Ribeye Steakhouse, First St., Manchester

Particular Mechanical and Electrical Services Specification

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1.0 Introduction

This specification and scope of works details the mechanical and electrical works for the fit out of Unit 1a, Building 8, First St. in Manchester.

The unit is located at ground floor level and is to be provided in shell form as part of the Building 8 commercial development.

This document is complemented by the Crookes Walker Consulting Standard set of Technical Preliminaries and Standard Specifications which detail quality of workmanship and materials and contractual obligations of the Contractor. In addition, this specification shall be read in conjunction with the main contract preliminaries and documentation.

2.0 Scope of the Works

2.1 General

This Specification forms part of a set of the design documents associated with the Mechanical and Electrical Engineering Services requirements for the proposed restaurant within Building 8 in First St. Manchester.

The Contractor shall include for the supply, delivery, co-ordination (including working and installation drawings), installation, setting to work, testing and commissioning of all engineering services required for the project.

Layouts of all services, plant and equipment, whether on view, in plant rooms, ducts, stores, ceiling voids or elsewhere shall be neat, safe and logical. Positions shall be chosen to afford easy access for operation, maintenance and replacement of any item of equipment with the absolute minimum of disruption and in full compliance with all relevant CDM regulations. Layouts shall also allow for future extensions where necessary or as described elsewhere.

2.2 Responsibilities

It is strongly recommended that during the course of the Tender period, the Contractor visits site to acquaint themselves with the condition of the existing installations and the scope of the works.

Prior to submitting the Tender the Contractor is deemed to have visited the site and satisfied himself as to its accessibility and restrictions, local conditions, the supply of and conditions affecting labour and or executing the Contract generally as no claim for additional expense or delay in the execution of the Contract on these grounds will be accepted.

The Contractor shall undertake a periodic wiring test and inspection prior to the works commencing.

2.3 Supervision on Site

The Contractor shall be responsible for ensuring that a competent Mechanical and Electrical Foreman is retained on site at times. It shall be the Foreman's responsibility to liaise with the Professional team to ensure a high level of workmanship, co-ordination with other trades and compliance with the Programme.

The installer shall be aware of the exposed nature of the services at high level and hence a high level of co-ordination and installation quality is a requirement.

2.4 Kitchen Fit Out and Other Specialists

The final positioning, installation and commissioning of the kitchen equipment shall be carried out by the Kitchen Specialist. The Contractor shall allow for the final co-ordination of the works and lead up service location with the Kitchen Specialist.

This Specification also refers to specialist system providers and the Contractor shall allow for co-ordination of final information of equipment positions and to liaise with the Specialists.

2.5 Temporary Works

The Contractor shall be responsible for all temporary and enabling works.

Note that throughout the course of the works areas outside of the restaurant unit shall remain live. The Contractor shall plan and co-ordinate shut downs or interfaces of any system in relation to the works in the unit to ensure that there are no impacts on the operation of the overall building and other Tenants.

2.6 Installation Drawings and Submittals

The Mechanical and Electrical Contractors will be required to produce installation and fabrication drawings for all elements of the installations including but not limited to the following:

1. Ductwork Installation and fabrication drawings
2. Co-ordinated ceiling layouts positioning all equipment.
3. Kitchen Extract Air Treatment System and Air handling Plant
4. Above Ground Drainage and stack connection details
5. Small power and data layout detailing all provisions.
6. Automatic controls for the kitchen ventilation system.

Within this Specification duties for equipment have been provided for Tender purposes the Contractor shall provide Technical Submittals for plant for comment by the Client Team that reflect the duties required as part of the final installation arrangement and servicing routes. This shall include final pressure drop calculations for fans.

The As Installed drawings shall be provided as detailed later in this Specification.

3.0 Mechanical Services

3.1 Mechanical Services Performance Criteria

The Mechanical Services shall be installed, tested and commissioned by the Contractor, in accordance with CIBSE guidelines, Best Practice and all relevant British Standards. The following design criteria shall be used when carrying out the design for the Mechanical Services:

3.1.1 External Design Criteria

Peak external design conditions

Summer:	Dry Bulb Temperature	28ºC
	Wet Bulb Temperature	21 ºC
Winter:	Dry Bulb Temperature	-5ºC
	Wet Bulb Temperature	-5 ºC

When the external ambient temperatures either exceed in summer or fall below in winter the defined external design conditions then the internal conditions shall drift away from those defined below.

3.1.2 Internal Design Conditions

The design conditions for the areas shall be as listed below:

Restaurant	:	21ºC ± 2ºC Winter 23ºC ± 2ºC Summer
Office:		21ºC ± 2ºC Winter 23ºC ± 2ºC Summer

No humidity control is provided.

3.1.3 Noise Criteria

The building services shall be designed to provide the following acoustic levels:

Area	Internal Noise Limits
Toilets	NR40
Restaurant	NR35
Kitchen	NR45 at full extract duty

External noise levels shall comply with the Planning restrictions for the site.

3.2 Mechanical Ventilation

3.2.1 Kitchen Supply and Extract

A new kitchen extract system and make up air system shall be installed to serve the central cooking areas.

The kitchen extract system shall extend from the new canopy to the carpark area where new air treatment plant will clean and filter the air prior to the air being exhausted through the façade.

Make up air for the canopy shall be provided by an in line fan providing 85% of the volume of the extract air.

The kitchen ventilation system shall include an interlock with the gas solenoid valve to isolate the gas supply to the kitchen should the ventilation system not be operating correctly.

The kitchen extract system shall be designed and installed to meet the criteria in the Chartered Institute of Building Services Engineers, DW172 and DEFRA design guidance.

The kitchen extract system shall be installed in fire rated ductwork complete with access panels for cleaning in compliance with the above documents.

3.2.2 Kitchen Extract Air Treatment

The kitchen extract air treatment shall be supplied and commissioned by:

Plasma Clean Ltd,
SBIC Broadstone Mill,
Broadstone Road,
Stockport,
Cheshire.
SK3 7DL

Contact: Sarah Cooke

Office: 0161 870 2325

The equipment shall be selected on the following criteria:

Extract Airflow	3.4 m^3/sec	
Activated Carbon	ACDC3-H	1 No
Electrostatic Precipitators	ESP 7500	2 No
Pre Filters	Prefilter Grade G4 and F7	

The Installer shall liaise with Plasma Clean Ltd to ensure that the configuration of the equipment and ductwork installation such as tapers onto the unit allow for the optimum performance of the equipment.

The Contractor shall include for the installation of all associated control equipment with the operation of the ESP system.
Magnehelic gauges shall be installed to the Carbon Filter and pre filter sections to indicate filter conditions.

The installation shall include of the following components.

