3.5
	Water Flow Rate (l/s)	0.15 l/s
	Storage Temp (°C)	65 C
	Output (kW)	2.5 kW
	Storage Capacity (l)	10 L
	Recovery Rate (l/hour @ 50 °C)	
	Recovery Time	15 mins
	Standing Loss	19 W
	Size w x d x h	360 x 294 x 385h
	Weight	6.7 kg
	Gas Connection	n/a
	HWS Connection	15 mm
	CWS Connection	15 mm
	Condensate Connection	N/A
	Flue	N/A
	Insulation Thickness (mm)	Standard
	Comments	c/w pressure reducing kit to 3.5 bar
INSTALLATION DA	Manufacturers Name	Ariston
	Model /Type	Andris Lux ECO
	Installation Date	2021
	Life Expectancy (yrs)	15
	Initial Value (£)	
LOCATION	Building Name	Tachbrook Kitchen
	Building Reference	42 Tachbrook St
	Floor	Ground Floor
	Grid Ref x-y coord	
	Room Name	Toilet
ELECTRICAL DAT	Electrical Supply	220v 1ph
2.5 kW Total	Power (kW)	2.5 kW

RADIATORS

3 radiators 3,900 W

NB: Pictures are diagrammatic only and may differ from actual asset details

15 mm

54 C dT MWT	REFERENCE		R-1
DESIGN INFORMATION	No. Off		1
	Fuel		Electric
	Heating Flow Temp		N/A
	Heating Return Temp		N/A
	Pump		N/A
	Room Temperature		16 degC
	Radiator Output	Selected Rad	**1,300 W**
	Water Flow Rate (l/s)		N/A
	Height (width if vertical)		500 mm
	Depth		81 mm
	Sections / Elements	Selected Rad	1
	Length selected	(Height if vertical)	**800 mm**
	Colour		White
	Connections (mm)		N/A
	TRV		N/A
	MV & BMS Control		N/A
	Electric Element		Yes
	Low Surface Temperature		No
	Comments		
INSTALLATION DATA	Manufacturers Name		Myson
	Model /Type		Rio Plan
	Installation Date		2021
	Life Expectancy (yrs)		15
	Initial Value (£)		
LOCATION	Building Name		Tachbrook Kitchen
	Location		42 Tachbrook St
	Floor		G
	Grid Ref (x-y coord)		
	Room Name		Range 1
	Other Room Name 1		-
	Other Room Name 2		-
	Other Room Name 3		-
ELECTRICAL DATA	Electrical Supply		220v 1ph
	Power (kW)		1.3 kW
3.8 kW Total	FLC (amps)		5.7 amps

RADIATORS

3 radiators

15 mm

REFERENCE	R-2	R-3		
No. Off	1	1		
Fuel	Electric	Electric		
Heating Flow Temp	N/A	N/A		
Heating Return Temp	N/A	N/A		
Pump	N/A	N/A		
Room Temperature	16 degC	16 degC		
Radiator Output	**1,300 W**	**1,300 W**		
Water Flow Rate (l/s)	N/A	N/A		
Height (width if vertical)	500 mm	500 mm		
Depth	81 mm	81 mm		
Sections / Elements	1	1		
Length selected	**800 mm**	**800 mm**		
Colour	White	White		
Connections (mm)	N/A	N/A		
TRV	N/A	N/A		
MV & BMS Control	N/A	N/A		
Electric Element	Yes	Yes		
Low Surface Temperature	No	No		
Comments				
Manufacturers Name	Myson	Myson		
Model /Type	Rio Plan	Rio Plan		
Installation Date	2021	2021		
Life Expectancy (yrs)	15	15		
Initial Value (£)				
Building Name	Tachbrook Kitchen	Tachbrook Kitchen		
Location	42 Tachbrook St	42 Tachbrook St		
Floor	G	G		
Grid Ref (x-y coord)				
Room Name	Range 2	Range 3		
Other Room Name 1	-	-		
Other Room Name 2	-	-		
Other Room Name 3	-	-		
Electrical Supply	220v 1ph	220v 1ph		
Power (kW)	1.3 kW	1.3 kW		
FLC (amps)	5.7 amps	5.7 amps		

CALORIFIERS

(unvented)

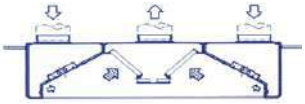
NB: Pictures are diagrammatic only and may differ from actual asset details

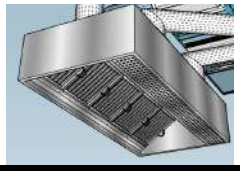
6,000 kW *0.15 l/s*

		REFERENCE:	C1 Solar Calorifier
DESIGN INFORMATION	System		HWS
	Equipment Description		Calorifier Elec + solar
	Construction		Stainless Steel
	Type		Calorifier - Solar + Elec, unvented
	No off		1
	Diameter		550 mm
	Height (length if horizontal)		588 mm
	Dimensions (HxWxDmm)		588x1990x553
	Storage Capacity		287 L
	Weight		332 kg
	Static Height		1 m
	Secondary Working Pressure		3.0 bar
	Secondary Test Pressure (bar)		4.5
	Secondary HWS Flow Rate		0.25 l/s
	Connection Sizes -		
	Primary		
	HWS Flow & CF		22 mm
	Secondary R		22 mm
	Drain		15 mm
	Gauges		Storage Temp, safety valve, Pressure
	Pre-Heat Period (45 dT)		2.5 hrs
	Pre-Heat kW		6,000 kW
	Storage Temp		65 degC
	Cold Fill Temp		10 degC
By Others	Expansion Vessel Size		35 litre
	Heating Medium		SOLAR+ELEC
	Electric Immersion (Titanium)		6,000 W
	Insulation		Manufacturer's finish
	Access Manhole		None
	Anti-Stratification Pump		Yes
	Comments		Horizontal c/w drain valve and un-vented pressure kit i.e. expansion vessel,
INSTALLATION DATA	Manufacturers Name		Gledhill
	Model /Type		Solar indirect IND300 SOL
	Installation Date		2021
	Life Expectancy (yrs)		15
	Initial Value (£)		
LOCATION	Building Name		Tachbrook Kitchen
	Building Reference		42 Tachbrook St
	Floor		1
	Grid Ref	(x-y) coord	
	Room Name		Loft Plantroom
ELECTRICAL	Electricity Supply		240 1ph
	Power		6,000 W
6.0 kW Total	Amps		27 amps

NB: Pictures are diagrammatic only and may differ from actual asset details

HOODS & CANOPIES





	REFERENCE				Kitchen Hood
DESIGN INFORMATION	System				Kitchen Extract
	Type				Supply / Extract Induction
	Style				Overhead (Enclosed)
	Number of				3
APPLIANCES	Oven - Convection	600 mm	600 mm	Electric	108 l/s
APPLIANCES	Oven - with range	600 mm	600 mm	Electric	108 l/s
APPLIANCES	Griddle - steel	600 mm	600 mm	Electric	90 l/s
APPLIANCES	Fryer - deep fat	300 mm	600 mm	Electric	63 l/s
APPLIANCES					
APPLIANCES					
	Hood Type	Wall - Open 1 side		AIRFLOW	480 l/s
	Supply AirFlow				408 l/s
	Lighting				Recessed LED
	Illumination Level				500 lux
	Width				2,100 mm
	Height				450 mm
	Depth				1,000 mm
	Capture Velocity (hood)				0.23 m/s
	Connection Size				2 no. 250⌀ ext + 2 no. 200⌀ sup
	Filtration - in hood				Removable grease filters
	Fire Extinguishant System				Ansul hood protection
	Filtration - grease				Electrostatic
				Manufacturer:	Airclean
				Type:	Single
				Airflow:	480 l/s
				Pressure Loss:	80 Pa
				H x W x D	540 x 694 x 620
				Power:	50 W
	Filtration - odour				Carbon
				Manufacturer:	Purified Air
				Type:	Removable 600x200 cells
				Airflow:	480 l/s
				Pressure Loss:	120 Pa
				H x W x D	600 x 600 x 600
	Comments				Condensate Channel & drain
INSTALLATION DATA	Manufacturers Name				info@ecanopy.co.uk
	Model /Type				Induction
	Installation Date				2021
	Life Expectancy (yrs)				30
	Initial Value (£)				
LOCATION	Building Name				Tachbrook Kitchen
	Building Reference				42 Tachbrook St
	Floor				Ground
	Grid Ref (x-y) coord				
	Room Name				Kitchen
ELECTRICAL DATA	Electricity Supply				240v 1ph
	Power (W)				200 W
0.6 kW Total					

