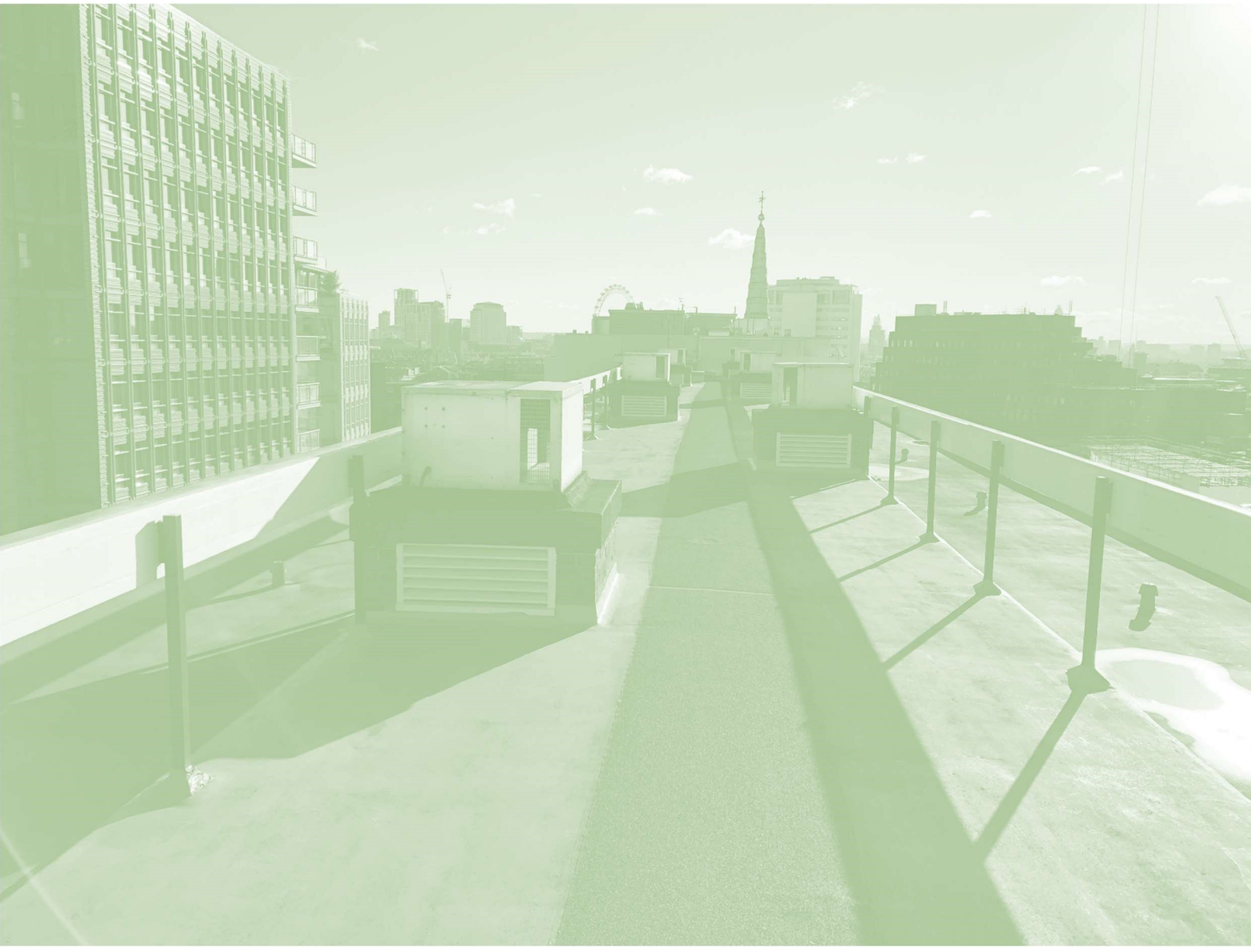
FLOH

HML PROPERTY MANAGEMENT LTD

CENTRE POINT HOUSE

VENTILATION SYSTEMS REPLACEMENT

Revision 00



VERSION CONTROL

REVISION	ISSUED FOR	DATE	AUTHOR	CHECKED BY
00	Tender	01/04/21	JG/MF	AM

Disclaimer

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A PRELIMINARIES / GENERAL CONDITIONS

A1 PROJECT PARTICULARS

This document sets out the technical requirements associated with the installation of new local extract ventilation systems serving sanitary accommodation in each of the apartments and decommissioning of existing central systems at Centrepoint House, London, on behalf of the building management company, HML Property Management Ltd.

A1.1 The site

Centre Point house comprises 36 duplex apartments over six storeys, with access at levels 3, 5 and 7. Lower levels of the building are occupied by retail accommodation.

A1.2 Background

Existing central ventilation installations are approaching end of life and fire protection issues have been identified with the existing configuration, replacement local systems are thus proposed.

A1.3 Site coordination and cooperation

It should be noted this is a residential building and will be occupied throughout the duration of works.

Space for deliveries and parking are limited. The contractor shall coordinate with and integrate the installation with the work of others at all times and make itself aware of the work of other trades to ensure that full collaboration and cooperation is maintained at all times.

Co-ordination meetings will be held between relevant sub contractors and the main contractor at which the contractor is to be represented by senior personnel.

The contractor shall ensure that management and supervision is maintained for the works on the site during normal working hours when the site is open. All significant types of work must be under the close control of competent trade supervisors to ensure maintenance of satisfactory quality and progress. The site organisation staff must include persons with appropriate knowledge and experience of mechanical and electrical engineering services to ensure compatibility with the works in general.

A1.4 Specific limitations

The contractor must not use or occupy or permit the site or any land upon which the works are being undertaken to be used or occupied for any purpose other than the carrying out of the works. It shall also not deposit or manufacture or permit to be deposited or manufactured on the site or any land upon which the works are being undertaken any materials which are not required for the carrying out of the works.

The contractor shall also not permit or suffer the storage of materials or the parking of vehicles in the immediate external vicinity of the boundaries of the sites by the contractor, or any building sub contract or other than for reasonable periods necessary for loading and unloading.

Outside normal working hours the contractor shall ensure that the site is closed and secured.

Working hours are normally 8.00 a.m. to 6.00 p.m., Monday to Friday. No work shall be executed outside these times unless in exceptional circumstances and then only with the written approval of the employer’s representative.

The contractor shall take all precautions necessary to ensure the safety residents and general public. The contractor shall ensure that plant and equipment is not left unattended and is secured during periods when the site is vacated.

A1.5 Noise and Nuisance

Ensure that the contract works are undertaken with as little noise as possible.

Ensure no nuisance by noisy working is caused to the employer or occupants of premises within and next to the site boundary.

The contractor's attention is drawn to statutory requirements regarding the control of noise and pollution in relation to the demolition and construction works and to the need to obtain all necessary prior consents from the relevant Authorities.

The contractor shall at all times prevent any public or private nuisance (including, without limitation, any such nuisance caused by noxious fumes, noisy working operations or the deposit of any material or debris on the public highway) or other interference with the rights of any adjoining or neighbouring land owner(s), tenant or occupier or any statutory undertaker arising out of the carrying out of the works and shall assist the Employer in defending any action or proceedings which may be instituted in relation thereto.

The contractor shall not permit radios or other audio equipment to be used on site in ways or at times which may cause nuisance.

Fit all compressors, percussion tools and vehicles with effective silencers of a type recommended by the manufacturers of the equipment.

Take all necessary precautions to prevent nuisance from smoke, rubbish and other causes.

A2 PRELIMINARIES

A2.1 General conditions

The contract administrator has prepared the overarching contract documents to which this technical specification and associated requirements is appended.

Compliance with the technical requirements stated herein is required in all respects, but all other contract matters shall be as per the overarching documents.

A2.2 Designation

Unless specifically stated, the designation ‘contractor’ shall be deemed to read ‘mechanical contractor’.

The designation 'CA’ stated within this document shall be deemed to read ‘Contract Administrator/Project Manager/Architect' and shall refer to FLOH Consulting Ltd.

The designation ‘Consultant Engineer' stated within this document shall be deemed to read 'Engineer' or ‘Consultant’ and shall refer to FLOH Consulting Ltd.

A2.3 Costs to comply with specification

Costs for the total of services shall be based on the specified fittings, articles and materials.

No alternative scheme will be considered, and the contractor shall conform strictly to the specification and associated drawings. The contractor shall visit the site before submitting its tender to familiarise itself with the existing building as appropriate as well as any existing services. No extra cost will be allowed for failure to undertake a site inspection.