Extract Section

- Intake Attenuator(System Side)
- Pre Filter (G4)
- Bag Filter (F7)
- ESP Section
- Carbon Filter (0.1s dwell time)
- Extract Fan (Invertor Driven)
- Discharge attenuator (Atmosphere Side)

Supply Air Section

- Intake Attenuator (Atmosphere Side)
- Pre Filter (G4)
- Bag Filter (F7)
- Supply Fan (Invertor Driven)
- Attenuator (System Side)

The supply and extract shall be formed as two air handling sections constructed in accordance with CWC Standard Specification.

The units shall be located on the mezzanine plant level with control panel mounted adjacent to the units and an additional local control panel shall be located within the kitchen in an agreed position.

The supply and extract air handling unit sections and associated control shall be as manufactured by one of the following:

- Halton, Rochester, Kent
- VES Andover, Manchester
- Air Source, Salford
- Air Handling Northern, Salford

The external static for the air handling units for Tender purposes shall be taken as 700pa. This shall be confirmed by the Contractor on final selection of the canopy.

3.2.3 Kitchen Canopies

Main Canopy

The Mechanical Installer shall be responsible for the supply, installation and commissioning of the new extract canopy in the kitchen. The canopy shall be as manufactured, installed and commissioned by:

Britannia Kitchen Ventilation
Abbey Road
Wrexham
LL13 9RF

Contact: 01926 675420 (Craig Vincent)

The canopy shall be a four sided island type canopy manufactured from 304 stainless steel sheet with integrally formed condensate collection channel and standing seam joints.

The equipment shall be selected on the following criteria:

Extract Airflow	3.4 m^3/sec
Supply Airflow	85% of extract
Nominal Dimensions	6400x1300x550mm
U V Treatment	To Be included within Canopy
Filters	Integral Britannia Ultrastream high efficiency baffle type grease filter.
Supply Air	Insulated supply air plenum with supply air nozzles to provide operator comfort.
Manufacturer	Britannia Kitchen Ventilation
Range	Ultrastream CS3 Britannia Material Ref 'S'
Lighting	Recessed mounted in Canopy

All ancillaries such as light fittings and grease filters shall be provided by the canopy manufacturer as part of a complete package.

Full details of the canopy shall be provided to the Contract Administrator prior to manufacture for approval and integration into the kitchen ceiling design.

Condensate Canopy

The Installer shall also include for a condensate canopy over the combi oven, generally as indicated on the ventilation drawings and manufactured from 304 stainless steel sheet. This canopy shall also be as provided by Britannia Kitchen Ventilation model ref 1OE.

Extract rate from the canopy shall be 0.15m^3/s for Tender purposes.

3.2.4 Dining Supply and Extract

General supply and extract shall be provided to the dining area by a packaged MVHR air handling unit mounted at high level in the dining space.

A range of sheet metal spiral ductwork shall be installed to distribute the fresh air to the fan coils and return air via high level spigots and grilles.

The unit shall be ducted to external facade and external louvres provide by the Contractor.

Attenuation shall be installed to comply with both the external sound conditions and the internal limiting noise levels.

The unit shall be operated via a separate controller located in the office/store area. The final location shall be agreed with the Contract Administrator.

3.2.5 Toilet Extract

Extract ventilation shall be taken from the toilet areas from a central extract fan and ducted to outside. The fan shall operate under the dictates of a PIR sensor and run on timer.

3.2.6 Ductwork Distribution

Ventilation Ductwork to be supplied, manufactured, erected, supported and tested in accordance with the requirements of HVCA DW144 and DW172. The Contractor shall also refer to CWC Standard Mechanical Specification.

The Contractor shall be responsible for the final selection of the duct mounted attenuators to achieve the noise criteria in the rooms and to ensure that the external noise levels do not exceed that required by Planning for the development.

All attenuators associated with the Kitchen Extract System shall be Melinex lined and have removable core for cleaning.

Cross talk attenuators shall be installed between noise sensitive areas and as indicated on the drawings.

3.2.7 Smoke and Fire Dampers

Install fire dampers complete with access doors as indicated on the drawings and at all fire compartment walls. Access doors for checking and resetting drawings shall be installed in compliance with CWC standard specification.

The kitchen extract shall not have fire dampers installed however shall be installed in fire rated ductwork.

Where ductwork passes through escape corridors smoke and fire dampers shall be included that shall be activated on initiation of the fire alarm and shall be remotely resettable. Dampers and associated control panel shall be as supplied and commissioned by Actionaire Ltd or Gilberts Blackpool.

3.2.8 Thermal Insulation

Fresh air ductwork from the external louvers to the air handling unit shall be insulated to prevent condensation occurring on the ductwork.

The supply air ductwork to the canopy shall be insulated where is passes through heated areas or ceiling voids where there is the potential of condensation.

3.2.9 External Louvres

External louvres for ventilation plant shall be supplied by the Mechanical Installer and shall be from the Gilberts range WGF-38 and be complete with bird screens.

As the building has a double façade arrangement the final detail of this shall form part of a Technical Submission to the Landlord's Team for comment.

The final colour selection (RAL number) shall be advised by the Contract Administrator.

3.3 Heating Installations

3.3.1 Overdoor Heater

An overdoor heater shall be provided at the main entrance to the unit. As the heater is exposed final details of the bracketry shall be submitted to the Project Manager for approval prior to installation.

The heater shall have electric heater elements and include a wall mounted controller in the bar area in a position to be agreed with the Contract Administrator.

The unit shall be as Dimplex AC3RN 3kW Over-door Heater with Remote Controller.

3.4 VRF Heating/Comfort Cooling System Installation

3.4.1 General

This section of the works shall consist of the design, supply, installation and commissioning of complete air conditioning system.

The system shall consist of two heating and cooling heat pump units of fan coil type connected to single outdoor heat pump units.

The system shall operate with refrigerant R410A and the installation shall be in accordance with BS4434:1989 and the manufacturer's recommendation.

Where condensate cannot be discharged by gravity only, condensate from each ducted unit shall be pumped to high level and then into a gravity condense system collecting condensate from multiple units. This shall be installed using PVC pipework and tubing with ABS plastic mains. The condensate pipework shall be laid to fall and discharge into the wash hand basin waste water system in the core area via waterless traps or as a HepVO (or equal and approved) connection.

Power supplies for the fan coil units, external condensing units, condensate pumps, refrigerant control boxes and central suite controllers shall be provided by the Electrical Services Sub-Contractor up to an isolator adjacent to the unit. Final connections of electrical supplies shall be completed by the approved air conditioning installer.

All interconnecting controls wiring shall be completed by the approved air conditioning installer.

3.4.2 External Condensing Units

The external condensing units shall be installed generally in the positions indicated on the layout drawings.

The Contractor shall fix the condensing units at high level on the wall of the ground floor car park. The condensing unit supports shall consist of galvanised steelwork support system allowing condensate and surface water to flow from the area to drain in compliance with Health and Safety and CDM Regulations. Galvanising shall be in accordance with EN 1S0 1461 (85 microns thickness). The condensing units shall be installed complete with condensate collection tray and drain to low level to a safe location.