GRILLES

All grilles to be measured on site before ordering. Contractor to advise client on length options

G: Range 1

ASSET REFERENCE:		EC1
DESIGN INFORMATION	Supply / Extract	E
	Room Air Balance (S/E)	-ve
	Equipment Description	Cowl intake / outlet
	Air Systems	
	Connected to	Extract Air System
	No of slots / No of Grilles	1
	Grille Air flow	437 l/s
	Throw (m) / Velocity (m/s)	2.55
	Static Pressure (Pa)	10 Pa
	Noise Level	30 dBA
	Fixings	Concealed
	Plenum Box	No
	Finish	Steel
	VCD	No
	Connection: Circular Duct Ø	500mm Dia
	Comments	
INSTALLATION DATA	Manufacturers Name	Lindab
	Model	HF Jet Cowl
	Pitch	N/A
	Size (W) Active	
	Size (W) Total	
	Size (H)	1,055 mm
	Size (Dia)	500 mm
	Selection Methodology	Grille Airflow
	Type	Cowl intake / outlet
	Shape	Circular
	Construction	Steel
	Installation Date	2021
	Life Expectancy (yrs)	30
LOCATION	Building Name	Tachbrook Kitchen
	Address / Location	42 Tachbrook St
	Floor	G
	Grid Ref x-y coord	
	Room Name(s)	Range 1
		Range 1 Wash-up

GRILLES

All grilles to be measured on site before ordering. Contractor to advise client on length options

G: Range 2

G: Range 3

ASSET REFERENCE:	EC2	EC3
Supply / Extract	E	E
Room Air Balance (S/E)	-ve	-ve
Equipment Description	Cowl intake / outlet	Cowl intake / outlet
Air Systems		
Connected to	Extract Air System	Extract Air System
No of slots / No of Grilles	1	1
Grille Air flow	437 l/s	437 l/s
Throw (m) / Velocity (m/s)	2.55	2.55
Static Pressure (Pa)	10 Pa	10 Pa
Noise Level	30 dBA	30 dBA
Fixings	Concealed	Concealed
Plenum Box	No	No
Finish	Steel	Steel
VCD	No	No
Connection: Circular Duct Ø	500mm Dia	500mm Dia
Comments		
Manufacturers Name	Lindab	Lindab
Model	HF Jet Cowl	HF Jet Cowl
Pitch	N/A	N/A
Size (W) Active		
Size (W) Total		
Size (H)	1,055 mm	1,055 mm
Size (Dia)	500 mm	500 mm
Selection Methodology	Grille Airflow	Grille Airflow
Type	Cowl intake / outlet	Cowl intake / outlet
Shape	Circular	Circular
Construction	Steel	Steel
Installation Date	2021	2021
Life Expectancy (yrs)	30	30
Building Name	Tachbrook Kitchen	Tachbrook Kitchen
Address / Location	42 Tachbrook St	42 Tachbrook St
Floor	G	G
Grid Ref x-y coord		
Room Name(s)	Range 2	Range 3
	Range 2 Wash-up	Range 3 Wash-up

11 MANUFACTURER'S INFORMATION

During the design process TSA may have contacted certain suppliers. Edited information is attached for information puropses.

The attached information may not be final but should provide the tenderer with contact names, details and initial information.

The Contractor shall verify all information with the supplier prior to pricing to ensure compliance with the specification.

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12 DRAWINGS

BUILDING SERVICES INSTALLATIONS

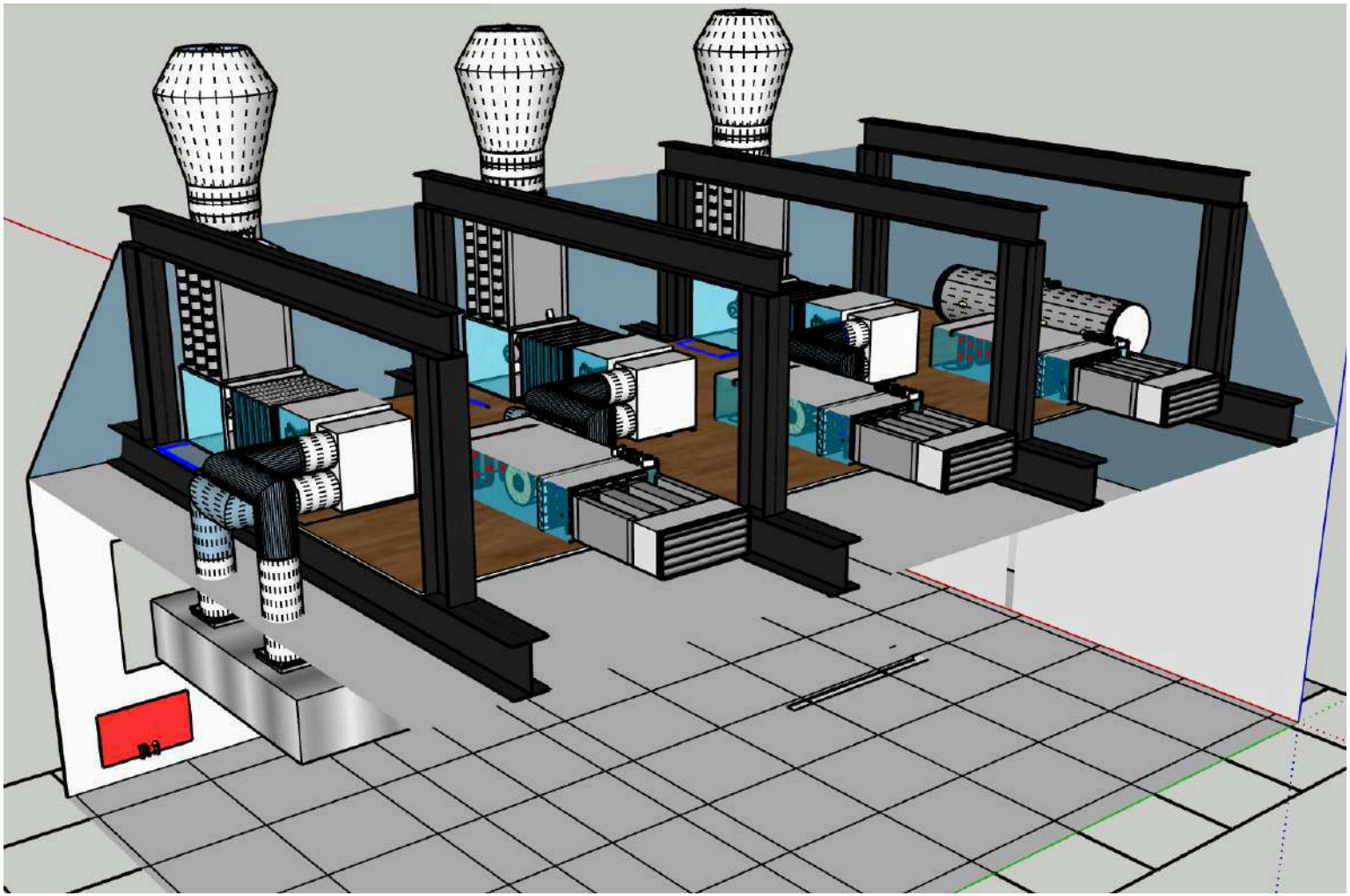
TSA's "Design Drawings" show the design principals of the scheme and differ to "Working Drawings" which include additional information including invert levels, setting out dimensions, actual equipment "blocks", full coordination with other Trades and phasing requirements for the works where appropriate.

