COMPLIANCE AND ASSOCIATED SERVICES FRAMEWORK

TENDER REFERENCE: EPCM16

ITT VOLUME 3: Specification

Version 1.0

Date For ITT Return: [18th January 2017]

Clarifications Close Date: [11th January 2017]

All Submissions to be made via EP Procurement Portal

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INTRODUCTION

The specification outlined below is a blend of Standard M3/NHF M&E documents and Eastern Procurement Specific requirements.

To remove any doubt the specification should be applied in the following levels of precedence:

- EPCM16 Volume 3: Specification,
- EPCM16 Appendix E: EP preliminaries
- EPCM16 Appendix F: Preliminaries - (M&E Services) (Rev 3 2015) (Amended 10 05 16)

EP would like to acknowledge that the M3 general Terms, lots 1 through 9 and the Asbestos removal sections of Lot 10 have been based on the M3 specifications for Asbestos and M&E Schedules and are reproduced here with their permission.

PRELIMINARIES

The M3/NHF Specifications are underpinned by the Preliminaries identified in the attached preliminaries document: Appendix F-Preliminaries - (M&E Services) (Rev 3 2015) (Amended 10 05 16).

The terms within Appendix F will apply to work done under all lots unless identified differently in the accompanying EP Preliminaries document (Appendix E)

GENERAL TERMS

In addition to the EP General terms this agreement uses the M3 Housing limited M&E general specification terms to support the framework. Contractors should familiarise themselves with all applicable terms and where any possible conflict between terms are identified it should be referred to EP for clarification.

1. EASTERN PROCUREMENT GENERAL CONDITIONS

1.1. INTRODUCTION

1.1.1. This document sets out the standard of works that needs to be achieved in the delivery of works to existing housing stock under Contracts to be let by Eastern Procurement Members.

1.1.2. Eastern Procurement is committed to delivering, where possible, common standards of work across the membership to support the drive for efficient delivery and efficient pricing of works. Members reserve the right to specify their individual requirements though we will always encourage standardisation where this is practicable.

1.1.3. The standards contained within this Specification have been developed and agreed by the members of Eastern Procurement. This specification is to be

upheld at all times except where legislative requirements exceed those stated in this specification in which case the higher standards shall apply.

1.1.4. For the avoidance of doubt, the standards and specifications defined in this document will apply in all circumstances, except only where the Client issues an amendment or other specific order stating an amendment to the specification.

1.1.5. For the avoidance of doubt, the adequacy of the works allowed and the working methodology employed by the successfully appointed Contractor will be entirely at their risk. In the event that there is a conflict between the Contractor Proposals and meeting the requirements of this Specification, this Specification will take precedence.

1.1. DEFINITIONS

1.1.1. Within this Specification the following words shall have the meanings herein assigned to them:

- Shall: shall mean mandatory.
- Will: shall mean informative.
- May: shall mean optional.
- Words: Those importing the singular only shall also include the plural and vice versa.

1.2. CONTRACTOR TO INFORM HIMSELF FULLY

1.2.1. The Contractor shall be deemed to have examined this document and associated appendices. No extra cost will be allowed for ignorance due to the Contractor's negligence in this respect.

1.2.2. The Contractor shall be deemed to be fully acquainted with all conditions likely to affect the execution of the Works, including the type, construction and location of the housing stock and to have satisfied himself as to the nature and extent of the Works and all matters likely to affect their performance.

1.3. OMISSIONS

1.3.1. 1Any queries relating to the document must be brought to the attention of the Client in writing immediately when they are discovered. The Contractor shall make due allowance in his Tender for all items, whether or not they are specifically referred to in the document, as are clearly necessary for the proper construction of the Works in accordance with the best current practice, and to comply with the document.

1.3.2. In the event of discrepancies in the document and pricing schedules, the Contractor shall refer the matter to EP for clarification in accordance with the timescales specified. No variation in the Tender Price will be considered due to the Contractor's failure to identify such discrepancies to his having incorrectly interpreted any part of the document or schedules. The Client’s decision as to the resolving of a discrepancy arising in such circumstances shall be final.

1.4. WORKMANSHIP

1.4.1. Properties shall be repaired/refurbished to meet all national and local legislation and conform to good industry practice in all respects.

1.4.2. Notwithstanding the requirement to comply with relevant Statutory Requirements, the Contractor shall also comply with the following requirements and good practice. In all cases, both statutory and otherwise, the latest enactment or re-enactment shall apply:

1.4.3. All materials, goods and appliances for the developments, shall comply as a minimum with the latest relevant British Standard Specifications, British Board of Agrément Certificates, CIBSE guides, Building Energy Codes and Technical Memoranda, Building Research Establishment Digests and Good Building Guides and Local Authority building requirements and be fit for their intended use.

1.4.4. All workmanship shall as a minimum be in accordance with the recommendations of the latest relevant:

1.4.4.1. British Standard Specifications
1.4.4.2. British Standard Codes of Practice
1.4.4.3. Building Energy Codes and Technical Memoranda D.O.E./DETR circulars
1.4.4.4. Trades suppliers, manufacturers, representative bodies Codes of Practice and recommendations of BRE Digests and Good Building Guides
1.4.4.5. The Chartered Institute of Building Services Engineers guidelines (CIBSE)
1.4.4.6. Local Authority's preferred practices
1.4.4.7. Good common practice
1.4.4.8. The standards set out in BS 8000-0:2014
1.4.4.9. British Board of Agrément Certification

1.4.5. All materials and workmanship must comply with the relevant European Standards as defined by Regulation 42 of The Public Contracts Regulations 2015 (S.I. 2015 No 102), and applicable at the date of the use and or performance of the same, save that in the absence of such European specifications, European Standards and/or European technical approvals, the Contractor must abide by the relevant British Standards and Codes of Practice applicable at the date of the carrying out works.

1.4.6. No materials, products or procedures listed in this Specification and no materials or products which at the time of use are widely known to building or maintenance Contractors or design consultants within the European Union to be deleterious to health or safety or to the durability of buildings and/or other structures and/or finishes and/or plant and machinery in the particular circumstances in which they are used, may be used in either construction or repairs.

1.4.7. Where materials, goods or appliances or workmanship standards are covered by more than one of the above standards and/or recommendations, the higher or more stringent shall be adopted (meaning that BS Licensing/Codes of Practice or the equivalent European standards will take precedence. British Board of Agrement Certificates will only be considered where there are no relevant standards available for the product or material used in this contract).

1.5. REGULATIONS, LEGISLATION ETC.

1.5.1. 1The whole of the Works shall be executed in strict conformity with the requirements of the Health and Safety Regulations, Factories Act and Local

Authority and other bodies concerned except insofar as this Specification may expressly make other arrangements.

1.5.2. The Works included in this Contract shall be carried out in accordance with the Regulations, etc. listed below and elsewhere in this document as are current at the time:-

1.5.2.1. Relevant sections of all Health and Safety Regulations.
1.5.2.2. Relevant sections of the Factories Act 1961.
1.5.2.3. By-Laws and Regulations of the Local Authority and any other Municipal authorities having jurisdiction.
1.5.2.4. Requirements of the local Water Supply Company.
1.5.2.5. Requirements of Gas Safe Register.
1.5.2.6. Requirements of OFTEC.
1.5.2.7. Requirements of HETAS
1.5.2.8. Requirements of the local Electricity Supply Company.
1.5.2.9. British Standard Specifications and Codes of Practice.
1.5.2.10. BS 7671:2008 + A3:2015 Regulations for Electrical Installations. IET Wiring Regulations
1.5.2.11. Regulations and Requirements of the local Fire Brigade.
1.5.2.12. The Electricity at Work Regulations 1989.
1.5.2.13. The CDM Regulations 2015.
1.5.2.14. The Party Wall etc. Act 1996
1.5.2.15. The Town and Country Planning Act 1990
1.5.2.16. The Building Regulations 2010

1.6. COMPLIANCE WITH BRITISH STANDARDS

1.6.1. Except where otherwise specified all the work in the Contract to which this document applies shall conform with the relevant provisions of the appropriate British Standards or British Standards Codes of Practice in being at the Date of Tender.

1.6.2. The Contractor shall also comply with any relevant British Standard Specification, or amendment thereto that may be issued subsequent to the acceptance of his Tender, provided that the part (or parts) of the work affected have not already been completed. Where any part of the Works has been completed the Contractor must inform the Client so that a decision may be reached as to the procedure to be adopted.

1.7. LOCAL AUTHORITY TESTS/APPROVALS AND PLANNING APPROVALS

1.7.1. The Contractor shall comply with and give all notices required by any Act of Parliament, Regulations or By-Laws of any Local Authority, Public Services Company or Statutory Body who may have any jurisdiction with regard to the Works or whose systems, are or will be connected, and he shall pay and indemnify the Employer against any fees or charges legally demandable under such Act of Parliament, Regulations or By-Laws in respect of the Works. No extra charge will be allowed due to failure in allowing for this requirement.

1.7.2. The Contractor shall also be responsible for ensuring that the obtaining of any directives, consents, approvals or acceptance tests by the relevant Local Authority, Public Utility or other Statutory Body is done by him in compliance with the overall programme for the Works and such consents and approvals shall be obtained in writing.

1.8. LABOUR

1.8.1. The Contractor shall take all precautions necessary to restrict the area of his Works to the immediate vicinity of the work involved under this Contract and shall not allow his workmen to stray beyond the boundaries of the Works. The Contractor, his operatives or any other employees of specialists associated with the Works will be prohibited from entering any room, department or part of the Employer's premises on the Site other than part where the Works are situated.

1.8.2. The Contractor shall be responsible throughout the Contract for ensuring that the trade custom and local practice are followed in the employment of the appropriate grades of operatives. Not more that one apprentice or semi-skilled assistant shall be employed for each full-rate tradesman.

1.8.3. The Contractor shall provide Site supervision throughout the period that works under this Contract are being carried out at Site and shall constantly employ on the Site at least one competent person in charge to manage and direct the Works. The person in charge will have control of all drawings, Specifications and other documents which are issued to the Contractor for use or guidance and shall also receive, execute and obey all instruction as may be given by the Client.

1.8.4. The Contractor shall employ sufficient persons to ensure that the Works are performed to the Contract Standard, and in particular, shall ensure that all such persons, whether directly employed, sub-Contractor or labour only, are at all times interviewed, selected and employed properly, are sufficiently qualified, competent, careful, skilled, honest, experienced, instructed, trained and supervised both generally and in particular as to:

1.8.4.1. All tasks which each person has to perform

1.8.4.2. All relevant provisions of the Contract

1.8.4.3. All relevant policies, rules, procedures and standards of the Employer

1.8.4.4. All relevant rules, procedures and statutory requirements concerning health and safety at work, including the Employer's and the Contractor's safety policies

1.8.4.5. All fire risks and fire precautions

1.8.4.6. The need to maintain the Contract Standard at all times

1.8.4.7. The need to recognise situations which may involve actual or potential danger or injury to persons and/or property; and, where possible without personal risk, the need to make safe such situations and forthwith to report the action taken to the Client or in the event of an emergency, to any of the employees of the employer with responsibility for the site in question.

1.8.5. Any person employed in the work who, in the opinion of the Client, is incompetent or poses a risk or who may act in an improper manner shall on the Client's instructions be immediately removed from the work. Any such person shall not again be employed on the Works without the permission of the Client.

1.8.6. The Contractor should take all reasonable steps to ensure that any person employed in the work does not pose any risk to Eastern Procurement, its member clients and/or its residents. Evidence of an appropriate recruitment, selection and on-going management regime will be required.

1.8.7. The Contractor should ensure that they have appropriate processes for monitoring the behaviours of any persons employed in the work and ensure that

they are kept abreast of any changes in status of any persons employed in their work.

1.9. MONITORING & REPORTING PERFORMANCE

1.9.1. The Contractor shall:

1.9.1.1. Provide key performance information (Covering the KPI and SKPI Appendix 2) to be issued in the following formats:

1.9.1.2. Individual Member reports (showing only relevant member data) shall be issued by email to individual Members and to EP.

1.9.1.3. An all-Member report issued by email to EP.

1.9.1.4. One off or new regular reports as are deemed necessary in order to achieve the objectives of the Framework.

1.9.2. Reports will be in excel format only and in a format to be agreed by Eastern Procurement and will be accepted to EP Procurement Portal only.

1.9.3. Contractors may also be required to submit key performance information via EP's e-procurement solution, In-Tend

1.9.4. Reports will be received on the same date each month (to be agreed) and not later than 14 days following the end of each month (reporting period) and summarised each quarter and annually showing trends

1.9.5. A written annual report detailing performance, Strengths, Weaknesses, Opportunities and Threats is to be presented to the Framework Performance Review Group at dates to be advised.

1.9.6. Framework Performance Review Meetings will take place at the Offices of Eastern Procurement Ltd

1.9.7. The Contractor must make immediate contact with Eastern Procurement Ltd in the event of a RIDDOR Reportable event and provide details of the issues and actions being taken. The Contractor shall also immediately inform Eastern Procurement of any press or media contact relating to works/services provided under this Framework Agreement.

1.10. KEY PERFORMANCE INDICATORS

1.10.1. KPIs are to be reported monthly to the Client and EP unless stated otherwise. A typical suite of KPI's is included in Appendix 1.

1.10.2. KPIs agreed at the commencement of a Contract will be the current measures and targets and may evolve throughout the duration of the Partnering Contract. It is envisaged that via the Framework Performance Review Group, the Resident Group and other forums the Contractor, the Client, residents and other stakeholders will amend and/or introduce new KPIs. It is intended that any new KPIs, or amendments, will be introduced following the agreement of the Partnering Team members.

1.10.3. Additional targets may be developed and reported as necessary in order that the overall objectives of the service are achieved. The number of, method measurement and target levels in relation to all existing and future KPI may be subject to change over the life of the contract.

1.10.4. In any instance whereby an appointment is not kept or completion of the works reported expired past the target or appointment date, the Contractor will be responsible for:-

1.10.4.1. Recording the completion date against the target or appointment date and the difference in days.

1.10.4.2. The delay reason as to why the reported works were not completed on the target or appointment date.

1.11. SITE MEETINGS

1.11.1. The Contractor will hold regular (usually monthly but may be more frequent at the sole discretion of the Client) site meetings to review progress and other matters arising from the administration of the Contract. The Contractor shall inform Sub-Contractors and suppliers when their presence is required.

1.11.2. The Contractor will chair the meeting and will take and distribute minutes (minutes are to be approved by those present at subsequent meetings). Copies of minutes are to be provided to EP whether or not EP are in attendance. These minutes are to be sent to info@eastern-procurement.co.uk

1.12. COPYRIGHT

1.12.1. This Specification shall be confidential, and the Contractor shall not show these to third parties without permission, or use them in any way not connected with the execution of the Contract.

2. M3 GENERAL SPECIFICATION TERMS

Applicability

001 This initial general section applies to all subsequent sections of this Specification of Workmanship and Materials **("this Specification")**.

002 This Specification is drafted as a series of instructions that the Contractor must ensure are complied with in relation to the Works. Each instruction includes all tasks necessary to comply fully with the instruction and the Schedule of Rates item(s) to which it relates.

003 The Schedule of Rates payments, as adjusted by the Contractor's tendered Rates, include for carrying out all tasks required by this Specification. No further payment is due to the Contractor in respect of any such tasks beyond the payments provided for in the Schedule of Rates.

004 Specifications across a number of trades may be relevant to each Schedule of Rates item. The Contractor must comply with all requirements of this Specification applicable to the specific type of Works to be undertaken.

005 References to Paragraphs and Sections in this Specification are to the applicable Paragraph and Section of this Specification.

Standards of workmanship and Materials

006 Carry out and complete all Works:

- in accordance with Good Industry Practice;
- in accordance with the Client's Policies;
- in accordance with any specific requirements for those Works in this Specification;

and

- to the satisfaction of the Client's Representative (acting reasonably).

007 To the extent that the standard of any Works has not been specified in this Contract, agree the relevant standard for the Works with the Client's Representative before their execution. Where particular Works or working methods are to be "Approved by" "Agreed with" or are indicated to be "subject to the Approval of" the Client's Representative, give the Client's Representative adequate notice when such Approval or Agreement is needed and retain evidence of all Approvals given, and items that have been Agreed, by the Client's Representative.

008 To the extent that it is necessary to design any aspect of the Works, in preparing those Designs use the reasonable skill and care to be expected of an experienced maintenance Contractor that is skilled in undertaking works similar to the Works.

009 Maintain all existing lines and levels at all times and carry through new work to the same lines and levels unless otherwise instructed by the Client's Representative.

European and British Standards & Codes of Practice

010 Ensure all Works undertaken and all Materials used in those Works comply with all applicable European and British Standards and Codes of Practice that are current at the time of their use.

011 References in this Specification of Workmanship and Materials to any European and British Standard or Code of Practice are to be construed as references to the version current at the time the Order is undertaken.

012 Where a specific European and British Standard or a Code of Practice is referred to, this sets out the minimum acceptable standard of Materials or workmanship.

Materials

013 The Client wishes to standardise the use of Materials across its Properties. This is in order to simplify parts requirements and van imprest loads, to improve its repairs processes and to reduce maintenance costs. Wherever possible, match all Materials used to materials currently used in the Properties, particularly in terms of their parts requirements and repair procedures. In this Specification the Client has set out details of its current Materials to which the Contractor is required to standardise.

014 Where this Specification indicates that Materials are to be "Approved by the Client's Representative", provide samples of the proposed Materials to the Client's Representative for Approval. Any Materials that comply with the functionality and compatibility (including aesthetic compatibility) requirements of this Specification may be proposed. No further Approval is required for any Materials listed in this Specification as being the Client's currently used Materials. The purpose of the Client's Representative's decision on the use and Approval of such Materials is to ensure that they meet the Client's requirements for functionality and compatibility. The decision of the Client's Representative on this is final.

015 Where this Specification requires Materials to be matched to existing Materials or finishes, this match is subject to the Approval of the Client's Representative.

016 Do not use any Prohibited Materials in carrying out the Works. Prohibited Materials are those Materials which are generally accepted or (having regard to Good Industry Practice) are reasonably suspected of:

- being harmful in themselves;
- being harmful when used in a particular situation or in combination with other Materials;
- becoming harmful with the passage of time; or
- being damaged by or causing damage to the structure in which they are to be affixed.

017 Materials are to be regarded as harmful if, in the context of their use in the Works (whether alone or in combination with other materials) they:

- are prejudicial to health and safety;
- may pose a threat to the structural stability or the physical integrity of any Property; or
- could materially reduce the normal life expectancy of any part of the Property.

018 Use, fix and apply all Materials strictly in accordance with the manufacturer's recommendations, directions or instructions.

019 Participate in joint initiatives with the Client and other Contractors to establish supply chain agreements.

020 Where appropriate suggest (economically viable) amendments to this Specification where those amendments may lead to an improvement in environmental performance or sustainability.

021 Provide all information the Client's Representative reasonably requests regarding the environmental impact of the supply and use of any Materials and goods the Contractor selects for use in the Works.

Periodic Servicing and Inspection, Routine and Responsive Maintenance Generally

022 This Specification covers all Periodic Servicing and Inspections, Routine and Responsive Maintenance to all Installations within the boundaries of each group of Properties. The Specification must be read and interpreted in conjunction with the Schedule of Rates.

023 Periodic Servicing and Inspections must involve the undertaking of the comprehensive servicing/maintenance operations described in this Specification throughout the duration of the Contract Period at the regular intervals pre-defined by the Client and starting immediately from the Commencement Date. Routine Maintenance is the repair or renewal of components undertaken at the same time as programmed Periodic Servicing and Inspections are being undertaken.

024 All references to British Standards or other equally approved EEC national standards must be deemed to mean those current, including all amendments, at the date of tender.

025 From time to time, when instructed by the Client's Representative the Contractor will be required to undertake additional Responsive Maintenance to deal with other ad-hoc day to day repairs/ maintenance, Emergency Work and Out of Hours Emergency Work.

026 The Contractor must ensure that his operatives visits each individual Property or group of Properties at the requisite frequency and carry out the specified inspections, maintenance, repairs, tests, certification and any other servicing Works to ensure that all systems, installations, equipment and appliances are maintained in prime condition.

027 At each scheme visit the Contractor's operatives must access the electronic log book for the respective installations and record all details of the visit and action taken. The Contractor must be deemed to have allowed in his tender for creation of the site specific installation data as each Scheme is inspected for the first time.

028 The Contractor must, within the first 3 months after Commencement of the Contract (i.e. at the end of the first servicing period) ensure that each installation and the like at each Scheme has a unique identifiable number.

029 Also within 3 months after Commencement of the Contract, the Contractor must provide the Client's Representative with both an electronic and a hard copy bound report containing a listing of all Schemes in alphabetical order and indicating against each Scheme, the full name and address of the Scheme; a full positional listing of all systems, installations, equipment, appliances and the like referenced with their uniquely identifying number in accordance with paragraph 028 above; the dates when Routine Maintenance has been undertaken and/or is due in respect of each Scheme.

030 At the same time, the Contractor may submit to the Client's Representative a separate report detailing any specific recommendations with respect to any individual Property or group of Properties. The Contractor is also following the completion of his first Periodic Servicing and Inspection visit to each scheme or predefined group of Properties to price annual cost of the Periodic Servicing and Inspection and Routine Maintenance requirements to the installation(s) to each Scheme or group of pre-defined Properties on the basis of the frequencies indicated later in this Specification and evaluated at his Tendered Rates, this evaluation is to be in accordance with the format and requirements of the Client, particularly having regards to any required Section 20 recharge information. If the evaluations are accepted by the Client they will form the basis of preparing all subsequent Valuations, which will be reimbursed at the rate of $1/12^{th}$ of the annual cost per month, starting from the first month following acceptance by the Client.

031 At the completion of each visit, to each Scheme the Contractor's operatives must complete electronically clear and explicit service report sheets. The electronic signature of the resident in respect of an individual dwelling or the Client's relevant scheme manager or other responsible officer must be obtained as proof of the Works being undertaken and completed. In blocks of flats or similar situations where there is no such dedicated, responsible manager or officer, the Contractor's operatives must self certify completion of the Works. In such cases the name of the self certifying operative must be printed clearly and legibly. Copies of reports are to be forwarded to the Client's Representative, together with any recommendations for works not already authorised. If the recommendations include for Works not covered by Rates and Prices in the Contract Documents then a quotation for such must be included with the service report sheets. The Contractor must update the electronic log book with all service report sheets.

032 The service report sheet is also to incorporate the following information:

1. arrival and departure times
2. state of installation or system on arrival
3. details of works carried out

4. details of any parts or components renewed

033 Minor work or alterations to electrical installations, which involves a change or modification to an existing single circuit, must include the issue of the certificate for Minor Electrical Installation Works in accordance the edition of the IEE regulations current at the time the Works are undertaken.

034 Major work or alterations to electrical installations, which involves a change or modification to two or more existing circuits and all new installations, must include the issue of an Electrical Installation Completion Certificate in accordance the edition of the IEE regulations current at the time the Works are undertaken.

035 Following any non-routine visit to a Property or group of Properties, to undertake Responsive Maintenance, the Contractor must also forward a report sheet to the Client's Representative detailing the nature of the visit, the authorisation for it and the actions taken.

036 All logs ,reports and test recording sheets for all categories and sections of work (whether specifically stated below or not) must be recorded in the electronic log book and be available for inspection and download by the Client on a web based system in a format to be agreed by the Client and the Contractor.

037 All project issues must be communicated through the Client's channels (to be agreed in advance with the Client) and must not be channelled directly or indirectly via the residents.

038 All bespoke software must be fully documented, recorded and provided to the Client (including providing all codes , passwords and part no's) and all must remain open protocol.

039 All systems must remain open protocol.

040 At handover meetings with the Client the Contractors are to provide all codes, passwords and part numbers for all systems , parts and equipment

041 Any damage caused by the Contractor installing inferior equipment must be made good at the expense of the Contractor

Quality

042 The Client is aiming for an economic, high quality maintenance service with a stable workforce and effective supervision.

043 The Works must be performed in accordance with the Contract Documents and must be carried out in an efficient and proficient manner.

044 The Client will monitor that the Specification is being met. Any default in performance will be dealt with in accordance with the Contract.

045 The monitoring system will include an inspection of the following:

- the number and suitability of engineers and operatives used;
- quality of materials, components and parts used;

- that the servicing and maintenance procedures used are either as detailed in the Contract or as agreed with the Client's Representative;
- that the frequency and standards of servicing and maintenance are being met; and
- that health and safety requirements are met.

Equipment and Materials

046 All equipment and materials required for the performance of the Contract must be supplied by the Contractor and must be approved by the Client's Representative. Any alternatives subsequently proposed by the Contractor must have the prior approval of the Client's Representative.

047 All equipment and materials used by the Contractor to fulfil the Contract must be suitable for the purpose and where an appropriate British Standard issued by the British Standards Institute, or other EEC nationally approved standard is current, must as a minimum, be in accordance with that standard.

Reporting of Defects

048 The Contractor must report in writing any obvious apparent defects in the design, installation and/or operation, to any of the existing installations, to the Client's Representative or his representative.

049 The Contractor must in particular report immediately to the Client's Representative any matters that may impact on health and safety issues and where immediate action is required from the Client.

Web Based Electronic Log Books

050 The Contractor is required to provide an Electronic Monitoring System or Log Book.

051 The electronic monitoring system shall be designed in such a way that the Client can be involved in the planning, management and view its compliance with its obligations as a landlord..

052 The system shall be web based with varying levels of access as the Client is a multi site, multi Client organisation.

053 The scheduled monitoring and inspection tasks as set out within the specification must allow for customisation for each particular site and building contained within the Schedule. Occasionally this may include new buildings as and when the requirement arises.

054 Tests out of specification shall generate a non-conformity report that shall be immediately available to the Client's Representative.

055 The Client will require the ability within the program to create notes or messages within the system; this must be recorded within the software audit trail.

056 All non-conformities raised must be clearly identified as a visual warning on the date of the fault and be summarised in visual alert facility and report.

057 The central electronic logbook will have communication software with the ability to 'synchronize' any test results put in by each remote site, contractors or into the central database.

058 The logbook software must include a user password security system, which can be set up by the administrator of the software and allow or restrict access as applicable.

059 The Client will require the Contractor to supply a support contract to include:-

- Telephone support during normal office hours Monday to Friday;
- Future upgrades and training for use of software as a result of improvements or changes in current legislation.
- All data stored shall be the property of the Client and all data must be provided to the Client on a regular basis on demand and at the termination of a contract.

060 The system shall be available to all contractors and not limited to any single provider.

061 The Client will own all data and such data should be made readily available by the Contractor to the Client upon request in a recognised format (e.g. Excel).

062 The Contractor is required to adhere to the Data Protection Act 1998 in the course of providing the Services that the Contractor may be compiling, processing and storing Personal Data for the Client and where this is the case, the Contractor will not transfer any Personal Data outside the European Economic Area.

063 It should have a document storage system that includes:

- Method Statements
- Risk Assessments
- COSSH Assessments
- PPM Planner
- Record Sheets
- Test Certificates
- Photographs
- Schematic Layouts

Programming of Works

064 The Contractor must within 20 working days of the award of the contract submit and agree a full annual programme for all works covering each element of the maintenance works with the Client's Representative.

065 The Contractor must ensure that all the dates contained within the programme have been agreed with the Client and that the equipment will be made accessible for service on the agreed dates.

Permit to Work Certification

066 If it is deemed necessary by the Client's Representative for the need for a permit to be issued before any work is undertaken on the system, the Contractor shall ensure his compliance with the permit to work system as employed by the Client's Representative.

Access

067 The Contractor shall ensure that he undertakes a risk assessment and provides a method statement for his means of access to allow for inspection and testing.

068 All works shall be carried out in strict accordance with the requirements of "The Work at Height Regulations 2005".

LOT 1 ALARMS, ENTRY SYSTEMS, SECURITY AND ASSOCIATED SERVICES

CONTROLLED DOOR ENTRY MAINTENANCE

SECTION 1 CONTROLLED DOOR ENTRY INSTALLATIONS

The following items are in addition to those specified elsewhere in this specification:

001 The Contractor must provide **a** fully comprehensive type Contract to maintain the Controlled Door Entry Installations; the installations will include video door entry systems, and powered door exit systems.

002 Detailed below are the specific requirements. The Contract must therefore comprise of the following elements:

Periodic Servicing and Inspections
Routine Maintenance
Responsive Breakdown Call-outs and Emergency Maintenance
Repairs, Replacements and Adjustments

Periodic Servicing and Inspections

003 The minimum requirements for preventative and routine maintenance are to be in accordance with the relevant equipment manufacturer's recommendations.

004 These are minimum requirements and the maintenance plans and task sheets must take into account the individual particulars of the Controlled Door Entry Installations concerned in terms of their condition, age and type.

005 The Contractor must carry out all necessary visits per annum for preventative and routine maintenance on all Controlled Door Entry Installations.

006 The Contractor must include for the provision and application of all consumables within the price for this element of the Contract.

007 All servicing and maintenance necessary to ensure that the operation of the Door Entry installation in strict conformity with the requirements of BS 7036:1988 including any subsequent amendments or substitutions.

008 At the service and inspection intervals recommended by the manufacturer's recommendations the Contractor must undertake the following:

.1 Inspect previous entries in the Property controlled door entry log book;
.2 Ensure that occupants are informed before any servicing and testing is commenced;
.3 Ascertain if there is a direct link with a remote station and inform them accordingly; and
.4 Carry out the following control panel checks;

- Check, clean and lubricate the lock and hinges, check earthing of the door and clean the fascia and back box, removing all debris, renew blown bulbs etc;
- Check all terminal screws are tight and that all cables are neat, secure and in good condition, carrying out minor remedial work as necessary;
- Check all PCB's are secure and in good condition and clean off dust using compressed air;

- Check all lamps and indicators and replace any blown bulbs/LED's/fuses as necessary;
- Check the transformer is securely mounted and not excessively hot or noisy;
- Check the charger for correct operation, voltage, output etc; and
- Check the control panel for correct functioning and indicator of status of circuits in normal and fault conditions and for correct operation of buzzers and resetting procedures.

5 Undertake the following cleaning

- Wipe all exposed surfaces of door entry panels with a damp cloth and dry with a lint free cloth; and
- Wipe all surfaces of telephone units with proprietary cleaning cloth and dry with a lint free cloth;

.6 Carry out a visual inspection to confirm that all cabling, fittings and equipment are undamaged;

.7 Periodic visual inspection of cabling, trunking and equipment including mountings;

.8 Periodic performance check, testing, resetting, realignment and renewal of unserviceable parts or components as necessary of:

- Entrance loudspeaking telephone assembly panel;
- Electrically operated door lock keep;
- Tradesmen facility;
- Concierge facility;
- Individual telephone units;
- 'Silent' alarms;
- Firemans switch;
- Door exit switches;

.9 Check operation of mains power supply units including checking earthing and bonding, continuity of supply etc;

.10 Check operation of fuses in panel;

.11 Confirm the operation of any electro-magnetic door closer/holder, that may be fitted and ease, adjust, lubricate etc., as necessary;

.12 Check that the installation complies with statutory and local authority requirements;

.13 Rectify at Contract Rates any urgent repairs necessary, having first obtained authorisation and an order number from the Client Representative;

.14 Restore system to normal operation, check for proper function and leave in satisfactory working order; and

.15 Complete entries in the log book, prepare a servicing report sheet and submit to the Client Representative;

009 It is the Contractor's responsibility to observe the on-going condition of the equipment with regard to safe and correct operation. The Contractor must bring to the attention of the Client's Representative any specific areas where periodic checking, lubrication and adjustment exceeds normal provisions for equipment of the age and type installed.

Responsive Breakdown Call Outs and Emergency Maintenance

010 The Contractor must attend to all call outs due to malfunction or breakdown.

011 The Contractor must include for call-out service and emergency maintenance on a 24 hour, 7 days a week, 365 days per year basis.

012 Call outs, which in the opinion of the Contractor are due to mis-use or vandalism must be brought to the immediate attention of the Client and a report issued.

013 Where out of hours call outs are attended to for authorised cases of breakdown, mis-use or vandalism, the Contractor will be paid in accordance with the Rates detailed in the Schedule of Rates.

Repairs, Replacements and Adjustments

014 The Contractor must be responsible for the replacing, repair and adjustment of any part of the Controlled Door Entry Installations should it fail. Any replacements or repairs must be of a standard equal to the original installation.

015 During the course of the preventative and routine maintenance visits, the Contractor must identify the need to replace and/or repair any item of equipment. Where replacement parts are required the ordering of such materials and implementation of the necessary works must be planned so as to suit the requirements of the building.

016 Works may be implemented during the Contractor's normal working hours provided that the Client is given 7 days notice. In the case of emergency repairs the timing of the work must be agreed with the Client.

Where repairs, replacements and adjustments are required and the works are not covered by the terms of this Contract, separate instructions must be issued. The basis of costing must be in accordance with the Rates detailed in the Schedule of Rates.

SECTION 2 NEW CONTROLLED DOOR ENTRY SYSTEMS SPECIFICATIONS

System Integration

001 The system must offer a door entry system as an integral part of the infrastructure. This integration must extend to the use of the system wiring as a carrier of all speech channels, and lock commands.

Panel Construction

002 The Door entry panel must be a digital vandal resistant stainless steel construction.The panel must have a backlit LCD display. In standby mode this will display time and date and be customisable with the scheme name.In addition, the panel will have yellow borders around each button, clearly identifying button positions, contributing to compliance with the Equalities Act 2010.

User instructions

003 The panel must provide visual prompts to the user via the display and provide spoken prompts explaining how to use the panel. In addition instructions must be engraved on the panel.

Trade Services

004 The Door entry facilities must also include a dedicated trades button. Trades access must be either by a PIN number or by a dedicated radio trigger. There must be no limit on the number of trades periods. Trades periods must be defined locally or remotely by time period, day of the week, and by panel.

Concierge mode

005 It must be possible to configure the door entry system to operate in concierge mode. This will allow door entry calls to be routed to a central concierge facility. The concierge facility will include:

- Intercept capability i.e. receive door calls instead of the resident;
- Concierge calling- calls from concierge to resident; and

- Resident to concierge calls;

Communication unit buttons in concierge mode must allow residents to call the concierge in addition to standard door entry functions.

Door Call

006 The system must have the facility for door calls to be routed on a by door panel basis on the same basis as alarm calls.

The resident's room unit will have clearly identifiable buttons incorporated into the unit to control the door entry facilities. These buttons will allow the resident to either:

- Select a privacy setting whereby calls are not announced at the room unit. (This should not be used to set call system privacy as well);
- Select button to communicate with the calling door panel; and
- Door open lock release button to allow remote release of the door lock;

An audible tone must be generated when the lock mechanism is released.

007 The remote Control Centre must also have the ability to release the door lock mechanism remotely.
Calls from the door panel to resident or scheme manager must be in "full duplex" mode.

Remote Door Release

008 Where required, the system must have the option for a remote radio door control unit to be supplied in each dwelling. The remote device must have controls for the lock release mechanism as well as the talk and privacy settings. It will allow the user to use the door entry system anywhere within their dwelling.

Proximity Access

009 The combined door entry system must have the ability for a proximity door system to be either integrated with it on the door entry panel or as a stand-alone entry system. The proximity entry system must be a completely contact less system. All lock release mechanisms must be 12 volt D.C. to match that of the Scheme Manager call system.

Key Tokens

010 The access keys must be battery-less tokens. They should be light, easy to use, reliable and durable. The mechanism for the deletion of keys must not involve a complicated process similarly the addition of keys must involve a simple registration mechanism using a master key.

Receivers used with Personal Triggers and Telcare Sensors

Configurations

011 The system must be capable of having a minimum of one and a maximum of 16 Receivers configurable for the type of scheme and geographic layout.

Reliability

012 It is essential that receiver will meet the requirements of EN 300220 Class One. This means it is designed for highly reliable short-range devices suitable for use in life inherent systems where the consequences of failure may result in physical risk to the user. (Non Class One receivers can be susceptible to missing alarm signals as they are only suitable for applications where the risk of failure will result in inconvenience for the user.) An independent test report

will be required from the successful Bidder to verify conformity to the standard.

Connection

013 The Receiver will be provided with an antenna connected by 10m low loss coax cable. The location and siting of the antennas will be decided to provide overall internal site coverage from the radio devices in conjunction with the Client Representative.

Fault Monitoring

014 Each receiver will be polled. If an identifiable failure occurs during polling a warning code must be generated. The telecare receiver must have a visual indication of system activity.

Code identification

015 Each Receiver must be provided with a unique identity code in order to provide identification when more than one Receiver is fitted to a system.

Telecare receiver Zoning

016 On activation of any portable triggers the alarm message received by the onsite system must also include information to allow the manager to determine in which part of the scheme the trigger was activated.

Receiver types

017 It must be optionally possible to reuse any existing 173MHz. receivers to support existing personal triggers only.

Personal Alarms and Telcare Sensors

Radio frequency

018 All radio triggers (personal and telecare) must function in the dedicated European Social Alarm Frequency band.

Residents triggers

019 The system must have personal radio triggers that allow residents to raise alarm calls from anywhere on the site, i.e. within the resident's property, in corridors, WC's etc. Where practicable and the site layout dictates, internal courtyard areas must also provide coverage for the personnel radio triggers.

Telecare sensors

020 The system must have the ability to have registered to it a range of telecare sensors. These should include as minimum bed occupancy with light switching options, property exit, flood, epilepsy, and fall detectors, medication dispenser ,enuresis and temperature extremes sensors. Coding space should be available to provide a maximum of 1000 telecare sensors per system. Telecare sensors must be able to be reused in different dwellings and in different combinations to meet the needs of particular residents.

Personal Trigger specification

021 The radio trigger must be small, light and ergonomically designed providing a minimum 5-year battery life. It will meet IP67 standards and be powered by a non-replaceable lithium battery providing approximately 20,000 calls. Radio triggers should be type approved to MPT1344.

Personal trigger types

022 A choice of personal triggers must be provided with an option to have a large button trigger where the button size will be in excess of 420mm^2
For those users with dexterity issues an optional adaptor must be available that makes it easier to activate

Auto low battery

023 All sensors working on the dedicated European alarm frequency will automatically report low trigger batteries.

Scheme Managers trigger

024 Special radio triggers for use by Scheme Managers as a personal attack system must be provided. The trigger must be either identical to a resident's personal trigger or a fall detector.

025 Initiation of a call from these radio triggers anywhere within the building or anywhere within the curtilage of land upon which the building is situated must make a coded priority call to the central monitoring Centre or any other receiving location dependant on the call routing configuration for that particular device, irrespective of any traffic taking place at the time of the personal attack incident. On receipt of this coded information, the operator will endeavour to select the associated DECT handset in order to attempt voice contact before emergency services are called.