All external condensing units shall be completely weather proof, factory assembled, pre-wired, tested and complete with all necessary electronic and refrigerant controls for ease of installation.

The external condensing units shall have electrically controlled fully inverter driven scroll compressor(s) to provide linear control to follow the variations in cooling and/or heating load.

3.4.3 Indoor Fan Coil Units

Indoor fan coil units shall be compatible for use with R410A refrigerant and shall be as scheduled in the mechanical equipment schedules.

Plenums and ductwork from the fan coils shall be thermally insulated.

The indoor fan coil unit printed circuit board shall be complete with power input fusing, address switches for a variety of operation controls, emergency operation switch and fault/operation indication LED's. Fan motors shall be thermally protected.

3.4.4 System Controls

The control system shall include all necessary remote controllers, PCBs, wiring adapters, BMS interfaces.

The complete system shall be controlled from a central controller located in the manager's office.

3.4.5 Refrigerant Pipework

The installer shall supply, install, test and commission all interconnecting refrigeration pipework between the external condensing units, flow selector boxes and the indoor fan coil units.

Pipework sizing, layout, fittings, etc., shall be in strict accordance with the manufacturer's design and installation requirements.

All pipework shall be carried out in refrigerant quality solid straight length drawn copper tubing to BS 2871 Part 2:1972 and complete with

the appropriate pipework headers/refnet joints (as manufactured and supplied by the equipment manufacturer).

All pipework shall be insulated with slip on closed cell elastomeric pipe insulation (as manufactured by Armaflex or equal and approved), and fire performance rated Class 'O' of the 1985 Building Regulations, having a wall thickness of not less than 13mm. A complete vapour seal must be achieved on all pipework services, insulation and joints.

Where pipework is located externally the closed cell elastomeric pipe insulation shall be UV stabilised to prevent deterioration of the insulation, and mechanically protected from damage/birds using an inverted cable tray.

All insulation joints (after pressure and leak testing) shall be properly glued so as to provide a complete seal to prevent any condensation and clearly marked for ease of identification.

For each installation the refrigerant charge weight must be calculated, to the actual installed length of pipework (not as per drawings) in accordance with the manufacturer's recommended instructions.

Pipe support shall not restrict expansion or contraction of the pipe and must not be applied to joints or headers.

3.4.6 Installation

The fixing of all air conditioning equipment, installation of all refrigerant pipework, insulation and full commissioning shall be performed by a specialist refrigeration installer who shall be authorised to install the manufacturer's equipment.

The commissioning of the systems is to be carried out in accordance with the manufacturer's Commissioning Requirements. The Contractor shall obtain the aforementioned documentation from the manufacturer at the time of order placement.

3.5 Automatic Controls

3.5.1 General

The controls for the kitchen ventilation system including that of the air filtration/treatment system shall be located in the area adjacent to the supply and extract air handling plant with the final location of the controllers to be positioned in agreement with the Contract Administrator.

A secondary 'local control panel' for the canopy supply and extract system to the kitchen canopies shall be located in the ground floor kitchen area in a location agreed with the Contract Administrator.

3.5.2 Controls Associated Power Wiring

The mechanical scope of works shall include for the design, installation, testing and commissioning of power and control wiring

associated with the mechanical services. This shall include all associated containment such as cable tray and conduit.

The Electrical Installer shall provide power to local isolators and switched fuses for connection by the Mechanical Installer.

The Mechanical Installer shall allow for all power and controls wiring from the kitchen ventilation control panel.

A fire alarm interface shall be provided for the ventilation and gas solenoid valve.

Fire alarm and power interfaces shall be provided by the Electrical Contractor for the Smoke Damper system as the fresh air duct penetrates the escape corridor.

3.6 Gas Installation

A gas supply has been provided as part of the Landlord's base build and includes a 50mm supply into the unit and a gas meter in the Landlord's demise. The installer shall extend the supply as generally indicated on the drawings and to the island cooking range for final connection by the Kitchen Installer.

Where gas pipe runs in ceiling voids or in enclosed risers the Installer shall provide and install passive ventilation grilles.

Ventilation Interlock and Gas Proving

The installation shall also include a gas solenoid valve (65mm) arrangement linked to the ventilation system. The installation shall be in compliance with the requirements of IGEM/UP1a and IGEM/UP/19.

The kitchen gas supply shall be linked to the gas safety panel by means of a solenoid valve and pressure sender unit. The ventilation shall be monitored by the panel through the use of a current monitor, a CO_2 sensor shall also be installed, all as per the manufacturer's specifications. In the event of a component failure of the ventilation system the kitchen shall be permitted to operate under a timed period of 24 hours utilising the system CO_2 provided this does not detect levels above those permitted under the BS. This facility allows the kitchen to remain operation until replacement components can be obtained

The system shall be supplied and commissioned by:-

S&S Northern Ltd
Wallace Francis House
Barnes Wallis Way
Buckshaw Village
Chorley
Lancashire
PR7 7JN
Or Equal and Approved

Model: Merlin 2000GD

3.7 Testing, Commissioning and Demonstrations

The Contractor shall comply with the following, with respect to the commissioning of building services. It will be the case that actions further to those denoted within the following clauses are be required to facilitate commissioning in accordance with best-practice guidelines and current regulations, in these instances, the Contractor shall incorporate all applicable requirements, including for the below:

a) Pre-commissioning, commissioning and re-commissioning shall occur in accordance with best practice and in line with current Building Regulations and CIBSE / BSRIA guidelines, for ALL building services and BMS systems.

b) The Main Contractor must ensure that the 'Main Programme of Works' makes provision and includes for commissioning requirements.

c) The Contractor shall allow carried out:

I. Commissioning of air and water systems must be carried out when all control devices are installed, wired and functional.
II. In addition to air and water flow results, commissioning results must include physical measurements of room temperatures, off coil temperatures and other key parameters as appropriate.
III. BMS/controls installation must be running in auto with satisfactory internal conditions prior to handover.
IV. All BMS schematics and graphics must be fully installed and functional to user interface before handover.

The restaurant management and maintenance staff and department head shall be fully trained in the operation of the systems.

3.8 Domestic Hot and Cold Water Services

An incoming water service is provided by the base build entering the unit at high level from the adjacent corridor. This service is already provided with a meter in the Landlords demise.

The Contractor shall allow for the supply, install, test, commission and set to work all the expansion and relief equipment, piped networks, valves, switches, items of plant and equipment, etc. to provide a fully functioning cold water system throughout the retail unit.

Hot water shall be generated by an indirect cylinder located in the new store room at mezzanine level. The hot water cylinder shall operate at mains water pressure. The cylinder shall be complete with an unvented kit and expansion provision, installed in compliance with the manufacturer's recommendations.

