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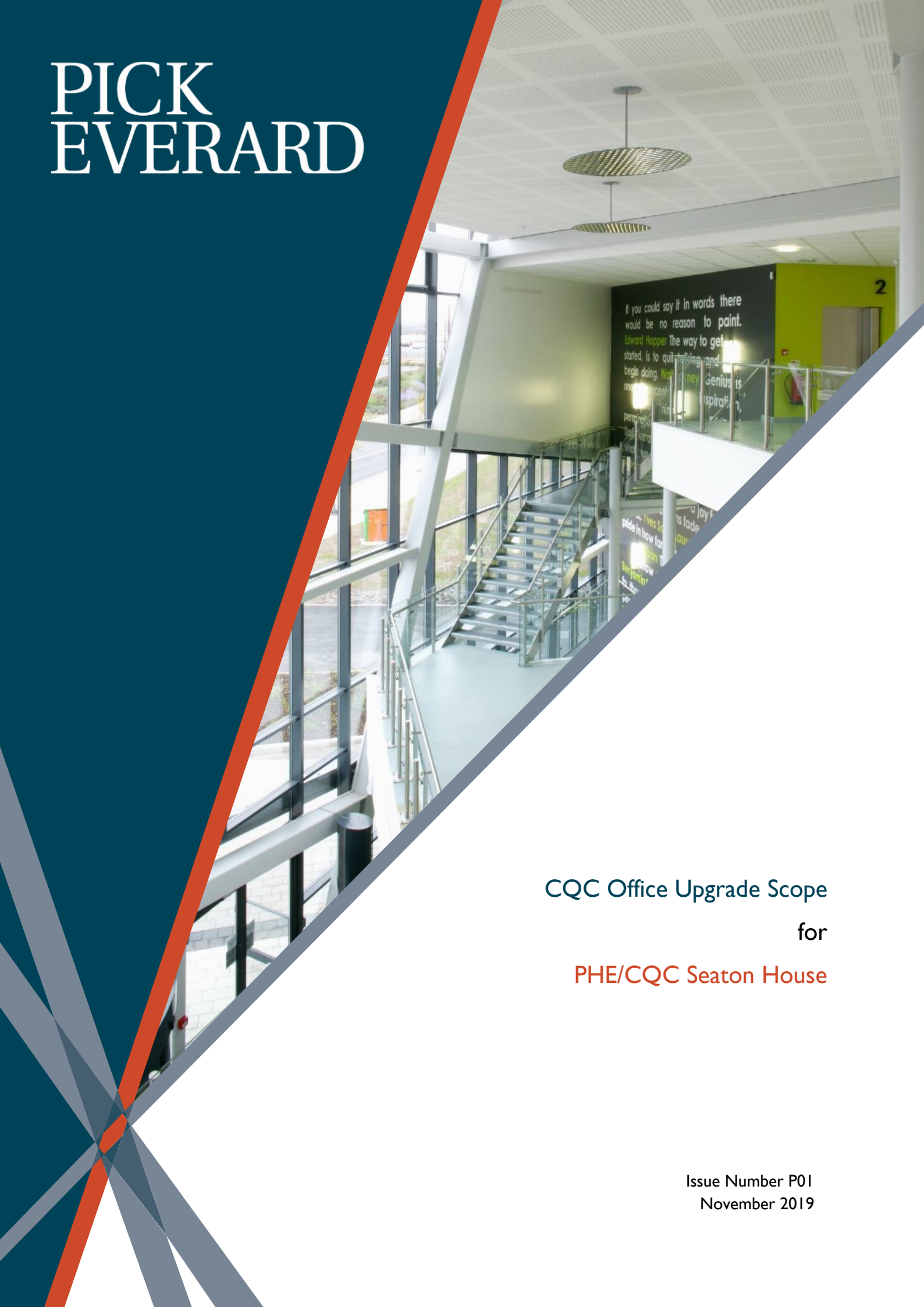


CQC Office Upgrade Scope

for

PHE/CQC Seaton House

Issue Number P01
November 2019

Document History

Issue	Date	Comment	Author	Checked
01	24/11/2019	Original issue	RN	ANC

Contents

1.0 Introduction

1.1 Site Buildings

The Seaton House Centre complex comprises NHS Drop in Centre on the ground floor and PHE offices on the first and second floors.

Additional personnel will be accommodated in the existing PHE 1st and 2nd floor offices under this contract, and building services shall be modified to suit the alterations as indicated in this Scoping document and associated Tender Drawings

1.2 Site Address

PHE Offices
Seaton House
London Road,
City Link,
Nottingham,

2.0 Scope of Works

Mechanical installation Work Packages shall be as follows:

2.1 WP1: 2nd Floor Tea Point Central:

Installation of new sink unit and sanitary fittings plus instantaneous drinking water boiler.

2.2 WP2: 2nd Floor Small Office 1 North:

Reduction of office size, relocation of air conditioning fan coil unit supply ducting and supply terminals.

2.3 WP3: 1st Floor Meeting Room North:

Provision of additional occupancy supply air from existing fresh air system AHU 01.

3.0 Mechanical Works

3.1 WP1: 2nd Floor Tea Point Central

A new additional stainless-steel sink shall be provided by others as indicated on the drawings in the second-floor existing tea point area. The area will also be fitted with an additional instantaneous drinking water boiler.

Domestic Hot Water Supply (DHWS): A new 15mm copper supply to the new sink mixer tap shall be connected off the existing under sink instantaneous water heater.

Mains Cold Water Supply (MCWS): a 22mm water supply to the new sink (15mm) and instantaneous drinking water boiler (15mm) shall be connected off the existing 22mm copper supply at low level serving the existing sink unit.

Foul Drainage (FD): A new 40mm PVC drain shall be connected into the existing drainage header.

Hydroboil: 2.4kW: 7.5 litre Over sink Boiling Drinking Water Dispenser

- Hydroboil complete with electronically activated and controlled delivery system to constantly monitor the water temperature and level, refilling and heating the water automatically as required.
- Manually resettable safety cut-out facility that protects the heating element if the cold-water supply fails.
- Warranty: Two year product guarantee with on-site service support from date of purchase.
- Electrical rating – 2.4kW
- Capacity – 7.5 litres:: Cups - 45/50
- Dimensions: 578mm x 318mm x 198mm
- Manufacturer: Zip Heaters UK, R4 unit Tenterfields Business Park, Luddendham Foot, Halifax. HX2 6EQ

3.2 WP2: 2nd Floor Small Meeting Room 1 North

The existing office wall is to be re-sited and the meeting room is to be reduced in size. As indicated on the drawings the supply / recirculation grilles are to be relocated and ductwork modified accordingly in the new ceiling grid fully coordinated with the new ceiling grid and lighting layout.

3.3 WP3: 1st Floor Meeting Room 1 North

The existing meeting room will now have increased occupancy. As indicated on the drawings a new supply grille shall be installed and connected to AHU01 fresh air supply ductwork system in the ceiling void. The new ducting branch shall be fitted with a volume control damper. The duct shall supply 80l/s of fresh air.

- Duct size – 150mm diameter
- Diffuser – Type DG3,3 way blow complete with 200mm plenum with 150mm flex connection spigot. Diffuser size to be 600mm x 600mm and coloured White
- Damper – Type RD: 150mm Diameter
- Manufacturer – Gilberts (Blackpool) Ltd, Clifton Road, Blackpool, FY4 4QT

The Contractor shall include for Total volume air tests to both FF-AHU01 & 2F-AHU02 and submit results to the Clients Representative.

Air volume tests shall be carried out with clean new filters in the AHUs

4.0 Reference Drawings

See Mechanical document and drawing schedule

976-PEV-XX-XX-SH-ME-0004_Mechanical Drawings Schedule

Mechanical Services Specification

CQC Offices Seaton House

27/11/2019 - 13:36

Table of Contents

Project definition

00-05-10 Project definition

100 A Document History

- **Issue 1:** Prepared from Standard Document version 2.1
  Date -25 November 2019
  Prepared by - RN
  Checked by - ANC
  Comment - Tender Issue

101 The Project

- **Project reference:** 190976
- **Project title:** CQC Offices Upgarde - Seaton House
- **Project description:** CQC have a requirement for upgrading the Mechanical and Electrical services on the first and second floors to accommodate additional personel. This will entail provision of occupancy fresh air to the FF meeting room and upgarde of hot and cold water services to the 2F tea area. See seperate document Scope of Works
- **Address of Site:** PHE Offices
  Seaton House
  London Road,
  City Link,
  Nottingham,

102 A Outline Description

- **Scope:** See seperate document Scope of Works

  The Works covered by this package includes the whole of the services described together with all additional work which may not be described in detail but are obviously necessary to provide a complete installation. Examples of this are brackets and secondary steelwork which shall be included as necessary for the complete installation.

- **Contractor input:** This Tender conveys the general and specific design requirements, standards and arrangements to be provided by the Contractor as part of the scope of works. This Tender package and associated documentation has been produced on an "abridged basis". This means that, generally and where possible at the time of compilation, the information provided is full and adequate for the purposes of tendering the Contract Works. Where it is has not been possible to incorporate full details, for example where due to a restricted design period or the nature of an existing aspect of the installation has not been clear , it will be incumbent on the Contractor to complete the required element of work/design to effect an appropriate, complete, working, suitable solution, installation and system on site.

102 B Pre Contract Information

- **Value 1:** Health & safety General: Information on the Clients H&S policy can be obtained from PHE / NHS Estates Department.
  The health and safety adviser for construction works can be contacted for further information via PickEverard.
  · Asbestos: Asbestos may still be present but it is not to be disturbed. Should asbestos be found by the contractor, especially if in the location of the
  contractor's works, the situation shall be reported and advice shall be sought from the project manager.
  Management Survey information (Type 2 Survey) and Demolition Survey information (Type 3 Survey) is available in electronic format.
  Enquiries should be made as a matter of routine for the scheme as early as possible in the

project with appropriate investigation and surveys being undertaken in liaison with the Project Manager.
The Client has a Policy document on asbestos which must be adhered to.
Further information is available from NHS Estates Management's asbestos specialist.
· Access: Permission for access to electrical switch rooms shall be sought only from an Authorised Persons. The Consultant and Contractor will follow the documented procedures.

Contact details below - Site:

Isabel Bryans: Deputy Centre Operations Manager- PHE Estates Department
0115 844 1393
Switchboard: 0344 225 4524

102 C Documentation

- **Value 1:** Description: The specification for the works is contained within the documents as below:-
  Document 1 - Job specific specification and workmanship clauses (this document)

103 A Elements of work included:

- **Services:** The main areas of work are listed below:-

  Mains Cold Water Services
  Hot Water Services
  Thermal Insulation
  Fresh Air Ventilation

104 A Tender drawings

- **Introduction:** The drawings issued as part of the tender documents shall be called the tender drawings. The tender drawings are indicative only and schematic in format and are not intended to show every pipework offset etc. These drawings when read in conjunction with the specification and supplemented by a site visit, where necessary, shall provide information for tendering and for the production of working drawings. The drawings provide information in relation to the design intent. The drawing shall be developed by the Contractor into fully detailed coordinated working drawings/proposals to be issued for comment to the Contract Administrator.

  Full allowance shall be made in any tender submitted for any contingencies which may arise in carrying out the full installation.

  The Contractor shall be responsible for any discrepancies, errors and omissions in the drawings and any particulars supplied by him provided that such discrepancies, errors and omissions are not due to inaccurate information on particulars furnished in writing.
  The production of the installation drawings must suit the contract progress. The Tenderer shall include in his drawing programme a period of four weeks for initial consideration and a further two weeks for formal issue.

  The Contractor shall allow for ensuring that the installation drawings prepared for the services installations are fully co-ordinated with all other engineering services including the drainage system and all structural and building details.

  The Contractor shall note that following issue of the Tender Drawings, subsequent changes to drawings may be communicated in a variety of formats which will be determined at the sole discretion of the Building Services Engineer. This may include but not be limited to; drawings in a CAD format; hand drawn sketch(s), drawings in pdf format; hand marked up CAD drawings in pdf format. It will be the Contractor's responsibility to use this information and incorporate it into his design / production / installation / coordination drawings.

The Contractor shall note that drawings and documentation supplied by the Building Services Engineer for this project will be provided in electronic format only. It will be the responsibility of the Contractor to provide paper copies using the electronic information supplied to him. Paper copies will not be provided by the Building Services Engineer.

- **Drawing schedule:** The tender drawings which accompany this specification and which form part of the tender documents are as on the Drawing Issue Sheet

  The drawings on the issue record is the extent of drawings being produced by the design team and the Contractor shall include for the preparation of all further drawings necessary to undertake the installation.

110 Project documents

- **Document type:** Mechanical Services Specification.
- **Title:** CQC Offices Upgrade
- **Format:** Electronic.

125 A Main Contract Preliminaries:

- **Contract Conditions:** The main contract preliminaries as detailed elsewhere apply to the whole of the Works, including the Works described in this document. The Contractor shall comply with the requirements of the main contract preliminaries in so far as they apply to these Works, and co-operate with and assist the other parties in complying with them generally.

