



Building Services & Low Carbon Energy Consultants

M&E Performance Specification

Park House, Isles of Scilly



Document Issues

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1.0 REGULATIONS AND STANDARDS

The Works shall comply with all relevant Statutory and other Instruments, Regulations, and European and British Standards current at the date of Tender, which shall include but may not be limited to the following:-

- Environmental Protection Act
- Health and Safety at Work etc Act
- Pollution Prevention and Control Act
- The Building Regulations
- The Construction (Design and Management) Regulations
- The Construction (Health, Safety and Welfare) Regulations
- The Contaminated Land Regulations
- The Control of Asbestos Regulations
- The Control of Substances Hazardous to Health (COSHH) Regulations
- The Electricity at Work Regulations
- The Hazardous Waste Regulations
- The Ionising Radiations Regulations
- The Management of Health and Safety at Work Regulations
- The Manual Handling Operations Regulations
- The Personal Protective Equipment Regulations
- The Provision and Use of Work Equipment Regulations
- The Site Waste Management Plans Regulations
- The Water Supply (Water Fittings) Regulations
- The Waste Electrical and Electronic Equipment (WEEE) Regulations
- BS 1710 Specification for identification of pipelines and services
- BS 4363 Specification for distribution assemblies for reduced low voltage electricity supplies for construction and building sites.
- BS 7375 Distribution of electricity on construction and demolition sites. Code of practice
- BS 7671 Requirements for Electrical Installations. IET Wiring Regulations
- BS 8000 Workmanship on construction sites
- CIBSE Guides
- BSRIA Guides
- National Joint Utilities Group (NJUG) Good Practice Guidance
- BS 5228 Code of practice for noise and vibration control on construction and open sites
- BS 6187 Code of practice for full and partial demolition

The Contractor shall be responsible for ensuring that all installations are compliant with all statutory requirements, including compliance with building regulations and specifically compliance with Part L requirements or similar.



2.0 MEP GENERAL

2.1 ALTERATIONS & DEMOLITION

The description of the engineering systems within this document is provided for guidance only. Determine the actual level of service removal required based on a detailed survey during the tender period.

Whilst this specification defines particular requirements in relation to the building services systems, include any works required to comply with all statutory regulations applicable to the scope of works, whether or not these are explicitly described herein.

If in doubt about the scope of works or about the effect an element of work may have on other areas of the building / site, consult with the Contract Administrator.

The contractor shall allow to safely isolate, disconnect and remove all the electrical & mechanical services from the building. The contractor shall set aside in a safe location the following for reuse:

- Hot water cylinders.
- Electric Radiators & Towel Rails.
- Lighting.
- PV Equipment.

2.2 Making safe & Decommissioning

Provide a qualified and competent engineer based permanently on site to be responsible for:

- the isolation and making safe of systems
- implementing and operating a permit-to-work system
- implementing a safety 'lock-off and tag-off' system logging and recording the decommissioning, including the production of a status document at the end of the contract covering all systems

Carry out the decommissioning of all engineering services systems identified in the tender documents and on the drawings. Employ, on a sub-contract basis, any specialists required to ensure that the equipment is properly decommissioned and made safe. Carry out decommissioning to a sufficient extent to render all systems into an inert state, to allow them to be stripped-out by unskilled personnel.

The scope of the decommissioning works includes but is not limited to:

- Isolate incoming low voltage, telecommunications services at the service entry point of each individual system
- Disconnect electrical and telecommunication services and strip back and make safe
- Divert if required any services to a safe location as required
- Drain down fluid systems in a sequenced manner to ensure that there are no isolated legs remaining and water leakage is kept to an absolute minimum. Make all necessary provisions for venting and draining of water systems, including determining the location of system air vents and drain points, to allow systems to be adequately drained prior to removal, and to avoid potential damage to components due to partial vacuum. Where existing drain points are not sufficient for the complete safe draining of a water system, make the necessary alterations to allow the system to be drained capture, store, remove from site and dispose of all fluids drained from engineering systems
- Obtain the written agreement of the Employer and the Water Authority prior to discharging chemically treated water into the foul drainage system
- Safely remove from site and dispose of all other fluids, and chemically treated water that cannot be discharged into a foul drainage system
- Safely remove all hazardous materials associated with the engineering systems, such as lamps, fire alarm detectors, etc
- Safely isolate and decommission the existing PV system to prevent the system from generating electricity during the works.
- Isolate, and remove from site, all equipment, distribution cabling, associated cable containment systems, control wiring and luminaires



- Remove all equipment from the building and dispose of it in a correct and safe manner, giving particular attention to the disposal of lamps and emergency luminaire battery packs, due to the hazardous nature of their content. Do not remove cabling unless both ends of the service are visible and confirmed redundant by a suitably qualified electrical engineer. If in doubt, leave all cabling in place until such confirmation obtained.

2.3 Incoming Services Diversions

The contractor shall be responsible for the management of the revised incoming services as detailed within this specification.

The contractor will be responsible for the liaising with / appointing the appropriate utility company where applicable. This includes all builder's work, excavation, back-filling, etc. Minimise service unavailability by efficient programming of the works. Coordinate the diversions with all other existing services and carry out any survey work necessary to facilitate this.

2.4 Site Survey

Undertake a site survey prior to submitting the tender, to verify matters that could affect post-tender costs or works. No additional costs will be approved post-tender for any additional works whose necessity was evident from information available at the time of tender. Make arrangements to visit site through the Contract Administrator.

Where quantities are stated in the tender documents, take these as indicative only. Ascertain final quantities prior to the commencement of any works.

Undertake detailed surveys of each system to be stripped out, to enhance the information provided within the tender documentation, and become fully acquainted with system arrangements.

2.5 Builders work In Connection

The contractor shall make allowance for bedroom and living room doors on the first floor to have a 10cm gap for the air from the positive input valve to spread around the flat. Bathroom and kitchen doors do not require this gap.

2.6 Fire Barriers

Fire Barriers

Fire barriers shall be installed by the Contractor wherever the containment passes through a wall, ceiling or floor and must be rated the same as any structural fire barrier rating. Proprietary intumescent bags/pillows may be used within conduit, trunking, tray and basket. However, where visible, neater alternatives are preferred, such as Intumescent Cement Filler. Any large penetrations to be sealed by the Builder.

The Mechanical and Electrical Contractors are responsible for ensuring all their services where passing through a fire compartment wall include appropriately rated internal fire barriers.

Where recessed electrical accessory boxes are in fire rated partition walls, these must be complete with appropriately matching fire rated putty lining. For tender purposes, allow 30 minute fire putty to all accessory boxes in rooms and 60 minute rated in corridor walls.

Please note, the external fire stopping of services passing through fire compartment walls is the responsibility of the main works Contractor.

Fire Spread

Any luminaire with a plastic diffuser must be appropriately TPa or TPb rated in accordance with Building Regulations Approved Document B.

2.7 On-site Working Drawings

The contractor shall prepare a set of installation/working drawings that shall be used for the installation of the works.



During the progress of the Works the Contractor shall keep a set of up-to-date drawings, in paper form, showing any alterations, which have been made to the scheme and the current position of all services as actually installed. These drawings shall be available for the Building Services Engineer's inspection at any time and shall form the basis of the Record Drawings.

At the completion of the installation, information on the 'marked-up' drawings shall be transferred to drawings in AutoCAD format and form the basis of the electrical contractor's record drawings for the O&M Manuals.

2.8 O&M Manuals, As-Fitted Drawings, Instructions for use of the Property

The O&M manual shall include full details of startup and shut down procedures, any necessary schematic drawings showing the location of control valves and plant etc., including where appropriate coloured drawing to indicate areas of zoning.