The length of pipework between the hot water return and the outlet should be kept to an absolute minimum and less than 2m where possible to reduce the risk of legionella. Full bore isolation valves shall be installed on the inlet supplies to aid in any future isolation requirements.

All domestic hot and cold water services pipework, valves and ancillaries shall be installed in accordance with CWC standard specification. All pipework shall be copper.

3.9 Above ground Drainage

As part of the base build drainage stacks have been provided for the equipment within Unit 1a.

The Contractor shall include for the supply, installation, commissioning and setting to work of the above ground drainage connecting to these stacks.

All necessary anti-siphon and ventilation pipework shall be provided to ensure that all water traps are maintained.

Exposed traps and branch drainage sections shall be chromium plated.

The sanitary plumbing installation shall be installed in accordance with BS EN 12056 and shall be fully in compliance with the requirements of the Local Authority and Building Regulations.

All necessary anti-siphon and ventilation pipework shall be provided to ensure that all water traps are maintained.

All stacks shall be continued up to discharge to the atmosphere at roof or high level. Where this is not possible (for example below external roof terrace) stacks should be extended to height of approx. 2m and fitted with an air admittance valve. The Contractor shall ensure that where the valves are boxed in sufficient ventilation and access are provided to ensure correct operation and maintenance access.

Drainage expansion joints shall be added in vertical and horizontal pipework as per manufacturer's recommendations. Fire collars shall be installed where the pipework passes through fire compartmentation.

All main vertical soil, waste and ventilation pipework shall be installed in PVC-U pipework and all horizontal waste pipework in PVC-U or MUPVC, conforming to BS 4514 or BS 5255.

A wash down gulley shall be installed into the floor build-up of the kitchen. The gulley shall be as manufactured by Wade International, manufactured from stainless steel with removable trap suitable for cleaning of the kitchen environment. The Contractor co-ordinate the final selection with the kitchen floor build up and finish.

4.0 Electrical Services

4.1 Electrical Services Performance Criteria

Restaurant	200-300 lux average; uniformity 0.8
Kitchen	500 lux average; uniformity 0.8
Prayer Room	150 lux average; uniformity 0.6
Toilets	200 lux average; uniformity 0.4
Store Room	100 lux average; uniformity 0.4

Generally, in accordance with CIBSE Guides, British Standards etc.

Emergency Lighting:	Minimum of 1 lux average in central line of defined escape route at floor level
Fire Alarm:	BS5839:2017 Part 1 Category L1

Where appropriate the Contractor shall carry out the works in accordance with the following:

All relevant British Standards in particular the following:

- BS7671 – (latest edition) - Requirements for Electrical Installations
- BS 5839 – 1 (2017) – Fire Detection and Alarm Systems for Buildings
- BS 5266-1 (2016) – Emergency Lighting
- BSEN 12464-1 Light and lighting- Indoor work places

Other documentation including:

- The Factories Act
- Health and Safety at Work Act
- Regulatory Reform (Fire Safety) Order 2005
- COSHH Regulations 1988
- Electricity at Work Regulations 1989
- C.D.M Regulations
- CIBSE Guides and Commissioning Codes
- Latest Building Regulations

4.2 Incoming Supply and Sub Main Distribution to Retail Unit

Retail unit 1A has been provided with a 90 kVA TP&N LV metered supply as part of the landlord's base build.

The LV supply terminates into a utility cut out and meter module unit, located in the landlord's ground floor LV switch room.

The utility cut out and meter module provides a connection for the tenant to enable their preferred utility service supplier to provide an energy meter.

The Contractor shall supply & install a 125A TP&N isolator within the landlords ground floor LV switch Room from the metered supply provided, to terminate a new sub main cable supplying the tenant's distribution board within retail unit 1A. The Contractor shall install a new XLPE/SWA/LSF sub main cable from the utility cut out and meter module unit isolator to supply the tenants distribution board located within the demise of retail unit 1A (Mezzanine level Store Room).

The Contractor shall supply & install a new 125A 18-way TP&N Distribution Board within the tenant's demise to supply all tenants M&E services.

All electrical circuits, associated containment and cabling systems for the installation shall emanate from these distribution boards, circuits shall be as per CWC detail design drawings.

The distribution board shall incorporate miniature circuit breakers to BS3871 and shall all be as detailed in the distribution board schedules in the appendix of this document. All circuits shall incorporate RCD protection and shall be provided with RCBO's within the distribution board. Proprietary blanking plates shall be provided to all spare ways on the board.

4.3 System of Wiring

The electrical contractor shall provide and install a complete wiring system to the restaurant including all chasing of walls, builders work holes (under 225mm) and conduit drops to provide a complete solution.

All cabling shall be supported by a system which is protected against failure in a fire e.g. metal conduit, metal tray, metal tie raps etc.

Final circuit wiring shall generally be carried out using LSZH singles copper cables within an enclosed trunking solution. All cables shall be installed flush within the building fabric and drawn into conduit droppers or laid in galvanised steel trunking, and each circuit shall be complete with a separate circuit protective conductor.

The installation in the kitchen and back of house areas shall be of a surface mounted nature, with Class 4 HGSW galvanised steel conduits emanating from a system of trunking installed at high level above ceiling voids. All visible wiring systems shall be installed neatly and parallel to the building lines.

Within the front of house and restaurant area the containment installation shall be of an exposed nature at high level, with galvanised steel conduits drops recessed in wall chases or concealed within the building fabric to final circuits.

4.4 Containment

Cable containment systems throughout the demise shall comprise of cable basket, metallic cable trays, trunkings, and conduits to serve lighting, power, comms/data and all other ancillary installations.

Dedicated cable tray/basket containment systems shall be provided and installed for the purposes of comms/data/ELV/fire alarms/lighting & small power.

Galvanised steel conduit shall be used as method of cable containment to final outlet points. All bends, corners and tee's etc. shall be manufactured (not fabricated). Service drops to dado shall be via concealed/recessed galvanised conduits, where this is not possible, dado drops shall be surface mounted & discreetly installed in the corners of rooms.

Throughout all areas, especially where ceiling voids are not provided, the containment systems shall be installed as necessary to minimise the appearance of the services and to ensure that all containment and cable routes shall be installed in a neat and unobtrusive manner.

Where cables are required to drop down walls, these shall be run in conduits that are flush mounted in to the structure. All conduits cast or buried within the structure shall be galvanised steel.

Where conduits are run in partitioned walls, the type of conduits utilised shall be based on the type of protective device and partition depth to ensure the installation is in compliance with the requirements of BS7671.

In order to install all containment and cabling, the Contractor shall include for all required Builders work.

4.5 Accessories and Finishes

The installation of accessories throughout the demise shall generally be flush, except within kitchen and back of house areas, plant rooms, ceiling voids and service risers where a surface installation is permitted.