125 B DETAILS RELATING TO PRE-DESIGNED PROJECTS

- **Scope of works:** The scope of Works described by the specification documents and included on the associated tender drawings and contained within other documentation is the completion of the design, the installation and the commissioning of the services for the project as described in detail elsewhere in the specification documentation.
  Although the project is predominately designed, there are certain elements for which the Contractor shall take on the design responsibility. One example of this is the system of bracketing supporting cables, pipework, equipment etc.
  Similarly items such as controls, fire alarms etc. using specialised equipment shall be the design responsibility of the Contractor (via the supplier) and shall meet the requirements of the performance specification and/or schematics.
  The installation shall include, but shall not be limited to, design finalisation, installation, commissioning, issue of test and completion certificates, record drawings, operating instructions and maintenance manuals.
- **General responsibility for design and warranties:** The Contractor will be required to take full responsibility for all of the works designed by himself even though the consultants appointed by the Employer have provided the majority of the design criteria and performance information. When the tender documentation permits the Contractor to select the equipment manufacturers this means there can be variations to the performance of similar products so the Contractor is responsible for ensuring the performance of the final overall system is correct and therefore is ultimately responsible for the design.
  The Contractor shall, in all instance, be responsible for checking the design criteria and performance specifications provided by others to ensure that the requirements of all relevant design codes, statutes, building and other regulations are met. The Contractor shall by putting forward his proposal assume all responsibility for all such design criteria to ensure that they meet with the requirements of performance specifications as if prepared by himself.
  The Contractor shall understand and accept that although he is required by this contract to satisfy or obtain approvals from the Employer and Contract Administrator, he shall also be required to satisfy or obtain approvals from any relevant Statutory or other competent Authority in all matters relating to the Works over which such Statutory or other competent Authority have powers to require satisfaction or approval.

Whilst the Contractor shall be required to accept responsibility for all design criteria and to ensure that the design meets the performance specification of the Employer or the Consultants, appointed by the Employer, the Contractor shall be entitled to rely upon the accuracy of any information provided by others provided always that such compliance or reliance shall not prejudice or derogate from the design responsibility under this contract to ensure that the Works shall be fit for the purpose made known in the tender documentation or reasonably to be inferred therefrom.
The Contractor shall be responsible for providing all necessary information as and when required by the Employer such that approvals arising out of the requirements of such design codes, statutes, building and other regulations can be obtained. If the Contractor is required by the programme or elects to commence work on site before such approvals have been obtained then he shall do so at his own risk.
The Contractor shall provide working drawings and fabrication drawings, of all elements of construction for the comments of the Contract Administrator and a nominated representative from the Contractor shall be available for consultation on matters of design at all times and shall attend design and site meetings if required as a matter of course. Any comments so given by the Contract Administrator or others appointed by the Employer shall in no way diminish the responsibility, of the Contractor for the design of the Works.
In addition to the general requirements relating to design responsibility, the Contractor shall if required by the Employer guarantee and indemnify the Employer in writing in respect of matters relating to the design, fabrication and construction of the Works and the fitness for purpose, as made known in the tender documentation or reasonably to be inferred therefrom, of the Works as set out in the proposals submitted by the Contractor.

- **Information provided by Contractor:**
  The Contractor shall provide the following drawn information:-
  * Produce or expand on previously produced Schematic Drawings
  * Detailed Design Drawings
  * Co-ordination Drawings
  * Installation Drawings
  * Installation Wiring Diagrams
  * Shop Drawings
  * Manufacturers Drawings
  * Manufacturers Certified Drawings
  * Builder's work Information
  * Controls Logic Drawings
  * Switchgear Starters etc.
  * As Installed Drawings
  * Plantroom Schedules and Schematics
  * Upon completion of the Works or a section of the Works produce record drawings
  * Request additional information as necessary from the Contract Administrator and provide information as necessary in time to meet the programme
  * Submit sufficient copies of the design/production information for distribution to all interested parties.
  * Make any necessary amendments without delay. Unless and until it is confirmed that resubmission is not required, resubmit for further checking and comment, and incorporate any necessary amendments all as before.
  * Submitted design/production information where the Works differ from the requirements previously advised documents each such difference must be the subject of a request for substitution or Variation, supported by all relevant information.
  * Should any amendment required be considered to involve a Variation which has not already been acknowledged as a Variation, notify the Contract Administrator without delay and in any case within 7 days, and do not proceed with ordering, fabrication, or fixing until subsequently instructed. Claims for the extra cost of such work, if made after it has been carried out may not be allowed.
  * Provide sufficient copies of the final design/production information and distribute to all affected parties.

Documents shall be provided to a programme developed and agreed with the Contract Administrator. The Contractor shall make allowance in his programme for incorporating any comments made by the design team.

- **Information provided by or on behalf of the Employer:** The information provided on behalf of the Employer shall include:-
  1) This Specification
  2)Project specific drawings- as listed elsewhere or detailed in this specification
  3) Schematic drawing(s)- as listed elsewhere
  4) Standard drawing(s) - as listed elsewhere or detailed in this specification
  5) Any other associated documentation as detailed in the specification.

126 A Design and Design Detailing

- **Design responsibility:** The Contractor shall be responsible for the detailed design activities covering the elements listed below and under the relevant clauses which identify the more specific requirements, in addition to those activities normally undertaken through the custom and practice of the industry, all of which are subject to the comments of the Contract Administrator.

  The Contractor shall warrant that all reasonable skill and care has been taken in the design of the works in so far as the works have been, or will be, designed by him or by specialist's employed by him. The Contractor shall also take care in the selection of materials and goods to be used in the contract works in so far as the goods are selected by the Contractor. He shall also give a warranty on the satisfactory performance of any portion of the works for which the work is detailed within the contract by means of performance specification.
- **Elements to be designed by the Contractor:** The information detailed on the tender drawings shall be interpreted as being an indicative representation of a minimum level provision; the Contractor shall develop these proposals further to provide a full and complete installation for:-

  1) Builders work details for construction.
  2) Brackets, supports, fixing and anchors associated with all services.
  3) Fire stopping and sleeving of services.
  4) Working drawings and final design co-ordination.
  5) Re-design of mechanical and electrical services installation where the Contractor selects an alternative manufacturer, or changes the design proposals, to that upon which the design has been developed and is based.
- **Contractor's Design Detailing Responsibility:** The Contractor shall be responsible for the detailed design activities listed within this specification and below (unless noted otherwise) in addition to and including those activities normally undertaken through the custom and practice of the industry, all of which shall be subject to the comments of the Main Contractor and Contract Administrator.

  The Contractor shall be responsible for ensuring that the work, which is undertaken, is fully co-ordinated and compatible with the remainder of the project design.
- **Major Items:** The Contractor's detailing obligations shall include but not be limited to the following:-

  * Design and Fabrication drawings and the co-ordinated Installation/Working Drawings and Record Drawings.
  * Drain points shall be inserted at all low level positions and vent points at all high level locations, with Auto Air Vents where ever possible.
  * Pipework gradients in accordance with BSRIA documents Application Guide 1/89 Flushing and cleaning of Water Systems.
  * Bracket and support detailed design and locations. (All types, loads and locations must be declared to the Contract Administrator prior to installation for comment (10 working days). Particular attention is drawn to loads imposed onto roof/purlins which are subject to agreement with the Structural Engineer.
  * Details of Electrical wiring diagrams of all equipment supplied by the Contractor showing all

interconnections between equipment to enable the necessary wiring to be undertaken.
* Details of all equipment component design and selection necessary insofar as such items have been selected by the Contractor for that item of equipment to meet the engineering specification and performance indicated.
* Automatic controls detailed design insofar as it is required to meet with full physical and operational requirements of the Engineering Specification. The Contractor shall be responsible for ensuring the full compatibility of the plant and equipment with the specified function. Where interfaces (relays or other devices or modifications to hardware or software) are required the design and incorporation shall be the Contractor's responsibility.
* Dimensioning of, and final installation details of, Automatic Control panels to suit the detailed requirement of the particular agreed manufacturers of controls equipment and cable entry/exit accommodation such that cable entry is possible in the selected location, safe operating and maintenance clearances are provided in all access positions when installed on site, component and cabling requirements to meet with particular manufacturers and the engineering specification requirements and doors are not fouled by other plant, equipment, services or structural elements.
* Attenuation of installed Plant
* Design of elements of the scheme provided by the Contractor for self weight and other applied forces/loadings in reasonable use. In particular any buried tanks or pipework will require designed anchorage encasement or foundations.
* Submit calculations and proposals to demonstrate the design has fully considered the requirements for thermal expansion accommodation and anchorage, including provision of bellows or bends.
* Acoustic design or modification of equipment to meet with the noise levels specified. All levels to be achieved with all M&E operating plant
* Valve, damper and access locations.
* System water capacities, and chemical additives - and arranging of the facilities required by BSRIA Application Guide 8/91 pre-commission cleaning of water system
* Selection of all anti-vibration mountings to suit the particular application of the mounts.
* Final exact locations of control sensors detectors and thermostats.
* Capacity, location and design of electrical conduit system, similarly trunking where used in lieu of multi-conduit installation.
* Duct platforms, access covers and gratings, ladders and additional structural steelwork where required and detailed in the sub-contract documentation.
* Selection of regulation devices to comply with CIBSE Technical Memorandum TM8.
* Sizing of cable terminations on items of equipment provided under the sub-Contract where cable sizes are specified.
* Ensuring cable sizing selections as specified are not invalidated by Sub - Contractor selection of alternative routes during installation.
* Detailed design of earthing and bonding requirements for electrical engineering services, mechanical engineering services, architectural and structural elements requiring earthing and bonding.
* Design of cable or cable trunking terminations, cable extension boxes etc. on to electrical equipment provided under the sub-contract and dimensioning of and final installation details of electrical switchgear to ensure that cables can be terminated into the equipment
* Fuse sizes installed in plug tops are appropriate for the rating of connected equipment.
* Sizing and detailed design of pipework between items of equipment provided under contract works.
* Detailed coordination and planning of services within Service Risers including provision of plan, section and elevation drawings.
* Phasing, programming and co-ordination of installation activities to minimise disruption and inconvenience to the site.

- **Coordination:** The Contractor is, as detailed elsewhere in the specification, responsible for detailed coordination of the mechanical and electrical installations with themselves and with the building fabric.

130 A Supervision of Works

- **Works:** The Contractor shall be responsible for co-ordination, supervision and administration of the work including the works of his sub-contractors.
  The Contractor shall arrange and monitor a programme with each of his sub-contractors, suppliers, local authority statutory undertakers etc and obtain and supply information as necessary for co-ordination of the work.
- **Resources:** A statement must be submitted within one week of any request describing the organisation and resources which are proposed to provide to control the quality of the Works. The statement must include the number and type of staff responsible for quality control with details of their qualifications and duties.

134 A Setting Out The Works

- **General:** Allowance shall be made for setting out the Works accurately on site in accordance with the drawings and documentation and Works shall not proceed until the setting out has been approved by the Contract Administrator.
- **Site dimensions:** Where installations are dependent on site dimensions, the Contractor shall ensure that these are available before proceeding with the Works. Do not take dimensions by scaling from the drawings. Where dimensions are indicated on drawings, check these on site as appropriate to ensure building construction and manufacturing tolerances can be accommodated. Do not order or manufacture equipment using dimensions indicated on the tender drawings, specifications or schedules.

135 A Delivery Storage and Protection

- **Delivery:** Delivery of material shall be arranged to correspond with the site programme and shall take into account any limitations on site storage capacity.
- **Protection:** The Contractor shall provide adequate and safe protection for all materials and products during transportation to site, storage and erection. Any damage will be rectified or products replaced.
  The delivery of all tubes, conduits, trunking and associated equipment shall ensure that the open ends are effectively plugged, capped or sealed.
  Plant and other equipment shall be protected against mechanical damage or damage caused by moisture ingress.
  Prior to erection, sufficient safe and secure storage shall be provided for all materials. Where necessary racks shall be provided to prevent distortion for storage of conduits, pipes and similar materials. Fittings, accessories and sundry items shall be stored in clean bins or bagged and stored in racks and maintained under suitable weatherproof cover.
  Once installed, adequate and safe protection shall be provided for all materials and equipment. All items shall be protected against the ingress of water and dust, formation of condensation, extremes and rapid changes of temperature, building Works and the operations of others.
  It is pointed out that protection other than hardboard covers or heavy duty polythene sheets shall be required to certain items of equipment. Such items shall include, but are not limited to, control panels, switchboards, distribution boards, heater batteries, fin pipework, gauge glasses.
  All items shall be protected from damage and paint splashes, and where possible items such as grilles diffusers, light fittings, switches, accessories etc. shall be installed as near to practical completion as possible.
  Filter mediums in air handling units etc. shall only be installed when the plant items concerned are being commissioned and tested. All plant items shall be covered with a minimum of polythene sheeting except when being worked upon.
  During construction, open ends of pipes, ducts etc. shall be blanked as the work proceeds.
  Where plant and equipment is installed in decorated areas, the equipment shall be left in a ready to paint condition for the decoration work to be carried out by others.
  Within plant rooms the painting shall be carried out under this contract, and any painted parts liable to corrosion shall be painted immediately after removal of any temporary protection.