Web Server

Overview

026 The central controller will contain a web server. This must be accessible from suitable on site equipment and/or remotely via the broadband connection. Access will be granted subject to a user name and password system. The web server will provide an easy system configuration tool using plain English.

Call routing

027 Traditional systems have had three modes of operation-onsite, local off site, and remote off site but this has limitations as they define the routing for ALL calls no matter the type, source, time of day or day of week. The system must have the facility to either locally or remotely configure the call routing to meet the needs of the resident and Contractors.

028 Call routing must be programmable on a per resident and alarm type basis so allowing calls to be routed to different destinations on the basis of day, time periods, and as the result of a manual switch.
For example: Some Residents in dwellings will have alarm calls routed to the onsite care staff 24 hours a day. All other Residents will have alarm calls directed onsite when the Manager is present and off site to the remote monitoring centre at other times.

029 All Auto low battery calls will go to the monitoring centre. As the needs change for the resident in dwelling number 7 calls can be added to the 24 hour extra care service provision. In all instances unanswered calls must be routed by default to a monitoring centre after a configurable time period or number of attempts basis.

Inactivity monitoring

030 Inactivity monitoring must be configurable by day of week and allow multiple monitoring time periods per day. Inactivity monitoring must be configurable on a by resident basis.

Communication unit settings

031 Each communication unit must be configurable for

- Call group;*
- Alarm/no alarm;*
- Speech/no speech;
- Intruder on/off;*
- Inactivity on/off;*
- Activities of daily living on/off;
- Cancel at source by event on/off;
- Away button on/off;
- Door entry on/off;*and
- Volume level;

* Configurable on a by time and date basis

Data storage

032 All changes to configuration data will be saved automatically to a memory card or immediately by means of a manual save icon. In addition configuration savings may be automatically exported to a remote secure location.

Text messages

033 It must be possible to send text based alarm messages to multiple cordless handsets. This must be enabled/disabled via the web browser. Messages may be sent to groups, all or individual handsets.

Door entry routing

034 There must be an option to route door entry calls for specific residents to alternative call groups. The Manager or remote monitoring centre receiving the call will be able to speak to the visitor and if required remotely release the lock and allow entry to the building. For example those with dementia may not be able to correctly use the system.

Dialling into the system

035 The system must allow calls from systems such as remote monitoring centres to communicate with the system using protocol. It must also allow calls to originate from GSM mobiles or landlines. Where the number is recognised (stored in the control unit) using caller line identification the interactive voice platform must be presented in the same manner as used by the onsite cordless master units.

Activities of Daily Living (ADL)

Overview

036 The system must have the ability to record sensor activity within each dwelling and transmit this data to a remote server so providing an overview of activities of daily living.The ADL system capacity must be equal to the maximum number of communication units. The remote server must allow access via a standard web connection and require a user name and password. The server must display activities on a configurable easy to understand user interface with a minimum of three levels of activity- normal, abnormal or alarm. The server will also display the data in a graphical format. Existing telecare sensors must be used to collect the data in addition to specific devices required such as electrical usage sensor.

Smoke and Heat Detector Equipment and Installation

Secondary Alarm Function

037 The smoke and heat detection is to be connected into the communication unit network and as such is regarded as a secondary fire alarm system. Where required the detectors may trigger the main fire alarm system. Detectors should comply with the appropriate approval and conformity certification.

Dwelling Protection

038 Where appropriate all dwellings as detailed on the address schedule must be provided with one smoke and one heat detector mounted upon the ceiling at least 300 mm away from the existing ceiling fittings and 500 mm away from adjacent walls.

Cabling

039 All surface cabling for the detectors installation must be enclosed within white, high impact, PVC mini trunking. The trunking must be supplied and installed with all proprietary lids, bends, tees, etc. Site manufactured bends, mitred corners etc. must not be acceptable unless specifically authorised by the Client Representative.

Fixing

040 The trunking must be securely fixed at approximately 500 mm centres.

Existing Trunking

041 Mini trunking between the communication unit and the ceiling may be utilised where practical and where sufficient spare capacity is available. The Contractor must not utilise any existing trunking, conduits etc. containing cabling other than that associated with the scheme manager call system and under no circumstances must utilise equipment containing cables operating at mains voltage.

Power Requirements

042 The detectors must derive their power supply from the system cable. The detectors must be driven from the system both during normal operation and under mains failure. i.e. via the system back-up batteries.

Functions

043 In the event that a smoke detector unit detects the presence of smoke, the unit must provide the following functions.

- The detector must emit an audible alarm. This alarm must sound until the detector is purged of smoke unless the cancel button is pressed. The alarm must operate separately from that provided by the communication unit;
- Upon detection the unit must activate a contact causing a signal to be placed upon the call system;
- This “smoke alarm” signal must be individually coded by the call system providing the recipient of the call with the dwelling code number plus the smoke alarm coding. This smoke alarm coding must be initiated in both on site and off site modes of operation;
- The call recipient must therefore be made aware of the call nature without the need to establish two-way speech into the dwelling; and
- The alarm call may be routed independently of other alarm calls subject to the routing configuration;

Power Supply and Telephone Connections

External Cabinets

044 In locations where no on site Scheme Manager is present, an equipment cabinet mounted externally may be required. The mains power supply for the Contractor's equipment in external cabinets must be provided by the local supply authority. The Contractor must liaise with the local supply authority, advising of proposed locations and programme of works. The local supply authority must install within the Contractor's equipment, a fused cut out and terminate their incoming supply cable.

IEE Wiring Regulations

045 The Contractor must complete and issue to the Local Supply Authority all necessary forms relating to the installation of supply, testing of equipment and connection of supply. The Contractor must test his installation and ensure that it complies with the Electricity Supply Regulations and the 17th Edition of the IEE Wiring Regulations for electrical installations. Between the Contractors consumer unit and the Local consumer Unit

Consumer Unit

046 The Contractor must supply single core double insulated 6mm square copper "Meter Tails". The Contractor must terminate the cables in his consumer unit and prepare the connections for termination into the Local Supply Authority's cut-out.

Distribution Boards

047 In locations where the control equipment is mounted internally, the Contractor must derive the power supply direct from a local building distribution board. If the distribution board is mounted remotely from the control equipment, the Contractor must derive the supply from the local ring main circuit.

Telephone Cable

048 A broadband (where possible) enabled telephone connection must be provided by the telecoms provider to the Contractors control equipment. The Contractor must terminate his telephone connection on to the junction box supplied by the provider.

Other Options

Remote release key safe

049 A wall mounted key safe must be provided to allow safe storage of master keys. In combination with a communication unit the lock can be released remotely from a monitoring centre to allow easy access for emergency staff.

CATV System on site

050 A CCTV camera must be fitted at the front door. The image will be capable of being transmitted to a spare channel on the residents' TV via the communal aerial system. This will allow the resident to visually check the identity of the visitor.

CATV System off site

051 Utilising the same infrastructure the system must be capable of sending the door entry call off site along with a video stream from the door panel. The system must be capable of delivering up to four camera streams from that scheme to the monitoring centre.

Printer

052 There must be the option of adding a system printer which must record a calls history along with a time and date stamp.

Door open Alert

053 Each fire door and communal external door must have a door open alert. An alarm plus local audible alert must be generated when the door is either left open or opened.

Manager Call Panel

054 A single button panel must be available where visitors need to be able to contact the manager or remote centre in order to gain access to the building.

Automatic line isolation unit

055 The system must be capable of protecting the entire structured cabling from failure within one isolated area.

System Cabling Installation

System Cable

056 Systems must be capable of working on a minimum of 10-core cable. All cores must be in different colours and the black and red conductors must be of greater diameter than the remaining cores. All surface run cabling must be securely clipped using correct size and type of clip for the particular application. Wherever possible surface run cable must be installed in unobtrusive locations out of direct line of sight.

Overheads

057 Overhead cables between properties must be avoided wherever possible, unless the Client Representative gives specific permission.

Undergrounds

058 At existing properties underground ducts must emerge adjacent to a wall of the property and have an up stand of 75 mm above the finished ground level. All cables used underground will be gel filled between the cores so providing greater water resistance.

Vertical Cables

059 External cables must be installed to avoid damage by accidental or malicious acts. Vertical cables must be enclosed with steel, galvanised conduit up to fascia level of properties, or to

the entry point into the building where higher.

Protection

060 Vertical conduits rising between underground ducts and fascia level must be located as close as possible to building corner lines or existing down comer pipe work. The bottom of the conduit must be sealed into underground duct to prevent the ingress of water.

Junction Boxes

061 The top of the conduit must terminate into an (IP55) weatherproof junction box sized to allow the correct bending radius of the cable installed.

Cable Termination

062 Cables must be terminated into the high-level junction box using suitable compression glands to give a secure, weatherproof seal (IP55).

Hole Sealing

063 All holes made by the Contractor through the fabric of the building must be sealed using appropriate materials. All external holes must be made weatherproof using materials that are harmonious with the external surface of the structure.

Conduit

064 Conduit must be steel, galvanised, heavy gauge, seam welded or solid drawn with a minimum diameter of 20mm comply with BS 4668.

Cables and Accessories Selection

065 Cables and accessories must be supplied and installed in accordance with part 5, “Selection and Erection of Equipment” and Appendix II “Notes On Methods of Support of Cables, Conductors and Wiring Systems” of the IEE Regulations 17th Edition.

Underground Cables

066 Cables below ground must be installed in UPVC ducts of 50mm minimum diameter. All joints must be solvent welded.

Installation Process

067 During the installation process residents should always have the facility to raise alarm calls. As a minimum residents should be provided with radio triggers to allow non-speech alarm calls to be raised.

Labelling

068 The Contractor must supply and install identity labels on all main items of equipment e.g. equipment cabinets etc.

Key Operated Firemans switch (i.e drop key)

069 A key operated firemans switch will be required adjacent to the door entry panel to override door entry.

Systems Capacity and Standards

070 **Capacity**

Communication unit	500
Communicall 869 Receivers	16
Radio Trigger	1000
Limit of triggers to communication devices	none
Door Panels	8
Base station	16 as standard 32 expanded
DECT handsets	3 as standard 15 expanded (Dependent on telephony switch)

Standards

071 The system must meet the following standards

Low voltage Directive (LVD)	EN 60950
EMC	EN55022, EN61000-3-2, EN50130-4
Radio Trigger	EN300220-3, EN300 683
Radio receivers	EN300220-3:2000 Class One
System	EN51034-3
CE	Compliant
21CN	Compliant
Design, manufacture, installation and service	BS EN ISO9001:2000

Doors

072 When requested doors new/existing to be fitted with door open monitoring contacts.

Locks (existing doors only)

073 The Contractor must install new Locks as required by the Entrance Door Type, generally (Magnetic-Locks on Steel/Alloy Doors and Electrical Strike on Wood Doors) however other suitable combinations will be considered.

Magnets (existing doors only)

074 Magnetic-locks and armature plates must be flush mounted with the armature-housing box, the type and fixing of which must be approved by the Client's Representative prior to installation. Fixing by means of external bolting must not be permitted.

Electrical strike locks (existing doors only)

075 Must be as manufactured by ASSA Ltd or approved equivalent and must be of the monitored type, and must fail in the open position.

Door Closer (existing doors only if required)

076 The Contractor must install a new overhead door closer with parallel arm action and adjustable door speed and latching action. Door closer to be fixed with anti-tamper screws.

Press to exit

077 Must be a Combined Push to Exit AND Emergency Exit (two 25mm IP66 buttons) heavy-duty double pole type / Model-, overlap style. Engraved “Push To Exit” in green and “Emergency Push To Exit” in red. To be installed on all doors regardless of type of locking mechanism.

Fireman's switches

078 Flush Stainless Steel Drop key

PART A Particular Specification: -

Door closer (existing doors only AND only if required)

079 The Contractor must remove the existing door closer. The Contractor must install a new overhead door closer with parallel arm action and adjustable door speed and latching action. Door closer to be fixed with anti-tamper screws. (Door closer must be LCN 4041P surface mounted).

080 The Contractor must ensure that all door closing mechanisms are adjusted to ensure the silent and complete closing of the door.

Door locks

081 The system must incorporate either:- One Electrical Strike Lock per door for the front and rear doors OR, Two Magnetic Locks per door for the front and rear doors. They must be mounted and housed in the door frame. The fixing bolts/screws must be a security type. In order to facilitate direct egress, the door locks must be exited by an internal handle AND/OR, PTE button, which must de latch the lock. To facilitate indirect entry the lock must be capable of being operated over a variable period of time, from within the Authorised Occupant’s flat by depressing the "OPEN DOOR" switch on the room unit or telephone. To facilitate direct entry the door locks must be capable of being de-energized for a variable period of time by means of a Proximity Token . The Contractor must provide suitable Lock Suppression to protect the Door Entry Electronic Control Equipment, this Suppression will be installed at the lock.

The system must be a "FAILSAFE" ON ALL CONTROLLED DOORS".

Miscellaneous

082 The Contractor will issue to each Customer receiving the door entry system, simplified operating instructions.

Making Good

083 The Contractor must make good all areas where the door installation or electrical services have been fitted.

PART B Particular Specification: -

084 A door entry system is to be installed as per a system and manufacturer to be agreed with the Client, typical systems are as detailed below:

085 The system must be:

Type “A” Functional Systems or Type “ B” Digital System –

With either: - “C”Video Ready option OR “D”Video Installed option. With a Type “i” / ”ii”/” door controllers, for two doors and 1000 users. With trade’s clock, double pole request to exit, FS4 fire switch and 2 x Type “2” magnetic locks

The Contractor must install a complete working door entry system, including all equipment, locking devices, conduit, cable etc as detailed herein :

General

086 The Contractor must visit site prior to familiarise themselves with the site and local conditions. A full GSM signal Strength reading must be obtained to enable the Contractor to select the correct Aerial for the GSM System (if applicable). Site visits must be by prior appointment with The Client’s members and Principal Contractor.

Electrolytic Action

087 Where copper and non-ferrous pipe work or equipment are connected together non-metallic fittings or joint rings must be incorporated to prevent contact between the two metals and the setting up of electrolytic action.

Electrical Supplies (all to be further checked with the respective Client’s members prior to commencement of any contracts)

088 Electrical supplies must be as follows:

400 volt	3 phase 50 Hz
230 volt	1 phase 50 Hz

All equipment must, unless otherwise specified, be suitable for operation at these voltages and must operate satisfactorily when the voltage is ± 10% of these nominal voltages.

Bacteria Free Material

089 Material must generally be of a type that will not support bacteria growth. No material must incorporate any form of animal hair.

Connections to Equipment

090 Service connections must conform to the items of equipment to which connections are to be made. Before any service is first operated, the Contractor must confirm safe operating pressures and temperatures with the manufacturer.

Drawings

091 The Contractor must be responsible for the provision of the installation drawings and all rates must be deemed to include the cost of preparing these drawings and supplying four copies for approval and general issue.

092 Installation drawings must be provided in adequate time to accommodate the agreed programme for the works.

093 The Contractor must be responsible for any discrepancies, errors or omissions on drawings and any other particulars supplied by him provided they are not due to inaccurate information or particulars furnished in writing to him.

Builders Work

094 Builder's work drawing must detail the construction of concrete bases, the building in of steel works, all holes greater than 150mm dia. or 150mm square, all holes through beams, columns or structural elements.

095 The builders work drawings must be prepared and issued for approval three weeks before the holes are required to accept services. The Contractor must supply two copies of each drawing.

096 The depth of all chases must be at least equal to the external diameter of any pipes or tubes installed in them to allow plaster cover to the normal thickness. Where chases are to be pre-cast the Contractor must supply any necessary detailed drawings.

097 No horizontal or diagonal chases must be permitted and vertical chases must be in approved locations, not back to back.

098 The Contractor must drill and plug any necessary holes in floors, walls, ceilings and roofs for securing services and equipment. Prior approval must be obtained from the engineer for all fixings into concrete walls, floors, ceilings, roofs or other structural surfaces.

099 Plant and materials must not be deposited on roadways, footpaths or in corridors without prior permission.

100 The Contractor must be responsible for all builders work.

101 Cutting of ways through landings, brick walls, concrete floors etc. must be carried out using masonry drills.

102 Where mini trunking is required all appropriate fixtures and associated bends, junctions and tee bars must be used.

103 All conduits must be galvanised steel and used with all appropriate fixtures and associated accessories.

Maintenance Manuals and Record Drawings

104 As part of the works and the rates priced the Contractor must provide record drawings of and maintenance manuals for the complete installation and plant.

105 The record drawings of the installations must detail the following:
- Positions of plant and equipment; and
- Routes, sizes and types of all trunking, tray, ducts, cable and conduit.

106 All record drawings must be submitted to the Client Representative for approval

107 Maintenance manuals must contain full operating and maintenance instructions sufficient to enable the plant to be operated, maintained, dismantled, reassembled and adjusted.

108 Three sets of the maintenance manuals must be provided, following submission to and approval by the Client Representative. The manuals must be A4 size, loose-leaf type, having stiff clothbound or approved plastic covers and must include a detailed index and ready means of reference.

109 Systems must be dealt with systematically and the following details included:
- Overview of all systems;
- Plant and nameplate details;
- Safety procedures;
- Automatic control items with sensor set points;
- Lubrication details;

- Wiring diagram of equipment and control panels;
- Procedures for emergency operation where applicable;
- Manufacturers information and contact telephone numbers;
- Procedures for fault-finding;
- Circuit schedules.
- List of essential spares.
- List of record drawings.
- Testing schedules.
- Completion & test certificates.

110 The production of Maintenance Manuals and Record Drawings are an essential part of the works, which must not be considered complete until approved copies of manuals and drawings have been received.

111 In the event of Practical Completion or Sectional Completion being accepted before the production of the Maintenance Manuals and Record Drawings monies will be retained from the Contract payments to cover the cost of preparing such drawings and manuals by others.

112 The amount retained may be released in stages to the Contractor as evidence of production of the necessary drawings and manuals is offered and approved.

113 In the event of the Contractor failing to product any evidence of the production of the drawings and manuals within one month of handover of the works or any section of the works the The Client's members or its representative/agent may at their discretion instruct others to carry out these works the costs of which will be charged to the Contractor.

Materials, Installations and Designs

114 All materials must comply with the current relevant British Standard Specification unless otherwise specified and Installations must comply with the relevant code of practice.

115 Materials, Installations and designs must comply with all Acts of Parliament, statutory rules and regulations, Gas Safety Regulations, Insurance Company requirements and BS7671.

Documentation

116 Hand over to the Client's Representative at Practical Completion:
- Copies of manufacturers' operating and maintenance instructions for all fittings and apparatus; and
- As-installed drawings showing all circuits and their ratings and the locations of all fittings and apparatus.

Final Adjustment

117 The Contractor must adjust Time Switches to the complete satisfaction of the Client's Representative. The Contractor must ensure that the correct fuse elements, fuse links or circuit breakers have been installed.

NICEIC/ECA Approval

118 The Contractor nominated to carry out the works must provide evidence of membership to the NICEIC or associated body prior to commencing work on site. Each of the company's engineers must provide current certification.

NSI/SSIAB Approval

119 The Contractor nominated to carry out the works must provide evidence of membership to NSI/SSIAB the or associated body prior to commencing work on site. Each of the company's engineers must provide current certification.

Removal of Existing Equipment

120 The Contractor must allow removing all existing equipment and furniture, which is not to be reused. (If fitted) The Contractor must offer the removed equipment back to the client for uses as maintenance spares.

Regulations

121 A representative list of regulations and guidelines, for the purpose of illustration only, is given below but it is not exhaustive and it is the responsibility of the Contractor to identify and ensure compliance with all applicable and updated regulations and amendments and to obtain all necessary permissions and approvals:

The Health and Safety at Work Act and all associated regulations and requirement of the Health and Safety Executive.
The Building Regulations.
The Offices Shop and Railway Act.
The Clean Air Act.
EC Directives and associated Codes of Practices.
County and Local Authority Bye-laws.
Local Planning Authority Requirements.
Petroleum Regulations.
Local Authority and other Bye-laws applicable to the site area.
Electricity at Work Regulations.
The Electricity at Work Act.
The COSHH Regulations.
The Model Water Bye-laws.
The Noise at Work Regulations.
The Fire Precautions Act
The Pressure Vessel Regulations.
The Gas Safety Regulations.
The Fire Precautions (Place of Work) Regulations.
The CDM Regulations April 2007
BS7671 – 2001 (16 Edition of the IEE Regulations)
CIBSE Codes and recommendations
BS 7255 Safe Working On Lifts
BS EN81-70 2003
The lift Directive 95/16/EC
Lift regulations 1997

Certificates

122 Copies of all Certificates and approval documents must be passed to the Client as they are obtained but not later than at practical completion. Copies must be included within the record documentation.

Scope of Works

123 This part of the specification details the electrical engineering installation, the door installation and requirements for the project. It must be read in conjunction with all other parts and sections of the Tender Documents .

124 The Contractor must be responsible for the execution of the work described herein .

125 The scope of work must comprise the whole of the labour and all materials necessary to form a complete installation and such tests, adjustments and commissioning as are described in subsequent clauses as may otherwise be required to give an effective working installation to the satisfaction of the Client's Representative.

126 The words 'complete installation' in the above clause must mean not only the major items of plant and equipment conveyed by the Specification, but must include all the incidental sundry components necessary for the complete execution of the works and for the proper operation of the installation with their labour charges, whether or not these sundry components are mentioned in detail in the tender documents issued in connection with the Contract.

127 The scope of work for the project must include the following: -

Type "A": The supply and installation of a complete audio only door entry system including all containment and fireman's overrides to all schemes instructed. Where new entrance doors are to be provided the Contractor must liaise with the door installers with regard to his requirements for the door entry equipment and mounting point arrangements.

Type "B": The supply and installation of a proximity access control system for resident entry at the front and rear doors to each scheme , proximity key fob reader, magnetic locks and manual door release buttons for exit. Where new entrance doors are to be provided the Contractor must liaise with the door installers with regard to his requirements for the door entry equipment and mounting point arrangements.

The supply and installation of all electrical supplies and containment as required for the door and door entry system.

Production of working drawings and builders work drawings as required.

Builders work as required.

Earthing.

Testing and Commissioning.

Training.

Production of Record Documentation.

Door Entry Control Systems

General

128 The following works describe the installation of a new door entry system for the schemes instructed including all associated builders work.

The door entry system will serve all flats / dwellings in the blocks as indicated . The system must be complete with trade's facility.

Unless otherwise stated the following particular preambles for Controlled Door Entry Systems must be read in conjunction with and must incorporate the materials and workmanship clauses of the electrical and other sections of the preambles as applicable.

Door Entry System Equipment Manufacturer and Supplier:-

129 The door entry equipment must be as supplied by an Approved Manufacturer.

The door entry system must be only installed by Contractor who is an approved installer or commissioned by the manufacturer.

Equipment to be provided

130 The equipment to be provided must be as authorised by the Client's Representative in relation to make, size, manufacturer's installation number, etc. At no stage must the Contractor install any item of equipment other than as specified without consent from the Client Representative.

131 The equipment to be provided must comprise of readily available components to facilitate ease of maintenance. Spare parts must be readily available for a minimum of 10 years and guaranteed for 5 years.

Door Entry Equipment Specification

132 The controlled door entry system must provide, each dwelling or office within the block or building with a means of accepting in the dwelling or office a call from each entrance door call panel, and a means of conversing with the caller from the dwelling or office unit and admitting entrance to the block or building, all without the need to leave the dwelling or office.

133 The entry phone system must be designed and installed in accordance with the specification attached and in conjunction with this brief to provide an integrated access controlled Audio with Video Ready/Video Installed entry system.

134 The system and equipment must be designed and manufactured of materials such that the unit present a high degree of resistance and protection to vandalism and provide durability.

135 The controlled entry system must be a system with full duplex speech. Type of system to be suitable for size to each block or building.

136 The entry phone system should be in line with the EEC directive 89/336/EEC and all equipment should carry the CE mark.

137 All equipment should be EMC tested. The manufacturers should be a BS EN ISO 9001- 2000 company.

General Operation

138 The controlled door entry system must provide,:-

- within the block or building with the means of accepting in the dwelling or office a call from each entrance door call panel;
- A means of conversing and or viewing with the caller from within the block or building and admitting entrance to the block, all without the need to leave the block or building;
- The design and operation of the system is to be designed to achieve a high level of protection to the equipment from vandalism and provide durability;.
- The equipment must be manufactured of materials such that the units present a high degree of resistance to vandalism;
- The controlled entry system must be a system with full duplex speech with Video. Type of system to be suitable for size to each block or building; and
- Provide for the ability to upgrade to a networked proximity access control system using controllers linked by use of a GSM/PSTN modem link using a SIM card;

Door Entry System Description

139 The Contractor is to supply and install a controlled entry system, which is to provide the following facilities:

- Visitors to ring from the entrance panel a selected dwelling or office and hold a private two-way conversation and observe the caller (video option);
- Allow the occupant of the dwelling or office to be able to operate an electric door release on the entrance door, with the admittance of an audible warning to indicate to the visitor that the lock has been activated;
- Allow for Tradesman's entry, during a selected period, by providing a button on the control panel, controlled by an Automatic summer winter seven-day digital time correction time clock with six on off times per day;
- In the event of a total power failure the lock release must revert to fail-safe; and
- The system must be so arranged in order that extension handsets, buzzers or xenon beacons and inductive couplers can be incorporated in the event that a tenant suffers from deafness;

140 It will be the Contractor's responsibility to check all dwelling numbers or office addresses etc. before the main panels are engraved.

141 The system must be capable of self-cancelling after a specified time period, irrespective of whether a call has been answered or not.

142 The system must be wired so that no individual dwelling or office, if faulty or vandalized, must cause the system to malfunction, and the wiring must be so arranged that an individual dwelling can be removed from service without having to gain access to the dwelling by use of plug in connectors.

143 The system must be able to activate the lock only when the handset has been answered and the lock release button on the dwellings handset has been activated. The lock release circuit will not operate if the handset has not been picked up. Only the lock at the call panel that the call has been generated must be released.

144 The system must incorporate an anti lock down circuit to stop residents jamming the handset lock release button down to allow access to the building by just calling that particular handset.

145 It must be the Contractor who is ultimately responsible for the design of the system and not that of the manufacturer. If the Contractor feels that the design is not suitable he must inform the manufacturer and the Client in writing with his views and suggestions.

Door Entry System Installation

146 The Contractor must supply and fit all components and installation materials necessary to complete and make the door entry system fully operational.

147 The proposed door entry systems must comprise the following:

- High gain handsets - Timed privacy handsets type – ED3 / OR Video Handsets;
- Privacy of speech. Handsets are not to become operational until individually called;
- Vandal resistant push button control panel with bezelled back box;
- Vandal resistant Pressure sensitive buttons (not touch sensitive) to IP68.Yellow contrasting rings on call buttons to aid the visually impaired;
- Equipment cabinets IP 66 Sarel cabinets with LK 1242E Sarel lock and chassis plates (or approved equivalents);
- Low voltage power supply;
- Inter-linking multi-core telephone CW type cabling. CW1308 & CW1600;
- Conduit/trunking/mini-trunking system;
- Door monitoring circuit to turn on Green LED on handset when the door is open;
- EMC tested equipment complete with CE mark;
- Full System isolation and exchange principle;
- Electronic access control key system including controllers and PSU;
- Residents tokens (Two per dwelling) Entrotag or equivalent;
- Spare coloured tokens;
- Master token (1) RED I Editor tokens (2) GREEN When stand alone systems;
- Double Pole Fireman's switches (one per main entrance door);
- One year's system maintenance (Provided by the installer) Contractor to provide one year's on site maintenance; and
- Double pole push to exit switches PTE/EPTE/OL/DP;

148 **Duplex Speech**

- Trades Facility with digital automatic summer/winter time correction time clock;
- Battery back up of Door entry and Proximity Access Control systems;
- Door locking devices and suitable wiring (See type of Locking Device);
- Five year Manufacturers equipment defects warranty for Manufacturer parts only. Installer to fit (at extra cost after year one);
- Local connection boxes (if required);
- Manufactures commissioning or installed using a manufacturer approved installer;
- Manufacturers commissioning certificate or approved installers certificate;
- Controller;
- Entrotag Panel mounted reader (or approved equivalent), Disability Discrimination act friendly system;
- Entrotag (Or approved equivalent) Vandal resistant reader to rear entrance;
- Clients logo engraved on Door Panel;
- Visual display indication on door panel (MLR Display); and
- Pictorial systems to indicate functions on handsets for door open, lock release and privacy on;

149 **Options:-**

- Extension Sounder/LED Indication OEM 26065 (or approved equivalent); and
- Hard of Hearing Inductive Coupler OEM 25844 (or approved equivalent);

150 The Contractor must contain all door entry control equipment and access control equipment within a IP 66 Sarel cabinets (or approved equivalent) with LK 1242E Sarel lock and chassis plates (or approved equivalent).

151 It must be the installing Contractor's responsibility to provide a mains supply to the door entry equipment from the landlords supply. The installation must be designed to operate from a 230 Volt 50Hz supply. All system functional voltages must be designed to operate around 12V DC.

Equipment to be Provided

152 The equipment to be provided must comprise of readily available components to facilitate ease of maintenance. Spare parts must be readily available for a minimum of 10 years.

System type

153 The system must be:-

Type "A"

Fully functional integrated access controlled audio entry system designed to work with individual pressure sensitive push buttons on a functional entrance panel(s) with up to a maximum of 16 dwellings or offices with future provision for Proximity Access Control.

Type "B"

Integrated access controlled audio entry system designed to work with a digital keypad series of push buttons on a digital entrance panel(s) with dwellings or offices numbering 17 and greater. The pressure sensitive call buttons are to be restricted to No's 0-9 and any other buttons necessary for making or cancelling calls to dwellings with future provision for Proximity Access Control.

Type "C"

As in "A" or "B" above (as applicable) with the addition of being Video ready. Including, all required wiring, Video Distribution Amps and PSU upgrade. With the only requirement required to make the Video operational:- Video Handsets and Colour Camera.

Type "D"
As in "A" or "B" above (as applicable) with the addition of Colour Video, including, Video handsets and Colour camera as part of the Installation

Front Door Panels

154 The Contractor is to supply and install Entrance panel fascia and they must be manufactured from type 316 Stainless Steel (12swg 2.6mm) with brushed satin finish to a mitred bezelled back box secured by 5mm vandal resistant stainless steel tamper proof machine screws. The vandal resistant screws will require the use of a special tool, not readily available and must not be easily removable without such a tool. A minimum of 4 screws must be required. Panels should be flush fixed or recessed so that edges are not exposed. The Contractor must seal the edges of the back box or panel to the wall or side screen (not the lower edge) with a suitable silicon sealant:

- The buttons on the panels must be flush with the faces of the panels and must be vandal resistant Non-moving Pressure Sensitive (Not Touch Sensitive);
- The speaker must be designed in such a manner that it is water resistant, and well protected from vandal attacks, for example by screwdrivers or squirted liquids, and be positioned such that the speech grill situated at the top of the panel, and is at 750 - 1000mm from ground level, for use of both able and disabled people;
- The fascia panel must contain 2 No square matrix (s) of 64 holes of 2.5mm diameter to allow the use of a speaker/amplifier which will be rear fitted to the fascia panel by means of 2 No x 4mm welded studs with nuts fitted to hold the unit in place. A stainless steel close mesh must be secured between the fascia and the speech unit in order to prevent sharp objects being pushed through the holes and damaging the speaker unit;
- The speaker/amplifier must be of high quality and be compatible with the handset described elsewhere to provide high quality simultaneous speech. The overall gain of

the system must be adjustable to compensate for any system feedback. The speaker amplifier unit must be a combined unit;

- The unit must be contained in a plastic case with a high-density microphone and Mylar cone speaker (or equivalent). A separate volume control must be adjusted at the rear of the unit for both microphone and speaker. The unit must be rated a 0.5 - watt and a frequency range of 200HZ to 8.1. kHz and provide clarity of speech without distortion. The unit must also match the impedance of the telephone handset to give balance to the system;
- The stainless steel push button will be flush to the fascia and have an enlarged shoulder which must be located at the rear of the fascia enabling both a sealing effect and prevention of the button being removed from the external fascia. The push buttons must be of vandal resistant pressure sensitive button type (PSB). The button must be the same grade stainless steel as to match the fascia. All switches are to be pre-wired to a terminal block on the button to accept incoming cables.
- The panel must incorporate a Peizo sounder (or approved equivalent), which must energise when the entrance door release has been operated. The sounder must be set in order to give adequate noise that indicates the door has been released but not to cause a nuisance to flats adjacent to the panel. A range of 40/50DB must be afforded from the sounder when mounted within the panel and secured in the box;
- The back box for the panel must be constructed from galvanised sheet steel with open corners to allow natural seepage of moisture. The boxes for screw fixing must be 10mm in length and welded securely to the back box;
- The call buttons must be arranged in two columns only to avoid misidentification of a call button due to the position of the engraved number;
- A stainless steel mitred bezel must be welded to the back box to afford maximum protection to the faceplate, which must be recessed below the surface of the bezel by approx. 10mm. All welds etc must be treated for the protection against the weather elements;
- When a secondary door (s) is employed the fascia panel must incorporate a “system busy light”. The light must be a RED LED mounted at the rear of the panel and protected on the fascia by a lexan screen (or approved equivalent). The LED must glow continuously until the system has reset and available for the next caller; and
- The exact location of the panel (s) is to be agreed with the Client Representative.

Engraving

155 The door entry call panels must have lettering on the panel to include flat numbers engraved 1mm in depth with minimum 6mm high letters back filled with black paint. The paint must not contain chemicals, which could lead to the staining of the call panel front plate under adverse weather conditions:

- A set of standard clear and simple operating instructions must be engraved on the faceplate for the benefits of visitors. This wording must be engraved in sentence case to aid the disabled;
- The Properties /flats numbers must be engraved be in sentence case to aid the disabled to the left of each call button (6mm). The call buttons must be arranged in two columns only to avoid misidentification of a call button due to the position of the engraved number;
- Where a trade’s button is required the word “Trades” must be engraved in sentence case to aid the disabled;
- All panels must have the block name engraved at the top of the panel in RED. This must be engraved in title case;
- The door entry call panels must have lettering on the panel to include flat numbers engraved 1mm in depth with minimum 6mm (24 point) high letters back filled with black paint. The paint must not contain chemicals, which could lead to the staining of the call panel front plate under adverse weather conditions;
- The Contractor must submit to the Client’s Representative for approval, details and a sample layout of the panel he proposes to use, together with details, showing full

engraving details, layout of numbers and the LED display panel, prior to ordering any equipment. (Wording and layout must be agreed prior to manufacture); and

- It will be the Contractor's responsibility to check all dwelling numbers etc. before the main panels are engraved and have the client approve the engraving and layout of the panel.

Requirements of the Equalities Act 2010

156 All call panels must have a circle milled on the button and in filled yellow for the partially sighted to be able to distinguish the position of the call buttons. The proximity access control reader legend colours must be designed to offer a high contrast;

- Standard English Braille adjacent to buttons; and
- All engraving must be 6mm high in Sentence case.

Digital Style Call Panels

157 Digital panels must have a Standard English Braille dimple on the number five button with the call and cancel buttons either side of the "0" button as per the standard keypad layout to aid the visually impaired. All call buttons when pressed must emit a bleep to indicate the button has been pressed.

158 The digital main entrance panel must provide for those with hearing disabilities indication by way of LED's. Theses must be mounted on the panel and protected on the fascia by a lexan screen (or approved equivalent). The LED's must operate as follows: -

- A GREEN LED shows when door is unlocked;
- An AMBER LED shows that the system is calling a relevant flat; and
- A RED LED shows that the system is busy;

Installation of Entry Panel

159 The flush mounted entry panel must be inserted in the wall mounted at a height of 750mm - 1m above floor level at its lowest edge, final positioning to be agreed on site. The face of the panel must be finish flush with the surrounding surface. Securing of the back box is to be achieved by suitable multiple fixings to prevent any travel or movement and be able to withstand the pressure exerted by any external levers.

160 Care must be taken to consider the disability act with regards the height and position of the door entry call panel.

161 The entrance panels must be earthed to meet the current statutory electrical regulations BS7671 2001 and amendments.

162 All cables entering the entrance panel must enter via glands, grommets or conduit locking rings to protect the cable against sharp edges that may damage the cables and must installed so that water can not run down them and on to any components. No cable must enter any back box via the top of the box.
The installer must seal ALL back boxes to the wall or side screen to prevent any water ingress.

System Power Supply and Control Unit

163 The power unit must be housed in a lockable sheet steel IP 66 Sarel cabinet (or approved equivilant). If this box is to be mounted in a vulnerable area it is to be fitted with an hasp and staple and locked with a pad lock. (To be agreed by Client Representative)

164 The power supply unit will supply all power to operate the system. The power supply unit driving the system must be of 12 volts DC operating voltage. The power supply unit will employ the use of an MCB for protection of the incoming main supply and must have mechanical fuse protection

throughout providing isolation to all phone outputs, lock release and extra low voltage inputs from the transformer (230V down rated to 12V).

165 The controller must also incorporate a tradesman's digital seven-day automatic summer/winter time correction time clock complete with daily settings with 6 on/off times per day. This must be to allow for Tradesman's entry, during a selected period, by operating a button on the main entrance panel and must be connected to the controlled lock release. In the event of a mains failure the time switch must continue to operate by means of a Lead Acid sealed battery standby unit.

166 The power supply units will provide outputs on the main control board and also supply outputs to phones from the remote local connection boards, which will allow flexibility in design to correspond with the layout of the building.

167 In the event of mains failure the system must have full battery back up. Under normal operation the system will automatically operate a built in battery charging circuit, this must ensure optimum life performance of the back up facility should mains failure occur.

168 The main control equipment will be fitted with adjustable time settings to adjust the following:-

- Call Tone Time Period Adjustable Between 1 & 25 Seconds;
- Call up Time Period Adjustable Between 1 & 60 seconds;
- Speech Time Adjustable Between 30 & 90 seconds;
- Lock release Time period Adjustable Between 1 & 60 seconds. (to be set at 8 seconds duration at the time of installation);
- Reassurance tone volume; and
- Battery Backup Charger output Adjust (13.8v);

Tradesman Settings

169 The Contractor must set the TC2 automatic summer/winter timer correction digital trades time clock to operate (provisionally) as follows:

On	Monday - Friday	07.00
Off	Monday - Friday	11.00
On	Saturday	07.00
Off	Saturday	11.00
On	Sunday	07.00
Off	Sunday	11.00

Time settings to be agreed with Client Representative prior to installation and commission.

Local Isolation Connection Boxes (if Required)

170 The local isolation connection unit must be a local connection box to individually isolate the dwelling handset. This must be by means of "line isolation" of each dwelling telephone handset and cable with individual fuse protection of each telephone circuit. In the event of either being damaged this must allow the rest of the system to operate normally and is designed to have a minimum of 8 outputs.

