The Royal Borough of Kensington and Chelsea.

THE ROYAL BOROUGH OF
KENSINGTON
AND CHELSEA

Employers Requirements

Communal & Emergency Lighting General Specification

For and on behalf of:

The Royal borough of Kensington and Chelsea.

Town Hall, Hornton Street, W8 7NX

Telephone No: 020 7361 3000

Website: https://www.rbkc.gov.uk/

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1.1. SECTION ONE: INTRODUCTION & GENERAL CONTRACT MATTERS

1.1.1. This specification, as a whole defines the general performance requirements and indicative specification requirements for the works. The successful supplier of the installation will have final responsibility for ensuring that the works meets current best practice and any respective statutory and, or regulatory standards.

1.2. INTRODUCTION TO THIS SPECIFICATION

1.2.1. The following lists the structure of the document:

a) Section One: Introduction & General Contract Matters.
b) Section Two: Technical Preliminaries
c) Section Three: Scope of Works
d) Section Four: Defects Liability
e) Appendices including
   a. property list – where agreed, a client produced property list will be issued for review and use as a pricing document by the supplier.
   b. FRP-013 – Employer Requirements Process
   c. Specialist coatings.
   d. Model forms

1.2.2. This specification shall be read in conjunction with the Electrical services drawings - where available and respective complimenting Electrical drawings – where available.

1.2.3. The Contractor shall note that this is a performance specification. It shall be clearly understood that the appointed Contractor shall be fully responsible for the detailed design, supply, installation, testing, commissioning, demonstrating, documentation and leaving in a satisfactory working order following the removal/adaptation/installation of part, or complete, lighting systems and schemes.

1.3. INTRODUCTION TO THE PROJECT

1.3.1. Following assessments within the borough, the provision of lighting and emergency escape lighting, has been categorised as having an insufficient level of lighting to the the identified communal areas / escape routes.

1.3.2. The contractor shall be required to identify each property listed, undertake initial visual survey, present requirements to meet the requirements set out in BS 5266 -1:2016 - Code of practice for the emergency lighting of premises, including -

- BS EN 1838:1999 - Lighting applications. Emergency lighting
- BS EN 50172:2004 - Emergency escape lighting systems

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1.3.3. Some of the properties listed will have multiple entrance ways and potential escape routes, the contractor will be expected to review a property in its entirety, including all relevant details, all respective circuits, all respective intake areas, plant rooms, lift motor rooms, tank rooms and other areas required to have emergency lighting as indicated by BS5266-1:2016.

1.3.4. Contractor shall ensure that upon completion of the works, the property shall have a fully functioning emergency lighting system, which -

a) Show clearly and unambiguously the escape routes.
b) Provide illumination along such routes to allow safe movement towards and through the exits.
c) Where present, that fire alarm call points and firefighting equipment provided along escape routes can be readily located.
d) Allow operations concerned with safety measures to continue upon loss of power to general lighting circuits.

1.4. PROPERTY LIST

1.4.1. N/A

1.5. VARIATION OF EQUIPMENT

1.5.1. Equal and approved shall be considered during the tendering process, a full letter of explanation is to be included within the proposal highlighting the advantages of changing the manufacturer. The equipment shall meet the specification below 100%.

1.5.2. Wherever products are specified by proprietary name the phrase 'or equivalent' is to be deemed included.

1.6. ASBESTOS

It shall be the Contractors responsibility to request and receive any information regarding asbestos on the site and subsequently satisfy their obligations by carrying out a Pre-construction asbestos survey as further identified within section 2.14 of this specification.

1.7. MAIN CONTRACT PRELIMINARIES

The Main Contract Preliminaries will be issued by the Contract Administrator as a separate document and included within the tender pack.

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1.8. DEFINITIONS

1.8.1. For a definition of roles and responsibilities of all parties involved in the project, refer to the Main Contract Preliminaries.
1.8.2. Where the phrase 'this Specification' has been used, this refers to all sections of this document as well as all supporting documents and the main specification documents collectively.
1.8.3. 'Employer' or 'Client' shall be in reference to The Royal Borough of Kensington & Chelsea (RBKC).
1.8.4. 'Principal Contractor' refers to the appointed Main / Fit-out / Building Contractor (or indeed services Contractor in lieu of the aforementioned).
1.8.5. 'Services Contractor(s)' refer to any or all of the Electrical, or Electrical Services Sub – Contractors (or indeed Main / Fit-out / Building Contractor in lieu of the aforementioned).
1.8.6. 'Contractor', 'Electrical Sub-contractor', 'Electrical Services Contractor(s)' and similar derivatives refers to the Electrical Services Contractor.
1.8.7. 'Electrical Sub-contractor', 'Electrical Services Contractor(s)' and similar derivatives refers to the Electrical Services Contractor.
1.8.8. The 'Consultant' refers to the appointed consultant identified within the main specification documents collectively, The Royal Borough of Kensington & Chelsea (RBKC) or any other Specialist Consultant/Sub-Consultant appointed by RBKC.
1.8.9. Other specialist Consultants or sub-consultants appointed by others shall be referred to separately.
1.8.10. 'Services Contract' refers to any or all of the Electrical, or Electrical Sub-Contract(s).
1.8.11. 'Drawings' refers to all RBKC Specialist Sub-consultants, Tender or Contract Drawings including the Electrical Services as well as sketches issued as part of the Contract or under a subsequent Instruction.
1.8.12. 'Site' shall mean the lands and other places, on, under, over, in or through which the works are to be executed or carried out and any other lands or places provided by the Client for the purpose of the Contract.

2. SECTION TWO: TECHNICAL PRELIMINARIES

2.1. GENERAL

2.1.1. Throughout this document "provide" and "provision of" shall mean the design, supervision, co-ordination, provision and delivery, off-loading & appointment of specialist lift and shift, storing, erection, installation, testing, commissioning and putting to work of the Electrical systems as described herein and/or shown on the accompanying tender design intent drawings to provide complete and functional installations.

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2.1.2. The Contractor shall remain responsible for developing the design based on the tender documents and shall be responsible for the full detailed design allowing for all necessary works within their tender submission.

2.1.3. The Contractor shall allow for the design, provision, installation, testing and commission of all Electrical services required including necessary ancillaries, fittings and fixings for the full operation and completion of the works, including the provision and/or alterations of electrical supplies and containment for Electrical systems etc

2.1.4. The installation will be in accordance with current editions of the BS 5266: emergency lighting and associated regulatory, statutory and best practice methodologies (see section 2.3.2 for further details).

2.1.5. The Contractor's responsibility shall include the following.

a) The preparation and submittal of all necessary calculations, designs, modelling and working drawings together with their own detailed Particular Specification for Comment by the Client.
b) The provision of design calculations, design drawings, working drawings, technical submissions and such details as are necessary to demonstrate their understanding of their design as detailed on the Tender Drawings to the satisfaction of the Client.
c) Preparation of builder's work drawings and schedules.
d) The preparation of a coordinated programme of works covering all aspects of the contract. This shall include those aspects of the works that require co-ordination with other contract programmes. Separation and submittal of Method Statements covering complex operations and those having a direct influence on the continuing operation of the site and other external system.
e) Brackets, supports, fixings and clamps.
f) Selection of plant and equipment to meet the specified criteria including all services design and co-ordination required to modify connections, services to facilitate the plant and equipment selected.
g) Detailed design of interfaces based on the specific equipment selected to meet the specified performance.
h) Off-loading and storage of all equipment.
i) Liaison, co-ordinate and co-operate with all other Contractors that may be employed by the Client to carry out other works related to the new facility. Co-ordinate and manage all sub-Contractors and specialists involved in the works, to ensure adherence to the programme and compliance with Site procedures.
j) Any deviations, changes or modifications to this specification, Employers Requirements and/or specific Tenure Specifications proposed by the Contractor must be approved in writing by the M&E engineer consultant, Main Contractor and Employer.