Works terminology

00-05-15 Works terminology

110 Terminology

- **Meaning:** Terms, derived terms and synonyms used are as defined in this section or in the appropriate referenced document.

210 Description terminology

- **Attendance:** Provision of temporary works and facilities to a third party. If not detailed in the contract, to be as described in RICS NRM coverage rule 10.4.
- **Building Manual:** A document containing information of use to subsequent building owners, occupiers and users about the requirements and procedures for effective operation, maintenance, decommissioning and demolition of the building.
- **Operating and Maintenance Manual:** This is often refered to as the O & M manual and is the same document as the Building manual as above
- **Construction Work:** Permanent work together with temporary work.
- **Contractor:** The organisation appointed to carry out the services installations as described in this specification and accompanying documentation - see amplification in 00-05-20 Clause 120A
- **Contractor's choice:** Selection delegated to the Contractor, and design liability to be that of the Contractor.
- **Contractor's design:** Design to be carried out or completed by the Contractor, supported by appropriate contractual arrangements, to correspond with specified requirements.
- **Cost:** The amount paid or given by one party to another in exchange for goods, work or services.
- **Designer:** A person carrying out design on a project.
- **Deviation:** Difference between a specified dimension or position and the actual dimension or position.
- **Employer:** The party to the Contract for whom the goods, work or services are provided. Includes Client (in consultancy contracts and CDM Regulations), the Employer, Building owner or Purchaser (in construction contracts), the Developer (in development agreements and funding agreements), or the 'Main' contractor in contractor/ subcontractor agreements - which may be defined terms in certain standard contract forms
- **Estimate:** An approximate evaluation of either time or cost of part or the whole of a project.
- **Execute:** To complete a task fully and put into effect. To fix, apply, install or lay products securely, accurately, plumb and in alignment.
- **Fastener:** Device for mechanically attaching something to something else.
- **Manufacturer and Product reference:** Manufacturer - the body under whose name the particular product, component or system is marketed.
  Product reference - the proprietary brand name and/ or reference by which the particular product, component or system is identified.
  References are as specified in the manufacturer's technical literature current on the date specified.
- **Manufacturer's standard:** Where used in conjunction with a specified proprietary product, accessories to be those recommended by the product manufacturer.
- **Permanent Work:** Work to be constructed and completed in accordance with the Contract.
- **Price:** An indication of the amount required to be paid by one party to another in exchange for goods, work or services.
- **Product:** Material, both manufactured and naturally occurring, goods and accessories for permanent incorporation into the Works.

- **Requirements:** A description in outline or detailed form of the development, or a part of it, which one party requires another to design and/or build.
- **Schedule of rates:** The subdivision of product and execution prices by a pre-determined unit basis.
- **Schedule of Work:** The subdivision of work items by a pre-determined classification. Can form the basis of a pricing document where Bills of Quantities are not used.
- **Schematic:** A drawing of a system showing components, products, systems and their interconnections.
- **Site equipment:** The Contractor's apparatus, appliances, machinery, vehicles or things of whatsoever nature required in or about the construction for the execution and completion of the Works and the remedying of defects.
  Includes Appliances, vehicles, consumables, tools, temporary work, scaffolding, cabins and other site facilities.
  Excludes: Temporary work, Employer's products and equipment or anything intended to form or forming part of the permanent Works.
- **Specification:** Written description of requirements.
- **System:** Products, components, equipment, accessories, controls, supports and ancillary items, including installation, necessary for that section of the work to function.
- **Temporary work:** Incidental work to undertaken during construction but not intended to form part of the completed work.

310 Activity terminology

- **Advise:** See 'Communicate'.
- **Agree:** See 'Communicate'.
- **Approve:** Record conformance of work to specified criteria by giving formal or official sanction.
- **Communicate:** Includes advise, inform, agree, confirm, notify, seek or obtain information, consent or instructions, or make arrangements.
- **Confirm:** See 'Communicate'.
- **Ease:** Adjust moving parts of designated products, systems or work to achieve free movement and good fit in open and closed positions.
- **Fix:** Receive, unload, handle, store, protect, place and fasten in position; dispose of waste and surplus packaging; to include labour, materials and site equipment for that purpose.
- **Give notice:** Communicate in writing to the person administering the Contract at the address listed therein.
- **Inform:** See 'Communicate'.
- **Keep for recycling:** As 'keep for use' but relates to a naturally occurring material rather than a manufactured product.
- **Keep for reuse:** Do not damage designated products, systems or work. Clean off bedding and jointing materials. Stack neatly, adequately protect and store until required by the Employer or Purchaser, or for use in the Works as instructed.
- **Make good:** Execute local remedial work to designated work. Make secure, sound and neat.
- **Match existing:** Provide products and work of the same appearance and features as the original, excluding ageing and weathering. Make joints between existing and new work as inconspicuous as possible.
- **Notify:** See 'Communicate'.
- **Quote:** Use 'Estimate'.
- **Recycle:** Collect, sort, process and convert discarded or recovered components into raw materials for use in the creation of new products.
- **Refix:** Fix previously removed products.

- **Remove:** Disconnect, dismantle as necessary and take out the designated products or work, together with associated accessories, fixings, supports, linings and bedding materials. Dispose of unwanted materials.
  Removal of a system includes this work.
- **Remediate:** Action or measures taken to lessen, clean-up, remove or mitigate the existence of hazardous materials existing on a property; in accordance with standards, specifications or requirements as may be required by statutes, rules, regulations or specification.
- **Repair:** Execute remedial work to designated products. Make secure, sound and neat. Excludes redecoration and replacement.
- **Replace:** Supply and fix new products matching those removed. Execute work to match the original new state of that removed.
- **Reuse:** Recover components to be fixed or used in the project or other buildings without the requirement for recycling.
- **Submit:** Deliver an item in a specified format to a specified person within a specified timeframe.
- **Submit proposals:** Submit information in response to specified requirements.
- **Supply and fix:** Supply of products, components or systems to be fixed, together with their fixing.

Project participants

00-05-20 Project participants

110 Project participants

- **Company:** Public Health of England (PHE)
  - **Name:** Isabel Bryans
  - **Role:** Deputy Centre Operations Manager
  - **Address:** Seaton House, City Link, London Road, Nottingham.
  - **Telephone number:** Direct: 0115 844 1393
    Switchboard: 0344 225 4524
  - **Email:** Isabel.Bryans@phe.gov.uk

110 A Project participants

- **Company:**
  - **Name:**
  - **Role:**
  - **Telephone number:**
  - **Email:**

110 B Project participants

- **Company:** Pick Everard
  - **Name:** Robert Newton
  - **Role:** MEP Engineers
  - **Address:** Gothic House, Barker Gate, Nottingham, NG1 1JU
- **Contact:** Pick Everard Consultants
  - **Name:** Robert Newton
  - **Telephone number:** 07881 364 158
  - **Email:** bobnewton@pickeverard.co.uk

110 D Project participants

120 A Contractor

- **Definition:** The term Contractor is used throughout the documentation as a means of identifying the organisation tendering and later appointed to carry out the services installations as described in this specification and accompanying documentation.
- **Contract Appointment:** The Contractor shall be appointed as a domestic sub-contractor by the Main Contractor undertaking the complete package of works and therefore the works referred to in this and other associated documentation relates to only the works associated with the Mechanical and Electrical Services.
- **Differentiation:** Were it is necessary to differentiate between the main contractor who is also contractually defined as the Contractor and the contractor installing the services works the term Services Contractor may also be used to define the organisation undertaking the works referred to in this and other associated documentation.
  (The Contractor is party who undertakes to perform the services, supply goods or carry out work defined in the contract under the roles of Main Contractor, Prime Contractor, Supplier, Service provider, Builder, Subcontractor, etc. as the context dictates.)

- **Main Contract Preliminaries:** The main contract preliminaries as detailed elsewhere apply to the whole of the Works, including the Works described in this document. The Contractor shall comply with the requirements of the main contract preliminaries in so far as they apply to these Works, and co-operate with and assist the other parties in complying with them generally.

130 A Changes to the Client team

- **General:** The organisations named above relate to the major team members who have already been appointed. The team is likely to be strengthened by other appointments as the project progresses.

Works Contract Management

00-50-70 Works Contract Management

GENERALLY

130 Supervision

- **Requirement:** The whole of the contract work and any significant parts must be under the close control of competent trade supervisors to ensure maintenance of satisfactory quality, progress and coordination.

  Full allowance shall be made for retaining on site during the whole progress of the Works a 'Supervisor' who shall ensure constant supervision and management of the Works.

  This person will be responsible for planning the work in close co-operation with all other trades and must not be withdrawn from the site unless notice is given in writing.
- **Evidence:** Provide names, CV's, qualifications and any other documentary evidence.
- **Submittal date:** One week before start on site.
- **Replacement of supervisory personnel:** Give maximum possible notice before changing supervisory personnel.

130 A Supervision of Works

- **Works:** The Contractor shall be responsible for co-ordination, supervision and administration of the work including the works of his sub-contractors.
  The Contractor shall arrange and monitor a programme with each of his sub-contractors, suppliers, local authority statutory undertakers etc and obtain and supply information as necessary for co-ordination of the work.
- **Resources:** A statement must be submitted within one week of any request describing the organisation and resources which are proposed to provide to control the quality of the Works. The statement must include the number and type of staff responsible for quality control with details of their qualifications and duties.

132 A Reading of Meters

- **Existing Sites:** On existing sites the reading on all water, gas and electricity meters shall be recorded prior to commencement of the Works. The reading on all water, gas and electricity meters shall be recorded immediately on completion of the Works and forwarded to the Contract Administrator.

134 A Setting Out The Works

- **General:** Allowance shall be made for setting out the Works accurately on site in accordance with the drawings and documentation and Works shall not proceed until the setting out has been approved by the Contract Administrator.
- **Site Dimensions:** Where installations are dependent on site dimensions, the Contractor shall ensure that these are available before proceeding with the Works. Do not take dimensions by scaling from the drawings. Where dimensions are indicated on drawings, check these on site as appropriate to ensure building construction and manufacturing tolerances can be accommodated. Do not order or manufacture equipment using dimensions indicated on the tender drawings, specifications or schedules.

135 A Delivery Storage and Protection

- **Delivery:** Delivery of material shall be arranged to correspond with the site programme and shall take into account any limitations on site storage capacity.
- **Protection:** The Contractor shall provide adequate and safe protection for all materials and products during transportation to site, storage and erection. Any damage will be rectified or products replaced.
  The delivery of all tubes, conduits, trunking and associated equipment shall ensure that the open ends are effectively plugged, capped or sealed.
  Air handling units and other equipment shall be protected against mechanical damage or damage caused by moisture ingress.
  Prior to erection, sufficient safe and secure storage shall be provided for all materials. Where necessary racks shall be provided to prevent distortion for storage of conduits, pipes and similar materials. Fittings, accessories and sundry items shall be stored in clean bins or bagged and stored in racks and maintained under suitable weatherproof cover.
  Once installed, adequate and safe protection shall be provided for all materials and equipment. All items shall be protected against the ingress of water and dust, formation of condensation, extremes and rapid changes of temperature, building Works and the operations of others.
  It is pointed out that protection other than hardboard covers or heavy duty polythene sheets shall be required to certain items of equipment. Such items shall include, but are not limited to, control panels, switchboards, distribution boards, heater batteries, fin pipework, gauge glasses.
  All items shall be protected from damage and paint splashes, and where possible items such as grilles diffusers, light fittings, switches, accessories etc. shall be installed as near to practical completion as possible.
  Filter mediums in air handling units etc. shall only be installed when the plant items concerned are being commissioned and tested. All plant items shall be covered with a minimum of polythene sheeting except when being worked upon.
  During construction, open ends of pipes, ducts etc. shall be blanked as the work proceeds.
  Where plant and equipment is installed in decorated areas, the equipment shall be left in a ready to paint condition for the decoration work to be carried out by others.
  Within plant rooms the painting shall be carried out under this contract, and any painted parts liable to corrosion shall be painted immediately after removal of any temporary protection.
- **Value 3:**

136 A Production Information

- **General:** The Contractor shall liaise with the Contract Administrator and others as necessary to help ensure co-ordination of the work with the related building elements and services. Drawings and other information as specified shall be provided showing such details of the work as the Contract Administrator may reasonably require:
  Submit for comment, make any necessary amendments and resubmit for further comment unless confirmation is received in writing that this is not necessary.
  Submit sufficient copies of final information for distribution to all affected parties.
- **Co-ordination of Engineering Service:** Co-ordination of the Engineering Services Installations will be carried out as part of the Works.
  The principles of co-ordination shall be agreed with all parties concerned. All necessary details/drawings/schedules etc. required to enable the co-ordination drawings to be prepared by others shall be provided. Details provided by others shall be incorporated into the Co-ordination Drawings.
  The installation drawings shall make due allowance for all building elements, structure and other services. Prior to submission all drawings, schedules and any other information provided by manufacturers, nominated suppliers or specialist subcontractors shall be checked and approved to ensure that all the requirements of the contract documentation have been incorporated. All documents submitted shall be accompanied by a certificate indicating that they have been checked and the name of the person carrying out the checking procedure.