Finishes shall generally be as follows:

General back of house areas - Flush 'White' plastic
Public areas - Flush 'brushed steel'
Kitchen areas- Surface 'Metal clad'
Plant areas and ceiling voids - Surface 'Metal clad'

Where possible, the location and mounting height of all accessories shall be installed in accordance with the standard specification clauses and in compliance with the latest DDA requirements. The Contractor is responsible for agreeing the mounting heights of all accessories with the client.

All small power accessories shall be provided with printed circuit identification labels.

4.6 Lighting

The electrical contractor shall supply, install, test and commission the complete lighting installation as indicated on the drawings, and luminaire schedule.

Illuminance (lux) levels in all internal areas of the building are specified in accordance with the CIBSE Code for Lighting.

All fluorescent and compact fluorescent lighting shall have high frequency control gear, to maximise lamp life and reduce energy consumption.

Lamps of all types shall have a CT class and colour rendering group suitable for the application in which they are installed. Dimmable fittings shall be provided in front of house and restaurant areas as indicated on the drawings.

The Contractor shall ensure that luminaire layouts are co-ordinated with ceiling and structural planning grids.

The contractor shall set out the luminaires as indicated on the tender drawings. The setting out locations shall be dimensioned on the contractors working drawing for approval by the client prior to any installation of any luminaires or associated wiring/containment.

The contractor shall allow for all works associated with the lighting and lighting control, including commissioning of the system to ensure a fully operational system.

New lighting installation shall be provided as follows;

4.6.1 Restaurant & Front of House

The lighting in the restaurant and front of house areas shall be provided via a mixture of wall mounted/surface mounted & pendant type luminaires, these luminaires shall be manually switched and have the ability to be dimmable.

The contractor shall coordinate with all mechanical systems to ensure there are no clashes.

4.6.2 Kitchen/Store room/Prayer room areas

The lighting in these areas shall be provided via surface mounted shock resistant luminaires as indicated on the drawings, these luminaires shall include 3HR integral emergency lighting battery packs where indicated.

4.6.3 Toilets areas

AR111 twin down lighters shall be provided in the toilet areas as indicated on the drawings.

Luminaires shall have an appropriate degree of protection in accordance with BS 5490.

4.7 Lighting Controls

The Contractor shall supply install test and commission lighting controls throughout the demise in accordance with that detailed on drawings, within this specification and in line with Part L of the Building Regulations, and shall generally be as follows:

Control of general lighting in the circulation areas toilets etc shall be provided by occupancy sensor PIR, as indicated on the drawings.

The store room and prayer rooms shall be controlled by PIR.

The contractor shall include for all cables connections and equipment necessary to provide a complete working system.

The lighting control system shall be provided by the lighting supplier as a complete lighting and control system.

4.8 Emergency Lighting

Emergency lighting and illuminated signage shall be provided as indicated on the layout drawings and as necessary to comply with BS5266.

The Emergency lighting system shall provide a minimum of 3 hour battery backup to the emergency lighting luminaires in the event of mains failure with their associated charger units able to suitably recharge within 24 hours.

The emergency lighting system shall be controlled automatically by a sensing relay housed within each individual battery pack. In the event of a loss of supply to the fitting, the associated battery pack is to automatically energise the lamps. Where conversion kits, are specified for luminaires they shall be factory fitted.

Testing of the emergency lighting shall generally be provided by key test switches adjacent to the relevant DB clearly marked with associated circuit references.

The key test switches shall disconnect the maintained power supply to the associated lighting circuits thus energising the battery back-up/stand alone and illuminating the emergency luminaires.

The emergency lighting layout shall be co-ordinated with the fire and emergency escape strategy. Emergency luminaires shall be located above fire-fighting and first aid equipment, exit signs shall be installed at each change of direction and over each emergency final exit door. Additionally, a non-maintained bulkhead luminaire shall be provided external to each final exit door. Illuminated exit signs shall be provided to meet the European Signs directive format.

The entire emergency lighting installation shall be installed, commissioned and tested in accordance with BS 5266-1:2016, and copies of the appropriate Test Certificate shall be handed over to the Engineer upon Practical Completion of the Work.

4.9 General Power

The Contractor shall supply, install, test and commission all cabling and accessories associated with the small power installation as indicated on the layout drawings and as detailed within the specification and tender documentation.

Power supplies shall be provided but not limited to the following:

- Kitchen Equipment
- Ancillary services
- Lighting and Control systems
- General & Cleaners sockets

Power circuits shall emanate from the new distribution board as indicated on the tender drawings.

Power circuits shall be designed to minimise electromagnetic interference to computer systems & minimise nuisance tripping due to earth fault leakage current.

Surge protection shall be provided for ICT equipment where necessary in order to comply with BS EN 62305 – Protection against Lightning.

The use of industrial pattern (BS EN 60309-2) switched socket outlets shall be considered to provide power connections in the kitchen area. Where industrial type sockets are provided, an allowance shall be made in order to supply and install a suitable industrial type plug for each item of equipment.

The provision of cleaner sockets, in the front of house areas shall be such that in no instance would a cleaning appliance require more than 12 metres of flex and arranged to prevent the need to trail a flex through a doorway to carry out any operation.

All general-purpose socket outlets shall be RCD protected by using an RCBO Device within the distribution board.

All circuits shall be installed in line with distribution board schedules included within the Appendix the back of this document.

4.10 Circuits to Fixed Equipment

The Contractor shall supply and install dedicated radial circuits to serve all items of fixed plant and equipment located throughout the demise as indicated on the Drawings.

A local switch disconnector shall be provided for each item of equipment. Conduits shall terminate directly into the ingoing side of the switch disconnectors with flexible conduits from the outgoing side to the equipment terminal boxes.

A flush/surface mounting galvanised steel box complete with a suitable flexible/rigid conduit and gland plate shall be provided as close as possible to the terminal box of each item of fixed equipment.

4.11 Labelling

All switch disconnectors shall have a label screw fixed adjacent to it to clearly indicate its purpose and corresponding circuit identification number. All labels shall be engraved with 6mm high black letters on white traffolyte. The exact wording/details shall be agreed with the Client prior to having the labels made.

All socket outlets and lighting switches shall be fitted with a typed adhesive legend to denote circuit reference.

4.12 Power to Mechanical Services

The Electrical Contractor shall provide all power requirements to the following mechanical services as indicated on the layout drawings:

- General mechanical services
- Heating and Cooling System Control equipment
- Condensers
- Fan coil units
- Supply to Kitchen ventilation system control panel in mezzanine bike store area.

Mechanical power shall be supplied from the new distribution board via dedicated power circuits and/or via control equipment.

The Electrical Contractor shall allow for liaising with the Mechanical Contractor to establish the final positioning of equipment and associated loadings.