171 The local isolation connection box must be where connections can be made in the vicinity to the handsets and "line isolates" each dwelling telephone and cables. This overcomes the necessity for long cable runs and accommodates comfortable, flexible electrical system.

172 The unit must also provide secrecy of speech and discrete lock release. The connection boards must be located whether within the main control unit or remotely within the Sarel sheet steel

enclosure to IP66 (beige colour) with a hinged barrel lockable lid and Sarel 1242E lock (or approved equivalent). If this box is to be mounted in a vulnerable area it is to be fitted with an hasp and staple and locked with a pad lock. (To be agreed by Client Representative)

173 The PCB local connection board must be mounted on a detachable plate secured by means of nuts and variable locking bolts.

THIS PLATE MUST BE REMOVED PRIOR TO DRILLING ANY HOLES TO THE CABINET.

174 The outputs to the phones are identical to that of the main power board contained in the power unit and the fuse protection circuit with LED indication must be of the same design. On each telephone output a red LED should be used to indicate the mechanical fuse has blow and a green LED to indicate a particular port has been called and is in use.

175 All connections on the board must be plugs and socket type terminals. Each telephone handset cable should be connected individually to each telephone output by use of a plug in type terminal plug for ease of isolation.

176 The power to the local connection board must be driven via the common wires from the main power board.

177 The connections to the handsets are to be labelled identical to the corresponding terminals on the local connection boards and main control board. The telephone outputs on the main equipment must be expandable by the employment of local connection boards fitted with either the main controller enclosure or remotely.

Electric Locking Device

178 ARCHITCTURAL SPECIFICATION – Electromagnetic Lock Model 32 /MAGNETIC LOCKS (or approved equivalent):-

179 All electromagnetic locks must be manufactured by Securitron Magnalock Corp (or approved equivalent).,
Sparks, NV, an ISO 9001 certified manufacturer.

- Locks must be capable of providing a pull-apart or tensile holding force of at least 600 pounds. A laboratory test certifying the minimum holding force must be submitted by the manufacturer upon request;
- Electromagnetic locks must have a lifetime replacement warranty;
- Locks must not consume more than 300mA of power @ 12VDC;
- Locks must be 8 inches x 1.75 inches x 1.5 inches in size;
- Locks must be fully sealed in resin to provide tamper and weather proofing;
- Two magnetic locks fitted per door. 1/3 and 2/3 fitted vertically;
- Doors to be outward opening. If inward opening seek professional advice;
- Strike plates fitted to provide a "floating" movement to assure automatic self-alignment with the lock;
- Finish is architectural brushed stainless steel;
- The locks and strikes must be plated to provide corrosion resistance;
- Anti-tamper caps must be provided for any exposed holes;
- Lock must have a factory internal senstat monitoring switch (or approved equivalent) with change over contacts NO going closed and NC going open; and
- A three meter factory sealed stranded cable must be provided for electrical connection;

TYPE 1

180 SECURITRON 32 series side fixed magnetic lock (or approved equivalent). (two per door one 32C monitored and one 32 (unmonitored per door) magnetic locks 12V DC. (Approx 600lbs of

holding power to be side fixed) or Equal and approved. Where rear entrance doors are required the same locking devise must be used with out a door monitoring circuit. The Contractor will supply all necessary ironmongery suitable for all doors and to match and suit the lock release or magnalock lock. If magnetic locks are not deemed suitable for the entrances, the Contractor must discuss alternatives with the client. If the entrances require inward opening doors, the Contractor must consult with the client and suggest a suitable locking device that is suitable to secure the doors against an inward kick of the door. Greater holding force magnetic locks may be required in different arrangements to that of an outward opening door. The Contractor must consult a specialist security door manufacturer to receive the correct advice and suitability.

Fireman's Switch (Double Pole/Double Throw) Type FS4

181 The Contractor must be required to install an emergency FS4/BZ/DP (or approved equivilant) type Fireman's double pole stainless steel switch at Main entrance access point. The switch must be a double pole double throw type switch. The fireman's switch must be mounted at a height of 1.9m above finished floor level to its lower edge and it's fascia secured by security screws as used on the door entry call panel. It must be operated using a drop key, inserted within the fascia plate. The type must be submitted to the Client's Representative for approval prior to installation.

182 The fireman's switch must be of the same design and manufacture as that of the door entry call panel. The switch must be mounted with a galvanised back box with mitred bezelled/ back box. A 12mm bevel edge and be suitable for insertion within the wall adjacent to the entrance door. The panel fascia must be constructed from type 316 Stainless Steel (12swg 2.6mm) with brushed satin finish, clearly engraved "FIRE SWITCH" in RED.

183 The fireman switch must be constructed as THREE separate parts. The back box, removable switch assembly and a faceplate, which can be fitted on to the back box once the internals, have been fitted with in the back box. This is so as the cables can be dressed before the faceplate is fitted to stop the key fowling on the cables. The internal switch assemble must have an extended key tube. The extended tube design must stop the key's stop rubbing and marking the faceplate.

184 The door entry control panel back box and the fireman's switch must be linked using flush mounted 20mm galvanised conduit with no junction boxes or inspection elbows along the route. The fireman's switch back box must be solely for this purpose, and must not be used as a through box.

Push to Exit Switch PTE/EPTE/OL/DP (Double Pole)

185 The Contractor must provide at every controlled access point at a height of 1.2 metres a double pole stainless steel push to exit switch, overlap style, with large 25mm button, back box type "PTE/OL", fixed with security screws match that of the door entry call panel. The switch must be flush fitted where possible. If the switch cannot be flush fitted it must be surface mounted in a green powder coated back box. Type " PTE/SM-PC (or as applicable equivilant).

186 The "Push to Exit" switch must be a double pole switch wired in a configuration that the lock's power travels through the normally closed side and a timed circuit must be connected to the normally open side for timed exit. The switch is to have 2 separate commons and a 25mm button for easy use of all persons including the elderly.

187 The Contractor must position the push to exit switch in a position that it cannot be depressed from the un-secure side of the installation. It will be the Contractor's responsibility to supply a guard to protect the switch from being depressed using a stick/coat hanger from out side the secure area. The Contractor must provide a sample to the Client Representative prior to installation for approval.

188 If the Contractor feels that the push to exit switch requires a shield to stop a coat hanger depressing the button he must make the client aware at the pre- site meeting.

Wiring of Fireman's and Push to Exit Switch

189 The switch must wired through the normally closed side of the switch to de-activate its appropriate fail-safe lock release, by disconnecting the supply to the lock release until the drop key is removed/unengaged (fireman switch) or the button is released (PTE). Therefore in the event of system, failure the lock can still be opened. A second set of connections is to be wired to the "normally open" side of the switch to operate a timed-release circuit for a timed entry. When the switch is momentary depressed it will open via a timed circuit either from the door entry controller or access control controller.

190 When operated using the timed circuit the door panel must sound to indicate to users that the door has been released and is released for as long as the sounder is energised. Where the push to exit switch is located in a position where it can be operated by using a rod or other device from outside the enclosed area precautions should be taken when positioning the switch so it faces away from the door or is protected by a shield.

Telephone Handsets –

191 The telephone handset must be of high impact ABS plastic, white in colour, which must incorporate a 20mm large round lock release button and timed privacy switch.

192 The handset will be for normal wall mounting and provide purpose made cable entry points on the base without the need to make additional holes. The polished finish of the handset must make it easy to clean.

193 The handset units must be wall-mounted telephones complete with coiled cords and located in the hallways of the flats. The Contractor must allow for any variations to the handsets positions that may be required by the Residents in some circumstances. However, any variations to the handset positions will not be acceptable if they are impractical or detrimental to the systems operation. For tendering purposes the Contractor must allow for a 6 metre run within each dwelling from the point of cable entry to the handset. The door call signals must be clearly audible anywhere in the flats with the intervening doors open.

194 The handset must have 'Door Release' and the 'privacy On' buttons and must also incorporate visual pictorially symbols/indicators for the 'Privacy On' function " a picture of a bell with a cross through it" and the door status " a picture of a door in the open position". The buttons must have a "key Symbol" and the words "Privacy On" pad printed on the handset (transfer or silk screen printing will not be acceptable).

195 The telephone handset must be wall mounted at a height of 1200mm above the finished floor level with special consideration given when sighting to avoid damage/injury to the unit and user. Due allowance must be made to accommodate the needs of disabled persons, the exact position to be agreed with the Client's Representative, and must confirm to all relevant BS and IEE standards and code of practice.

196 An instruction leaflet on the handset operation must be provided with every telephone handset and left with the occupier at time of installation. Instructions in other languages should be made available if required by occupier, The Client's members translation departments may be able to assist in this should the need arise.

197 The handsets must be fixed to the wall using 4 No. round head screws of adequate length to ensure a firm fixing. In addition, no part of the handset body must be under stress.

Audio Handsets:-

198 The telephone handset must incorporate the following features as standard and as factory manufacture:

- Full duplex, high quality speech from door to flat;
- Secrecy of Speech. (Conversation between entrance panel and the dwelling or office are to be completely private);
- Privacy nuisance on/off Soft - Touch latching switch. The privacy button must be of sufficient size for ease of operation to disconnect the call circuit;
- Nuisance switch on/off indicator LED (red) and a picture of a bell with an X through it must be positioned below the LED with the words " on privacy". The LED must be visible at all angles when the handset is on its cradle;
- The door monitoring LED must have a picture of a door in the open position must be shown above the LED with the words "door open";
- A dedicated button for the lock release, which allows operation only when the handset has been removed from the cradle switch. (Lock release from the cradle switch is not acceptable). The button is to be soft touch, non-latching operation of sufficient size for ease of operation. A picture of a key must be embossed on to this button;
- A Green LED positioned above the lock release button to indicate when the door has been opened. The LED will illuminate permanently when the door is open and extinguish when the door is closed. The door monitoring LED must be visible at all angles when the handset is on its cradle; and
- Timed lock release operation with full discrete locking (only the dwelling or office called from the entrance panel can unlock the door);

199 The handset must be pad printed to indicate the privacy switch and lock release button (silk screen printing or transfers are not acceptable).

200 The handset must have both wording to describe the use of each button and also pictorial symbol to show door open (a door in the open position) and privacy on (A bell with an X through it).

201 The handset will be called by means of an oscillator generated call tone (AC/DC buzzers are not acceptable), which will call through the handset receiver as a loudspeaker to emit the call tone. The call tone will only be heard when a call to that dwelling or office is in process and the cradle is depressed.

202 The handset cover must be fixed to the handset base by means of two preformed screw fixings, (top & bottom) modifications to the handset moulding is not acceptable.

203 The handset should consist of a hang up device using a single robust hook incorporating a switch:

- Facility for extension sounders and or flashing beacons for hard of hearing; and

- Facility for inductive couplers for hard of hearing;

Video Handsets Option:-

204 As Specified in Audio Handsets, PLUS:-
The Video system should be full colour,

Colour Camera:-

205 The front panel camera should conform to or exceed the following specification :

- Angle viewing : 45 degrees;
- Horizontal Resolution : 330 TV Lines;
- Pick-up Device : 1/3" Interline CCD;
- Scanning System : 625 Lines Interlaced;
- Synchronisation : Internal;
- Output Signal : Standard composite signal;
- IV pp Composite Video into 75 ohms;
- Light Sensitivity –30 IRE : 3 lux;
- Electronic Iris 1/50 – 1/100,000;
- Signal to Noise Ratio : 46 dB or more (AGC off);
- Gamma : 0.45;
- AGC On (4-26dB max);
- Input Voltage DC 12.0V (9.0V – 14.0V) ;
- Power Consumption With line lock 1.95W or less;
  Without line lock 1.85W or less;
- Ambient Temperature
- Operation : -10ºC to + 55ºC;
- In Storage : -20ºC to +70ºC;

- Relative Humidity
- Operation : Under 90% non-condensing
- In Storage : Under 95% non-condensing

206 Colour camera with backlight compensation and white balance adjustment

207 As an option to a front panel camera a silent witness vandal resistant camera, can be fitted as a standalone unit

Door Entry System Multi-Core Wiring

208 The cabling to the door entry system must comprise be carried out using standard twisted core PVC insulated and sheathed, screened where necessary, cables complying to the British Telecom Specification CW1308 and rated not less than 80V suitable for internal and external conditions. (0.5mm PVC/PVC) (CW1600 where screen cable is necessary) except where larger cables are required for heavy-duty lock releases, magnetic locks or earthing requirements to meet the current statutory electrical regulations. The conductor cross-sectional areas must be such that the lengths required for the installation must not affect the system operation (normally 1.5 three core or 2.5 three core cable).

209 All wiring to include 10% spare pairs. (not spare cores) i.e. if seven connections required in the handset a 6 pair CW1308 (or equivalent) to Handsets must be installed. Video Handset option also requires RG59 Coax cable running between the Colour Camera and the Video Distribution Amp .

210 A 25% spare factor must be allowed for all containment.

211 The Contractor must ascertain for himself the exact wiring details required for each situation, including numbers of cores etc., for the correct operation of the system.

212 At no time must any junction boxes be used to join cables Cable lengths must be continuous lengths from marmusting boards to Handset. Cable junction boxes will not be permitted. All cables must be identified with cable markers.

213 ALL EQUIPMENT IS TO BE EARTHED TO MEET THE CURRENT STATUTORY ELECTRICAL REGULATIONS BS7671 2001 and Amendments.

Fixings

214 All screws used in conjunction with the electrical installation, other than those used on the panel fascia, must be of a tamper proof type. The Contractor must allow in his rates for the supply of and handing to the Client's Representative 1no. purpose made screwdriver to suit such screws. All conduit box lids and trunking is to be held in place with security screws.

Method of Cable Installation

215 The whole of the system wiring must be in strict accordance with the current addition of the IEE wiring regulations, and where possible, be concealed and run in such a manner so as to be as unobtrusive as possible. Where wiring is surface fixed cables must be run in the following manner:

PERFORMANCE SPECIFICATION FOR INSTALLATION

Electrical Installation Generally

216 Install, test and commission the electrical work in accordance with the current IEE Regulations, ensuring compliance with design and performance requirements, to provide a safe, well insulated, earth protected system capable of supplying the anticipated maximum demand. Installation work to be carried out by qualified electricians fully conversant with the current IEE Regulations. Fastenings, bushes, glands, terminals, connectors, clips, clamps and all other minor accessories necessary to complete the installation to be types recommended for the purpose by relevant equipment, accessories, and etc. manufacturer. In locations where moisture is present or may occur, use corrosion-resisting fastenings and avoid contact between dissimilar metals.

Steel Conduit and Trunking Installation (Communal areas and risers)

217 All cables within communal areas and risers must be installed within surface run steel conduit/trunking to route agreed with Client's Representative prior to installation. Conduit/trunking must be of sufficient size to permit easy withdrawal of cables and installation of cables. Ends must be cut clean and square with axis and must be reamed. Bends must be made so as not to alter the diameter of the conduit. Purpose made elbows, bends or tees must be used:

- All conduits must be butted inside couplings, boxes and accessories;
- All conduit/trunking must be galvanised;
- Steel conduit circular locking rings must be fitted to each entry to every type of screwed fitting and to each of running couplings;
- The method of terminating steel conduit at all untapped entries must be by means of a smooth bore brass bush, compression washer, couplings and lock ring;
- Exposed conduit threads inside boxes must not be permitted;
- The conduit/trunking must be mechanically and electrically continuous throughout so that cables are fully protected and must be fixed with round head screws in accordance with BS 7671 – 2001 and amendments;
- The trunking must be complete with all purpose-made accessories including end caps,

lids and earth continuity links;
- All bends and tees must be gusseted;
- Site manufactured bends must not be permitted;
- On horizontal runs of trunking, cable-retaining straps must be fitted at 1.5m centres;
- On vertical runs of trunking, cable supports must be fitted at 3m centres;
- Where any cable trunking passes through a fire barrier, a cable support with fire stopping material must be provided;

Conduit/Trunking/Ducting Generally

218 Use conduit/trunking/ducting suitable for the location and use, ensuring adequate:
- Strength
- Tolerance of high and low temperatures
- Resistance to ingress of solid objects and water
- Electrical properties
- Corrosion resistance
- Resistance to flame propagation
- All conduit/trunking lids to be secured using security screws

219 **Steel conduit and Fittings Generally**

Location/use: To BS 4568:Parts 1 and 2 or BS EN 50086-1 and 2-1;
Manufacturer and reference: plain thread able rigid conduit no less than 20mm internal diameter;
Jointing: Screwed;
Size: In accordance with BS 7671 – 2001 and Amendments;
Fittings: Deep boxes, extension rings, expansion coupling should be used at intervals were conduit crosses movement joints;
Protection class/finish: Class 2/ Galvanised;
Other requirements: All conduit is to be run at least 150mm clear of any plumbing and mechanical services. Cable running adjacent or parallel to heating pipes are to be located under the pipes;
Mounting/support: Conduit must be supported at regular intervals not exceeding 1000mm on horizontal and vertical runs using vandal resistant screws;
Use maximum practical lengths to minimise number of joints. Remove burrs from cut ends;
Use elbows or tees and/or junction boxes at changes of direction;
Fix securely with boxes fixed independently of conduit;
Tightly screw all joints to ensure electrical continuity, with no thread showing. Use expansion couplings where conduit crosses movement joints in structure; and
Make secure connections to boxes, trunking, etc. with screwed couplings and provide rubber bushes at open ends;

Installing Conduit in Concrete

220 Fix securely to reinforcement and fix boxes to formwork to prevent displacement. Depth of concrete cover to be not less than specified for reinforcement.

Drainage of Conduit

221 Provide drainage outlets at lowest points in conduit installed externally and in locations where condensation may occur.

222 **Steel Trunking and Fittings Generally**

Location/use: Riser routes to BS 4678:Part 1;
Manufacturer and reference: to be approved;
Size: In accordance with BS 7671;

Fittings: Screwed couplings and rubber brushes at open ends;
Protection class/finish: Class 3 / Zinc coated;
Other requirements: Metal partitions inside trunking;
Mounting/support: Surface Screwed;
Use proprietary units to form junctions and changes of direction wherever possible;
Use mechanical fastenings/fixings; do not weld;
Fit a copper link at each joint to ensure electrical continuity;
Fit grommets, bushes or liners into holes, through which cables pass; and
Fit security screws to secure trunking lids.;

223 **PVC Surface Trunking System Generally**

Location/use: For use in Flat/dwelling only To BS 4678:Part 4;
Size: In accordance with BS 7671;
Fittings: Mini trunking system rectangular surface boxes and circular boxes;
Strength: Heavy duty;
Colour: White;
Other requirements: Conduits must be jointed and terminated utilising standard conduit for door entry electrical equipment;
Use maximum practical straight lengths to minimise number of joints;
Use proprietary units to form junctions, changes of direction and trunking entry to surface boxes; and
Site manufactured changes in direction will not be permitted;

224 **Cabling Generally**

CABLES to be BASEC certified. Select types and sizes to suit operating conditions, ensuring compliance with BS 7671. Obtain approval before proceeding with installation. CABLES to be BASEC certified and of the types listed below. Where not specified, select types and sizes to suit operating conditions, ensuring compliance with BS 7671 – 2001 and Amendments. Obtain approval before proceeding with installation.

Location/use		Cable;
Ring Circuits	2.5mm Sq	PVC insulated and sheathed;
Lighting	1.5mm Sq	PVC insulated and sheathed; and
Metre tails	16mm Sq	Double insulated;

225 **Installing Cables Generally**

Do not commence internal cabling until the building is sufficiently enclosed to ensure permanently dry conditions.

Install cables neatly and securely, adequately protected against accidental damage, adverse environmental conditions, mechanical stress and deleterious substances. Install cables without joints other than at equipment and terminal fittings.

Do not use junction boxes without approval.

Sleeve cables passing through masonry walls with conduit bushed at both ends.

Do not run cables in spaces where they will be surrounded or covered by insulation. Where this is not practical, size cables accordingly and inform Client's Representative.

226 **Cable Routes to be:**

Straight, vertical or horizontal and parallel to walls unless shown otherwise.

In approved locations where exposed to view. When not specified otherwise, conceal cables wherever possible.

Concealed horizontal runs in walls, if unavoidable, to be located within 150 mm of ceiling or between 150 and 300 mm of floor.

Concealed cable runs to wall switches and outlets to be vertically in line with the accessory.

227 **Protective Conductors**

Use cable conductors throughout; do not use conduit or trunking as protective conductors.

228 **Armoured Cable**

Handle and install carefully to prevent damage to sheath and armouring.

Do not install if cable and ambient temperature are, or have been for the previous 24 hours, below 0 °C.

Fit galvanized steel guards where cables are liable to mechanical damage.

Bond armour to equipment and main earthing system.

Make moisture proof connections to apparatus using sealed glands and PVC shrouds.

Armoured PVC insulated cables must be subjected at the manufacturers works to the routine test, detailed in BS6346. Duplicate copies of the test certificates must be submitted to the Client Representative if requested.

If jointing of cables is required the voltage test detailed in BS6346 clause 16.3 using test voltages detailed in Appendix B to BS6346 table 20, must be applied to the cable in the presence of the Client Representative. A visual check of all conductors, bonds and joints of their measured electrical continuity must be undertaken. The method to testing must be as given in BS 7430.

Where the building construction steelwork and/or foundation piles are employed as a integral part of the system resistance and continuity test must be carried out at each stage of the building construction and the results recorded in the logbook.

229 **PVC Sheathed Cables**

Do not install cables when the temperature is near or below freezing.

Do not install in cavities of external walls.

Fit insulating cable glands at entries to equipment.

Terminate cable sheaths within boxes.

230 **MICC Cables**

Neatly and carefully dress cable into position using tools recommended by cable manufacturer. Avoid corrugating sheath when bending.

Connect to equipment and boxes with PVC shrouded glands.

Fix cables with clips recommended by manufacturer ensuring that cable is fixed within 150 mm of bends and connections.

As soon as a length of cable has been installed, fit permanent seals and immediately carry out an insulation test between conductors or between any conductor and cable sheath. Repeat test between 24 and 48 hours later. Only infinity readings will be accepted. Replace any cable, which fails and repeat tests.

231 **Cables Laid Directly in the Ground**

Before laying cables, ensure that bottom of trench is even and free from sharp stones, roots, etc.

Lay cables on a 75 mm bed of sand.

Where two or more cables are laid in the same trench, set 150 mm apart.

Cover each cable with 75 mm of sand overlaid with cable covers to BS 2484.

Mark each change in direction of cables with a precast concrete slab, size 300 x 300 x 150 mm thick, impressed with 'LV CABLE' and laid level with finished ground level.

232 **Cables in Vertical Trunking/Ducts**

Support with pin racks or cleats at each floor level or at 5 m vertical centres, whichever is the lesser.

Provide and fix heat barriers at not more than 5 m centres where fire-resisting barriers are not specified.

Earthing and Bonding Requirements

233 The complete system will be correctly earthed and in the case of low voltage cables DC circuits grounded at the same potential throughout the installation. In addition where the systems voltage has a potential risk of contact with metallic fixed structures, those items must be supplementary bonded to earth. In full accordance with BS 7671 2001

234 The installer also must strictly follow the manufacturers earthing requirements.

Testing of Door Entry and Access Control Systems

235 Once the Contractor has satisfied himself that the system is fully operational, testing must be carried out in the presence of the Client's Representative. The testing must be carried out on sections of the completed installation as necessary to ensure satisfactory operation of the following:-

- Operation of the call tone, speech and door release system from each dwelling telephone handset unit.
- Audibility and clarity of the communication system from each dwelling unit to the entrance porch and vice versa.

236 The tests must be carried out using a dummy dwelling unit connected to positioned plug in test connections. On completion of the testing, duplicate signed Test Certificate and Commission Certificate indicating individual flat tests will be handed to the Client Representative.

237 Once the system is finally tested. Should any amendments be made to this system as a result of testing, and then the amended copies of the above are to be issued to the Client's Representative.

238 Proximity Tokens must operate the doors correctly

239 Test results must be submitted in the form of a check list with a final Test certificate to the Client's Representative upon completion

Testing and Commissioning of Door Entry and Access Control Equipment

240 The system must be installed by a approved installer. If an approved installer does not install the system then installation Contractor MUST and must employ appropriate manufacturer to commission the system fully. This must be in full agreement with the client at tender stage that an installer other than a manufacturers approved installer can install the system. Evidence must be provided that the system has been commissioned by manufacturer (or an approved installer) at handover. This must be in full agreement with the client at tender stage.

241 The entire system must be tested upon completion by the Contractor, with final testing and commissioning to the satisfaction of the Client Representative carried out in the presence of all parties.

242 The Contractor must provide a commissioning certificate that must included a tick test sheet with comments showing which handsets have been tested with in the dwellings. Test results must be submitted in the form of a check-list with a final Test certificate to the Client Representative upon completion. The Contractor must also provide two copies of operating instructions, manuals, 'As fitted' drawings and schedules of equipment. This is to include equipment locations, wiring routes, details of which flats are supplied from which Floor Handset Distribution Unit.

243 The Contractor must also supply the addresses and telephone numbers of the maintenance departments who will be responsible for servicing the system. One copy of this information must be retained at site, the second copy being supplied to the Client Representative.

244 The Contractor must have local maintenance and repair facilities available, especially for dealing with emergency call outs.

245 If the manufacturer commissions the system, the manufacturer must issue a manufacturers commissioning certificate that must included a tick test sheet with comments showing which handsets have been tested with in the dwellings. The manufacturer must be responsible for the upkeep of the system against manufacturers defects for a period of one year from the date as indicated on the manufacturers commissioning certificate. The installer must responsible for all other defects. The Contractor must attend all defects and call in the manufacturer if deemed a manufacturers defect.

246 **Inspection and Testing**

To BS 7671 2001, Part 7 and Appendix 6 of the current IEE Regulations.

Give not less than 24 hours notice before commencing tests.

In addition to items required to be, inspected or tested, ensure that labels and signs required by the Regulations are securely fixed in the correct locations.

After satisfactory completion of tests submit two copies of inspection and completion certificates to Client's Representative.

247 **Builders Work in Connection with the Controlled Entry System**

The builders work is to include all work necessary to install the controlled entry system including:

- Cutting out or forming holes, chases;
- Building in equipment;
- Removal and replacement of ducts, panels, false ceilings, etc., to provide access;
- Making good all work disturbed and decorating all exposed new metal conduits on corridors.

248 **PVC Mini-Trunking**

The system wiring to the handsets must be enclosed within 16 mm x 16mm white PVC mini-trunking – colour white, which must enter the handsets in purpose made knock-outs and trunking accessories. All changes in trunking direction must be made with pre-manufactured accessories. All conduit/trunking is to be installed in a neat and tidy manner, with adequate clips and fixings. Allow up to 5 Metres of trunking per dwelling.

The trunking must be fixed using round head screws of adequate length located every metre and within 25mm from each end, corner or change of direction.

All cutting of trunking must be neat, clean and true. Ragged edges must be cleaned off. Junctions between sections and accessories must be made with proprietary trunking accessories.

The trunking must run vertically and horizontally and must run close to corners of the building structure, architrave's or where possible within cupboards etc. The trunking must present an unobtrusive appearance upon completion.

All trunking must run between finite positions, i.e. accessories, walls and ceilings etc. and must not terminate in mid run. Where necessary trunking must be extended to the next change of direction of wall/or ceilings.

After final installation all trunking and trunking lids must be cleaned using a mild detergent. Prior to fitting, a sample must be provided to the Client Representative for approval.

249 **Labels and Diagrams**

All items of equipment must be identified with a part number noted on it.

Terminals inside each unit must also be readily identified by engraved or pad printed labelling on the PCB i.e. terminals labelled Ov, +6v, S1, S2 for speaker amp connections.

All cables must be clearly labelled with destination i.e. flat cables, flat 24.

The system will be supplied with an instruction manual complete with circuit and schematic diagrams. A copy of which will be left on site with the equipment for ease of maintenance. An instruction sheet and handset connection diagram should be supplied with each handset. The instruction sheet will in each case be left with each user at each handset position

The Contractor must provide an idiots guide to each dwelling indicating how to use the door entry and proximity access control system

Holes etc

250 The Contractor is to allow for making all penetrations for cables. System wiring is to enter the property through a purpose made hole within the building fabric, not the door frame. Cutting of ways through landings, brick walls, etc. must be carried out by boring using masonry drills and electric hand drills. Holes are to be drilled from the flat outwards so that any blown wall finishes are external.

251 The Contractor must be required to pull back existing wallpaper, make good the hole with plaster and reinstate the paper on completion. The cutting of holes through concrete floor slabs must be undertaken by using diamond cutter. Holes to be made good. All holes must be fire stopped to current BS regulations. All cables running through the building fabric must be protected against mechanical damage.

252 Cables installed in conduit running between floor levels must be protected with sleeves.

253 In the event of a valid claim for redecoration being sustained, the cost must be borne by the Contractor. The work must be carried out when the dwellings/ flats are occupied .

Samples

254 The Contractor must provide samples of the equipment intended to be used and also off-site demonstration of the equipment working as specified during the tender period.

255 All samples submissions and demonstrations must be required to meet the approval of the Client Representative prior to the work commencing on site.

Operation and Maintenance Manual.

256 The Contractor must supply and hand over to the Client Representative at Practical Completion:

- An "As installed" wiring CAD diagram and component list which must indicate the wiring arrangement of the system and connections between the items of equipment, including a list of components used in that equipment in the format as specified by the Client Representative;
- This must be a “CAD” type drawing. This must include;-
  - Equipment locations;
  - Wiring routes; and
  - Details of which flats are supplied from which “Floor Handset Marmusting/Distribution Unit”;
- Each system must be supplied with two copies of the manufactures instruction manuals. A copy of which will be left on site for the ease of maintenance;
- Copies of manufacturers' operating and maintenance instructions for all OTHER fittings and apparatus;
- The system is to be supplied with an instruction manual complete with circuit and

schematic diagrams, a copy of which will be left on site for the ease of maintenance; and

- An instruction sheet is to be supplied with each handset and left with each user at the handset position.

Maintenance

257 The Contractor must indicate the provision made for the continued maintenance of the Controlled Entry System.

258 Where defects occur within the twelve months defects liability period, caused by a malfunction of equipment or workmanship or as a result of direct vandalism, the Client Representative will issue to the Contractor a “NOTICE OF DEFECT”. The Contractor must attend site and rectify the defect within 48 hours of receiving such a notice. Where it is not practicable to rectify the defect within 48 hours due to the nature of the work required, the Contractor must immediately inform the Client Representative of their intentions.

259 A copy of the Contractors report will be handed to the Client Representative when the works are complete.

260 Should, in the opinion of the Client Representative, the Contractors response to defects be found to be unsatisfactory, the C Client Representative will issue a final notice. On the Contractors failure to comply with the final notice, the Client Representative will arrange for the works to be carried out by others and any cost incurred by the Client will be fully recoverable from the Contractor.

261 If the manufacturer commissions the system, the manufacturer must issue a manufacturers commissioning certificate and must be responsible for the upkeep of the system against manufactures defects only for a period of one year from the date as indicated on the manufactures commissioning certificate. The Contractor must responsible for all other defects. The Contractor must attend to the fault first to identify if it is a installation fault, vandalism call out, mechanical fault with the door of a manufactures defect. If the manufacturer does not commission the system it must be the responsibly of the Contractor to attend all manufactures defect faults.

Door Entry and Access Control Mains Power Supply

262 Allow for providing a power supply to each service cupboard or position of the door entry main equipment power supply control box. Wiring to be in orange Pyroshield cable (or approved equivalent) affixed to rear elevations run from the nearest power source from the landlords meter.

263 The Contractor must allow for an electrical spur, 3 amp MK (or equivalent) type key switch spur to be provided outside the door entry control cabinet. The Contractor must ensure that the manufacture provides a 3 amp MCB within the door entry equipment cabinet.

264 Allow for moving and repositioning any external porch lamps that will fowl or inhibit the opening of the front or rear entrance doors to the Client Representative approval.

265 Allow for providing bulkhead lamps within each service cupboard, where door entry equipment is fitted where non exist at present.

PROXIMITY ACCESS CONTROL ENTRY INSTALLATION

266 The Proximity Access Control entry system Controller/GSM must be as approved manufactured :-

Proximity Access Control System Operation

267 A proximity key reader access system must be provided by the Contractor. The access system must be a non- contact proximity technology where specified. Residents' access into controlled areas will be via the use of individually coded electronic keys.

268 The system must comprise of Proximity Access Control system controllers for 2 doors with power supplies, battery back up, readers and fobs.

269 For the standalone systems, all controllers must have a minimum of 25% spare capacity after all initial programmed proximity tokens have been programmed in to the system.

270 The Proximity Access Control controller must be selected to suit the building being controlled.

271 All controllers must come complete with power supplies, battery back up, readers and fobs. The Contractor must contain all KMS control equipment within, IP 66 rated cabinet(s) with LK 1242E Sarel locks and chassis plates (or equivalent).

272 Where new readers are required, then the main entrance will have a panel mount reader in a mitred bezelled back box. For the rear door, a Vandal resistant reader will be used. For occupant's use only and must be of the proximity access control reader type, which is controlled by a remote controller, located in or near the main audio entry equipment.

273 Each Proximity Token must have a unique pre-programmed random code, which cannot be reproduced, with sufficient different random combinations to ensure system integrity. Programmable electronic keys are not acceptable. The Proximity Token must be capable of attachment to a key ring and must be read when held amongst mechanical keys.

274 The identification of the electronic key should be via a numeric or alphanumeric user definable code. The codes should relate to the address to which each key is issued, giving as a minimum the flat number they are issued to and the issue number. Each individual Proximity Token issued to a flat should be coloured coded. The electronic key must not contain a battery.

275 Non-residential Proximity Tokens can be enrolled on to any other system which have access to more than one block and or site. Existing tokens must be able to be enrolled on to the new systems. Tokens that contain a facility or site code are not acceptable. The Proximity Token must be IP67 rated and must carry a lifetime manufacturer's guarantee against electronic failure.

276 All readers must be capable of being mounted on a metallic surface or behind non-metallic materials without any adverse effect on the ability to read the token.

277 Misreading of the Proximity Token must not occur and the recognition must be no less than 100% reliable. There must be a need to present an electronic key to a reader a second time.

278 The door controller must unlock the controlled door within 0.3 seconds from the completion of a valid access attempt.

279 The door controller must be capable of being supported from a 12 volt stand-by battery. The stand-by battery must be charged from the unit when on mains supply.

280 The Proximity Token access control system must be capable of interfacing with all types and manufacturers of door entry systems.

281 The maximum response time from presentation of the Proximity Token to release of the lock drive must not exceed 0.3 seconds, even with the maximum number of users enrolled in the

system. Provision must be made to report and release all lock drives at each outstation by means of a simple switched input.

282 **Proximity Access Controller System Type**

Type “i” Simplekey- SA controller, for two doors and 1000 users.
Type ”ii” Simplekey - N controller, with GSM modem, for two doors and 1000 users.
Type “iii” N/A
Type “iv” N/A

283 If, when using any controller and more than two doors are required combinations of controllers must be used. I.e. if a block has three controlled doors and it is specified to use a controller then two controllers must be used.

Type “i” The Simplekey-SA door controller is a 1000 user unit that can control two doors and has been developed specifically where only local key management is required. It has an easy upgrade to a network controller [Simplekey-N] .

Type ”ii” The Simplekey- N door controller is a 1000 user unit that can control two doors and has been developed specifically for remote key management applications. Up to 20 Simplekey door controllers can be linked together using standard RS485 connection allowing up to 40 doors to be controlled from one dial up connection.

284 Where proximity tokens are to be controlled from a PC, then all controllers must be networked back to the PC where the Simplekey software is installed.

Vandal resistant readers and reader housings

285 The reader must be capable of external mounting without additional environmental protection and must operate from -30 degrees C and + 40 degrees C and within a relative humidity band of 0% and 90% non-condensing.

286 All readers must be capable of being mounted on a metallic surface or behind non-metallic materials without any adverse effect on the ability to read the electronic key.

287 The reader must not require any additional power supply and must be capable of operating up to 1km from the control unit using standard 6 core (1.0mm<) unscreened cable.

288 Stand alone vandal resistant reader housings must be manufactured from brushed finished stainless steel the type 316 Stainless Steel (12swg 2.6mm) with brushed satin finish to a mitred bezelled back box secured by 5mm vandal resistant stainless steel tamper proof machine screws to the same design as the door entry call panel.

289 A minimum of 4 screws must be required. Panels should be flush fixed or recessed so that edges are not exposed.

Access Control Cables

290 The Contractor must install the proximity access control system to the manufactures recommendations.

291 The reader cabling must use multi-stranded unscreened six-core cable. Cable from the reader must be permitted to run next to mains carrying conductors without adverse effect.

(i) All cable is 7/0.2 0.22mm2 unscreened multi-stranded (intruder alarm style) cable.

292 The locks for the main entrance door or for any door with a door entry call panel must be powered by the door entry controllers power supplies and not via the lock output. The lock output relay is to give a volt free contact to the door entry system to open the door. In every case an audible indication must be heard when the door has being released generated by the door entry system. All rear entrance doors must be powered via the lock outputs.

293 When the installation has been tested [including GSM communications] and found to be satisfactory, the Contractor must carry out the necessary programming of the proximity tokens. The Contractor must provide for each property 3 No. Coloured coded programmed proximity tokens. [See coloured coding below]

294 On Standalone system, the Contractor must also provide per block/scheme, 20 or 20% No. Spare programmed fobs whichever is the greater number, a Master RED fob and two Editors GREEN fob, which together with the receipts and any un-issued fobs must be given to the Client's Representative.

295 Whether for either Standalone or PC based systems, all Residents' fobs must be colour coded to easily identify each fob issued to the same apartment.

Key 1: Blue
Key 2: Yellow
Key 3: Orange
Key 4: Black [if required]

RED AND GREEN FOBS MUST ONLY BE USED AS MASTERS (RED) AND EDITIORS (GREEN) FOR THE STANDALONE SYSTEMS.

For Standalone Systems:-

296 The Proximity Token must be identified and entered onto the system programming list as flat number and coloured. All Proximity Token supplied by the Contractor must be programmed into the controller. When using the controllers on Standalone systems, the Contractor must enter the Proximity Tokens in order, with the master token colour red being entered in to position one and the two editor tokens coloured green entered in to slots two and three. The Contractor must also provide a programming list to match.

297 A full and comprehensive list must be provided as to the names/dwelling number and of the position or record/slot number in the controller, the person and colour of the Proximity Tokens that has been issued to. This list must be clear and in order by controller slot/record number.