- **Co-ordination of all trades:** Allowance shall be made for co-ordinating the Works with the Works of other trades and installations which may be on site during the period of the installation.
- **Co-operation:** The Contractor shall co-operate with other contractors, supplies, local authorities and statutory undertakers.
- **Builderswork:** Builder's work such as chases, holes through floors, roofs etc. shall either be marked out on site or submitted on dimension drawings all as required.
  Builder's work information shall be provided appropriate to the stage of the design development and shall include requirements for foundations, bases, and supporting structures for plant and equipment. This information shall be in the form of fully dimensioned drawings showing both size and position of builder's work requirements together with weights of equipment.
  All cut holes and chases required together with any pockets cast in the concrete, shall be marked on site together with any inserts, any built in sleeves or similar.
  Holes may not be cut in steelwork, reinforcement or pre-cast concrete without written permission. Under no circumstances will holes be cut in pre-stressed concrete. Permitted holes in steelwork must be drilled by the steelwork supplier.

  Builder's work drawings shall be provided on the immediate commencement of the Works. The drawings shall detail work that forms part of the building construction and shall include concrete bases, the building in of steelwork, foundation bolts and metal inserts, making chases and cutting away and making good etc. The builder's work drawings must indicate accurately the sizes and positions of all items of builder's work required. Alternatively, a request may be made to mark out in advance on site the builder's work requirements.
  Where possible the depth of wall chases shall be equal to the external diameter of the conduit to be installed to allow the plaster cover to be of normal thickness.
  For external pipework and cabling installations the Contractor will excavate trenches, construct chambers for valves, hydrants etc., form thrust blocks, supply and lay cables, pipes etc. and on completion of the engineering installation work will back fill and reinstate the ground.
  Timely indication shall be given of any difficulties likely to be encountered accommodating the plant or equipment in the space available.
  The strength of floors across which heavy loads are to be moved shall be checked in good time before the load is applies so that if the strength of the floor is found to be inadequate arrangements for supporting the load can be made without delaying it's movement.
  Any builder's work which has been incorrectly advised shall be rectified at the expense of the Contractor who issued the information, irrespective of how this information has been provided.

137 B Drawings

- **Introduction:** Drawings are to be supplied in time to meet the overall programme for the Works bearing in mind the time required for comment by others.
  It should always be considered that the programme may be dictated by others involved in the project e.g. Structural Engineer, and not just the services installation itself.
  Various types of drawings are required throughout the contract which are detailed in subsequent paragraphs.
  The people/organisations responsible for producing these drawings are detailed elsewhere.

  Sketch drawings, schematic drawings, detailed design drawings, co-ordination drawings, installation drawings, installation wiring diagrams, shop drawings, manufacturer's drawings, manufacturer's certified drawings, record drawings, builder's work drawings are as defined in the BSRIA Guide BG6/2009.
- **Sketch Drawings:** Line diagrams and layouts indicating basic proposals, location of main items of plant, routes of main pipes, air ducts and cable runs in such detail as to illustrate the incorporation of the Engineering Services within the project as a whole.
- **Schematic Drawings:** These are line diagrams describing the interconnection of components in a system. The main features of a schematic drawing are as follows:-
  1) A two dimensional layout drawing with divisions to show the distribution of the system between building levels. Or an isometric style layout indicating the distribution of systems across individual floor levels. The drawing is not necessarily constructed to scale. Include all functional

components which make up the system, i.e. plant items, pumps, fans, valves, strainers, terminals, electrical switchgear, distribution and components.
2) Symbols and line conventions shall be in accordance with good practice.
3) The drawing shall be labelled with appropriate pipe, duct and cable sizes where these are not shown elsewhere.
4) Indicate components which have a sensing and control function and show the links between them, e.g. building management systems, fire alarms and HV controls.
5) Identify the major components indicated on the schematic drawing so that their whereabouts in specification and on other drawings can be easily determined.
6) Include all data essential to testing and commissioning including volumetric flow rates, design total pressure losses at equipment, locations of dampers, valves and flow measuring stations, electrical fault levels, current ratings, short circuit capacities and tripping times.

- **Detailed design drawings:** These are drawings showing the intended locations of plant items and service routes in such detail as to indicate the design intent. The main features of detailed design drawings should be as follows:-
  1) Plan layouts to a scale of at least 1:100
  2) The drawing will not indicate the precise position of services, but it should be feasible to install the services within the general routes indicated. It should be possible to produce co-ordination drawings or installation drawings without major re-routing of the services.
  3) Represent pipework by single line (or double line) layouts.
  4) Represent ductwork by either double or single line layouts as required to ensure that the routes indicated are feasible.
- **Co-ordination drawings:** These are drawings showing the inter-relationship of two or more engineering services and their relation to the structure and building fabric. The main features of a co-ordination drawing are as follows:-
  1) Plan layouts to a scale of at least 1:50, accompanied by cross-sections to a scale of at least 1:20 for all congested areas. Plantroom layouts to a scale of at least 1:20, accompanied by cross-sections and elevations to a scale of at least 1:20.
  2) A spatially co-ordinated drawing, i.e. no physical clashes between the system components when installed at the scaled-off positions shown on the drawing. Provide dimensions in areas where tolerances are minimal.
  3) Make allowance for the service at its widest point for spaces between pipe and duct runs. Allow for insulation, standard fitting dimensions and joint widths on the drawing. Also allow for those plant items specified by the designer and identified in the design specification. The drawing shall indicate positions of main fixing points and supports where they have significance to the structural design.
  4) Make allowance for installation working space and space to facilitate commissioning and maintenance and arrange the services so that it is possible to demonstrate a feasible sequence of installation.
  5) Support the drawing with individual services drawings for clarity.
- **Installation drawings:** These are drawings based on the detailed drawing or co-ordination drawing with the primary purpose of defining that information needed by the tradesmen on site to install the Works. The main features of installation drawings should be as follows:-
  1)Plan layouts to a scale of at least 1:50, accompanied by cross-sections to a scale of at least 1:20 for all congested areas. Plantroom layouts to a scale of at least 1:20, accompanied by cross-sections and elevations to a scale of at least 1:20.
  2) A spatially co-ordinated drawing, i.e. no physical clashes between the system components when installed at the scaled-off positions shown on the drawing. An allowance shall be made for inclusion of all supports and fixings necessary to install the Works, and for the service at its widest point for spaces between pipe and duct runs. Allow for insulation, standard fitting dimensions and joint widths on the drawing.
  3) Make allowance for installation details provided from shop drawings and include for installation working space; space to facilitate commissioning and space to allow on-going operation and maintenance in accordance with the relevant health and safety requirements.
  4) Make allowance for plant and equipment including those which are chosen as alternatives to the designer's specified option.

5)Provide dimensions where the positioning of services is considered to be important enough not to leave to the tradesmen on site.

- **Installation Wiring Diagram:** These are drawings showing the interconnection of electric components, panels etc in accordance with the design intent indicated in the schematic drawings and incorporating the details provided on manufacturer's certified drawings.
  The following shall be indicated: maximum electrical loading for each supply cable; cable termination facilities; and cable identification and all terminal numbers.
- **Shop Drawings:** These are drawings prepared by a fabricator or supplier unique to the project, including supplier's drawings for ductwork, pre-fabricated pipework, sprinkler systems, control and switchgear panels and associated internal wiring.
- **Manufacturers drawings:** These manufacturers or suppliers drawings are provided to indicate a typical representation of the product, component or plant item to be supplied for a particular project.
  Manufacturers certified drawings are provided by a manufacturer or supplier to indicate details of the product, components or plant items and which the manufacturer or supplier guarantees the supplied equipment will comply with.
- **Record drawings::** These are drawings showing the building and services installations as installed at the date of practical completion.
  The main features of the record drawings should be as follows:-
  1) Record drawings should be in electronic format (AutoCad preferred).
  2) To provide a record of the locations of all the systems and components installed including pumps, fans, valves, strainers, terminals, electrical switchgear, distribution and components.
  3) Drawn to a scale not less that that of the installation drawings
  4) Have marked on the drawings the positions of access points for operating and maintenance purposes.
  5) The drawings should not be dimensioned unless the inclusion of a dimension is considered necessary for location (as in the case of underground services).
- **As installed drawings::** Drawings/records retained on site to record the progress of and any site modifications to the Works including any changes to software.
- **Builderswork drawings::** At the design Stage these are drawings to show the provisions required to accommodate the services which significantly affect the design of the building structure, fabric and external Works. Also drawings (and schedules) of work to be carried out by building trade, and required to be costed at the design stage e.g. plant bases.

  At the installation Stage these are drawings to show requirements for building works necessary to facilitate the installation of the engineering services (other than where it is appropriate to mark out on site).
- **Control logic diagrams::** These are diagrams, drawings and/or schematic details of all control components and instruments showing the layout with each item uniquely identified together with a description of the controls operation and details of the associated interlocking.
- **Switchgear starter and control instrumentation panel drawings::** Drawings showing the construction and internal wiring diagrams of the starters, panels and/or other devices.
- **Plantroom schedules and schematics::** Frame the following under acrylic glazing and hang in each plant room and any other appropriate location:-

  1) Schematic drawings of circuit layouts showing identification and duties of equipment, numbers and locations, controls an circuits
  2) Valve schedules in the form of printed sheets showing the number, type, location, application/service and symbol, and normal operating position of each valve.
  3)Control schematics
  4)Location of isolating switch for electrical supply
  5) Location of main incoming gas valve serving gas meter.
  6) Location of sprinkler fire main control valve
  7)Emergency operating procedures and telephone numbers for emergency call out service applicable to any system or item of plant and equipment.

8)All other items required under Statutory or other regulations.
The drawings shall be framed with 3mm thick hard board backing set in a hardwood frame (minimum cross section 25mm x 20mm) and glazed with 1.5mm clear acrylic.
The hardwood frame shall be finished mid oak in colour and shall have a varnished finish with a life expectancy of 25 years.

138 A Examination of Drawings/Information

- **Introduction::** The drawing will be examined to ensure the propositions submitted comply, in principle, with the design intent. Such an examination shall not relieve the originator of such documents of his responsibilities and obligations under the contract.
  After preparing the drawings, the Contractor must not proceed with the Works until the drawings have been commented on in writing.
- **Drawing and design information submission:** Drawings shall be assessed using an A/B/C drawing status system. Review and comment by the Contract Administrator does not constitute a formal check of the information. The Contract Administrator comments shall not constitute any form of "approval", and they shall not necessarily be exhaustive. Comments shall not remove or dilute the Contractor's design and detailing responsibility and liability, nor shall they absolve the Contractor from any issues not apparent to the clients representative when reviewing the drawings. Rejection of the drawings for reasonable technical shortcomings or lack of spatial co-ordination shall be binding, however. Comments shall be made in the following format:-

  Status "A" - No comment, the Contractor may proceed

  Status "B" - The Contractor may proceed subject to incorporating the comments as set out

  Status "C" - The Contractor shall re-submit the drawing before proceeding further, incorporating comments.

  Drawing comments shall be issued as five hard copies (not electronic format) drawings to the Contract Administrator of his representative for review, with a single copy to the Quantity Surveyor, the Acoustician and the Project Manager.
  A single copy of each of the latest set of Contractor's drawings shall be issued to the Contract Administrator for review on demand.
  Drawing submissions should be provided by the Contractor to allow at least two weeks for the Contract Administrator's representative to return comment. The Contractor shall obtain a record of receipt from the Contract Administrator's representative within three days of any drawing issue. Should comment not be forthcoming after two weeks, the Contractor shall further communicate with the Contract Administrator's representative to record the consequences of any lack of comment. Lack of comment shall in no circumstance confer any acceptance or approval of the Contractor's proposal.
  The Contractor shall allow sufficient time within the design programme for submissions for comment and the incorporation of subsequent revisions.
  It shall be noted that any installation proposal drawings shall not be given a status higher than status "C" if not accompanied by a multi-service co-ordination drawing that demonstrates that correct clearances and tolerances have been designed between all ser vies, adequate commissioning and maintenance access has been detailed, and correct clearances have been provided between the services and the structure.
  Any installation works carried out on proposed installations designated status "C" or unchecked by the Contract Administrator's representative, shall be at the Contractor's own risk and any claim for delays or recompense should the works be found to be defective or inadequate.