4.13 Equipment Mounting Heights

The Contractor shall ensure that the mounting heights of the various wiring accessories, etc. are agreed with the Client/Engineer prior to commencement of works on site.

For the purposes of Tendering the following typical mounting heights shall apply:-

Item	Location	Height A.F.F.L.
Light Switches	All Areas	1050mm
Socket Outlets	All Areas	450mm/or On Trunking
Data Outlets	All Areas	450mm/or On Trunking
Isolators	Kitchen	1050mm

(NOTE: All mounting heights given to underside of outlet plate.)

4.14 Fire Alarm System

An analogue addressable type L1 standard in compliance with BS5839 Part 1 2017 shall be provided in the refurbished areas.

The fire alarm equipment shall be provided in accordance with this specification and layout drawings.

A new fire alarm panel shall be installed within the demise, the new fire alarm panel shall be interfaced with the existing Landlords fire alarm system for the building via the fire alarm interface unit provided within the demise.

The fire alarm interface shall allow communication between the tenant's fire alarm system and the existing Landlords in the event of an alarm signal activation.

The new detectors and devices shall be linked together and wired in a loop and connected to the new fire alarm panel.

The system shall incorporate analogue technology devices and generally field devices shall comprise of multi-criteria optical smoke detectors, fixed temperature heat detectors, manual break glass call points, alarm sounders, visual alarms (flashing beacons), and interface units etc.

The Equalities Act requires a greater independence for those with hearing impairments, visual indication strobes shall be provided on escape routes, in public areas and in DDA toilets to cater for the hard of hearing.

Where ceiling voids are >800mm, detection shall be provided within the void.

Automatic smoke and heat detectors shall be of the plug-in type. They shall have a visible indication of a fire condition via a red LED.

Sounders shall generally be of the loop powered addressable type; either incorporated into detector bases (emitting max 85 dB @ 1m) or wall mounted (emitting max 105 dB @ 1m). Warning beacons shall be integrated as indicated.

Wiring shall be carried out utilising 2 core 1.5 mm2 and earth FP200 'Gold' enhanced fire-resistant cable (red), as indicated on the Drawings.

Additional fire alarm interface units shall be wired off the loop for connection to the various mechanical services, gas valves etc. under the supervision of the respective supplier / specialist.

All call points shall be capable of being tested using a key without the need for shattering the glass.

The Contractor is to include for all necessary interfaces between the building services systems and the fire alarm system to provide a fully functioning systems and building. Typically, this will include (but not limited to) natural gas system, ventilation systems, access control systems as applicable.

4.15 CCTV

The Electrical Contractor shall employ a specialist sub-contractor on a domestic sub-contract basis to design, supply, install, test and commission a complete security system including containment & equipment as indicated on the drawings and as detailed in this Specification.

Include for commissioning of the systems on completion.

The CCTV system shall be designed in accordance with all the appropriate standards including but not limited to:

Rotakin standards

NSI – NACP 20 Planning, Installation and Maintenance of Closed Circuit Television Systems.

BS EN 50132-7:1996 Alarm systems - CCTV surveillance systems for use in security applications. Application guidelines

BS 8418:2003 Installation and remote monitoring of detector activated CCTV systems - Code of practice (AMD 15833).

Police Scientific Development Branch (PSDB) Guidelines

Security provisions shall be designed in accordance with ACPO Secured By Design where possible.

The complete system shall be a deterrent and shall be suitable for identification and for evidential purpose.

The location of the fixed CCTV monitor and controls shall be within the store room on the Mezzanine level.

Cameras

All cameras shall be housed in a covert, impact and vandal proof dome housings.

Visual Performance / Recognition

Where CCTV Cameras are to be provided the target visual performance of the CCTV systems shall reflect the Police Scientific Development Branch (PSDB) guidelines as follows:

Internal entrance / exit lobbies Recognition of a known person at 2m

Circulation corridors Crowd Control / General Surveillance - Identification of unknown persons at 3m

Main entrance Recognition of unknown persons at 2m

Bar Areas Identification of unknown persons at 2m

Monitoring & Recording

Recording and head end-control equipment shall be located in the store room Mezzanine level. A Network Video Recorder (NVR) recording capability and keyboard to support the recording unit shall be provided.

A dedicated monitor shall be provided within the store room office to enable staff to view live images. The system shall be programmed so that camera's go to stand-by mode outside of normal use hours. While in stand-by mode, the cameras and recording system shall be triggered by the fire alarm device activation.

General

The complete system shall be capable of accommodating additional cameras for additional monitoring (minimum of 10% spare capacity).

The recording and monitoring equipment shall be provided with a simple mains-voltage power supply, a standby UPS power supply system is not proposed.

Containment and Ancillary Power

The Contractor shall be responsible for liaising with the relevant specialist and shall provide all necessary cable containment and power supplies to enable the systems to be installed.

Upon completion of the works, the complete system shall be tested and commissioned by the specialist Contractor in accordance with the industry standards and system requirements.

Final connections to outlets/equipment shall be concealed in ceiling voids and/or the building fabric.

Local dedicated 230-volt power supplies via un-switched fused connection units shall be provided to CCTV equipment as required.

4.16 Sound System Installation

The Electrical Contractor shall provide and install all associated power, containment and provision of all electrical attendances associated with the Sound system installation in accordance with the requirements of this specification, and as detailed on the Drawings.

The Sound System equipment and associated wiring shall be supplied and installed by the Client at a later date.

All associated power supplies shall be wired on radial circuits from the local distribution board, via a local means of isolation.

The Electrical Contractor shall obtain full details of the proposed systems from the Client's Specialist prior to the commencement of the installation and shall include for all back boxes and conduits as necessary to ensure that the final installation shall be fully integrated and concealed in every respect.

The preferred sound system supplier is:

BlackA Group
Water St
Stockport

Tel: 0161 477 9300

Contact: Craig West
Craig@blackagroup.com

4.17 I.T. Installation

The Electrical Contractor shall employ a Specialist I.T. Sub-Contractor on a domestic sub-contract basis to design, supply, install, test and commission a complete structured voice, data and communications I.T. installation throughout the demise, inclusive all CAT 6 cable wiring, outlets, containment & equipment as indicated on the drawings and as detailed in this Specification.

The Electrical Contractor shall ensure that the scheme is designed and installed in strict accordance with manufacturer's requirements.

The Specialist must be capable of providing full end-to-end system warranty. To this end the Specialist must show evidence of having attained 'approved system installer' status for the product manufacturer offered.

