

Section E2

Electrical Detailed Specification 49-59 Old Street

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E2.01 Foreword

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Introduction

This specification and drawings have been prepared to assist the Contractor in the electrical installation At 49-59 Old Street, Islington, London. EC1V 9HX

The Contractor shall complete all sections of this Specification.

The works are to the complete building with the exception of the ground floor retail unit known as “Look Mum, No Hands” and the adjacent garage which shall only have their incoming supplies replaced. The works are to completely rewire the building as shown on the design drawings including all trenching, containment, holes, firestopping as required. The contractor shall also allow to liaise with UKPN for the new incoming supply. It should be noted that the Access control system, Fire alarm and the Data network shall be installed by the council’s incumbent contractors, however all of the holes and containment shall be provided by the Electrical contractor.

It shall be the responsibility of the Main Contractor to ensure that all elements related to the electrical services installation as detailed within the Complete Contract documents are allowed for by the Main Contractor or any specialist sub contractor within the tender sum returned.

This particular section of the specification shall be read in conjunction with the Section relating to Standards and Technical requirements E1. Where the two sections describe the same or similar subject but have different specific requirements the Particular section shall take precedence, but the matter shall be brought to the Services Consultant’s attention.

This document must be read in conjunction with the Mechanical package from Bailey Associates, the Architectural package and the main contract documents from Islington Council. The contractor shall allow to co-ordinate all services within this package with the Mechanical and Architectural services.

Codes of Practice

The Contractor shall be responsible for the insurance that all works tendered and undertaken are carried out to a minimum standard to conform to the following codes of practice.

1. Latest relevant BS Standards and Codes of Practice
2. Health and Safety at Work Act
3. Latest relevant Building Regulations
4. Local Authority Regulations and By-Laws.
5. Electricity Supply Regulations
6. HVCA Ductwork Specification DW144 & DW172
7. Statutory Authorities/Undertakers By-Laws, regulations and Recommendations

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8. CIBSE Guides and Commissioning Codes		
9. IEE Regulations 17 th Edition including all the latest amendments (BS7671)		
10. Offices, Shops and Railway Premises Act		
11. Factories Act.		
12. Local Water Authorities By-Laws and the 1999 water regulations.		
13. The Gas Safety (Installation and Use) Regulations		
14. Environmental and Public Health Approvals		
15. The Electricity at Work Regulations 1989		
16. All current Technical Memoranda		
17. CIBSE Energy Codes		
18. Construction (Design & Management) Regulations 2007		
19. COSHH Regulations		
20. Current Housing Standards		
21. Gas Installation BS 6891 : 2005		
22. Water Supply (Water Fittings) Regulations 1999		
23. BSRIA Technical Note TN15/95, Handover Information for Building Services		
24. BS6700 : 2006 (service supplying water for domestic use in buildings)		
25. HS(G) 70 and associated Code of Practice		
26. BS7671 (IEE Regulations)		
27. Schools Policy on Contractors		
28. National Health Service (NHS) Estate, Health Guidance Note 'Safe Hot Water and Surface Temperatures		
29. Water Regulations		
30. Institute of Gas Regulations		
The whole of the installation, materials, components and workmanship shall comply with the latest editions and amendments of all relevant British Standards, European and British Codes of Practice, and Industry Regulations such as are applicable at the date of Tender.		