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k) Advise the Client in writing, and within 5 working days, of the cost implications to the Electrical and Electrical Services scheme arising from changes to the scheme or as a result of (written or verbal) instructions issued by the Contract Administrator on site.

l) The Contractor shall at all times fully protect the works to maintain separation from the existing operations of surrounding areas with all services and systems fully maintained in operation during The Contract.

m) At least two weeks shall be allowed for the Employer's Agent to inspect the submitted documents, from receipt, and also sufficient time shall be allowed to incorporate any comments by the Employer's Agent and re-submission of the documents prior to commencing any associated work on site. The time for this process shall be included in the programme or works to be agreed.

2.2. PROGRAMME/CASH FLOW PROJECTION

2.2.1. The Service Provider shall prepare a programme of work to meet the completion dates given (section 2.11 - PROGRAMMING & SCHEDULING) and shall submit this programme at the start of the contract to the Client Representative for approval.

2.2.2. The supplier shall provide, alongside the project programme, a cash forecast projection for the full duration of all works associated with the project. This will include pre-start, main body of works and post project associated costs.

2.2.3. The forecast will highlight expected monthly expenditure, inclusive of all anticipated costs, as a single line cost, shown as pounds sterling for the respective calendar month. This will be listed by calendar month and based on the Borough's financial year cycle; that is April through to the end of March.

2.2.4. Where the project duration extends past the end of the current financial year, then a separate book will be presented, detailing proposed expenditure covering the following year, and so forth.

2.3. CLASS OF WORKS

2.3.1. All works shall conform to the best principles of modern practice and shall be carried out by fully competent tradesmen of the appropriate grades.

2.3.2. The whole of the works shall comply with the requirements of the following bodies or authorities where applicable, with all amendments in force at the date of tender:

a) The Regulations for Electrical Installations 18th Edition as published by the Institution of Electrical Engineers subsequently referred to as the IET (IEE) Wiring Regulations.

b) BS 5266 -1:2016 - Code of practice for the emergency lighting of premises.

c) The Electricity Supply Regulations 1988.

d) FRP-013 – Employer Requirements Process – SEE APPENDIX B

e) The relevant Codes of Practice and British Standard Specifications as published by the British Standards Institution.

f) The Fire Officers Committee Regulations and the Local Fire Officers requirements.

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g) Local Bye Laws and the regulations and requirements of other Authorities.
h) Health and Safety at Work Act 1974 with particular reference to the Electricity at Work Act 1989.
i) Building Regulations.
j) Any other relevant regulations statutory or otherwise.
k) All works shall be installed to facilitate ease of inspection, testing and maintenance.
l) The Contractor shall make good at no extra cost to the Contract any part of the work that has not been carried out to the full satisfaction of the Engineer.

2.4. INFORMATION TO BE PROVIDED BY THE CONTRACTOR

2.4.1. CONTRACTOR SURVEY DETAILS

A fully detailed survey shall be carried out, by the Contractor, to ascertain all relevant site details, prior to carrying out any drawings works and ordering of materials or construction works. The survey shall include but shall not be limited to:

a) Positions of existing emergency light fittings.
b) Positions of existing emergency lighting and communal lighting equipment, including time clocks, photocells, power supplies and the like.
c) Building finishes (walls, ceilings and floors).
d) Location of other electrical supplies and other services.
e) Location of risers.

2.5. WORKING DRAWINGS

2.5.1. Working drawings shall be provided for all installations where the Smart Scan networked system has been installed. Existing building layouts are not, generally, available and the Contractor shall include for preparing layouts of all floor plans and location of control equipment, fittings and where identified cableways serving the respective circuits. These shall be provided in sufficient detail to enable the scheme to be reviewed as a whole.

2.5.2. The Contractor shall include in his tender for the preparation of all Working, Drawings, Builders Work and Installation Drawings together with any detail drawings necessary to facilitate the installation, to the satisfaction of the Project Manager.

2.5.3. Such drawings shall be submitted to the Project Manager for comment in such time so as not to impede the progress of the Works A period of 14 days minimum from receipt of drawings is required by the Project Manager to comment on the drawings prior to use by the Contractor as Construction Drawings.

2.5.4. This time period shall be included in the Contractor's programmes. Such general comments as given by the Project Manager shall not relieve the Contractor of any responsibility for the accuracy of details as set out on the drawings. Failure to prepare and present Working and Construction drawings to the Project Manager, as required above shall render the Contractor liable to all consequential costs incurred by the Employer or the Project Manager in the correction of the Works Working drawings shall comprise:

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2.5.5. Details of all equipment being installed and its relationship to the other equipment and to the building.
2.5.6. Details of any text and wording required (including engraving details, address, numbering and the like.)
2.5.7. Details of coordination with existing buildings, including locations of risers and switchrooms and any locations in which equipment will be installed.
2.5.8. Coordination of ingoing services and installations with any existing services
2.5.9. Coordination with any temporary structures, services, components and the like.
2.5.10. Any temporary works required, especially to maintain existing systems

2.6. CONSTRUCTION DESIGN MANAGEMENT REGULATIONS 2015

2.6.1. Throughout all aspects of the Tendering and Contract phases of this project, the Electrical Services Contractor, as well as his Sub-Contractors and relevant suppliers, shall adhere to the requirements of the Construction (Design and Management) Regulations 2015 and shall be responsible for adherence to Health & Safety legislation throughout the project.
2.6.2. The Contractor shall ensure that all items of equipment requiring future inspection and maintenance shall be positioned in accessible locations.
2.6.3. Where these locations affect the building fabric or architectural features the contractor shall advise the supervising officer within 2 – 3 days.
2.6.4. The contractor shall include all costs associated with CDM documentation, labour and equipment within the tender.

2.7. COMPETENCE

2.7.1. The Contractor shall not accept appointment unless the Contractor is suitably competent to carry out, resource, complete and hand over the works in full and to the requirements set out within the specification documents.
2.7.2. As such, the tendering Contractor is required to agree to carry out the contract in accordance with the above CDM requirements.

2.8. METHOD STATEMENTS

2.8.1. The successful Contractor will be required to provide a Method Statement in connection with the contract prior to commencement on site. This statement must take into consideration all aspects of the proposed works which may have a direct or indirect effect upon the client's normal operations and/or can be seen to pose a risk.
2.8.2. In particular, the Contractor will be required to provide a statement as to his proposals in respect of fulfilling all legal obligations regarding any work carried out on or adjacent to Electrical systems in accordance with the current legislation. This must include precautions taken to ensure that the systems are left in a safe condition as required by the Regulations.

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2.8.3. The Contractor in programming and executing the works must ensure that they are completed within no longer than 30 working days and have no more than 20 workers working simultaneously at any point in the project; or exceed 500 person days.

2.8.4. The Contractor in his time calculations must allow for any works which may be required following Practical Completion.

Where Regulations apply but the project is not notifiable.

2.8.5. The "Principal Contractor" as defined within the CDM Regulations, shall be the Contractor named in the Building Contract. The Principal Contractor will only be appointed upon the satisfactory development of the pre-construction phase of the Health and Safety Plan.

2.8.6. The Principal Contractor will be required to comply with all requirements of the CDM regulations which include, but are not limited to the following.

a) Ensure co-operation between Contractors on site and ensure they comply with site safety rules.
b) Take reasonable steps to keep unauthorised persons off the site
c) Give information to Contractors.
d) Ensure that every Contractor and employee carrying out construction work complies with any rules within the Health and Safety Plan.
e) Ensure that there are arrangements for the co-ordination of the view of employees or their representatives.
f) Ensure the Contractors provide information and training for their employees.
g) Ensure that the Health and Safety Plan contains the necessary features.
h) Give direction to the Contractors and including written health and safety rules in the Health and Safety Plan. Ensure that every Contractor and every employee carrying out construction work can discuss and offer advice on health and safety.
i) Ensure the contractors co-operate with the Principal Contractor and comply with his direction and safety rules.
j) Ensure that contractors provide the Principal Contractor with information, including risk assessment, information on reporting accidents and information for the CDM Coordinator.