298 The list must be issued to the Client Representative as a record so as any changes to the programming details can be amended. It must be a printed list, and issued to the Client Representative prior to any Proximity Token being issued to any resident. This list must also be in a disk format so that the Client Representative can modify any changes to the list in the future.

299 "Master" or "Editor" tokens must not be different from any of the other tokens other than by the colour. Any token must be able to be selected and used as a Master or Editor token. If a Master or Editor token is lost then the system must accept a new master or editor from any of the existing tokens.

300 For PC Based systems:- The Proximity tokens administration is done from the PC. The communication to the Simplekey Door Controllers be via GSM. The successful Contractor will provide the PC which requires Microsoft© Windows 2000 or XP in order for Simplekey

Administration software to operate. The Simplekey software is provided with a USB Desktop Administration Reader for adding tokens.

301 All Proximity Tokens supplied by the Contractor must be identified and entered into the Simpleykey Software and allocated to relative readers and controlled doors as required. The Proximity tokens will then be given to the appropriate tenants. The Contractor will also program into the Simplekey Software all Staff & Contractors proximity tokens.

302 Nominated housing staff member(s) must be trained in the whole operation of the electronic key access control system whether on both Standalone and PC based systems, by either the manufacturer's own training staff and/or other certified training staff.

303 The Contractor must in addition ensure that every Resident is made aware of the function and operation of the door entry installation before the system is put into operation.

304 Disabled, visually impaired, blind, elderly or tenants with special needs.
In the case of disabled tenants, elderly, visually impaired or blind tenants, the Contractor must provide adequate instruction as to how the tenant is to use the access reader. The tenant must be instructed as to how to show their token and gain successful entry.

305 All Proximity Tokens issued should sealed in an envelope with the appropriate apartment/name which should be clearly written on the front of the envelope. It will be decided whether the envelopes should handed to Housing Officers or put through letter boxes.

306 Non-residential keys should be placed in a brown A4 envelope and passed to the nominated Housing Officer.

Earthing and Bonding

307 The earthing system within the building must be a ‘protective multiple earthing’ system (PME) in accordance with the requirements of BS 7671 2001 and amendments, BS 7430 and the requirements of the local Regional Electricity Company (REC).

308 All final circuits installed as part of the Electrical Services Installation must incorporate a separate earth conductor.

309 Supplementary bonding positions must be bonded in accordance with BS7671 2001 and the Contractor must provide a spiral green/yellow supplementary earth cable bond to the items indicated via earthing clamp in accordance with BS 951. The positions indicated are not exhaustive and the Electrical Contractor must include to provided equipotential and supplementary bonding to the full extent required within BS 7671 2001 and BS 7430.

Testing and Commissioning of Electrical installation

General

310 This section covers the test and commissioning of all electrical works carried out with in the contract. This does not include or cover the testing and commissioning of the door entry system equipment by the specialist installer or door entry manufacturer. The testing and commissioning of the door entry equipment is covered earlier with in this document.

311 The electrical works must be inspected and tested both during and after installation. When the installation is completed and before energised it must be inspected and tested in accordance with the requirements of BS 7671 2001 and as detailed in this part of the specification. Testing must be carried out in the presence of the Engineer or his appointed representative, who must be given at least 7 days notice before the tests are to be carried out.

312 It must be noted that electronic components may sustain serious damage as a result of certain electrical installation test procedures. Conductors and other circuitry must be tested prior to them being connected to electronic components. Electronic equipment must be tested in accordance with the manufacturer's instructions. The presence of electronic components must be noted clearly on the circuit cards and in operation and maintenance manuals with an indication that testing procedures may result in damage.

Test Instruments

313 The Electrical Contractor, for the purpose of testing the works, must provide all labour and test instruments. Competent persons, trained in the use of the instruments, must operate the instruments. If, in the Engineers opinion, a particular instrument is not suitable then an acceptable alternative must be provided.

314 Calibration certificates related to the instruments being used must be made available for inspection by the Engineer.

Visual Inspection

315 A visual inspection of the installation must be carried out as required by BS 7671 2001 and must include, but should not be restricted to, the items listed on the Completion Schedule.

Test results

316 The following items, where relevant, must be tested in the sequence indicated and the results tabulated on test schedules, as described in BS7671, copies of which must be included in the O & M manuals.

317 **Continuity of final ring circuit conductors.**

Continuity of protective conductors, including main and supplementary equipotential bonding:

- Earth electrode resistance;
- Insulation resistance;
- Insulation of site built assemblies;
- Protection by electrical separation;
- Protection by barriers or enclosures provided during erection;
- Insulation of non-conducting floors and walls;
- Polarity; and
- Earth fault loop impedance;

Operation of residual current operated devices.

318 In the event of any test indicating failure to comply, that test and those preceding it, the results of which may have been influenced by the fault indicated, must be repeated after the fault has been rectified.

Certification

319 Following satisfactory completion of the inspection and testing an NICEIC/ECA Completion and Inspection certificates must be issued to the Client or its representative/agent.

320 The NICEIC/ECA inspection certificate must be completed using the results tabulated on the test schedules and the test and completion schedules must be provided as an appendix to the inspection certificate.

321 A practical completion certificate must not be issued until both the NICEIC/ECA Completion and Inspection certificates are issued together with the completed schedules. The original copies

of the certificates and schedules must be included in the Operation and Maintenance Manuals and two further copies issued to the The Client's members or its representative within 14 days of the tests being carried out.

Commissioning of Electrical Installation

322 Prior to commissioning, the Electrical Contractor must satisfy himself that the installation is in a safe and satisfactory condition, that all statutory notices are displayed, and that all necessary arrangements have been made for the installation to be safely commissioned.

323 The commissioning must comprise the energising of the electrical installation, setting into motion any motor or machinery and verifying the operation of controls, safety devices, alarms and lighting levels in relation to the design requirements.

324 Equipment employing batteries such as emergency lighting, fire alarms, etc. must be subjected to full performance tests including operation for the prescribed time period with battery re-charge accomplished in the specified time.

325 Equipment fitted with batteries must be protected to ensure that the battery, battery charger or any other component does not sustain damage during discharge or recharge of the batteries when operating unattended.

326 Records of measurements and settings both as offered for acceptance and finally commissioned, must be issued to the Clients Representative and included in the Operating and Maintenance Manuals.

327 Adequate time for testing and commissioning must be properly integrated into the main Contractors overall programme of site activities.

328 All commissioning and any necessary demonstrations must be completed before the installation is accepted for use unless agreed otherwise with the Clients Representative.

Labelling and Identification

329 All equipment, materials, components and installation of electrical services must have signs/labels displayed in accordance with BS5378 Parts 1, 2 and 3 and the relevant sections of BS7671 - 2001.

330 The following principle colour co-ordination of signs/labels must apply:

- Warning - Yellow background with black lettering
- Mandatory Blue background with white lettering
- General Information White background with black lettering
- Emergency Green background with black lettering
- Prohibition White background with red lettering
- Fire Fighting Red background with white lettering (except extinguishers which have particular colours)
- Equipment/Service- Orange bands of tape or where required orange colour Routed in common locations with others.

331 All items of equipment or enclosures within which voltages exceeds 250 volts or separate enclosures or items of equipment that allow simultaneous human contact with live parts exceeding 250 volts must be so arranged that before access may be gained a warning of the maximum voltage present must be clearly visible i.e. "DANGER 400 VOLTS".

332 Each switchboard must have the primary warning triangle sign denoting 'Caution, risk of electric shock'.

333 Where an isolator leaves any part of equipment or enclosure ‘live’ when in the off position a warning notice must be used indicating that the equipment is not totally isolated and giving instructions for achieving further isolation.

334 A safety sign must be fixed to every enclosure associated with a high voltage discharge lamp installation, e.g. inductors, resistors, capacitors and transformers. In addition a supplementary sign must be located below the warning sign which must be 10mm x 50mm yellow background with 5mm black lettering stating DANGER plus the highest open circuit voltage to earth (i.e. 5000 volts AC).

335 All LV main switch-rooms must have a warning sign together with warning notices on all doorways into the switch-room.

336 The warning sign must be the yellow triangle with black edging and the electrical symbol within the triangle.

337 The warning notices must be a yellow background with black lettering stating “NOTICE - AUTHORISED PERSONS ONLY” with “KEEP LOCKED AT ALL TIMES” with a minimum letter size of 25mm high. All electrical equipment must be labelled to ensure correct identification and give essential operating functions, which relate to each other.

338 All these labels must conform to a white background with black lettering:

- Individual switch fuse, MCCB, isolator must state:
  - The circuit which it controls with a general description of;
  - Type of load;
  - Rating;
  - Phase; and
  - Outgoing cable size in mm2 and cable type;

- All distribution boards must have external labels which state:
  - Voltage;
  - Maximum Rating of Protective devices uses; and
  - Type of load connected;
- All distribution boards must have internal labels which state:
  - Main cable in size in mm2;
  - Phase colour indicator;
  - Circuit number;*
  - Description of circuit;*
  - Circuit protection device rating;*and
  - Actual circuit current;*

339 Circuit cable*.

*This applies to all sub-circuits and these labels/circuit charts must be complete in clear printing in black ink on a white background.

The individual phase must be identified with its colour of Brown, Black & Grey in accordance with BS 7671 2001 Amendment 2.

340 Where a distribution arrangement incorporates contactors, time switches, relay indicator lights and push buttons each of these must be labelled and indicate its function i.e. “LIGHTING”, “OVERRIDE SWITCH”, “TIMESWITCH FOR EXTERNAL LIGHTING”.

These labels must conform to a white background with black lettering.

Local switchgear/isolators and controls gear must have individual labels, which must be black lettering on a white background. These labels must indicate:

- Equipment title;
- Current Rating, Phase, Voltage; and
- Circuit Reference;

The ON/OFF functions must be clearly indicated using an appropriate label where the operating positions are not clearly indicated on the equipment itself.

341 All junction boxes which form a marmusting point and junction point for fire alarm system, security systems and communication systems must have a label with black lettering and white background. These labels must indicate the Wiring System enclosed voltage and circuit references.

Other information/identification labels must include:

- Particular identification of switch/fused spur outlets;
- Particular identification of junction boxes;
- Particular identification of blanked off outlets for future use; and
- Particular identification of communication systems, special circuits;

All these must be individually labelled in black lettering on a white background.

342 Where an item of equipment and or switchgear is designated for emergency operation the labelling must be white lettering on a green background.

The labelling must clearly indicate the item of equipment/function it performs together with the emergency action required or to be undertaken.

343 Where an item of equipment and/or switchgear is designated for prohibited use i.e.:

- “Danger switch off when not in use”;
- “Do not switch off”; and
- “Emergency stop”;

This labelling must be red lettering on a white background.

344 Where a particular item of equipment and/or switchgear is designated for fire fighting use i.e. “a fire alarm switch on a main switchgear panel” then this must be clearly and differently indicated with a label which must have white lettering on a red background.

The material used for the labelling must be a composite plastic component with three layers of rigid plastic (040” ABS) materials. The letter colour being the centre element of the composite and when engraved the composite must then expose the colour. The method must be as commonly referred to as “TRAFFOLYTE”.

All lettering must be in capitals and generally the height of lettering that must be used as follows:

- 6mm for identification labels
- 12mm for warning notices
- 12mm for principle working of an emergency sign
- 6mm for the secondary wording of an emergency sign

The fixing used for all labels must be either bolted with gripping washer or riveted with space washers behind each rivet.

Two fixings must be provided for labels with a height up to 25mm and where labels have a greater height than this four fixings one in each corner of the label must be provided.

Training

345 Upon completion of the Electrical Services Installation the Contractor must be required to provide a demonstration of the various electrical services systems to the Client. This element of training works must be carried out under the supervision of the Client Representative. The training must take place over a period of one half day and the Contractor must include for all attendance costs as necessary.

Record Documentation

346 As part of the works the Contractor must provide record drawings and maintenance manuals for the complete installation and plant as detailed at the beginning section of this part of the electrical specification.

347 The production of Maintenance Manuals and Record Drawings are an essential part of the works, which must not be considered complete, until approved copies of manuals and drawings have been received.

348 In the event of Practical Completion being accepted before the production of the Maintenance Manuals and Record Drawings, monies will be retained from the Contract payments, to cover the cost of preparing such drawings and manuals by others. The amount retained may be released in stages to the Contractor as evidence of production of the necessary drawings and manuals is offered and approved.

349 In the event of the Contractor failing to produce any evidence of the production of the drawings and manuals within one week of handover of the works or any section of the works, they may be instructed to carry out these works, the costs of which will be charged to the Contractor.

AUTOMATIC DOOR OPENING SYSTEMS INSTALLATIONS

Contract Requirements

001 The Automatic door opening systems must be covered by a fully comprehensive type Contract.

002 Detailed below are the specific requirements. The Contract must therefore comprise of the following elements:

Routine Maintenance
Responsive Breakdown Call-outs and Emergency Maintenance
Repairs, Replacements and Adjustments

Routine Maintenance

003 The minimum requirements for preventative and routine maintenance are to be in accordance with the relevant equipment manufacturer's recommendations.

004 These are minimum requirements and the maintenance plans and task sheets must take into account the individual particulars of the Automatic door opening systems concerned in terms of their condition, age and type.

005 The Contractor must carry out all necessary visits per annum for preventative and routine maintenance on all Automatic door opening systems.

006 The Contractor must include for the provision and application of all consumables within the price for this element of the Contract.

007 All servicing and maintenance necessary to ensure that the operation of the Automatic door opening systems in strict conformity with all current BS requirements including any subsequent amendments or substitutions.

008 The Works must also include for but not be limited to the following activities which are to be undertaken on each service visit.

Checking and Maintenance

Cleaning:	• In accordance with the manufacturers printed recommendations.
Inspections and Testing:	• Periodic visual inspection of cabling, trunking and equipment including mountings; and • Periodic performance check, realignment and renewal (as directed by the Client's Representative) of unserviceable parts or components as necessary

Item No	Item	Frequency	Action	Notes
1a	Safety Checks – revolving doors	3 Monthly	Check that suitable prescence sensing devices are provided to ensure that the automatic powered revolving door will stop before it can strike a person	

Item No	Item	Frequency	Action	Notes
			or object within its swept area	
1b	Safety Checks – sliding/swing doors	3 Monthly	Check that suitable prescence sensing devices are provided to give protection at the leading mullion and if a person or object is in this area ensure that the door will stop before it can strike the person or object	
Item No	**Item**	**Frequency**	**Action**	**Notes**
2	Safety Checks – all doors	3 Monthly	Check that emergency stop buttons are provided and are easily identifiable and accessible; Check that all necessary warning signs are fitted e.g. “Keep Clear” “In Emergency Push to Open” “Automatic Door, Keep Moving”	
3	Safety Checks – link to alarm systems	3 Monthly	Test function during operation of fire and/or security alarms. Ensure fire doors return to closed position; Ensure access doors release from automatic drive; Confirm similar operation during mains failure;	Check design characteristics in electronic log book
4	General	3 Monthly	Check all nuts, bolts and screws on the tracks, as well as the automatic opener and the door itself to make sure everything is tightened securely. All the hinge pins should be oiled and all nuts and bolts retightened; Examine all gearboxes drives and linkages; Clean all tracks and grease the rollers. Ensure a thick grease is used that can accommodate temperature changes well. Replace rollers that don't operate smoothly; Clean adjust and lubricate gearboxes;	Complete entries in electronic log book

Item No	Item	Frequency	Action	Notes
			Ensure correct adjustment of guides and pivots adjust where necessary	
5	Electrical Installation	Annually	Examine flexible cables for wear, fraying braid and brittle insulation; Examine connections; Tighten all terminals; Test insulation resistance; Check all controllers; Check battery pack and programming switch; Check and adjust drive belts; Adjust delay and hold open times as necessary to ensure safe working order; Clean and adjust micro switches, cams door drive units where necessary; Generally clean door/frame and manual contact switches and check for correct working order;	Complete entries in electronic log book

009 It is the Contractor's responsibility to observe the on-going condition of the equipment with regard to safe and correct operation. The Contractor must bring to the attention of the Client's Representative any specific areas where periodic checking, lubrication and adjustment exceeds normal provisions for equipment of the age and type installed.

Responsive Breakdown Call Outs and Emergency Maintenance

010 The Contractor must attend to all call outs due to malfunction or breakdown.

011 The Contractor must include for call-out service and emergency maintenance on a 24 hour, 7 days a week, 365 days per year basis.

012 Call outs, which in the opinion of the Contractor are due to mis-use or vandalism must be brought to the immediate attention of the Client and a report issued.

013 Where out of hours call outs are attended to for authorised cases of breakdowns, mis-use or vandalism, the Contractor will be paid in accordance with the Rates detailed in the Schedule of Rates.

Repairs, Replacements and Adjustments

014 The Contractor is responsible for the replacing, repair and adjustment of any part of the Automatic door opening systems should it fail. Any replacements or repairs must be of a standard equal to the original installation.

015 During the course of the preventative and routine maintenance visits, the Contractor must identify the need to replace and/or repair any item of equipment. Where replacement parts are required the ordering of such materials and implementation of the necessary works must be planned so as to suit the requirements of the building.

016 Works may be implemented during the Contractor's normal working hours provided that the Client is given 7 days notice. In the case of emergency repairs the timing of the work must be agreed with the Client.

017 Where repairs, replacements and adjustments are required and the works are not covered by the terms of this Contract, separate instructions must be issued. The basis of costing must be in accordance with the Rates detailed in the Schedule of Rates.

CCTV INSTALLATIONS

Contract Requirements

001 The CCTV Installations must be covered by a fully comprehensive type Contract.

002 Detailed below are the specific requirements. The Contract must therefore comprise of the following elements:

Routine Maintenance
Responsive Breakdown Call-outs and Emergency Maintenance
Repairs, Replacements and Adjustments

Routine Maintenance

003 The minimum requirements for preventative and routine maintenance are to be in accordance with the relevant equipment manufacturer's recommendations.

004 These are minimum requirements and the maintenance plans and task sheets must take into account the individual particulars of the CCTV Installations concerned in terms of their condition, age and type.

005 The Contractor must carry out all necessary visits per annum for preventative and routine maintenance on all CCTV Installations.

006 The Contractor must include for the provision and application of all consumables within the price for this element of the Contract.

007 All servicing and maintenance necessary to ensure that the operation of the CCTV installation in strict conformity with the requirements of the appropriate British and European Standards.

008 The Works must also include for but not be limited to the following activities which are to be undertaken on each service visit.

Checking and Maintenance CCTV Installations:

- Check fixings of camera brackets to structure of building and resecure as necessary;
- Check fixings of individual cameras to camera brackets and resecure as necessary;
- Check that camera brackets and cameras correctly earthed;
- Check connection of cameras and cabling and remake connections as necessary;
- Check operation of VCR equipment and adjust as necessary;
- Check operation of display screens and adjust as necessary;
- Leave installation in working order; and
- Remove any debris etc, which has lodged on camera's camera brackets and related equipment, cabling etc, including cutting back any vegetation affecting the operation of, or obstructing access to the camera.

Item No	Item	Frequency	Action	Notes
1	Camera and Housings	Annually	Carry out the following checks; ▪ connections ▪ coverage ▪ movement ▪ performance ▪ focus ▪ iris adjustment Clean all camera lenses; Examine for corrosion; Examine integrity and tightness of all mountings and fixings;	Complete entries in electronic log book. Report any faults to Client' Representative for instructions
2	Recording Device	Annually	Check quality of playback /retrieved images; Check settings for camera multiplexing to ensure required recording duration; Check that camera video signals are recorded as a full screen image from each of the cameras; Check ability to play back, pause, frame advance/rewind, and four speed fast forward or rewind; Check ability to go to a particular time and date	Complete entries in electronic log book. Report any faults to Client's Representative for instructions
3	Operation	Annually	Perform site and lighting assessment	Complete entries in electronic log book. Report any changes to Client's Representative for instructions
4	Alarm Inputs	Annually	Check operation and response	Complete entries in electronic log book.
5	Electrical Installation	Annually	Examine flexible cables for wear, fraying braid and brittle insulation; Examine connections; Test insulation resistance;	Report all results to Client's Representative
6	Posts etc	Annually	Examine general condition for corrosion or other physical damage; Examine all fixings; Examine cable entries and /or doors for damage	

			for security and vermin ingress;	

009 It is the Contractor's responsibility to observe the on-going condition of the equipment with regard to safe and correct operation. The Contractor must bring to the attention of the Client's Representative any specific areas where periodic checking, lubrication and adjustment exceeds normal provisions for equipment of the age and type installed.

Responsive Breakdown Call Outs and Emergency Maintenance

010 The Contractor must attend to all call outs due to malfunction or breakdown.

011 The Contractor must include for call-out service and emergency maintenance on a 24 hour, 7 days a week, 365 days per year basis.

012 Call outs, which in the opinion of the Contractor are due to mis-use or vandalism, must be brought to the immediate attention of the Client and a report issued.

013 Where out of hours call outs are attended to for authorised cases of breakdowns, mis-use or vandalism, the Contractor will be paid in accordance with the Rates detailed in the Schedule of Rates.

Repairs, Replacements and Adjustments

014 The Contractor must be responsible for the replacing, repair and adjustment of any part of the CCTV Installations should it fail. Any replacements or repairs must be of a standard equal to the original installation.

015 During the course of the preventative and routine maintenance visits, the Contractor must identify the need to replace and/or repair any item of equipment. Where replacement parts are required the ordering of such materials and implementation of the necessary works must be planned so as to suit the requirements of the building.

016 Works may be implemented during the Contractor's normal working hours provided that the Client is given 7 days notice. In the case of emergency repairs the timing of the work must be agreed with the Client.

017 Where repairs, replacements and adjustments are required and the works are not covered by the terms of this Contract, separate instructions must be issued. The basis of costing must be in accordance with the Rates detailed in the Schedule of Rates.

NEW CCTV SYSTEMS.

Specific Performance Criteria

018 The Contractor must ensure that the complete installation complies with the following criteria

019 The Contractor must be required to demonstrate compliance with the following before acceptance of the system and final payment The installation must conform with the relevant sections BS EN 50132-7:1996, BS 7671 2001, BS EN 61000 (EMC), Code of Practice for the Planning, Installation and Maintenance of Closed Circuit Television Systems issue 2 October 1991 and the Performance Testing of CCTV Perimeter Surveillance cameras using normally available site lighting (using the Rotakin Standard Test Target).

020 The images displayed must be in line with the parameters recommended by the police scientific development branch as below:

- Detection: Target 10% of screen height;

- Recognition:- Target 50% of screen height; and
- Identification: Target 120% of screen height

021 The Contractor must with regards to the size of the images, use the `Rotakin' model to demonstrate the systems ability to achieve the above criteria with the requisite clarity of the images required on cameras with non self contained camera lighting.

022 The Contractor must also ensure that the system produces displayed, recorded images and transmitted images, which are in compliance with the above.

023 The images must have true defined colour retention, by definition this must be colour true in appearance to the target area/subject. The images display must also be focused and clearly defined to the adjacent colour/target area/subject. In addition the display image must be stable with no detectable noise.

024 The above requirements required for all lighting condition where the ambient lighting is below 1 lux the camera to automatically revert to mono.

025 Where external day/night cameras are scheduled, the cameras must be 3 axis gimble complete with integrated infra-red LEDs with a min 20m range and be enclosed within a heated vandal resistant dome enclosure.

026 Where internal cameras are designated they must be 3axis gimble varifocal fixed mini dome units.

027 The cameras to be located so as not to be influenced by artificial or natural fluctuations in the surroundings or lighting levels.

028 Where internal cameras are designated they must be 3axis gimble varifocal fixed mini dome units.

029 The cameras to be located so as not to be influenced by artificial or natural fluctuations in the surroundings or lighting levels.

Pre-sets Associated with Fully Functional Cameras (PTZ)

030 The Contractor must set all pre-set and tours required for the PTZ (fully functional cameras)

031 With regards to the above cameras, the Contractor must allow in his rates for the setting of all pre-sets to achieve the agreed aiming and view. The Contractor must include in his rates for the PTZ cameras to each have target location pre-sets as stated.

Recording Equipment

032 The Contractor is to install a 16 channel digital DVD recorder with a hard drive (min 1 Tera HHD)) to record 16 channels simultaneously at 6 - 10 frames per second whether in use or not for a period of 14 days thereafter to overwrite the oldest recording. The output to the monitors to be16 images, Cameo, Quad or Sequencing display.

033 The recorder to imprint the date and time of the recording.

034 The recorder to include a DVD writer to enable a particular incident to be recorded however the recording is not required to be of evidential quality.

Cabling

035 The Contractor to be responsible for the installation of all cabling to the cameras and ancillary equipment including any 220/240v supplies that are required for the satisfactory operation of the proposed system. The cabling to be suitable for purpose as described in BS EN 50132-7:1996 & BS 7671 2001 adequately segregated from all other services to prevent noise on the system and screened where necessary

036 The cabling to be concealed behind ceilings and within rising ducts to be adequately clipped, or if unavoidable enclosed within mini trunking within the building externally in galvanized steel conduit of adequate size for purpose with a brass ring bush at the termination of the conduit the conduit to be secured by galvanized two hole screw fixing saddles.

Cable Ducts and Trenches Etc.

037 To feed pole mounted cameras, the Contractor shall supply and install and make all necessary connections a 32 pair duct grade steel wired armoured UTP cable; within this multi core cable adequate twisted shielded pairs must be included for all dome cameras, and additional pairs for failure and future expansion,

038 Where cables enter a building pipe ducts with easy bends shall be supplied, laid and installed by the Contractor, and be complete with draw wire. The radius of the bends shall be a minimum of 8 times the
diameter of the pipe duct.

039 Where cables are laid direct in the ground, trenches shall be excavated and backfilled by the Contractor, cables shall be laid at a minimum depth of 500mm and their location clearly indicated on appropriate record drawings.

040 The trench bottom shall be of constant depth and free from sharp stones, bricks etc. All backfilling shall be carried out using granular pea gravel, 10mm single size aggregate to BS 882 (for pipes/ducts),or sand
(for cables), with 150mm layers below and above the pipe/ducts/cables.

041 Final backfill shall be selected earth, compacted level with the surrounding area.

042 Directly on the sand cover the Contractor shall supply and lay continuous plastic protective tiles 150mm wide together with a cable marking tape (Campbell or similar) labelled "ELECTRIC CABLE BELOW" 300mm from finished ground level. Tiles and tapes shall be laid such that the outer edges of the tile/tape are at least 75mm beyond the outer cable in the trench over its full length. All cable locations shall be clearly indicated on appropriate record drawings.

043 Cables run under roads or other prepared surfaces at a minimum depth of 750mm shall be installed in steel pipes suitably protected against corrosion and complete with draw wire, which shall be provided and laid by the Contractor.

Coaxial Cables

044 All coaxial cables shall conform to the relevant sections of BS EN 50117:2002 - 2004, and must be suitable for the purpose. If installed underground the cable should have a moisture proof High Density Polyethylene type jacket/sheath. Internally, only flame retardant materials, which may include halogen free materials, should be used. Polyethylene must not be used internally except where a connection is made between
the external and internal route.

045 All cable must have a tape-and-braid type screen, with either a semi air spaced cellular dielectric or solid/gas injected foam dielectric with a solid copper centre conductor. The cable must be capable of taking a current of 30amps for a period of five seconds.

Connectors

046 All IEC coaxial connectors must be fully screened and have as a minimum screw or crimp or compression type connection on both the centre core and braid. Any other type will not be accepted.

047 All F type connectors must be crimp type and suitable for the cable they are fitted to. Screw type F connectors will not be accepted. Where F connectors are fitted externally they must be weatherproof.

048 Surge protection shall be provided for all the control equipment.

Electricity Supply

049 An unswitched fused connection unit c/w neon indicator shall be provided and installed, by the Contractor, at a point adjacent to each of the motor driven cameras where required.

050 Dedicated switched socket outlets shall be provided complete with surge protection shall be provided where indicated for all the control equipment.

Monitors

037 The primary monitor to be located in the main office with the recording equipment

038 The secondary (slave) monitor to be located in an alternative position to be agreed with the Client.

039 The monitors to be 19ins flat screen LCD mounted on suitable wall brackets (16 images, Cameo, Quad or Sequencing display)

040 The Contractor to supply a video showing the proposed coverage that will provided by the cameras as quoted under varying lighting conditions.

Signs

041 The Contractor must include for supplying and installing signs on the exterior of the building. The signs must be complete with pictogram advising of the presence of CCTV. The signs must be 3mm Foamex in construction and be size A3.The format must be as stated in the Data Protection Act.

Training

042 The Contractor must include in his tender for demonstrating to selected staff the operation of the system.

Service and Maintenance

043 The Contractor must allow in his rates for servicing and maintaining systems and making good all defects, including all parts and labour required for 12 months from the date of installation completion on new systems. In addition the Contractor must test and check operation of all RCCB units associated with the system.

Protocols

044 The Contractor must not install a closed protocol system.

045 The maintenance and replacement parts relating to the system provided must not be limited to the Contractor.

Supplementary Alarm Panel

046 The Contractor must supply/fix wire and connect a Galaxy IP or other equal and approved compatible alarm panel to enable all P.I.R's to be connected to individual zones. In addition the Contractor must include for connectivity to the alarm output of the intruder alarm system

047 The Contractor must also include for connectivity and controllability the galaxy panel to facilitate remote de-activation of the alarm circuit (Redwall detectors) collectively or individually. The Contractor must include therefore for the panel to be appropriately connected and configured to the router.

048 The Contractor must include in his rates for interconnecting between the intruder alarm panel and the additional Galaxy panel to allow activations of the intruder alarm system to be transmitted to the CCTV control room when the Galaxy alarm panel is set, (full set).

049 The intruder alarm and Redcare transmitter must remain unaffected by the proposed CCTV installation

050 The secondary alarm panel must be keypad operated with automatic re-set facility and 8 no. Alarm inputs-outputs

051 The panel must be located in a position to be agreed with the engineer and client, for pricing purposes the Contractor must include in his rates for the keypad to be adjacent to the intruder alarm panel.

052 Note: The P.I.R's must, if appropriate, be located to avoid triggering the system when approaching the building to `Un-set' the secondary alarm

Special Requirements.

053 In addition to the remote monitoring the Contractor must include in his rates for supplying and down loading the Dedicated Microsoft browser software to the Internet connected PC located in the scheme’s monitoring station to allow access to display and control of the live images.

Video Motion Detection

054 The Contractor is deemed to have included in his Rates for the setting of the video motion detection, including detection zones and time settings applicable to all internal cameras.

055 The precise time and detection zones must be agreed on site with the Scheme Manager
In order to achieve the maximum frame rate of recording images, the individual camera images from the internal cameras must only record when movement is detected.

Conformity

056 The installation must conform with the relevant sections BS EN 50132-7:1996, BS 7671 2001, BS EN 61000 (EMC), Code of Practice for the Planning, Installation and Maintenance of Closed Circuit Television Systems issue 2 October 1991 and the Performance Testing of CCTV Perimeter Surveillance Systems (using the Rotakin Standard Test Target).

DIGITAL SWITCHOVER, COMMUNAL TV AERIALS, SATELLITE AERIAL AND DISTRIBUTION SYSTEM

ROUTINE AND RESPONSIVE MAINTENANCE TO COMMUNAL TV AERIALS AND SATELLITE AERIAL AND DISTRIBUTION SYSTEMS

Contract Requirements

001 The Communal Aerials and Satellite Aerial and Distribution Systems shall be covered by a fully comprehensive type Contract.

002 Detailed below are the specific requirements. The Contract shall therefore comprise of the following elements:

Routine Maintenance
Responsive Breakdown Call-outs and Emergency Maintenance
Repairs, Replacements and Adjustments

Routine Maintenance

003 The minimum requirements for preventative and routine maintenance are to be in accordance with the relevant equipment manufacturer's recommendations.

004 These are minimum requirements and the maintenance plans and task sheets shall take into account the individual particulars of the Communal Aerials and Satellite Aerial and Distribution Systems concerned in terms of their condition, age and type.

005 The Contractor shall carry out all necessary visits per annum for preventative and routine maintenance on all Communal Aerials and Satellite Aerial and Distribution Systems.

006 The Contractor shall include for the provision and application of all consumables within the price for this element of the Contract.

007 All servicing and maintenance necessary to ensure that the operation of the TV Aerials installation in strict conformity with the requirements of BS 7036:1988 including any subsequent amendments or substitutions.

008 The Works shall also include for but not be limited to the following activities which are to be undertaken on each service visit.

Checking and Maintenance TV Aerials

- Check fixings of aerial posts/mast to structure of building and resecure as necessary;
- Check fixings of individual aerials to aerial support post/mast and resecure as necessary;
- Check that aerial support post and aerials correctly earthed;
- Check connection of aerials and co-axial cables and remake connections as necessary;
- Check and realign direction of aerials to transmitters;
- Recalibrate amplifiers;
- Test aerial and leave in working order; and
- Remove any debris etc, which has lodged on aerials, aerial posts and related equipment, cabling etc.;

Checking and Maintenance Satellite Aerials

- Check fixings of aerial dish bracket to structure of building and resecure as necessary;
- Check fixings of aerial dish to aerial dish bracket and resecure as necessary;
- Check that the satellite aerial are correctly earthed;
- Check connection of aerial dish and co-axial cables and remake connections as necessary;
- Check and realign direction of aerial dish antenna to transmitters;
- Recalibrate amplifiers;
- Test aerial dish and leave in working order; and
- Remove any debris etc, which has lodged on aerial dish and brackets, related equipment, cabling etc, including cutting back any vegetation affecting the operation of, or obstructing access to the satellite dish.;

009 It is the Contractor's responsibility to observe the on-going condition of the equipment with regard to safe and correct operation. The Contractor shall bring to the attention of the Client's Representative any specific areas where periodic checking, lubrication and adjustment exceeds normal provisions for equipment of the age and type installed.

Responsive Breakdown Call Outs and Emergency Maintenance

010 The Contractor shall attend to all call outs due to malfunction or breakdown.

011 The Contractor shall include for call-out service and emergency maintenance on a 24 hour, 7 days a week, 365 days per year basis.

012 Call outs, which in the opinion of the Contractor are due to mis-use or vandalism, must be brought to the immediate attention of the Client and a report issued.

013 Where out of hours call outs are attended to for authorised cases of breakdown, mis-use or vandalism, the Contractor will be paid in accordance with the rates detailed in the Schedule of Rates.

Repairs, Replacements and Adjustments

014 The Contractor shall be responsible for the replacing, repair and adjustment of any part of the Communal Aerials and Satellite Aerial and Distribution Systems should it fail. Any replacements or repairs shall be of a standard equal to the original installation.

015 During the course of the preventative and routine maintenance visits, the Contractor shall identify the need to replace and/or repair any item of equipment. Where replacement parts are required the ordering of such materials and implementation of the necessary works shall be planned so as to suit the requirements of the building.

016 Works may be implemented during the Contractor's normal working hours provided that the Client is given 7 days notice. In the case of emergency repairs the timing of the work shall be agreed with the Client.

017 Where repairs, replacements and adjustments are required and the works are not covered by the terms of this Contract, separate instructions shall be issued. The basis of costing shall be in accordance with the Rates detailed in the Schedule of Rates.

018 CCTV data protection on digital TV shall apply in all works and installations to the 2008 regulations.

General

001 The systems shall comply with the current technical conditions of the Licensing Authorities. It will be the responsibility of the Contractor to determine the requirement for any licences and apply for any licence that a building may require. The Client or Client Representative will not be responsible for the non-application of any licence.

System Overview

002 The requirement for this specification is to design, supply, install, test and commission a five wire Integrated Reception System, to distribute FM radio signals in Band II, DAB signals in Band III , DTT signals in Band IV and V and DST signals in L-band. The system should be composed of four cables providing individual IF Polarities, and one cable providing terrestrial frequencies between 88MHz.and 862MHz, in the bands II through V, all signals should pass through switch devices to a minimum of one termination point in each dwelling within the defined property as detailed in this document, to a schedule agreed with the Client or their appointed agents. Any variations to the number of required termination points in each dwelling must be agreed with the Client or Client's Representative prior to commencement of any works.

003 CCTV data protection on digital TV shall apply in all works and installations to the 2008 regulations.

Contractors Responsibilities

004 Due to the complex nature, of this project, Contractors must meet with the following criteria, to be considered to undertake these works:

- is a member of the Confederation of Aerial Industries Ltd;
- is registered as approved industry installation agents;
- has demonstrable quality measurement processes aligned with recognised standards such as BS EN ISO 9001 : 2000 International Quality Standard;
- has the relevant qualifications for Television Distribution Systems design and installation;
- has a proven minimum three year track record in the installation of multi-block Integrated Reception Systems, as defined by the Sky Homes/Digital Television Group specification, for other Social Landlord's;
- has a demonstrable Software Controlled Project Management System in place which can produce bespoke progress reports suitable for this unique project;

005 Where a non-employed sub-contractor is used, then the Contractor will remain responsible for the sub-contractor's work. The Contractor is to ensure that all employees, sub-contractors and individuals undertaking work on their behalf conform to the standards as laid down in the Contractor's Standards, Practices and Procedures.

006 The Contractor will make certain that during the System installation works, existing television and radio services will remain accessible to the residents connected to the existing system.
The Contractor shall take sole responsibility to identify and apply for all required licences in respect of the property. The Client disclaims responsibility for failure to apply for any required Licences.

007 Should the Contractor believe that there are omissions within this specification rendering them incomplete in any respect, or that additional information is required to ensure that the proposed system operates in a safe and satisfactory manner they should inform the Client immediately. The Contractor shall take responsibility for developing the required additional information to ensure the proposed system operates safely and satisfactorily.

008 The Contractor will work where necessary, with the current provider of Television services to the property to ensure services are maintained throughout the installation, in some areas it may

be necessary to remove existing services prior to installation of the new system.

009 The Contractor shall be responsible for distribution of pre-start leaflets to all residents initially one month and subsequently one week prior to commencement of works, and to make the necessary arrangements to gain access into individual dwellings to install "Drop-Cables" and the connection of new system-outlets. Upon completion confirmation that the new system is working and delivering the required signals, is made to the resident. The resident should sign a document to that effect.