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<p><i>Drawings and Specification</i></p> <p>The Drawings to be read in conjunction with this specification are as listed on the “Drawing Issue Sheet” which accompanies this specification and are for the guidance of the Contractor only. The Contractor must also refer to the Architectural drawings.</p> <p>Unless specified in this Particular Section of the Electrical Specification or on the Electrical Tender Drawings, the installation shall comply with the requirements detailed in the Electrical Services Standards Section. These drawings are building floor plans showing indicative positions only for the electrical components. The exact positioning of all components shall be agreed with the Contract Administrator on site.</p> <p><i>Access and Site Occupation</i></p> <p>The Contractor is to note that the ground floor retail unit known as “Look Mum, No Hands” will be occupied for the duration of the works and as such shall only have interruptions of supply out of their business hours.</p> <p>All entry points to and into the site shall be supervised and secured throughout the Contract.</p> <p>Access to the areas affecting adjacent buildings is strictly forbidden unless approved by the Contract Administrator.</p> <p>Note: No delays/costs to contract will be considered in respect to failure to comply with the above.</p> <p>The Contractor is to ensure that sufficient time is allocated within the main program for all requirements of these specifications/drawings to be met.</p> <p><i>Materials</i></p> <p>The installation materials and equipment shall be as specified. Where the installation materials and equipment are unspecified, these are at the discretion of the Contractor but must conform to the appropriate British Standard Specification where applicable.</p> <p>Where the Tenderer is unable to obtain prices for the uniquely specified equipment within the tender offer period, this shall be brought to the attention of the Contract Administrator at the time of tender submission and equal alternative equipment shall be scheduled if available. No provisional sums, contingency or daywork allowances shall be included within the tender offer except those specified.</p> <p><i>Routing of Services</i></p> <p>The Contractor shall prepare detailed working drawings which shall be prepared with due regard to other building constructional details and shall include full dimensions.</p> <p>These drawings shall be submitted for comment by the Contract Administrator at least 20 working days prior to commencement of work. These drawings shall be amended during the progress of the works in line with all revisions made to the Project. In spite of this, all service routes shall be agreed with the Contract Administrator before starting.</p>		

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<p>Generally 230V wiring and accessories shall be installed surface to the building fabric; wiring shall be single core stranded copper cables drawn into galvanized steel conduits etc. unless noted otherwise.</p> <p>Responsibility and Cognisance</p> <p>The appointed Contractor will be deemed to have visited and inspected the site and satisfied himself as to the nature, extent and character of the works, local conditions, accessibility of the sites, proximity of existing buildings, the variation of any conditions affecting labour and materials and any other matters which may affect his tender. Responsibility and cognisance of all factors relevant to the carrying out of these works rests with the Contractor. No claim will be entertained for lack of knowledge of site conditions arising from the failure of the nominated Contractor to visit the site prior to the submission of his tender.</p> <p>The Contractor will be required to visit site prior to the submission of the tender.</p> <p>Permission to visit site may be sought from the Contract Administrator</p> <p>The Contractor must ensure that constant reference is made to the latest drawings before work is installed in each area.</p> <p>No claim for extra payment will be accepted in respect to failure to comply with the above.</p> <p>Documentation</p> <p>The Contractor shall complete the Schedules of Work, Schedules of Rates, and the Summary of Tender included within this specification and return the completed document with the Tender. Failure to fully complete all items within the Summary of Tender may result in non acceptance of the Tender.</p> <p>Testing and Commissioning</p> <p>The complete electrical installation shall be installed to the current edition of BS7671 the IEE Regulations and on completion the whole of the installation shall be tested as recommended by that document. Copies of all test certificates shall be supplied to the Contract Administrator before handover.</p> <p>The Contractor shall inform the Contract Administrator of commencement of testing and commissioning procedures giving at least 5 working days notice. The Contract Administrator may attend and witness testing and commissioning procedures at his own discretion.</p> <p>Outstanding Items</p> <p>At practical completion of the project, the Contractor shall prepare and submit to the Contract Administrator a full and complete list of outstanding or snagging items.</p>		

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	<p>All outstanding items shall be completed to the satisfaction of the Contract Administrator within 28 days of issue of the Contract Administrator's list of outstanding items. If these works are not completed the Contract Administrator reserves the right to have all outstanding items rectified by alternative Contractors and all fair and reasonable costs shall be deducted from the Contract retention monies.</p> <p>Defects</p> <p>The Contractor shall note that the building works, building services, materials and installation within this Contract shall be subject to 12 months defects liability.</p>		
E2.02	<p>Scope of Works</p> <p>The Contractor shall include, within the Contract works, for the manufacture, works testing, delivery, supply, installation, testing, commissioning and setting to work of the electrical services work as scheduled below.</p> <p>Note:- The Contractor shall allow to strip out and remove from site all electrical items, cable, accessories, containment distribution equipment etc. whether internal or external, that are redundant or made redundant by these works.</p> <ol style="list-style-type: none"> 1) Distribution equipment 2) Cable management installation 3) Sub-main cabling 4) Connections to Mechanical Plant 5) General power 6) Lighting Installation (General and Emergency) 7) Fire Alarm 8) Voice and Data 9) Earthing and Bonding 		
E2.03	<p>Distribution Equipment</p> <p>The contractor shall allow to supply and install the distribution equipment as shown on the tender drawings.</p> <p>The finished distribution board shall be complete in all respects with all fixings, coupling, labels and connection to other electrical equipment.</p> <p>Local distribution boards shall be fully armed with new RCBO's- as appropriate together with a selection of spares of various sizes as agreed with the engineer.</p> <p>The distribution boards shall be equipped with a type written circuit schedule (A4 size) securely fixed, within a glazed picture frame, to an adjacent wall in such a location as to be easily accessible and clearly visible, fully detailing the circuits connected to the relevant panel, the information shall include the following: -</p> <ol style="list-style-type: none"> 1. Contact details of the electrical contractor responsible for the installation 2. Origin of the circuit feeding the board and reference number for device responsible for isolation of the supply. 		