2.8.7. The Contractor in programming and executing the works must ensure that they are completed within 30 working days and have NO more than 20 workers working simultaneously at any point in the project; or exceed 500 person days.

Where Regulations apply and the project is Notifiable.

2.8.8. The Client will have notified the HSE in accordance with the CDM 2015 Regulations. The Principal Contractor will be required to liaise with the Client and Principal Designer regarding notification of the requirements.

2.8.9. The notification shall be issued as a formal F10 – Notification of construction project HSE form and the Contractor shall not commence any works until this document has been submitted and the Contractor informed of this action.

2.8.10. The Contractor shall display in a readable position on the site, the notice given to the HSE under Regulation 21.

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2.8.11. The tendering Contractor must notify the Contract Administrator if there is any likelihood of not being able to meet the above requirements.

2.8.12. The tendering Contractor is required to agree to carry out the contract in accordance with the above CDM requirements.

2.9. THE ENVIRONMENT

2.9.1. The Electrical Services Contractor shall manage their works in an environmentally considerate manner. They shall also be responsible for ensuring that all the suppliers and sub-contractors also work in this manner. Efforts to conform to this clause should be built into their normal working practice and should include, but not be limited to, the following.

a) Reducing waste on site.
b) Reducing the use of energy on site – i.e., switching plant off when not testing or commissioning.
c) Separating all waste and ensuring all that can be recycled is.
d) Recycling all cardboard and paper packaging.
e) Using [more] environmentally friendly products (e.g., biodegradable cleaners and flushing agents).
f) Using materials from sustainable sources.
g) Encouraging the use of public transport, car sharing and local accommodation.
h) Efficient planning of procurement so that deliveries can be combined.

2.10. TENDER SUBMISSIONS

2.10.1. Details in respect of the tenderers return package requirements, tender sum breakdown, provision of schedule of rates, requirements for formal identification of exclusions, tender compliance, value engineering, provisional sums and programme requirements shall be as set out within the supporting documents and the main specification documents collectively.

2.11. PROGRAMMING & SCHEDULING

2.11.1. Details in respect of programming & scheduling, shall be as set out within the supporting documents and the main specification documents collectively.

2.11.2. However, the programming & scheduling required by the Contractors shall be not limited to the minimum requirements as below.

a) Tender Installation Programme.
b) Information Release / Required Schedule.
c) Installation Programme.
d) Procurement Schedule / Programme.
e) Testing & Commissioning Programme.

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2.12. VARIATIONS

2.12.1. No variation or deviation from this Specification will be made except by issue of a formal Change Order with relevant technical submission issued by the requesting agent.

2.12.2. The Electrical Services Contractor shall, always, comply with the Contract Documents, including this specification and all associated documents, schedules and drawings.

2.12.3. Should the Electrical Services Contractor depart from the design intent, he shall confirm this to the Consultant immediately.

2.12.4. Should the Consultant accept any deviation from the design intent, the Electrical Services Contractor shall, where necessary and at the Consultants discretion, provide detailed calculations and supporting information for review by the Consultant. The Electrical Services Contractor would then take on the design responsibility for this element of the Contract / Installation.

2.12.5. Any agreed deviations shall be undertaken at no extra cost to the Contract. Indeed, it would be expected that any such deviation would render savings that would be returned to the Client.

2.12.6. The Electrical Services Contractor will be required to enter into a design warranty for any design element of their, or their sub-contractors, work. The Electrical Services Contractor will also be required to comply with the 'designers' requirements, as defined within the CDM regulations.

2.13. VISITING SITE

2.13.1. The Electrical Services Contractor shall visit, or be available to visit, the construction site at all stages of the construction process as required.

2.13.2. Pre-Tender Survey/Visit

The Electrical Services Contractor shall visit the site prior to tendering to satisfy himself regarding the following, as no claim will be entertained on the grounds of want of knowledge in such respects:

a) Local conditions generally.
b) Nature and accessibility or otherwise of the site.
c) Nature and extent of proposed works.
d) Supply of and conditions affecting labour.
e) Familiarisation with the existing services installation.
f) Condition of existing services plant, equipment, wiring, pipework etc.
g) State and capacity of incoming gas/water/Electrical/telecoms supplies.

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2.14. PRE-CONSTRUCTION ASBESTOS SURVEY

2.14.1. The Contractor should be aware that the possibility of asbestos or other hazardous materials being present in other locations cannot be ruled out. Suitable PPE should be worn.

2.14.2. A pre-construction R & D asbestos survey will be carried out by the Employers Asbestos Consultant, prior to the works. A final register and drawing plan if necessary is available complete with risk assessment and removal plan for readiness and programming into the initial main element of works.

2.15. PRE-CONSTRUCTION SURVEY/VISIT

2.15.1. Immediately following availability of access to site and prior to commencement of construction, the Electrical Services Contractor, shall fully examine site conditions, physical restraints and existing installed services (where applicable) to ascertain that the drawings properly reflect the required works and, if applicable, existing services drawings are accurate as drawn.

2.15.2. The Electrical Services Contractor shall notify the Consultant of any variations between the site conditions and the Design Intent within one week of access such that a properly coordinated set of drawings can be produced prior to the installations commencing. No additional costs shall be met by the Client for lack of attention and compliance with this clause or for the works required to coordinate with the existing services.

2.16. EXISTING & REFURBISHMENT INSTALLATIONS

2.16.1. As noted above, the Electrical Services Contractor shall take great care to make themselves aware of the arrangement and condition of all existing services installations.

2.16.2. This will be essential to allow him to understand exactly how to replace, modify, extend or interface with any existing services as detailed within this specification.

2.16.3. No additional costs shall be met by the Client for lack of understanding or awareness of the arrangement and layout of the existing services.

2.17. ELECTRICAL SUPPLY

2.17.1. The Contractor shall be responsible for the provision of dedicated circuits for each lighting circuit. Where existing circuits are to be reused, then the contractor will be responsible for ensuring that they are fit for purpose.

2.17.2. In all cases the contractor shall provide suitable electrical certification demonstrating that the circuit serving the system meets current electrical regulations (BS7671: 2018)

2.17.3. MICC Cables

Generally, use 600v grade copper conductor MICC cable with LSZH overall sheath for all single-phase applications.

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Where required, agree use of MICC cables for all other applications with the Project Manager.

a) Provide red overall sheathed cables to all fire alarm system installations.
b) Provide black overall sheathed cables for all lighting applications.
c) Provide white overall sheathed cables for general power applications.

2.18. BUILDERS WORKS

a) The Contractor shall include for all core drilling of floors to ensure a clean and adequately sized transition for the ingoing cables and containment.
b) The Contractor shall protect all the existing finishes, furnishing and fixtures, services cables and the like.
c) The Contractor shall form holes of sufficient size to accommodate the cable containment.
d) Stopping containment short of the core hole is not acceptable. Cables shall be enclosed along their entire length.
e) The Contractor shall form or cut other holes through brickwork, blockwork and timber, as necessary.
f) All holes shall be properly made good, and fire stopped as appropriate to suit the surrounds.
g) Where holes are drilled into dwellings, they shall only be drilled with the resident being present.
h) No holes shall be drilled into an unoccupied dwelling.
i) Generally, holes shall be drilled from the inside of the dwelling to minimise the risk of break out plaster.
j) The Contractor shall ensure the risk or damage to brickwork where the bit breaks through is minimised. If necessary, 6mm pilot holes shall be used. The Contractor shall be responsible for all damage caused by the drilling operations and shall remedy them at his own expense.
k) Ensure conduit is not concealed until work has been inspected and approved.
l) Obtain permission before horizontally chasing walls.
m) Ensure that conduit and fittings buried in concrete or behind plaster are protected against corrosion or electrolytic action prior to rendering.
n) Ensure conduit concealed in wall chases is covered by plaster and/or rendering to minimum depth of 12 mm.
o) The Contractor shall include for redecoration of surrounding areas affected by the works. This shall include walls, ceilings and floor where containment systems or old light fittings have been replaced, trunking, risers, panels, boxing and the like where these have been disturbed by his works. The Contractor shall match, as closely as practicable, the existing colours, textures and finishes of decoration. Where this is not possible the Contractor shall agree an alternative colour and finish to be applied.
p) The contractor shall refer to appendix c - specialist coatings, where required to do so.