Programming and Services

010 The proposed system should be capable of delivering the following services and programming detailed below:

Service Programming ,	Band Frequency Comments ,
Terrestrial Analogue:	BBC1 IV and V UHF; BBC2 IV and V UHF; ITV 1 IV and V UHF; Channel 4 IV and V UHF; Channel 5 IV and V UHF;
Terrestrial Digital:	Multiplex 1 IV and V UHF; Multiplex 2 IV and V UHF; Multiplex A IV and V UHF; Multiplex B IV and V UHF; Multiplex C IV and V UHF; Multiplex D IV and V UHF;
RSL Analogue Advised Locally:	IV and V UHF,
Satellite Digital Services:	from Astra/Eutelsat 28 degrees east orbital position L-band IF,
All Horizontal & Vertical transmissions:	both Low and High band in the transmission range 10,700MHz -12,750MHz
FM Radio;	Legally transmitted national and local radio programming common to the general area of the particular site.
DAB Radio Programming:	delivered by the DAB Services ,
Closed Circuit TV:	If Required IV and V UHF

011 It will be the responsibility of the Contractors to familiarise themselves with all sites and local conditions prior to installation. The Contractor must satisfy itself that the services stated are available on each of the sites indicated, and that the quality of the signals will enable him to meet the relevant specification requirements indicated. If any of the services are not available, the Contractor must notify the Client or Client Representative in writing. If, in the course of the installation, the Contractor believes that plans will have to be changed, The Client or Client Representative must be notified immediately and any costs etc agreed between the Contractor and the Client or Client Representative before installation work continues.

Design and Planning

012 The Contractor should allow for a minimum of 30% spare capacity at each switch location.

Network Topology

013 The required topology for the system should take the form of either a Star Network or a Tree and Branch network.

014 The Star network is generally a topology suitable for systems requiring between 6 and 60 outlet points. Individual cables route directly from the outlet socket within each dwelling directly to the centrally located Head-end within the multi-tenanted property.

015 The Tree and Bush network is generally a topology suitable for larger systems such as required in tower blocks. Individual cables route directly from the outlet socket within each dwelling to a switch position and then via a main trunk cable to the centrally located Head-end within the multi-tenanted property.
In the case of both topologies above, should there be a distribution system, or method of split cables, installed within the dwelling, then the cable route may be interrupted, providing all terminations are correctly made off and any signal losses accounted for.

Proposed Cable Routes

016 Single or multiple cables routes intended to provide service for one dwelling, should not be routed through another dwelling. In situations where no other cable route is available the Contractor must obtain written permission from the Client or Client Representative prior to any work commencing.

017 Cables can only be installed in roof spaces where no other route exists. In roof spaces the cable construction requirements should be LSZH (Low Smoke Zero Halogen) and should be taken into account by the Contractor.

018 Overhead spans are not to be used unless no other route is available. Even then they shall not be used unless prior consent is obtained from the Client or Client's Representative. Allowances must be made for likely interference if this method is used.

019 Should it be necessary to install cables underground, the Client must be consulted and approval given for all proposed routes below paths, roads etc. All underground cables will be installed in a separate green duct of suitable size to take the number of cables involved. The type and its construction of the duct must be approved by the Client or Client Representative.

020 Internal cables, located in building risers, must be fixed to a cable tray or located within an enclosed conduit or trunking, only PVC cables are to be installed in ducts and risers.

021 Where proposed cables are to be distributed over or across a flat roof area, they should be installed on a suitable cable tray of galvanised material.

022 Proposed externally mounted vertical cable spans cables are to be installed utilising a suitable catenary wire of a galvanised or stainless steel material.

023 All surface mounted external cable routes must have the prior of approval of the Client. In situations where vandalism is considered to be an issue the external cables should be protected by a suitably sized trunking or capping.

Signal Testing and System Planning

024 As part of the design process the Contractor should perform a site signal test at each location to determine that all the required services detailed are available at the levels required for distribution. If any service is, as a result of the site signal test, found not to be available this must be reported to the Client or Client Representative immediately so that an agreement may be made as to which services will be provided.

025 It should be noted that, in certain parts of the United Kingdom, analogue terrestrial Channel 5 and some digital terrestrial multiplexes are not available. The Contractor shall indicate which of the above services (if any) will not be available over the proposed system. RSL (Restricted Service License) services do not have a long-term license and cover a small geographical area. Any inclusion of a RSL service should not be seen as permanent.

026 All system planning must be undertaken to avoid common analogue interference patterns and particular reference to channel N+/- 1, 5 and 9 must be taken into account when allocating frequencies.

External Equipment

027 External equipment will be housed in suitable waterproof enclosures, conforming to IP65 Specification. The size type and position external enclosures must be approved by the Client or Client Representative prior to installation. No equipment must be mounted in, or accessible from, any dwelling but should be accessible for maintenance purposes in a dry secure location.

028 No underground joints in the cables will be allowed. All joints must be made above ground.

029 The Client or Client Representative must agree the final position for aerials and satellite dishes. If more than two satellite dishes are required or any single dish exceeds 1.3metres diameter, planning permission must be obtained.

System Plans and Schematics

030 A schematic plan representing the proposed system in block diagram form, showing locations of equipment, types of cables, earthing arrangements, list of materials and written method statements including method statements for non generic health and safety risks and additional requirements such as cherry pickers must be submitted to the Client or Client Representative for final approval one month prior to commencement of installation. On acceptance, an approval notice will issued to the Contractor.

Additional IF Feed

031 Where the Client requires the flexibility of allowing a second IF feed at the outlet point, system planning and cable requirements should be taken into account by the Contractor.

Dish Alignment

032 Dishes shall be aligned for maximum signal strength and carrier to noise ratios. The LNB shall be aligned so that the horizontal and vertical transponders appear equal and give maximum rejection of the opposite polarity. This is to avoid cross polarisation problems.

Standards and Codes of Practise

033 The systems shall comply with the requirements detailed in the following standards and codes of practice:-

- CENELEC BS EN 50083 All relevant parts;
- CENELEC BS EN 50117 For coaxial cables;
- CENELEC BS EN 60966 For connecting cables;
- BS 4662:1970 Specification for boxes for the enclosure of electrical accessories;
- BS 5773:1995 Specification for general requirements for electrical accessories;
- The Confederation of Aerials Industries Codes of Practice for Television Aerials, and TV Distribution Systems;
- The requirements of the Digital Television Group Book 3 (DTG book 3);
- (except to the extent that technical differences apply, when this Specification will

override DTG book 3); and
- IEE regulations; Latest edition;

Levels

034 All signal levels must comply with the maximum output provided for by the amplifiers to be installed taking into account adequate derating for the number of channels distributed and amplifiers in cascade

035 At each outlet position on the system the maximum and minimum levels should be as detailed in the table below.

FREQUENCY BAND	MAXIMUM LEVEL	MINIMUM LEVEL **,**
Band II FM Radio:,	74dBuV ,	54dBuV ,
Band III DAB: ,	65dBuV,	45dBuv ,
UHF Band IV and V Analogue: ,	80dBuV ,	60dBuV ,
Band IV and V Digital:	65dBuV ,	45dBuV ,
Satellite IF Digital:	77dBuV,	52dBuv

036 The Terrestrial Digital signals will require a minimum Carrier to Noise at the outlets of 26 dB.

037 The Carrier to Noise at the outlets will require a minimum of *9 dB for Satellite Digital frequencies.

*The Carrier to Noise Measurement should be made against a 'noise floor' and not between transponders.

038 The recommended frequencies required to set the noise floor are in the:
- Low band 1980MHz.
- High band 1080MHz.

039 If a transponder signal is present at these frequencies then the 'noise floor' frequency should be adjusted to avoid conflict. The new frequency should be noted and advised on the completion certification.

Electrical Works

040 The Client or Client Representative may request the Contractor to make provision for the supply of a single 230 volt power supply and PME on each scheme. These must be fused non-switched spurs.

041 If required the Contractor agrees to work with the Client’s chosen electrical contractor.

042 Should the Client or Client Representative nominate the Contractor to make provision for the supply of single 230V supply and PME they shall provide the relevant electrical completion certificates for the Clients recording procedure.

Safety

043 The total system must be installed to comply with the requirements of all relevant Health and Safety legislation and the safety statement as issued by the CAI.

044 All relevant equipment must be Safety Earth Bonded in compliance with BS EN 50083. All co-axial outer connections must be permanently bonded to the building’s PME .

045 Practical Safety Earth Bonding should follow the procedure set out below, however the requirements of the CAI statement, noted above give the technical requirements.

046 Incoming cables from antennas should be bonded across the outer sheath of all relevant co-axial cables prior to the input of the IF/RF amplifiers.

047 Drop Cables from Multi-switches to outlet plates should be bonded across the outer sheath of all drop cables.

048 All electrical and electronic devices should be bonded to each other by means of an earth tag. Incoming and outgoing earth cables should be fixed in such a manner that should the device be disconnected from the system then the integrity of the earth is maintained. In general terms this would mean the earth cables being crimped together. Individual earth cables must not be wrapped around earth posts.

049 The system must be earthed, via a minimum 16mm earth Cable, taking into account the CAI statement on Earth Bonding and the requirement to maintain no more than a 5 ohm loop resistance, to the Buildings PME.

050 Where individual buildings share an installation the earth must be connected to the relevant Building PME. The external Aerial Mount should also be connected to the installations earth.

051 If a Lightning Protection System is installed on the given building then the aerial mount should be connected to the protective strip by use of proper LPS equipment.

CCTV

052 Where required door entry CCTV may be required to be distributed to residents by taking advantage of the cable infrastructure utilised for the IRS System.

053 Where the cameras exist in situ the Contractor should allow for the security cameras to be connected by way of a splitter to any future security equipment that may be installed as part of an audit & review of the estates main current security system.

054 Where new cameras are required the Contractor should allow in the Rates, for the supply and install on each entrance of a suitable 240 Volt V Colour Camera complete with Lenses and encapsulated in a Vandal resistant cabinet including any additional lighting and electrical works.

055 All images from the cameras must be relayed to a dedicated TV channel on the residents set within the block that they live. In the event of multiple entrances, the residents should be able to view all cameras on the one dedicated channel.

Equipment – General

056 All goods and materials used in providing the system shall conform to EU and national standards, where such standards have been established, and to the Codes of practice issued by the relevant industry bodies.

057 Materials and components used must be new and not recycled.

058 All amplifiers and distribution equipment shall be sourced from the manufacturers to be approved by the Client and Client Representative, all sourced equipment should be CE marked and able to cope with the minimum and maximum signal levels as approved, in the CAI SMATV Code of Practice, and the signal levels previously stated for the given frequencies in use.

059 No departure from the specified and/or approved materials will be accepted until prior sanction in writing has been given by the Client.

060 All equipment and cables should be clearly labelled, to ensure there is no confusion with other services.

Television and Radio Aerials

061 The upgrade may require replacement of existing aerials, and the addition of new ones, should services such as DAB be required. Any new aerial positions required must be agreed with the Client or Client Representative before installation.

062 Aerials must be supplied by a recognised manufacturer or supplier and have achieved CAI Benchmarking Status. The choice of aerial will be determined by local conditions and the CAI Guidelines for Benchmarked Aerials. The supporting structure for the aerial must be connected to the PME.

063 The mounts and support structures and all associated fixings for aerial system, must have the capability to withstand wind speeds of 100mph or 160kph.

064 A balun must be integrated in all UHF antennas to ensure the matching of the dipole feeder.

Satellite Dishes

065 Satellite dishes must be constructed to withstand a wind speed of 60mph/100kph and be of an adequate size for the system concerned and be able to produce a 15dB carrier to noise level at the installations site, for the given transponders being received. All satellite mounts must be connected to the PME. Roof top mounted dishes should be within a identifiable safe zone, appropriate warning signage is required to define the area.

Head-End Equipment and Repeater Amplifiers

066 All equipment should be powered at 230 volts except where line powering of multi-switches etc is required.

067 The equipment must be securely mounted and accessible for maintenance purposes in a dry secure location.

068 No equipment active or passive must be mounted in, or accessible from, any dwelling. If required, a lockable suitable weatherproof housing to the Clients specification must be supplied.

069 Within the Head-end the coaxial cable connection will be via ‘F’ type and IEC connectors only. All ‘F’ connectors must be crimped and IEC connectors should be of a professional design and correctly made off.

070 All connectors should be the correct size for the cable used.

071 A provision must be made for re-allocation of frequencies during switchover via a wideband aerial/amplifier on all systems and with a programmable amplifier on systems over 36 points.

Cable

072 All cables are to be manufactured to conform to the relevant parts of specification BS EN 50117, and have passed the benchmarking approval test and have a certificate issued by the Confederation of Aerial Industries confirming that the cable meets with the benchmarking approval.

073 Cables should be supplied from a recognised supplier or manufacturer

074 All coaxial cables shall have nominal impedance characteristics of 75ohms and should be suitable for the purpose and application they are to be deployed. Any special cable construction requirements including LSZH (Low Smoke Zero Halogen) should be taken into account by the Contractor.

075 Where cables are required to be installed into an underground duct they must be of RBS type. The cable construction must include a water barrier, taking the form of a polythene-backed aluminium foil tape embedded in the sheath.

076 The cable should be earthed as necessary and at no point on the system must the loop impedance be greater than 5 ohms.

077 One 2 metre fly lead is to be provided by the Contractor from the system outlet point to the TV or video within each dwelling. Where a satellite receiver is installed a further 2 metre fly lead should be supplied to connect the IF system outlet point to the satellite receiver.

078 Fly leads should comply to all relevant parts of specification BS EN 60966 and be of a Double Screened construction.

Mounting Boxes

079 In new build or refurbishment work, flush metal boxes shall comply with BS4662 and have a minimum internal depth of 40 mm. When installed as a stand-alone upgrade existing wiring boxes to BS4662 may be used provided that they have a minimum internal depth of 25 mm. All cable exits from the boxes shall be grommeted so as to prevent damage to the cable. Flush mounted boxes of insulating material may be used in hollow partition walls of plasterboard and similar material and shall have a minimum internal depth of 40 mm, comply with BS5773 and have mounting centres compliant with BS4662.

080 Surface mounted boxes where used shall be of moulded insulating material, and have a minimum internal depth of 40 mm, and be compliant with BS5773. They must have mounting centres compliant with BS4662 and be of a style and colour that meet with the current style and colour of electrical wiring accessories installed in the same dwelling.

081 In all cases, care shall be taken to ensure that all cable bending radii are no smaller than those advised by the cable manufacturer.

Passive Equipment

082 All accessories must conform to the requirements of CENELEC BS EN 50083.

083 All passive accessories will be 75 ohms. All satellite IF frequencies will be connected using 'F' type connectors.

System Outlets

084 The system must be connected to at least one socket outlet in every home. All socket outlets must be fully screened, surface or flush mount type, and have sockets for TV, Satellite and Audio (covering both FM and DAB frequencies) They must be approved for use on 'Sky Homes' installations. Where required, sockets must be capable of passing the Digibox infra-red remote control signals.

Installation - General

085 Where catenary rope is used it should be fixed, by the use of u clamps, using a minimum of two clamps at each fixing point, at the top and bottom of each vertical span and tensioned to prevent displacement.

086 Stainless steel catenary should only be used when requested by the Client or Client Representative.

087 Cable tray routed across a flat roof should be fixed, at not less than one metre spacing, to a heavy duty brick or concrete block, by means of a standard screw and plug fixing, two fixings to each brick or block.

088 The brick or block should be laid on a non-penetrating membrane of rubber or on two layers of mineral roofing felt. The substance used should be cut to the size of the brick or block and loose laid on the existing roof surface. Care must be taken should any shingle be located on the roof that the placing of any
bricks or blocks does not cause penetration of the existing roof surface.

089 Alternatively, a proprietary support unit may be used in place of the brick or block, such as support systems consisting of strategically weighted rubber support bases which are fully independent from the roof surface. These will need to be approved by the Client or Client Representative in writing prior to installation and installed to the manufacturer's instructions.

090 Cable trays that are fixed vertically should be fixed using a method that locates the tray against a vertical surface, with a minimum spacing off of that surface of 12mm, at no more than one metre spacing so that the tray does not move in any plane.

091 All cable trays must be earthed in line with the earthing statement of the IEE so that the installation meets 17th (or later) edition regulations.

092 Within the network, the connection of the coaxial cable will be via 'F' type and IEC connectors only. All 'F' connectors must be crimped and IEC connectors should be of a professional design and correctly made off.

093 All connectors should be the correct size for the cable used.

Installation Procedure

094 The installation process is broken down and shall be completed in accordance with the following order of work. Any deviation from this process may only be taken after consultation with and agreement of the Client or Client's Representative and after such agreement has been advised

by the Client or Client's Representative in writing.

1. Site survey and familiarisation;
2. Pre Installation preparation, e.g. distribution of pre-start leaflets, and core drilling;
3. Installation of antennas and dishes. Test and determine adequate signal levels and advise if one or more required measurements are inadequate. In advance of any further work, inform the Client or Client Representative which programmes may be affected;
4. Install the necessary trunking, capping or cable tray, particularly in respect of the network backbone;
5. Install the backbone cables;
6. Install the Head-End, and all remote located switches and repeater amplifiers etc;
7. Connection of backbone and commissioning of system;
8. Install "Drop-Cables" to individual homes and connect new socket-outlets. Any AV equipment connected to the old system should be connected to the new system where required and confirmation that the new system is working and delivering the required signals, is made to the resident. The resident should sign a document to that effect. Any dwelling where the Contractor is unable to gain access should be noted and the date and time of non-access advised to the Client or Client Representative;
9. Any old system that has been replaced should be switched off after a period of time, to be determined by the Client or Client's Representative; and
10. Redundant equipment should be removed from site and disposed of in an orderly fashion ensuring that all current requirements are met for the disposal of equipment of this nature.

Installation Testing

095 Before the hand-over of each system and before completion of the contract, the whole system must be tested by the Contractor to ensure that the system complies fully with the Specification. The tests will include the maximum and minimum signals for each of the services, measured at the socket outlets as specified by the Client or Client's Representative.

096 The Contractor shall provide a printed record of all measurements, either in tabulated or spectrum form, to the Client or Client's Representative, and shall also keep a set on file.

Installation Commissioning

097 The Contractor will have to supply a final commissioning certificate, indicating signals at the inputs and output of the main equipment and levels received at the outlets. The Contractor will have to demonstrate to the Client that the picture quality on all the services stated is to CCIR grade 4 on the analogue television channels and error free on the Digital channels.

098 The Contractor will provide all certification forms in a standard industry format. The Contractor will confirm the addresses, including postcodes, which have been attached to the given head-end, once the Installation is complete.

099 Test equipment must be accurate to within +- 1.5 dB and suitable for all the services indicated. The minimum requirement is a Spectrum Analyser, a simple signal strength indicator is not sufficient.

Definition of Practical Completion

100 The system with <u>any</u> outstanding tests, commissioning, defects or works will not be accepted as practically completed or put into service. <u>This will be applied on a block by block basis.</u>

A one week's trouble-free running period will be included before the next block in the programme is taken out of service and the system accepted as complete. No extension of time will be allowed should the achievement of a trouble-free period be difficult. Following a joint

defects correction site visit (“Snagging”) and the correction of any identified system defects the system will be handed over to the Client

Future Maintenance

101 To avoid any issues and potential problems the successful installation Contractor shall assume full responsibility for the comprehensive maintenance of the complete system from the date of order until the expiration of the Defects Liability period off 12 months. The Contractor should carry out any works that they deem prudent at their own expense during this period,, following expiration of the Defects Liability Period the Contractor will be responsible for the ongoing periodic inspection and maintenance of any installation commissioned under this Contract and will be reimbursed at the Rates tendered by him or if the equipment is subject to a SSP lease arrangement at his own expense..

As Built Drawings

102 The Contractor shall allow within his tendered rates to produce two sets of as fitted drawings for each site one should be submitted to the Client or their appointed Agents, whilst one shall be fitted to the site equipment in a suitable manner.

103 Drawings should include the following information
- Channels utilised for distribution;
- Head-end equipment layout;
- Cable Sizes;
- A schematic layout of the distribution system;
- Number and location of equipment enclosures; and
- Earthing arrangements;

104 At the Head-end as fitted drawings should be laminated and mechanically fixed inside the cabinet.

System Maintenance Manual

105 The Contractor should allow within his tender rates to provide a comprehensive maintenance manual containing detailed equipment and system information,

106 The manual should include the following
- A set of test and completion Certificates, in a standard industry format, with the addresses, including postcodes, which have been attached to the given head-end, following the Installations completion, this should also detail the properties that have not been connected to the system.
- Manufacturers address and telephone number
- Equipment Numbers
- Operating Instructions
- Commissioning Certificates
- As fitted drawings for each site

Post Installation Requirements and Maintenance

107 The Contractor shall assume responsibility to maintain the complete system, without charge for a period of 12 months from the final date of commissioning. The Contractor will attend to faults as reported by the Client within 24 hours or as otherwise agreed in writing by all parties concerned.

108 On completion of the twelve month defect period the Contractor will submit certification of signal levels on each system as received at an agreed number of outlets, with proof of performance. This document will be taken as the final certificate.

109 All cables and equipment found to be faulty within the initial 12 month period will be repaired or replaced free of charge to the Client. If the fault is outside the control of the Contractor, The Client will accept a reasonable charge by the Contractor to rectify the fault.

Digital Switchover Works to Communal Television Systems

110 There are two main options for the provision of digital communal television systems:

Alternative 1 – Master Antenna TV System (MATV)

A modern Master Antenna TV System that can carry and provide ALL of the following- analogue and terrestrial digital television (free to view and subscription), FM radio and digital audio broadcasting (DAB). (Satellite signals cannot be carried.)

Alternative 2 – Integrated Reception System (IRS)

An Integrated Reception System a MATV system carrying all of its services; extended to also carry Satellite signals (free to view and subscription)

111 All systems should provide a single master socket to the living room of each dwelling.

112 The IRS System should be installed to SKY homes Specification, incorporating the CAI Code of Practice

113 The IRS System may be installed under 4 different options:-

1. Outright purchase by client and Installation with maintenance dealt with on this Schedule of Rates
2. 5 year lease to client and Installation with all maintenance by Contractor included in the price
3. 10Year lease to client and Installation with all maintenance by Contractor included in the price
4. 20year lease to client and Installation with all maintenance by Contractor included in the price

Building Permissions for All Works in this Section

114 It shall be the entire responsibility of the Contractor to obtain and pay for all required building regulations / planning permissions / listed buildings approvals (conservation) and the like , and to undertake all liaison and submit all necessary applications and notices (fees payable to any Local Authority will be reimbursed at nett cost) .

INTRUDER ALARM INSTALLATION SERVICING AND MAINTENANCE

CONTRACT REQUIREMENTS

001 The Intruder Alarm Installations must be covered by a fully comprehensive type Contract.

002 Detailed below are the specific requirements. The Contract must therefore comprise of the following elements:

Routine Maintenance
Responsive Breakdown Call-outs and Emergency Maintenance
Repairs, Replacements and Adjustments

Routine Maintenance

003 The minimum requirements for preventative and routine maintenance are to be in accordance with the relevant equipment manufacturer's recommendations.

004 These are minimum requirements and the maintenance plans and task sheets must take into account the individual particulars of the Intruder Alarm Installations concerned in terms of their condition, age and type.

005 The Contractor must carry out all necessary visits per annum for preventative and routine maintenance on all Intruder Alarm Installations.

006 The Contractor must include for the provision and application of all consumables within the price for this element of the Contract.

007 All servicing and maintenance necessary to ensure that the operation of the Intruder Alarm installation in strict conformity with the requirements with all current existing manufacturers requirements and recommendations and to comply with NIS Standards ,NACOSS certification standards and to BS 4737 – Section4.2 1986 and including any subsequent amendments or substitutions.

008 The Works must also include for but not be limited to the following activities which are to be undertaken on each service visit:

• Check Fused Spur Cartridge Fuse for Correct Rating
• Check Fuse Spur Unit for Correct Rated Cartridge Fuse including Testing /Certification.
• Check Link Fire Alarm System to Redcare Communicator including Connections/Adaptations
• Produce Schedule Of Equipment to Identify Location of Accessories within Premises, Inspect Externally and Report (Six Months)
• Inspect Equipment, Sensor Covers, Terminal Boxes and Fixings to Six Monthly Specification
• Test and Inspect Sensors, Door Switches, Deliberately Operated Switches to Six Monthly Specification. Mark Batteries with Date Of Installation.
• Test Communication Signal to Remote Manned Centre/Police Station
• Check Main Alarm Panel and All Sensor Equipment
• Test And Inspect Power Supplies And Associated Batteries and Report to Six Months Specification; Mark Batteries With Date Of Installation
• Check Fixed Personal Attack Alarm Unit including Connections/Adaptations
• Test Pir and Door Contact Type Intruder Alarm System

• Test All Alarm Bells , Sounders , Warning Lights , Control Panel Systems and The Like.
• Test All Break Glasses , Panic Buttons and the Like
• Carry Out Each Specific Alarm System Manufacturers Specified Routine Maintenance Checks

Checking and Maintenance items to also apply

Cleaning	• Wipe all exposed surfaces of control panels with a damp cloth; and • Dry with a lint free cloth.
Inspections and Testing	• Periodic visual inspection of cabling, trunking and equipment including mountings; and • Periodic performance check, realignment and renewal (by instruction of Client Representative) of unserviceable parts or components as necessary to all systems;

Item No	Item	Frequency	Action	Notes
1	System integrity	Annually	Carry out external examination of the installation;	All evidence of tampering or damage should be recorded and reported to the Client's Representative
2	Sensors and contacts	Annually	Carry out operational check; If outdoors check beam systems are not impaired by vegetation or other obstacles;	Confirm correct operation and sensitivity, where appropriate check special configuration for volumetric devices
3	Sensor covers, terminal boxes and fixings	Annually	Check security; Check internally for signs of overheating, ingress of dust and moisture; Clean internal components with soft brush and remove any dirt or fluff; When replacing covers check operation of any tamper switch which may be fitted;	Clean in
4	Alarm signals	Annually	Check remote signalling equipment physical connections; Test remote signalling equipment communications to the Alarm Receiving Centre	

			(Applicable to monitored systems only) Check all audible warning and alarm devices;	
5	Wiring	Annually	Inspect all hard wiring and flexible connections	
6	Power supplies	Annually	Check mains and stand-by battery power supplies including charging rates; Check control unit for correct operation; Check equipment responds to interrupted mains supply;	Batteries should be checked for signs of leakage or corrosion
7	Batteries	Three yearly	Replace – sealed lead acid; Replace – sealed nickel-cadium;	Batteries should be disposed of only in accordance with statutory recommendations
8	System	Annually	Check system is fully operational	Complete entries in electronic log book

009 It is the Contractor's responsibility to observe the on-going condition of the equipment with regard to safe and correct operation. The Contractor must bring to the attention of the Client Representative any specific areas where periodic checking, lubrication and adjustment exceeds normal provisions for equipment of the age and type installed.

Responsive Breakdown Call Outs and Emergency Maintenance

010 The Contractor must attend to all call outs due to malfunction or breakdown.

011 The Contractor must include for call-out service and emergency maintenance on a 24 hour, 7 days a week, 365 days per year basis.

012 Call outs, which in the opinion of the Contractor are due to mis-use or vandalism must be brought to the immediate attention of the Client and a report issued.

013 Where call outs are attended to for authorised cases of mis-use or vandalism, the Contractor will be paid in accordance with the rates detailed in the Form of Tender and/or the Schedule of Rates.

Repairs, Replacements and Adjustments

014 The Contractor must be responsible for the replacing, repair and adjustment of any part of the Alarm Installations should it fail. Any replacements or repairs must be of a standard equal to the original installation.

015 During the course of the preventative and routine maintenance visits, the Contractor must identify the need to replace and/or repair any item of equipment. Where replacement parts are required the ordering of such materials and implementation of the necessary works must be planned so as to suit the requirements of the building.

016 Works may be implemented during the Contractor’s normal working hours provided that the Client is given 7 days notice. In the case of emergency repairs the timing of the work must be agreed with the Client.

017 Where repairs, replacements and adjustments are required and the works are not covered by the terms of this Contract, separate instructions must be issued. The basis of costing must be in accordance with the Rates detailed in the Schedule of Rates.

FIRE ALARMS/DETECTION SYSTEMS, EMERGENCY LIGHTING SYSTEMS AND FIRE FIGHTING EQUIPMENT SERVICING AND MAINTENANCE

The following items are in addition to those specified elsewhere in this specification:

001 The Contractor must test, service, maintain, certify and report on all fire warning systems fully in accordance with the provisions of British Standard 5839: 2013 as appropriate at each Property.

002 The Contractor must test, service, maintain, and report on all existing emergency lighting fully in accordance with the provisions of British Standard 5266: Emergency Lighting Part 1:1999 "Code of Practice for the Emergency Lighting of Premises other than Cinemas and certain other premises used for Entertainment" as appropriate at each Property.

003 In accordance with the Standards the Contractor must at quarterly intervals undertake the following:

.1 Inspect previous entries in the Property fire log book;

.2 Ensure that occupants are informed before any testing is commenced;

.3 Ascertain if there is a direct link with the fire brigade or other remote station and inform them accordingly;

.4 Carry out the following control panel checks;

- Check, clean and lubricate the lock and hinges, check earthing of the door and clean the fascia and back box, removing all debris, renew blown bulbs etc;
- Check all terminal screws are tight and that all cables are neat, secure and in good condition, carrying out minor remedial work as necessary;
- Check all PCB's are secure and in good condition and clean off dust using compressed air;
- Check all lamps and indicators and replace any blown bulbs/LED's/fuses as necessary;
- Check the transformer is securely mounted and not excessively hot or noisy;
- Check the charger for correct operation, voltage, output etc; and
- Check the central control panel for correct functioning and indicator of status of circuits in normal, fault and alarm conditions and for correct operation of buzzers and resetting procedures.

.5 Keep the tops of the batteries clean and unobstructed, grease the terminals, maintain the electrolyte at the correct level in accordance with the manufacturer's instructions, check the casings for leaks and test for correct voltage;

.6 Carry out a visual inspection to confirm that all cabling, fittings and equipment are undamaged. Check that a clear space of at least 750mm radius in all directions below every detector exists and that all manual call points remain unobstructed and conspicuous;

.7 Simulate alarm condition from a detector for each zone. In each zone a different detector is to be used on each occasion and a record kept in the log book. Visually check the detectors for proper function and clean condition;

.8 On systems where the circuit is not monitored, ALL break glass points, heat and smoke detectors etc., must be operated;

.9 Ensure that activating equipment described in items .7 and/or .8 result in the operation of all alarm sounders giving acceptable audibility throughout the premises;

.10 Confirm the operation of any electro-magnetic door closer/holder, automatic smoke vents etc., that may be fitted and ease, adjust, lubricate etc., as necessary;

.11 Confirm the operation of any transmission of alarm signal to the fire brigade or other remote station if applicable;

.12 Check that all maintained lamps are lit;

.13 Simulate failure of the normal lighting supply to operate all luminaries and illuminated signs from the battery supply and check for correct operation and clean. Replace any blown or defective lamps.

.14 At one quarterly visit the tests are to be in accordance with the "annual" testing requirements of the BS; for sealed battery systems this test is not required until the units are three years old. For central battery systems this level of test is only required every third year. In these instances the tests are to be substituted by "six monthly" tests as next described.

.15 At second subsequent quarterly visits the tests are to be in accordance with the "six monthly" testing requirements of the Standards;

.16 At first and third subsequent quarterly visits the tests are to be in accordance with the "monthly" testing requirements of the Standards;

.17 Ensure that, in accordance with the Standards, all testing is carried out at times of minimum risk having due regard to the time required to recharge the batteries following a full or partial discharge test(s);

.18 Check that units are correctly positioned and not obstructed in any way;

.19 Check that the installation complies with statutory and local authority requirements;

.20 Rectify at Contract Rates any urgent repairs necessary, having first obtained authorisation and an order number from the Client Representative;

.21 Restore system to normal operation, check charging arrangements for proper function and leave in satisfactory working order;

.22 Complete entries in the fire log book, prepare a servicing report sheet and submit to the Client Representative;

004 On one quarterly visit each year the Contractor must, in accordance with the Standards, additionally check and clean all detectors for correct operation.

005 The Contractor must also provide a 24 hour, 365 (366) days per year call-out service in respect of emergencies to undertake all necessary inspection and testing to determine the cause of any fault, for provision of any temporary works necessary to maintain an effective detection and alarm cover until full repairs can be effected and for additional log book entries and service reports.

006 The Contractor must also provide a 24 hour, 365 (366) days per year call-out service in respect of emergencies to undertake all necessary inspection and testing to determine the cause of any fault, for provision of any temporary works necessary to maintain an effective emergency

lighting installation until full repairs can be effected and for additional log book entries and service reports.

Fire Fighting Installations and Equipment

The following items are in addition to those specified elsewhere in this specification:

Generally

007 The Contractor must at specified intervals test, service, maintain, certify and report on all fire fighting installations, equipment and/or appliances fully in accordance with the provisions of British Standard 5306: Fire Extinguishing Installations and Equipment on Premises: Part 1:1976 "Hydrant Systems, Hose Reels and Foam Inlets" and Part 3:2003 Code of Practice for the inspection and maintenance of Portable Fire Extinguishers" as appropriate at each Property;

008 The Contractor must also provide a 24 hour 365 (366) days per year call-out service in respect of emergencies to undertake all necessary inspection and testing to determine the cause of any fault, for provision of any temporary works necessary to maintain adequate and effective fire fighting provisions until full repairs can be effected.

Dry Risers

009 At six monthly intervals the Contractor must inspect all dry rising main installations in accordance with the Standards to ensure that all inlet and landing valves, drain valves, spindles, glands and washers, door hinges and locking arrangements are in good condition and ready for immediate use.

010 Servicing is deemed to include for any necessary replacement of washers, caps, chains, wheels, nuts and securing straps and the like parts.

011 Wet testing of dry risers as recommended in the Standards must be included in the pricing rates but must only be carried out on the specific instruction of the Client Representative.

012 In the event of more substantial repairs being found necessary to dry riser components the Contractor must notify the Client Representative to obtain further instructions. If the repairs cannot be effected immediately the Contractor must follow the recommendations of the Standards in dealing with replacement of any defective valve assemblies or inoperative installations.

013 On completion of servicing Works to dry risers prepare a servicing report sheet and submit to the Client Representative.

Hose Reels

014 At six monthly intervals the Contractor must inspect all hose reel installations in accordance with the Standards to ensure that all inlet valves automatic valves, glands, tubing and nozzles are sound. Clear access to hose reels and free operation of pivots, doors etc., must be checked. All hoses must be run out and checked for generally condition, leaks and for adequacy of flow.

015 Servicing is deemed to include for any necessary replacement of 'o'-rings, nozzles, 't'-pieces, automatic valves and hose guides and the like parts.

016 In the event of more substantial repairs being found necessary to hose reels or components the Contractor must notify the Client Representative to obtain further instructions. If the repairs cannot be effected immediately the Contractor must follow the recommendations of the Standards in dealing with replacement of any defective or inoperative hose reels.

017 On completion of servicing Works to hose reels the Contractor must prepare a servicing report sheet and submit to the Client Representative.

Fire Extinguishers

018 At annual intervals the Contractor must carry out inspection, servicing and maintenance of all fire extinguishers in accordance with the Standards and must include the following:

- Check that all extinguishers are in good condition and located in their correct place;
- Inspect and test all cylinders and containers by weight or pressure check as appropriate. Any
  containers found to be deficiently charged should be refilled as necessary; and
- Servicing must include all discharge tests and recharging and all replacement of headcap seals,
  tamper seals, pull tight seals, cartridges, safety clips and pins, brackets, hoses, head caps and
  assembly valves and the like parts;

019 In the event of a replacement being necessary contact the Client Representative to obtain authorisation and an order number for the replacement. If the replacement cannot be effected immediately label the extinguisher in accordance with the Standards.

020 On completion of servicing Works to fire extinguishers the Contractor must mark and date each extinguisher/central log in accordance with the Standards and prepare a servicing report sheet and submit to the Client Representative.

Fire Blankets

021 At annual intervals the Contractor must check that fire blankets are correctly located, in good condition, properly mounted and ready for immediate use.

022 Servicing is deemed to include for all repacking of serviceable blankets.

023 In the event of replacement being necessary contact the Client Representative to obtain authorisation and an order number for replacement.

Easycheck Emergency Lighting Test Panels:

024 Where premises contain an automatic emergency lighting testing panel the Contractor must undertake the full tests and inspections of the systems in accordance with the previously stated requirements for non-monitored installation. The Contractor must not rely solely on the panel executing the test functions.

025 The Easycheck Emergency Lighting Test Panels must on each visit be inspected and tested in accordance with the manufacturer's instruction. The Contractor on each visit must download the event log onto a printer. The print-out must be submitted to the Client's Representative. Any serious faults must be reported immediately to the Client's Representative.

026 Any operative that may have the occasion to work on an Easycheck control panel must be trained by the manufacturer on the operation and maintenance of the system before commencing any works. The Contractor must provide the Client's Representative evidence that all relevant operatives have successfully carried out this training before commencement of the contract.

027 An option has been included in the Contract for the Contractor to visit sites with Easycheck Emergency Lighting Panels on a monthly basis to download the event log onto a printer and

submit the data to the Client's Representative. Any serious faults must be reported immediately to the Client's Representative.

Bin Room Fire Suppression Equipment

028 The Contractor must obtain all manufacturers Specifications and relevant maintenance procedures for all equipment to enable the function to be maintained, checked and tested.

029 The control panel, and associated equipment must be tested and inspected in accordance with BS 5839: 2013 and the additional requirements called for under the Fire Alarm servicing section of this Specification.

030 Inspection and testing should be undertaken by a 'Competent Person' with the following inspection & testing regime is to be undertaken: -

031 The quarterly service visit is to include the following tasks:

- All detection must be cleaned, inspected for damage, corrosion and operation and must report any defects immediately to the Client's Representative;
- All pipework and fitting must be checked for soundness and any sign of corrosion;
- All nozzles must be removed and cleaned in accordance with manufacturers recommendations;
- The Solenoid valve must be checked for operation and cleaned;
- Check, remove and clean filter;
- Check operation of manual isolation valve and double check valve; and
- The complete wash down cycle must be activated.

032 The service visit is to include the following tasks in respect of Bin Room Chutes with automatic closures:

- Emergency fire damper on the chute must be inspected and tested manually;
- Weighing mechanism must be inspected and left in a free fall operation;
- Wire ropes must be inspected for corrosion or damage and must be adjusted to the correct tension;
- All fusible links must be inspected and replaced if defective or damaged;
- Slide mechanism must be inspected, cleaned and greased; and
- All test and inspections carried out must be recorded in the electronic log book.