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<p>3. Size and construction of cable feeding the board.</p> <p>4. ZE and earth fault and symmetrical phase to phase/phase to neutral fault current at the panel.</p> <p>5. Design current of all outgoing circuit ways.</p> <p>6. Rating of outgoing way protective device.</p> <p>7. Description of outgoing way protective device and type.</p> <p>8. Cable size for each out going circuit and cable description.</p> <p>9. Maximum ZE and measured ZE for each outgoing circuit.</p> <p>The boards shall also have securely fixed to the front casing a traffolite label, indicating the boards' reference number in 5mm high red coloured in-filled lettering on a white background.</p> <p>All switchfuses shall also have securely fixed to the front casing a traffolite label, indicating the reference number, of the distribution board being supplied, in 5mm high red coloured in-filled lettering on a white background.</p> <p>The contractor shall also provide a full schematic drawing, minimum size A1, within a picture frame, of the new sub-mains distribution identifying all switchfuse references and protective rating, cable sizes and distribution sizes and references. The drawing shall be mounted on an adjacent wall within the Mains intake room.</p>		
<p>E2.04 Cable Management Installation</p> <p>The Contractor shall design, supply and install all cable management that is required to facilitate the entire electrical installation as indicated on the design drawing whether 400-220Volts, extra low voltage, data comms, control wiring or alarm wiring.</p> <p>The contractor should note that all containment for all electrical systems whether shown or not shall be included in the main electrical contractor's package.</p> <p>It is intended that the existing semi-recessed metal ceiling mounted trunking within each office space shall be reused, with separately installed within, lengths of plastic mini trunking to provide segregation for the Fire alarm cabling, in addition the contractor shall include within their price to make repairs and replace missing parts by bespoke manufacture as necessary to ensure a complete and safe containment system remains.</p> <p>Where this existing containment systems is deemed to have insufficient capacity for the new wiring installation, the contractor shall allow within their tendered price for all additional containment necessary for the complete electrical installation, whether for additional drops to alleviate congestion or new containment to supply new drops or access area's not covered by the existing installation.</p> <p>The Contractor shall ensure that the systems used are suitable in all respects for the cable type they are containing/carrying.</p>		

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<p>Generally containment shall be surface run; however, where possible in new ceiling spaces and new partitions, containment shall be concealed flush within the fabric of the building.</p> <p>All containment shall be of the galvanised steel type, and be either conduit or single-multi compartment trunking</p> <p>All types, routes and positions of cable containment shall be agreed by the architect/engineer before installation.</p> <p>Cable Trunking</p> <p>All cable trunking shall of heavy gauge steel construction and have a galvanised finish.</p> <p>Standard accessories i.e. bends or T pieces shall be used at changes of direction. Site cuttings shall be permitted providing the edges are finished so as to be free from burrs and paints with a corrosion resisting paint before erection. Suitable electrical continuity bonding shall be provided between each section.</p> <p>Where cable trunking is installed in the vertical position the Contractor shall provide cable pin racks which shall be spaced to comply with the manufacturer's recommendation.</p> <p>Where cable trunking is installed in long horizontal runs the Contractor shall install retaining clips.</p> <p>Cable trunking shall be installed on supports at intervals as recommended by the manufacturer to prevent sagging.</p> <p>Conduit</p> <p>All new conduit shall be heavy gauge, screwed steel, continuously welded and of 20mm² minimum diameter.</p> <p>The conduit system shall be galvanised throughout.</p> <p>In all areas the conduit system shall be installed concealed within the fabric or the building unless agreed in writing by the Contract Administrator.</p> <p>Conduit accessories shall be manufactured from sheet steel or malleable iron complete with covers and shall be of the same finish as the conduit installation to which they are connected.</p> <p>Externally mounted conduit boxes shall have machine faced joints between box and cover and shall be fitted with a suitable gasket to prevent the ingress of moisture.</p> <p>Adaptable boxes shall be manufactured from sheet steel or malleable iron and shall be of the same finish as the conduit installation to which they are mounted.</p> <p>Adaptable boxes shall be of sufficient size to allow for the number of cables and terminations required. Adaptable boxes shall be equipped with gaskets where installed in damp locations, in a similar manner to conduit boxes.</p>		