On receipt of the above information the Employer's representative shall formally comment within two weeks. The Contractor shall incorporate all such comments and issue a further updated copy to the Employer's representative for final comment within one week of receipt of documents.

The Contractor shall handover to the Employer's representative two hard copies and one DVD of Operating and Maintenance Instructions NO LATER than the date of practical completion. All the above information shall also be provided in electronic form on a memory stick for issue to the client.

Practical Completion may be withheld until the O & M manual has been substantially provided.

Operating and Maintenance Instructions shall be indexed and contained in ring binders with stiff covers. The name of the Site shall be printed on the front and spine with, where more than one volume is necessary, a suitable identification title. The date of completion of the Works shall be included on a flyleaf. The Instructions shall be fully cross-referenced and coordinated with the Record Drawings.

If the documentation is not completed to the full satisfaction of the Employer's representative the Employer shall be entitled to have the manuals prepared by another firm or company and recover the full costs incurred from the Contractor. No claim for payment will be entertained for manuals partially completed.

Provisions for energy-efficient operation of the dwelling / Instructions for Use of the property in order to satisfy the requirements of The Building Regulations Approved Document Part L1. The Contractor shall be fully responsible for the preparation, production and submission of all information required to fulfill section 4 Criterion 5.

The Contractor shall be responsible for obtaining and coordinating the relevant information in conjunction with the Contract Administrator.

Failure to produce the required format of information at the appropriate time may result in Building Regulations approval not being granted. It is therefore imperative that due allowance is made within the tender for this element of work.

The information to be provided by the Contractor shall be in accordance with the guidelines set down in section 5 Criterion 5.

This is to be a single copy of a separately produced document and should not be confused with any other document.

Due to its nature, much of the required information will be required to allow the production of the EPC by the EPC Assessor and implemented as part of the scheme. The Contractor shall be required to collate all relevant information. Information submitted by the Contractor shall be submitted in draft format 5 weeks prior to practical completion to provide the Contract Administrator sufficient time to review and return comments.

The Subcontractor shall provide information about the building in accordance with the requirements of Part L1 of the Building Regulations. This should provide the occupier of the facilities/premises with sufficient



information about the building and the fixed building services to allow them to operate the facilities/premises using no more fuel or power than is reasonable in the circumstances.

This can be done by provided a suitable set of instructions aimed at achieving economy in the use of fuel in terms that the householder can understand in a durable format that can be kept for the life of the equipment.

The Client shall provide Energy Performance Certificates (EPC) and for the project.

2.9 Aftercare

The successful Contractor shall include within their cost to maintain the complete building services installation (limited to the extent of the contract works) for the 12 Months defects period. These works are to be undertaken in accordance with this specification and all manufacturers' instructions.

The Contractor shall allow to analyse the electrical load during the first Month of occupied building use and balance the load.



3.0 MECHANICAL PERFORMANCE SPECIFICATION

3.1 Performance Specification

This Performance Specification is intended to indicate the minimum standard of works, workmanship and materials of the Mechanical Services installation.

Where applicable this Specification shall be read in conjunction with any other relevant documents and drawings comprising the Tender Documents for the Mechanical installations.

The Architects Drawings and Specifications, along with this performance specification shall form a single entity and be complementary to each other.

The Contractor shall include in his Tender for all items described in the Tender Documents and indicated on any Drawings. He will provide the supply, installation and setting to work of the Mechanical Services as described.

These shall include the supply, delivery, erection, testing and putting into reliable and continuous commercial service and installations detailed in this specification.

All necessary supports for services and plant will be provided and installed by the Contractor, unless otherwise specified hereinafter.

The installation of the Mechanical services will be carried out by the Mechanical Services Contractor in co-ordination with the builder and all other sub-contract works.

All work shall be in compliance with Standards and Specifications set out elsewhere, this Specification, the any Drawings and all Codes, British Standards and statutory requirements.

Any conflict between this Specification and other Specifications shall be immediately referred to the engineer whose decision will be final and must be acted upon by the Mechanical Services Contractor.

The Mechanical Contractor shall be deemed to have visited the site prior to submitting his Tender, to have fully acquainted himself as to the nature and extent of the works and to have examined the specifications, drawings (including building drawings) as fitted/record drawings, asbestos register and the Conditions of Contract.

3.2 General

The works shall comprise:

- a) New incoming mains cold water supply.
- b) New hot water cylinders.
- c) Panel Heaters.
- d) Mains cold water systems.
- e) New ensuite/bathroom/kitchen mechanical extract ventilation systems.
- f) Above ground drainage.
- g) Simple controls.

3.3 New Incoming Services

3.3.1 Mains Cold Water

For the redevelopment of Park House, Isles of Scilly, 5 new mains water supplies are to be installed into the development. The Mechanical Contractor is to liaise with South West Water with regards to organising the new connections. The Meters are to be installed in the water riser cupboard central to the property.

The contractor is to extend the existing water connection (with South West Water's approval) which currently



rises within flat 2. The water connection is to be extended underground to the water riser cupboard underground in MDPE (Blue). The new extension of pipe is to be installed 900mm below finish ground level and enter the water riser cupboard via 125mmØ slow radius bend ducts.

As the pipe rises above ground the pipe will be converted to copper pipework to a manifold with meters. From the meter a 22mmØ pipe will rise and pass to each of the flats.

Once the pipe enters each flat the contractor will install stop cocks, double check valves and drain points on each supply. These will feed the 5 new build apartments.

The MCWS pipework buried below ground shall be as follows: Pipework – 20mm-110mm shall be Polyethylene PE80 SDR11, with electro-fusion fittings. Polyethylene pipes to BS EN 12201. Lengths - straight pipe 6m or 12m, coiled pipe multiples of 25m. Socket fittings with heating elements for fusion jointing to BS EN 12201. Finish – Blue.

Once within the risers and building the pipework is to be installed in copper pipe and fittings to BS EN 1057 - R250 and fittings will be capillary fittings to BS EN 1254 with integral solder ring to BS EN 1254 with integral solder ring for sizes up to and including 54mm. The pipework is to be routed around the buildings feeding each apartment.

Any pipework which passes through fire separating elements are to be fire stopped in accordance with Building regulations part B Volume 1 Dwelling houses section 7 Protection of openings and fire stopping.

3.4 Heating Systems

The Contractor shall supply, deliver, install, set to work and commission the panel heaters as indicated in the following documentation and the drawings associated with this project

The property consists of 5 apartments which are to be heated via panel heaters.

Panel Heaters:

The Mechanical Contractor shall supply, deliver install, set to work and commission the panel heaters for each room.

FOR TENDER PURPOSES, the panel heaters will be Dimplex Alta 40cm Panel heaters (or equal and approved). The sizes of the heaters will be as per drawings M-1003 and M-1004.

These are to be installed as per manufacturers recommendations.

Towel rails

The Contractor shall supply deliver install, set to work and commission towel rails for each bathroom. The towel rails shall be Dimplex TRM Towel Rail, Colour Chrome or equivalent and approved. They shall be connected as per manufacturers recommendations.

3.5 Domestic Cold Water Services

The Contractor shall supply, deliver, install, set to work and commission the following;

From the mains cold water meters, the supplies shall be distributed to the 5 new flats. The pipework is to be distributed via the risers and within the ceiling/roof voids. Upon entry to each apartment a further stop cock is to be installed within a suitable location as per water regulations.

The Mechanical Contractor shall provide new cold water services to serve WHBs, sinks, WCs, showers, laundry equipment, sink, kitchen appliances and hot water cylinders. These are to be complete with ball-o-fix



type service valves approximately 300mm above finished floor level, where fed from below and 300mm below finished ceiling level, where fed from above.