A2.4 Schedule of rates

Prior to commencement the contractor shall furnish a schedule of rates showing in detail, the quantities, prices and extensions used in the calculations of its price and it shall accept responsibility for the accuracy of any quantity and extensions contained therein which shall balance with the total cost of this.

This schedule shall form part of the contract documentation.

A2.5 Bankruptcy

If the contractor becomes insolvent or bankrupt or has a bankruptcy order or an administration order made against it or compound within its creditors or being a corporation makes an arrangement with its creditors or carries on its business under an administrator or administrative receiver, commences to be wound up (other than for the purposes of reconstruction or amalgamation) the employer may, without prejudice to any other of its rights, terminate the contract immediately without notice.

A2.6 Publicity

The contractor shall not disclose or cause to be disclosed to any third party, any information relating to the employer, its business or its customers or the business or customers of any subsidiary of a body associated with the employer, without the written consent of the employer during the existence of this contract and after its termination, however, such termination arises.

No name plates whatsoever shall appear on the contract works unless written permission is obtained from the employer.

A2.7 Provisional sums

Where provisional sums are included in the tender documents by the engineer, such sums are at the disposal of the employer and shall not be disposed of, or employed in any way, except by written instructions given by the employer.

A2.8 Variations

The employer may issue written instructions to the contractor to vary the contract works and the contractor shall comply with such written instructions.

A2.9 Value Added Tax

Payment and recovery of value added tax will be the entire responsibility of the Contractor, who will be deemed to have allowed in his tender for all incidental costs and expenses which may be incurred.

A2.10 Terms of payment

The contract sum shall be paid in monthly instalments, each calendar month, in arrears.

Invoices will not be certified unless this documentation is produced to the satisfaction of the employer.

A2.11 Liability

The contractor shall indemnify the employer in respect of all damage or injury occurring to any person or the property and against all actions, suits, claims, demands, costs, charges and expenses arising in connection therewith which shall be occasioned by the negligence, breach of contract or statutory duty by the contractor.

The contactor shall not be liable to the employer for any damage or injury to the extent that it is caused by or arises from the act or omission of the employer.

The contractor shall maintain insurance for the following levels of cover: -

- Employers liability - £10,000,000.00
- Public and products liability - £5,000,000.00
- Contract works insurance - £300,000.00
- Professional indemnity - £1,000,000.00

All such insurance shall be extended to indemnify the employer against such claims for which the contractor may be legally liable. A copy of the contractor's insurance shall be provided with it’s tender.

A2.12 Standards and regulations

The complete services installation and components shall, unless stated otherwise, comply with the appropriate British Standard (BS) or Code of Practice (CP) and where no BS or CP is applicable the Agreement Certificate for the item.

All equipment and systems shall be designed and installed in accordance with the relevant standards and that operational compatibility exists between the systems and any other system installed in the same location.

All product and materials shall have product conformity certification (e.g. BSI Kitemark, BSI Safety Mark or CARES scheme) or product approval (e.g. British Board or Agreement Certificate).

All products must have the recognised ‘CE’ mark attached.

Certificates of compliance with British Standards, BSI Certification Schemes, and/or other Quality Assurance Schemes, shall be provided to the CA when requested.

All authorities shall be notified in accordance with their particular regulations and the contractor shall be responsible for obtaining required approvals for the works.

In the absence of specific design, performance or installation standards being stated seek the instructions of the CA prior to commencement of the Works and with adequate time so as not to cause delay.

All statutory obligations, where applicable, must be complied with. These include, but are not limited to:

- British Standard Specification (BS) and European Standards (BS EN).
- British Standard Code of Practice (BSCP).
- CIBSE Guides to Current Practice and Technical Memoranda.
- Institution of Electrical Engineers Regulations (IEE) (BS 7671).
- Electricity Supply Regulations.
- Electricity at Work Regulations.
- Institute of Plumbing Design Guide (IOP).
- All local Bye-Laws and/or Regulations.
- The Building Regulations.
- All local planning policy conditions/requirements.
- Loss Prevention Council (LPC).
- Local Fire Brigade Requirements.
- Building Research Station (BRE) digest recommendations.
- Manufacturer's instructions and recommendations for installation, commissioning and testing.
- Government (formerly PSA) specifications.
- Health and Safety at Work Act.
- CDM Regulations.
- Health Technical Memoranda (HTMs).
- Health Building Notes (HBNs).
- Radio Communications Agency.
- Electromagnetic Compatibility Regulations.

When new editions are published during the construction, the instructions of the CA shall be sought regarding any modifications or changes necessary.

References to BSI documents shall be to the versions and amendments listed in the British Standards Catalogue and in subsequent issues of BSI News up to one month prior to the tender issue date.

The tender shall be based on Regulations current one month prior to the issue date of tenders.

A2.13 Drawings and specification

Engineering services (herein after called the 'services') shall be executed in accordance with the specification, contract drawings and such further instructions as may be issued from time to time by the CA in the most substantial and workmanlike manner according to the true intent and meaning of the specification and no advantage shall be taken of the outline drawings and specification and shall be completed to the full satisfaction of the CA.

The contractor shall include for all relevant items shown upon the drawings whether such items are referred to in the specification but not shown upon the drawings.

Positions of plant shown upon the drawings shall be used for the purposes of tendering, but they may be reasonably varied by the architect without extra cost unless such alterations are made after the plant is installed.

The contractor shall carefully examine the site, specification and the drawings and shall be held to concur as a practical manufacturer and tradesman in the methods and styles of

construction to be adopted and the sufficiency of the material proposed to be used in the execution of the services.

Should anything be omitted from the said specification or drawings which is fitting and usually considered necessary to be done for the due and proper completion of the services, the contractor shall execute the same as if it has been particularly specified or shown upon the drawings and shall supply whatever may be necessary to complete the installation without any claim for payment for such omissions.

Should there be any item or items in the specification or upon the drawings which the contractor has any doubt as to the true intent and meaning thereof, it shall satisfy itself by enquiring of the CA before submitting its tender. The CA decision shall be final. After formal acceptance of the tender, the CA interpretation thereof will be binding on the contractor.

In the event of any discrepancies in the scale approved to any plan or drawing and the figured dimensions thereon, the figured dimensions shall be taken and held to be correct.

A2.14 Programme and phasing of works

Commencement, completion and phasing of the works on site shall be agreed prior to commencement.

The contractor shall allow in its tender for all work and facilities required to meet the programming and phasing of the works including non-productive overtime.

Claims for lack of knowledge in respect of any of the above aspects of the works shall not be entertained.

A2.15 Contractor to inform itself fully

The contractor shall be responsible for all measurements and for the completion of quantities required and no allowance will be made for any alleged ignorance or insufficient knowledge, inaccurate measurements or error on its part.

Drawings prepared in connection with the services indicate diagrammatically the position of the various runs, points and equipment etc. however actual runs and positions of equipment etc. shall be fully determined on site. The contractor is required to obtain all information in respect of dimensions, door hangings, architectural features, furniture etc., from the architectural information and by enquiry of the CA.

A2.16 Construction (Design & Management) Regulations

The contractor shall note that this project shall be carried out in accordance with the Health & Safety Executive Construction (Design & Management) Regulations 2015.

The contractor shall include in the tender for complying with CDM Regulations in full its capacity of principal contractor and must prepare a Health and Safety file prior to the commencement of works.

Risks that are apparent to the consulting engineer following the development of the design packages are set out in Appendix A.

A3 MATERIALS AND EQUIPMENT

Materials, equipment and expendable sundries shall be supplied and purchased new from manufacturers or stockists. No second hand reconditioned or overhauled equipment shall be allowed.

All plant, equipment and materials shall be protected against damage or adverse weather conditions until practical completion. Any plant equipment or materials that have been subjected to damage, incorrect storage or incorrect installation will require to be replaced.

Materials shall be of a consistent manufacturer and standard. Each type of material item, or range of material items shall therefore be of a single manufacture.

Unless specifically stated, material items shall be of the same finish and/or quality and/or grade as the system within which they are installed.

A3.1 Samples

The contractor shall include for submitting samples of materials, valves, cables, switches, fittings etc., together with sketches, illustrations, leaflets or drawings if required to the CA.

Such samples and illustrations etc. shall remain the property of the CA until the termination of the contract, when they will be returned to the contractor.

No material shall be ordered or used until it has been approved by the CA.

The contractor shall clearly mark samples etc., with its own name and address and the contract to which they refer.

A3.2 Spares

The contractor shall provide all spare parts and consumable items to enable the end user(s) to carry out all maintenance tasks for 12 months after completion of the project.