The necessity for fully coordinated Working Drawings depends on the complexity of the project. This project requires the Contractor to:

MEDIUM COMPLEXITY: TSA's drawings & EDS's provide sufficient detail for general installation although additional detailing is required proir to installation. The Contractor shall compile additional drawing information including invert levels, setting out dimensions, plant bases, specific installation details and coordination with other Trades. The Contractor shall mark-up on site any changes made and alter the DWG drawings at project completion to reflect the "As Built" situation

SAMPLE

PRODUCED BY	DRAWING NUMBER	TITLE	SCALE	REVISION
TSA	1212 Vent M1	Ventilation Drawings 3D	3D	
	1212 Vent M2	Ventilation Drawings 3D	3D	
	1212 Vent M3	Ventilation Drawings 3D	3D	
	1212 Vent M4	Ventilation Drawings 3D	3D	
	1212 Vent M5	Ventilation Drawings 3D	3D	
	1212 E01	Power Ground	1:50 @ A3	
	1212 E02	Lighting Ground	1:50 @ A3	
	1212 E03	Lighting First	1:50 @ A3	
	1212 M01	Drainage Layout	1:50 @ A3	
	1212 M02	Water Services	1:50 @ A3	
	1212 SCH/01	Electrical SLD	-	



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Tachbrook Kitchen

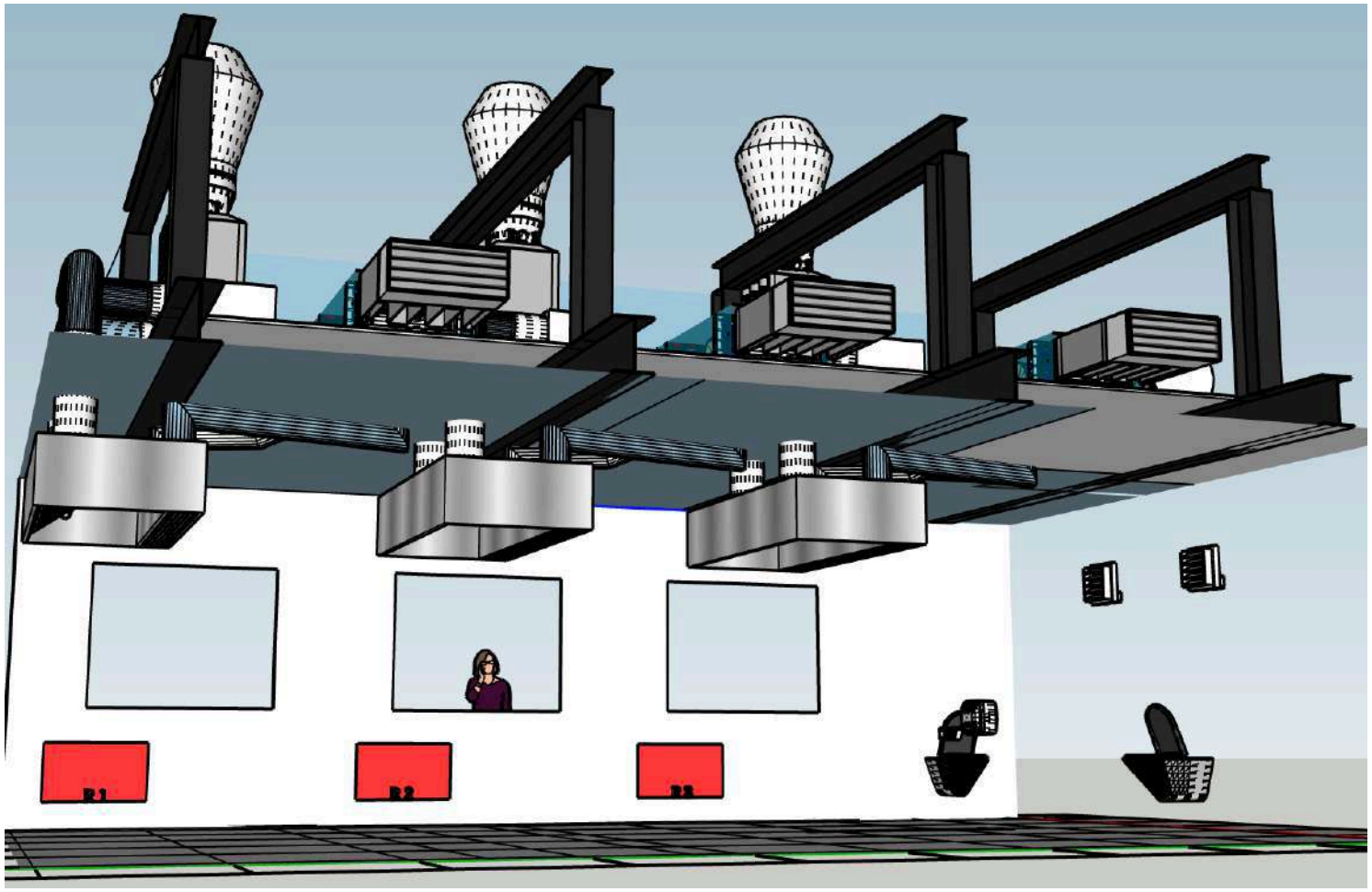
42 Tachbrook St, SW1V 2LZ

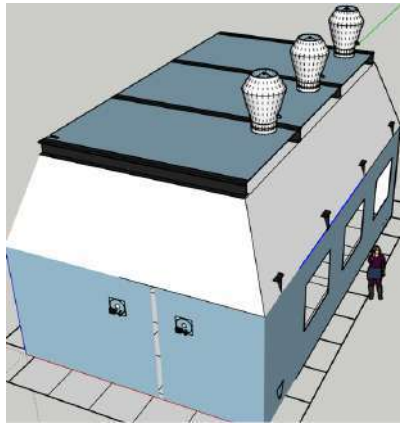
T S A
Technical Support Associates
CONSULTING ENGINEERS

First Floor
57B High Street
BAGHOT
Surrey GU19 5AH
01276 476237
www.tsaservices.co.uk