The pipework is to convert from MDPE to Copper within the riser, all copper pipework and fittings shall be to BS EN 1057 - R250 and fittings will be capillary fittings to BS EN 1254 with integral solder ring to BS EN 1254 with integral solder ring for sizes up to and including 54mm.

Any pipework which passes through fire separating elements are to be fire stopped in accordance with Building regulations part B Volume 1 Dwelling houses section 7 Protection of openings and fire stopping.

All pipework, not on view, shall be thermally insulated and all pipework on view i.e. final connections, shall be chromium plated copper tube.

All equipment shall be installed in accordance with best practice for the industry to eliminate noise and vibration transmission throughout the systems.

3.6 Domestic Hot Water Services

The Contractor shall supply, deliver, install, set to work and commission the following;

Domestic hot water services shall be provided to each apartment by the hot water cylinder which will be a Heatrae Sadia Megaflo Eco direct – unvented cylinder located within the apartment. The boilers shall be fed from the cold water supply and the hot water is to be a single pipe distribution system. All cylinder sizes are on the drawings P1000 and P1001.

All cylinders installed on the ground floor will be placed on a plinth height of 430mm to keep the electrics above the height of the predicted flood water.

The Mechanical Contractor shall install new hot water services to serve WHBs, sinks, mixer showers, and kitchen appliances. These are to be complete with ball-o-fix type service valves approximately 300mm above finished floor level, where fed from below and 300mm below finished ceiling level, where fed from above.

The hot water shall be run within the ceiling/roof voids, in copper pipework and fittings shall be to BS EN 1057 - R250 and fittings will be capillary fittings to BS EN 1254 with integral solder ring to BS EN 1254 with integral solder ring for sizes up to and including 54mm. All pipework, not on view, forming part of the distribution run, shall be thermally insulated and all pipework on view i.e. final connections, shall be chromium plated copper tubing.

Any pipework which passes through fire separating elements are to be fire stopped in accordance with Building regulations part B Volume 1 Dwelling houses section 7 Protection of openings and fire stopping.

All equipment shall be installed in accordance with best practice for the industry to eliminate noise and vibration transmission throughout the systems.

3.7 Showers

The Contractor shall supply, deliver, install, set to work and commission all showers within each bathroom. The showers make and models to be confirmed by the client.

3.8 Ventilation Systems –Bathroom, En suite, kitchen Extract

The Contractor shall design, supply, deliver, install, set to work and commission the following;

Independent mechanical extract air ventilation systems shall be provided to each bathroom, en-suite and kitchen consisting of ceiling/surface mounted extract air fans (individual or MEV) mounted within the ceiling voids/on the ceiling and terminating via external wall grilles or roof tile/ridge vents, via flat rigid ducting. The fans shall be PIR controlled or light switch controlled where no natural light is provided, complete with run-on timer. The fans shall run continuously on trickle speed (10-20%) and boost to full duty on PIR/light switch



activation.

The bathroom/utility extract system shall be a Vent Axia silent fan humidistat model.

The kitchen extract make/model is to be agreed by the client.

The extract systems shall be installed complete with all necessary flat rigid ductwork, internal/external grilles/louvres/tile vents, dampers and attenuation.

Any ductwork which passes through fire separating elements should be in accordance with Building regulations part B Volume 1 Dwelling houses section 7 Protection of openings and fire stopping.

All equipment shall be installed in accordance with best practice for the industry to eliminate noise and vibration transmission throughout the systems.

3.8.1 Positive Input Ventilation (PIV)

Within the flats on the first floor due to there being no trickle vents within the windows PIV systems will be installed. All living room and bedroom doors will need to have a 10mm gap above the floor level to allow the circulation of air. The Vent Axia Lo-Carbon Pureair PIV with Heater. These units will be on trickle air flow. The fresh air will come from the loft and the unit will go into stand-by mode when the temperature goes above 27°C and will also automatically turn the heater on to take the chill off the air coming in.

3.9 Above Ground Drainage

The Contractor shall supply, deliver, install, set to work and commission the above ground drainage from the boiler condense, WC's, wash hand basins, showers, washing machines, kitchen appliances, etc.

The above ground drainage system shall be PVCu and MuPVC tube and fittings installed to the relevant British Standard BS EN 12056:2000 and Building Regulations Part H.

The installation shall conform to the Relevant British Standards and Building Control Part H with regards to falls, rodding access points, venting and distances to stack locations etc.

Any pipework which passes through fire separating elements are to be fire stopped in accordance with Building regulations part B Volume 1 Dwelling houses section 7 Protection of openings and fire stopping.

3.10 Insulation

All pipework concealed in ceiling voids, builders work casing, manifold boxing/covers, risers, shafts etc and exposed in plantrooms, etc, shall be insulated to the standards outlined in Section 4.0 of this Specification – Standard Mechanical Clauses, via the download link. Identification bands shall be provided at regular intervals, in compliance with BS1710.

3.11 Building Regulation Compliant Controls

The Contractor shall design, supply, deliver, install, set to work and commission the following;

Panel heaters are digitally controlled on the heater which allows a set point range and a 7 day programmable user timer with modes: Normal (timer) comfort, Eco, Away and off.

Towel rails are installed with a timer and preset time profiles and 3 custom profiles with additional 'preheat' mode enabling 2 periods to be set to come on for the same time each day.

Ensuite & bathroom ventilation is to be controlled via the humidity sensor with a fixed 15min timer overrun. This fan is a intermittent operation. The grille will be a open grille.



3.12 Electrical Wiring in Association

The Electrical wiring in association with the Mechanical Services installations including all controls and interconnecting wiring and power wiring from local isolators to be designed, installed and tested by the Electrical Contractor.

The Mechanical Contractor shall only include for the design, supply, positioning and fixing of the relevant items of control and providing wiring diagrams to the electrical contractor.

3.13 Testing & Commissioning

The Mechanical Services installations shall be commissioned to achieve the design conditions by suitably qualified engineers.

The boiler, underfloor heating and hot water heater shall be commissioned by the relevant manufacturer's engineer.

The cold water system shall be chlorinated and a certificate of compliance issued to the CA.

The commissioning shall be carried out in accordance with the Building Regulations Approved Document Part L1 Section 4, the relevant CIBSE Commissioning Code and the manufacturer's recommendations.

A commissioning programme shall be provided and submitted to the Client, two months prior to handover, for comment.

Two copies of all test and commissioning certificates shall be provided to the Building Services Consulting Engineer before the handover date.



4.0 MECHANICAL WORKMANSHIP AND MATERIALS

In line with our company policy of promoting environmental considerations, the Contractor is to download these sections from our website. Please see link below (copy & paste into browser).

<http://edp-environmental.co.uk/documents/4590988962>

The Contractor is deemed to have read and complied with all clauses when preparing their tender.



5.0 ELECTRICAL PERFORMANCE SPECIFICATION

5.1 Performance Specification

This Performance Specification is intended to indicate the minimum standard of works, workmanship and materials that will be accepted in the provision by the Contractor of the Electrical Services installation.

Where applicable this Specification shall be read in conjunction with any other relevant documents and drawings comprising the Tender Documents for the Mechanical installations.

The Architects Drawings and Specifications, along with this performance specification shall form a single entity and be complementary to each other.

The Contractor shall include in his Tender for all items described in the Tender Documents and indicated on any Drawings. He will provide for the design, supply, installation and setting to work of the Electrical Services as described.

These shall include for the design, supply, delivery, erection, testing and putting into reliable and continuous commercial service and installations shown on the accompanying room data sheets and specified in detail elsewhere in this Specification.

All necessary supports for services, lights, cable trunking, and distribution board's installations will be provided and installed by the Contractor, unless otherwise specified hereinafter.