A comprehensive list, including all spare parts likely to become damaged together with the source of these components and costs, shall be submitted to the client three months before completion in order to arrange any necessary instructions.

Where specialist services are required, details of these services together with contact details shall be included in addition to the above.

A3.3 EU Declaration of Conformity

All equipment and fittings MUST have a current EU Declaration of conformity and CE mark.

As requested by the CA and prior to delivery provide an EU Declaration of Conformity for all equipment. The declaration shall state the following as a minimum:

- The manufacturer or its authorised representative.
- Description of equipment.
- The harmonised standard(s) that have been applied.
- The signatory who has been empowered to enter into commitments on behalf of the manufacturer.
- The last two digits of the year in which the CE marking was affixed.

Where only a Declaration of Incorporation for component parts of the assembly can be provided advise all aspects to be considered to enable others to provide a Declaration of Conformity.

A3.4 Informing manufacturers

Whilst preliminary discussions between the designers and the specified manufacturers have taken place at various stages it cannot be assumed that any manufacturers specified are fully aware of the final design requirements.

It is therefore essential that the tenderer fully informs the manufacturers and equipment suppliers of the exact requirements as shown in the specification and drawings as claims for extra costs due to lack of knowledge will not be entertained.

A3.5 Equipment warranties

Ensure that all manufacturers' equipment warranties are to run for at least 12 months from the date of practical completion of the contract. The Contractor shall ensure that individual manufacturer's warranties are extended accordingly.

Materials, equipment and products which include longer warranties shall be re-assigned to the Employer. The contactor shall provide a schedule of all such items which include longer warranties.

Installations shall include features, fittings and appliance such that manufacturers' warranties are not invalidated.

Any costs associated with this requirement shall be included in the contract price.

A3.6 Damage to plant and equipment

It is the responsibility of the Mechanical contractor to ensure all items of plant and equipment become operational in a condition equal to that when they left the manufacturers finished assembly line. Damage by other trades will not be accepted as a reason for a sub-standard finish of plant and equipment.

A3.7 Deleterious materials

Upon practical completion of the development or any part thereof the contractor shall provide written confirmation that none of the following materials have been specified, installed or used in the construction of the Development:

- High alumina cement or concrete;
- Wood wool slabs in the form of permanent formwork;
- Asbestos dust products;
- Calcium chloride cement;
- Calcium silicate bricks or tiles;
- Sea dredged aggregates or sea washed aggregates except for sea dredged aggregates that comply with BS 882: 1983 and BS 8110: 1985;
- Aggregates that do not comply with BS 882 and BS 8110;
- Aggregates which are reactive in terms of alkali-silica reactions;
- Chlorofluorocarbons (CFC's) Hydrochlorofluorocarbons (HCFC's) other than HCFC's for coolants in air conditioning plant;

Any other substances not in accordance with the British Standards and codes of Practice at the time of specification.

All other substances generally known to be deleterious at the time of specification.

A3.8 Asbestos

Only staff and operatives that have undergone asbestos awareness training shall be permitted to work on site.

Works shall not commence until the contractor has reviewed and satisfied itself with the information contained within the asbestos register. If during the stripping out works or during the installation any asbestos is suspected, the contractor shall stop work in that area and bring the matter to the attention of the CA/engineer for further instructions to be given.

A4 LABELLING, PAINTING AND FINISHING OFF WORKS

A4.1 Manufacturer's labels

Major equipment shall be clearly labelled with both the manufacturers detailed label and a "equipment description or reference title" label applicable to the project. Both labels shall be

securely fixed in a prominent position on the equipment and shall be engraved on either a non-ferrous plate or rigid laminate plastic.

Labels shall indicate the following details as a minimum:

- Manufacturers name and address
- Serial No. of item
- Date of Manufacture
- Specified Duty and Performance
- Electrical requirements

Labels shall describe the equipment function or title and the system reference number applicable to the project. This label shall be a minimum size of 50 mm x 100 mm. A sample shall be submitted to the CA for approval prior to production.

Lubrication points, air vents, drain points, electrical connections and pipe connections shall also be clearly labelled by either manufacturer's standard labels, purpose made rigid laminated plastic labels secured to the equipment or where not practicable stencilled on directly in enamel paint in an approved manner.

A4.2 Painting and finishing off

As the installation progresses, all ferrous components shall be thoroughly wire brushed and cleaned of all dirt, rust, paper labels and grease etc. All welded joints shall be cleaned and be free from surplus slag. All surplus jointing materials shall be removed, and all edges and corners made safe to the entire satisfaction of the Engineer.

The foregoing work shall be carried out prior to the progression of any further work, by either the contractor or any other contractor, which shall conceal the materials in question. After cleaning, one coat of anti-corrosive primer of an approved manufacture shall be applied.

The contractor shall note that this applies to all pipes, fittings, steel supports and unpainted plant.

All exposed pipework, metalwork, brackets etc., except for aluminium or galvanised items shall be given one coat of undercoat and one coat of heat resistant paint of an approved colour.

Upon completion, the whole of the works shall be thoroughly cleaned to remove all building debris, insulation and paint splashes. After cleaning, if damage is apparent it shall be repaired to the satisfaction of the Engineer.

The contractor shall ensure that all exposed copper pipework in the plant room shall be cleaned of all jointing compounds, flux, excess solder, polished and given two coats of clear lacquer.

A5 INSTALLATION AND WORKMANSHIP

The services shall be executed, manufactured, erected and completed in the best and most workmanlike manner and with the best materials of their respective kinds and everything is to be done to the full spirit and intent of the contract which is intended to comprise everything necessary for the perfection completion of the works.

Where particular materials are called for, the CA shall have authority to reject materials which do not conform to the specification.

Where the words "equal" and "approved" appear in the specification, they shall mean an article or articles approved in writing by the CA, being equal in every respect to that or those specified.

In cases where permission is given for a lower priced article to be provided, the contract price shall be adjusted to suit the difference in cost.

Unless otherwise specified and approved, all design materials and installations shall comply with the latest issue of the relevant current British and European Standards, British Codes of Practice, Statutory Regulations and Bye Laws etc.

Unless otherwise stated, all materials shall be new and unused.

A5.1 Setting out of works

The contractor shall take all its own dimensions for all plant and materials to be supplied and fixed and shall be entirely responsible for their accuracy.

All measurements are to be taken from actual buildings and plant and not from drawings and specification.

A5.2 Installation liaison

Care shall be taken to ensure there is close liaison with other trades in installing services to prevent obstruction of other services, fixtures or fittings.

Services through ducts shall be arranged to permit maximum access in the ducts and the services shall be readily accessible for maintenance.

Any work which must be rectified due to negligence in this respect will be the responsibility of the contractor.

Routes of services and approximate positions of apparatus are shown upon the drawings, however exact positions shall be determined by dimensional detail drawings or on site by the CA in consultation with the contractor.

Care shall be taken to obtain uniform and tidy arrangements of wall and ceiling mounted equipment. The precise position of a piece of equipment shall be determined as follows: -

a) Single items of equipment which are visually remote from other electrical or mechanical equipment shall be erected at the mounting heights stated in the specification or shown upon the drawings.

b) Two or more items of equipment whether mechanical or electrical or both, which are to be erected on the same wall, or ceiling, or which will be otherwise visually close to each other, shall be arranged in a neat and symmetrical group.

Symmetry of arrangement shall be obtained by horizontal and vertical alignment through the centre lines and not the edges of equipment and for this purpose the mounting heights stated in the general specification or on the drawings may be varied slightly.

A5.3 Delivery, lifting and positioning of plant

The contractor shall be responsible, and shall allow within its tender, for all costs associated with the delivery, offloading, lifting and positioning of all plant and equipment. This shall include liaison with the local authority and police, costs for complying with any of their requirements including fees payable and traffic management if necessary.

This allowance shall include for all scaffolding and hoisting/lowering equipment necessary to ensure successful installation of the works.

A6 ACCESS

All access facilities shall be located such that they are easily accessible, fit for their purpose and in compliance with health and safety regulations. Health and Safety of maintenance staff must be considered.

No plant or equipment is to be installed in such a manner that it cannot be routinely and regularly maintained in a safe manner. No plant is to be installed such that longer term maintenance or the replacing of parts is impractical or likely to cause undue expenditure. No plant access points are to be obstructed.

Minimum access requirements shall be as follows:

A6.1 Plant and equipment

Access facilities shall be provided to all items of plant and equipment. The requirements for access shall be established with the manufacturer and indicated as clear unobstructed space on the co-ordinated installation drawings.

Walkways, access platforms, ladders and lifting gear shall be provided if necessary.