VENTILATION DRAWINGS 3D

DRAWN	DATE	SCALE
DKS	07 Jul 21	NTS
TSA 1212	Vent M2	Rev: 0





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Tachbrook Kitchen

42 Tachbrook St, SW1V 2LZ

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57B High Street
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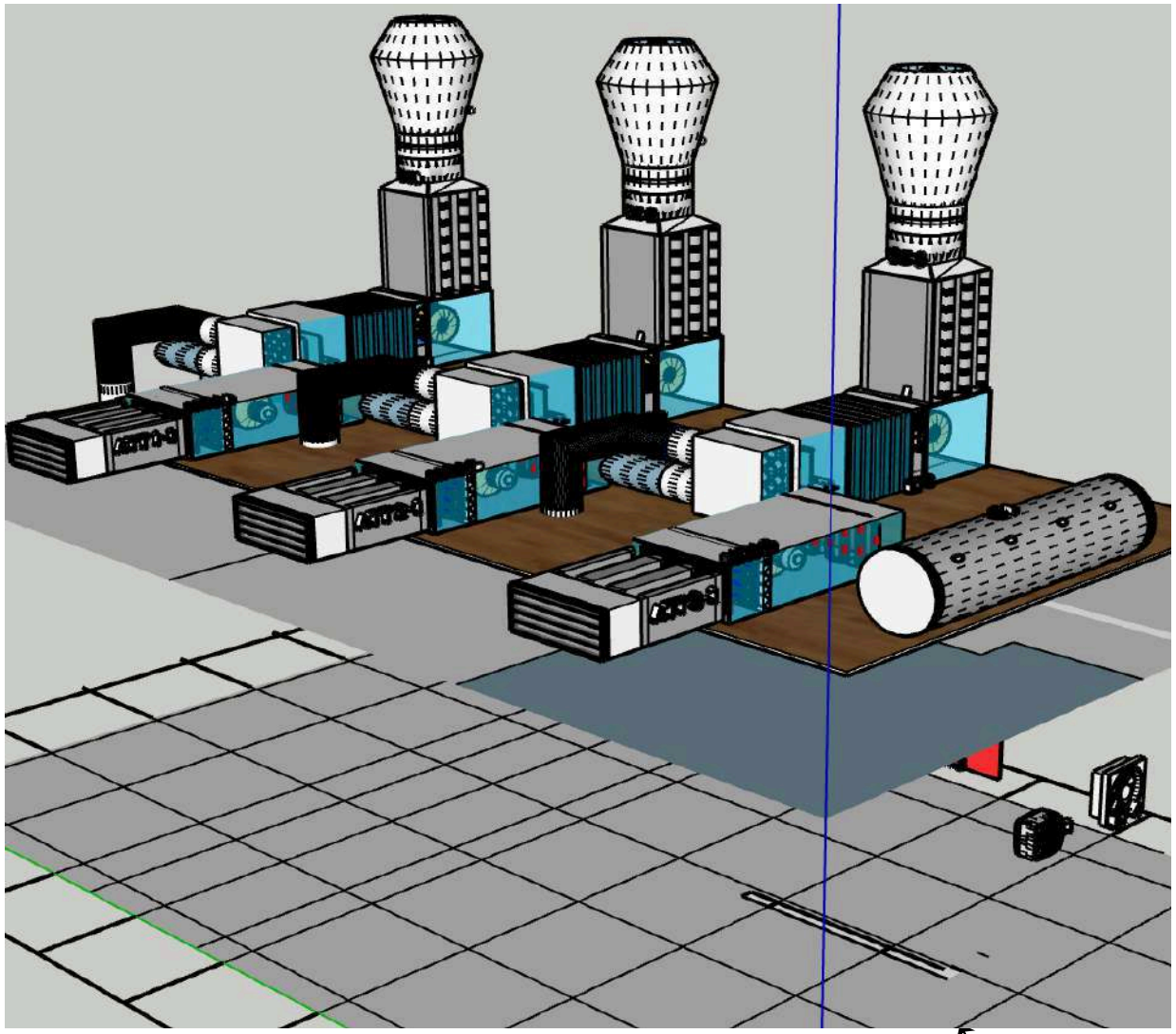
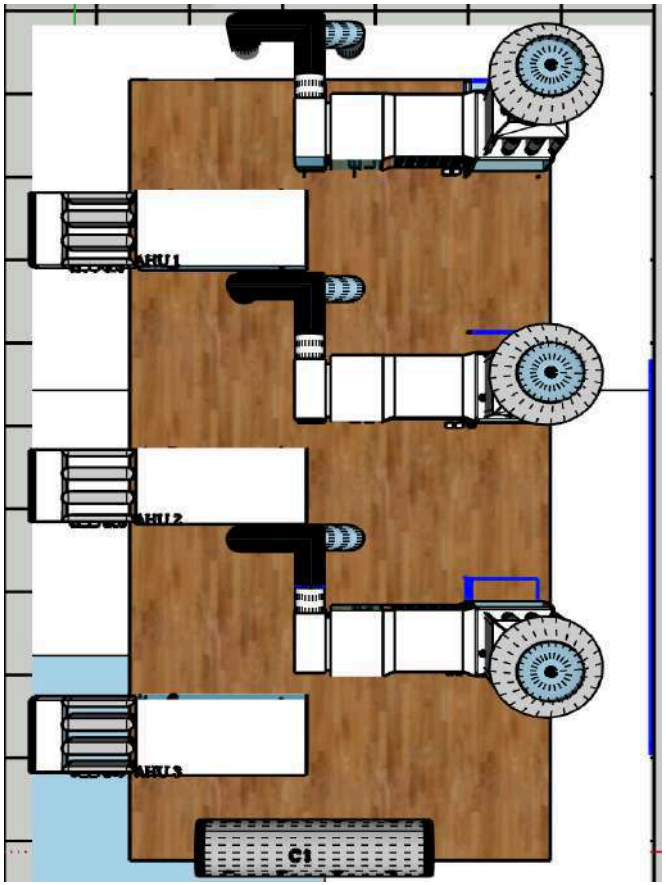
VENTILATION DRAWINGS 3D

DRAWN	DATE	SCALE
DKS	07 Jul 21	NTS
TSA 1212	Vent M3	Rev: 0





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Tachbrook Kitchen

42 Tachbrook St, SW1V 2LZ

T S A
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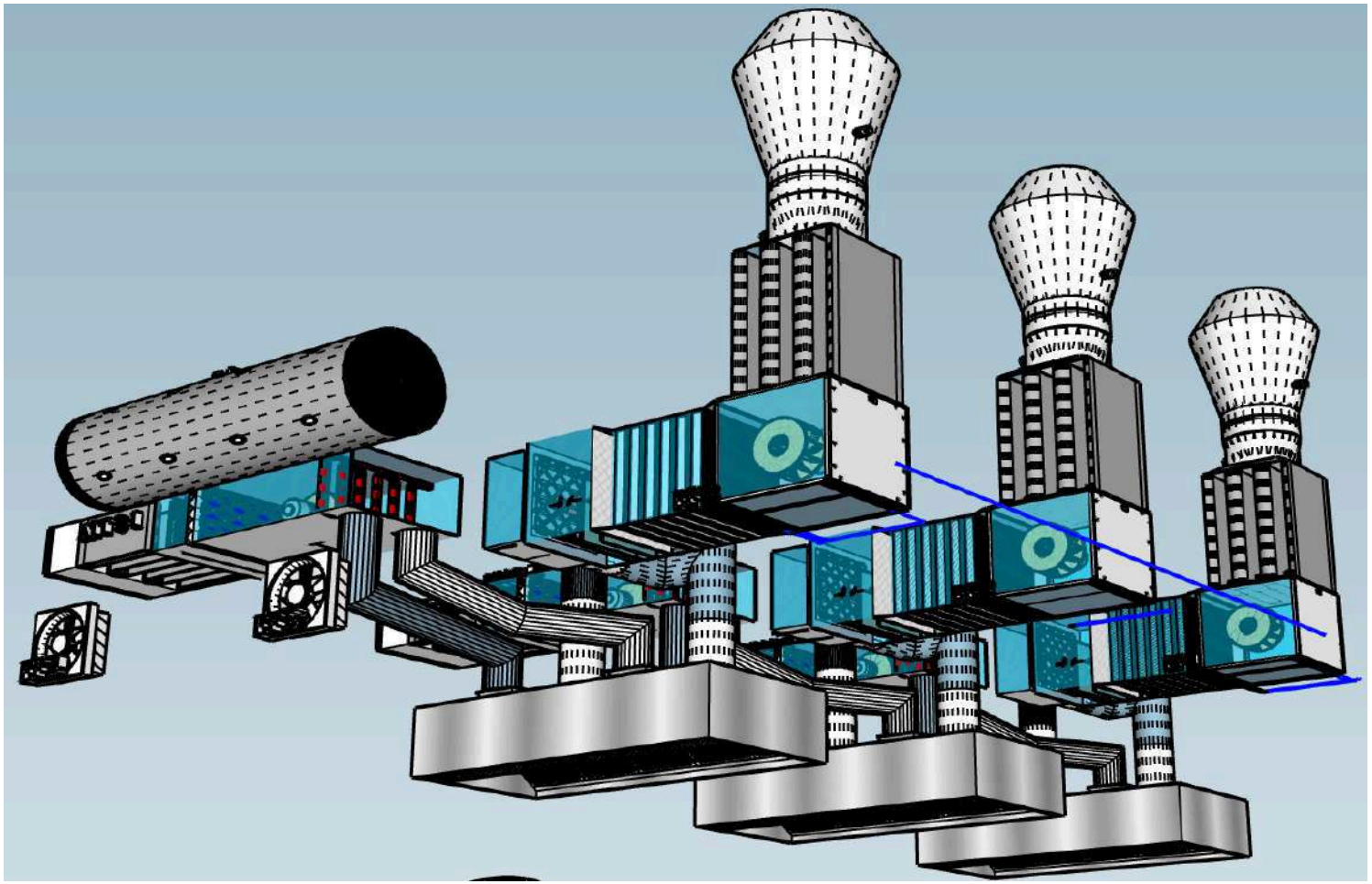
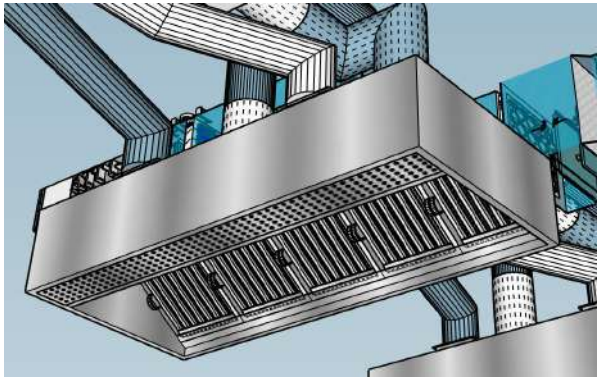
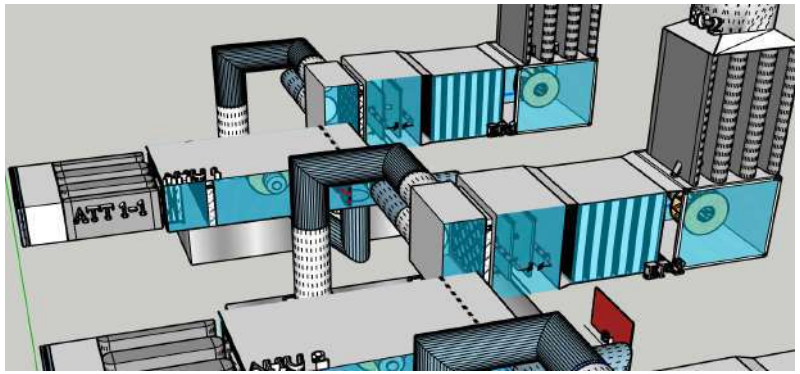
VENTILATION DRAWINGS 3D