The design and installation of the Electrical services will be carried out by the Electrical Services Contractor in co-ordination with the builder and all other sub-contract works.

All systems shall be designed, selected, manufactured and installed in accordance with the latest version of all applicable BS/BSEN and CIBSE/BSRIA standards and any other as detailed in this specification.

Any conflict between this Specification and other Specifications shall be immediately referred to the engineer whose decision will be final and must be acted upon by the Electrical Services Contractor.

Where sections of the works have been specified on performance parameters and the Contractor has selected systems and equipment to meet these performance criteria, the Contractor shall ensure such systems and/or equipment will fully meet the specified performance requirements.

Additionally, the selected systems/equipment shall not be incorporated in such a way as to adversely affect the operation of the rest of the installation.

The Electrical Contractor shall be deemed to have visited the site prior to submitting his Tender, to have fully acquainted himself as to the nature and extent of the works and to have examined the specifications, drawings (including building drawings) as fitted/record drawings, asbestos register and the Conditions of Contract.

The Contractor shall provide to the Engineer, drawings, calculations etc, to prove his selections for performance specified works. These shall be provided before work commences on site in a reasonable time (minimum 14 days) for comments to be issued. The Contractor shall not commence ordering materials & equipment or proceed with an alteration until the drawings etc. have been commented upon by the Engineer. These comments will not be unreasonably withheld.



5.2 General

The works will comprise:

- A. Internal & External Electrical Distribution for Building Services
- B. Wiring and cable ways
- C. Lighting.
- D. Small power.
- E. Telephone/Internet/Satellite TV (The tenant to make application. The contractor to liaise with open reach to ensure each flat is provided with the service).
- F. Fire alarm

5.3 Site Electrical Supply

A 100 amp cut out and meter has been identified based on record information. This currently serves a single DB which then splits off.

Looking at the potential building load see below a breakdown based on W/m2 rates:

80w/m2 – general lighting and power and additional 60w/m2 for electric heating.

Flat 1 – 13.5kW, Single phase
Flat 2 – 10.5kW, Single phase
Flat 3 – 11.5kW, Single phase
Flat 4 – 8.5kW, Single phase
Flat 5 – 18kW, Single phase
Landlords – 5kW, Three phase

The above would work with a 100A three phase supply however, this will leave limited spare capacity.

The supply is coming into the ground floor DB. The power supply strategy is to have each flat supplied directly from the DNO. This implies the DNO shall provide a Multi Service Board (MSB), from which each flat consumer board and the landlord DB shall be connected from via approved fiscal electricity meters to be housed in the risers.

It is assumed at this stage that the supply will be TN-C-S but this is to be verified with the Distribution Network Operator (DNO) Western Power Distribution (WPD) and expected to be as follows:

- Three-phase 4-wire / Single-phase 2-wire
- Nominal voltage: $U/U_0 = 400 \text{ V} / 230 \text{ V}$
- Permitted variation: +10%-6%
- Nominal frequency: $f = 50 \text{ Hz}$
- Permitted variation: $\pm 1\%$ u Metering position: Main Switch room
- Over current protection device: BS88
- Over current protection device rating: TBC
- Prospective fault current: $I_{pf} = 25 \text{ kA}$ (3 phase), 16 kA (1 phase)
- The REC's disconnection time at this current: $t = \text{TBC seconds}$
- The external earth fault loop impedance: $Z_e = 0.35\Omega$ (TBC)

The contractor shall, following his design calculations, advise the Client on the actual electrical load requirements.

The electrical utility supply is to be installed and supplied by NGED and shall be terminated into an MSB (Detail to be confirmed by NGED). The DB will in turn supply 5No. single phase meters and 3 phase meter, which in turn will supply switch fuse isolator (SFIs) complying with BS EN 60947-3 for duty AC22B and 1No. three phase meter supplying a TP&N switch fuse isolator.



All the above meters and switch fuses shall be located within the electrical riser.

The Electrical Contractor shall install individual sub-main circuits from the SP&N meters via SFIs to each flat via the mains riser and within the fabric of the building.

The Electrical Contractor shall install a sub-main from the 3phase meter via SFIs to serve the landlord's DB.

The Electrical Sub-contractor shall be required to manage the design and installation process with the local DNO, to provide a suitably sized, fully designed and coordinated installation.

5.4 Mains & Sub-Mains Cabling

The Electrical Sub-Contractor shall, design, supply and install all low voltage mains cabling as required to form a complete distribution network between the main switch fuses all final distribution boards and any fixed equipment.

A single phase and neutral consumer unit shall be supplied and installed by the Electrical Sub-Contractor in each dwelling.

The sub-main cabling supplying each dwelling shall be installed by the Electrical Sub-Contractor with each supply cable originating from the meter in the riser cupboard.

A suitably rated fused switch shall be provided adjacent to each dwelling's energy meter position with double insulated cable tails left ready for connection by the meter operator.

Suitably rated sub-main cabling shall be installed to cable trays routed through the building accessible risers and ceiling voids, terminating to the consumer unit within each dwelling.

Where lateral cables pass from landlord areas into dwellings, cabling shall be drawn through a 50mm metal conduit suitably fire sealed at both ends.

All cables shall be sized in accordance with the requirements of this specification and the latest 18th Edition IET Wiring Regulations, including amendments.

All necessary cable support systems shall be supplied and installed such that cables are supported continuously over their entire run lengths with metal fixings.

Cable cleats shall be of the correct diameter/size for the cables being fixed. All cables shall be terminated utilising brass compression glands. For indoor application BW type glands shall be used. For outdoor applications CW type glands shall be used, but these shall be installed bottom entry only.

When terminating into distribution boards, gland plates or trunkings, a bond from the distribution earthing bar to the cable gland earthing ring shall be installed using LSZH/Copper conductors of at least half the cross-sectional area of the cable phase conductor.

All low voltage main/sub-main distribution armoured cables shall be XLPE, insulated single wire armoured and LSZH sheath overall 600/1000 Volt grade with stranded copper conductors to BS 5467 and BS 6360.

The sub-main cables shall be installed within the riser metered cupboard to each floor, then to the fabric of the building when leaving the riser by securely fixing using one hole Telecleats of the size and type specified by the cable manufacturer or an equal and approved method.

5.5 MCB Consumer Units & Distribution Boards

The Contractor shall design, supply, deliver, install, set to work and commission the following;

A TPN Type B, distribution board shall be installed within a position to be agreed with by the architect to supply lighting and power circuits to the main landlord's areas.



The board shall be complete with a 3 pole switch disconnecter that completely isolates the distribution board from all external incoming supplies. This switch is to be lockable in the off position.

A New SPN Type A, fire rated, surface mounted, distribution board shall be installed within each flat and be within the utility cupboard at a height of 1400mm F.F.L to the centre.

The boards shall be complete with a 2 pole switch disconnecter that completely isolates the distribution board from all external incoming supplies. This switch is to be lockable in the off position.

The Electrical Sub-Contractor shall ensure the Consumer Unit is suitably positioned within the utility cupboard to facilitate access by a disabled person within a wheelchair in line with BS7671 Reg:421.1.201

All final distribution boards shall be Hager or equivalent if first agreed by the client be of sufficient capacity to supply the items currently detailed in the circuit schedules whilst leaving 25% spare capacity for future use. All spare unused ways are to be fully banked with the manufacturer's blank space units.

All final circuits within the flats shall be individually protected.

All MCB's and RCBO's are to comply with BS EN 60898:2003, BS EN 60898-2:2006, and BS EN 60947-2:2006 and any other relevant standards that relate to any specified equipment.