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<p>Where a conduit terminates at a motor or other equipment requiring non-rigid connection, a flexible metallic conduit shall be installed. The conduit connection adapter shall be of the factory made brass type with the coarse thread for coupling the conduit.</p> <p>Each flexible conduit shall be not less than 450mm long and shall enclose, in addition to the circuit cables, a separate insulated coloured green/yellow circuit protective conductor connected to an earth terminal in a conduit box and the earth terminal in the appliance. The flexible conduit shall not be used as the circuit protective conductor.</p> <p>Cables shall not be less than 1.5mm² core, CSA for lighting circuits and 4.0mm² core CSA for small power circuits.</p>		
<p>E2.05 Sub Main Cable</p> <p>Allow to install low smoke and fume XLPE SWA copper stranded cables to each distribution board single or three phase as shown on the tender drawings</p> <p>All single phase SWA cables shall have 3 cores. 3 phase cables shall be 4 core but with a separate CPC of equal size. The armouring shall not be relied upon as the means of earthing conductor</p> <p>The sub mains cables shall be enclosed in the central riser shown on the design drawings or enclosed in ample sized cable trunking, lid fixed with security screws.</p>		
<p>E2.06 Connection to Mechanical Plant</p> <p>The Contractor shall supply and install new electrical supplies to any new mechanical services plant as indicated on the mechanical contract drawings.</p> <p>Any item of roof mounted plant shall be isolated via an IP65 rated switch disconnector of appropriate size (MK Commando Safety Switch range)</p> <p>All other items of mechanical plant must have a suitably rated switch disconnector immediately adjacent to the plant i.e. boiler, heat exchanger etc.</p> <p>Supplies to mechanical plant shall be carried out utilizing multicore XLPE insulated and steel wire armoured cables with PVC sheathing clipped to galvanized steel cable tray in plant areas and white trunking elsewhere.</p> <p>Final connection to items of mechanical plant shall be allowed for and the contractor shall liaise with all relevant contractors to finalise and agree the appropriate final locations for service routing and the programme for installation.</p>		
<p>E2.07 General Power</p> <p>The Contractor shall supply and install the complete system of small power outlets including all electrical accessories and cable management systems as required to facilitate all items indicated on the drawings.</p>		

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<p>In addition to the accessories shown on the electrical design drawings the Electrical Contractor shall allow for the supply, installation and testing of the items listed below.</p> <p>a) 5 No. 13A switched fused connection units final positions to be confirmed</p> <p>b) 5 NO. 13A switched fused double socket outlets final positions to be confirmed</p> <p>All electrical accessories shall be manufactured by MK Ltd (Metalclad plus range. Small power outlets shall be wired by 4mm² single core stranded cables drawn into surface mounted galvanised steel trunking or conduit. All ring circuits shall utilize the dual earth method. All accessories on new partition walls shall be flush mounted.</p> <p>All conduit or trunking shall be complete in every respect including all manufactured fittings</p> <p>The route and position of all wiring systems and power outlets shall be agreed with the Architect/Consultant prior to installation. Small power outlets shall generally be mounted 500 mm above finished floor level or in offices 150mm above work/desktop.</p> <p>In general, the small power outlets shall be wired and connected using the ring circuit principle only 12 double sockets per circuit will be accepted. In offices the sockets shall be split up into 3 ring circuits for future expansion. The Radial Circuit Wiring Method shall be utilised where connection is required to fixed items of equipment rated in excess of 13 amp. Only 1 item of equipment shall be connected to each Radial Circuit</p> <p>Generally, small power circuits shall be wired and connected to combined 32A rated RCBO units mounted within the final circuit distribution boards.</p> <p>Where fused connection units are indicated, they shall be mounted adjacent to the items of equipment they are to control. Final electrical connections shall be either by heat resisting 3 core flexible cable or by single core cables drawn into flush conduit with fixed terminations within a flush conduit box, as indicated on the drawings.</p> <p>Isolating switches shall be provided adjacent to electrical machinery and plant where necessary to ensure the safety of operatives and maintenance staff.</p> <p>Appliances rated in excess of 13 Amp, or those requiring a three-phase supply, shall be permanently connected to a separate final sub circuit off local distribution boards and independently switched.</p> <p>All connection units and isolating switches shall be equipped with engraved face plates describing the equipment served.</p> <p>All small power electrical accessory face plates shall be engraved to indicate the relevant circuit number.</p> <p>Final position of all equipment is to be agreed on site by the Engineer.</p>		