DRAWN	DATE	SCALE
DKS	07 Jul 21	NTS
TSA 1212	Vent M4	Rev: 0







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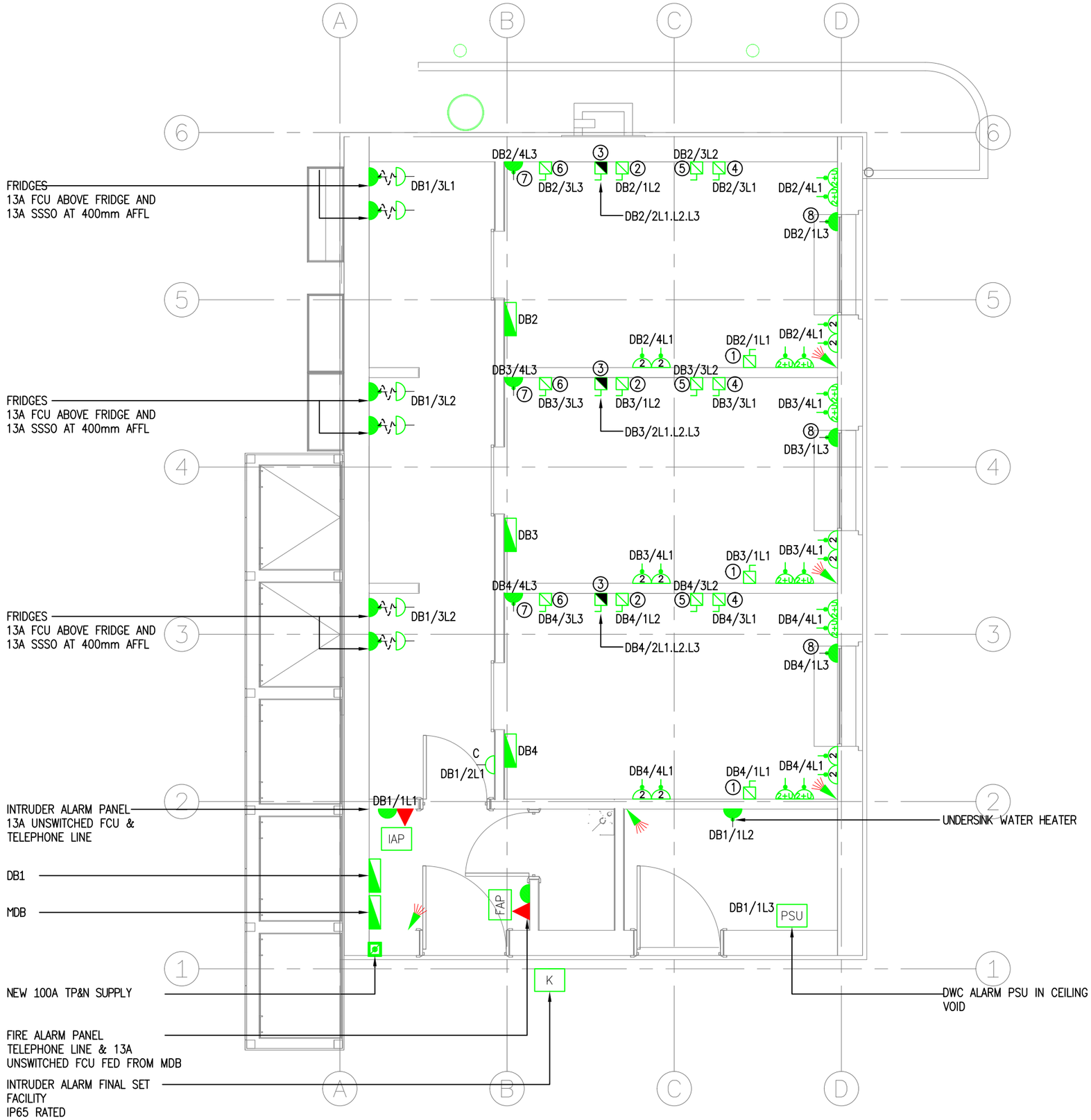
VENTILATION DRAWINGS 3D

DRAWN	DATE	SCALE
DKS	07 Jul 21	NTS
TSA 1212	Vent M5	Rev: 0



LEGEND

- SINGLE/ DOUBLE SWITCHED 13A SOCKET OUTLETS
- SHAVER POINT SOCKET OUTLET
- DOUBLE SWITCHED 13A SOCKET OUTLET c/w USB
- SWITCHED FUSED CONNECTION UNIT
- IP RATED OUTDOOR SWITCHED SOCKET OUTLET
- 13A SSSO
- 13A UNSWITCHED FUSED CONNECTION UNIT
- TWIN TELEPHONE SOCKET OUTLET
- DISTRIBUTION BOARD
- SECURITY CAMERA
- ISOLATOR SPN
- ISOLATOR SPN
- INTRUDER ALARM PIR (IP65)
- CLEANERS SOCKET 13A TSSO

EQUIPMENT REFS

1. COFFEE MACHINE – 50A
2. INDUCTION HOB – 32A
3. OVEN – 32A
4. FRYER – 50A
5. GRIDDLE – 50A
6. MICROWAVE COMBI – 50A
7. KITCHEN HOOD
8. PANEL HEATER