All completed distribution boards/consumer units shall be fitted with engraved laminated labels which are to be screwed to the inside of the door of the unit. The labels are to be engraved with 6mm black characters on a white back ground and are to identify the following information;

- Title and reference number of the distribution board
- Supply source
- Supply cable
- Rating of distribution board and size of incoming isolator
- Incoming supply characteristics; (earth loop impedance, fault current and cut-out fuse size)

3.1 Surge Protection

It is proposed to provide protection against transient over voltage, the surge suppression requirements shall meet the regulations of BS EN 62305 Parts 1-5.

The protection will comprise of a device restricting "let through" voltages to a low and harmless level. This device will be located external to the Landlords DB and protect against externally generated transient voltages such as those caused by lightning and, to protect other parts of the system within the building from switching transients and stray transients induced onto the supply from equipment elsewhere on the site.

The protective device specified is to be provided with status indication lamps on the front of the panel. The status indication lamps are to be placed in a position where they will be visible without having to remove any covers.

3.2 Final Circuit Cabling

The Electrical Sub-Contractor shall be responsible for the design, supply, installation, testing and commissioning of the systems described below.

Generally, a concealed installation shall be provided with use being made of accessible ceiling and floor voids, and bulkheads for the routing of primary cable support systems.

Within all areas, the final circuit wiring shall be 6491B single core cables or 6242B LSZH twin and earth

Surface mounted installations shall be acceptable in areas such as plantrooms, switchrooms and riser cupboards.



Cable support systems shall be secured to the building fabric using proprietary galvanised steel fittings, installed at regular intervals in accordance with manufacturers' recommendations.
All cabling shall be supported along its entire length.

Where single insulated sheath cabling is utilised, a fully enclosed trunking/conduit network shall be provided.

All containment shall be suitably sized to ensure a minimum of 25% spare capacity is provided post completion.

Specific requirements for cable support and containment systems shall satisfy specific sections to this Specification including BS 7671 – IEE Wiring Regulations 18th Edition with regards to separation of services.

Where services are exposed, particular attention shall be paid to the design, installation standard, and quality of finishes, aesthetics and co-ordination with other services and other elements of the building design.

The occurrence of services crossovers, particularly where services are exposed, shall be minimised.

Cabling shall not be installed within 150mm of any heating appliance or hot pipe work, and where in the vicinity, shall be installed below such pipe work or heating devices.

Cabling shall not be installed within 50mm of any piped service.

The Electrical Sub-Contractor shall provide measures within the design and installation to ensure that wet piped services shall not affect electrical installations if leaks were to occur.

All conduit/final containment runs to equipment and outlets shall be recessed to provide a flush finish including making use of accessible raised floor voids where permissible.

No surface mounted steel basket, steel conduit or steel trunking shall be used outside of plantroom and riser areas.

Cable support systems shall be secured to the building fabric using proprietary galvanised steel fittings, installed at regular intervals in accordance with manufacturers' recommendations.
All cabling shall be supported along its entire length in accordance with support cable spacings as detailed in OSG BS7671 Table 4C

The Electrical Contractor shall provide measures within the design and installation to ensure that wet piped services shall not affect electrical installations if leaks were to occur.

All cables within the building shall be run free from thermal insulation throughout their entire length and shall be adequately spaced from all other services. Mixed band cables shall not be run together.

When installed flush, cable drops to lighting switches, socket outlets, connection units and other current using equipment are permitted to be in 50mm chases with metal capping or PVC or metal conduit drops, bushed to the accessory back box. The drops and routes shall be in the safe wiring zones as stated in BS 7671.

All final circuits are to have the additional protection of 30mA RCBO's at the origin of the circuit. All drops are to be true and vertical and the accessory boxes are to be below the depth of the plastered finish.

Electrical & Non-Electrical Services shall be segregated as outlined in BS 7671.

Band 1 and Band 2 circuits are not to be contained in the same wiring system except where one of the following applies:-

- The cables are installed on cable tray where physical separation is provided by a partition.



- The cables are insulated for their system voltage and installed in a separate compartment of a cable ducting or cable trunking system.
- A separate conduit, trunking or ducting systems in employed.

Where lateral cables pass from landlord areas into dwellings, cabling shall be drawn through a 50mm metal conduit suitably fire sealed at both ends.

All cables selected by the electrical contractor shall be suitable for their environment and sized in accordance with BS7671 18th Edition of the IEE Wiring Regulations, to satisfy the requirements of current rating, voltage drop and earth loop impedance.

Allowance shall be made for supply and fitting fire barriers to all trunking basket, conduit and cables that penetrate fire compartment walls and floors.

Where Rockwool is used for fire barrier installations, this shall be installed in such a manner as to eliminate any air gaps around cables inside and outside of the containment, therefore backing sheets on Rockwool strips shall need to be removed and the Rockwool flush shall be used only to pack out inside the containment. The Contractor to ensure cables have been derated where routes pass through fire barriers.

Installation labels shall be affixed to the fire barriers and shall be labelled on a plan drawing. This drawing shall be included within the submission of O&M manuals.

The rating of the fire barrier shall be equivalent to the rating of the compartment being penetrated.

3.3 Containment – Plant Areas/ Cupboards/ Risers

The Electrical Contractor shall design, supply, deliver, install, set to work and commission the following;

All containment shall be provided complete with all propriety bends, tees, sets, fixings and supports. The main high level cable containment for the building is to be co-ordinated with the final positions of the internal wall and other fixed elements of the new building.

Metal containment shall be provided with earth tags at all junctions and shall be made up using all proprietary fittings and fixtures. Trunking runs are to be made from all manufactured type bends, tee's and sets etc,

The basket runs in plantrooms and risers are to be made from all manufactured type bends and sets etc,

Steel conduit shall comply with BS 4568, be heavy duty where applicable, and shall be installed in accordance with the manufacturer's recommendations;

- Steel conduit and accessories shall be heavy gauge welded to BS 4568. The finish shall be galvanised Class 4.
- Conduits shall be threaded to butt closely together in couplings and sockets. Except at running couplings, threads shall not be exposed and these shall be cleaned, primed and painted immediately after installation.
- Where the conduit finish is damaged during installation, the conduit shall be cleaned and painted with zinc-rich paint.
- All conduit drops in chases in plastered walls shall be painted with red oxide paint before plaster is applied.
- All accessories used shall be of the cast iron type, i.e. no pressed steel accessories will be accepted.
- All conduit drops in chases shall have a coupler inserted in the run 300mm from ceiling level.
- In plantrooms and external locations all conduit box lids shall be fitted with gaskets.

Where Steel trunking is used:

- For general purpose, cable trunking shall conform to BS 4678, Part 1, Class 3.
- The gauge of the trunking shall be, 1.2mm up to and including 150 x 50mm, all other sizes up to and



- including 150 x 150mm shall be 1.6mm thick sheet steel.
- Where larger trunking is specified, the gauge of the trunking shall be detailed elsewhere in the Specification.
 - Trunking shall be properly aligned and covers closely butted and secured.
 - Manufacturers' standard accessories, e.g. bends, tees, etc, shall be employed throughout. Bends, tees etc. shall be of the gusset or radius type.
 - Sections of trunking shall be bolted together by sleeve couplings and local tinned copper supplementary bonding connectors.
 - Multi-compartment trunking shall have welded internal fillets, and properly manufactured crossovers at junctions.
 - Manufacturers' proprietary cable retaining straps shall be provided at 750mm intervals wherever the cover is not on top.
 - For the support of cables, metal pin racks shall be fixed at 2m intervals inside vertical trunking installed to guard against undue mechanical strain.
 - Where trunking passes through floors, ceilings and walls, the cover shall be cut and fixed to project 75mm either side of the obstruction. When the structure is made good, this section of cover will not be removable. Internal fire resisting barriers shall also be fitted.