PROGRESS

145 A Programme

- **Master programme:** Before starting work on site submit in an approved form a master programme for the Works, which must include details of:-
  1) Planning and mobilisation by the Contractor
  2) All Sub-contractor's work.
  3) Running in, adjustment, commissioning and testing of all engineering services and installations.
  4) Work resulting from instructions issued in regard to the expenditure of provisional sums.
  5) Work by other concurrent with the Contract.

  Submit within 7 days of request.

- **Delays:** If any circumstances arise which may affect the progress of the Works submit proposals or take other action as appropriate to minimise any delay and to recovery any lost time.
- **Key Performance Indicators:** Provide :-
  1) Details: of all items on the critical path
  2) Record progress against each of the KPIs.
  3) If performance against KPI falls short of target, submit proposals for remediation.
- **Prior to attendance at the Pre-contract Meeting:** Full list of proposed drawings to be issued during the programme. This shall include proposed dates of issue of all drawing types led by co-ordination and builders work drawings.
  A project programme including design period, first and second fix dates for sub-trades, plant lift dates, commissioning periods, and key information such as plant procurement lead in periods.
- **Four Weeks before installation commencement:** Provide :-
  1) Co-ordinated services working drawings for comment. (Installation/Working Drawings detailing all aspects of the Contractor's Proposals).
  2) Builders work drawings or earlier as required.
  3) Services programme of works showing the co-ordination with other building activities.
  Information to support a Building Regulations application.
  4) Comprehensive schedule of mechanical and electrical installation components and equipment.
- **During Installation:** Provide:-
  1) rogress chart, based on programme, updated weekly to include progress achieved and programme variations.
  2) Complete set of drawings marked "As Installed Site Copy", on which all revised installation details shall be recorded as they occur.
  3) Documentary evidence of Building Regulations Approval.
- **Notice of Completion:** Give notice of the anticipated dates of completion of the whole or parts of the Works.
  Associated Works: Ensure necessary access, services and facilities are complete.
  Period of Notice (minimum): 7 days.

150 Monitoring

- **Progress:**
  - **Records:** Record on a copy of the programme kept on site.
  - **Delays:** Minimize. Take appropriate action to recover lost time.
  - **Corrective action:** Submit proposals.
  - **Submittal date:** As soon as possible.
  - **Completion forecast:** Submit on the last working day of each week.
- **Key Performance Indicators:**
  - **Details:**

- **Performance:** Record against each of the KPI's. If performance against KPI falls short of target, Submit proposals for remediation as soon as possible.
- **Corrective action:** Submit proposals.
- **Submittal date:** As soon as possible.

151 A Work Before Completion

- **General:** Before completion the Contractor shall make good all damage consequent upon the works including:-
  1) Temporary markings, coverings and protection wrappings which shall be removed unless otherwise instructed.
  2) Clean the Works thoroughly inside and out, including all accessible ducts and voids. Remove all splashes, deposits, efflorescence, rubbish and surplus materials.
  3) Cleaning materials and methods shall be as recommended by the manufacturers of products being cleaned, and must not damage or disfigure other materials or construction.
  4) Obtain COSHH dated data sheets for all materials used for cleaning and ensure they are used only as recommenced by their manufacturers.
  5) Touch up in newly painted work any minor faults carefully matching colour and brushing out edges. Repaint badly marked areas back to suitable breaks or junctions.
  6) Adjust moving parts as required, ease and lubricate as necessary to ensure easy and efficient operation, including doors, windows, drawers, ironmongery, appliances, valves and controls.

155 A Maintenance of Existing Services

- **Continuity:** Any existing services to existing premises shall be maintained during the progress of the Works.
  Any additional work and materials necessary to maintain these services at all times during the duration of the Works shall be included within the tender. Any existing services disturbed by the Works are to be reinstated fully in accordance with the standards of quality defined in the specification.
  All connections to existing services shall be undertaken, out of normal working hours.

160 Progress meetings

- **General:** Meetings will be held to review progress and other matters arising from administration of the Contract.

  Full allowance shall be made for attending all site meetings called in relation to the Works. Personnel attending such meetings must be familiar with all aspects of the work and must be capable of taking decisions binding on the Contractor.
- **Frequency:** as required
- **Venue:**

161 A Valuations

- **Interim:** Include details of amounts requested under the Contract together with all necessary supporting information.
  These shall be submitted at least seven days before established dates.

162 A Quality Standards/Control

- **Quality control Resource:** A statement must be submitted within 7 days of request and at least two working weeks prior to commencement on site, describing the organisation and resources which the Contractor proposes to provide to control the quality of the contract works. The statement must include the number of type of staff responsible for quality control, with details of their qualifications and duties.
- **Incomplete documentation:** Where and to the extent that products or work are not fully documented, they are to be:-

1) Of a kind and standard appropriate to the nature and character of that part of the Works where they will be used.
2) Suitable for the purposes stated or reasonably to be inferred from the project documents.
3) Omissions or errors in description and/or quantity shall not nor release the Contractor from any obligations or liabilities under the Contract.

- **Workmanship slills:** Operatives shall be fully trained and shall have appropriate skills and experience for the type and quality of work.
  Operatives shall be registered with the Construction Skills Certification Scheme.
  Operatives must produce evidence of skills/qualifications when requested.
- **Quality of Products:** All products shall be supplied New (proposals for recycled produces may be considered is specified elsewhere).
  Supply of each product shall be from the same source or manufacturer.
  Whole quantity of Each Product Required to Complete the Works: Consistent in kind, size, quality and overall appearance.
  Tolerances: Where critical, measure a sufficient quantity to determine compliance.
  Deterioration: Prevent. Order in suitable quantities to a programme and use in appropriate sequence.
- **Quality of execution:** The Contractor shall fix, apply, install or lay products securely, accurately, plumb, neatly and in alignment.
  Colour Batching: do not use different colour batches where they can be seen together.
  The Contractor shall check on-site dimensions.
  Finished work shall be free from defects, e.g. not damaged, disfigured, dirty, faulty, or out of tolerance.
  During the location and fixing of product joints open to view shall be adjusted so they are even and regular.
- **Compliance:** The Contractor shall retain on site evidence that the proprietary product specified has been supplied.
  The Contractor shall submit evidence of compliance, including test reports indicating:

  1) Properties tested
  2) Pass/fail criteria
  3) Test methods and procedures
  4) Test results
  5) Identity of testing agency
  6) Test dates and times
  7) Identities of witnesses
  8) Analysis of results

165 A Testing & Commissioning

- **Testing and commissioning of Services:** A programme shall be agreed for pre-commissioning checks, setting to work, commissioning and performance testing, and allow for all costs incurred. Where required, formal method statements shall be provided supported by risk assessments detailing all commissioning procedures. Notice shall be given to all parties stating any requirements for attendance and co-operation of others, not less than fourteen working days in advance.
  The contractor shall provide all necessary facilities to enable tests to be witnessed and inspections carried out either on site or at manufacturer's Works.
  The Contract Administrator will only witness test proceedings, confirm recorded results and determine if the specified requirements have been satisfied. If following test or inspection any plant or part thereof is shown to be defective or not conforming to the specification the Contract Administrator will reject such defective parts by written notice, within reasonable time, indicating area of dispute.
  The Contractor shall appoint an "approved" engineer, to supervise the whole of the testing, commissioning, performance testing and instruction of client's staff.
  The Contractor shall provide all specialised personnel (including manufacturer's representatives)

and co-ordinate their activities.
Equipment, material and systems shall be tested as detailed in Work Sections. If an inspection or test fails, repeat the procedure, until satisfactory results are obtained. All tests shall be completed before any paint; cladding or similar materials are applied or before services are concealed. Ensure all requirements such as cleanliness, protection from harmful external and internal elements etc. are provided prior to commencement of commissioning. Following satisfactory completion of testing and when the installations are in a safe and satisfactory condition, set to work, regulate and adjust the systems, as necessary, to meet the specified design requirements. All necessary instruments and recorders are to be provided to monitor systems during commissioning and performance testing. Test equipment shall be subject to a quality assurance procedure complying with the latest approved standards.
Do not start performance testing, including system demonstration, system proving or environmental and capacity testing, until commissioning of the system is completed to the satisfaction of the Contract Administrator.
Maintain on site full records of all commissioning and performance testing cross referenced to system components and on completion of the Works include a copy in each Operating and Maintenance Manual. All certification documents shall be provided for approval by the Contract Administrator before any system is offered for final acceptance. Gas, fuel oil, electricity and water for testing and commissioning will be provided by the Contractor.

- **Commissioning proceedures:** Observe the following requirements when commissioning the Engineering Services.
  Progressive static testing will be witnessed by the Contract Administrator when work is presented for testing. This will include:-
  1) Insulation resistance tests
  2) Earth fault loop impedance tests
  3) Earth continuity tests
  4) Pipeline pressure tests
  5) Air Ductline Pressure Tests
  6) Water sampling

  Pre-commissioning examination and testing shall be provided to ensure that each system or item of equipment is complete, in a safe condition and all notices are displayed. "Completion" for operational purposes implies the bulk of snagging has been offered to the Contract Administrator and that remedial work has been completed.
  All fans, pumps etc. shall be tested for operation, polarity, phase sequence and impedance etc. The commissioning programme shall be finalised, taking into account site progress and availability of related services, access required for controls etc. and this shall be agreed with all parties.
- **Operational demonstration:** A written statement shall be provided to the Contract Administrator confirming that each installation has been correctly tested and commissioned and that the performance requirements can be achieved.
  The Contractor shall demonstrate to the Contract Administrator that all system components are operating correctly, and the completely integrated installation will function in accordance with the specified performance requirements.
  Any demonstration should be carried out if/when requested by the Contract Administrator.
  Each plant shall be run for the period identified elsewhere, and a log book and record all hours run provided.

  Where requested in the particular specification, provide equipment to simulate loads to allow for full testing of air conditioning systems.
- **Interference with tests:** If by any act of the Employer or Contract Administrator, the Contractor shall be prevented from carrying out the "taking over tests", within two months from the date on which the Contractor has notified the Contract Administrator that the plant/equipment is completed and ready for tests, unless in the meantime the plant/equipment shall have been proved not to be substantially complete in accordance with the Specification and Conditions, the plant/equipment shall be deemed to be taken over as on the said two months. Payment to the Contractor shall be made as if the final satisfactory "take over tests" had taken place.

Nevertheless the Contractor shall make the said tests during the period of maintenance as and when required by the Contract Administrator upon fourteen days notice in writing and the obligation and liabilities of the Contractor in connection with such tests shall be the same as his obligations and liabilities in connection with the tests specified, provided that the Contractor shall be paid the extra cost (if any) of such tests.

- **Outstanding acceptance tests:** Any items which have failed their acceptance tests or where such tests are delayed by the Contract Administrator are to be listed and dates agreed, during the defects liability period when reasonable demands for consumer requirements are available.
- **Inspection and tests:** Schedules shall be submitted showing those parts of the Works for which inspections and tests are required in the specifications, to substantiate conformity with the Specification and for which records are required to be maintained.
  Should any alternative item be proposed which does not carry appropriate certification, the Contractor shall ensure independent testing is carried out at no expense to the Employer to confirm compliance.
  Where required, provide formal method statements supported by risk assessments detailing the procedures for carrying-out on site tests.
  The Contractor shall agree in advance with all parties procedures for inspections and tests including periods of notice.
  Where a test indicates non-compliance with the Specification submit immediately details of the non- compliance and proposals for corrective action.
  The Contractor shall arrange access for personnel who require to be in attendance, to manufacturer's or other off site premises when any inspections and tests carried out. Attendance or otherwise of the supervisory personnel during specified inspections or tests will not reduce the obligations or restrictions of the Contract.
  All tests required by legislation shall be carried out under the direction of a "competent person".
- **Test Certificates:** Where testing specific to the project is required, test certificates shall include:-
  1) Project title.
  2) Details and date of test.
  3) Instruments used, serial numbers, calibration dates.
  4) Signature of those witnessing test.
  5) Project name.
  6) Specific location of the item in the Works.
- **Type tests:** Certificates of verification of type tests shall be provided by the Contractor. Drawings and other documents forming part of the certificate shall be made available prior to any order being placed.
- **Inspection and test records:** A set of drawings and/or report sheets shall be prepared to record accurately the test and inspection information including plant identification, section and installation under test.
- **Record documents:** Record documentation shall be provided for all elements of the works, to enable the operator to understand the design, operation and maintenance procedures. The documentation shall include:-
  1) Record Drawings and Schedules
  2) Plant room and switch room drawings, schedules and schematics
  3) Operating and Maintenance Manuals
  4) Blank Maintenance Logs
  5) Log Book.

  As a minimum requirement, the Record Documents shall:-

  1) Clearly record the arrangements of the various sections of the Works as installed and identify and locate all component parts
  2) Make it possible to understand the extent and purpose of the Works and the method of operation thereof
  3) Set out the extent to which maintenance and servicing is required and how, in detail, it should be carried out
  4) Provide sufficient, readily accessible and proper information, to enable spares and

replacements to be ordered
5) Correlate record documents so that the terminology and the references used are consistent with those used in the physical identification of the component parts of the installations.