Rev	Detail	Date	By	CKD
1	ISSUED FOR COMMENT	09.07	JB	DS

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Project

Tachbrook Kitchen

45 Tachbrook Street, Pimlico, London, SW1V 2LZ

Title

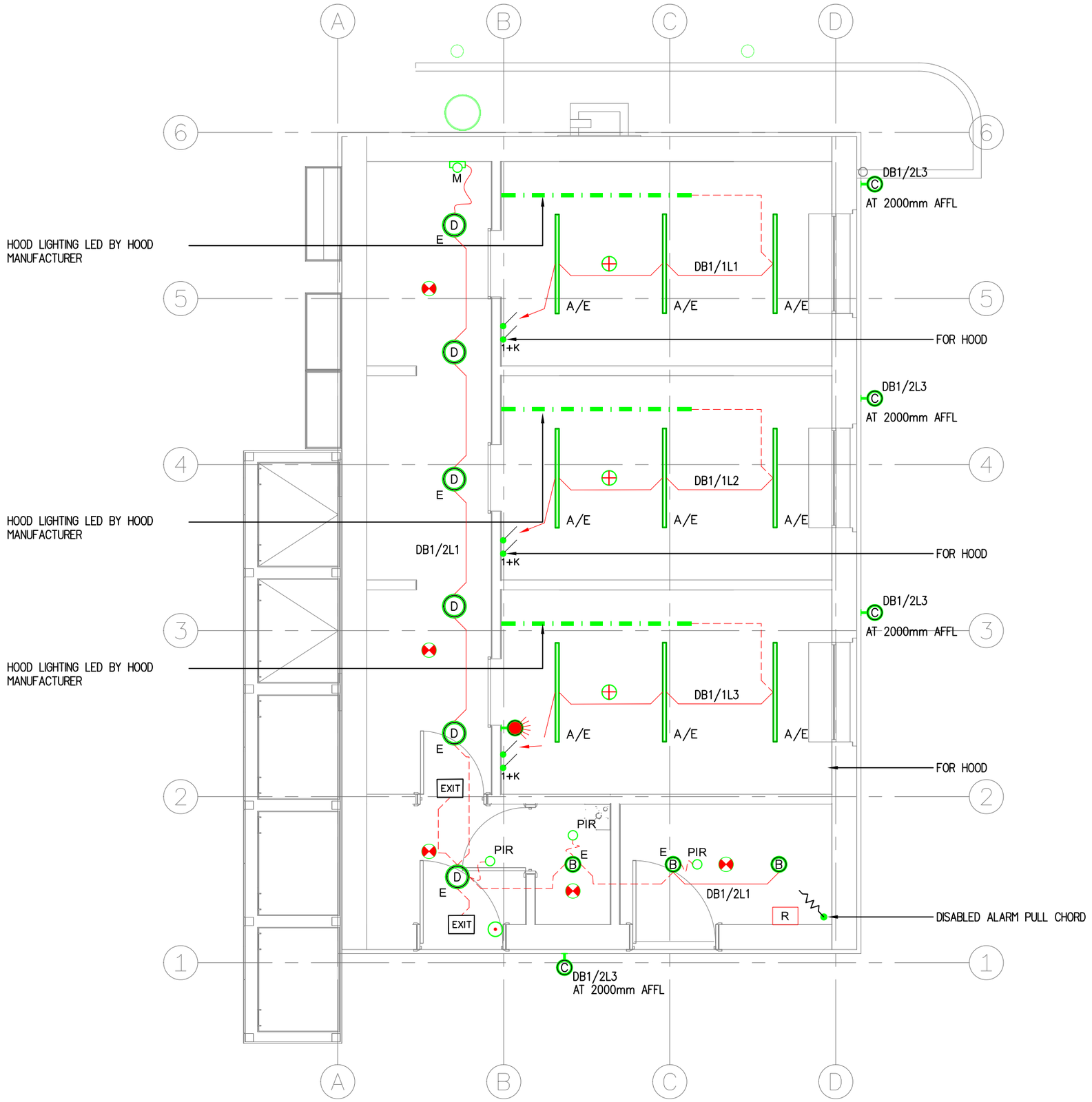
Ground Floor
Small Power Layout

Drawn By	Checked	Date	Scale
J.Beal	D.Smith	July '21	1:50 @ A3

Drawing Number

TSA/1212/E/01

Revision 1



LEGEND

- A — LED BATTEN FITTING
- A/E — LED BATTEN FITTING c/w EMERGENCY BACKUP
- B — LED DOWNLIGHT
- C — WALL MOUNTED EXTERNAL LED FITTING
- D — LED DOWNLIGHTS – CORRIDOR
- E — EMERGENCY FITTING
- 'E' — DENOTES EMERGENCY FITTING c/w 3 HOUR BATTERY PACK
- LIGHT SWITCH (AT 1200mm AFFL)
- 2 — 2 WAY LIGHT SWITCH
- 2 — MULTI GANG LIGHT SWITCH (AT 1200mm AFFL)
- K — EMERGENCY LIGHTING TEST KEYSWITCH
- DWC ALARM PULLCORD c/w INTEGRAL REASSURANCE INDICATOR
- DISTRIBUTION BOARD
- COMBINED SMOKE DETECTOR & SOUNDER/ STROBE
- COMBINED HEAT DETECTOR & SOUNDER/ STROBE
- FIRE ALARM BREAKGLASS CALL POINT (1200mm AFFL)
- FAI — FIRE ALARM INTERFACE
- PIR — PRESENCE DETECTOR
- M — MICROWAVE PRESENCE DETECTOR
- DWC ALARM BUZZING INDICATOR (IP65)
- R — DWC ALARM

NOTES

01. CONTRACTOR TO BOND ALL EXTREANEOUS CONDUCTIVE PARTS TO EARTH USING 4mm² LSZH SINGLE

Rev	Detail	Date	By	CKD
1	ISSUED FOR COMMENT	09.07	JB	DS

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Project

Tachbrook Kitchen

45 Tachbrook Street, Pimlico, London, SW1V 2LZ

Title

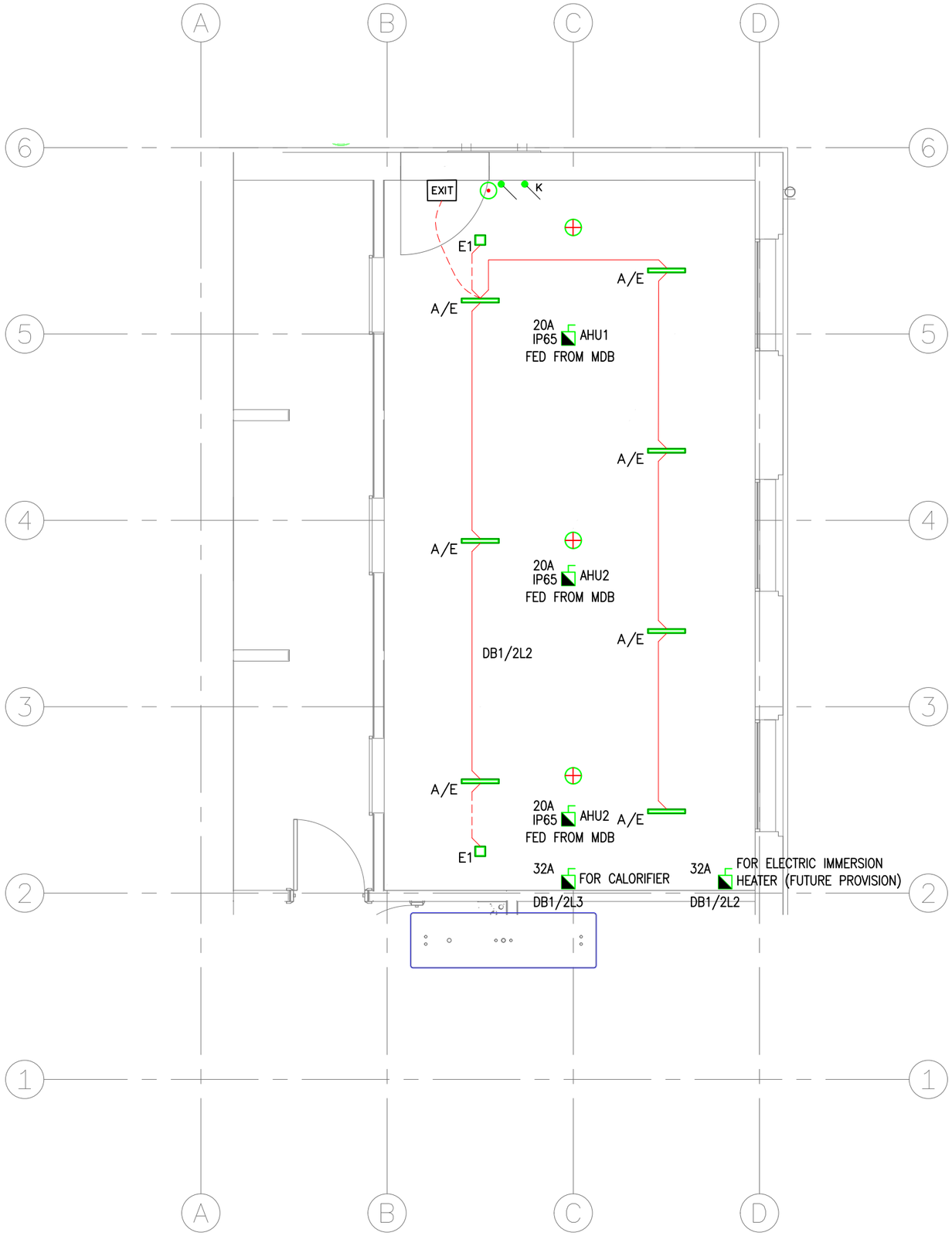
Ground Floor Lighting Layout

Drawn By	Checked	Date	Scale
J.Beal	D.Smith	June '21	1:50 @ A3

Drawing Number

TSA/1212/E/02

Revision ?