Automatic Smoke Vents:

033 Contractors in respect of automatic smoke vents are to:

- Determine which of the tests are relevant to the Client's installed Property, and complete 'selected test type';
- At each quarterly test, record data and update electronic log book; and
- Any equipment failures should be notified immediately for remedial action

Test Type	Equipment Type	Operation	Test Procedure
1.	Pneumatic Natural Ventilators	Auto	Activate Alarm. Check all vents open. Check all vents close.
2.	Pneumatic Natural Ventilators	Manual	Use fireman's switch to open / close vents. Check all vents activated.
3.	Electric Natural Ventilators	Auto	Activate Alarm, Check all vents open. Check all vents close.
4.	Electric Natural Ventilators	Manual	Use fireman's switch to open/close vents. Check alt vents activated,

5.	Powered Smoke Extract	Auto	Activate Alarm. Fans start and shutters, If fitted open. Fans stop/shutter close on reset,
6.	Powered Smoke Extract	Manual	Use fireman's switch to start/stop fans and open/close shutters if fitted.
7.	Electric Retractable Smoke Curtains	Auto	Activate alarm. Check curtains In designated zones drop and reset.
8.	Pneumatic Retractable Smoke Curtains	Auto	Activate alarm, Check curtains In designated zones drop and reset.
9.	Electric Supply		For battery operated systems of all types. check mains supply is healthy,
10.	PneumatIc Supply		Check for air leaks. Drain receiver condensate. Check compressor oil level. Record hours run from meters when fitted.
11.	Powered Pressurisation Fan System	Auto	Activate alarm. Fans start and shutters, if fitted, open. Fans stop/shutters close on reset.
12.	Compressor	Auto/Manual	Check oil level. If low top up with suitable compressor oil. Check belts for wear. Check condensate and for any oil leaks.

Fireman's Switch

034 The Contractor must obtain all manufacturers Specifications and relevant maintenance procedures to enable the function to be maintained, checked and tested. This is to include all keys etc. to enabling testing to be undertaken.

035 The Contractor should be aware that a proportion of Properties included within the servicing regime only have the fireman's switch at that Property and therefore a separate visit is required to undertake the servicing works.

036 There are however a large proportion of Properties where an emergency lighting Property, fire alarm Property, bin room suppression Property or a combination of all three is fitted at that Property and therefore the servicing of the fireman's switch can be included within this servicing works.

037 Inspection and testing should be undertaken by a 'Competent Person' with the following inspection & testing regime is to be undertaken: -

038 The annual service visit is to include the following tasks:

- Undertake visual inspection of fireman's switch for vandalism, damage etc;
- Undertake check of fireman's switch to ensure correct operation;
- Lubricate as required and leave in good working order;
- Ensure entry Property doors are closed prior to leaving site; and
- Immediately report any vandalism, damage etc. to fireman's switch, doors etc. to the Client's Representative.

Fire Safety Signage:

039 The annual inspection of fire safety signage is to include the following tasks:

- Ensure that the position, location and details of the fire extinguishers, fire blankets, hose reels, dry and wet risers are clearly indicated with an appropriate safety sign in accordance with BS.5499-1; and
- Where safety signs are found not to be displayed in accordance with BS.5499-1 the Contractor is to immediately notify the Client's Representative in writing, who will then issue instructions to the Contractor for the provision of the necessary signage

040 The requirements for fire safety signage, notices and graphic symbols are generally as detailed in BS.5499:2002.

Sprinkler Installations

041 In undertaking the maintenance of sprinkler installations, the Contractor shall pay particular attention to:

- BS5306-2:1990 Fire extinguishing installations and equipment on premises – Part 2: Specification for sprinkler systems.
- Loss Prevention Council's (LPC) *Rules for Automatic Sprinkler Installations*
- LPC Technical Bulletins.
- CIBSE Guide E: Fire Engineering

042 The Contractor shall be listed as 'Certificated' in the scheme termed: LPS1048, *Requirements for Certificated Sprinkler Installers, Supervising Bodies and Supervised Installers'* administered by the Loss Prevention Certification Board (LPCB) All personnel employed on the contract shall be suitable trained and experienced and capable of carrying out the work in every respect.

043 In undertaking the six monthly inspection and testing of the sprinkler installation the Contractor shall examine the electronic log book records pertaining to the installed system. In particular the Contractor shall ensure the presence and validity of the following information:

- Extent of sprinkler protection.
- Hazard classification.
- Type of system.
- Details of water supply.
- 'As-fitted' drawings.
- Commissioning and testing records.
- Maintenance records

044 The inspection shall take into account the following:

- safety
- wear and tear
- corrosion etc by external influence
- damage
- age of installation
- suitability of installed equipment

045 The inspection should test the operation of the system, and its interfaces, and include but not be limited to examine and clean sprinkler and fire detection heads (including spares), examine pipework and valves for leaks, test earthing, test trace heating systems, examine pumps, glands and valves, test pump failure alarms, test standby diesel pump operations, examine compressors, water and air gauges, ensure all requisite notices are in place, test operation of links to fire alarm systems and control centres, visually examine electrical installation

Automatic Door Release Mechanisms

046 The Contractor is to undertake monthly inspections of the automatic door release mechanism by checking the operation of the fail-safe mechanisms, either by 'breaking-out' the doorset, or by simulating failure of the mains power supply, as appropriate, results of the inspections are to be updated on the electronic log book.

Periodic Electrical Inspection

047 Periodic Electrical Inspections must be undertaken in accordance with the current Edition of BS.7671, the Regulations for Electrical Installations, as published by the Institute of Electrical Engineers, (IEE).

048 The Contractor must give at least 7 days prior notification of site attendance to the Client's Representative, who will confirm the practicalities of dates and advise of any difficulties relating to access to individual buildings.

049 The testing and servicing of the cabling systems must be executed in a manner so as not to interfere with the smooth operation of the Properties and does not cause any danger to the occupants of the Property should the systems be called upon under emergency situations.

050 Any system defects must be immediately notified to the Client's Representative.

051 The Contractor is to allow for undertaking a 5 yearly periodic electrical inspection to Properties to be advised by the Client. The inspection is to be undertaken in accordance with the edition of BS.7671 current at the time the inspection is undertaken.

052 The Contractor must allow for the fully testing and inspection of the cabling to the landlords supply within the building which may include for, but not exclusively limited too, the following systems:

- Fire Alarm System;
- Emergency Lighting System;
- Bin Room Fire Suppression Equipment; and
- Any other systems identified by the Client's Representative, i.e. security systems, etc.

053 Inspections should be carried out in accordance with Chapter 73 of BS.7671. This requires that an inspection comprises careful scrutiny of the installation, carried out without dismantling or with partial dismantling as required, together with appropriate testing.

054 The Contractor should be aware that diagrams, charts or tables may not be available for all installations, resulting in a degree of exploratory work being necessary so that inspection and testing can be undertaken in a safe and effective manner. A survey may also be necessary to identify certain elements, circuits etc within that particular premise.

055 Where fully testing and inspection is undertaken at a Property the Contractor must ensure that the system is maintained operable on all zones not involved in the testing. Results must be submitted to the Client's Representative on the Electrical Inspection Certificate. The Contractor should also identify any dangers which might arise during the testing and inform the Client's Representative concerning these.

056 Inspection and testing should be made in such a way as to minimise disturbance of the installation and inconvenience to the user/s. Where it is necessary to disconnect part, or whole, of an installation in order to carry out a test, the disconnection should be made at a time agreed with the Client's Representative and for the minimum period needed to carry out the test.

057 The requirement of Regulation 14 of the Electricity at Work Regulations 1989 regarding working on, or near, live parts must be observed during inspection of an installation.

058 In certain circumstances it will not be practicable and too disruptive to isolate the whole installation for the amount of time that is required for a comprehensive inspection. Much of the installation in such Properties will have to be done whilst the installation is in operation.

059 Main switch panels can rarely be isolated from the supply for long periods of time. Similarly, the disruption that may be caused by isolating final circuit distribution boards for long periods will also not be tolerated. The Client's Representative acknowledges that distribution boards need to be isolated separately for short periods of time for an internal inspection of live parts and examinations of connections. Where it is necessary to inspect live parts inside equipment however, the supply to the equipment must be disconnected

Fire Alarm, Emergency Lighting and Bin Store Fire Suppression Equipment Certificates

060 The Contractor must complete and sign the Periodic Test Certificate – Quarterly Test, Periodic Test Certificate – Six Monthly Test and the Annual Test Certificate for each fire alarm system all in accordance with BS 5839: 2013. The original copy of these is to be scanned into and stored within the electronic log book. Each certificate is to be completed in full and is to be signed and date by the engineer undertaking the inspection.

061 The Contractor must complete and sign the Certificate of Inspection and Test Certificate for each Six Monthly Test and the Annual Test for each emergency lighting Property all in accordance with BS5266-1:2005. The original copy of these is to be scanned into and stored within the electronic log book. Each certificate is to be completed in full and is to be signed and date by the engineer undertaking the inspection..

062 The Contractor must include in the costs for the Fire Alarm and Emergency Lighting Test Certificates to be obtained from the National Inspection Council for Electrical Installation Contracting (NICEIC) of the Electrical Contractors Association (ECA), or other equal and approved organisation. Each certificate is to have a unique reference number.

063 The Contractor must also complete and sign the appropriate Certificate of Testing of a Fire Alarm system based on BS 5839: 2013, Certificate of Inspection and Test Certificate based on BS 5266-1:2005 for the Emergency Lighting and the Certificate of Inspection and Test Certificate for Bin Room Fire Suppression Systems. A separate certificate for each premise and each type of system is required.

064 The Contractor must include in the servicing costs for Emergency Lighting and Fire Alarm test certificates to be purchased from the National Inspection Council for Electrical Installation Contracting (NICEIC) or the Electrical Contractors Association (ECA). Each certificate must have a unique reference number. The forms must be signed by a suitably qualified Electrical Engineer, or member of the ECA or NICEIC.

065 The Contractor must complete and sign the Certificate of Testing of Bin Store Fire Suppression Equipment for each Quarterly Test for each bin store fire suppression equipment, all in accordance with BS 5839: 2013. A copy of this is attached to this appendix. The original copy of these is to be scanned into and stored within the electronic log book. Each certificate is to be completed in full and is to be signed and date by the engineer undertaking the inspection..

Electrical Inspection Certificate

066 Following the testing of the cabling systems to the landlord's supply, fire alarm, emergency lighting and bin store fire suppression equipment that are 5 years old, the Contractor must complete and sign the Report of results of Electrical Test/Inspection Certificate all in accordance with BS.7671, (current edition).. The original copy of these is to be scanned into and stored within the electronic log book. Each certificate is to be completed in full and is to be signed and date by the engineer undertaking the test/inspection and his supervisor.

Documentation and Identification of Equipment

067 The Contractor must be responsible for fully recording within the dedicated site specific electronic Log Book the works executed at the time of each visit.

068 During the first service visit the Contractor must ensure that he has access to the dedicated site specific Log Book covering all fire safety systems. The Contractor must supply and fit to all items of equipment a self-adhesive label with a unique identifying reference number. The Contractor must fully update the dedicated site specific electronic log book with the reference numbers and devices/equipment on the installations.

069 The log book format must be as follows:-

- Site specific electronic;
- Table of Contents;
- Introduction;
- System(s) Details, including persons responsible for maintenance of log book and name, address and telephone numbers of Contractor;
- Description of systems (e.g. Fire Alarm and Emergency Lighting as applicable);
- Equipment Details – Under this heading, full description of equipment installed in a schedule including unique reference numbers for each device or item of equipment covered under this servicing contract, separate schedules must be provided for each system;
- Any ancillary devices or specific information must be included together with a description of the system;
- Any preventative maintenance plan
- Programmed dates for inspection and maintenance visits
- Method Statements and Risk and COSHH assessments
- Details of routine testing and servicing of each system must be detailed;
- Schedules for each system for Recording Events;
- False alarms, faults etc. including details of the work undertaken to repair the equipment;
- Any statutory inspection reports

070 In the case of addressable panels the Contractor must download the device addresses for submission to the Client's Representative. These addresses must also be noted onto an updated plan undertaken by the Contractor. Also all access codes must be recorded and submitted to the Client's Representative.

Contractor's Experience

071 The Contractor must have at least 5 years continuous experience in the installation, repair and maintenance of the types of equipment to be maintained under the terms of this Contract.

Operatives Technical Competence

072 Any Staff working on fire alarms operating at low voltage (refer to definition) and electrical services to battery chargers and/or self-contained emergency lighting luminaries or any equipment operating at low voltage and must be suitably competent.

073 Where Staff are working within a Control Panel with low voltage present, they must be formally trained and instructed in the methods of isolation and disconnection of the supply and avoidance of danger from a low voltage source. (Definition: Low Voltage normally exceeding extra-low voltage but not exceeding 1000V ac or 1500V dc between conductors, or 600V ac or 900V dc between conductors and earth.)

074 The Contractor must submit documentation that his Staff has attended the relevant manufacturer's courses on the equipment to be maintained. If, prior to the Commencement of the Contract, Staff have not been trained formally, the Contractor must, at his own expense, arrange for his Staff employed in the maintenance servicing work on the Contract to be sent onto manufacturers training courses, immediately following award of the Contract.

075 The resultant certificate(s) of competence must be forwarded to the Client Representative.

Manufacturer's Maintenance Schedules

076 It must be the Contractor's own responsibility to obtain from all manufacturers of equipment/apparatus in properties detailed maintenance schedules relating to this equipment and to ensure that all maintenance conforms to these precise requirements.

Service Repairs

077 A detailed list of parts requiring replacement will be notified to the Client Representative and an order will then be issued to the Contractor for the work to be carried out, at rates based on the Rates set out in the Schedule of Rates.

Amendments to Schedule

078 No appliance will be serviced which is still maintained under the manufacturer's guarantee period and these will be notified to the Contractor. When it is proposed to change an appliance during the servicing period then this appliance will be omitted from the service schedule.

079 The Contractor must maintain and keep up to date for inspection by the Client's Representative the system descriptions and associated drawings to reflect any alterations to any of the systems detailed.

Call out to Reset Systems after Actuation

080 The Contractor must be required to attend, on the request of the Client's Representative to reset, and set to work any previously activated fire safety system.

Visual Inspections

081 In addition to the aforementioned requirements, the Contractor must undertake visual inspections of all fire safety systems and emergency lighting safety systems within each premise each time the site is visited, for whatever purpose. The intention is to ensure that a system fault does not go undetected, whilst Staff is working elsewhere within the Property. Should a fault condition be identified, then a report should be passed to the Client Representative as soon as is practicable, but in any event within 24 hours of completion of the

visual inspection. The Client Representative will then issue any necessary instructions required for remedying the defects identified by the Contractor during the visual inspection.

User Safety Checks

082 The Contractor must be required to carry out monthly 'user' safety checks to fire safety systems within certain Properties (primarily those that do not have an on-site supervisory member of staff).

083 For Properties that only contain emergency lighting, there will be the need for a further 10 visits to site to carry out the monthly safety checks, thereby giving a total of 12 visits per annum. In a property which contains a fire alarm and emergency lighting, there will potentially be the need for a further 8 visits to site to carry out the monthly safety checks, thereby giving a total of 12 visits per annum.

084 The Contractor is to forward to the Client Representative each week, system condition report sheets in respect of the user safety checks carried out in that week. It is a condition of the Contract that payment for safety checks will not be made before receipt of the system condition report by the Client Representative. Should any defect be identified during the safety checks, the Contractor is to forward by electronic means, within 24 hours of completion of the safety check, the defects report sheets, to the Client Representative.

085 The Client Representative will then issue any necessary instructions required for remedying the defects identified by the Contractor during the user safety check.

Autodial/Intruder Alarm Interface

086 It is important to ensure that operation during testing does not result in a false alarm of fire.

087 If the Fire Alarm System is connected to a 999 automatic dialling unit, then transmission should be prevented (for instance, by disconnection before the routine test is carried out, since, under normal conditions, 999 test calls are not permitted). In certain equipment using automatic dialling it is possible to prevent transmission of signals by lifting a telephone receiver. Use of this function to inhibit transmission is deprecated, but where used the inhibited state should be indicated by the use of the notice on the control equipment.

088 If transmission of signals to a remote manned centre is prevented during test, a visual indication of this state should be given at the control equipment. If a link to a remote manned centre is to be used during the test, then it is essential to notify the centre before undertaking the test, unless a recognised procedure is regularly carried out at an agreed time.

089 All communicating equipment is to be tested and left in working order on each service visit.

090 The occupants of the premises should be notified of any test of the system that may result in the sounders being operated.

Spares

091 The Contractor must check the availability of spares at the premise, such as glasses, test probes and keys etc and reported to the Client Representative. In particular, at least 5 space glass of each type of manual break glass must be available on site.

Open Protocol / training / code availability

092 All manufacturers' equipment for all systems must be on an open protocol system with unrestricted access to all codes and provision of training for all installers is to be inclusive within the submitted tender rates.

New Installations by Contractor

093 If the Contractor is instructed to install or renew a complete fire alarm/detection system and/or emergency lighting system or to replace all fire fighting equipment to the Properties, the Contractor will be responsible during the defects liability period to undertake all periodic inspections and servicing, and responding to false alarms, breakdowns, malfunctions at no cost to the Contract. The Contractor is to ensure that all available warranties for new equipment are obtained from the manufacturers with copies provided to the Client Representative.

New Installations provided by others

094 If the Contractor is instructed following the installation or renewal by other Contractors of a complete fire alarm/detection system and/or emergency lighting system or the replacement of all fire fighting equipment to the Properties during the defect liability period of such installations, to undertake all periodic inspections and servicing, and respond to false alarms, breakdowns, malfunctions, the Contractor is to clearly identify in his Valuations that he has undertaken such Works. The Contractor is to ensure however that whatever Works the Contractor was required to undertake does not invalidate any warranties for new equipment which should have been previously made available by the other Contractors from the manufacturers and provided to the Client Representative. If the Contractor establishes that warranties have not been provided, the Contractor is to use his best endeavours to obtain such warranties on behalf of the Client.

ROUTINE MAINTENANCE SCHEDULES FIRE ALARM/DETECTION SYSTEMS

General Notes

001 The following Routine Maintenance Schedules detail work required to be undertaken in addition to those Statutory Regulations, manufacturer's instructions and codes of practice relevant to the particular service, installation or appliance, and they must be strictly adhered to.

002 Upon completion of the work a technical report sheet must be completed to the requirement of the Client Representative on all installations, systems and appliances which must contain the date of periodic service, condition of the equipment and the details of appliance(s).

003 The Contractor may record any additional comments on the report sheet that are applicable to the general condition and operation of the installation, system and or appliance(s).

004 All installations, systems and appliances must be left in good working order. If a fault is found or any replacement part(s) are required that are not covered by the Specification or Routine Maintenance Schedule be found, it must be reported immediately to the Client Representative. Replacement parts used, will be reimbursed as an extra in accordance with the Contract Conditions.

005 Periodic Routine Maintenance visits must be carried out to the entire satisfaction of the Client Representative. The Contractor must carry out all Work with as little inconvenience as possible to the day to day working of the Property to which the installation, system or appliance applies.

006 Service Types as defined in the Routine Maintenance Schedules must be undertaken at the following frequencies:

Type A service	=	Monthly
Type C service	=	3 Monthly
Type E service	=	6 Monthly

Type F service = 12 Monthly

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

FIRE ALARM/DETECTION SYSTEMS

	Operation	*Service Type*	
		C	*F*
1.	Operate units and carry out pre-service check noting any operation faults.	√	√
2.	Check main switch, fuses and supply.	√	√
3.	Check that the battery and associated charger are in a clean and satisfactory physical condition and that no exceptional environmental or other condition exists, which could damage or affect their performance.	√	√
4.	Check that the specific gravity of each cell is correct and record on property record sheet.	√	√
5.	Remove any corrosion on intercell connectors or terminals and regrease.	√	√
6.	Check all electrolyte levels and restore with distilled water as necessary.	√	√
7.	Check system for earth faults with a volt meter test between each pole of the battery and earth.	√	√
8.	Inspect battery charger interior for any adverse conditions, overheating or the ingress of water.	√	√
9.	Disconnect battery intercell connectors, clean, regrease and reassemble.		√
10.	Test for correct current output (constant potential type).	√	√
11.	Test for correct current output (constant current type) check that the correct fuses are fitted, together with spares.		
12.	Simulate a fuse failure condition.	√	√
13.	Simulate a charge fail condition.	√	√
14.	Ensure that the correct fault indication is displayed on the system indicator where this facility is provided.	√	√
15.	Inspect indicator interior for any adverse condition (ingress of water or other deterioration), clean and adjust as necessary.	√	√
16.	Simulate all the indicator functions and check for correct operation.	√	√
17.	Silent testing of systems may be required when the buildings are in full occupation, agreement must be arranged with the Property Manager prior to the audibility testing being carried out.	√	√
18.	The alarm function of the control and indicating equipment should be checked by the operation of 25% of all detectors and call points in each zone.	√	
19.	The alarm function of the control and indicating equipment should be checked by the operation of 25% of all detectors and call points in each zone, ensure that 100% of all detectors and call points have been tested within the year. Test 2% of heat detectors installed by application of a heat source.		√
20.	The operation of the sounders and any link to a remote operative centre, i.e. fire brigade/ESU should be tested ensuring correct reception at the operational centre.	√	√
21.	Report any environmental conditions, which would affect the correct performance of each detector.	√	√
22.	Ensure that any addressable system detectors in use have not been exchanged resulting in false information in respect of the origin of the alarm being recorded.	√	√
23.	Check that a clear space of at least 750mm (30”) radius is preserved around every detector.	√	√
24.	Check that all cable fittings and equipment are secure, undamaged and adequately protected.	√	√

25.	Where electrically energized door locks are fitted, these should be checked for correct operation when fire alarm energizes circuit. Operation of key switch should be proved.	√	√
26.	Check operation of automatic magnetic door release units, floor/wall mounted door retainers, overhead type door retainers, automatic electro magnet opening windows, automatic smoke vents etc., by operating a fire alarm contact. Doors should close and vents should open, easily and quickly. Doors should also close on failure of main supply.	√	√
27.	Test relays for connecting any adjacent buildings. Check for correct operation, building to building.	√	√

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

FIRE ALARM/DETECTION SYSTEMS (cont'd)

	Operation	*Service Type*	
		C	*F*
28.	Sounders must be fully tested for audibility on all visits as a final test prior to returning the system to service.	√	√
29.	Replace any blown bulbs/LEDS/fuses as necessary.	√	√
30.	Spares - Check that at least five spare manual call point glasses are on site and at least one key of all types required are available, report as necessary.	√	√
31.	Report any alteration to the protected premises which would affect the correct operation of the system.	√	√
32.	A general visual inspection of the Electrical Installation should be made to ensure that all cable fittings and equipment are secure, undamaged and adequately protected.	√	√
33.	Report to a responsible person on site and theClient Representativeof any faults which cannot be rectified during the routine maintenance visit.	√	√
34.	Upon commencement of each maintenance visit the Contractor will attach a self adhesive label to the control panel which will indicate: a. Contractors Company name b. The operatives name or payroll number c. Date maintenance visit carried out The above label must be submitted to the engineer for approval prior to the commencement of the contract.	√	√
35.	Complete the fire alarm system log book after each visit.	√	√
36.	Ensure system is left in good working order.	√	√
37.	Report any anomalies to the Client Representative.	√	√
38.	Complete periodic service report.	√	√

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

EMERGENCY LIGHTING INSTALLATIONS

Central Battery Type

		Service Type	
	Operation	*C*	*F*
1.	Operate the battery charger to prove that it is functioning correctly, make any necessary adjustment.	√	√
2.	Measure the specific gravity of the electrolyte for each cell with a hydrometer and record the reading on service record card.	√	√

3.	Check battery electrolyte level and top up with distilled water if necessary.	√	√
4.	Disconnect battery link connectors, clean re-grease and re-assemble.	√	√
5.	Ensure that the battery connections are clean and tight, remove any signs of corrosion from terminals, connections or the cell case.	√	
6.	Ensure that cell vent caps are secure and that vent holes are clear.	√	√
7.	Check instruments, indicating lamps, fuses, relays and contactors in the unit. Inspect wiring and the charger cubicle for signs of deterioration, ensure connections are clean and secure.	√	√
8.	With battery charger on, record battery voltage and battery charger output current, and record on service record card.	√	√
9.	Each luminare and sign should be energized from the central battery to simulate a mains failure for a period of one third of its rated capacity. Report any defective luminaries.	√	
10.	Simulate mains failure for the full duration of the rated capacity.		√
11.	Check that emergency lights have operated correctly and that all the tubes or lamps in each fitting are working, report any defective light units.		√
12.	Carry out inspection of integrity of fittings.	√	√
13.	Replace any blown or defective lamps	√	√
14.	Complete log book.	√	√
15.	Ensure central battery is left in good working order.	√	√
16.	Report any anomalies to the Client Representative.	√	√
17.	Complete periodic service report.	√	√

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

EMERGENCY LIGHTING INSTALLATIONS (cont'd)

Self Contained Type

		Service Type	
	Operation	*C*	*F*
1.	Simulate mains failure for 1/3 of its rated capacity by removing controlling fuse or switching off key switch, report any defective lamps/tubes	√	
2.	Simulate mains failure for the full duration of its rated capacity by removing controlling fuse or switching off key switch, report any defective lamps/tubes.		√
3.	Replace any blown or defective lamps.	√	√
4.	Check unit ensuring that there is no sign of over heating or loose connections.		√
5.	Restore mains supply and ensure that fitting returns to normal working.	√	√
6.	Complete log book.	√	√
7.	Ensure unit is left in good working order.	√	√
8.	Report any anomalies to the Client Representative.	√	√
9.	Complete periodic service report.	√	√

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

FIRE FIGHTING INSTALLATIONS AND EQUIPMENT - DRY RISERS

		Service Type
	Operation	*E*
	Scope of Works	

1.	All servicing and maintenance necessary to ensure that the operation of the Dry Risers, Hose Reels and Hoses is in strict conformity with the requirements of the following including any subsequent amendments or substitutions. System BS5306: Part 1:1976 incorporating amendment No. 1 and 2 Dry Riser BS5041: Part 2: 1987 Part 3: 1975 incorporating amendment No. 1 Part 4: 1975 incorporating amendment No. 1 Part 5: 1974 incorporating amendment No. 1 Dry Risers Check all landing valves are closed and that there are no obstructions around same. Fill system with water and charge to a pressure of 10-Bar for approximately fifteen (15) minutes. During this period, an inspection of the system should be undertaken to ascertain that there are no leaks of water from any joints or landing valves. Should any defects be found as a resultant of the aforementioned tests, these should be rectified and the system should be drained. All landing valves should have padlocks and straps replaced and the system left ready for use. Test Certificates should be issued upon completion of all works. TEST PROCEDURE FOR DRY RISING MAINS The test ensures that the Dry Riser Systems are in satisfactory condition so that all equipment is ready for immediate use in accordance with B.S. 5306 Part 11976. Testing Dry Risers must be carried out annually. The Contractor should be accompanied on the premises by a responsible representative for the site, whilst carrying out a physical check of the dry rising mains. This includes: 1 Checking all valves open and closed (leave closed & strap & lock). 2. Replace all outlet instantaneous washers. 3. Replacing all damaged or missing blank caps and chains. 4. Checking that all hand-wheels and nuts are undamaged and in place. 5. Checking landing instantaneous outlets are free moving and undamaged. 6. Checking air release valve and replacing if necessary. 7. Checking the inlet cabinet door for corrosion. 8. Checking that the inlet breaching valve springs, and that the rubbers are free moving and in good condition. 9. Checking the glazing in the door. 10. Removing any rubbish from the inlet box. 11. Lightly lubricating all moving parts.	√ √
		Service Type

	Operation	*E*
	Scope of Works	
	Static Pressure Test On completion of inspecting the system, water will be allowed to flow through for at least 5 minutes, discharging via the topmost outlet flushing out any debris that may be present (if possible). The system will then be completely charged with water to a pressure of 3 bar (measured at the inlet), and all landing valves will be checked for leakage, and auto air purge will be checked for valve operation. Should this valve be found to be faulty, every attempt will be made to fit a new valve at the time of test. The pressure will then be increased to 10 bar (measured at inlet) for a period of 15 minutes, during this time a further inspection of the system will be made to check for leakage of water at joints and landing valves. When the landing valve is replaced, all of these checks should be completed. Flow Test On completion of the Static Pressure Test a Flow Test will be carries out. Water will be passed through the system under pressure for a period of not less than 5 minutes and Flow Gauge readings recorded on the Test Certificate. If unable to sustain an effective jet from the topmost outlet or if there is any undue pressure loss in the rising main (after allowing for the height involved) an investigation will take place. Putting into Operational Readiness When the pressure has been released at the pumping appliance, the coupling to the rising main inlet will be disconnected and the action of the non-return valves checked. The system will then be drained and left ready for use. Remedial Action and Re-test If after these tests any defects are found which are impossible to rectify immediately, then the faulty valve will be padlocked down with an “Out of Order” notice attached to the valve in a prominent position. A full report will be given in writing within 7 days of the inspection to the Client stating the work that is required to reinstate the Dry Riser System b ack to full operation, this including all materials required and the cost of fining, together with an estimate of time to complete the repair and the date when the repair will begin. When work is complete then a full re-test of the system will be carried out as specified previously. Certification A Certificate confirming the satisfactory performance of the installation will be issued by the Testing Contractor and sent to the Client.	
	Visual Inspection of dry riser	C

DRY RISERS

	Operation	*Service Type* *E*
	Cleaning	
1.	Clear away all debris from risers.	√
2.	Wipe down all surfaces with a damp cloth.	√
3.	Dry with a lint free cloth.	√
	Inspections and Testing	
4.	Check valves for leakage.	√
5.	Inspect pipework, flange joints, unions etc., for leaks	√
6.	Check operation of valves.	√
7.	Inspect all valves for gland leakage, clean and repack gland stuffing boxes where necessary, gland nuts should be tightened where necessary, just sufficiently to prevent leakage while leaving the valve spindle free to move easily.	√
8.	Inspect pipework supports to ensure pipe hangers are firmly mounted and undamaged.	√
9.	All valves should be opened to make sure that they are free to operate and to minimise any tendency towards sticking.	√
10.	Clear nozzles/outlets of any debris.	√
11.	Replace as necessary any defective or missing washers, caps, chains, wheels, nuts, securing straps and the like minor parts.	√
12.	Inform Client Representative in respect of the replacement of any other damaged or defective components deemed necessary and for which instructions are required.	√
13.	Complete periodic service report.	√

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

FIRE FIGHTING INSTALLATIONS AND EQUIPMENT (cont'd)

HOSE REELS

	Operation	*Service Type* *F*
1.	Check that mains isolating valve is closed (open for auto hose reel check)	√
2.	Run out hose reel fully and inspect the hose for satisfactory condition.	√
3.	Open isolating valve and 'load' the hose. Check hose and nozzle for leaks.	√
4.	Operate nozzle and check for correct spray/jet configuration to discharge water until it runs clean and at a continuous rate.	√
5.	Check hose connection and gland nut on centre spindle for satisfactory condition	√
6.	Check that the hose reel operates correctly and that the nozzle is 'free'.	√
7.	Rewind hose on to reel ensuring its correct 'lay'. Ensure that main isolating valve is left closed. (Open on auto hose reels).	√
8.	Wipe any water from hose reel surfaces and surrounding floor area.	√
9.	Sign and date hose reel label, or fit 'out of use' label.	√
10.	Report any anomalies to the Client's Representative.	√
11.	Replace as necessary any defective or missing 'o'-rings, nozzles, 't'-pieces, automatic valves, hose guides and the like minor parts.	√

12.	Complete periodic service report, provide list of any other defects requiring attention to Client and obtain signature or otherwise to proceed with repairs.	√
13.	Provide copy of report/defects list and current inventory within seven days of inspection visit to Client's Representative.	√
14.	Ensure appliance is left in good working order.	√
15.	Report any anomalies to the Client's Representative.	√
16.	Complete periodic service report.	√

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

FIRE FIGHTING INSTALLATIONS AND EQUIPMENT (cont'd)

FIRE EXTINGUISHERS

	Operation	*Service Type*
		F
	WATER/CO_2 OR FOAM/CO_2	
1.	Clean nozzle.	√
2.	If extinguisher is five (or multiple of five) years old discharge and inspect performance.	√
3.	Remove CO_2 cartridge.	√
4.	Check striker action and lubricate as necessary.	√
5.	If CO_2 cartridge is fifteen or more years old, replace cartridge.	√
6.	Weigh CO_2 cartridge, if weight indicates 10% or more of CO_2 charge has been lost, indicate replacement cartridge required.	√
7.	Check internally for deposits or corrosion, clean as necessary.	√
8.	Refill cylinder with fresh water or fresh foam compound, top up to correct level.	√
9.	Check operating instructions are clear and correct, replace as necessary.	√
10.	Sign and date cylinder label or fit out of use label.	√
	CO_2 GAS	
1.	Check nozzle action.	√
2.	If extinguisher is ten (or a multiple of ten) years old discharge and inspect performance, carry out hydraulic test on cylinder and subsequent recharge.	√
3.	Weigh extinguisher, if weight indicates 10% or more of CO_2 charge has been lost, indicate recharge required on defects list.	√
4.	Check operating instructions are clear and correct, replace as necessary.	√
5.	Sign and date cylinder label or fit out of use label.	√
	DRY POWDER	
1.	Clean nozzle.	√
2	If extinguisher is five (or a multiple of five) years old discharge and inspect performance.	√
3.	Remove CO_2 cartridge.	√
4.	Check striker action and lubricate as necessary.	√
5.	If CO_2 cartridge is fifteen or more years old, replace cartridge (at Contractor's cost).	√
6.	Weigh CO_2 cartridge, if weight indicates 10% or more of CO_2 charge has been lost, indicate on defects list replacement cartridge required.	√
7.	If extinguisher has been discharged, remove remaining powder and inspect cylinder internally for deposits or corrosion.	√
8.	If extinguisher has not been discharged check powder runs freely, check quantity of powder is sufficient.	√

9.	Reassemble top and refit on cylinder.	√
10.	Check operating instructions are clear and correct.	√
11.	Sign and date cylinder label, or fit out of use label.	√

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

FIRE FIGHTING INSTALLATIONS AND EQUIPMENT (cont'd)

FIRE EXTINGUISHERS (cont'd)

	Operation	*Service Type*
		F
	ALL TYPES ADDITIONALLY	
1.	Replace as necessary all head cap seals, tamper seals, pull-tight seals, cartridges, safety pins and clips, brackets, hoses, nozzles, head caps, assembly valves and the like parts.	√
2.	Complete periodic service report, provide list of any other defects requiring attention to Client and obtain signature or otherwise to proceed with repairs.	√
3.	Provide copy of defects list and current inventory within seven days of inspection to Client Representative.	√
4.	Ensure appliance is left in good working order.	√
5.	Report any anomalies to the Client Representative.	√
6.	Complete periodic service report.	√

NOTE: IF FOR ANY REASON AN EXTINGUISHER CANNOT BE LEFT FULLY OPERATIONAL, A SUITABLE REPLACEMENT MUST BE LEFT IN ITS PLACE AND THE DEFECTIVE EXTINGUISHER REMOVED UNTIL IT HAS BEEN REPAIRED

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

FIRE FIGHTING INSTALLATIONS AND EQUIPMENT (cont'd)

FIRE BLANKETS

	Operation	*Service Type*
		F
1.	Wipe surfaces clean	√
2.	Remove and unroll fire blanket and check for deterioration/tears etc.	√
3.	Re-roll blanket, refit in holder.	√
4.	Sign and date cylinder label.	√
5.	Report any anomalies to the Client Representative.	√
6.	Complete periodic service report, provide list of defects requiring attention to Client and obtain signature or otherwise to proceed with repairs.	√
7.	Provide copy of defects list and current inventory within seven days of inspection to Client Representative.	√
8.	Report any anomalies to the Client Representative.	√
9.	Complete periodic service report.	√

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

FIRE FIGHTING INSTALLATIONS AND EQUIPMENT (cont'd)

MAINTENANCE SCHEDULE FOR SPRINKLER SYSTEM
SPRINKLER SYSTEM (WET) HALF YEARLY AND YEARLY

		Service Type	
	Operation	*E*	*F*
1.	Overhaul and Test Valves. Standard alarm bell test/check to remote alarm panel (where applicable). Drain down installation. Remove alarm cover. Refill, re-commission installation. Check operation flow meter	√	
2.	Inspection of System. Visually inspect all pipework for general condition and leaks etc. Visually inspect all sprinkler and fire detector heads for condition, location relative to new equipment. Inspect premises generally for unprotected areas, etc. Test operation of alrm gongs by opening test valve.	√	
3.	Pipework and Control Valves: Examine for leaks. Examine hangers and supports, adjust if necessary. Examine for corrosion and general condition. Examine and test electrical earthing. Examine and test trace heating systems. Test and adjust thermostats as necessary. Test main stop valve for free travel, ensure that it is left fully open.	√	
4.	Pump House . Inspect water storage tank to ensure water level is correct and automatic infill is operational. Check pump house valves are locked in correct positions. Check diesel fuel, coolant, oil and battery acid levels are correct. Clean and examine pumps, glands and valves Run each pump independently (check initiating pressures are correct), electrical/diesel, jockey. Check operation of flow water. Check signals to remote alarm panel are correct for the pump operational ftjnctions. Visually inspect all pump house pipework and valves for leaks or other damage. Check pump house temperature is maintained above 10°C, and that ventilation dampers are functioning correctly. Test pump failure alarms Test compressors. Examine water and air gauges to ensure that pressures are at design parameters.	√	
5.	Check sprinkler spares cabinet is full and provide replacements.	√	
6.	Standby Diesel Pump: Test run for at least one hour. Change lubricating oil. Change oil and air filters. Test coolant anti-freeze concentration and top up if required.		√
7	Report any anomalies to the Client's Representative.	√	
8.	Before leaving, check sprinkler installation is fully operational with any faults rectified.	√	

9.	Complete periodic service report on electronic log book, provide list of defects requiring attention to Client and obtain signature or otherwise to proceed with repairs.	√	

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

Bin Room Fire Suppression Equipment

	Operation	*Service Type*
		C
1.	Detection equipment: Clean, Visually inspect for damage, corrosion and operation	√
2.	Pipework and fittings: Check for soundness and any sign of corrosion	√
3.	Nozzles: Remove and clean in accordance with manufacturers recommendations, refit	√
4.	Solenoid Valve: Check for operation and cleaned	√
5.	Filter: Check, remove and clean, refit	√
6	Manual Isolation Valve: Check operation.	√
7.	Double Check Valve: Check operation.	√
8.	Wash Down Cycle: Activate	√

Bin Room Chutes – Automatic Closures.