It shall be demonstrated as required throughout the execution of the Works, that complete and accurate records are being maintained and that the record documents are being progressively compiled as the work on site proceeds.

167 A Operation of Systems

- **Before Practical Completion:** Systems may not, without the prior written approval of the Contract Administrator be used before Practical Completion.
  Systems to be used before practical completion for the benefit of the overall Works and/or Contractor must have all defective consumable elements (including lamps and tubes) replaced by new not more than seven days prior to Practical Completion.
  No system shall be put into use prior to handover to the Employer, except for testing and commissioning, unless otherwise instructed.
  Following the receipt of written instructions, the Contractor shall operate designated parts of the Works, provided that such operation is practicable and does not prejudice the responsibilities of the Contractor and obligations under the Contract.
  Additionally and without adjustment to the price submitted, the Contractor, shall if instructed, provide:-
  1) Comprehensive insurance including indirect loss for any plant being operated
  2) Maintenance of the installation
  3) Re-instatement of the installation to "as new" condition prior to handover to the Employer
  4) Allow the defects liability period to commence on handover.
- **Befor production of operating information and record drawin:** Attendance shall be provided, at no expense to the Employer, to put into service, operate 24 hours a day and maintain the systems to the Employer's requirements, including the provision of suitable competent labour, in the event that the Record Drawings and/or Maintenance Manuals are not available when the Works would, in the opinion of the Contract Administrator, otherwise qualify for Practical Completion.
  In the event of the Contractor failing to provide this service satisfactorily the Employer shall be entitled to make his own arrangements and recover the full cost through the Contract or.

OPERATION

200 Employer's representatives inspections

- **Access:** Provide at reasonable times.
- **Inspections:** Agree dates and times several days in advance, to enable affected parties to be present.
- **Safety:** Submit details in advance of safety provisions and procedures (including those relating to materials, which may be deleterious), which will require compliance of the Employer and Employer's representatives when visiting the site.
- **Covering Up:** Ensure that no section of the Works are covered, concealed or insulated until completion of a witnessed, satisfactory test. A period of four working days notice shall be given when any section of the Works are to be covered or concealed indicating that they are ready for examination and/or measurement, and/or testing.
- **Provide:** Protective clothing and/ or equipment site for the Employer, the Employer's representatives and other visitors to the site.

230 Measurement

- **Covered work:** Give notice before covering work required to be measured.

240 Service runs

- **General:** Provide adequate space and support for services, including unobstructed routes and fixings.
- **Ducts, chases and holes:** Form during construction rather than cut in situ.
- **Coordination with other works:** Submit details of locations, types and methods of fixing of services to fabric and identification of runs and fittings.

260 Security

- **Protection:** Safeguard the site, the Works, products, materials, and existing buildings affected by the Works from damage and theft.
- **Access:** Take reasonable precautions to prevent unauthorized access to the site, the Works and adjoining property.

280 Stability

- **Responsibility:** Maintain the stability and structural integrity of the Works and adjacent structures during the Contract.
- **Design loads:** Obtain details, support as necessary and prevent overloading.

PROTECTION FROM

390 Noise and vibration

- **Noise control:** In accordance with BS 5228-1,
- **Noise levels from the Works:**
- **Measurement area:**
- **Equipment:** Fit compressors, percussion tools and vehicles with effective silencers of a type recommended by manufacturers of the compressors, tools or vehicles.
- **Restrictions:** Obtain consent before using percussion tools and other noisy appliances.
  Do not use radios or other audio equipment or permit employees to use in ways or at times that may cause nuisance.

400 Pollution

- **Prevention:** Protect the site, the Works and the general environment including the atmosphere, land, and water courses against pollution.
- **Contamination:** If pollution occurs inform immediately, including to the appropriate Authorities and provide relevant information.

420 Pesticides

- **Use:** Not permitted.

430 Nuisance

- **Duty:** Prevent nuisance from smoke, dust, rubbish, vermin and other causes.
- **Surface water:** Prevent hazardous build-up on site, in excavations and to surrounding areas and roads.

450 Fire prevention

- **Requirement:** Prevent personal injury or death, and damage to the Works or other property from fire.

- **Standard:** Comply with 'Fire prevention on construction sites' - the joint code of practice on the protection from fire of construction sites and buildings undergoing renovation.

460 Smoking on site

- **Smoking on site:** Not permitted.

470 Burning on site

- **Burning on site:** Not permitted.

480 Moisture

- **Wetness or dampness:** Prevent, where this may cause damage to the Works.
- **Drying out:** Control humidity and the application of heat to prevent:
  Blistering and failure of adhesion.
  Damage due to trapped moisture.
  Excessive movement.

500 Infected timber and contaminated materials

- **Removal:** Where instructed to remove material affected by fungal and/or insect attack from the building, minimize the risk of infecting other parts of the building.
- **Testing:** Carry out and keep records of appropriate tests to demonstrate that hazards presented by concentrations of airborne particles, toxins and other micro-organisms are within acceptable levels.

510 Waste

- **Includes:** Rubbish, debris, spoil, containers and surplus material.
- **Requirement:** Keep the site and Works clean and tidy. Remove rubbish, dirt and residues before closing voids and cavities in the construction.
- **Waste:** Remove frequently and dispose off site in a safe and competent manner as approved and directed by the Waste Regulation Authority.
- **Recyclable material:** Sort and dispose at a Materials Recycling Facility approved by the Waste Regulation Authority.
- **Documentation:** Retain waste transfer documentation on site.

520 Electromagnetic interference

- **Duty:** Prevent excessive electromagnetic disturbance to apparatus outside the site.

530 Laser equipment

- **Construction laser equipment:** Install, use and store in accordance with BS EN 60825-1 and the manufacturer's instructions.
- **Class 1 or Class 2 laser equipment:** Ensure laser beam is not set at eye level and is terminated at the end of its useful path.
- **Class 3A and Class 3B laser equipment:** Do not use without approval and subject to submission of a method statement on its safe use.

540 Power actuated fixing systems

- **Use:** Not permitted.

550 Invasive species

- **General:** Prevent the introduction or spread of species (e.g. plants or animals) that may adversely affect the site and the Works economically, environmentally or ecologically.
- **Special precautions:**
- **Requirement:** Report immediately suspected invasive species discovered during execution of the Works. Do not disturb and agree methods for safe eradication or encapsulation.

PROTECTION OF

580 Existing services

- **Confirmation:** Notify service authorities, statutory undertakers and/ or adjacent owners of proposed work not less than one week before commencing site operations.
- **Identification:** Before starting work, check and mark positions of mains and services. Where positions are not shown on drawings obtain relevant details from service authorities, statutory undertakers or other owners.
- **Work adjacent to services:** Comply with service authority's or statutory undertaker's recommendations.
  Adequately protect, and prevent damage to services.
  Do not interfere with their operation without consent of service authorities, statutory undertakers or other owners.
- **Identifying services:**
  - **Below ground:** Use signboards, giving type and depth.
- **Overhead:** Use headroom markers.
- **Damage to services:**
  - **Action:** Immediately give notice and notify appropriate service authority or statutory undertaker.
  - **Repair:** Make arrangements for making good without delay to the satisfaction of service authority, statutory undertaker or other owner as appropriate.
- **Liability:** Measures taken to deal with an emergency will not affect the extent of the Contractor's liability.
- **Marker tapes or protective covers:** Replace, if disturbed during site operations, to service authority's or statutory undertakers recommendations.

590 Roads and footpaths

- **Duty:** Maintain roads and footpaths within and adjacent to the site and keep clear of mud and debris.
- **Damage:** Make good if caused by site traffic, or otherwise consequent upon the Works, to the satisfaction of the Employer, Local Authority or other owner.

600 Existing topsoil and subsoil

- **Duty:** Prevent over compaction of existing topsoil and subsoil in those areas which may be damaged by construction traffic, parking of vehicles, temporary site accommodation or storage of materials and which will require reinstatement prior to completion of the Works.
- **Protection:** Submit proposals.
- **Submittal date:** Before starting work.

610 Retained trees, shrubs and grassed areas

- **Protection:** Preserve and prevent damage.
- **Replacement:** Mature trees and shrubs if uprooted, destroyed, or damaged beyond reasonable chance of survival in their original shape, as a consequence of the Contractor's negligence, must be replaced with those of a similar type and age at the Contractor's expense.

620 Retained trees

- **Protected area:** Unless agreed otherwise, do not dump spoil or rubbish, excavate or disturb topsoil, park vehicles or plant, store materials or place temporary accommodation within an area which is the larger of the branch spread of the tree or an area with a radius of half the tree's height, measured from the trunk.
- **Roots:** Do not sever if exceeding 25mm in diameter. If unintentionally severed give notice and seek advice.
- **Ground levels:** Do not change within an area 3m beyond branch spread.

630 Existing features

- **Protection:** Prevent damage to existing buildings, fences, gates, walls, roads, paved areas and other site features, which are to remain in position during execution of the Works.
- **Special requirements:**

640 Existing work

- **Protection:** Prevent damage to existing work, structures or other property during the execution of the Works.
- **Removal:** Minimum amount necessary.
- **Replacement work:** To match existing.

650 Building interiors

- **Protection:** Prevent damage from exposure to the environment, including weather, flora, fauna, and other causes of material degradation during the execution of the Works.

660 Existing furniture, fittings and equipment

- **Protection:** Prevent damage or move as necessary to enable the Works to be executed. Reinstate in original positions.
- **Removal by Employer:**
  - **Timing:** Before work starts in relevant areas.
  - **Item:**

680 Especially valuable or vulnerable items

- **Protection:** Ensure provision and maintenance of special protective measures to prevent damage or injury.
- **Items:** Animals - Horses livestock - General public attendees to Riding School - Staff personnel
- **Method statement:** Submit within one week of request describing special protection / measures to be provided.

720 Method and sequence of work Restrictions

- **Specific limitations:**

730 Adjoining property

- **Agreement:** Access to and/ or use of the following has been agreed with adjacent owners.
- **Details:**
- **Permission:** Obtain as necessary from other owners if required to erect scaffolding on, or otherwise use, adjoining property.

740 Adjoining property restrictions

- **Precautions:** Prevent trespass of workpeople and take precautions to prevent damage to adjoining property. Pay charges. Remove temporary protection and make good on completion or when directed.
- **Damage:** Bear cost of repairing damage arising from execution of the Works.

750 Existing structures

- **Duty:** Check proposed methods of work for effects on adjacent structures inside and outside the site boundary.
- **Supports:**
  - **Standards:** In accordance with BS 5975 and BS EN 12812.
  - **Requirements:** Provide and maintain incidental shoring, strutting, needling and other supports as may be necessary to preserve stability of existing structures on the site or adjoining, which may be endangered or affected by the Works.
    Do not remove until new work is strong enough to support existing structure.
    Prevent overstressing of completed work when removing supports.
- **Adjacent structures:** Monitor and immediately report excessive movement.

780 Use or disposal of materials

- **Specific limitations:**

790 Working hours

- **Specific limitations:**

Works Contract Verification

00-60-70 Works Contract Verification

STANDARDS OF PRODUCTS AND EXECUTIONS

110 Substitute products

- **Details:** If products of different manufacture to those specified are proposed, submit details with the tender giving reasons for each proposed substitution. Substitutions which have not been notified at tender stage may not be considered.
- **Compliance:** Substitutions accepted will be subject to verification requirements detailed in the specification.

120 Substitution of products

- **Products:** If an alternative product to that specified is proposed, obtain approval before ordering the product.
- **Reasons:** Submit reasons and relevant information for the proposed substitution.
- **Information to be submitted:** Manufacturer and product reference.
  Cost.
  Availability.
  Relevant standards.
  Performance.
  Function.
  Compatibility of accessories.
  Proposed revisions to drawings and specification.
  Compatibility with adjacent work.
  Appearance.
  Copy of warranty or guarantee.
- **Alterations to adjacent work:** If needed, advise scope, nature and cost.
- **Manufacturers' guarantees:** If substitution is accepted, submit before ordering products.

130 Equivalent products

- **Inadvertent omission:** Wherever products are specified by proprietary name the phrase 'or equivalent' is to be deemed included.

140 Substitution of standards

- **Specification:** To British Standard or European Standard.
- **Substitution:** May be proposed complying with a grade or category within a national standard of another Member State of the European Community or an international standard recognized in the UK.
- **Ordering:** Submit notification of all such substitutions before ordering.
- **Documentary evidence:** Submit for verification when requested. Submitted foreign language documents must be accompanied by certified translations into English.

DOCUMENTS AND INFORMATION

150 Currency of documents

- **Currency:** References to published documents are to the editions, including amendments and revisions, current on the date of the Invitation to Tender.

160 Incomplete documentation

- **Products and executions:** Where and to the extent that products or executions are not fully documented, they are to be as follows.
- **Requirements:**
  - **Standard:** Of a kind and quality appropriate to the nature and character of that part of the Works where they will be used.
  - **Suitability:** Suitable for the purposes stated or reasonably to be inferred from the project documents.
- **Contract documents:** Omissions or errors in description and/ or quantity shall not vitiate the Contract nor release the Contractor from obligations or liabilities under the Contract.