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<p>Show the cost for the 5 connection units and 5 double sockets identified above. The cost shall be included but separate and identifiably within this section.</p>	£	
<p>E2.08 Lighting Installation (General and Emergency)</p> <p>The Contractor shall supply and install the complete lighting installation including all electrical accessories, lighting fittings, cable management systems and controls as indicated on the drawings. However final position shall be agreed on site with the Engineer/Architect.</p> <p>The lighting installation shall be wired by single core stranded cables drawn through Galvanised steel conduit/trunking. All containment in ceiling voids shall be galvanised steel trunking. All accessories and containment in new partition walls shall be flush mounted. On brick walls surface mounted will be acceptable.</p> <p>Where emergency operation is required, general lighting luminaires shall incorporate battery packs and invertors integrally.</p> <p>All lighting electrical accessories shall be mounted at 1200mm above finished floor level to comply with DDA requirements and manufactured by MK and from their Metalclad Plus range.</p> <p>The Contractor shall allow to supply, wire and install 3 additional Graduate 1500 LED luminaires with R25C sensors by Dextra Lighting, not shown on the drawings, at the architect's discretion. The cost shall be included but separate and identifiable within this section.</p> <p>The Contractor shall allow to supply, wire and install 4 additional HBE LED, 3 hour maintained emergency sign lights by Dextra Lighting, not show on the drawings, to the escape route areas at the architect discretion, signage to be agreed. The cost shall be included but separate and identifiably within this section</p> <p>The Contractor shall supply and install lighting control switches as described above, surface mounted to the building fabric and generally local to the luminaires which they control. Emergency lighting key test switched will be required together with retractive switches for the dimmable fittings. Switches on new partition walls shall be flush mounted Brushed Stainless-Steel Albany Plus range by Mk Ltd. The contractor shall ensure that luminaires shown on the drawings that are to be controlled by dimmer switches are ordered dimmable and include for all additional wiring required</p> <p>Final electrical connection to general and emergency lighting luminaires shall be made via plug in lighting connectors and heat resisting 3/4 core LSF (low smoke and fume) sheathed cables.</p> <p>The Contractor shall supply and install lighting control switches, where indicated on the design drawings</p> <p>All luminaires shall be equipped with an engraved traffolite label to indicate the relevant circuit number. All lighting control switches shall be equipped with engraved face plates to indicate the relevant circuit number.</p> <p>Contact Dextra Lighting Ltd</p>	<p>£</p> <p>£</p>	