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- DISTRIBUTION BOARD
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- COMBINED HEAT DETECTOR & SOUNDER/ STROBE
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- M — MICROWAVE PRESENCE DETECTOR
- DWC ALARM BUZZING INDICATOR (IP65)
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NOTES

01. CONTRACTOR TO BOND ALL EXTREANEOUS CONDUCTIVE PARTS TO EARTH USING 4mm² LSZH SINGLE

Rev	Detail	Date	By	CKD
1	ISSUED FOR COMMENT	09.07	JB	DS

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Project

Tachbrook Kitchen

45 Tachbrook Street, Pimlico, London, SW1V 2LZ

Title

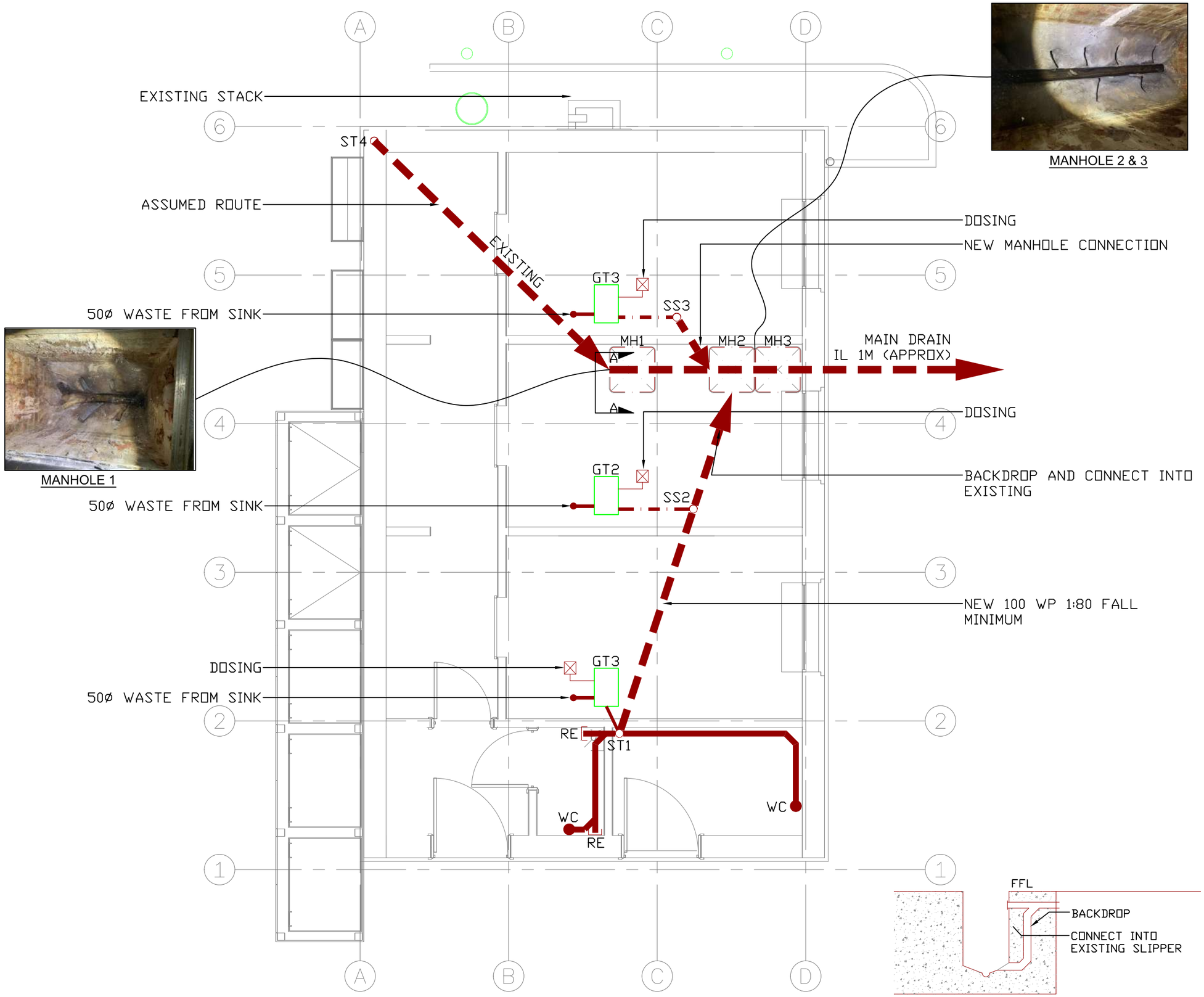
High Level Plant Space Lighting Layout

Drawn By	Checked	Date	Scale
J.Beal	D.Smith	June '21	1:50 @ A3

Drawing Number

TSA/1212/E/03

Revision 1



MANHOLE 1

MANHOLE 2 & 3

SECTION A-A

DRAINAGE LEGEND

- LOW LEVEL PIPEWORK
- BELOW GROUND PIPEWORK
- STACK

NOTES

1/ EXISTING MH LOCATIONS TO BE CONFIRMED
2/ EXISTING MH INVERT LEVELS TBC
3/ GREASE TRAPS TO BE FULLY ACCESSIBLE

Rev	Detail	Date	By	CKD
1	ISSUED FOR COMMENT	09.07	JB	DS

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Project

Tachbrook Kitchen

45 Tachbrook Street, Pimlico, London, SW1V 2LZ

Title

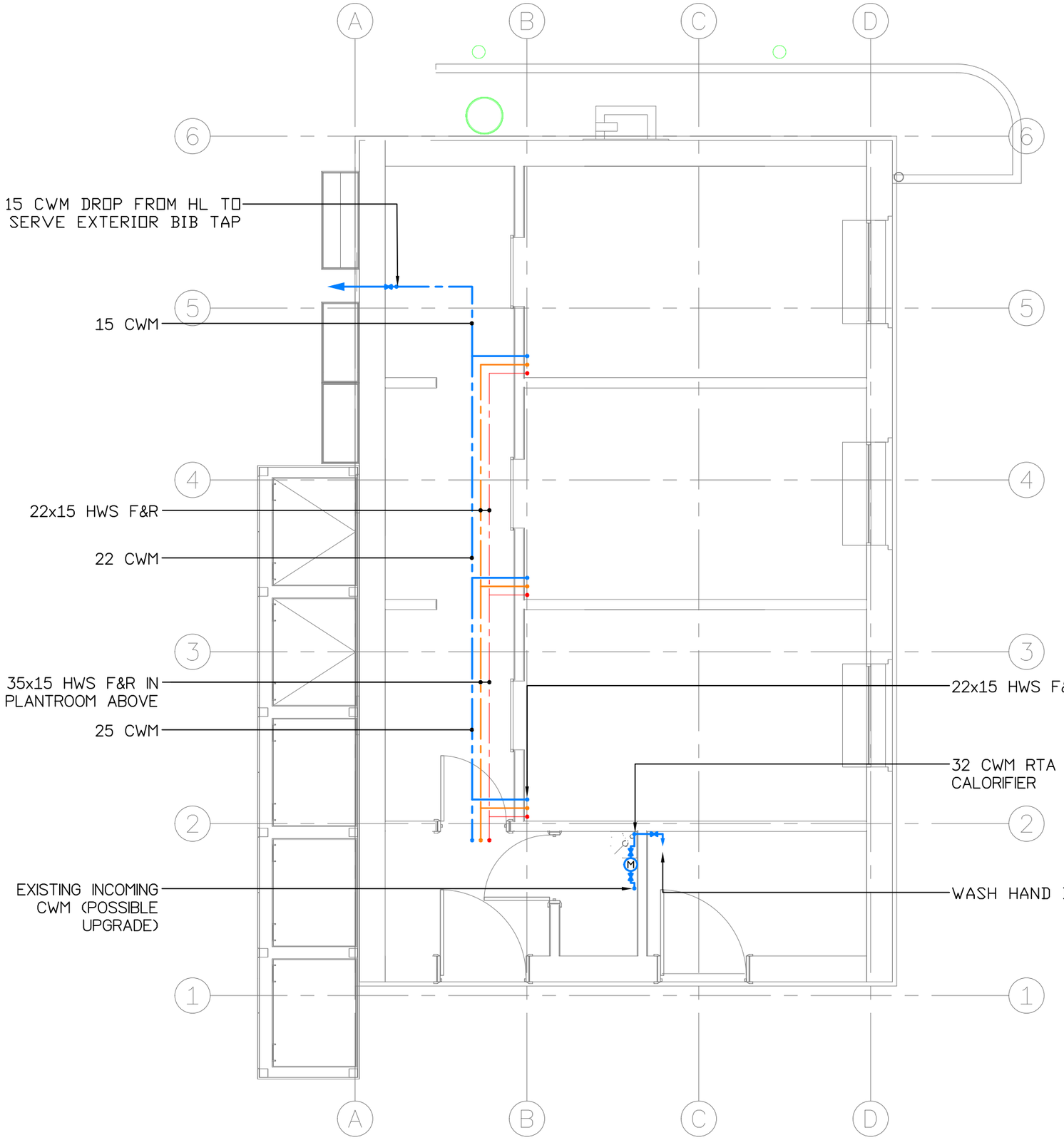
Drainage Layout

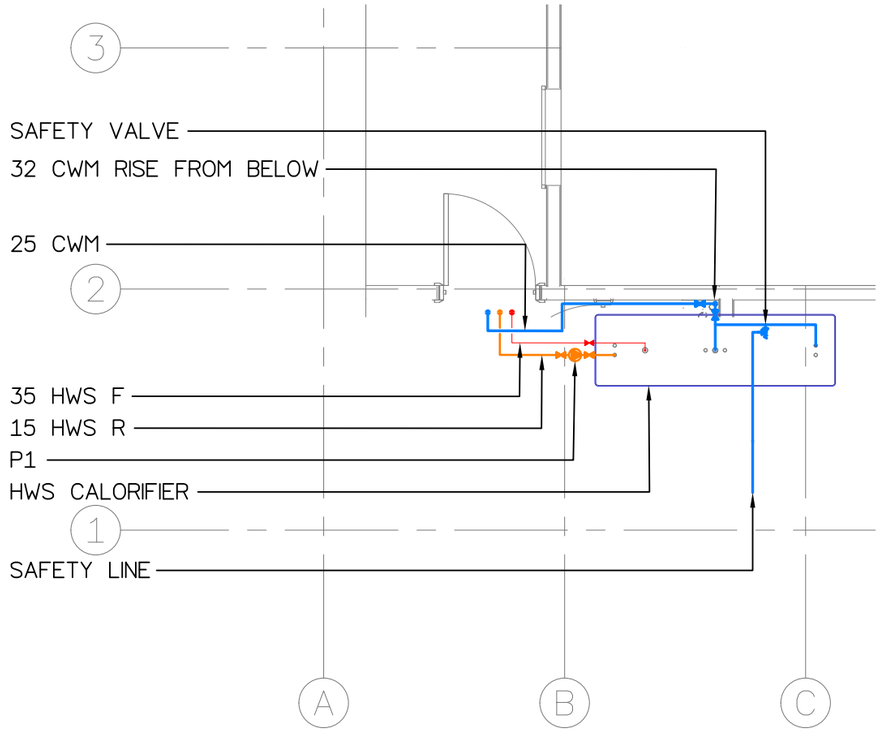
Drawn By	Checked	Date	Scale
J.Beal	D.Smith	June '21	1:50 @ A3

Drawing Number

TSA/1212/M/01

Revision 1 A





CALORIFIER WATER SERVICES WITHIN LOFT SPACE

PIPE LEGEND

- LOW LEVEL CWS PIPEWORK
- HIGH LEVEL CWS PIPEWORK
- LOW LEVEL HWS FLOW PIPEWORK
- HIGH LEVEL HWS FLOW PIPEWORK
- LOW LEVEL HWS RETURN PIPEWORK
- HIGH LEVEL HWS RETURN PIPEWORK

Rev	Detail	Date	By	CKD
1	ISSUED FOR COMMENT	09.07	JB	DS

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Project

Tachbrook Kitchen