Access is required for:

- Regular maintenance, fabrication or adjustment;
- Replacement of parts;
- Monitoring plant conditions;
- Cleaning.

Prior to practical completion demonstrate to the CA that all plant and equipment have adequate access facilities.

A7 ELECTRICAL WORK ASSOCIATED WITH MECHANICAL SERVICES

The electrical work associated with the mechanical installation shall be carried out by the electrical contractor who shall be employed by the mechanical contractor.

The mechanical contractor shall install all the equipment which shall then be electrically connected by the electrical contractor. The mechanical contractor shall free issue all loose sensors and controllers to the electrical contractor for installing and wiring.

The mechanical contractor shall supply the electrical contractor with all electrical details and wiring information to ensure the equipment is fed and controlled correctly.

The mechanical contractor shall co-ordinate its installation with the electrical contractor to avoid any conflict occurring between the M&E installations.

The mechanical contractor shall ensure that the wiring connections to all plant conform to the diagrams shown on the tender drawings. If any discrepancy is found, then the CA shall be informed before installation.

A8 EARTH CONTINUITY AND BONDING OF SERVICES

A8.1 Overview

Electrical earthing continuity shall be provided between all metal pipework, ductwork and associated equipment. It shall be carried out in accordance with the latest edition of the IET Regulations for buildings and shall fully comply with the current edition of the BS7671 and BS 7430.

All incoming service ducts and pipes shall be bonded to the electrical earthing system direct from the main earth bar located adjacent the main electrical intake position in the ground floor riser cupboard. The main earth bar shall be used for connection to all primary earth bonding cables.

All metalwork which may provide a path to earth such as all plumbing hot and cold-water pipework, waste pipes, stainless steel sinks etc shall be bonded in full accordance of the IET wiring regulations BS 7671.

All flexible joints, non-metallic compensators or flexible connections shall be bridged across by means of a linking copper earth tape. The tape shall be 20 mm wide braided, tinned with copper lugs at each end and bolted to the flanged joints or connections. An alternative means of fixing the link tape to smaller diameter pipes may be used subject to approval.

All items of equipment shall have an appropriately sized, threaded brass earth stud(s) to allow connection of earth continuity links. The earth link tape(s) shall be as specified elsewhere. The item of plant or equipment shall have earth continuity within itself and shall also have the same earth continuity link with associated pipework and/or ductwork connections.

All additional earth continuity links are subject to individual service continuity checks by the installer.

Where supplementary circuit protective conductors are specified for SWA sub-mains/ sub-circuits, these shall be tie wrapped to its associated sub-mains cable throughout its entire length in accordance with section B for cable cleats and supports.

Protection against indirect contact shall be by utilising the over current protective devices for earthed equipotential bonding and automatic disconnection of supply.

The resistance between any points on the bonded system and main earth shall not exceed 0.5 ohms.

Low voltage switchboards shall be provided with a continuous earth bar to which all electrical apparatus shall be connected to form a continuous bonded earth system directly connected to the earth point.

All extraneous conductive parts and metalwork shall be solidly bonded by supplementary bonding conductors of minimum size 6mm^2.

Earth tapes shall be LSF sheathed and coloured Green/Yellow.

All bonding conductors shall be concealed by a surface or flush conduit system as appropriate.

Extraneous parts shall include building cladding, and structural steel work etc.

Whilst sizes of earthing bonding and protective conductors will have, in most cases, been stated within the specification, it is the Contractors responsibility to check the actual resistance in accordance with the examination and test procedures outlined therein and in the current edition of the IET Electrical Regulations.

The contractor shall confirm the tabulated requirements have been met or calculations based on the regulation formulae.

All protective conductor cables shall be connected by properly sized lugs crimped to the cable.

A8.2 Rubber Matting

Black rubber strip floor matting shall be installed in front of switch panels and control panels. The matting shall be manufactured in accordance with BS 921, neatly cut to the dimensions required and laid in an approved manner.

A9 BUILDERS' WORK

Builder's work comprises the elements of building work necessary to incorporate the services installation into the building/fabric and finishes including cutting of all chases, holes, forming openings and plinths, 'building-in' pipe and cable sleeves, provision of supports/noggins in walls to accommodate fixing of services equipment and the provision of plywood backboards for the support of ceiling mounted grilles, luminaires, fire detectors etc.

A9.1 Builders' work drawings

The contractor shall be responsible for the production of the builders work drawings of a scale sufficient to indicate to the project manager installation details which include typically the following:

- Bases, plinths and piers;
- Holes, pockets and openings in floors, walls roofs and false ceilings;
- Floor plates, trench covers, sumps, puddle flanges and access points;
- Support framing for all equipment items;
- Structural steelwork for supporting all items of plant;
- Any other details necessary to ensure the proper execution of the works.

The contractor shall confirm positions and sizes of all builders work including holes, fixed pipe support channels etc.

A9.2 Services crossing building expansion joints

At points where services cross the building expansion joints flexible connections, compensators, or expansion joints shall be provided to accommodate the building movement within the services installation unless it can be demonstrated that there is sufficient flexibility in the pipework installation.

Brackets and supports each side of the flexible joint shall be so arranged that the services crossing the building expansion joint remain symmetrical and correctly aligned.

A10 INSPECTION, TESTING AND REJECTION

The services shall be carried out in accordance with the instructions which will be given from time to time by the CA and/or it's representative and to its satisfaction in all things.

Tests shall be carried out in accordance with agreed and recognised standards such as those produced by CIBSE. Additionally, electrical engineering services shall be tested and commissioned in accordance with the latest BS7671 IET Wiring Regulations.

Tests shall include, but not be limited to the following, as applicable: -

- LV Infrastructure
- Lighting Installation
- External services Installation
- Power Installation
- Fire Alarm Installation
- Lightning Protection System
- Mechanical Systems
- Goods and Passenger Lifts
- Access control systems
- Photovoltaic (PV) installation
- Intruder/Security system

The CA shall have full power to inspect and test at the sole cost and charge of the contractor, the work or materials during manufacture or construction or at any place where any materials are being made or obtained therewith.

All other operations of the contractor or any authorised sub-contractor, manufacturer or tradesman shall be open to the inspection of the CA at all times.

The CA shall have full power either before or after delivery or erection to reject any of the work which it may consider defective either in material manufacture or workmanship and to order removal of same and its directions on such subjects are to be final and shall be promptly attended to by the contractor at its own expense.

Should compliance with such instructions be refused or neglected for three days, the CA shall have power to have the rejected work taken down and removed without being answerable or accountable for any loss or damage which may arise or happen to the same and any consequential expense shall be paid to the employer.

Except where otherwise specified, the contractor shall provide free of charge such assistance, labour, materials, electricity, fuel, stores, apparatus and instruments as may be requisite and as may be reasonably demanded to carry out the tests efficiently.

A10.1 Tests upon completion

The contractor shall give the CA fourteen days' notice in writing of the date after which the contractor will be ready to carry out the tests on completion hereinafter specified. Unless otherwise agreed, the tests shall take place within ten days after the said date on such day or days as the CA shall in writing notify the contractor.

If the contractor fails to make such tests within the time aforesaid, the CA may itself proceed to make tests and all tests so made by the CA shall be at the risk and expense of the contractor.

The contractor shall be required to provide all necessary testing equipment and instruments and to test the installation in the presence of and to the satisfaction of the CA and to carry out such rectification to the plant and further tests as the CA may direct and shall leave the installation in perfect working order as specified.

All such tests shall be carried out free of charge to the employer.

To facilitate progress of the services it may be necessary to test sections separately and no extra charge to the employer will be permitted.

If any portion of the services fails to pass the tests of the said portion, tests shall, if required by the CA be repeated within a reasonable time upon the same terms and conditions and all costs arising from the repetition of the tests shall be met by the contractor.

A10.2 Test certificates

Where testing specific to the project is required, ensure test certificates include: -

- Project title.
- Details and date of test.
- Instruments used, serial numbers, calibration dates.
- Signature of those witnessing test.
- contractor's name.
- Specific location of the item in the Works.

Provide a drawing or schedule extract along with the test certificate where items in the certificate are referenced back to the drawing.

A completed NICEIC certificate shall be issued on satisfactory completion of electrical works together with all accompanying results.

All test results shall be issued to the engineer for comment upon completion of the project.

A10.3 Inspections and test records

Prepare a set of drawings and/or report sheets to record accurately the test and inspection information including the following: -

- Plant identification, section and installation under test.
- Manufacturer's reference number.
- Date, time, duration of test, weather conditions.
- Test results with itemised readings including records of all other checks and tests.