The Electrical Contractor shall provide the necessary segregation between different voltages in accordance with BS EN 50174 and the various equipment suppliers' recommendations.

All cabling installed over Fire escape routes shall be supported by metallic clips, ties, baskets/trays or trunking in compliance with BS 7671:2011 amendment A3:2015.

Cable containment shall be installed surface fixed or suspended on a Unistrut and threaded rod frame (dependent on area) in a neat and tidy fashion, fully co-ordinated with all other services and the structure.

All conduit/final containment runs to equipment and outlets shall be recessed to provide a flush finish including making use of accessible raised floor voids where permissible.

All containment shall be suitably sized to ensure a minimum of 25% spare capacity is provided post completion.

Allowance shall be made for supply and fitting fire barriers to all trunking, basket, cables and conduits that penetrate fire compartment walls and floors.

Installation labels shall be affixed to the fire barriers and shall be labelled on a plan drawing. This drawing shall be included within the submission of O&M manuals.

The rating of the fire barrier shall be equivalent to the rating of the compartment being penetrated.

3.4 Containment – Domestic Areas

High impact plastic conduit may be used within wiring zones providing in accordance with BS7671:2018 for installation within walls. Routing within ceiling voids shall be supported throughout.

3.5 Lighting

This section of the Specification is intended to provide specific requirements for the complete internal lighting, external lighting, and emergency lighting installations (including controls). This section should be read in conjunction with all other sections of the Specification and any associated design intent drawings.

The Electrical Sub-Contractor shall fully refer to the architectural plans and specifications for finishes, reflectances, room dimensions (and height) and ceiling types/finishes.

The Electrical Sub-Contractor shall design, supply, install, test and commission a complete building lighting and controls installation.

The installation shall generally comprise of:

- a. Internal luminaires to provide general illumination throughout the building.



- b. External luminaires to illuminate the specified external areas, features and facades.
- c. Manual and automatic lighting control systems.
- d. An emergency lighting system consisting of 3-hour battery backup conversion packs to general luminaires

The complete design and installation shall be fully coordinated with all other services and building requirements. The design shall be fully compliant with the entire documentation package issued, including all applicable design standards. Any discrepancies that may exist between conflicting documentation shall be clarified before final agreement of the tender costs, or alternatively the most onerous requirement shall be allowed for.

All equipment and components shall be supplied, installed, tested and commissioned in accordance with manufacturer's recommendations and requirements.

Where the project's requirements deviate from the manufacturer's requirements the Electrical Sub-Contractor shall verify with the manufacturer(s) of the component and/or equipment that the application or configuration is acceptable and within their warranty terms. This acceptance from the manufacturer(s) shall be in writing. This verification process shall take place prior to the ordering of the equipment and confirmed (that the above acceptances by all parties has taken place) as part of the technical submission process to the Engineer.

All equipment and components shall be selected, manufactured and installed in accordance with the latest version of all applicable standards and as detailed in this Specification. Some of the key standards are scheduled below, however this list is non-exhaustive:

Standards

- BS 7671 - IET Wiring Regulations 18th Edition
- Approved Document B of the Building Regulations
- Approved Document L of the Building Regulations
- Approved Document M of the Building Regulations
- The Disability Discrimination Act
- All CIBSE Lighting Guides
- SLL Code for Lighting 2012
- BS EN 12464-1&2:2011 – Lighting of Indoor Workplaces and External Lighting
- BSRIA – BCIA Controls for End Users
- ILE Guidance Notes for the Reduction of Obtrusive Light (2005)
- BS 5266-1:2011 – Code of practice for emergency lighting of premises
- BS 5266-2:1998 – Code of practice for electrical low mounted way guidance systems for emergency use
- BS 5266-10:2008 – Guide to the design and provision of emergency lighting to reduce the risks from hazards in the event of failure of the normal lighting supply.
- BS EN 1838:1999 – Lighting Applications. Emergency lighting
- BS 5499-1:2002 – Safety signs, including fire safety signs – Specification for geometric shapes, colours and layout
- BS 5499-4:2000 – Safety signs, including fire safety signs – Code of practice for escape route lighting
- BS EN 50172:2004 – Emergency escape lighting systems

5.10.1 Lighting Installation Standards

The Electrical Sub-Contractor shall supply, erect and connect all lighting luminaires complete with all glassware, diffusers, lamps and necessary gasket seals utilising new luminaires only.

Luminaires selected shall exceed the requirements of Part L of the Building Regulations where applicable.

All general and emergency luminaires and controls shall be installed aligned in a neat manner. Final locations shall be coordinated on the Architect's reflected ceiling plans; however the Electrical Sub-Contractor shall advise the Architect should the final positioning be detrimental to the output of the



luminaires or the operation of the system.

Where utilised, luminaire gaskets shall be to the highest quality to enable the Ingress Protection rating to be achieved as specified for the life of the luminaire. Gaskets shall be non-perishable. If possible diffusers and other glass type covers should be fitted as late as possible to ensure they are not soiled. All covers, diffusers, accessories shall be clean ready for practical completion, and all lamps shall be working correctly.

Ensure that no fittings are damaged / spoiled by decoration, finishes, other trades etc. Any damaged luminaires shall be replaced at no cost to the Landlord such that the installation is new at the day of handover.

Luminaires shall be installed in accordance with the individual lighting manufacturer's requirements for fixing, mounting and wiring.

The Electrical Sub-Contractor shall establish the various types of ceiling systems being used and shall allow for installing the luminaries accordingly, ensuring the correct type of finishing seals/gaskets/flanges are provided.

For Tender Purposes Only, the contractor shall allow for:

Manufacturer for Lights: Tamelite Lighting or Franklite

The client shall decide on the fittings to be installed once sample have been provided by the appointed contractor.

All aspects of the lighting installation, including fixing details, luminaire types, exact locations etc., shall be confirmed with the client & architect prior to production of working drawings.

A sample luminaire of each type shall be supplied and erected prior to placing an order for the type of luminaire concerned for the approval or otherwise of the Engineer/Client/Architect. This sample is over and above the quantities required for the installation generally.

All services and cable passing through or accessories installed within fire compartments shall be fully fire stopped to maintain the integrity of the wall at the same rating.

The Electrical Contractor shall ensure all items are included to comply with Building Control, Fire Department and site fire officer requirements.

Control of Lighting

The lighting control shall be via manual switches, Presence and Absence Detectors, and dimmer switching

Light switches shall be installed at 1200mm A.F.F.L to the top of the plate.

The finish of the switches to be brushed satin nickel, semi-flush from Wandsworth Electrical

5.10 Emergency Lighting

The emergency lighting shall be in the common areas.

The emergency lighting shall be design (BAFE), installed (BAFE), commissioned and tested to the requirements of BS 5266-1:2011 and BS EN 1838:1999.

Attention shall be paid to the increased emergency illumination levels required within specific locations, as detailed within BS 5266-1:2011 Annex D.



All emergency luminaires shall feature integral dual-colour status LEDs to indicate local healthy 'charging' and fault indication. All status LEDs shall be located in the position where they can be easily identified and monitored.

The Fire alarm panel/firefighting equipment require a minimum illuminance of 15lux on its plane of visual task in compliance with BS 5266-1:2011

Illuminated LED emergency exit signage shall be provided throughout the communal areas of the building, in order to highlight the shortest route to emergency exits in compliance with BS 5266-2:1998 and the building fire strategy.

These shall be wall or ceiling mounted with a pictogram to the latest European Signs Directive (1996). The exact configuration of the sign shall be confirmed with the Architect and Engineer prior to ordering.

The emergency lighting system shall be tested centrally using banks of key switches located adjacent to each lighting distribution board. The bank shall be labelled "EMERGENCY LIGHTING TEST POINT". Each key switch shall be engraved to denote the circuit it is isolating.