2.19. EXISTING CONTAINMENT SYSTEMS

a) Where required and agreed, the Contractor shall supply and install a completely new cable installation reusing and adapting the existing containment systems where necessary.

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b) Where existing containment is installed and is in good condition and would benefit the client for this to be reused, the installer should identify this and report this back to the client prior to undertaking any adaptation or replacement works.
c) Existing conduit and steel trunking systems may be reused under certain conditions, only with the express permission of the client. If it is to be reused it shall be:
d) Fit for purpose.
e) Inspected for suitability, capacity and condition. If the condition is deemed unacceptable in the opinion of the Project Manager, it shall be replaced.
f) Thoroughly cleaned internally and reamed if necessary.
g) Securely fixed and any missing fixings, lids, gaskets, covers and the like reinstated or renewed.
h) Secured along its entire length with security screws, including all conduit boxes, adaptable boxes and the like. Boxes with cross threaded screws shall be replaced.

2.20. CONDUIT SYSTEM

a) Where new conduit systems, extended sections of adaptations are required, the conduits shall be 20mm or 25mm Class 4 heavy gauge steel, surface fixed with all the proprietary accessories, e.g., boxes, adaptable boxes, saddles, couplings etc. necessary to provide a complete and satisfactory installation.
b) The conduit installation shall be fully completed before any cables are drawn into it.

2.21. FIXINGS

a) All apparatus, accessory boxes, trunking, conduit saddles, and fittings shall be securely fixed with Size 8 wood screws at least 38mm long.
b) The screws shall generally be of the roundhead type unless countersunk screws are required and shall be zinc plated steel within buildings and shall be brass in all damp and external areas. Except for fittings incorporating single hole fixings, e.g., space bar and distance type conduit saddles, at least 2 No. screws shall be used for each item to be fixed.
c) No shot firing shall be used.
d) All drilling or welding of structural steelwork shall be carried out without the written permission of the Project Manager.
e) Where fixings into brickwork, blockwork, concrete or masonry shall be made using non-deteriorating type plastic plugs of a size appropriate for the screws to be used & inserted into a hole of correct diameter & depth as recommended by the manufacturer of the fixing plugs.
f) No fixings shall be made into the mortar course of brickwork, blockwork, or masonry.
g) All conduit stop end, through & adaptable box lids shall be fixed with star headed security screws.

2.22. CONDUIT (STEEL)

a) All Steel conduits, bends, couplers, fittings and components shall be BS 4568 Parts 1 and 2 and shall be heavy gauge screwed, welded, black enamelled unless otherwise specified.
b) No conduit less than 20mm diameter shall be used unless otherwise specified elsewhere.

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c) The runs shall be so arranged that any condensed moisture can drain to the lowest point, where a screwed plug shall be provided for the purpose of draining.
d) Conduit runs shall be arranged in a neat and inconspicuous manner. Due consideration shall be given to the other services and the Contractor shall ensure that his selected routes will enable the necessary clearance to be obtained between electrical and other services.
e) Bends shall be made on a pipe-bending machine fitted with formers of the correct radii for the conduit. Where bends and sets occur in multiple conduit runs, they shall be arranged symmetrically to present a uniform and neat arrangement.
f) No more than two right angle bends will be allowed between draw-in boxes. All burrs shall be removed from cut lengths and surplus screwing lubricant wiped from threads prior to fixing of the conduit.
g) The requirements of Regulations 522-08 shall be observed when erecting a conduit installation.
h) Conduit systems concealed in walls, floors and roof slabs shall be designed so that the wiring can be readily inserted after the whole of the conduit installation has been erected and all wall, ceiling, and floor finished have been completed. All conduit chases into walls shall be recessed sufficiently to permit a minimum thickness of 6mm of plaster or other finish to be obtained.
i) Ceiling boxes for lighting fittings, etc., shall be brought flush with the ceiling plaster or finish. Extension rings shall be provided where necessary to facilitate this. The boxes of flush pattern switches and sockets, etc., shall be recessed into the wall structure until front edge is level both horizontally and with the finished surface of the plaster or other wall covering.
j) The use of crampets shall be restricted to the securing of conduits to floor slabs and in chases pending plastering or other finishes.
k) In roof voids and similar spaces where the conduits pass across the ceiling beams, plain stamped saddles shall be used.
l) Purpose made fixing clips and brackets may be necessary to buildings of special construction or industrial premises and the Contractor shall be deemed to be aware of this at the time of tendering and to have included for the supply of it in this tender.
m) Details of the proposed clips and/or brackets shall be submitted to the Project Manager / Project Managers Representative for approval prior to the manufacture of same being commenced.
n) Holes shall not be drilled in any structural steel work or pre-stressed concrete without first obtaining the approval of the Project Manager / Project Managers Representative.
o) Conduits shall be terminated in accessories, fuse boards or other equipment either by being screwed into the tapped spout or hole when such is provided or by locking into clearance holes by means of flanged couplers and smooth bore hexagonal male bushes.
p) Connections between conduit and the boxes with clearance holes shall be fitted with a brass compression washer between the box and coupler. All conduit joints shall butt in solidly to boxes, etc., with no exposed threads except at running couplers.
q) Where surface type fuse boards are to be installed on a concealed conduit installation the conduits shall terminate in an adaptable box behind the fuse board. Where possible an extra 20mm conduit shall be installed to a suitable termination point such as in a roof void or services duct to allow for future extension. The remote end shall be plugged.
r) Where the conduit system is left temporarily incomplete, all open ends shall be sealed by means of a coupler and screwed plug. Steps shall be taken to prevent the ingress of plaster into junction boxes and associated conduits.
s) Where the galvanising has been damaged during the course of the erection it shall be made good with good quality aluminium or zinc paint immediately.

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t) All boxes carrying lighting fittings, switches, sockets and other accessories shall be rigidly and securely fixed independently of the saddles. All other conduit boxes shall be securely fixed before the cables are drawn in.

u) Sufficient boxes shall be installed to permit the re-wiring of the installation and no box shall be installed in an inaccessible position. The Contractor shall check all proposes positions with the Project Manager / Project Managers Representative before installation.

2.23. CONDUIT (FLEXIBLE STEEL)

a) In situations where connections to motors or other such items of removable equipment are prone to mechanical damage these shall be made with PVC sheathed metallic flexible conduit, as manufactured by Kopex Ltd. List No. LS/1/PVC or equal and approved.

b) The flexible conduit shall terminate in the equipment, fitting, or conduit box etc., by means of a proper manufactured coupling as Kopex Ltd. List No. C/12 Duralumin in coupling or equal approved. Flexible conduits shall be kept as short as possible.

2.24. CONDUIT (UPVC)

a) **Plastic conduit shall NOT be installed** within any common or communal area. It shall only be used where specified and agreed in advance with the Project Manager and RBK&C electrical engineer. Only when approved and in these circumstances every precaution shall be taken to prevent external mechanical damage and unnecessary stress during erection.

b)All cabling fitted in plastic trunking or conduits shall be secured within the trunking using metal cable retain clips.

c) Plastic conduit shall be manufactured to BS 4607 from plasticised PVC and shall not support combustion. It shall be rigid heavy gauge high impact grade except where flexible is specified and be continuous drawn with welded fixings to accessories.

d) The minimum size of conduit to be used is 20mm diameter. Oval conduits shall not be used without the Project Manager / Project Managers Representative written approval.

e) The conduit shall be installed only where operating temperatures are within the range 10°C to 65°C. No actual installation of the conduit system will be allowed when the ambient temperature is below 5°C.

f) The conduit system shall mechanically continuous and all termination shall be made in conduit boxes, switches and socket outlet boxes or in the enclosure of electrical equipment. All conduit accessories shall be of same material as the conduit unless otherwise specified and conform to BS 4607 Part 1 and be provided with socket adapters to accommodate the conduit.

g) The ends of all conduits shall be cut square, be free from burrs and closely butted inside sockets. The joint between the conduit and socket shall be permanent, being made with cement supplied by the conduit manufacturers.

h) For conduit up to 25mm diameter, site bends may be made cold in conjunction with the correct size of steel bending spring. Above 25mm diameter bends must be made by heating the tube and insertion of the correct size of rubber cord in accordance with the manufacturer's instructions. Conduits showing signs of strain or kinking as a result of bending shall not be installed.