Maintain records of all specified inspections and tests performed including third party and works test certificates.

Include in records, as appropriate, details of the element, item, batch or lot, the nature, number and date of the inspections and tests, the number and type of deficiencies found, any corrective action taken and other relevant particulars.

Maintain all records on site for inspection. Issue copies of all completed test certificates to the CA within 1 week of the test being completed. On completion of the Works, include copies in the operating and maintenance manuals.

Provide all certification documents for approval by the CA before any system is offered for final acceptance.

A11 COMMISSIONING

A11.1 General

All engineering services systems are to be thoroughly commissioned and tested to prove that they are capable of achieving the specified performance, to prove the correct and stable operation of all control systems and all plant, equipment and systems are safe to operate and maintain. Environmental tests are to include, where necessary, the provision of artificial loads to simulate the full range of operating conditions. The correct operation of each system is to be demonstrated on completion of the commissioning and testing.

Fully detailed method statements are to be provided in advance for each system, to indicate the methods to be employed.

A11.2 Commissioning report

The Commissioning Specialist shall prepare a commissioning report for submission to the CA and Engineer and ultimately for inclusion in the O&M Manual. The report shall contain the following, as applicable: -

- Air flow volumes for each system, including duct traverse record sheets.
- Terminal grille and diffuser volume flow records for all systems, including hood factor tests, etc.
- Provision shall be made in the commissioning report for recording test data during any re-commissioning exercises.

A12 CONTRACTORS WORKING DRAWINGS

The contractor shall prepare his own working drawings. If any further instructions, details or drawings are required to enable these working drawings to be prepared or any work to be done, the contractor shall apply in writing to the engineer for such information.

The contractor shall ensure that the working drawings are co-ordinated with other trades during their preparation.

Generally working drawings shall follow the guidance given in BSRIA Technical Note TN/22/97.

The contractor shall submit to the engineer for comment during the progress of the services installation and within such reasonable times as the engineer may require, such drawings of the general arrangement and details of the services or any part thereof.

Within a reasonable period after receiving such drawings, the Engineer shall identify his comments if appropriate.

The Engineer shall appraise the drawings on a technical nature only in terms of the drawings being compatible with the intent of the design and comment by the Engineer shall not relieve in any way the contractor from his responsibilities under this Contract, in respect of the accuracy of drawings or the relationship of the drawing content in terms of co-ordination of other trades.

Drawings signed as above described shall not be departed from except as provided by an Official Instruction.

The Engineer shall have the right at all reasonable times to inspect all drawings of any portion of the "Services".

In the event of any discrepancies in the scale approved to any plan or drawing and the figured dimensions thereon, the figured dimensions shall be taken and held to be correct.

The contractor shall be responsible for and shall pay the extra cost, if any, occasioned by any discrepancy, error or omissions in the drawings and other particulars supplied by him, whether “commented on” the Engineer or not, provided that such discrepancies, errors or omissions are not due to inaccurate information or particulars furnished in writing to the contractor by the Employer or Engineer.

A13 "AS INSTALLED" DOCUMENTATION

One copy of the "As Installed" documentation shall be submitted for approval at least 20 working days (or as otherwise agreed with the CA) prior to the anticipated handover date for comment and approval.

The final documentation incorporating the engineers comments shall be made available at handover.

Should the contractor fail to produce the "As Installed" documentation to the Engineers approval at the date of practical completion the Client may instruct the Engineer to provide the drawings with whatever assistance the Engineer deems necessary and the cost of preparing the drawings will be deducted from the outstanding payments due to the contractor.

A13.1 Drawings and charts

During the progress of the works the contractor shall record on drawings in an approved manner, the information necessary for preparing the "As Installed" drawings.

The marked-up drawings shall be made available to the Engineer for inspection and checking at any time during the contract.

"As Installed" drawings shall indicate, as applicable:-

- The exact positions of all plant and apparatus.
- The size, type and routes of all pipework, conduits, trunking ductwork etc.
- The size, type and date of laying of all underground services and ducts.
- Schematic diagrams of distribution systems and control systems.
- Position of all valves - valve reference numbers shall correspond to the reference numbers on valve labels.
- A list of symbols, notation and nomenclature used
- General arrangement drawings shall be to a minimum scale of 1.50, Plant Rooms and section 1.20.
- In addition to the "As Installed" drawings, valve and instruction charts reproduced on suitable plastic materials shall be supplied and fixed in the Boiler House, Calorifier Rooms, and or Plant Rooms. All charts must be approved by the Engineer prior to final printing.

The contractor shall provide printed instructions and "As Installed" drawings of plant control systems and equipment in sufficient detail to enable the Employer to operate, maintain, dismantle, re-assemble and adjust such plant and equipment.

The final "As Installed" drawings of the installation, together with any required drawings or Instructions relating to the plant and equipment, shall be provided at Practical Completion.

"As Installed" drawings shall be in approved CAD format. The engineer's design drawings may be available to the contractor electronically in PDF format, or DWG format on request.

A13.2 Maintenance manual

The contractor shall furnish to the Engineer upon practical completion of the complete installation, three copies of a maintenance manual.

The Manual shall be of the loose-leaf type, A4 size having stiff covers, with sub-division for each section, a ready means of reference and a detailed index. The manual shall contain full operating and maintenance instructions for each item of equipment and shall deal systematically with each system including the following:

Table A1: Maintenance manual format

Section 1	Index	
Section 2	System Description	Description of the equipment, design and operational intent.
Section 3	Operating Instructions	Description of operational routines and controls, including start up and shut down procedures. A schedule of set point control settings for normal operation of the plant shall also be included. A schedule of flow, temperature and pressure conditions shall be provided.
Section 4	Fault Finding	Description of routines for fault finding and rectification procedures.
Section 5	Maintenance Instructions	Planned Maintenance Instructions for the complete system and incorporating the component and equipment manufacturer's instructions.
Section 6	Hazards and Dangers	A comprehensive list of the hazards and dangers associated with the operation and maintenance of the system.
Section 7	Parts List	A full and detailed parts list by plant item, including Supplier Item No., Manufacturers Description, Manufacturers Part No. and Manufacturers address.
Section 8	Recommended Spares List	A comprehensive list of recommended spares, including the Manufacturers Description, Manufacturers Part No, and Manufacturers address.
Section 9	Commissioning and Test Certificates	A full set of commissioning and Test results for the complete system.
Section 10	Emergency Procedures	A full description of the actions to be taken in the event of an emergency or malfunction of the equipment. It shall include a full and accurate directory of names, telephone numbers of individuals or organisations to be contacted.
Section 11	Drawing Index	A complete index of all-drawing numbers and titles supplied.
Section 12	Drawings	Full set of "as installed" drawings showing the location and size of all plant equipment, pipework, ducts and service connections to plant and equipment.

Note:

Manufacturer's standard "hand out" cards and leaflets will be accepted in the manual, but only as supporting information additional to the instructions detailed above.

A13.3 Building log book

Not required.

A14 POST COMPLETION

A14.1 Defects in completed work

When defective completed work is discovered, immediately give notice. Do not proceed with affected related work until response has been received.

Documented remedial work: Do not execute work which may:

- Hinder access to defective products or work; or
- Be rendered abortive by remedial work.

A14.2 Making Good defects

Where inspection or testing identifies that work, materials or goods are not in accordance with the contract and measures are required to establish the precise status of the item (e.g. testing, opening up, experimental making good) all such activities shall be at the Contractor's expense and shall not be considered as grounds for an extension of time under the contract.

Make good all damage consequent upon the work.

Remove temporary markings, coverings and protective wrappings unless otherwise instructed.

Clean the works thoroughly inside and out, including all accessible ducts and voids. Remove all deposits, rubbish and surplus materials.

A14.3 Defects liability period

The contractor shall be responsible for rectifying any defects, which arise in the works for which he is responsible, for a period of 12 months from the date of practical completion.

B GENERAL TECHNICAL CLAUSES

B1 INTRODUCTION

This section specifies the general requirements and quality of the mechanical services equipment and installation.

All clauses in this section may not apply to this project and only those relevant to the works are applicable.

B2 MECHANICAL VENTILATION

B2.1 General

Systems shall be supplied and installed as indicated on particular design information to provide supply and/or extract mechanical ventilation to remove odours in sanitary and kitchen areas, maintain fresh air levels in accordance with design criteria.