	Operation	*Service Type*
		C
1.	Emergency Fire Damper: Inspect and test manually.	√
2.	Weighing Mechanism: Inspect and leave in free fall operation.	√
3.	Wire Ropes: Inspect for corrosion or damage and adjust to the correct tension	√
4.	Fusible links: Inspect and replace if defective or damaged.	√
5.	Slide Mechanism: Inspect, clean and grease.	√
6	Air Test: Undertake.	√
7.	Electronic Log Book: Update with details and findings of service visit	√

Automatic Door Release Mechanisms

	Operation	*Service Type*
		A

1.	Check (and record) the operation of the fail-safe mechanisms, either by 'breaking-out' the doorset, or by simulating failure of the mains power supply, as appropriate	√

ROUTINE MAINTENANCE - SCHEDULES FOR PERIODIC SERVICING

Automatic Smoke Vents:

Test Type	Equipment Type	Operation	Test Procedure	*Service Type*
				C
1.	Pneumatic Natural Ventilators	Auto	Activate Alarm. Check all vents open. Check all vents close.	√
2.	Pneumatic Natural Ventilators	Manual	Use fireman's switch to open / close vents. Check all vents activated.	√
3.	Electric Natural Ventilators	Auto	Activate Alarm, Check all vents open. Check all vents close.	√
4.	Electric Natural Ventilators	Manual	Use fireman's switch to open/close vents. Check all vents activated,	√
5.	Powered Smoke Extract	Auto	Activate Alarm. Fans start and shutters, If fitted open. Fans stop/shutter close on reset,	√
6.	Powered Smoke Extract	Manual	Use fireman's switch to start/stop fans Open/close shutters if fitted.	√
7.	Electric Retractable Smoke Curtains	Auto	Activate alarm. Check curtains In designated zones drop and reset.	√
8.	Pneumatic Retractable Smoke Curtains	Auto	Activate alarm, Check curtains In designated zones drop and reset.	√
9.	Electric Supply		For battery operated systems of all types. Check mains supply is healthy,	√
10.	PneumatIc Supply		Check for air leaks. Drain receiver condensate. Check compressor oil level. Record hours run from meters when fitted.	√
11.	Powered Pressurisation Fan System	Auto	Activate alarm. Fans start and shutters, if fitted, open. Fans stop/shutters close on reset.	√
12.	Compressor	Auto/Manual	Check oil level on a weekly basis. If low top up with suitable compressor oil. Check belts for wear. Check condensate and for any oil leaks.	√

SECTION 3 INSTALLATION OR RENEWAL OF EMERGENCY LIGHTING

General Requirements

001 This specification contains those standard technical clauses applicable to emergency lighting installations.

002 The Contractor will provide emergency lighting, in accordance with the current BS5266, the Health and Safety (signs and signals) Regulations, Part 'B' of the building regulations and to the Local Authority and Fire Officer's requirements and approval.

003 Where applicable ensure the emergency lighting installation complies fully with the requirements of the following British Standard Guidelines and Recommendations.

- BS 2560 : Specification for EXIT signs (internally illuminated).
- BS 5266 : Part 1 CP for emergency lighting of premises other than cinemas and certain other specified premises used for entertained.
- BS 5266 :Part 3 specification for small power relays (electromagnetic) for emergency lighting application up to and including 32A.
- BS 5378 : Safety signs and colours
- BS 5499 :Fire safety signs, notices and graphic symbols.
- BS 5655 :Part 1 Safety rules for construction and installations of electric lifts.
- BS 6133 :Safe operation of lead acid stationary cells and batteries.
- BS 6290 :Lead acid stationary cells and batteries.
- ICEL 1001 :The construction and performance of battery operated emergency lighting equipment.
    - Part 1 Central system equipment
    - Part 2 self contained luminaires and associated systems.
- ICEL 1002 : The photometry of battery operated emergency lighting luminaires.
- ICEL 1003 : Emergency lighting - applications guide.
- ICEL 1004 : Modifications of mains luminaires to incorporate an emergency lighting conversion kit.
- The 17th Edition of the IEE Wiring Regulations.
- HMSO - Recommendations on Safety in Cinemas.
- HMSO - The Hospital Technical Memorandum No.11 and 16.
- Local Authority standing orders and byelaws.

004 On completion at the works fully commission the entire installation in the presence of the Client's Representative.

005 Ensure the system(s) defined operate(s) on non-maintained or maintained principles as detailed later in this specification. Complete with all appropriate relays, battery chargers, batteries connection outlets etc

Wiring Mediums

006 These luminaire will be controlled via the adjacent lighting controls to allow the lights to be switched 'on' or 'off' depending on useage of the rooms but will automatically illuminate on failure of the lighting circuit supply. Note that where no specific wiring medium is specified then this is of the appropriate type as defined in BS 5366 in Part 1,

007 Where 'central' battery systems are to be installed make the cable sizes a minimum of 2.5mm^2..

008 In cases where luminaires are connected to a central battery system(s) then colour code the conductors for ease of identification and fully segregate from other services.

009 Install non-maintained emergency luminaire with a 'mains' unswitched live connection fed from the appropriate circuit of the designated distribution board.

Emergency Lighting Systems

010 Use the types of system(s) as defined in the Order and adopt the following minimum appropriate requirements:-

011 Complete self-contained luminaires with lamps, legend (where required for exit signs) alkaline batteries (suitable for temperatures up to 50C) of a 3 hour duration period, charger a red light emitting diode (mains healthy) and mains sensing devices.

012 Brief description of operation for various types are as follows:-

.1 Non-maintained - emergency light 'OFF' and battery on automatic charger when 'mains' supply is healthy. The luminaires lamp shall automatically switch 'ON' when 'mains' is interrupted and powered by battery.
.2 Maintained - emergency light 'ON' and battery on automatic charge when 'mains' supply is healthy. The same luminaire lamp remains 'ON' powered by the battery when the 'mains' supply is interrupted.
.3 Sustained - normal mains' powered lamp 'ON' and battery on automatic charge when 'mains' is healthy. Separate emergency lamp is automatically switched 'On' when 'mains' supply is interrupted.

013 Complete embodiment control gear for fluorescent luminaires with charger/inverter module (of appropriate rating) battery pack and wire to suit maintained or non-maintained emergency use as the case may be. Use the batteries of the high temperature type minimum 50 C capable of a 3 hour operation period.

014 Fit/wire the above components within the selected luminaires by the luminaire manufacturers taking care to keep components away from hot components.

015 Install a charger indication of the red light emitting diode type within each luminaire.

016 Ensure the operation of the components is as defined in the particular specification.

017 Ensure central battery system(s) are of the battery cubicle type, of the rating defined in the particular specification and allow the complete connected emergency system to operate for at least three hours in the event of 'mains' failure.

018 Ensure each battery cubicle contains the following minimum equipment:

.1 A suitably rated battery charger of the solid state constant voltage type, with self protecting current limiting, for protection against low battery voltage and short circuit protection.
.2 A suitably rated load contactor arranged to changeover to battery operation in the event of mains failure.
.3 A transformer rectifier circuit with dc smoother.
.4 Suitably rated 'mains' and 'control' fuses.
.5 Phase failure relay, connected to the incoming SP and TPN supply of the designated source(s) to be monitored.
.6 Alarm indicators mounted on the front of the panel for the following: high and low voltage, charger failure alarm. Provide a common volt free contact to operate when any of the alarms are initiated for remote fault indication.
.7 Include a voltmeter with 'load' and 'charge' ammeters.
.8 Where designated, install complete a double pole fused distribution board with 20% spare ways to serve local emergency lighting distribution boards.
.9 Provide isolating switches on the cubicles to enable the maintained lighting supplies to be isolated when required.

.10 Panel internal wiring.

.11 Ensure that for maintained systems the cubicle encloses double wound transformer (with earth screen) wired to normally open contacts of the contactor controlled by its own switch.

019 Unless otherwise instructed, install alkaline pattern batteries with plastic cases and having a standby life of 25 years. The voltage size is as defined in the particular specification. Ensure the recharging of the system after use is completed within 24 hours.

020 Where local emergency lighting distribution boards are to be used ensure these are of the appropriate patterns compatible with the system source, voltage etc. and are fitted complete with local isolator/contactor remote control relays for remote monitoring as declared, the particular specification. All such boards shall have double pole fused outgoing ways.

021 Ensure 'slave' type luminaires are of the types instructed and are supplied and installed complete in every respect, and of the appropriate types to suit the maintained or non-maintained connections and voltage sizes of the selected system(s).

022 Emergency lighting illuminated exit signs will be self-contained 3Hr maintained and be in operation at all material times 24hrs/7days.

023 Dedicated Emergency lighting luminaires will be self contained 3Hr non-maintained supplied from adjacent lighting circuits. These luminaires will be off when general artificial lighting is available and will automatically illuminate on failure of the adjacent lighting circuit.

024 General lighting luminaires provided with emergency converted for emergency lighting operation will be self-contained switched maintained 3 hour duration nickel cadmium charger/inverter packs integral to the luminaire, or in remote emergency packs within 1m of the luminaire.

025 Each emergency luminaire will be fitted with a charge fail LED indicators clearly visible when the unit is installed and luminaire is switched on.

026 The Contractor will include for supplying and installing 20Amp DP key switches mounted adjacent the lighting distribution boards to enable a test/isolation facility to the circuits supplying the luminaires.

Installation Requirements

027 Connect each battery cubicle to the mains source designated and controlled by a suitable multipole isolator mounted adjacent the respective cubicle. Enclose final connections in flexible conduit.

028 Ensure final connections to emergency luminaires are as follows:-

.1 Self contained luminaires are fitted via concealed plug in ceiling rose or in the case of wall mounted units, fuse connection units. Final connections are with multicore butyl flexible cables of the appropriate size.

.2 Embondiment control gear are via 4 pin ceiling rose outlet of different pattern to conventional 3 pin ceiling roses, mounted adjacent to 'mains' connection arrangement controlling 'mains' supplies to luminaires. Final connection is with multicore butyl flexible cable of the appropriate size. Fit appropriate warning labels externally to luminaires stating emergency source connection. Pin configuration for 4 pin ceiling roses are as follows: -

.1 Pin 1 - switched live

.2 Pin 2 - Neutral

.3 Pin 3 - Earth (separate CPC)

.4 Pin 4 - Unswitched live

.3 Connect 'slave' luminaires for central systems in the manner defined under 4.2.1 but using the 4 pin rose defined under above.

029 Where test switches are required in the particular specification to operate the emergency luminaires fit the same type/pattern as normal lighting switches but of key action. Wherever possible mount the key switches on the respective multigang plate of the 'local' lighting control switches.

030 Test keyswitches will be connected so that all luminaires on the test circuit will switch ‘off’ during the test to avoid emergency lighting installations being inadvertently left in test mode and thus becoming inoperable.

031 The multi-gang test grid switch will comprise of MK Electric Albany Plus Range with Matt Chrome finish or equal and approved. Emergency Lighting Grid switch cover plate to be labelled with circuit reference.

032 All emergency lighting luminaires in plasterboard ceiling areas are to be connected by means of 4core 1.5mm² heat resistant flex via joint boxes provided in the ceiling void for termination of the fixed wiring cables and final connection to luminaires externally to the luminaires. Joint boxes will be suitably sizes to fit through the aperture provided in the plasterboard ceilings for the recessed luminaires or surface/pendant luminaires flex connections

Testing and Commissioning

033 On completion of the total emergency lighting installation(s) carry out in the presence of the Engineer and Fire Officer, the complete testing and commissioning of the whole installation in accordance with the equipment manufacturers recommendations and the requirements of BS 5266.

034 Upon satisfactory completion of the above tests the equipment manufacturers will be required to supply the necessary completion certificate for the complete system as outlined in BS 5266.

035 On completion, and after a minimum 24 hour charge period, each emergency unit will be functionally tested by operation of the test switch with the batteries discharged for the full 3 hour period, after which recharged and again functionally tested, to the manufacturers recommendation.

036 Any luminaire that fails to operate for the full rated standby period will be replaced by the Contractor at no cost to the project.

037 On completion each emergency unit will be functionally tested by operation of the test switch with the batteries discharged for the full 3 hour period, after which recharged and again functionally tested, to the manufacturers recommendation.

038 The Tendered Rates are deemed to include for completing all required commissioning and system demonstration tests. Give a minimum of 10 days notice of the proposed test dates to enable the Client’s Representative/Fire Officers to witness these tests.

039 Fully record all tests and issue with the "As Fitted" drawings and the operating and maintenance manuals.

040 Detail all positions, number and types of installed emergency luminaires on the 'As Fitted' drawings and in the operating and maintenance manuals

041 Provide 1No. emergency lighting test log

SECTION 4 – INSTALLATION OR RENEWAL OF FIRE ALARM DETECTION SYSTEMS

General Requirement

001 This specification contains those standard technical clauses applicable to the fire alarm installation. The exact scope of work including technical design parameters, schedule of zones and list of drawings are as detailed in the particular specification.

002 Where applicable ensure the fire alarm installations also comply fully with the requirements of the following British Standards, Guidelines and Recommendations.

- B.S. 5306 : Fire extinguishing installations and equipment on premises.
- B.S. 5445 : Components of automatic fire detection systems.
- B.S. 5446 : Specification for components of automatic fire alarm systems for residential premises.
- B.S. 5588 : Fire precautions in the design and construction of buildings.
- B.S. 5839 : Fire detection and alarm systems in buildings. Part 1 Code of practice for installation of servicing.
- B.S. 5839 : Part 2 Specification for manual call points.
    - Part 3 Detector/release.
    - Part 4 Control/indication.
    - Part 5 Optical beam.
- B.S. 6133 : Code of practice for safe operation of lead-acid stationary cells and batteries.
- B.S. 6266 : Code of practice for fire protection for electronic data processing installations.
- B.S. 6290 : Lead-acid stationary cells and batteries.
- Fire Offices Committee (FOC) - rules for automatic fire alarm installations for protection of property.
- Local Authority standing orders and byelaws.
- The 17th Edition of the IEE Wiring Regulations.
- HMSO - The Hospital Technical Memoranda Nos. 16, 81, 82, 83, 87, 88.

003 Note that the schematic diagram(s) produced for tendering purposes is/are not to be used for construction works as these drawings only denote the zonal / operational requirements.

004 Obtain both during the tender period and prior to construction work fully detailed wiring diagrams from the selected manufacturer. These drawings must define all cabling requirements. Submit copies of manufacturer's drawings to the Client’s Representative for comment prior to the commencement of the works.

005 The Contractor will supply, install, test and commission the complete fire alarm system as detailed on the drawings.

006 The system will be manufactured and installed in compliance with BS 5839: 2013 with automatic detection provided as detailed on the approved drawings.

007 The communal areas will be provided with a centrally controlled system with control and indication panel, batteries, detectors, call points and sounders.

008 The domestic Properties will be provided with mains powered stand alone detectors with integral batteries and sounders.

009 Multiple detectors located in the same accommodation unit will be interlinked so that activation of any one detector will sound the alarm at all detectors in the same unit.

010 In addition the domestic detectors will be interlinked into the communal areas central system to give an alert alarm to the communal areas in the event of a fire alarm activated in any of the domestic Properties.

011 A delay of 5 minutes (adjustable) will be provided to allow the alarm to be reset by the Customers(occupiers of the domestic Properties) otherwise full alarm will be given to all areas as described below.

012 The communal area new fire alarm system wiring will be derived from a new fire alarm panel located within the communal entrance lobby at ground floor level with power supply fed from the communal lighting distribution board.

System Types and Operation

013 Generally, unless otherwise instructed the fire alarm system comprises the following:-
- Annunciator / control panel(s).
- ELV battery cells/charger.
- 'Mains' power supply.
- Manually operated 'break glass' call points.
- Automatic smoke (optical/ionisation) and heat (fixed temperature/rate of rise) detectors.
- Magnetic door release units together with control relays/push-buttons (optional).
- Sprinkler zone pressure sensors (optional).
- Call points operated in conjunction with fusible links (plant rooms).

014 Ensure the fire detection and alarm systems derive their power supply from a control unit which incorporates a standby battery and automatic charger designed so as not to become inoperative in the event of failure of the standby battery or the a.c. supply.

015 Ensure the fire alarm system is actuated by the operation of either a manual 'break glass' call point or automatically by smoke detectors, heat detectors and, where applicable, the sprinkler system pressure switches and/or fusible links.

016 On the instigation of the above, ensure this operates the respective fire alarm zone indicator of the annunciator / control panel(s), the sounder alarm circuits, isolate defined plant systems, demagnetise signal(s to remote indicator panel(s) and/or fire brigade network alarm system.

017 Unless otherwise specified in the standard specification, ensure the fire alarm system is 24V d.c. 'Open circuit' principle with all wiring being continuously monitored such that in any event of the following conditions, it shall cause a "fault" indication to be displayed at the main annunciator panel:
- .1 Short circuit fault.
- .2 Open circuit fault.
- .3 Earth fault.

018 Arrange the control circuitry so that none of the above conditions cause the fire alarm sounder to operate. Ensure that monitoring of the system is intrinsic in the control circuit design, automatic in operation and does not require the manual operation of switches or other apparatus.

Components

019 The various components listed below illustrate the minimum arrangement/types required and where necessary adapt these to suit the specific details instructed, ensure the components are of the flush or surface patterns suitable for the installation requirements defined and are supplied complete with all necessary boxes, seals/gasket, cable entries, fixings, covers etc.

020 Ensure annunciator / Control Panels are of modular design complying with B.S. 3116 : Part 4 and have:-
- ➢ Suitable steel enclosure (finish to be defined).
- ➢ Required quantity of fire zone circuit indicators (with lamp test facilities).

- Zone fault indication to suit quantity of zone circuits (with lamp test facilities).
- Power' supply failure indication.
- Battery healthy' indication.
- Zone lamp test key switch (enable).
- ' Alarm mute' key switch (enable).
- 'All sounder' test key switch (enable).
- Two-stage alarm facilities (where applicable i.e. pulsating - alert and continuous - evacuate).
- 'master alarm' control key switch.
- Zone identification.
- All necessary operating relay/switch devices, auxiliary relays - controlling remote plant item, door release units etc.
- Sufficient quantity of terminals to receive all incoming and outgoing circuit wiring.
- Facilities for supervisory buzzer (where applicable).
- Battery cells/charger unit of a size suitable for the full system. In large installations mount the above items in separate steel enclosure of similar suite to the panels.
- Facilities for remote signalling to local fire brigade or alarm centre network.

021 Sounders - install the type specified the particular specification - red finished and, in turn, connected to the respective annunciator panel(s) using 'A; and 'B' dual circuit wiring techniques.

022 Break glass call points - install of red finish and comply with BS 5839: 2013, complete with scored glass, suitable inscription of operations, integral LED indicator, key-operated test facilities and appropriate enclosures for flush or surface mounting.

023 Smoke detectors - install of the 'ionisation' or 'optical' patterns as shown on the drawings and complete with interchangeable plug-in bases, integral LED indicator (unless remote indication is specified) and appropriate mounting conduit boxes.

024 Heat detectors - install of the fixed temperature patterns in accordance with B.S. 5445 with or without rate of rise as defined in the particular specification. Install each complete with interchangeable plug-in bases, integral LED indicator (unless remote indication is specified) and appropriate mounting conduit boxes.

025 Remote indicators - install of white square mounting plates complete with appropriate mounting boxes (flush or surface-mounted). Fit appropriate designation labels on plates giving zone code reference.

026 Install door release units of a type similar to Briton 999 and of the electromagnetic type, each complete with electromagnetic unit, the iron armature unit (fitted to the door), the 'mains' relay/power unit, a local fuse connection unit provided mains supply for the relay unit and a push- button to release the door. Install each of the above units complete with appropriate box enclosure.

027 Sprinkler pressure sensors - will be supplied and installed by others but connect to the auxiliary section of the annunciation/control panel(s).

028 Fusible link units - as above but connect to panel(s) via wall-mounted electromechanical push-button call points.

029 End of line units - install on all monitored circuits and generally connect at the end of the respective circuit contained within purpose made boxes or where designated by the manufacturers within the panel(s). Where remote mounted, fit appropriate labels to cover for ease of identification.

030 Duct-mounted smoke sensors - where smoke sensors are to be mounted in mechanical ductwork supply complete with the necessary sample and exhaust probes (of appropriate length

to suit size of duct) mounting boxes fitted with transparent covers and appropriate designation labels. Note: unless otherwise specified use only 'optical' sensors for these purposes.

031 Power supply units - install an a.c. supply operated automatic constant voltage charger, ammeters and voltmeter (fitted to the cover of the enclosures), a pre-charged standby sealed lead or alkaline 'battery' an appropriate metal enclosure, output fuses and mains 'On' indication.

032 Ensure the 'standby supply' capacity for each installation is such as to allow the system alarm sounders and auxiliary loads to operate continuously for a minimum of 30 minutes and be fully recharged within the following 24 hours. Furthermore, ensure the 'standby supply' system is of sufficient capacity to support the fire alarm system in standby mode for a minimum period of 24 hours prior to any initiation of an alarm condition. In addition to the above, ensure the battery charger unit is capable of supporting the entire system alarm load in the absence of the 'battery'.

033 Ensure fault monitoring and alarm indication is provided for:-

- .1 Mains power failure.
- .2 Battery power failure.
- .3 Charger output failure.

034 Contain power supply units in a ventilated sheet steel enclosure designed to ensure adequate heat dissipation. Treat all steel so as to be acid/alkaline corrosion resistant.

035 Ensure the enclosure is gloss paint finish.

Installation/Wiring Mediums

036 The standard type of cabling for wiring the fire alarm system will be multicore MICCV soft skinned FP200 cable complying with BS 5839: 2013 with red LSF overall sheath.
All cabling will generally be of the following minimum sizes:-

- 1.5mm² for detector
- 1.5mm² for auxiliary circuits
- 1.5mm² for dedicated bell circuit
- 1.5mm² minimum size conductor for 'actuation' circuits
- 2.5mm² minimum for 'sounder' circuits using 'A' and 'B' wiring technique.

037 All cabling will be concealed within the building fabric, with cable basket provided within ceiling voids for multiple runs of cable.

038 Single cables will be clipped neatly using proprietary LSF coated “P” clips at regular spacings, in accordance with manufacturers recommendations.

039 All fire alarm cables will be tested with a 500-volt insulation resistance tester, prior to final termination of equipment with base fixed.

040 Install fire alarm wiring installations to suit other installations i.e. surface to flush as the case may be. Refer to the particular specification for exact details.

041 Where 'heat' or 'smoke' detectors are installed in locations which cannot be readily seen such as ceiling/floor voids etc., then fix in the locations indicated on the drawings, remote LED indicator units and connect to the respective detector back plate terminals and install flush or surface to ceiling or walls boxes as the case may be.

042 In instances where automatic signalling facilities are required to remote situations such as the local fire brigade, remote indicator panels etc. (using British Telecom landlines or similar) under the contract, supply and fix (albeit by the specialist manufacturer) the necessary interface/indication units required for transmitting and receiving alarm signals. Ensure these

components are compatible the existing system(s) or private network equipment. Ensure all associated installation costs, charges etc., are included in the tender.

043 Include all auxiliary control wiring under the contract namely to field items. systems such as door release units, shutdown/actuation of mechanical plant systems, sprinkler system pressure sensors, extinguishing systems, (such as Inergen or Co^2), fusible link systems etc. In addition, ensure that the necessary relay and termination facilities are included within the respective annunciator / control panel(s) to receive/control the above.

044 Unless otherwise specified, include for the specialist manufacturer of the equipment to finally connect only the incoming and outgoing circuit wiring of the annunciator / control panel(s).

045 Ensure each fire alarm system has a dedicated mains supply from the 'LV' source terminating in the annunciator / control panel(s) respective power supply and via a wall-mounted isolating switch. Control the 'LV' source supply by a suitably rated lockable switch fuse/MCB. Paint this switch together with the respective terminating isolating red and label "FIRE ALARM - DO NOT SWITCH OFF".

Operation

046 Activation of any alarm point in the retail areas (i.e. break-glass unit, automatic detectors), will sound all fire alarm sounders and indicate a visible and audible signal on the main indicator panel to identify the respective zone of origin.

047 Manual break glass call points will be suitable for semi-recessed mounting in general areas with a side profile are not less than 75mm2. Labelling to MCP's will be white pictorgram on red as required by the British standard. Beacons / sounders will also have similar labels i.e. black lettering on clear marker tape.

048 Each smoke detector will be provided with a red plastic dust cover (removed at hand-over). All smoke and heat detectors will be mounted on common mounting bases.

049 The fire alarm devices are to be referenced and labelled in the following format Z3/A08 –Zone 3 / device 8.

Zoning

050 The system will be zoned as instructed by the Client's Representative:-

Testing and Commissioning

Commissioning

051 The Contractor will employ a specialist commissioning engineer to test and commission the complete installation.

052 A functional test will be applied to all automatic sensors, either smoke and/or heat, and likewise manual call points. A record will be kept of each and every individual point with the results duly recorded. In addition to the above, a full audibility test will be applied throughout the complex, with individual readings recorded for each specific area.

053 Full audibility testing will be undertaken and recorded for each area.

054 On completion of the testing and commissioning by the manufacturers engineer, the Contractor will provide a record of the results, in duplicate together with the manufacturers certified test report.

055 All costs for testing and commissioning the fire alarm installation are deemed to be included in the Tendered Rates.

056 All protocols for the fire alarm installation mustl be open protocol to ensure final user access is permit able.

057 Tests to be Conducted

- A visual inspection of the whole of the installation, covering equipment and section in subways, walkways, crawlways, ceiling and floor voids where accessible.
- The operation of all panels, accessories and items of equipment and a check for proper function, including such items as may have been supplied by others but wired under this Contract. Make these tests under normal operating conditions, including the discharge and recharging of the 'battery' system, and the results noted.
- Make insulation tests covering all circuits and between phases, phase to neutral, phase to earth and neutral to earth. Where a central or main distribution point is 10 megohms or above, individual sub-circuit tests may be omitted at the discretion of the Engineer.
- Functional test of all smoke detectors by use of an approved smoke generator-testing device.
- Functional test of all "fixed temperature" or "rate of rise" heat detectors, by an approved heat source testing device.
- Simulated tests for fire or fault alarm at one or more detector or manual contact as may be instructed by the engineer, with all such tests being agreed and recorded onto a system check list which will be approved by the engineer prior to any witness testing being carried out.
- for correct polarity of the alarm devices, bells, sirens, klaxons etc., and all other items where correctness of polarity is essential.
- Testing of all sprinkler sensors and fusible link units.
- Testing all visual indicators under simulated operational conditions with sounders out of circuit.
- Testing of auxiliary signals to remote panels via British Telecom landlines.

Procedure

058 The Contractor is to carry out in conjunction with the manufacturer of the control equipment etc the full tests listed above to the Contractor and tmanufacturer’s own satisfaction. Thereafter, fully demonstrate the complete operation of the system to the satisfaction of the Client’s Representative and/or Fire Officers.

059 Arrange a mutually agreed programme for the above demonstrations with the Client’s Representative.

Documentation

060 The manufacturer shall be required to issue the required fire alarm system test certificate(s) (as detailed in BS 5839: 2013).

061 Record all the audibility test results and present them in tabulated form.

062 Issue copies of all documentation including the above to the Client’s Representative for comment prior to inclusion in the final handover documentation.

Audibility Tests

063 Fully test the fire alarm system's audible alarm facility to ensure that the correct audibility levels are achieved as required by BS 5839: 2013, conduct these tests in the presence of the Client’s Representative, Fire Officer and Client's representative.

064 Carry out the test on completion of the installation when all mechanical plant is fully functioning to ensure that realistic results are obtained.

065 Ensure that the manufacturer measures and records the sound pressure level in each room, area or plant space. Make a number of tests and record in each area to obtain an average value.

066 Immediately inform the Client's Representative in writing, if in any area the required audibility level is not achieved.

Fire Alarm System instruction

067 Note that the Tendered Rates allow for the equipment manufacturers to provide instruction on the use of the complete system for the Client's representative after the contract completion date.

068 The above instruction course shall include a practical demonstration of the installation and equipment. The Contractor is responsible for arranging the required demonstration and agreeing the time and dates with regard to the overall contract programme works.

069 Ensure that the 'As Fitted' drawings and manuals are available before the Client's demonstration and instructions.

070 At practical completion hand over any spare detection bases to the Client's Representative.

071 Provide 10% spare glass and test keys for the alarm break glass units installed. Hand these to the Client's Representative at practical completion and obtain a written receipt, which is issued to the Client's Representative

Spare Components

072 Provide the under noted items as 'SPARES', to be handed over to the Client's Representative at completion of the Contract. All items shall be new, unused and contained within the manufacturer's standard packaging and suitably labelled as to type and use.

073 Provide typewritten schedules detailing the quantities supplied of each item. Hand over all spares in one consignment and obtain a signature for receipt of the goods.

074 The quantities of spares provided are 10% (ten per cent) with a minimum of 3 (three) of any one type and or rating. The 'spares' shall comprise:-

- Indicator lamps or LED's.
- 'End of line' resistors or diodes.
- Printed circuit cards (where these are of the plug-in type).
- Smoke detectors (each type as installed).
- Heat detectors (each type as installed).
- Glasses for break glass units (minimum quantity 5).
- Sounders (each type as installed).
- Special keys for testing or operating equipment (minimum quantity 3).
- Fuses or other safety devices contained within the fire alarm panel(s).
- All similar necessary spares associated with any gas extinguishing system installed

SECTION 5 INSTALLATION OR RENEWAL OF FIRE ALARM SYSTEMS - MONITORED

General

001 All fire alarm systems are to be connected to a nominated control monitoring services to be agreed with the Client.

002 All fire alarm installation equipment must be approved by the Client's Representative.

003 All Systems provided must be open protocol

Specification

004 The Contractor is to supply fit wire and connect a complete fire alarm system or upgrade to an existing system, to BS 7671-2008 and BS 5839: 2013.

Warranty Period

005 The Contractor must provide from the date of practical completion full cover during the warranty period of minimum 12 calendar months.

System Detail

006 The fire alarm system must comprise of an addressable analogue fire alarm (LD1, LD2) system as per the following;

1 The panel to be located in a prominent position adjacent to the main access to the building.

2 A separate dedicated single phase supply from the landlords supply distribution board must be provided via a lock on lock off 6amp 9k rated MCB.

3 The system must consist of break glass units at each exit to the building, at either end of corridors on all floors and at each landing on the stair ways.

4 Smoke detectors must be located as per the recommendations of BS 5839: 2013 in the corridors, common areas and offices.

5 Combined Heat detector/ sounder must be located within the hall way to each flat to give 75db an the bed head

6 Bin stores, Laundry rooms, common kitchen's, plant rooms must contain heat detection, roof voids and common area stores must be covered by smoke detectors.

7 The system must include for all the necessary equipment to interface to the existing monitoring service on site

8 Sounders must be fitted to give adequate coverage of all the common areas.

9 Al cabling must be fire resistant as per the BS 5839: 2013.

Warden Call Linked Smoke Detection

007 Where a warden call system exists within the building that includes a smoke detector the Contractor must ensure that they are fully functioning and connected via the voice link to the monitoring service.

008 Should the above not apply then the Contractor must supply fit wire and connect a smoke detectors linked to the warden call system adjacent to the heat detector in each flat.

009 Should the existing system not facilitate this then the Contractor must supply fit wire and connect a batter/mains smoke detector adjacent to the heat detector.

Automatic Door Closing Devices

010 The Contractor must fit electro magnetic 'hold open' or 'free swing' type door closers to all doors where automatic closing is required by the Fire Officer. This must normally include all main circulation routes through the building including escape stairs and the flat main doors on to communal corridors.

011 The Contractor must include for extra low voltage circuits from suitably rated power supply units wired via the volt free contacts of the fire alarm panel. This system must comply with BS 5839: 2013. The doors must close automatically with the operation of the fire alarm system, on power failure and, in addition, the corridor doors and escape stair doors must close routinely under the control of a time switch. The time switch must be suitably labelled and located in the office. It must initially be set to close the doors at 11.00 p.m. resetting the circuit at 6.00 a.m. to be agreed with the Client's Representative.

SECTION 6 - SPECIFICATION AND GUIDANCE FOR FIRE ALARM SYSTEMS IN HOUSES IN CONVERTED DWELLINGS – NO PANEL REQUIRED

001 This specification is for fire alarms that are required to meet BS 5839: 2013 for installations in "Houses in Multiple Occupation". They may be used to form a "mixed" system either with a Grade A panel controlled system in the halls and landings or a further Grade D system.

002 Grade D detection systems may be used to provide high quality and long life detection in flats, either a single point detector in the circulation area of main living area, or as part of an interconnected system for larger flats.

003 Interconnected systems may also be used to overcome poor layout problems in older flat conversions, such as through lounges.

Power for the system

004 Power for the fire alarm and detection system must be taken from a dedicated landlord's electrical.

005 If there is no separate electric meter for the landlord's supply, a contract only meter must be installed prior to the fire alarm system.

Single interconnected system

006 Grade D systems comprise a series of mains operated alarm/detection units which are sited in the hall, stairs and landing and may also be sited in every risk room.

007 The level of installation should be specific to the particular Property requiring the installation.

008 Each detector/ sounder is to be a stand alone mains operated unit, individual detectors are to be interconnected so that when one unit is activated by fire (or test) the whole system sounds. A sound level of 75dbA is to be achieved in all rooms in the house where occupants may sleep.

009 Optical smoke detectors are to be sited in living rooms, dining rooms, bedsits, halls, and on landings,

010 Fixed heat detectors are to be sited in kitchens or kitchen diners.

011 Each detector is to be fitted with a hard wired rechargeable battery back up supply with a 10 year guarantee.

012 Each detector should be fitted with both a “hush” button for silencing false alarms and a test switch.

Mixed systems

013 The mixed system is to comprise two separately operating smoke detection systems, to be installed in “Houses in Multiple Occupation” comprising converted self contained flats

014 It is to be designed to minimised false alarms. It is most suited to HMOs, but may be specified for other HMOs where risk is reduced.

015 Where an existing single smoke detection system is being improved it is possible to utilise the existing wiring and/or detector heads where appropriate.

016 Main system will comprise a series of optical smoke detectors in the ground floor hallway, first floor landing and second floor landing.

017 Inside each flat/bedsit, a heat detector is to be installed in a suitable location in the circulation space, close to the flat/bedsit entrance door. All the heat detectors are to be linked together to form a system which, when activated, indicates and sounds throughout the Property that evacuation is necessary. The power supply for the detectors is to be taken from the landlords supply.

018 Within each individual flat/bedsit, install a stand alone optical smoke detector complete with remote hush and test facility within the circulation space or living area (taking care not to site too close to kitchens) install. Power for the detector to be taken from electricity supply for the flat/bedsit.

019 No remote hush is required to be fitted to the main system as it is designed to sound when evacuation is necessary. A remote test facility may be fitted for the landlords convenience.

Method to upgrade existing systems using Radiolinking

020 This is applicable to new build houses which have an existing mains operated system fitted when the house was built.

021 The Building Regulations require detectors in hallways/landings – linked together.

022 The best solution is to extend the system to that specified in the schedule of works by changing one of the detector heads to a radio link head.

023 Then other heads can be linked to this main detectors and adjusted to the radiolink frequency so that when one detector is activated by smoke, all the detectors sound.

024 Power will still need to be supplied to each head, as they are mains operated, but the interlinking is provided by radio transmission.

General

025 For non self contained dwellings within “Houses in Multiple Occupation” further features are to be added on the system.

026 The remote hush and test switch (sited in a hallway at a convenient height for single systems) is to be provided and linked to the system

027 An alarm locator switch to turn off all alarms except the one that is activated is to be provided

028 On completion the Contractor should certify that it meets the standard and has been installed in accordance with BS 5839: 2013.

029 The detectors are to be guaranteed for 10 years and planned replacement of detector heads should take place every 10 years, or sooner if faults of defects appear.

030 The use of the Easifit system allows existing detectors to be unclicked and replaced without any changes to the wiring.

031 All Electrical work required to meet the requirements of Part P (Electrical Safety) must be designed, installed, inspected and tested by a electrician competent to do so. Prior to completion the Client must be satisfied that an appropriate electrical installation certificate has been signed and issued for the work.

SECTION 7 - SPECIFICATION AND GUIDANCE FOR FIRE DETECTION AND ALARM INSTALLATIONS

Performance Objectives

001 To provide an open protocol fire alarm system installed throughout the premises, primarily for life safety.

002 Installation is to comply with category L1 and BS 5839: 2013.

003 The system shall be installed in accordance with the specification and drawings. The Contractor is to be accredited with LPS1014 and will be responsible for certification of all aspects of the system in accordance with relevant standards and requirements.

Design Parameters

004 The installation is to be designed to incorporate the requirements imposed by the following standard, regulations and codes of practice:

- BS 7671 – Requirements for electrical installations - IEE Wiring Regulations (incorporating all amendments).
- BS 5839: 2013 – Fire Detection and Fire Alarm Systems for Buildings.
- HTM05-03 Part B: Fire detection and alarm systems.
- BS EN54-2 & 4

System Description

005 This section details the general requirements, but should be read in conjunction with all other relevant sections of this specification.

006 The Contractor shall design, supply and install an addressable fire alarm system to cover the premises providing full L1 coverage in accordance with BS 5839: 2013.

007 The fire alarm system shall utilise analogue addressable fire alarm technology and shall provide a modular fire panel(s) capable of easy expansion at a later date to a minimum of 6 loops to take into account changing site conditions.

008 In order to provide a totally integrated fire alarm system throughout the site, a Communications Network shall be provided. Configured to meet specific site requirements, the communications network shall typically be capable of integrating a master fire alarm annunciator, fire alarm sector panels, and repeat indicators.

009 The cause and effect operation shall be developed in conjunction with the site fire officer, providing full horizontal progressive evacuation throughout all applicable areas.

010 To assist with installation and maintenance, devices should be addressed using a coded plastic card which simply fits into the detector base during commissioning and remains in situ for the life-time of the device; ensuring that the address cannot be accidentally lost and devices do not require re-addressing when changed.

011 All detection devices must be open protocol and available freely from more than one source. It should be possible to adjust sensitivity of the devices to take into account and limit any false alarms within the building, all sensitivity modes should still be fully compliant with the relevant standards and should be third party approved to certify compliance.

012 Where appropriate anti-ligature detectors shall be provided which will release from the separate mounting base if undue pressure is applied. The base shall be permanently fixed to the ceiling and connected to the detector by a plug and socket arrangement, when pressure is applied the base shall remain in place but the detector element shall release - indicating a fault condition on the fire system.

013 Where standalone sounders are provided these shall be in the form of high output loop powered wall mounted units, in the cases where these are integral to the detector position they should also have the ability to provide visual indication to, where appropriate, comply with the requirements of the Equalities act.

014 Manual call points shall be provided to all designated escape routes and final fire exits and in accordance with the requirements of the standards listed above and shall be of the resettable type.

015 Interface units shall be provided as indicated to facilitate control of systems such as:
- Automatic doors/door access system
- Fire door hold open units
- Mechanical plant/equipment
- Lifts

016 Interconnection with the nurse call system (where installed) shall also be provided, allowing the nurse base indicators to also be used to display fire information; the label displayed must be full text information to enable the nursing staff to be aware of the exact location of the fire condition within the building.