Full emergency lighting calculations shall be provided by the Electrical Sub-Contractor for the whole building, including outside of final exits. These shall be forwarded to the Engineer for comment prior to installation. The whole design shall be based on dedicated photometric data of the emergency luminaire and not use a scaled lumen version of the mains luminaire unless agreed with by the Engineer.

Photometric data shall be made available if requested.

Samples of all proposed emergency luminaires shall be provided to the Architect and Client for approval prior to procurement.

At a date to be agreed, the Electrical Contractor shall carry out full tests on the emergency lighting installation in the presence of the Client and Engineer.

5.11 External Lighting

All external lighting shall be wall mounted luminaires from Tamelite Lighting or similar designer/ manufacturer.

The Electrical Contractor shall design, supply, install, test and commission a complete external lighting system, as detailed below and to the standards as set out in BS 12464-2:2007

The external luminaires will be selected to meet the requirements of European Code BS 13201, which embodies new demands from the designer in terms of exterior lighting performance.

5.12 Small Power and Accessories

The Electrical Contractor shall design, supply, deliver, install, set to work and commission the following;

General purpose small power outlets are to be provided by means of 13A single and twin switched socket outlets, and switched and unswitched fuse connection outlets, all as detailed below.

All general sockets shall be protected by RCBO's and AFDD's located within the distribution boards

All 13A switched and unswitched fuse connection units and double pole switches shall be complete with neon indicator lamps.

The Electrical Contractor shall allow to label all fuse connection units and isolators to give identification as to their use and circuit reference.



Within Kitchen/Utility/Laundry areas, any under-counter electrical equipment shall be powered by a single socket outlet at low level, wired through a switched fused connection unit (SFCU) above the worktop or if not possible, within an accessible cupboard to allow manual isolation.

Where multiple appliances are in close position to one another the use of multi-gang grid-switch c/w fuse protection shall preferably be used in lieu of individual SFCU's.

The electrical contractor is to liaise and ensure full co-ordination with the kitchen supplier and any other specialist as necessary to ensure correct the location, size and types of all power requirements.

Dedicated supplies are to be installed to the fire alarm, lift, door entry, electric gates

Electric Showers to be placed on dedicated radial SP&N circuits with local pull-cord isolator c/w status on/off indicator.

Cookers to be installed on their own 40 amp dedicated SP&N supply.

All wiring accessories such as double-pole switches & fused connection units etc, which control fixed connected equipment shall feature engraved plates which clearly identify their use. The finish of the engraving shall first be agreed with the architect prior to the ordering and installation of the plates.

The Electrical Contractor shall make due allowance within the tender submission for coordinating all power, voice and data outlets and power to specialist equipment in order to provide a fully coordinated installation. This shall involve producing working installation drawings which are submitted to the Client and Engineer for comment/approval. The whole process shall be carried out in an iterative manner and at an early stage within the design development stage of the programme.

The Electrical Contractor shall allow for close liaison with the Mechanical Sub-Contractor and Main Contractor regarding coordination of all outlets and shall verify against Architects wall elevations the setting out of all equipment, prior to installation.



3.6 FIRE ALARM

The Electrical Contractor shall employ the services of a specialist to design, supply, deliver, install, set to work and commission the following;

The Fire Alarm panel shall from Eaton or similar manufacturer.

Separate fire alarm systems shall be provided to each flat and the main communal areas.

Communal Areas

The fire detection system for the communal areas shall be installed to meet the requirements of a Category L2 of BS 5839-1:2017.

The Fire alarm panel shall be open protocol, have 72hr battery back-up under standby condition and 12hr under full load conditions and shall be a 2-wire system. The panel shall be installed flush into the wall.

The system shall, upon activation, dial out to the clients specified alarm receiving centre and should therefore be Alarm Receiving Centre (ARC) capable. The contractor is to liaise with the client regarding setting up ARC and is to include all additional cabling, connections and commissioning associated with this.

The system is to be conventional and configured into the requisite number of zones. Rate of rise heat detectors & optical smoke detectors, sounder bases/flashing beacons and manual call points shall be installed. All devices are to be clearly identified by means of a label.

Fire alarm zones shall be arranged so that the indications of the fire alarm system can be rapidly related to the layout of the building. The building shall be split into multiple zones in accordance with the recommendations set out in BS 5839, the requirements of the Local Fire Authority, and the fire strategy document produced by the client's advisor.

All wiring associated with the new fire alarm system shall be carried out using Enhanced fire resisting pliable red sheathed cables manufactured to BS 7629 and should meet the PH120 classification in accordance with EN 50200 and be clipped direct within the ceiling voids and flush.

All cabling and accessory boxes shall be concealed/flush fitting in a similar manner to the general electrical installation in those areas.

Any risk assessments shall require approval from Building Control and the Fire Officer prior to implementation, and any deviations from BS 5839 shall be clearly noted within the fire alarm commissioning certification.

Ceiling void detection shall also be considered for voids less than 800mm where a particular risk may be present.

Each automatic detector shall be provided with a remote LED indicator, fitted to the underside of the ceiling directly beneath the detector.

Where automatic detectors are located within ceiling voids they shall be fully accessible.

AOV'S/Rooflights

There shall be Fire Alarm Interface Relay installed and linked to the AOV. The AOV shall have a control panel linked to it with a battery back-up to ensure continued use if mains power is to fail.

A Firemans override switch shall be installed in close proximity to the Fire alarm panel.

Apartments

Connection landlords



The fire detection system for the flats shall be installed to meet the requirements of a Category LD2 Grade D of BS 5839-6:2019+A1:2020.

Domestic smoke detectors & heat detectors with Sounder bases are to be installed within the flats and spaced to provide a compliant sound pressure level throughout the flats. These to be interlinked, mains powered with battery back-up.

Additional Heat detectors with sounder linked to landlord dedicated circuit to be installed within each apartment circulation. In accordance with BS 5839-1:2017.

Domestic detectors shall be on their own dedicated power circuit.

All detectors within each flat shall be linked to a Remote Locate, Silence and Test Control Switch, situated at switch height, to enable the silencing and testing of the alarms by elderly or disabled persons.

A sound pressure level of 75dB is required to be achieved at all bedheads and 65dB in all other areas.

The complete Fire Alarm System shall be designed, installed, tested and commissioned in accordance with LPS 1014.

3.7 TV

The Electrical Contractor shall employ the services of a specialist to design, supply, deliver, install, set to work and commission the following;

It is proposed that a communal Freeview be installed throughout the flats. The flats shall be served via central system located with any boosting or joint equipment located within an accessible location within a communal area.

Each flat shall be provided with a TV outlet within each lounge.



3.8 Earthing and Bonding

The Electrical Contractor shall design, supply, deliver, install, set to work and commission the following;

The Electrical Contractor shall supply and install a 50mm x 6mm solid copper Main Earth Terminal (MET) adjacent to main LV distribution board

The main earth terminal shall be used for the connection of all main protective bonding conductors installed throughout the building and for bonding to the earthing systems provided by the Independent District Network Operator (IDNO)/District Network Operator (DNO) for dwelling supplies through their internal low voltage distribution network.

The building shall be provided with earthing and bonding to all incoming services, including all exposed and extraneous metalwork to the requirements of BS 7671:2018 and all IEE and WPD Guidance notes.

The Electrical Contractor shall be responsible for calculating the sizes of all earth, main and supplementary protective bonding cables and for ensuring compliance against the relevant standards.

Minimum size of bonding cables shall be related to the size of the incoming service cable.

All cables connected to the MET shall be labelled to identify their use.