In all other way's plastic conduit shall be installed as steel conduit except as follows: -

i) Fixings shall be made at least every 900mm for surface runs.

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j) Care shall be taken to prevent damage due to expansion.
k) Expansion joints shall be made with oversize sleeves sealed with non-setting mastic compound.
l) Where earthing facilities are required, a suitable size earth conductor shall be included in the conduit system and connected to purpose made terminal in each accessory or conduit box.
m) Where flexible conduit is specified, this shall be heavy gauge and fitted with cemented couplings suitable for connection to the remainder of the conduit system. The use of flexible corrugated conduit will not be permitted.
n) At ceiling lighting points where, excessive heat may cause loss of fixings, the method of attachment of fittings shall prevent heat transmission or metal-ceiling boxes shall be used.

2.25. CONDUIT FITTINGS

a) All conduit fittings shall be of similar materials and finish to the particular conduit being used and comply with BS 4568 Part 2 unless otherwise specified.
b) Hard cast boxes will not be allowed except where specified for use with Fire Alarm equipment.
c) Elbows and tees, inspection or solid types, will not normally be allowed, but where conditions warrant the use of these fittings the Contractor shall apply to the Project Manager / Project Managers Representative for permission to use the same.
d) Standard circular boxes shall be used at lighting points unless otherwise specified.
e) Looping-in boxes used on concealed conduit systems shall be 'medium' pattern where the floor slab thickness permits 90° bends to be obtained in the conduit.
f) Angle pattern looping-in boxes may be used where the slab thickness is limited.
g) Adaptable boxes shall be heavy gauge pattern and of ample size for the quantity of conduits that are to be accompanied.
h) For conduit of 25mm diameter the boxes shall be 50mm in depth.
i) For conduits up to 37 mm diameter the boxes shall be 65mm in depth.
j) For conduits up to 64mm diameter the boxes shall be 100mm in depth.
k) Where inspection boxes occur in floor slabs, a non-ferrous metal floor trap shall be installed over the box.
l) The aperture area of the trap shall be sufficient to enable the cover for the inspection box to be easily removed.
m) Trap covers shall be recessed or plain type to suit the particular floor finish.

2.26. METAL CONTAINMENT/METAL FRAMEWORK & SUPPORTING STRUCTURES – TREATMENT

2.26.1. All cut edges shall be cut square, deburred and treated with a suitable and compatible paint, with finish as follows -
a) Galvanized finish; use two coats zinc rich paint.
b) Black enamelled finish; uses two coats of good quality, air drying, black enamel paint. Remove grease, oil, dirt and rust before applying protective paint.
c) Notify of any serious damage and repair or replace as instructed.

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2.27. COATING MATERIALS

a) All coating materials shall be applied in accordance with manufacturer's instructions and specifications. Coatings shall be applied in accordance with BS6497.
b) Whenever possible all coating materials shall be from one manufacturing batch.
c) Where more than one batch is to be used, keep separate, allocate to distinct parts or areas of the work, and inform the Project Manager accordingly.
d) Check that all coating materials to be used are recommended by their manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other.
e) Coating materials shall be Polyester powder coat, colour to be agreed to a standard RAL range. The Contractor shall apply a polyester powder seal and a polyester powder coat as recommended by the manufacturers.
f) Curing times shall be as recommended and appropriate to the metal temperatures. Coating thickness shall be in the range 55 –65 microns.
g) The durability shall pass the BS3900 tests for flexibility, scratch and impact resistance.

2.27.1. Handling and Storing Coated Steelwork
2.27.1.1. Use methods and equipment which will minimise chafing, chipping and other damage to coated components.
2.27.1.2. Ensure an adequate drying/curing period for each coat before handling.
2.27.1.3. Use suitable packing, lashings, lifting harnesses, nylon slings, rubber protected chains and chocks, etc.
2.27.1.4. Stack coated components clear of the ground, separated by timber chocks, and so that ponding does not occur.

2.28. TRUNKING (STEEL)

a) Metal trunking may be approved or specified in certain installations instead of multiple conduit runs. Such trunking shall be fabricated from sheet metal. It shall be internally reinforced by cross stays in such a manner that distortion will not occur during and after the installation of the cables. The internal free area of the trunking shall be such that the quantity of specified cables shall not occupy more than 45% of the available capacity.
b) All trunking used shall be of sufficient gauge to ensure that it is rigid when erected, will not easily deform and will not spring from its original shape. Trunking shall be securely fixed, each length shall be separately supported, and additional fixings shall be provided 300mm from the ends of a run.
c) Sliding joints shall be incorporated in trunking runs crossing building expansion joints.
d) Sections of trunking shall be connected by internally fixed rectangular coupling units of sufficient width to provide a bearing face of 25mm to which the lengths shall be welded or bolted. Paint and/or enamel shall be scraped away between the coupler and trunking to provide with additional fixings within 150mm of the end.
e) Tee pieces and bends shall be of the gusset type with removable covers and be formed with similar means of connection and inner radii shall be such that the integrity of cable insulation

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and conductors will not be impaired. Copper links shall be provided at couplings to maintain earth continuity.

f) Where a change in direction of a trunking run occurs, the deviation must be affected by a purpose made unit manufactured on similar lines to the bends and tee pieces described below, not by manipulation of the trunking.

g) Trunking shall be firmly attached to its associated equipment either by bolted flanges or by hexagonal male bushes, flanged couplings, and compression washers, according to the direction of run in relation to the equipment. Grommeted holes will not be accepted.
Where trunking does not terminate in equipment, the otherwise open end shall be capped with a flanged cover suitably bolted in position.

h) Vertical runs of trunking exceeding 2m in length shall be fitted with pin packs or other approved type of support to carry the weight of the cable. Inverted trunking shall be provided with cable retaining clips.

i) Care shall be taken to avoid damaging finished surfaces, protective enamel, or galvanising. Any such damage that occurs to the trunking shall be made good using a matching enamel or zinc rich paint immediately after erection.

j) Trunking that is intended for accommodating cables for various services shall be divided into compartment in order that complete segregation of the difference service cables can be affected.

k) Where trunking passes through walls and/or floors that normally constitute a fire barrier in a building, the Contractor shall seal any gaps left between the trunking and the building structure with intumescent material. The Contractor shall also provide a barrier of intumescent material fitted inside the trunking at this point to prevent the passage of fire.

2.29. TRUNKING (UPVC)

a) *Under NO circumstances* shall UPVC Trunking be permitted to be used in any common or communal area without metal support for any cables contained within it. Due to the situations where fire has caused trunking lids under heat melt and fall, allowing the cables within to subsequently drop and fall from the containment that can restrict exit and entanglement.

b) All cabling fitted in plastic trunking or conduits shall be secured within the trunking using metal cable retain clips.

c) Trunking manufactured from a high impact grade of UPVC, in compliance with BS 4678 Part 4, such trunking shall have a white finish, unless otherwise specified.

d) The internal free area of the trunking shall be such that the quantity of cables specified shall not occupy more than 45% of the available capacity.

e) Trunking of 50mm of greater width, installed with the cover on the side or bottom, shall be fitted with removable cable retainers at intervals not exceeding 1 metre.

f) All trunking and accessories shall be installed strictly in accordance with the manufacturer's instructions, taking particular care to prevent distortion due to expansion.

g) Fixing holes must be elongated to allow for longitudinal expansion, and washers be provided behind screw-heads.

h) Screws must not be over-tightened. Fixings to be spaced at maximum intervals of 400mm and two fixings must be provided at each point, for trunking having a width of 50mm or greater.

i) Straight joints shall be completed using permanent and semi-permanent sealing cements, allowing sufficient gap between ends of trunking lengths to allow for expansion. Lids shall be fitted so that they overlap joints for greater strength.