Ensure all network connections Interface comply with:

- BS EN 50098
- RJ45
- G703
- STM-1 (G703)
- STM-1 (G957)

STM-4 (G957Ensure all data communication system equipment meets the requirements of:

- BS EN 60950-1
- BS EN 55022
- BS EN 61000-4-1
- BS EN 61000-6-1 and BS EN 61000-6-2
- BS EN 14908

Install all data cabling in accordance with:

- BS 6701
- BS EN 50174-1
- BS EN 50174-2
- BS EN 50174-3

The specialist sub-contractor shall allow to design, provide and install a fully wired I.T. infrastructure from a new glass fronted data cabinet located within the mezzanine level office to final CAT6 RJ45 compliant outlets located as depicted on the drawings and described within the specification. The installation shall be wired on the new galvanised steel wire tray system and within surface conduits and the fabric of the building. All new cabling shall be CAT6 Class E rated data cable to the outlets.

Design, supply, provide and install the following:

- A new 6U glass fronted wall mounted data cabinet located in the mezzanine level store room
- Patch panels within the data cabinet, including a minimum of 25% spare capacity. Allow to make off all Cat 6 data cabling within the patch panels.
- CAT 6 cabling from the CAB position to the new Data outlets.
- CAT 6 data outlets
- 1meter Cat 6 patch lead to match quantity of outlets.
- Connections at the data outlets
- Testing and commissioning of the cabling and connections

The client shall provide the following:

- New data switches within the data cabinet.
- All final patch connections to the data switches including the Fibre cable.

The installation shall comprise the system infrastructure i.e. comms cabinets, patch panels, cabling, room outlets, etc., only, as detailed in this Specification.

All necessary containment shall be provided by the Electrical Contractor.

Communications Cabinet

All modular distribution equipment, including UTP patch panels, patch lead organisers, active equipment, etc., shall be housed within a new 6u wall mounted communication cabinet installed within the mezzanine level office.

Following completion of all installation works, the structured cabling cabinet shall be thoroughly cleaned inside and outside, to remove all dust, debris, cable off-cuts, etc. prior to installation and connection of the active equipment.

All data outlets shall be terminated on to RJ45 patch panels back at the new cabinet.

UTP Cabling

The complete UTP infrastructure; patch panels, cabling, outlets, patch cords etc must comply as a minimum to Cat 6 class E standards and be installed to manufacturers recommendations.

The system will be required to support, as a minimum, the following protocols:

- Token Ring 4, 16, 32 and 100 Mbps
- Ethernet 10 Base T
- IBM 3270 SNA
- IBM S/36, 38 AS/400
- RS 232
- ISDN

- TPDDI
- 100 Base-T Ethernet
- 1000 Base-T Ethernet

The distance between the distributed patching panel location and the data outlet must not exceed 90m as measured by a micro test/fluke Cat 6 test instrument with the NVP set to the manufacturer's recommended value.

The maximum distance of the horizontal subsystem channel, end to end including patch cords, must not exceed 100m.

Cabling shall be terminated using the manufacture's recommended method and tools only. Wiring tie bars shall be utilised to relieve the strain on the connectors.

Patch Leads/Converters

A quantity of 1m/2m patch leads shall be supplied and installed, equal to the quantity of final outlets.

All patch leads shall be manufactured from the same manufacturer of the UTP cable to ensure end-to-end continuity of the complete installation.

The IT Specialist shall also provide a quantity of 25No. RJ45 patch leads to the Client at handover.

Wireways

All necessary containment shall be provided by the Electrical Contractor to facilitate cabling to each wall mounted/trunking mounted outlet plate as indicated on the drawings.

All structured cabling shall be laid on LSZH matting within the primary cable tray containment system; which shall be sized with 25% spare capacity.

All UTP cables shall be tie wrapped at 2m intervals to provide a tidy and unrestrained presentation to the satisfaction of the Engineer.

Labelling

Patch panels, cables and outlets shall all be indelibly labelled using a proprietary cable marking system of rings or tags. The format of which shall be agreed with the Engineer Representative.

Testing and Commissioning

The UTP system shall be tested using specialist test equipment to prove that:

1. There is cable pair continuity
2. That cable pair polarity has been maintained i.e. that the two cables within the pair are not reversed.
3. Cable pair shorting, both within a particular pair and between adjacent pairs, does not exist.
4. The installation will be capable of operating in excess of 1000Mbit/s
5. The cable meets the manufacturer's performance characteristics
6. All pairs in the cable shall perform the various recognised Cat 6 permanent link tests to at least 1G/bits 250MHz

7. The cables are correctly installed with respect to strain relief and bend radius
8. All labelling at both ends of each cable has been completed

Appropriate Test Certificates and Certificates of compliance shall be provided for all of the above, together with a twenty-year full system manufacturer's warranty.

System Warranty

Upon Practical Completion, the IT Specialist shall warrant the installed system against defects of workmanship or materials for a period of not less than 25 years from the date of Practical Completion.

The Specialist must be able to provide a full 20-year channel warranty for the system installed and must therefore be a System Installer.

Incoming Data/Telecoms Provision

A cable tray provision is available at high level (Landlords corridor) that links to the comms room at ground floor for incoming data/phone services. The contractor shall provide cable containment only for the incoming data/telephone services within the demise. Incoming comms / data services, telephone lines, ICT structured cabling will be provided direct by each tenant.

4.18 EPoS System

The EPos (Electronic Point of Sale) digital system shall run over the IT structured cabling installation. The client shall appoint a specialist contractor to supply and install all the required hardware within the data cabinet provided within the mezzanine level store room to form a complete installation.

The specialist EPos contractor shall supply and install the following equipment: -

- Monitors
- Kitchen printers
- Hardware
- Connections/Patch leads
- WI-FI points (For Handheld Billing)

The specialist contractor shall be responsible for testing and commissioning the EPos system on completion.

4.19 Disabled toilet alarm system

The Electrical Contractor shall provide, supply and install a complete CTEC NC 951 disabled WC alarm system as per the drawings and specification. A central alarm indicator panel shall be located behind the bar area.

4.20 Mechanical Wiring Installation

Included in this section of the works shall be the provision of power supplies and control cabling associated with the Mechanical Services Installation as detailed on the Drawings.

Final connections to all equipment shall be made by the Mechanical Services Contractor.

The Contractor shall liaise with the Mechanical Contractor regarding exact locations and wiring details of Mechanical Services Equipment and associated controls.

The Contractor shall include for all necessary containment associated with the Mechanical Wiring installation, to meet their requirements.

All power supplies shall be wired on dedicated circuits, using LSF insulated stranded copper conductors, as detailed in the Distribution Board Schedule.

Local isolation points shall be provided for each item of equipment using electrical power, rating as indicated. Isolating switches shall be rotary action, metal clad switch disconnector with lockable handles rated as indicated on the drawings.

4.21 Earthing & Bonding

A complete earthing and bonding system shall be provided as required by BS 7671 17th Edition and BS 7430:2011 Code of Practice for Earthing.

Supplementary bonding shall be carried out utilising 2.5 mm2 PVC green and yellow copper conductors protected to the point of termination. Where unprotected, the supplementary bonding conductors shall be 4 mm2 with a green and yellow PVC sheath.