Generally, all main equipotential bonding connections shall be made within 600mm of a service entering the building

Where connections to incoming services, extraneous conductive parts etc. are to be made conductors shall be lugged and bolted.

Any surface treatment of the conductive part shall be removed to ensure a good low resistance connection.

The system shall be carried out in PVC served copper conductors sized in accordance with the specification and drawings.

Supplementary bonding shall be provided in accordance with the current edition of BS7671. This shall include but not be limited to the following:

- a) Wash hand basins, including the interconnections to hot and cold taps and metal waste pipes.
- b) Showers, including the interconnections between hot and cold taps and metal waste pipes, as well as the shower itself.

All supplementary bonding to be carried out in minimum 4mm² single Cu/LSZH cables. The supplementary bonding conductor to low level pipe work, etc., shall be taken from an adjacent socket outlet or similar and shall be connected to the pipe work, sink top, etc., via a flex outlet plate fixed as close as possible. Cables shall not simply stick out of plaster.

All final circuits shall have protective conductors independent of cable containment system.

3.9 Solar Photovoltaic System.

The building has an existing PV array which will be retained and modified. This will allow the whole building to benefit from the PV.

Each flat shall have a separate PV System to be designed, installed and commissioned by a specialist PV contractor. The size and output shall depend on the roof space and orientation for the installation of the solar PV panels.

The system shall comprise the PV panels, the inverter, DC Isolator, AC Isolator, Generation Meter, G99 relay, DC cables and terminations, AC cables and terminations.



3.10 Test and Inspection

All testing shall be carried out as recommended by the current edition of the IEE wiring regulations (BS7671), relevant British and European Standards and Codes of Practice and current legislation.

Conduits and cables shall be tested during the progress of the work before their concealment as follows:

- Continuity of protective conductors and equipotential bond of conduit, metal sheaths etc.
- Continuity of current carrying conductors.

Immediately prior to completion and in the presence of the Engineer or Clerk of Works carry out the initial inspection and testing detailed in Part 6 of the 18th Edition of the Wiring Regulations.

Test results are to be documented on test charts containing the following information for each circuit:

- Design current (IB).
- Earth loop impedance (Z_e) at furthest point.
- Line neutral impedance at furthest point.
- Loop resistance ($R_1 + R_2$).
- Continuity of ring final circuit conductors.
- Insulation resistance readings.
- Polarity test.
- RCD test where applicable.

In addition to the aforementioned information, each chart shall contain details of the external characteristics appertaining to the distribution board.

Following successful inspection and testing, copies of the Inspection Test Certificates shall be forwarded to the Engineer within 14 days of the tests being completed, or at Practical completion whichever is the sooner. Note that the Engineer will not accept the installation as practically complete until a Test/Completion Certificate is presented.

3.11 Equipment Cleaning

The contractor shall allow to clean out the interiors of all main switchgear, together with distribution boards, panels, trunking, contactor enclosures, switches etc., ensuring that cabling trimmings, swarf and dust are removed by means of an industrial vacuum cleaner. No equipment is to be made "live" prior to this cleaning operation being completed to the satisfaction of the Engineer.

All luminaire housing, galleries, interiors and diffusers are to be thoroughly cleaned before final snagging and subsequent hand-over.

3.12 System Demonstration

For each of the separate specialist packages, the contractor shall allow for system demonstration to the client by each of the system specialists. The contractor shall allow for up to half a day per system, not necessarily on the same day and at the client's convenience.

The Electrical Contractor shall allow to spend a minimum of a day demonstrating the operation of all the electrical appliances and accessories to the satisfaction of the client.

3.13 Labeling

All Landlords areas equipment to be labelled with discrete circuit reference self-adhesive labels. All metering shall be clearly labelled. All kitchen SFCU's or Grid-switches shall be engraved with identification of the finish of labelling & engraving to be agreed with architects prior to the installation.





6.0 ELECTRICAL WORKMANSHIP AND MATERIALS

In line with our company policy of promoting environmental considerations, the Contractor is to download these sections from our website. Please see link below (copy & paste into browser).

<http://edp-environmental.co.uk/documents/4590988962>

The Contractor is deemed to have read and complied with all clauses when preparing their tender.



APPENDIX A

EDP1 – MECHANICAL SERVICES

SUMMARY OF TENDER

(To be completed by the Tenderer and returned with Tender).

REF	ITEM	COST
1.	Supply and install incoming MCWS (extension)	
2.	Supply and install panel heaters and towel rails	
3.	Supply and install domestic water pipework systems	
4.	Supply and install hot water cylinders	
5.	Supply and install mechanical extract ventilation systems including ductwork, dampers, valves and air bricks	
6.	Supply and install above ground drainage.	
7.	Testing & Commissioning.	
9.	Preparation of O & M Manuals & As Built drawings	
10.	13 Months Maintenance	
11.	Any other item not included above	
12.	Provisional Sums as APPENDIX B	6,000.00
	TOTAL	

Exclusive of:

a. VAT

Inclusive of:

- a. Preliminaries.
- b. Profit & overheads.
- c. Contingencies.

SIGNED:

DESIGNATION:

FOR & ON BEHALF OF:

DATE:

The Contractor will be required to submit a fully quantified schedule of rates before the Contract is awarded.



APPENDIX B

SCHEDULE OF PROVISIONAL SUMS

(To be completed by the Tenderer signed and entered on EDP1 Summary of Tender).

REF	ITEM	PROVISIONAL SUM £
1.	Building control requirements	1,000.00
2.	Incoming Utilities	5,000.00
	TOTAL	£6.000.00

We have taken due consideration of possible works to be instructed under the above sums within our Tender/Works programme.

SIGNED:

DESIGNATION:

FOR & ON BEHALF OF:

DATE:



APPENDIX C

Electrical Tender Summary

EDP1 – ELECTRICAL SERVICES

(To be completed by the Tenderer and returned with Tender).

REF	ITEM	COST
1.	Electrical Distribution	
2.	Containment	
3.	Lighting Installation	
4.	Small Power Installation	
5.	Fire Alarm Installation	
6.	Earthing and Bonding	
7.	Solar Photovoltaic System Installation	
8.	Testing & Commissioning	
9.	Working drawings	
10.	O & M Manuals, and As Installed drawings	
11.	13 Months Maintenance Work	
12.	Any Items not included above	
15.	Provisional Sums	£2,000.00
15.	TOTAL	

Exclusive of:

a. VAT

Inclusive of:

- a. Preliminaries.
- b. Profit & overheads.

SIGNED BY:

POSITION:

DATE:

FOR & ON BEHALF OF:

The Contractor will be required to submit a fully quantified schedule of rates before the Contract is awarded.



APPENDIX D

SCHEDULE OF PROVISIONAL SUMS

(To be completed by the Tenderer signed and entered on EDP1 Summary of Tender).

REF	ITEM	PROVISIONAL SUM £
1.0	Works associated with building control & unknown services.	£2,000.00
	TOTAL	£2,000.00

We have taken due consideration of possible works to be instructed under the above sums within our Tender/Works programme.

SIGNED BY:

POSITION:

FOR & ON BEHALF OF:

ADDRESS:

DATE:

edp-environmental.co.uk

enquiries@edp-environmental.co.uk

South West

Exeter Office

3 River Court, Pynes Hill, Exeter, EX2 5JL
Tel: 01392 367 237

Bristol Office

12 Whiteladies Road, Clifton, Bristol, BS8 1PD
Tel: 01173 258 975

South East

Chobham Office

D1A, Fair Oaks Airport, Chobham, Surrey, GU24 8HU
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London Central

Islington Office

Upper Floor, 66 Arthur Road, London, N7 6DR
Tel: 02076 091 899



Helping You Drive Your Carbon Footprint Down