B2.2 Relevant standards

The installation shall conform to all relevant British Standards and Codes of Practice which are current at the time of installation. Attention is particularly drawn to the following: -

- BS EN ISO 7235, Methods of testing for silencers for air distribution systems
- BS 4856, Methods for testing and rating fan coil units, unit heater and unit cooler
- BS 4857, Methods for testing and rating terminal reheat units for air distribution systems
- BS 4954, Methods for testing and rating induction units for air distribution systems
- BS 5588, Code of Practice for ventilation and air conditioning
- BS 6583, Methods for volumetric testing for rating of fan sections in central station air handling units
- BS 6821, Methods for aerodynamic testing of dampers and valves
- BS EN 60335-2-65, Air cleaning appliances
- BS EN ISO 7235, Measurement procedures for ducted silencers
- DDENV 328, Heat exchangers. Test procedures for establishing the performance

B2.3 Ductwork

The contractor shall provide and fix ductwork together with all necessary fittings and accessories as described below.

Ventilation ducts shall be in proprietary plastic flat ducts and fittings. Ducts and fittings shall be solvent jointed if approved by manufacturers installation documentation. Joints shall be vapour sealed.

Ductwork shall be fixed at 750mm centres and a maximum of 300mm from any bend.

Ductwork shall be complete with dampers, bends, tees, tapers, transformation and special pieces.

Ductwork shall not be in direct contact with other surfaces such as ceilings, that may transfer noise to occupied spaces.

Transformation or taper pieces shall be constructed so that the angle on any side does not exceed 20 degrees to the axis of the duct. Sharp corners or edges on ductwork, associated equipment, supports and angle supports, shall not be allowed.

All positions for plant and ductwork shall be checked on site and detailed installation drawings shall be submitted to the Engineers before manufacture is commenced.

The whole of the ductwork shall be cleaned by means of a high vacuum plant supplied by the contractor, immediately prior to the operation of each installation.

Upon completion of the ductwork installation, the contractor shall be required to demonstrate to the Engineer that the system is air tight by carrying out air leakage test in accordance with DW/143 where appropriate.

Efficient protection shall be given to all duct ends left disconnected during the progress of the works.

B2.4 Flexible ductwork

The contractor shall provide and fix ranges of flexible ductwork as shown upon the drawings. The size of ductwork shall be shown upon the drawings or detailed in the Schedule of Grilles and Diffusers.

Flexible ductwork shall be used to connect trunk ducts to grilles using the shortest length possible commensurate with providing the required degree of tolerance required for the system installation. Flexible ductwork shall not be installed with a tight radius bend thus preventing puckering occurring and shall be independently bracketed to prevent undue sagging.

Connections shall be made to all items of equipment using a good quality jubilee clip.

All joints shall be air tight and shall be finally taped with heat resisting 50mm wide PVC adhesive tape which shall also be used to seal the insulation to the ends of each length of ductwork.

Flexible ductwork shall be as follows:-

- Supply (Conditioned) Air - Type M-KC pre-insulated
- Recirculation/Extract - Type ST

All flexible ductwork shall be Thermaflex as manufactured Flexible Ducting Limited, Milngavie, Glasgow, G62 7LW or equal and approved.

B2.5 Grilles and diffusers

The contractor shall provide and fix in the positions indicated upon the drawings, diffusers and transfer grilles.

Grilles and diffusers shall be constructed from polished extruded aluminium complete with standard fixings, as recommended by the manufacturers, or of the type detailed later and finished with a stone enamel finish to our approved BS colour.

Frame and fixing details shall be selected to ensure compatibility with the suspended ceiling, they shall be complete with plenum boxes as required and shall be supported from the structure with mild steel drop rods. All drop rods shall be cut back and fitted with plastic end caps.

B2.6 Extract fans

The contractor shall supply, install and commission extract fans and ancillaries as shown on the drawings and specified in Section D.

B2.7 Vibration isolation springs

Ventilation plant shall be isolated from the structure using constant level anti-vibration spring mountings.

The contractor shall supply and fix the mountings at the positions identified by the air handling unit manufacturer and shall be responsible for obtaining this information at tender stage.

Spring mounts shall be free standing, laterally stable without housings, snubbers or guards and complete with a 5mm thick ribbed acoustical neoprene pad, cold bonded to the underside of the box plate.

Each mounting shall comprise of a polyester coated high frequency isolation pad, spring pressure plate and high deflection colour coded steel spring. Flexible connections shall be utilised to connect the ventilation ductwork to the air handling unit.

C SCOPE OF WORKS

C1 DESCRIPTION OF WORKS

Note: Where materials, fittings or installation methods detailed in the section, differ from those detailed in the clauses in Section B, this section shall take precedence.

C1.1 Existing installations

C1.1.1 Apartment systems

Communal extract systems provide extract ventilation from sanitary accommodation in each dwelling. Each dwelling has two connections, one to the bathroom and one to the WC which connect to a branch duct which passes via flexible ductwork over the upper floor landing to the water tank cupboard where it connects to a duct riser.

Duct risers are positioned within a common service riser within apartments, adjacent the apartment entrance and adjacent the corridor, at the lower levels of each. At upper levels of apartments, the same duct rises through the water tank housing which is opposite the bathroom and WC at each landing level.

Fig C.1 – Typical riser cupboard in lower level of apartments showing duct from below to above

Fig C.2 – Typical branch off common duct in upper level water tank cupboard, enter landing ceiling void

Built in fire dampers are installed at the lower level of each apartment but these have been established through CCTV and visual inspection to be in poor condition.

C1.1.2 Roof mounted plant

Vertical common ducts rise through the building collecting branch ducts from each duplex apartment before connecting to roof level fans.

There are seven communal extract fans at roof level associated with systems as follows:

- Five systems have two rising ducts which are configured in a back to back arrangement in adjacent risers, these systems serve six apartments each.

- Two of the systems have only a single rising duct, and thus serve three apartments.

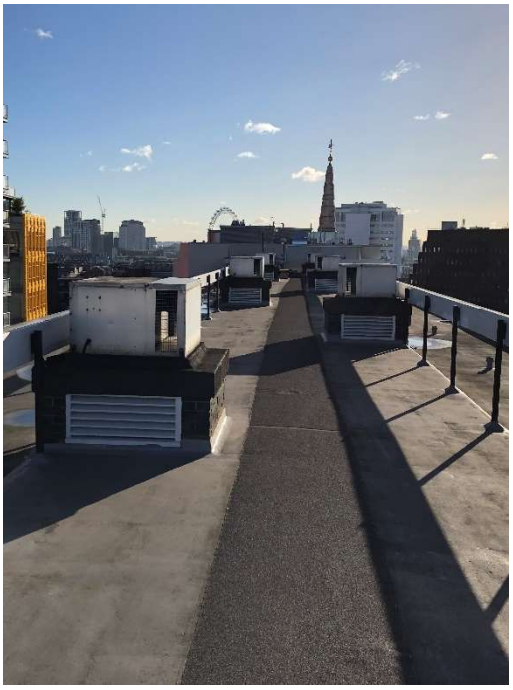

Fig C.3 – Roof mounted plant arrangement

Fig C.4 – Typical communal extract fan

Fan controls are limited to simple contactors for on/off and duty/standby/fail changeover. A module is provided per fan. All but one of these are original.

C1.2 Description of proposed works

Local extract systems are proposed to replace the aged and poor performing communal systems. The following sections provide an overview of proposed works in each apartment which the contractor shall be responsible for all elements.

C1.2.1 Mechanical services installations

Within each apartment, mechanical services installations shall be as follows:

- Supply and install new local extract fan within a purpose built bulkhead at ceiling level in WC area.
- Supply and install new wall mounted extract terminals in WC and adjacent bathroom
- Install ductwork between extract terminals and fan.
- Supply and install a new louvre, affixed to the underside of the slab penetration over the lower level recessed balcony.
- Test and commission fan installation.

Systems shall operate continuously, providing extract to WCs and adjacent bathrooms to meet Building Regulations requirements.

C1.2.2 Electrical services installations

Electrical installations in each apartment shall be as follows: -

- Provide new electrical supply, taken from a spare way on the apartment distribution board located in the riser cupboard at the lower level.

- Supply and install cable within mini trunking, extended from lower level to fan on upper level.
- Supply and install a local fan isolator switch, surface mounted over the WC door, accessed from the upper floor landing.

C1.2.3 Builders work elements

Generally, builders work elements comprise the following in each apartment: -

- Form openings within internal partitions in apartments.
- Form penetrations in slab over balconies for exhausts.
- Partial disassembly of built-in wardrobes in bedrooms to facilitate forming of openings through partitions beyond.
- Form ceiling bulkheads in WC and stair areas to accommodate fan and associated ductwork.
- Supply and install purpose made casing around high level and vertical ductwork in bedroom areas.
- All making good around all openings.
- All decoration of casings and bulkhead.
- Provide platform over stairs to allow safe working.