45 Tachbrook Street, Pimlico, London, SW1V 2LZ

Title

Water Services

Drawn By	Checked	Date	Scale
J.Beal	D.Smith	July '21	1:50 @ A3

Drawing Number

TSA/1212/M/02

Revision 1

DEVICES SERVING FIRE ALARM PANEL TO BE LABELLED "FIRE ALARM. DO NOT SWITCH OFF".

FIRE ALARM PANEL IN MAIN ENTRANCE

AHU1

AHU2

AHU3

DB1 SPLIT-LOAD 4 WAY (L) & 4 WAY (P) 125A TPN MCB DB

DB2 8 WAY 125A TPN MCB DB

DB3 8 WAY 125A TPN MCB DB

DB4 8 WAY 125A TPN MCB DB

1x 3C 2.5mm² FP200

1x 5C 10mm² XLPE/SWA/LSZH (EARTHING - INTEGRAL CPC)

1x 3C 16mm² XLPE/SWA/LSZH (EARTHING - INTEGRAL CPC)

1x 5C 50mm² XLPE/SWA/LSZH (EARTHING - INTEGRAL CPC)

1 L1 | 2 | 3 | 4 | 1 L2 | 5 | 6 | 7

40A (18A) SP&N MCCB

20A TP&N MCCB

20A TP&N MCCB

20A TP&N MCCB

63A TP&N MCCB

125A TP&N MCCB

125A TP&N MCCB

125A TP&N MCCB

MDB TO BE 8 WAY 250A TPN MCCB DB. MDB INCOMER TO BE 250A TPN INTEGRAL SWITCH DISCONNECTOR. MDB TO BE FURNISHED WITH SURGE PROTECTION

MDB
FORM 4b Type 6
TYPE - WALL MOUNTED
FAULT CAPACITY - 36KA
INCOMING CABLE ENTRY - BOTTOM
OUTGOING CABLES - TOP

1 x 4C 95mm² XLPE/SWA/LSZH & 1C 50mm² LSZH SINGLE CPC (EARTHING - SEPARATE CPC)

DNO

DNO FUSE CUT-OUT AND METERING PANEL

INCOMING SUPPLY FROM DNO

BUILDING STRUCTURE

LIGHTNING PROTECTION

INCOMING WATER

COMMS

SPARE

SPARE

1C 35mm² LSZH SINGLE G/Y

1C 16mm² LSZH SINGLE G/Y

REMOVABLE TEST LINK

MAIN EARTH BAR 50mm x 6mm COPPER ADJ. MDB

Rev	Detail	Date	By	CKD
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Project

Tachbrook Kitchen

45 Tachbrook Street, Pimlico, London, SW1V 2LZ

Title

ELECTRICAL SCHEMATIC

Drawn By	Checked	Date	Scale
J.Beal	D.Smith	July '21	NTS

Drawing Number

TSA/1212/SCH/01

Revision 1

12 PHOTOS

Existing incomer & water mains

General roof structure - plantroom floor will be created between beams by Builder

Existing intake cupboard