	<p>Tel: 01747 858 100 Dave Watt 07977 460 192 dwatt@dextragroup.co.uk</p>	£	p
	<p>Contact Thorlux Lighting Martin Dearnley Mob: 07860 421 615 martin.dearnley@thorlux.co.uk</p>		
E2.09	Fire Alarm Installation		
	<p>The Contractor shall supply and install all of the necessary containment to facilitate the complete installation by others. Drawings in the main package from Islington Council</p>		
E2.10	Data/Voice & Access control Installation		
	<p>The Contractor shall supply and install all of the necessary containment to facilitate the complete installation by others. Cabling will go back to patch panels in each office, each patch panel shall be connected via optical and copper core cabling to the basement server room. An Entry call panel at the front of the building shall serve each unit. Information is contained within the main package from Islington Council.</p>		
E2.11	Earthing and Bonding		
	<p>The Contractor shall carry out all necessary earthing and bonding requirements as detailed on the drawings and as defined by the Current Wiring Regulations, (BS7671) 17th Edition. Earthing and bonding shall include:-</p>		
	<ul style="list-style-type: none"> a) Cross bonding of all incoming services to the premises. b) Bonding to all extraneous metal parts of the building, including sink units, structural steelwork, window frames etc. c) Bonding to all items of mechanical plant including radiators, steel/copper pipework, steel supportive frameworks, ductwork etc. d) Bonding to all items of sanitary pipework and appliances including cross bonding of Timesave type drain couplings, metal drain pipework between plastic sections etc. 		
	<p>All metal sheaths and/or armouring of cables shall be bonded to the metal parts of equipment to which they are connected.</p>		
E2.12	Associated Building Works		
	<p>The Contractor shall allow within the tender price to undertake all associated building works which would reasonably be expected to complete the electrical installations described above, including the holes required for any cable or trunking routes.</p>		

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	<p>The holes around any cables or conduits passing through internal or external walls must be properly sealed against the ingress of water or insects and/or the transfer of noise. Holes through fire compartment walls shall be sealed with a suitable 'fire-stopping' material rated for 60 minutes.</p> <p>The Contractor shall allow for all necessary pattresses for light fittings and accessories.</p>		
E2.12a	Show separate cost for trenching detail as per drawing 17020-T-221		
E2.13	<p>Handover, Record Drawings and Documents</p> <p>Prior to handover, the Contractor shall explain the full workings and operation of all the installations to the Site Manager in the presence of the Contract Administrator.</p> <p>Prior to the issue of the Practical Completion Certificate, a set of 'As Installed' drawings and a complete 'Operations and Maintenance Manual' shall be issued to the Contract Administrator for approval in addition to the information required for the Health and Safety File. The drawings shall be to a scale not less than the contract drawings, clearly showing the layout of the cables, equipment sizes/specification etc. and marked 'As Installed'.</p> <p>The Practical Completion Certificate will not be issued until these drawings are approved.</p> <p>When approved, the above drawings shall be supplied to the Contract Administrator as follows:</p> <ul style="list-style-type: none"> a) Two sets of paper prints and b) AutoCAD DWG or DXF Digital CAD file on floppy disk. 		
E2.14	<p>Schedule of Rates</p> <p>The Contractor shall provide a schedule of rates based on the tender to be used for add or omit purposes for the supply, wiring & install of</p> <p>1No. lighting point (excluding luminaire)</p> <p>1 No. Emergency Light Point (excluding luminaire)</p> <p>1 No. Switched fused connection unit on 10m radial circuit</p> <p>1 No. power point</p> <p>1 No. meter of 20mm galvanised steel conduit</p> <p>1 No. meter of 16mm² 3 core LSF XLPE SWA</p> <p>1 No. meter of 25mm² 3 core LSF XLPE SWA</p> <p>1 No. meter of 100mm X 50mm 2 compartment Steel trunking</p> <p>1 meter of MT 2</p>		

Tender Summary

1.	Foreword	Introduction	£.....
		Codes of Practice	£.....
		Drawings and Specification	£.....
		Access and Site Occupation	£.....
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		Routing of Services	£.....
		Responsibility and Cognisance	£.....
		Documentation	£.....
		Testing and Commissioning	£.....
		Outstanding Items	£.....
		Defects	£.....
2.	Scope of Works		£.....
3.	Distribution Equipment		£.....
4.	Cable Management Installation		£.....
5.	Sub Main Cable		£.....
6.	Connection to Mechanical Plant		£.....
7.	General Power		£.....
8.	Lighting Installation (General and Emergency)		£.....
9.	Fire Alarm Installation		£.....
10.	Data/Voice Installation		£.....
11.	Earthing and Bonding		£.....
12.	Associated Building Works		£.....
12a	Trenching detail		£.....
13.	Handover, Record Drawings and Documents		£.....
14.	Contingency		£ 14 ,000.00
15.	Provisional Sum for Lightning Protection		£ 15 ,000.00

Total Taken to Main Summary

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Signed

On behalf of

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Dated