C1.3 Decommissioning of existing services

Upon completion of installation of new local systems in all apartments, existing communal systems shall be taken out of service. Broadly, works shall comprise the following: -

- Decommission roof mounted fans and leave in situ.
- Blank off and seal existing fan air terminals to prohibit vermin ingress and provide suitable weather proofing of openings.
- Disconnect fan power supplies at distribution board and remove associated cabling.
- Within each apartment, cut out sections of common ductwork passing through riser cupboard on lower levels, stripping back to the floor level and ceiling as far as practicably possible.
- Set existing fire dampers to closed position.
- Fill remaining duct stubs with inert material to ensure fire integrity of slab is maintained and seal appropriately.
- Allow for reinstating fire stopping around duct penetrations passing through slab between apartments.

C1.4 Scope of works schedule

Reference shall be made to the scope of works schedule in Appendix B for specific information regarding the above works.

C1.5 Resident liaison

The contractor shall put forward nominated personnel to act as resident liaison representatives to coordinate works in apartments and provide a point of contact on site that residents can refer to.

The contractor shall devise a system for residents to 'book in' installations to suit the programme. Every effort shall be made to ensure the programme is not interrupted by time slots not being filled.

The contractor shall produce a programme for works in each apartment, stating anticipated durations of specific elements to inform residents of proposed activities prior to commencement.

It should not be assumed that works in apartments will follow a systematic sequence since access be arranged by the contractor to suit residents' availability.

C1.6 Key dates and overview of project timeline

It is envisaged that works will take three months to complete assuming an allowance of one week per apartment and a mixture of three to four teams working in apartments at any one time.

- April 2021 - tender period.
- May 2021 - tender review and award
- June 2021 - mobilisation and programming
- July, August, September 2021 – Contract period

A specific sequence of work will be agreed with the contractor at the time of award.

D SCHEDULES

D1 GENERAL

This section of the document schedules the plant and equipment to be installed under the mechanical engineering services installation. Where materials, fittings or installation methods detailed in the section, differ from those detailed in the clauses in Section B, this section shall take precedence.

The specification shall not be altered without prior approval from FLOH Consulting Ltd. Where alternative approved manufacturers are used, the mechanical engineering services sub-contractor shall accept full responsibility that the equipment selected meets all requirements set out within this document and take responsibility for its safe installation.

D2 DRAWINGS

Drawing ref.	Title	Scale	Size
CPH-FLOH-XX-XX-DR-M-57-EX01	MECHANICAL ENGINEERING SERVICES VENTILATION SERVICES TYPICAL APARTMENT – EXISTING, LOWER & UPPER FLOOR LAYOUT	1:50	A1
CPH-FLOH-XX-XX-DR-M-57-EX02	MECHANICAL ENGINEERING SERVICES VENTILATION SERVICES TYPICAL APARTMENT – STRIP OUT WORKS, LOWER & UPPER FLOOR LAYOUT	1:50	A1
CPH-FLOH-XX-XX-DR-M-57-EX03	MECHANICAL ENGINEERING SERVICES VENTILATION SERVICES STRIP OUT WORKS ROOF LEVEL LAYOUT	1:100	A0
CPH-FLOH-XX-XX-DR-M-57-0001	MECHANICAL ENGINEERING SERVICES VENTILATION SERVICES PROPOSED WORKS THIRD & FOURTH FLOOR LAYOUT	1:50	A0
CPH-FLOH-XX-XX-DR-M-57-0002	MECHANICAL ENGINEERING SERVICES VENTILATION SERVICES PROPOSED WORKS FIFTH & SIXTH FLOOR LAYOUT	1:50	A0
CPH-FLOH-XX-XX-DR-M-57-0003	MECHANICAL ENGINEERING SERVICES VENTILATION SERVICES PROPOSED WORKS SEVENTH & EIGHTH FLOOR LAYOUT	1:50	A0
CPH-FLOH-XX-XX-DR-M-57-0004	MECHANICAL ENGINEERING SERVICES VENTILATION SERVICES PROPOSED WORKS SECTION & ELEVATION DETAILS	1:5/1:50	A1

D3 MECHANICAL VENTILATION

D3.1 Extract grilles

Grille ref	Location	Floor	Quantity	Air volume (l/s)	Size (mm)	Aperture size (mm)
EG/01	WCs	3rd to 8th	32	6	137 dia.	100 dia.
EG/01	Bathrooms/En suites	3rd to 8th	39	8	137 dia.	100 dia.

Notes

- Extract grilles shall be circular air extract valve type, as Gilberts Series GX or equal and approved.
- All grilles shall be supplied in standard finish, PPC white RAL9010 20% gloss finish.
- Grilles shall be manufactured by Gilberts (Blackpool) Ltd., Gilair Works, Clifton Road, Blackpool, Lancashire, FY4 4QT. E: sales@gilbertsblackpool.com, T: 01253 766 911, Fax: 01253 767 941.

D3.2 Exhaust louvres

Grille ref	Location	Floor	Quantity	Air volume (l/s)	Size (mm)	Aperture size (mm)
EL/01	External balcony soffits	3rd to 8th	36	14	150x150	n/a

Notes

- Exhaust louvres shall be stainless-steel 16 SWG, face fixed perforated flat steel and shall provide a minimum free area of 60% with perforations of 5mm.
- Fixing of all louvres shall be via countersunk flush fitting screw holes, fixing back to structure using stainless-steel countersunk screws.
- Louvres shall span corrugations in concrete soffit, which will allow air to exhaust laterally, as well as through grille perforations.
- All louvres shall be supplied in standard stainless-steel finish
- Insect mesh to be fixed to soffit over cored opening, behind grille.
- Size shall be verified against proposed flow rates prior to ordering.
- Louvres shall be bespoke, details will be confirmed during tender period.

D3.3 Extract fans

Fan ref	Location	Floor	Quan-tity	Air volume (l/s)	Resis-tance (Pa)	Size (mm)	Motor rating (kW)	Full load current (A)	Spigot size (mm)
EF/01	WC/ Bathrooms /Ensuites	3rd to 8th	36	14	75	298Lx 178Wx 220H	0.02	0.1	97 dia.

Notes

- Fans shall be in-line axial type, as Vent-Axia ACM or equal and approved.
- Size shall be verified against proposed flow rates prior to ordering.
- Fans shall be manufactured by Vent-Axia Vent-Axia Limited, Fleming Way, Crawley, West Sussex, RH10 9YX, E: info@vent-axia.com., T: +44 (0)344 856, Fax: +44 (0)1293 565169

D3.4 AV Mounts

Fan ref	Location	Floor	Size (mm)	Number off
AV/01	WC/Bathroom	3rd to 8th	75Lx50Wx 120H	144

Notes

- AV mounts shall be acoustic suspension hanger spring type, as Automation Components P2551 or equal and approved.
- Size shall be verified against fan selection prior to ordering.
- AV mounts shall be manufactured by Automotion Components Ltd, Alexia House, Glenmore Business Park, Portfield Works, Chichester, PO19 7BJ, E: sales@automotioncomponents.co.uk, T: 0333 207 4498

D3.5 Flexible connectors

Fan ref	Location	Floor	Size (mm)	Number off
FC/01	WC/Bathroom	3rd to 8th	100Lx 100Dia.	72

Notes

- Flexible connectors shall be polyurethane (PU) coated fabric sleeve with clamps type, as BPC Ventilation model FDC or equal and approved.
- Size shall be verified against fan selection prior to ordering.
- AV mounts shall be manufactured by BPC Ventilation, 8 Redlands Road, Larne, Co. Antrum, BT40 1AX, E: info@bpcventilation.com, T: 0044 2828 275 150

E SUMMARY OF TENDER

SUMMARY OF TENDER		
1	Preliminaries	£
2	General technical clauses	£
3	Mechanical services installations:	
3.1	Supply and install new local extract fans in all apartments.	£
3.2	Supply and install new wall mounted extract terminals in WC and adjacent bathroom in each apartment.	£
3.3	Ductwork installation for all apartments.	£
3.4	Louvre installation over lower level recessed balcony in all apartments.	£
3.5	Test and commission fan installations.	£
4	Electrical services installations:	
4.1	Works to distribution boards in all apartments.	£
4.2	Cable installations in all apartments.	£
4.3	Containment installations in all apartments.	£
4.4	Installation of local fan isolator switches in all apartments.	£
4.5	Connection of fan in all apartments.	£
5	Builders work elements:	
5.1	Form openings within internal partitions in apartments.	£
5.2	Form penetrations in slab over balconies for exhausts.	£
5.3	Partial disassembly of built-in wardrobes in bedrooms to facilitate forming of openings through partitions beyond.	£
5.4	Form ceiling bulkheads in WC and stair areas to accommodate fan and associated ductwork.	£
5.5	Supply and install purpose made casing around high level and vertical ductwork in bedroom areas.	£
5.6	All making good around all openings.	£
5.7	All decoration of casings and bulkheads.	£
5.8	Provide platform over stairs to allow safe working.	£
6	Decommissioning of existing system:	
6.1	Decommission roof mounted fans and leave in situ.	£
6.2	Blank off and seal existing fan air terminals.	£
6.3	Disconnect fan power supplies at distribution board and remove associated cabling.	£
6.4	Works associated with strip out of existing vertical ductwork in riser cupboards.	£
6.5	Reinstatement of fire stopping around duct penetrations passing through slab between apartments.	£
7	Resident liaison	£
8	Any other items not listed (please state)	£
	SUB TOTAL	**£**

	PROVISIONAL SUMS	
9	None included	£
	Add Main contractors Discount	£
	Total Tender Sum	**£**

It is important that the summary is completed accurately to indicate the costs associated with the various headings.