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j) Tee joints and bends shall be affected by utilising appropriate and approved accessories, fitted in accordance with manufacturer's instructions, and separately fixed, where these are not of the "Snap-On" design.
k) The inner radii of all bends in the trunking system shall be such that cables will not require a bend of lesser radius than that prescribed in the current edition of IEE Regulations.
l) Where trunking terminates in accessories or equipment, this shall be achieved using flanged couplers or another appropriate accessory. Open ends shall be fitted with end caps of an approved pattern.
m) "Self-fixing," types of PVC trunking will not be accepted. All trunking shall be screw fixed.
n) Unless routes of trunking area clearly indicated on the drawings they shall be determined by the Contractor and approved by the Project Manager / Project Managers Representative before work commences.
o) Trunking shall be parallel with the lines of the building construction, and properly aligned.
p) Vertical runs of trunking exceeding 2m in length shall be fitted with an approved type of support to carry the weight of the cables.
q) Where trunking passes through walls and/or floors that normally constitute a fire barrier in a building, the Contractor shall seal any gaps left between the trunking and the building structure with intumescent material. The Contractor shall also provide a barrier of intumescent material fitted inside the trunking at this point to prevent the passage of fire.
r) Where points are wired using mini trunking the trunking must be extended along the whole length of the wall upon which it is fitted whether it contains cabling along its entire length or not, this applies both vertically and horizontally.
s) Mini trunking shall be installed in a convenient corner or against door architraves and skirting boards. Under no circumstances should it be installed in the centre of a wall without the prior agreement of the Project Manager / Project Managers Representative. Where possible trunking shall be installed in accessible cupboards or other unobtrusive locations.
t) Where mini trunking butts up against the accessory box a purpose made clip or moulded coupling shall be used to assure a square and neat joint occurs at this point.
u) Where mini trunking is installed from a floor or roof void it shall extend 30mm into the void and a short length of lid placed on the trunking to extend 12.5mm below the ceiling. The longer length of trunking lid shall then be fitted, and a purpose made clip-on coupler fitted over the joint in the lids and butted against the underside of the ceiling.
v) No surface cables shall be installed without the protection of P.V.C miniature trunking.
w) Mini trunking is used from one room to another and it passes through a wall a short length of lid shall be fitted of the trunking extending 12.5mm either side of the wall. The lid shall then be fitted in both rooms and a purpose made clip-on coupler fitted over the joints on either side of and butting against the wall.
x) Where mini trunking is used from one room to another and it passes through a wall a short length of lid shall be fitted to the trunking extending 12.5mm either side of the wall. The lid shall then be fitted in both rooms and a purpose-made clip-on coupler fitted over the joins on either side of and butting against the wall.
y) All finished lengths shall be caulked using decorators caulking mastic.

Generally, in all other ways' plastic trunking shall be installed as steel trunking except as follows:

z) Fixings shall be made at least every 500mm for surface runs.
aa) Double side tape fixing mini trunking shall not be acceptable.
bb) For use in Flat/dwelling only To BS 4678: Part 4.

a. The contractor shall install all cabling within each dwelling in white MT2 mini trunking the contractor shall use manufactured bends and ends only.
b. Installer to install to Project Manager's requirements.

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c. Allow 6 meters per dwelling.

2.30. AUTOMATIC SWITCHING CONTROL OPERATIONS

2.30.1. Presence and absence detection Lighting will automatically be switched on and/or off when anyone enters and leaves the space covered by the sensor (according to a pre-set time). Where some lighting is always required, base lux levels will be maintained. Absence only detection requires manually switching 'on' but minimises parasitic power.

2.39.2. Daylight control A photoelectric cell (PEC) monitors the level of daylight, switching 'on' when the daylight fades below a trigger point maintaining a consistent lighting level and resulting in potential savings.

2.39.3. Wherever possible, the contractor will supply and install a system whereby both daylight control with presence detection is present. Ensuring that by combining the two types in the correct settings will yield maximum savings.

3. SCOPE OF THE WORK

3.1. EXTENT OF THE WORKS

3.1.1. The Regulatory Reform (Fire Safety) Order 2005 (the 'FSO') does not apply to individual flats but does apply to the common parts of blocks of flats. The FSO also applies to workplaces within a block of flats. For example, these can include a room used by a caretaker or concierge, a plant room or commercial premises.

3.1.2. The FSO imposes requirements and duties on the 'responsible person'. In this case, the Royal Borough of Kensington & Chelsea (RBKC), duty as the landlord to manage any of the identified risks to a reasonably practicable level.

3.1.3. The FSO requires that the appropriate fire safety measures are determined by means of a fire risk assessment. The fire risk assessment must be 'suitable and sufficient' to ensure that the general duty of fire safety care is satisfied within the common parts.

3.1.4. As part of the fire risk assessment it was identified that several properties were found to be deficient in terms of emergency escape lighting.

3.1.5. This programme is intended to correct that deficiency, by reviewing the identified properties and undertaking actions to ensure that the correct type and number of emergency luminaires are installed, fully operational and compliant with the current regulations.

3.2. VALIDATION COMMISSIONING, RESILIENCE AND EXISTING CONTROLS.

The Contractor shall allow for validation commissioning of the existing system to be carried out by a specialist commissioning contractor of their choice. The contractor shall be responsible for the works and the results which will provide the basis of equipment selections following review by the consultant and client.

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3.3. RESIDENTS LIAISON OFFICER (RLO)

The Contractor shall ensure that a dedicated Resident Liaison Officer is appointed for this project and duties shall comply with those set out by Royal Borough of Kensington & Chelsea.

The Contractor will nominate an operative of suitable standing to act as RLO. That operative will be available on site between the hours of 8.00 – 16.00 for contact by any tenants; name and CV to be provided at pre contract meeting for review and approval.

The Contractor will distribute a letter to each tenant or person that may be affected by the works detailing:

- The works to be undertaken.
- A program of works.
- The working hours of the Contractor.
- The contact name and telephone number of the RLO.
- Which properties may be affected by the noise of the operations?
- Reassurance that no loss of supply will be encountered / advise as to when these programmed stages of loss of supply are.

The contents of the letters are not restricted to but must contain the above items. The Client, before distribution, must also agree the contents.

The Contractor will provide and erect a signboard, with the Client's logo. Location and size to be agreed by Contract Administrator and Client representative.

The Contractor will provide an out of hours emergency telephone contact, for use by the Client emergency service, the contact number will be provided at the pre contract meeting. (The Client will test call the number prior to the start and during the term of the contract).

The Contractor will hand deliver a letter of interruption of services to each resident no later than (7) days prior to the shutdown. It should include:

- The day dates and time of any shutdown.
- The time the services will be restored.
- The duration of the shutdown.
- The time the services will be restored.
- The name and telephone number (including emergency number) of the RLO.

The Contract Administer must agree to the contents before distribution. The contractor will produce a copy of the letter at the pre-contract meeting.

3.4. EXISTING & STRIP OUT DRAWINGS, REPORTS & NOTIFICATIONS.

3.4.1. Strip out drawings.

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The Contractor shall provide strip-out drawings as part of their initial enabling works identifying the extent of the strip out works, details regarding isolation, method of isolation, methods of safe removal and builders work including any fire stopping.

3.4.2. Validation reports.

The Contractor shall ensure validations reports are issued prior to validation commissioning being carried out and respective works commence.