The hot and cold supplies and wastes to all sinks shall be cross-bonded along with metal sink units. All suspended ceiling grids shall be cross-bonded and all supplementary bonding shall be connected to the nearest circuit protective conductor.

Care shall be taken to ensure that all joints are properly made and bonded to ensure continuity. The main equipotential bonding conductors shall be connected to the earth bar within the distribution board.

5.0 Testing & Commissioning

The Contractor shall fully test and commission all services provided, prior to offering the systems for inspection.

Once the Contractor has satisfied himself that all systems are operating correctly, he shall repeat any testing and commissioning deemed necessary for the benefit of the Employer's Representative. At least ten working days' notice should be given of these witness tests.

On completion of the works and prior to the date of Practical Completion, the Contractor shall provide full Operational and Maintenance Manuals as described elsewhere in the contract documents.

A draft copy of the document shall be made available to the Employer's Representative for comment, at least one week prior to Practical Completion.

5.1 Visual Inspection

A visual inspection shall be made to verify that the installed Mechanical and Electrical equipment is

- In compliance with the applicable British Standards and European Standards
- Correctly selected and erected
- Not visibly damaged

5.2 Testing

The following items shall be tested in the sequence indicated following the standard methods of testing as prescribed in the IEE Regulations.

- Continuity of ring final circuit conductors
- Continuity of protective conductors
- Insulation resistance
- Insulation of non-conducting floors and walls
- Polarity
- Earth fault loop impedance
- Operation of residual current devices

5.3 Certification

Electrical Systems
Following the inspection and testing, Completion and Test Certificates shall be handed over to the Engineer.

The Completion Certificate shall take the form of that prescribed by the 17th Edition of the IEE Regulations and a comprehensive set of tabulated circuit test results shall also be handed over based on the Electrical Contractors Association Standard Form.

These shall be bound together into a manual for presentation to the Client following verification by the Engineer.

Mechanical Systems

The Contractor shall provide chlorination certificate/test results to demonstrate that the water is suitable for consumption and include appropriate sets in Operating and Maintenance Manuals.

F Gas certification shall be provided for the refrigerant based systems.

5.4 Commissioning

The Contractor shall be responsible for ensuring that the following items of plant and equipment are commissioned and certified by suitably qualified persons.

Prior to commissioning these items the Contractor shall give the Engineer two weeks written notice so that arrangement can be made for Client's Representatives and the Engineer to witness the commissioning, if so desired.

- Fire Alarm Installation
- VRV/VRF Fan coils and Ventilation
- Kitchen Ventilation Airflows and Interlocks

5.5 Induction & Training/System Demonstrations

The Contractor shall be responsible for ensuring that the following elements of the Mechanical and Electrical Services Installation are fully demonstrated to the Client.

- Lighting Controls
- Fire Alarm
- General Electrical Installation
- Plant Controls

These demonstrations shall be separate to the witness testing of the services installations carried out for the Engineer.

All demonstrations shall be carried out prior to handover, by suitably qualified personnel (including the various Specialist Sub-Contractors), in the presence of the restaurant management for the purposes of training (and / or his nominated representative) and the Engineer.

The Contractor shall submit a fully detailed schedule of all system demonstrations to the Engineer for consideration well in advance of the proposed dates/times.

6.0 Operation & Maintenance Information

6.1 General

This section indicates the provision of "As Fitted" drawings and maintenance manuals. On completion of the works and prior to the date of Practical Completion, the Contractor shall provide full Operational and Maintenance Manuals in both paper format and electronically as described elsewhere in the contract documents.

A draft copy of the document shall be made available to the Employer's Representative for comment, at least one week prior to Practical Completion

6.2 Record Drawings & Maintenance Manuals

Record drawings and maintenance manuals shall be provided as described in the Standard Preliminaries Specification, except that the record drawing provision shall comprise the following:-

Co-ordinated drawings for the new and existing services shall be provided.

a) Three sets of paper prints for each drawing on the project.

b) Two sets of AutoCAD compatible copies of the drawing data files for each drawing on the project. The original scheme drawings have been produced by an AutoCAD system and copies of the data files will be made available to the Contractors for updating purposes.

Operating and Maintenance Manuals shall be provided in accordance with the Standard Preliminaries Specification, Section 6.0, and shall include the following:-

a) General description of the system and associated plant.

b) Manufacturer's performance and technical data.

c) Controls and their operation, including sequencing.

d) Co-ordinated drawing showing details of the installed equipment and their interface with the controls.

e) Procedures for fault finding.

6.3 Operation and Maintenance Manuals

In addition to those requirements outlined above, it is a specific requirement that the operation and maintenance manuals are prepared by the commissioning specialist.

The final form of the manuals and 'As Fitted' drawings shall be as follows:-

a) 2 No. electronic copy with drawings in PDF and AutoCAD formats

Appendix 1 – Mechanical Tender Summary

Ribeye Steakhouse, First Street, Manchester

Summary of Mechanical and Public Health Services Costs

Item	Description	Price £
1	Preliminaries inc. Installation Drawings	
2	Above Ground Drainage	
3	Hot and Cold Water Services	
4	General supply and extract ventilation	
5	Kitchen Extract ventilation and make up air	
6	Heat Pump Installations	
7	Extract Canopies inc. Installation	
8	Gas Installation	
9	Testing and Commissioning	
10	Operating and maintenance	
11	Provisional Sum for Condensate Canopy Extract System	£4,000.00
	Total	**£**

Total in words_____

Further to the compliant Tender above the Tenderer shall also provide alternative costs/savings as below.

The above figure includes Main Contractors discount, profit and overheads but is excusive of Value Added Tax.

Signature _____

For and on behalf of_____

Address _____

_____

Date_____

Appendix 2 – Electrical Tender Summary

Ribeye Steakhouse, First Street, Manchester

Summary of Electrical Services Costs

Item	Description	Price £
1	Preliminaries inc. Installation Drawings	
2	Incoming Supply & Sub-main distribution	
3	Containment System Installation	
4	General Lighting	
5	Emergency Lighting	
6	Wiring to Mechanical Systems	
7	CCTV Installation	
8	ICT and Data Installations	
9	Fire Alarm Installation	
10	Disabled Toilet Alarm	
11	Testing/ Commissioning/ Demonstration of Service to end user	
12	Operation and Maintenance Manuals	
13	Other items not included above (Please Specify)	
14	Provisional Sums (to be expended on instruction)	
	Total	**£**

Total in words _____

The above figure includes Main Contractors discount, profit and overheads but is excusive of Value Added Tax. The tender is submitted on a fixed price basis.

Signature_____

For and on behalf of_____

Address _____

_____

Date_____

Appendix 3 – Mechanical Equipment Schedules

Attached as separate document.

Appendix 4 – Electrical Equipment Schedules

Attached as separate document.