170 Energy rating calculation

- **Calculation documentation:**
  - **Number of copies:**
  - **Assessor:**
- **Deliver to:** Energy Performance Certificate Assessor and also lodge in the Building Manual.

220 Technical information

- **Retain:** Available on site for reference by supervisory personnel.
- **Information:** Manufacturer's current information and relevant British Standards, relating to products to be used in the Works.

230 Compliance

- **Compliance:** Retain on site evidence that the proprietary product specified has been supplied.
- **Submit:** Evidence of compliance with performance specifications, including test reports indicating properties tested, pass or fail criteria, test methods and procedures, test results, identity of testing agency, test dates and times, identities of witnesses and analysis of results.

PRODUCTS AND EXECUTION

240 Workmanship skills

- **Operatives:** Appropriately skilled and experienced for the type and quality of work.
- **Registration:** With Construction Skills Certification Scheme.
- **Evidence:** Operatives must produce evidence of skills and qualifications when requested.

250 Quality of products

- **Generally:** New.
- **Supply:** Each product from the same source or manufacturer.
- **Quantity:** Whole quantity of each product required to complete the Works of a consistent kind, size, quality and overall appearance.
- **Tolerances:** Where critical, measure a sufficient quantity to determine compliance.
- **Deterioration:** Prevent, order in suitable quantities to a programme and use in appropriate sequence.
- **Recycling:** Proposals for recycled products may be considered.

260 Quality of execution

- **Generally:** Fix, apply, install or lay products securely, accurately, plumb, neatly and in alignment.
- **Colour batching:** Do not use different colour batches where they can be seen together.
- **Dimensions:** Check on-site.
- **Finished work:** Not defective, damaged, disfigured, dirty, faulty, or out of tolerance.
- **Appearance:** Adjust joints open to view so they are even and regular.

270 Inspections

- **Standard:** Inspection, or other action, of products or executions must not be taken as approval unless confirmed in writing including the following:
  Date of inspection.
  Part of the work inspected.
  Respects or characteristics which are approved.
  Extent and purpose of the approval.
  Associated conditions.

280 Related work

- **Details:** Provide trades with necessary details of related types of work. Before starting each new type or section of work ensure previous related work is approximately complete, in accordance with the project documents, to a suitable standard and in a suitable condition to receive new work.
- **Preparatory work:** Ensure necessary preparatory work has been carried out.

290 Manufacturer's recommendations and instructions

- **General:** Comply with manufacturer's printed recommendations and instructions current on the date of the Invitation to Tender.
- **Submit:** Details of changes to recommendations or instructions.
- **Execution:** Use ancillary products and accessories supplied or recommended by main product manufacturer.
- **Products:** Comply with limitations, recommendations and requirements of relevant valid certificates.

300 Water for the Works

- **Mains supply:** Clean and uncontaminated.
- **Suitability:** Do not use until evidence is provided.
- **Testing:**

SAMPLES AND APPROVALS

340 Approval of products

- **Programme:** Undertake or arrange submissions, samples, inspections and tests to suit the Works programme.
- **Approval:** Relates to a sample of the product and not to the product as used in the Works. Do not confirm orders or use the product until approval of the sample has been obtained.
- **Retain:** Complying sample in good, clean condition on site. Remove when no longer required.

350 Approval of execution

- **Programme:** Undertake or arrange submissions, samples, inspections and tests to suit the Works programme.
- **Approval:** Relates to the stated characteristics of the sample. (If approval of the finished work as a whole is required this is specified separately). Do not conceal, or proceed with affected work until compliance with requirements is confirmed.
- **Retain:** Complying sample in good, clean condition on site. Remove when no longer required.

ACCURACY AND SETTING OUT GENERALLY

370 Accuracy of instruments

- **Measurement:** Use instruments and methods described in BS 5606, Appendix A.
- **Accuracy:** Maintain
- **Linear dimensions:**
- **Angular dimensions:**
  - **Verticality:**
  - **Levels:**

380 Setting out

- **General:** Submit details of methods and equipment to be used in setting out the Works.
- **Levels and dimensions:** Check and record the results on a copy of drawings. Notify discrepancies and obtain instructions before proceeding.
- **Completion of setting out:** Give notice before commencing construction.

400 Critical dimensions

- **Critical dimensions:** Set out and construct the Works in accordance with the critical dimensions and tolerances stated.
- **Details:**

410 Setting out records

- **Record drawings:** Include details of grid lines, setting-out stations, benchmarks and profiles. Retain on site throughout the Contract and hand over on completion.

SERVICES GENERALLY

430 Services regulations

- **Services:** New and existing services must comply with the Byelaws or Regulations of the relevant Statutory Authority.

440 Water regulations and byelaws notification

- **Requirements:** Notify Water Undertaker of work carried out to or which affects new or existing services. Submit required plans, diagrams and details.
- **Consent:** Allow adequate time to receive Undertaker's consent before starting work. Inform immediately if consent is withheld or is granted subject to significant conditions.

460 Electrical installation certificate

- **Certification:** The original certificate is to be lodged in the Building Manual at the completion of relevant electrical work.

470 Gas, oil and solid fuel appliance installation certificate

- **Content:**
  - **Installation:** Describe the new installation and/ or the work carried out to an existing installation including the address.
  - **Safety:** Include special recommendations or instructions for the safe use and operation of appliances and flues.
- **Statement:** Confirm that the installation complies with the appropriate safety, installation and use regulations.
  - **Inspection:** Provide the Contractor's name and address, the date on which the installation was checked and the name, qualifications and signature of the competent person responsible for checking compliance.
- **Submit:** Before the completion date stated in the contract.
- **Certificate location:**

480 Mechanical and electrical services

- **Final tests and commissioning:** Carry out so that services are in full working order at completion of the Works.
- **Confirmation:** Provide a Building Regulations notice, signed by a suitably qualified person, to Building Control that systems have been commissioned in accordance with approved procedures.
- **Records:** A copy to be lodged in the Building Manual.

490 Air permeability

- **Method:** Pressure test in accordance with the ATTMA publication: TS 1: Measuring Air Permeability of Building Envelopes.
- **Requirement:**
- **Results:**
- **Copy:** Include in the Building Manual.

510 Resistance to passage of sound

- **Method:**
- **Compliance:**
- **Copies:** Include in the Building Manual.

520 Energy performance certificate

- **Assessment:** Undertaken by a member of an approved accreditation scheme. Submit details of scheme name and evidence of qualifications when requested.
- **Building type:**
- **Method:**
- **Format:**
- **Certificate:** Include in the Building Manual.
- **Report:**
- **Submittal date:**

QUALITY CONTROL

540 Proposals for rectification of non-compliant products and executions

- **Non-compliant items:** Submit proposals for opening up, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution.
  - **Opening up, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution:** Submit proposals
  - **Submittal date:** As soon as possible after discovery of items which are or appear to be non-compliant.
- **Acceptability:** Such proposals may be unacceptable and contrary instructions may be issued.

550 Measures to establish acceptability

- **General:** Wherever inspection or testing shows that the work, materials or goods are not in accordance with the Contract and measures (e.g. testing, opening up, experimental making good) are taken to help in establishing whether or not the work is acceptable, such measures will be at the expense of the Contractor and will not be considered as grounds for revision of the completion date.

DAYWORK

600 Daywork

- **Labour, plant and materials definitions:** As described in 'Definition of Prime Cost of Daywork carried out under a Building Contract' published by the RICS and the Construction Confederation.
- **Percentage additions to cover overheads, incidental costs and profit:**
  - **Labour (before completion):**
  - **Labour (after completion):**
  - **Plant (before completion):**
  - **Plant (after completion):**
  - **Materials (before completion):**
  - **Materials (after completion):**

630 Daywork vouchers

- **Notice:** Give reasonable notice to person countersigning daywork vouchers before starting work to be recorded.
- **Information requirements:**
  - **Details:** Include a full description of the work undertaken time spent on individual tasks.
  - **Reference:** To the instruction under which the work is authorized.
  - **Signature:** Sign by Contractor's person in charge as evidence that the operatives' names, the time spent by each, the plant and materials shown are correct.

Works Contract Administration

00-70-70 Works Contract Administration

USE OF DOCUMENTS

100 Freedom of information

- **Records:** Retain, make available for inspection and supply on request information reasonably required to allow response to requests made under the provisions of the Freedom of Information Act 2000.
- **Received requests:** Obtain instruction before proceeding.
  Do not supply information to those who are not project participants without express written permission.
- **Confidentiality:** Maintain at all times.

110 Drawings

- **Definitions:** Building Applications Guide: Design framework for building services. 3rd edition A design framework for building services. Design activities and drawing definitions.
- **CAD data:** In accordance with BS 1192.

120 Cross references

- **Accuracy:** Check remainder of the annotation or item description against the terminology used in the cited section or clause.
- **Related terminology:** Where a numerical cross-reference is not given the relevant sections and clauses of the Specification will apply.
- **Relevant clauses:** Clauses in the cited specification section dealing with general matters, ancillary products and execution also apply.
- **Discrepancy or ambiguity:** Before proceeding, obtain clarification or instructions.

130 Referenced documents - conflicts

- **Precedence:** Specification prevails over referenced documents.

140 Dimensions

- **Dimensions:** Do not scale.

160 Measured quantities

- **Measured quantities:** When ordering products and constructing the Works, the accuracy and sufficiency of the measured quantities is not guaranteed.
- **Precedence:** The Specification and drawings shall override the measured quantities.

DOCUMENTS PROVIDED ON BEHALF OF EMPLOYER

DOCUMENTS PROVIDED BY CONTRACTOR, SUBCONTRACTORS AND SUPPLIERS

280 Schedule of Rates

- **Fully priced copy - submittal date:** Within 4 weeks of an order being placed.

350 Programme

- **Programme of work:** Prepare a summary showing the sequence and timing of the principal parts of the Works and periods for planning and design. Itemize any work which is excluded.

380 Method statements

- **Method statements:** Prepare describing how and when the following procedures are to be carried out.
- **Submittal date:** Within one week of request.

400 Alternative method proposals

- **General:** In addition to and at the same time as tendering for the Works as defined in the tender documents, alternative methods of construction and installation may be submitted for consideration. Alternatives, which would involve significant changes to other work, may not be considered.
- **Alternative method proposals:** Include a complete and precise statement of the effects on cost and programme.
- **Safety method statement:** Carry out a health and safety risk assessment for each alternative and where appropriate provide a safety method statement suitable for incorporation in the Health and Safety Plan.
- **Full technical data:** Submit for each alternative together with details of any consequential amendments to the design and/ or construction of other parts of the Works.

450 Health and safety information

- **Content:** Describe the proposed organization and resources to safeguard the health and safety of operatives, including those of subcontractors, and of any person whom the Works may affect.
- **Include:**
    - **Policy document:** A copy of the Contractor's health and safety policy documents, including risk assessment procedures.
    - **Records:** Accident and sickness records for the past five years and of any previous Health and Safety Executive enforcement action.
    - **Training:** Records of training and training policy.
    - **Personnel:** The proposed number and type of staff responsible for health and safety on this project with details of their qualifications and duties.

470 Outline construction phase health and safety plan

- **Content:**
    - **Risk assessment:** Method statements on how risk from hazards identified in the pre-construction information and other hazards identified by the Contractor will be addressed. Procedures for carrying out risk assessment and for managing and controlling the risk.
    - **Management system:** Details of the proposed management structure, responsibilities and arrangements for issuing health and safety directions. Include procedures for informing other contractors and employees of health and safety hazards.
    - **Selection:** Proposed procedure for ensuring competency of other contractors, the self employed and designers.
    - **Communication:** Procedures for communications between the project team, other contractors and site operatives. Include arrangements for cooperation and coordination between contractors.
    - **Emergency:** Procedures including those for fire prevention and escape.

- **Records:** Arrangements for ensuring that accidents, illness and dangerous occurrences are recorded.
- **Personnel:** Procedures for ensuring that persons on site have received relevant health and safety information and training. Include arrangements for consulting with and taking the views of people on site, for preparing site rules and drawing them to the attention of those affected and ensuring compliance.
- **Monitoring:** Monitoring procedures to ensure compliance with site rules, selection and management procedures, health and safety standards and statutory requirements. Review procedures to obtain feedback.

480 Health and safety file information

- **Information:** Provide as required by Principal Contractor and Provide as required by Principal Designer.

645 'Listed' domestic subcontractors

- **General:** Section 4 of the Works Information provides that certain works must be carried out by a subcontractor or supplier of the Contractor's choice selected from a list of not less than three persons.
- **Shortage of names:** If at any time prior to execution of a binding subcontract agreement less than three persons named in the list are able and willing to carry out the relevant work, give notice without delay. The Employer will then forthwith add the names of other persons, as provided above, so that the list comprises not less than three such persons, or confirm that no names will be added. If the Employer fails to do either within one week of the Contractor's notification, the Contractor, who may subcontract in accordance with the Contract, must carry out the work.
- **Agreement:** Before the start of work to which the list relates, enter into a binding subcontract agreement and confirm that this has been done, giving the name of the selected Subcontractor.