3.4.3. The Contractors validation reports shall include but not be limited to the following;

a) Analysis against BS7671 (current version).
b) Analysis against CIBSE SLL Lighting guides requirements.
c) Analysis against BS 5266 requirements (current version).

3.4.4. Notifications.

1. The Contractor shall comply with the client's notifications and signage requirements for site works.
2. The Contractor shall ensure that the Principle Designer is aware of all notifications and consultation has occurred to ensure monitoring and approval of notifications is carried out.
3. All and any fonts, layouts, time periods, wordings and general requirements for notification purposes shall be in line with Royal Borough of Kensington & Chelsea requirements.

3.5. LOSS OF SERVICE & TEMPORARY SUPPLIES

3.5.1.1. The Contractor shall be allowed, within their programme to carry out works with a loss of service if;

a) The planned loss of service is anticipated to be no longer than ½ day **(12 hours).**
b) The planned loss of services has prior agreement with both the client and consultant.
c) Prior approval of client is given.
d) Notification letters to residents have been issue >7 days before.
e) Newsletter is present in common areas to notify intentions.
f) Vulnerable person's strategy is in place.

3.5.2. Temporary Supplies.

Depending upon the period of loss of service strategy agreed with the client and necessity, the Contractor may be required to provide a method for temporary supplies, particular consideration to temporary lighting systems shall be given. As such, any temporary service will only be accepted if this is capable of satisfying delivery in line with operational duty identified within validation report.

3.5.2.1. A temporary supply shall only be accepted if;

a) Good Condition.
a) Previously maintained.
b) 24-hour breakdown and contractor response.

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c) Owned by or contracted through the Main Contractor.
d) Fully operational.
e) Electrically sound.

3.5.3. Vulnerable person's protocol.

The Contractor shall allow for a strategy to be formed in consultation with the client and consultant to ensure suitable monitoring and protection of known vulnerable persons within the building(s). The Contractor shall ensure, once a plan is scheduled, that this is in place and adhered to by the Contractor and managed specifically by the RLO during times of loss of service.

3.6. COMMUNAL LIGHTING REQUIREMENTS

3.6.1. The Contractor shall design, supply, install and commission a complete energy efficient communal lighting scheme to suit the existing building layout. The design proposals shall be agreed with the Client prior to commencement on site.

3.6.2. The contractor will be responsible to engage the services of a competent person for all general and Emergency Lighting Installations.

3.6.3. Where full replacement or renewal works take place, the installation of LED light fittings shall be undertaken.

3.6.3.1. For general communal escape routes and circulation areas, White 4000K luminaires with die-cast aluminium body and with satin polycarbonate front cover shall be utilised as Thorlux PRISMALETTE PRO LED fittings or equal and approved shall be utilised.

3.6.3.1.1. Minimum Standard for general circulation luminaires is as follows –

a) Vandal resistant LED bulkhead luminaire manufactured from strong diecast LM2 aluminium full polyester powder coated black, with white option.
b) Ceiling or wall mounted distribution options.
c) High impact resistant UV stabilised polycarbonate cover.
d) IP66 rated luminaire.
e) LED light engine providing L70/B10 88,000-hour life, 4000K, CRI 80+
f) LUX Guard LED PCB protection.
g) Semi recessed and cornice mounting options.
h) Control gear and LED circuit boards replaceable for future maintenance.
i) Manufactured in the United Kingdom.

3.6.3.2. For general wall mounted fittings to the side, rear or front elevation of buildings and blocks, White 3000K luminaires with die-cast aluminium body and with satin polycarbonate front cover shall be utilised as Thorlux MERCIAN LED fittings or equal and approved shall be utilised.

3.6.3.2.1. Minimum Standard for wall mounted luminaires shall be –

a) Vandal resistant LED bulkhead luminaire manufactured from strong diecast LM2 aluminium full polyester powder coated black, with white option.
b) Wall mounted distribution options.
c) High impact resistant UV stabilised polycarbonate cover.

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d) IP65 rated luminaire.
e) LED light engine providing L70/B10 88,000-hour life, 4000K, CRI 80+
f) LUX Guard LED PCB protection.
g) Semi recessed and cornice mounting options.
h) Control gear and LED circuit boards replaceable for future maintenance.
i) Manufactured in the United Kingdom.

3.6.4. All commissioning activities shall be done via the supplier/Manufacturer, or by approved commissioning agents of the supplier/manufacturer.

3.6.4. Balcony lighting shall comprise of LED luminaries installed to the balcony soffits; Luminaries shall be installed centrally outside each resident's door plus at additional intermediate locations where detailed.

3.6.5. Where luminaires need to be wall mounted, these shall be installed to the side of the front entrance door and shall be uniform throughout, ensure that lighting design avoids extraneous lighting to enter dwelling through windows or quarter lights.

3.6.6. Lighting levels shall be set to achieve the following levels within the common parts.

Area	Minimum Maintained LUX	Minimum Uniformity	Minimum Colour Rendering Index
Hallway and landing	100	0.6	80
Store	100	0.6	80
Stairs	100	0.6	80
	50 – 150 (rotary dimmer with push on/off)	0.6	80

3.6.7. The positions of all luminaries shall be agreed with the contract administrator prior to the start of works.

3.6.8. Consideration for division of circuits needs to be undertaken as part of the lighting design process, circuits arranged for staircases half and full landings and any balconies will require a dedicated circuit installed per floor.

3.6.9. All luminaires shall be corrected to give a power factor of 0.95 or better.

3.6.10. The contractor shall allow for an appropriate method of fixing luminaires throughout, all mounting heights shall be agreed with the contract administrator on site.

3.6.11. Luminaries shall have a colour temperature 4000K.

3.6.12. The final position of all luminaires, columns and equipment shall be agreed with the contract administrator before works commence.

3.6.13. The Contractor shall allow for making good and decoration of the ceiling to accommodate the new location and orientation of the proposed luminaires.

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3.7. LIGHTING CONTROL

3.7.1. Lighting installation is to be upgraded to provide presence detection control.
3.7.2. The Contractor shall provide DALI dimming luminaires within the communal areas with DALI PIR presence detection with an operational time of 15 minutes.
3.7.3. Security levels - The Contractor shall ensure that the lighting levels for security purposes shall be achieved and maintained throughout the agreed routes; these will be set at a 10% security level and held continuously until presence next detected.
3.7.4. The contractor shall provide sufficient PIRs to ensure full coverage of the common areas.
3.7.5. The luminaires shall operate in presence detection mode with daylight compensation Photocell element to hold off lighting when sufficient daylight is present i.e. entrance lobby natural light exceeds 2% daylight factor or greater than 500lux.
3.7.6. Lighting within storerooms and cleaners' cupboards shall be PIR operated. The PIR shall be integral to the fitting. The PIR shall have an operate time of 10 minutes only.

3.8. EMERGENCY LIGHTING

3.8.1. The Contractor shall provide a system of emergency lighting to comprise, self-contained and integral DALI LED emergency luminaires, associated control gear and standby 3hr battery packs together with a system of illuminated emergency exit signs with pictogram legends.
3.8.2. All emergency lighting luminaires shall generally be wired with live feeds from the local lighting circuits and shall be as detailed within the schedules. All luminaires designated for emergency use shall incorporate a green LED indicator, which shall be readily visible under normal operating conditions.
3.8.3. The emergency lighting systems and emergency exit signage in the building shall be provided to meet the requirements of BS 5266 and CIBSE SLL Lighting guidance Note 12 and shall comply and be certified by the Industry Committee for Emergency Lighting (ICEL) 1001 and BS 5266.
3.8.4. Emergency lighting units are to be fitted with green LED indicators to indicate a healthy supply. The emergency luminaires shall incorporate integral nickel cadmium battery back-up for three-hour service.
3.8.5. The Contractor shall ensure that all key switches – where required, are rewired and replaced for testing and maintaining the emergency lighting by site operatives.