E1 DECLARATION

We hereby submit our fixed price summary of tender, being the sum total for the works defined in the specification and on the drawings.

We have not deviated or alternatively priced, in any way, from the specified articles, nominated suppliers, sub-contractors or materials, or the manner in which they are specified to be fixed.

Signed

.....

Date

.....

For & on behalf of

.....

APPENDIX A: DESIGNERS RISK ASSESSMENT

Designers hazard identification and management register

Project: Centrepoint House, ventilation works
File reference: F2147-CPH-HMR-001
Date: 02 April 2021

This register identifies hazards associated with the project works and identifies actions taken or to be taken to manage those hazards. It does not determine the degree of risk associated with those hazards. Generic hazards, i.e. those a suitably competent designer or contractor should be able to identify for themselves have not been included, save for the avoidance of doubt. This register is not exhaustive and is intended to summarise the output of the designer's processes under CDM Regulation 9. It is the responsibility of the Tenderer/Contractor to carry out the resultant risk assessment and establish a safe method of working

Ref.	Item	Area/location of hazard	Description of hazard*	Those at risk					Control measures taken as part of design	Residual hazard	Information provided in support of hazard control provisions	Status
				C	M	P	U	D				Active/ Closed
1	Service interuption	Apartment	Loss of ventilation services outside of working hours			X			Design stipulates existing system must only be taken out of service once new systems are operational.	Service interuption	Details provided to assist installation. Written description of approach provided.	Active
2	High level ductwork installation	Over stair in each apartment	Fall from height	X					Inclusion of access platform over stairs to provide safe working access.	Services at high level Working in confined spaces	Drawn details of working platform and description in scope of works.	Active
3	Works to roof fans	Roof	Fall from roof	X					Works to roof fans is limited. Redundant equipment proposed to be left in situ to avoid excessive works at roof level.	Fall from roof	Written description of works provided. Roof plan and photographs in specification identifying plant locations.	Active
4	Works to existing electrical services	Apartment	Electric shock	X		X			Apartments have been surveyed to ensure locations of DBs is understood.	Electric shock	Details provided to assist installation. Written description of approach provided.	Active

Key:

C	Construction Operatives
M	Maintenance Operatives
P	General Public
U	Other users
D	Demolition Operatives

APPENDIX B: SCOPE OF WORKS SCHEDULE

FLOH

SCOPE OF WORKS SCHEDULE

Project: F2147_Centre Point House
Reference: F2147-CPH-SOW-001
Date: 23/03/2021
Revision: 00

Ref	Activity	Apartment number																																		
		01	02	03	04	05	06	07	08	09	10	11	12	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
		Floor																																			
		3 & 4												5 & 6												7 & 8										
Builders work items																																				
B1	Carefully remove ceiling where bulkhead is proposed in WC/bathroom area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B2	Erect safety platform over stairs for safe access to work area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B3	Carefully remove ceiling where bulkhead is proposed in stair area	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B4.1	Form high level opening of 125mm dia. approx. through partition wall between WC & stair	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B4.2	Form high level opening of 125mm dia. approx. through partition wall between WC & bathroom	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B4.3	Form high level opening of 135mmHx80mmW approx. through partition wall between stair and bedroom	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B5	Carefully remove wardrobe carcass from wardrobe surround to expose void (as applicable)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B6	Form high level opening of 135mmHx80mmW approx. through wardrobe surround (as applicable)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B7	Scan slab in bedroom to identify reinforcement	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B8	Form opening of 110mm dia. in slab between reinforcement	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B9	Form opening of 20mm dia. through partition wall between riser cupboard and lobby	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B10	Form opening of 20mm dia. through partition wall between stair and WC/bathroom	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B11	Form opening of 20mm dia. through partition wall between WC/bathroom and hall	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B12	Install ductwork casing	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B13	Install low level boxing around ductwork c/w skirting board at penetration of slab within bedroom	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B14	Form bulkhead in WC/bathroom area as follows:																																			
B14.1	In-line with lower casing	1				1	1				1	1		1					1			1	1			1	1			1				1	1		
B14.2	Approximately 300mm														1																1		1				
B14.3	Approximately 550mm to farthest corner		1						1									1																			
B14.4	Approximately 750mm to farthest corner			1	1			1	1				1			1	1			1	1			1	1			1	1			1				1	1
B15	Install 400x300mm access panel in bulkhead	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B16	Carefully reinstate wardrobe carcass into wardrobe surround (as applicable)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B17	Make good slab penetration including application of cementitious coating	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B18	Make good partition openings	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B19	Ensure bulkhead installation is completed to an acceptable standard of finish. Paint colour shall be white matt	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B20	Ensure casing installation is completed to an acceptable standard of finish. Paint colour shall be white satin/gloss	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B21	Ensure skirting board installation is completed to an acceptable standard of finish. Paint colour shall be white gloss	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Electrical services installation																																				
E1	Provide new electrical supply from a spare way on the apartment DB protected by a 6A type B MCB in riser cupboard at the lower level	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
E3	Install new mini trunking from lower level riser cupboard to proposed fan installation incorporating the fan isolation switch	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
E4	Install new 1mm2 LSF twin & earth cable in the mini trunking installation from lower level riser cupboard to proposed fan installation incorporating the fan isolation switch	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

SCOPE OF WORKS SCHEDULE

Project: F2147_Centre Point House
Reference: F2147-CPH-SOW-001
Date: 23/03/2021
Revision: 00

		Apartment number																																			
Mechanical services installation																																					
M1	Install fan c/w spring hangers, drop rods & cradle within WC/bathroom bulkhead zone	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M2	Install ductwork, to suit following configuration:																																				
M2.1	Fan in toilet bulkhead, duct turns to serve toilet, duct tees to serve bathroom		1	1	1			1	1	1			1			1	1	1		1	1			1	1			1	1			1				1	1
M2.2	Fan in toilet bulkhead, duct tees to serve toilet, straight run duct to serve bathroom	1				1	1				1			1					1			1	1			1	1			1				1	1		
M2.3	Fan in bathroom bulkhead, duct tees to serve bathroom, straight run duct to serve ensuite														1																1		1				
M2.4	Fan in bathroom bulkhead, duct turns to serve bathroom											1																									
M3	Cut back existing duct (as applicable) within ceiling void in WC/bathroom bulkhead zone and cap off	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M4	Carefully remove existing extract grilles in WC & bathroom, and install cover plate over former opening	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M5	Install exhaust louvre in soffit over balcony	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
M6	Install extract grille(s)	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M7	Test and commission new system																																				
Decommissioning of existing system																																					
D1	Following completion of new installations, decommission central extract fan and make safe	7																																			
D2	Isolate fan power supply at distribution board location	7																																			
D3	Strip out redundant cabling	7																																			
D4	Blank off exhaust opening with cover plate. Apply sealant prior to riveting outer perimeter of cover to avoid weather ingress and prevent debris/vermin to enter	7																																			
D5	Cut back common riser duct in lower level service cupboard	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
D6	Ensure fire damper is set to closed position in common riser duct in lower level service cupboard	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
D7	Infill bottom section of common riser duct with inert material in lower level service cupboard	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
D8	Securly fix blanking caps to open ends of common riser duct in lower level service cupboard	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Notes:
All above items shall be read in conjunction with drawings and speicifcation
Decommissioning works associated with existing communal system shall be undertaken only once new installations are installed and operational in all apartments

END OF DOCUMENT