017 Future requirements for IP connectivity should also be possible with the chosen equipment allowing interrogation of the system remotely from devices such as Smartphone's, it shall also be feasible to provide interconnection with other either fixed or mobile devices.

018 Generally, wiring shall be in the form of soft skin enhanced fire resisting cabling as stated within BS 5839: 2013. Wiring routes must also be limited and the system should allow for the main fire components, with all the loops, network and power cables, to be mounted within suitable electrical risers with just the control and indicating element mounted within the appropriate positions.

019 An appropriately sized wall mounted framed colour zone chart shall be installed at the main entrance panel position; the chart shall be clearly visible for the attending fire brigade without entering the building.

020 Testing shall be carried out by an approved specialist in accordance with the British Standards and the relevant test certification and log books, etc. shall be made available to the Client prior to practical completion. Client demonstration periods shall be arranged, after the commissioning stage, for key personnel to allow them to operate and monitor the system on a day to day basis.

Product Requirements

Fire Panels

021 The new panel(s) shall be supplied and shall be of a modular format to provide the capability of easy expansion at a later date to a minimum of 6 loops to take into account changing site conditions.

022 The Fire Alarm Panels(s) shall comprise a processor unit and separate annunciator panel. All site wiring shall be terminated into the processor unit allowing it to be easily accessible in a switch cupboard or riser. It shall also be possible to mount the processor unit and annunciator panel to give a combined unit.

023 The processor unit box shall be supplied complete with labeled terminations to permit connection of all cables before the fitting of the necessary control electronics.

024 They shall be capable of allowing the user to take control of a minimum of the following activities, with all access codes provided to the Client:
- Isolation facilities
- Test modes
- Print options
- Programming facilities allowing adding and deleting of detectors, etc.

025 The fire detection system shall allow connection of the following:
- Smoke detectors
- Heat detectors
- Combined smoke detector and sounder
- Combined smoke detector, sounder and strobe
- Resettable call point (MCPs)
- Short circuit isolators
- Interface units for items as shown and detailed
- Magnetic door hold devices

Battery/Charger

026 A charger together with maintenance free sealed lead acid cells shall be supplied suitable for integral mounting within the processor unit, which should be BS EN54-4 compliant.

027 The batteries and charger shall be capable of providing standby power for a period of 24 hours plus a further 30 minutes in alarm load with all sounders operating continuously.

Sensor Bases

028 Sensors shall be designed to fit onto a common mounting base and shall be addressed with the use of a coded plastic card.

029 Each card shall give a unique address to the sensor, which shall be determined by the combination of 'pips' removed. The card shall be placed in the sensor base enabling corresponding switches in the sensor head to operate to produce the correct address. Bases shall be non-polarity sensitive and shall be entirely free of electronic parts. A security screw shall be fitted to each base to avoid unauthorised removal where appropriate.

Sensor Heads

030 All sensor heads shall be of a 'low profile' design. Smoke sensors shall be available in the following forms for use where appropriate:
- Optical
- Ionisation
- Heat
- Multi-sensor heads (optical and heat)

031 Dual LED indicators – controlled by the panel, shall indicate constantly when the sensor is in alarm, allowing full 360O visibility.

032 Detection devices shall operate in one of fire response modes, any of which shall be selected from the fire alarm control panel. Each mode shall correspond to a unique response behavior which shall be broadly related to sensitivity to fire. Whatever the type of detector, Mode 1 shall give a higher sensitivity to fire than Mode 5. Selection of the most suitable mode shall depend upon environmental conditions within the specific areas of the device. All device modes available must be fully compliant with the relevant EN standards and shall have been third party approved to confirm full compliance.

Manual Call Points

033 Manual Call Points shall incorporate an LED indicator and shall be suitable for surface/flush mounting. The units shall be manufactured in red thermoplastic and shall be of the resettable type.

034 Manual Call Points shall incorporate an electronic module together with switches to enable the setting of the address.

Outstations

035 Addressable outstations shall be provided to interface groups/zones of conventional sounders and detectors, door detents, plant control circuits, etc. to the analogue addressable data loop.

036 Outstations shall be modular based and shall be configured to meet individual system requirements.

037 Modules shall be supplied either as individual units housed within separate enclosures or, alternatively, mounted on a din-rail within a multi-way outstation enclosure capable of accommodating up to 10 modules. Depending on the application, outstations shall either take their power directly from the addressable loop or a separate power supply shall be provided.

038 All power supplies shall be EN compliant and outgoing sounder circuits must be monitored for fault conditions and this information shall be relayed to the panel for display.

Visual and Audible devices

039 A wide range of visual and audible devices shall be available for both direct connection to the addressable loops and where appropriate connection to conventional circuits.

16.	Manometers		Examine general condition. Examine fluid in manometers. Replace as necessary. Test against known standard, recalibrate as necessary.	
Tanks, Bunds and Chemical Stores				
17.	General	6 Monthly	Clean and examine. Examine for leakage. Examine general security arrangements.	
18.	Tanks	6 Monthly	Examine general condition. Examine for corrosion or deterioration. Examine protective coatings and linings. Examine elevators, mixing devices and agitators.	
19.	Bunds	6 Monthly	Examine general condition of bunds. Consider size and suitability for application. Clean bunds of all foreign material.	
20.	Stores	6 Monthly	Examine security. Examine access and suitability. Examine ventilation.	
Filters				
21.	General	6 Monthly	Examine internally and externally for general mechanical condition, corrosion and deterioration of protective linings and coatings.	
22.	Strainers	6 Monthly	Clean and examine strainers. Replace gauze as necessary.	
23.	Sand Filters	6 Monthly	Back wash filters. Check filter bed. Measure and record pressure across filter.	
24.	Activated Carbon Filters	6 Monthly	Measure and record pressure across filter. Replace carbon filters as necessary.	See manufacturer's requirements.
25.	Cartridge Filters	6 Monthly	Measure and record pressure across filter. Replace cartridge filters as necessary.	See manufacturer's requirements.
26.	Reverse Osmosis Plant	6 Monthly	Measure and record pressure across plant. Replace membranes as necessary.	See manufacturer's requirements.
Controls				
Item No.	**Item**	**Frequency**	**Action**	**Notes**
27.	Control Panels	6 Monthly	Clean interior and exterior of control panels.	

			Ensure identification labels are correct, legible and in position. Examine and test indicator lamps, renew as necessary. Clean and test selector switches. Examine condition of panel wiring. Ensure that wiring terminal connections are sound. Examine earthing arrangements and test continuity. Examine fuse holders, ensure that correct fuses are fitted. Examine relays, clean and adjust as necessary. Examine contactors and overload relays, clean and adjust as necessary. Ensure overloads are set for load conditions. Examine isolator and interlock. Examine protective guards. Examine circuit boards. Ensure they are securely located. Examine circuit boards for evidence of over heating or component failure.	
28.	Sensors and Detectors	6 Monthly	Examine condition. Examine fixings. Examine pockets, enclosures, etc. Examine terminal connections. Examine condition of wiring. Test output and compare to manufacturer's parameters. Recalibrate as necessary.	
Electrical Installation				
29.	Electrical Installation	6 Monthly	Examine local isolators and connections to the fixed wiring installation. Examine flexible cables for wear, fraying braid and brittle insulation. Examine connections. Test insulation resistance. Examine earthing arrangements and test continuity.	
30.	Electrical Installation – Fixed Wiring	Annually	Carry out a periodic inspection with associated circuit tests in accordance with the requirements of the specification and BS 7671+A1: Requirements for Electrical Installation.	
Water Softening Equipment				
31.	Cation Exchange Systems	6 Monthly	Clean and examine equipment. Test for leakage. Undertaken regeneration cycle, measuring key parameters pre and post regeneration cycle. Renew resins and regenerative materials as necessary.	See manufacturer's requirements.

			Measure hardness of water at point of delivery and after softener. Compare to design parameters and commissioning data.	
Item No.	**Item**	**Frequency**	**Action**	**Notes**
Disinfection Equipment				
32.	Chlorination Equipment	6 Monthly	Examine sodium hypochlorite or calcium hypochlorite tanks, mixing systems, pipe, injectors, etc. for leaks, corrosion and/or deterioration. Test concentration levels. Adjust as necessary.	See manufacturer's requirements.
33.	Chlorine Dioxide Systems	6 Monthly	Clean and examine equipment. Test for leakage. Examine generators and injectors. Test concentration levels. Adjust as necessary.	See manufacturer's requirements. Compare to design parameters and recommendations in HSE document L8.
34.	Ionisation Systems	6 Monthly	Clean and examine equipment. Test for leakage. Examine electrodes. Replace as necessary. Test concentration levels. Adjust as necessary.	See manufacturer's requirements. Compare to design parameters and recommendations in HSE document L8.
35.	Ozone Systems	6 Monthly	Clean and examine equipment. Test for leakage. Examine generators and injectors. Test concentration levels. Adjust as necessary.	See manufacturer's requirements. Compare to design parameters and recommendations in HSE document L8.
36.	UV Systems	6 Monthly	Clean and examine equipment. Test operation of UV lamps. Replace as necessary.	
Gas Bottles and Injection Systems				
Item No.	**Item**	**Frequency**	**Action**	**Notes**
37.	Gas Bottles	6 Monthly	Examine gas bottle carriers.	

			Examine framework and support chains. Examine gauges. Ensure gas bottles are securely fixed.	
38.	Regulators and Reduction Valves	6 Monthly	Check pressure regulators and sensors. Examine gauges. Examine manifold tailpipes for cracks, chaffing, damage to threads and test for leaks. Test safety valves. Test joints, connections, glands and seals for leaks. Pressure test manifolds.	
39.	Pipework and Injectors	6 Monthly	Examine pipework, hangers and supports. Examine for corrosion. Pressure test pipework. Clean and examine injectors.	

THERMOSTATIC MIXING VALVE MAINTENANCE

General Requirements

001 The Contractor shall be deemed to have read the whole of this specification together with the Client's requirements' and will be deemed to have included in his Tendered Rates for full compliance.

The Contractor is required to provide a 24 hour breakdown service 365 days per annum.

Asset Register

002 The Contractor must ensure that all the asset registers supplied by the Client prior to the commencement of the Contract are verified during the first month of the contract period and any discrepancies made known, in writing, to the Client's Representative.

003 At the commencement of the Contract, a set of services drawings may be issued to the Contractor who shall ensure that, during each maintenance service element, the respective drawing shall be marked up by him to indicate the actual installed services. At the completion of each element the marked-up drawings shall be returned to the Client's Representative.

Maintenance Reports

004 The Contractor shall ensure that, following all inspection visits, conditional reports shall be submitted to the Client's Representative in electronic format, including all specialist reports and test equipment printouts.

005 The Contractor shall provide to the Client's Representative copies of the site risk assessment, method statement and COSHH assessments issued to the Contractor's Staff and to his specialist sub-contractors.

Manufacturer's Requirements

006 Where manufacturer's instructions exceed the requirements of this document they shall be adhered to in their entirety.

Programming of Works

007 The Contractor must within 20 working days of the award of the contract submit and agree a full annual programme for all works covering each element of the maintenance works with the Client's Representative.

008 The Contractor must ensure that all the dates contained within the programme have been agreed with the Client and that the equipment will be made accessible for service on the agreed dates.

Permit to Work Certification

009 If it is deemed necessary by the Client's Representative for the need for a permit to be issued before any work is undertaken on the system, the Contractor shall ensure his compliance with the permit to work system as employed by the Client's Representative.

Access

010 The Contractor shall ensure that he undertakes a risk assessment and provides a method statement for his means of access to allow for inspection and testing.

011 All works shall be carried out in strict accordance with the requirements of “The Work at Height Regulations 2005”.

012 The Contractor shall ensure that all personnel employed upon this contract are suitable trained and experienced and competent to work at height.

Guidance

013 The Contractor shall refer to the specification and to the British Standards Institution publications for detailed guidance. Other guidance is available from the HSE, NHS Estates, the Water Regulations Advisory Scheme and the Thermostatic Mixing Valve Manufacturer’s Association.

The Contractor shall pay particular attention to:

- NHS Estates Health Guidance Note – ‘SAFE’ hot water and surface temperatures.
- Building Regulation Approved Document G.
- Thermostatic Mixing Valve Manufacturer’s Association Recommended Code of Practice for Safe Water Temperatures.
- HSE document L8: The prevention and control of legionellosis (including Legionnaires’ disease).
- The Water Supply (Water Fittings) regulations.
- WRAS Water Regulations Guide.
- BS EN1287 1999 ‘Sanitary tap ware – low pressure thermostatic mixing valves’
- BS 7942: 2011 Thermostatic Valves for use in care establishments.
- BS 6700:2006+A1:2009 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their cartilages.

Minor Repairs

014 The Contractor shall, during testing, carry out minor repairs such as tightening joints, replacement of clips, etc to achieve a pass status and make appliances safe to ensure compliance with BSEN62305:2006.

Periodic Inspections and Testing

015 Inspection and testing of thermostatic mixing valves must unless otherwise instructed by the Client’s Representative be carried out in accordance with the requirements tabled below;

Item No.	Item	Frequency	Action	Notes
System Information				
1.	The Contractor shall examine records pertaining to each TMV. All TMVs should be identified by a unique asset number. In particular the Contractor shall ensure the presence of the following information:			

	‘As-fitted’ drawings Manufacturer’s installation and maintenance manual Commissioning and testing records. Maintenance records			
Item No.	**Item**	**Frequency**	**Action**	**Notes**
Testing				
2.	Water Treatment	6 Monthly	Measure temperature of water flow at normal flow rate and after allowing stabilisation. Repeat temperature test at approximately ¼ normal flow rate. Temperature range should be as required in Health Guidance Note ‘Safe’ hot water and surface temperatures (Section 3 Table 1).	Use a digital thermometer of known accuracy, with a minimum refresh rate of 4 times per second.
3.	Fail Safe Action	6 Monthly	Isolate cold water supply. Ensure all hot water ceases to flow in time specified by manufacturer for valve type.	
4.	Flow Rate	6 Monthly	Measure flow rate. Compare flow to commissioning data and previous maintenance records.	Undertake maintenance as appropriate
Inspection and Maintenance				
5.	TMV – General	Annually	Examine for leaks. Examine for corrosion. Examine connections, hoses and outlets. Examine fixings. Descale in accordance with manufacturer’s instructions. Sterilise shower heads as required by legionella risk management plan.	
6.	Pipework	Annually	Examine for leaks. Examine hangers and supports, adjust as necessary. Examine for corrosion. Examine thermal insulation. Record hot and cold water temperatures.	
Item No.	**Item**	**Frequency**	**Action**	**Notes**

7.	Isolation Valves	6 Monthly	Examine for leaks. Test valves for free travel. Repack if necessary. Examine for corrosion.	
8.	Strainers	6 Monthly	Examine general medical condition. Clean strainers and filters.	
9.	Repairs		If repairs are necessary, all works shall be carried out in strict compliance with manufacturer's recommendations and requirements. Upon completion of works the TMV shall be recommissioned in accordance with the manufacturer's instructions. Record commissioning data.	

LOT 6 LAUNDRY & KITCHEN EQUIPMENT MAINTENANCE

General Requirements

001 The Contractor shall be deemed to have read the whole of this specification together with the Client's requirements' and will be deemed to have included in his Tendered Rates for full compliance.

Personnel

The Contractor shall employ a competent approved gas technician who has undertaken suitable training to an approved standard. A minimum of modules:

- COMCAT 1 – Commercial Catering Ranges
- COMCAT 2 – Commercial Gas Water Boilers
- COMCAT 3 – Commercial Catering Fryers

Shall be held.

Additionally, where necessary the following modules shall be held:

- COMCAT 4 – Commercial Catering Fish and Chip Ranges
- COMCAT 5 – Commercial Catering Forced Draught Burners

All ACS assessment shall have been undertaken within the previous five years.

A person of equal competence shall supervise the works.

The Contractor is required to provide a 24 hour breakdown service 365 days per annum.

Asset Register

002 The Contractor must ensure that all the asset registers supplied by the Client prior to the commencement of the Contract are verified during the first month of the contract period and any discrepancies made known, in writing, to the Client's Representative.

003 At the commencement of the Contract, a set of services drawings may be issued to the Contractor who shall ensure that, during each maintenance service element, the respective drawing shall be marked up by him, to indicate the actual installed services. At the completion of each element the marked-up drawings shall be returned to the Client's Representative.

Maintenance Reports

004 The Contractor shall ensure that, following all inspection visits, conditional reports shall be submitted to the Client's Representative in electronic format, including all specialist reports and test equipment printouts.

005 The Contractor shall provide to the Client's Representative copies of the site risk assessment, method statement and COSHH assessments issued to the Contractor's Staff and to his specialist sub-contractors.

Manufacturer's Requirements

006 Where manufacturer's instructions exceed the requirements of this document they shall be adhered to in their entirety.

Programming of Works

007 The Contractor must within 20 working days of the award of the contract submit and agree a full annual programme for all works covering each element of the maintenance works with the Client's Representative.

008 The Contractor must ensure that all the dates contained within the programme have been agreed with the Client and that the equipment will be made accessible for service on the agreed dates.

Permit to Work Certification

009 If it is deemed necessary by the Client's Representative for the need for a permit to be issued before any work is undertaken on the system, the Contractor shall ensure his compliance with the permit to work system as employed by the Client's Representative.

Access

010 The Contractor shall ensure that he undertakes a risk assessment and provides a method statement for his means of access to allow for inspection and testing.

011 All works shall be carried out in strict accordance with the requirements of "The Work at Height Regulations 2005".

012 The Contractor shall ensure that all personnel employed upon this contract are suitable trained and experienced and competent to work at height.

Guidance

013 The Contractor shall refer to the specification and to the Institution of Gas Engineers and Managers publications for detailed guidance. Other guidance is available from the HSE, GasSafe and the Water Regulations Advisory Scheme.

The Contractor shall pay particular attention to:

- IGE/UP/1 Edition 2 Strength testing, tightness testing and direct purging of industrial and commercial gas installations.
- IGE/UP/1A Edition 2 Strength testing, tightness testing and direct purging of small, low pressure industrial and commercial Natural Gas installations.
- IGE/UP/2 Gas installation pipework, boosters and compressors on industrial and commercial premises.
- IGE/UP/10 Edition 2 Installation of gas appliances in industrial and commercial premises. Part 1: Flued appliances.

The Contractor shall pay particular attention to the HSE's 'CAIS' series of leaflets and especially:

- *CAIS 12: Maintenance priorities in catering.*
- *CAIS9: Planning for Health and Safety when selecting and using catering equipment and workplaces.*
- *CAIS3: Precautions at manually ignited gas-fired catering equipment.*
- *CAIS17: Safety during emptying and cleaning of fryers. CAIS23: Gas safety in catering and hospitality.*

Further guidance includes:

- *HS(G)35 Catering Safety: Food preparation machinery.*
- *HS(G)55 Health and safety in kitchens and food preparation areas. HS(G)107 Maintaining portable electrical equipment.*
- *Work equipment. Provision and Use of Work Equipment Regulations 1992. Guidance on the regulations L22 1992.*

Guidance concerning the Water Regulations is available from the Water Regulations Advisory Scheme (WRAS) and detailed advice is contained within:

Water Regulations Guide Second Edition.

The maintenance, inspection and testing of local exhaust ventilation and combustion ventilation is the subject of another module of the CLAW specifications. However, the Contractor shall undertake his works in cognisance appropriate regulations and the HSE's guidance. Any obvious or perceived deficiencies shall be reported to the Client's Representative

Minor Repairs

014 The Contractor shall, during testing, carry out minor repairs such as tightening joints, replacement of clips, etc to achieve a pass status and make appliances safe to ensure compliance with BSEN62305:2006.

Periodic Inspections and Testing

015 Inspection and testing of commercial catering equipment must unless otherwise instructed by the Client's Representative be carried out in accordance with the requirements tabled below;

General Note

Operational maintenance items such as blade replacement; sharpening, functional adjustments, etc., have not been included as part of this specification. The manufacturer's instructions, recommendations and requirements shall be observed in every respect.

Kitchen Ventilation

This specification does not include for maintenance of the ventilation systems in kitchens. Any maintenance works on these systems shall be subject to the appropriate specifications.

Kitchen Electrical Installation

This specification does not include periodic inspection and testing of the fixed electrical installation. Reference should be made to the appropriate specifications.

Nevertheless, as a part of their maintenance, inspection and testing of kitchen equipment, Contractors shall examine emergency isolation methods and test the operation of key locks, emergency stops, contactors and isolators.

The Contractor shall also report inappropriate or inadequate lighting, emergency lighting and any perceived deficiencies in automatic fire detection.

Deep Cleaning

Deep cleaning is not included within this specification. Reference should be made to the appropriate specifications for further guidance.

Asbestos

The Contractor shall be aware that for many years asbestos containing materials were used in the construction of kitchen equipment.

The Contractor shall examine the **'Asbestos Register'** for the premises to be maintained prior to the commencement of any works.

If, during the progress of maintenance works, the presence of asbestos is suspected, all works shall cease and the Contractor shall inform the Client's Representative as a matter of urgency. The Client's Representative will issue instructions as appropriate.

No works shall be undertaken that may result in the release of asbestos fibre.

Kitchen Equipment Servicing

Item No.	Item	Frequency	Action	Notes
1.	**Safety Devices (general)**			
1.1	General		Examine burners, controls and thermostats. Examine safety and ignition devices. Examine fusible links. Examine safety valves. Examine safety guards.	
1.2	Fat Fryers		Examine and test thermostats. Both control and limit thermostats must operate at the correct temperature	Guidance is included in the preliminaries to this maintenance module
1.3	Flame failure devices		Examine and test flame failure devices.	Report the absence of flame failure devices
2.	**Gas Supply (general)**			
2.1	Tightness test		Carry out tightness testing of the local kitchen gas installation in accordance with the requirements of IGE/UPIA.	
2.2	Emergency isolation		Examine emergency isolation valves. Test operation of emergency isolation valves. Ensure appropriate notices are in place.	Report compliance with BS6173:2009
2.3	General		Examine pipework connections and supports. Examine for corrosion. Test pipe connections for leaks. Drain condensate traps. Test gas pressure; adjust governor as necessary Test valves and cocks; lubricate where required to ensure efficient operation and soundness. Ensure all flexible connections comply with BS669 Part 2:1997 Ensure restraining cables comply with the requirements of BS6173:2009	
3.	**Water Services (general)**			
3.1	General		Ensure that at its point of entry to the kitchen/servery area, the cold water main is fitted with an appropriate isolating valve and a suitably colour coded label marked ‘WATER’.	
3.2	Pipework		Examine pipework connections and supports. Examine for corrosion. Examine pipe connections for leaks. Examine thermal insulation. Test valves for free travel.	
Item No.	**Item**	**Frequency**	**Action**	**Notes**

3.	**Water Services (general)** (cont'd)		
3.3	Appliances	Clean and flush out water tanks. Test ball valves and stop cocks. Rewasher ball valves. Examine water level. Check and rewasher fill taps. Check and regrease all drain valves. Check, clean and grease waste stack. Check valve on sterilizer waste.	Report any deviation from the Water Regulations.
4.	**Standard Requirements**		
4.1	General	Ensure that all maintenance works are carried out in strict accordance with manufacturer's requirements and recommendations. Examine doors, runners, door furniture, channels, hinges, seals, shelves and rollers, trays and refractory linings. Clean and examine filters and sight glasses. Apply protective coatings as necessary. Examine thermal insulation. Examine legs, frames and fixing of all appliances. Carry out a full heat test, check operation and calibration of all control and limit thermostats. Recalibrate as necessary.	Remedy any defects. $\pm 5^{o}C$ mechanical thermostats $\pm 1^{o}C$ electronic thermostats
5.	**Machines (general)**		
5.1	General	Examine bearings and drives. Clean and lubricate as necessary. Test safety devices. Examine securing bolts, tighten as necessary.	

Item No.	Item	Frequency	Action	Notes
6.	**Gas Fired Appliances (general)**			
6.1	General		Remove all burners, clean and check burners, aeration screws and injectors. Remove gas pilots, clean and check. Test and adjust burners, controls and thermostats. Clean all heat exchanger surfaces (hot plates). Clean and test for leaks. Test thermostats. Regrease all gas taps and cocks. Replace thumb pieces as applicable. Test flame failure devices. Examine thermocouples. Test any high limit protection. Overhaul and test governors. Test for gas escapes during operation. Test thermostats at two settings, recalibrate as necessary.	$\pm 5^{o}$C mechanical thermostats $\pm 1^{o}$C electronic thermostats
7.	**Electrical Services**			
7.1	General		Examine flexible cables for wear, fraying braid and brittle insulation. Examine plugs for cracks, loose terminals, reverse polarity, ensure that correct fuses are fitted. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Examine mechanical condition of equipment. Test safety devices.	
8.	**Single and Double Hotplate Ranges**			
8.1	General		Examine legs, frames and fixing of all appliances. Examine for corrosion. Examine thermal insulation. Examine general mechanical condition. Clean hotplate wells.	

Item No.	Item	Frequency	Action	Notes
8.	**Single and Double Hotplate Ranges** (cont'd)			

8.2 Gas fired ranges of any defects		Check operation of appliance. Turn off gas supply. Strip hotplates, clean and overhaul all burners, injectors and air sleeves. Overhaul governor. Clean cooker hotplate well. Replace all burners. Remove oven burners, clean and overhaul all burner-injectors. Check flue. Check thermostats for correct location; test and ease head as necessary. Ease and grease all hotplate and oven taps. Light and regulate all burners. Test thermostats at two settings, recalibrate as necessary.		Inform Client's Representative or faults. ±5°C mechanical thermostats ±1°C electronic thermostats
8.3 Electric ranges		Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are corrected connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Measure resistance.		
9. Steam Ovens, Combination Ovens, Convection/Regeneration Ovens, etc.				
9.1 General items of applying		Examine doors, runners, door furniture, channels, hinges, seals, shelves and rollers, trays and refractory linings. Clean and examine filters and sight glasses. Apply protective coatings as necessary. Examine thermal insulation. Examine legs, frames and fixing of all appliances. Clean and flush out water tanks. Test ball valves and stop cocks. Rewasher ball valves. Examine water level. Check and rewasher fill taps.		Some steam ovens are specialist equipment subject to the regulations to pressure vessels. A written scheme of examination is required.
Item No.	**Item**	**Frequency**	**Action**	**Notes**
9. Steam Ovens, Combination Ovens, Convection/Regeneration Ovens etc. (cont'd)				
9.2 Gas Fired			Remove all burners, clean and check burners, aeration screws and injectors.	

			Remove gas pilots, clean and check. Test and adjust burners, controls and thermostats. Clean and test for leaks. Test thermostats. Regrease all gas taps and cocks. Replace thumb pieces as applicable. Test flame failure devices. Examine thermocouples. Test any high limit protection. Overhaul and test governors. Test for gas escapes during operation. Test thermostats at two settings, recalibrate as necessary.	±5°C mechanical thermostats ±1°C electronic thermostats
9.3	Electrically heated		Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Measure resistance. Test thermostats at two settings, recalibrate as necessary.	±5°C mechanical thermostats ±1°C electronic thermostats
10.	**Single and Double Oven Ranges, Roasting Ovens, Pastry Ovens etc.**			
10.1	General		Examine doors, runners, door furniture, channels, hinges, seals, shelves and rollers, trays and refractory linings. Clean and examine filters and sight glasses. Apply protective coatings as necessary. Examine thermal insulation. Examine legs, frames and fixing of all appliances.	

Item No.	Item	Frequency	Action	Notes
10.	**Single and Double Oven Ranges, Roasting Ovens, Pastry Ovens etc.** (cont'd)			
10.2	Gas Fired		Remove all burners, clean and check burners, aeration screws and injectors. Remove gas pilots, clean and check. Test and adjust burners, controls and thermostats. Clean and test for leaks. Test thermostats. Regrease all gas taps and cocks.	

	Replace thumb pieces as applicable. Test flame failure devices. Examine thermocouples. Test any high limit protection. Overhaul and test governors. Test for gas escapes during operation. Test thermostats at two settings, recalibrate as necessary.	±5°C mechanical thermostats ±1°C electronic thermostats
10.3 Electrically heated	Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Measure resistance. Test thermostats at two settings, recalibrate as necessary.	±5°C mechanical thermostats ±1°C electronic thermostats
11. Micro Wave Ovens		
11.1 General	Examine equipment casing. Examine door. Examine hinges and catches. Examine door seal. Clean and examine interior of ovens. Examine rotary tables. Examine lamps. Carry out radiation leakage test using appropriate test meter.	Copies of calibration certificates shall be appended to report.

Item No.	Item	Frequency	Action	Notes
11.	**Micro Wave Ovens** (cont'd)			
11.2	Electrical		Examine flexible cables for wear, fraying braid and brittle insulation. Examine plugs for cracks, loose terminals, reverse polarity, ensure that correct fuses are fitted. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Examine mechanical condition of equipment. Test safety devices.	
12.	**Baine Marie**			
12.1	General		Examine legs, frames and fixing of all appliances. Examine for corrosion. De-scale tanks and baths. Examine food containers. Examine drain cocks.	
12.2	Gas Fired		Remove all burners, clean and check burners, aeration screws and injectors. Remove gas pilots, clean and check. Test and adjust burners, controls and thermostats. Clean and test for leaks. Test thermostats. Regrease all gas taps and cocks. Replace thumb pieces as applicable. Test flame failure devices. Examine thermocouples. Test any high limit protection. Overhaul and test governors. Test for gas escapes during operation.	

Item No.	Item	Frequency	Action	Notes
12.	**Baine Marie** (cont'd)			
12.3	Electrically heated		Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Measure resistance.	
13.	**Hot Cupboards**			
13.1	General		Examine doors, runners, door furniture, channels, hinges, seals, shelves and rollers, trays and refractory linings. Clean and examine filters and sight glasses. Apply protective coatings as necessary. Examine thermal insulation. Examine legs, frames and fixing of all appliances.	
13.2	Gas Fired		Remove all burners, clean and check burners, aeration screws and injectors. Remove gas pilots, clean and check. Test and adjust burners, controls and thermostats. Clean and test for leaks. Test thermostats. Regrease all gas taps and cocks. Replace thumb pieces as applicable. Test flame failure devices. Examine thermocouples. Test any high limit protection. Overhaul and test governors. Test for gas escapes during operation. Test thermostats at two settings, recalibrate as necessary.	$\pm 5^{o}C$ mechanical thermostats $\pm 1^{o}C$ electronic thermostats

Item No.	Item	Frequency	Action	Notes
13.	**Hot Cupboards** (cont'd)			
13.3	Electrically heated		Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Measure resistance.	
14.	**Grilles, Salamanders, Toasters, Fryplates, Griddles, Bratt Pans**			
14.1	General		Examine legs, frames and fixing of all appliances. Examine shelves and rollers, trays and refractory linings. Examine mechanical condition.	
14.2	Gas Fired		Remove all burners, clean and check burners, aeration screws and injectors. Remove gas pilots, clean and check. Test and adjust burners, controls and thermostats. Clean and test for leaks. Test thermostats. Regrease all gas taps and cocks. Replace thumb pieces as applicable. Test flame failure devices. Examine thermocouples. Test any high limit protection. Overhaul and test governors. Test for gas escapes during operation.	
14.3	Electrically heated		Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Measure resistance.	
Item No.	**Item**	**Frequency**	**Action**	**Notes**
15.	**Boiling Pans, Stock Pot Stands, Bulk Hot Water Boilers, Tilting Kettles**			
15.1	General		Examine legs, frames and fixing of all appliances. Examine for corrosion.	

	De-scale tanks and baths. Examine drain cocks. Check and rewasher fill taps. Examine trunions, lubricate as necessary.
15.2 Gas Fired	Remove all burners, clean and check burners, aeration screws and injectors. Remove gas pilots, clean and check. Test and adjust burners, controls and thermostats. Clean and test for leaks. Test thermostats. Regrease all gas taps and cocks. Test flame failure devices. Examine thermocouples. Test any high limit protection. Overhaul and test governors. Test for gas escapes during operation. Clean and examine flue ways.
15.3 Electrically heated	Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Measure resistance.

Item No.	Item	Frequency	Action	Notes
16.	**Deep Fat and Fish Fryers (Single and Double Pan)**			
16.1	General		Examine legs, frames and fixing of all appliances. Examine doors, lids and baskets. Examine fusible links. Examine mechanical condition. Examine fire protection systems where fitted.	Report type in asset register
16.2	Gas Fired		Remove all burners, clean and check burners, aeration screws and injectors. Remove gas pilots, clean and check. Test and adjust burners, controls and thermostats. Clean and test for leaks. Test thermostats. Regrease all gas taps and cocks. Test flame failure devices. Examine thermocouples. Test any high limit protection. Overhaul and test governors. Test for gas escapes during operation. Clean and examine flue ways.	
16.3	Electrically heated		Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Measure resistance.	

Item No.	Item	Frequency	Action	Notes
16.	**Deep Fat and Fish Fryers (Single and Double Pan)** (cont'd)			
16.4	Thermostats		Of all equipment used in Catering Areas, fat fryers are most frequently involved in fires. The most common cause is overheating of the oil or fat. Normal frying temperature is within the range: **163ºC to 188ºC (325ºF to 370ºF)** For safe operation the limit of overriding thermostat **must** be set below the flash point: Groundnut Oil 250ºC (482ºF) Corn Oil 243ºC (469ºF) Lard 275ºC (527ºF) Dripping 246ºC (475ºF) Hydrogenated Cooking Fat 228ºC (442ºF)	
17.	**Cafeteria Boilers**			
17.1	General		Examine legs, frames and fixing of all appliances. Clean and flush out water tanks. Test ball valves and stop cocks. Rewasher ball valves. Examine water level. Check and rewasher fill taps. Desludge boiler. Examine draw off cocks, replace washers as necessary.	Report plastic draw off cocks
17.2	Gas Fired		Remove all burners, clean and check burners, aeration screws and injectors. Remove gas pilots, clean and check. Test and adjust burners, controls and thermostats. Clean and test for leaks. Test thermostats. Regrease all gas taps and cocks. Test flame failure devices. Examine thermocouples. Test any high limit protection. Overhaul and test governors. Test for gas escapes during operation. Clean and examine flue ways.	

Item No.	Item	Frequency	Action	Notes
17.	**Cafeteria Boilers** (cont'd)			

17.3 Electrically heated	Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Measure resistance.	
18. Cafeteria Type Steam Boilers		
18.1 General specialist items	Ensure that all maintenance works are carried out in strict accordance with manufacturer's requirements and recommendations. Examination of the pressure vessel in accordance with the written scheme. Otherwise maintain as per Cafeteria boilers.	Cafeteria type steam boilers are of equipment. They are subject to the regulations applying to pressure vessels. A written scheme of examination is required.
19. Milk and Coffee Urns, Indirectly Heated Urns, etc.		
19.1 General	Clean and examine urn. Clean and examine sight glasses. Examine water jackets, descale as necessary. Otherwise maintain as per Cafeteria Boilers.	
20. Sterilising Units		
20.1 General	Examine legs, frames and fixing of all appliances. Examine for corrosion. De-scale tanks and baths. Examine drain cocks. Check and rewasher fill taps. Check valve on sterilizer waste.	

Item No.	Item	Frequency	Action	Notes
20.	**Sterilising Units** (cont'd)			
20.2	Gas Fired		Remove all burners, clean and check burners, aeration screws and injectors. Remove gas pilots, clean and check. Test and adjust burners, controls and thermostats. Clean and test for leaks. Test thermostats. Regrease all gas taps and cocks. Test flame failure devices. Examine thermocouples. Test any high limit protection. Overhaul and test governors. Test for gas escapes during operation. Clean and examine flue ways.	
20.3	Electrically heated		Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine heating element enclosures, heating elements and connections. Measure resistance.	
21.	**Vegetable Preparation Machines, Potato Peelers**			
21.1	Appliances		Examine bed plate mountings, secure as necessary. Examine safety guards, ensure they are appropriate, in position and securely fixed. Examine drive belts, tension as necessary. Examine and test mechanical condition of plant and equipment. Lubricate in strict accordance with manufacturer's recommendations. Examine abrasive discs and lining. Examine inlet screens, seals and bearings.	
21.2	Motors and Gearboxes		Clean as necessary, remove surplus oil and grease. Examine securing bolts and anti-vibration mountings, secure as necessary. Examine pulleys and keys. Examine alignment between motor and load. Test bearings for play.	

Item No.	Item	Frequency	Action	Notes
21.	**Vegetable Preparation Machines, Potato Peelers** (cont'd)			

21.3 Water and drainage systems	Clean and flush out. Rewasher taps. Examine inlet screens, seals and bearings. Test drains to ensure free flow.
21.4 Electrical installation	Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are corrected connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine and test safety interlocks.
22. Food Slicers	
22.1 General	Examine bed plate mountings, secure as necessary. Examine safety guards, ensure they are appropriate, in position and securely fixed. Examine drive belts, tension as necessary. Examine and test mechanical condition of plant and equipment. Lubricate in strict accordance with manufacturer's recommendations. Examine blade. Examine blade guard and retaining shaft. Test operation of blade guard. Examine blade adjustment.
22.2 Electrical installation	Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine and test safety interlocks.

Item No.	Item	Frequency	Action	Notes
23.	**Dish Washers**			
23.1	General		Examine legs, frames and fixing of all appliances. Examine for corrosion. Examine doors, hoods and baskets. Examine runners, channels and drainage boards. Examine mechanical condition. Examine gauges. Examine temperature settings during wash and dry cycles.	
23.2	Water and drainage systems		Clean and flush out. Rewasher taps. Examine inlet screens, seals and bearings. Test drains to ensure free flow.	
23.3	Electrical installation		Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine and test safety interlocks.	
23.4	Detergent dosing system		Examine dosing pumps. Examine detergent reservoirs. Examine fixed and flexible pipework. Examine nozzles, check valves and suction ends. Examine control boxes.	
24.	**Waste Disposal Units**			
24.1	General		Examine mountings, secure as necessary. Examine safety guards, ensure they are appropriate, in position and securely fixed. Examine and test mechanical condition of plant and equipment. Lubricate in strict accordance with manufacturer's recommendations. Examine grinding discs and lining. Examine inlet screens, seals and bearings.	
24.2	Water and drainage systems		Clean and flush out. Rewasher taps. Examine inlet screens, seals and bearings. Test drains to ensure free flow.	

Item No.	Item	Frequency	Action	Notes
24.	**Waste Disposal Units** (cont'd)			
24.3	Electrical installation		Examine flexible cables for wear, fraying braid and brittle insulation. Examine colour coding of cables, ensure cores are correctly connected. Examine earthing arrangements and test continuity. Test mechanical action and polarity of equipment switches. Clean and test control and regulating switches, pilot lamps, thermostats and timing devices. Examine and test safety interlocks.	