3.9. EMERGENCY LIGHTING TEST SWITCHES – where required

3.9.1. The Contractor shall provide emergency light test switches are located adjacent the electrical consumer unit within each block. The Contractor shall provide new test switch positions and provide new key switch plates throughout as required to meet this clause.
3.9.2. The Contractor shall provide additional test switches as necessary to meet the requirements of this specification and the requirements of BS 5266 and BS 7671.

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3.9.3. Switching of the emergency lighting test switch shall not isolate the normal supply the standard lighting installations. The Contractor shall wire the circuitry of the installations to meet this requirement.

3.10. EMERGENCY LIGHTING LABELLING/ASSET TAGGING

3.10.1. The Contractor shall provide self-adhesive labels to all emergency luminaires. Each luminaire shall be labelled with a unique reference number to identify the fitting for maintenance and fault reporting purposes.

3.10.2. The labels shall be white with black text Calibri 18 font or as directed by the Client. The label shall be attached to or adjacent to the luminaire in a readable location. Labels shall be fitted to both internal and external emergency luminaires and as such the labels shall be durable to withstand the environmental conditions they are expected to be located within.

3.10.3. The Contractor shall fully detail and describe the method and strategy of the labelling system and this shall be included within the O&M manual and emergency lighting logbook. The Contractor shall provide a schedule of emergency luminaires including their unique reference number and location. This can be shown as a list with the above details listed, or as a floor plan indicating the location, type and reference number of the respective light fitting.

3.11. SELF-MONITORING SYSTEM

3.11.1. Where an Emergency lighting self-monitoring system is to be installed the following specification should be adhered to, as Thorlux Smart Scan system or equal and approved:

3.11.2. Each luminaire shall be equipped with an ‘intelligent’ electronic sensor providing movement detection, light level sensing and an infra-red receiver for programming and remote control.

3.11.3. Wireless control groups shall be catered for, for example; a single balcony would be classed as a control group, or single stairwell. This will enable the client to initiate logical and localised command and control initiatives for both security and energy saving measures.

3.11.4. Emergency luminaires shall be self-test with built in wireless capability, operating on the same wireless network as the standard intelligent luminaires.

3.11.5. Tests can be initiated using an infra-red programmer as well as retrieving emergency operational status information. The system shall be monitored by a central wireless Gateway. This device will upload system status and energy performance to a website for users to view in a graphical format.

3.11.6. Wireless connectivity Luminaires shall be capable of being inter-connected wirelessly. Operational frequency shall be 868/922 MHz with low data rates - less than 1%. The system shall work on a mesh networking principle and be capable of adding link addresses across a building providing a corridor hold function. The link addressing shall be independent from the group addressing. Programmable settings can be altered from floor level using an infra-red programming device.

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3.11.7. Emergency luminaires Emergency luminaires shall be self-contained LED type, capable of communicating status via the wireless mesh network to the Gateway. System test times and other parameters shall be programmed via the website, this information shall be automatically downloaded to the Gateway. The Gateway shall control all emergency testing and reporting automatically.

3.11.8. Website system monitoring all luminaires shall report status to the Gateway once per day. This will include failure status and energy performance data. These records shall be uploaded to a website periodically where the data will be stored securely and displayed in graphical format. The website will also store supporting site documentation including 'as fitted' drawings, commissioning certificates and any other documentation required by the end user.

3.11.9. Environmental credentials the manufacturer shall be independently certified to ISO14001. The manufacturer's processes shall be carbon offset via a quantifiable carbon offsetting scheme and shall include emissions from the lighting manufacturer's vehicles used for delivery and other project associated mileage.

3.12. TEST AND INSPECTION

3.12.1. The Contractor shall test and commissioning the emergency lighting installation in accordance with the equipment manufacturer's recommendations and the requirements of the current BS5266-1 in the presence of the Client.

3.12.2. The Contractor shall provide the necessary completion certification upon satisfactory commissioning tests.

3.12.3. Typed copies of the test sheets shall be included within the operation and maintenance manuals.

3.12.4. The Contractor shall fully record all tests test certificates and issue with the 'As Fitted' drawings and the operating and maintenance manuals.

3.12.5. The Contractor shall allow for out-of-hours' work to carry out illumination level checks and fully record all results as required by BS 5266-1.

3.12.6. The emergency lighting installation shall be tested in full compliance with all parts of the current edition of BS 5266 through the 12 months Defect Liability period.

3.12.7. All inspections and testing shall be recorded within a log book which shall be located within the intake room in a visible location within a clear plastic sleeve, at the end of the defect liability period a hard copy of the log book together with an electronic copy shall be issued to the contract administrator.

3.13. EXISTING RETAINED EXTERNAL LIGHTING

The contractor shall allow within the tender for the cleaning and re-lamping of all external lighting, including wall mounted floodlights and lighting columns, the aiming and height shall also be checked adjusted as required.

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3.14. ELECTRICAL SWITCH ROOMS

3.14.1. Electrical Switch Rooms shall normally be fitted with a minimum of two maintained emergency luminaires controlled by a local lighting switch. However smaller type rooms may be fitted with one maintained and one non-maintained version.

3.15. TANK ROOMS

3.15.1. Tank rooms or tank areas within loft spaces shall be fitted with a minimum of two emergency luminaires to each region, controlled by a local lighting switch.

3.15.2. These lights shall be controlled by a MK Masterseal IP56 10amp rated switch with neon indicator or equal and approved.

3.16. ROOF VOIDS

3.16.1. Loft spaces shall be fitted with a minimum of two maintained emergency luminaires controlled by a local MK Masterseal IP56 10amp rated switch with neon indicator or equal and approved.

3.17. CONTROL REQUIREMENTS

3.17.1. All lighting circuits shall be wired to a 10-amp rated miniature circuit breaker within the landlord's distribution board, number of circuits to be determined by contractor.

3.17.2. Circuits shall be uncontrolled-biased, meaning each fitting shall be wired to provide a minimum of permanent live, neutral and earth. Where additional lines for command and control needs are required, this will be agreed in advance with the consultant and project manager.

3.17.3. The design of uncontrolled circuits shall have due regard to ensure that all areas have sufficient illumination at all material times during the reduced daylight hours of the winter months. Any deviation to the exact requirement of uncontrolled lighting due to building layouts or natural lighting levels shall be agreed with the contract administrator on site.

3.17.4. On enclosed communal corridors or open balconies where natural light is poor, the lighting design shall ensure the adequate use of sufficient emergency-maintained luminaires. Lighting to these areas may require connection to the uncontrolled circuits.

3.17.5. Exact locations of the emergency lights shall be agreed with the contract administrator on site.

4. DEFECTS LIABILITY

4.1. The defects liability period of 12 months from the issue of the final Certificate of Practical Completion includes for all "breakdowns" in this period - except those for which, in the opinion of the CA, the Contractor is not responsible for.

4.2. The Contractor shall ensure that any defects in the operation of the system shall be attended to within six/twenty-four hours of the defect being notified to him, any time of the year including

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holidays. No payment will be for abortive visits due to no access being available. If the Contractor fails to remedy the defects within twenty-four hours the Project Manager may arrange for the works to be carried out by others and the Contractor will be contra-charged for all costs incurred.

4.3. The Installation contractor shall attend site and assess/repair the fault.

4.4. The installer shall warrant the lighting installation for 1 year from date of commissioning certificate.

4.5. The emergency lighting fittings and associated control equipment shall be warranted for 3 years from date of supply.

4.6. If the fault is a manufacturer's defect the installer is responsible to ensure the manufacturer attends site if required at no cost to the client. The manufacturer shall attend on instruction from the installation contractor who has attend first to the fault and deemed the fault a manufacturers defect of equipment. The manufacturers shall attend with the replacement part within 2 working days.

4.7. Where the fault is found to be due to vandalism or external forces and chargeable the contractor will enter here the actual labour charge for the call, inc travel and other costs, during the defects period excluding VAT. This will be the total amount to be invoiced excluding parts due to vandalism.

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