740 Quotations for proposed instructions or compensation events

- **Include:**
  - **Cost breakdown:** A detailed breakdown of cost, including allowance for direct loss and expense.
  - **Resources:** Details of additional resources required.
  - **Programme:** Details of adjustments to be made to the programme for the Works.
  - **Other:** Other information as is reasonably necessary to fully assess the implications of issuing such an instruction.
- **Inability to comply:** Inform immediately if it is not possible to comply with any of the above requirements.

750 Design and production information

- **General:** Complete the design and detailing of parts of the Works as specified.
- **Production information:** Based on the drawings, specification and other information.
- **Liaison:** Ensure coordination of the work with related building elements and services.
- **Master programme:** Make reasonable allowance for completing design and production information, submission (including to the CDM Coordinator), comment, inspection, amendment, resubmission and reinspection.
- **Design and production information:** Submit two copies, one can be returned with comments. Ensure that necessary amendments are made without delay.
- **Contractor's changes:** Support request for substitution or change to the Employer's requirements with relevant information.

- **Final version of design and production information:**
- **Employer's amendments:** If considered to involve a change to the Employer's requirements, which has not already been acknowledged as a change, notify without delay (maximum period 7 days), and do not proceed until instructed. Claims for extra cost, if made after it has been carried out, may not be allowed.

820 Insurance claims

- **Notice:** If an event occurs which may give rise to a claim or proceeding in respect of loss or damage to the Works or injury or damage to persons or property arising out of the Works, immediately give notice to the Employer, the person administering the contract on behalf of the Employer and the Insurers.
- **Failure to notify:** Indemnify the Employer against loss, which may be caused by failure to give such notice.

880 Defects in existing work report

- **Undocumented defects:** When 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 executions, or be rendered abortive by the remedial work.

890 Tests and inspection schedule

- **Timing:** Agree and record dates and times of tests and inspections to enable affected parties to be represented.
- **Confirmation:** Provide one working day prior to each test or inspection. If sample or test is not ready, agree a new date and time.
- **Records:** Submit a copy of test certificates and retain copies on site.

Works Contract Completion

00-80-70 Works Contract Completion

NOTIFICATION

100 Notice of completion

- **Requirement:** Give notice of the anticipated dates of completion of the whole or parts of the Works.
- **Associated work:** Ensure necessary access, services and facilities are complete.
- **Period of notice (minimum):** Two weeks.

COMPLETION WORK

170 Work before completion

- **General:** Make good damage consequent upon the Works. Remove temporary markings, coverings and protective wrappings unless otherwise instructed.
- **Cleaning:** Clean the Works thoroughly inside and out, including accessible ducts and voids. Remove splashes, deposits, efflorescence, rubbish and surplus materials.
- **Cleaning materials and methods:** As recommended by manufacturers of products being cleaned, and must not damage or disfigure other materials or construction.
- **COSHH dated data sheets:** Obtain for materials used for cleaning and ensure they are used only as recommended by their manufacturers.
- **Minor faults:** Touch up in newly painted work, carefully matching colour and brushing out edges. Repaint badly marked areas back to suitable breaks or junctions.
- **Moving parts of new work:** Adjust, ease and lubricate as necessary to ensure easy and efficient operation, including doors, windows, drawers, ironmongery, appliances, valves and controls.

180 Security at completion

- **General:** Leave the Works secure with, where appropriate, accesses closed and locked.
- **Keys:** Account for and adequately label keys. Hand over to the duly authorized person with an itemized schedule. Retain a duplicate schedule signed by that person as a receipt.

190 Rectification and defects

- **Notice:** Give reasonable notice for access to the various parts of the Works.
- **Access arrangements:**
- **Completion:** Give notice when remedial works have been completed.

INFORMATION

240 The Building / O & M Manual

- **Responsibility for production:** The Contractor.
- **General:** Obtain and provide comprehensive information for owners and users of the completed Works. Include an overview of the main design principles and describe key components and systems within the finished Works to enable proper understanding, efficient and safe operation and maintenance.

On all projects with a services context exceeding £50,000 a specialist **shall be** employed to produce the Health & Safety, operating and maintenance manuals. On projects below this value, they can be prepared by the Contractor although preparation by a specialist is recommended.

- **Content:** The operating and maintenance manuals must include but shall not be limited to:-
*A full description of the systems installed, written to ensure that the Employer's staff fully understand
the scope and facilities provided.
*A description of the mode of operation of all systems, including services capacity and restrictions.
*Diagrammatic drawings of each system, indicating principal items of plant, equipment, valves etc.
*A photo-reduction of all record drawings together with an index. Reduced size A3
*Legend of all colour-coded services.
*Schedules (system by system) of plant, equipment, valves, etc, stating their locations, duties and
performance figures. Each item must have a unique number cross-referenced to the record and diagrammatic drawings and schedules.
* The name, address and telephone number of the manufacturer of every item of plant and equipment,
together with catalogue list numbers.
*Manufacturer's technical literature for all items of plant and equipment, assembled specifically for the
project, excluding irrelevant matter and including detailed drawings, electrical circuit details and operating
and maintenance instructions.
*A copy of all Test Certificates, Inspection and Test Records, Commissioning and Performance Test
Records (including, but not limited to, electrical circuit tests, corrosion tests, type tests, start and commissioning tests) for the installations and plant, equipment, valves, etc., used in the installations.
*A copy of all manufacturer's guarantees or warranties, together with all maintenance agreements offered
by Contractor's and manufacturers.
*Copies of Insurance & Inspecting Authority Certificates and Reports.
*Starting up, operating and shutting down instructions for all equipment and systems installed.
*Control sequences for all systems installed.
*Schedules of all fixed and variable equipment settings established during commissioning.
*Procedures for seasonal changeovers and/or precautions necessary for the care of apparatus subject to
seasonal disuse.
*Detailed recommendations for the preventative maintenance frequency and procedures which should be
adopted by the Employer to ensure the most efficient operation of the systems.
*Details of lubrication systems and lubrication schedules for all lubricated items.
* Details of regular test to be carried out (eg water cooling towers etc.)
* Details of procedures to maintain plant in safe working conditions.
* Details of the disposal requirements for all items in the works.
* A list of normal consumable items.
*A list of recommended spares to be kept in stock by the Employer, being those items subject to wear or
deterioration and which may involve the Employer in extended deliveries when replacements are required at some future date.
*A list of any special tools needed for maintenance cross-referenced to the particular item for which
required
* Procedures for fault finding.

* Emergency procedures, including telephone numbers for emergency services.
* Back-up copies of any system software.
* Documentation of the procedures for updating and/or modifying software operating systems and control programs.
* Instructions for the creation of control procedure routines and graphic diagrams.
* Details of the software revision for all programs provided.
* Two back-up copies of all software items, as commissioned.
* Copies of relevant HSE/CIBSE/IEE Guidance notes etc.
* Guarantees, warranties, maintenance agreements, test certificates and reports.

- **Specific Requirements:** Practical completion will not be certified until the Health & Safety file and the Operation & Maintenance Manuals have been provided and are accepted by the Contract Administrator.
- **Format:** Before preparation commences, the format and content of the manual shall be agreed. The manuals shall be provided in hard copy and in searchable electronic format.

  Hard copies shall be A4 size, plastic covered, loose-leaf, four-ring binders with hard covers, each indexed and sub-divided into sections.

  Drawings larger than A4 shall be included in the binder so that they may be unfolded without being detached from the rings. The main sets may form annexes to the Manual.
- **Number of copies:** Three hard copies
- **Latest date for submission:** A Draft copy shall be provided one week before the date for completion stated in the contract.
  The final version shall be provided no later than 4 weeks after practical completion.

320 Presentation of Building Manual

- **Format:** A4 size, plastics covered, loose leaf, four ring binders with hard covers, each indexed, divided and appropriately cover titled
- **Selected drawings:** Where these are needed to illustrate or locate items mentioned in the Manual: if larger than A4, to be folded and accommodated in the binders so that they may be unfolded without being detached from the rings.
- **As-built/ record drawings:** The main sets may form annexes to the Manual.

320 A Record Drawings::

- **Content::** Record Drawings and Schedules must include, but are not limited to:-

  *Location, including level if buried, of Utility Service connections, including those provided by the appropriate Authority, indicating points of origin and termination, size and material of service, pressure
  and/or relevant information.
  *Position and depth of all underground systems.
  *Schematic drawings of each system, indicating principal items of plant, equipment, zoning, means of
  isolation, etc., in sufficient detail to make it possible to comprehend the system operation and the interconnections
  between various systems.
  *Details of the principles of application of automatic controls and instrumentation.
  *Diagrammatic dimensioned plans and sections of each system or service showing sizes and locations of
  all ancillaries, plant, equipment controls, test points and means of isolation etc., including any items
  forming an integral part of the engineering systems provided by others (such as plenum ceilings, builder's'

work shafts, chimneys etc.).
*Identification of all terminals/cables etc., by size/type and duty/rating as recorded from the approved
commissioning results.
*Detailed wiring drawings/diagrams/schedules for all systems, including controls, showing origin, route,
cable/conduit size, type, number of conductors, length, termination size and identification and measured
conductor and earth continuity resistance of each circuit. Ensure routes indicate if cable/conduit is surface
mounted, concealed in wall chase, in floor screed, cast in-situ, above false ceiling etc.
*Details of co-ordination of wiring and connections with cable core identification, notation of fire alarm,
security, control and instrumentation and similar systems provided as part of the Works.
*Details to show inter-connections between the Works and equipment or systems provided by others to
which wiring and connections are carried out as part of the Works.
*Location and identity of each room or space housing plant, machinery or apparatus.
*Dimensioned plans and sections at a scale of 1:20 of plant rooms, service subways, trenches, ducts and
other congested areas, where, in the opinion of the Contract Administrator smaller scale drawings
cannot provide an adequate record. Indicate the location, identity, size and details of each piece of
apparatus.
*Manufacturers' drawings of equipment, indicating:-
*general arrangement and assembly of component parts which may require servicing; internal wiring
diagrams, together with sufficient physical arrangement details to locate and identify component parts;
*schedules as required, to locate, reference and provide details of ratings and duty of all items
incorporated into the Works, together with all fixed and variable equipment settings established during
commissioning.
*For each programmable control item, schedules indicating:-
*for each input and output point connected, full data in respect of that point, including reference, type of
input/output, connected equipment reference, set values of temperature or pressure etc., set values of
start/stop/speed change times, alarm priority, control;
*specification reference and any other such parameters as are applicable;
*each spare input and output point including reference, type of input/output and space for future entry of
appropriate parameters as listed above.
*Logic flow diagrams for each individual control or monitoring specification and for each building services
engineering system to illustrate the logical basis of the software design.
*Schedules setting out details of all initial values of user-defined variables, text statements for alarm
messages etc.
· Documentation: Guarantees, warranties, maintenance agreements, test certificates and reports.
320 Presentation of Building Manual

- **Format::** DWG, REVIT, PDF and hard copy format
- **Number of Hard Copies::** Three

340 Information for commissioning of services

- **General:** Submit relevant drawings and preliminary performance data to enable the building user's staff to familiarise themselves with the installation.
- **Submittal date:** At commencement of commissioning.

350 Training

- **Objective:** Before completion, explain and demonstrate to designated maintenance staff the purpose, function and operation of the installations including items and procedures listed in the Building Manual.
- **Level of training:** Sufficient level of training to ensure that the Employer's representatives have a good working knowledge of the installed systems and the controls.
- **Time Allowance (minimum):** Two days.

400 Schedule for spare parts

- **General:** Before Completion, submit a priced schedule of spare parts that the Contractor recommends should be obtained and kept in stock for maintenance of the services installations.
- **Content:** Include in the priced schedule for:
  Manufacturers' current prices, including packaging and delivery to site.
  Checking receipts, marking and numbering in accordance with the schedule of spare parts.
  Referencing to the plant and equipment list in Part 3 of the Building Manual.
  Painting, greasing, etc. and packing to prevent deterioration during storage.
- **Latest date for submission:** Four weeks before completion.

410 Tools

- **General:** Provide tools and portable indicating instruments for the operation and maintenance of all services plant and equipment (except any installed under Named Subcontracts) together with suitable means of identifying, storing and securing.
- **Quantity:** Two complete sets.
- **Submittal date:** At completion.

Outline Specification

55-40-40 Hot & cold water supply systems

130 Boosted cold water supply system : MCWS

This Specification covers the design, supply, delivery, installation and testing of a new cold water supplies to the 2nd Floor Kitchen Tea point extended from the existing mains cold water supply.

The Contractor shall allow for installing the following

Cold water supply to S/S sink instantaneous water heater Zip drinking water boiler

Cold water supply to S/S sink tap outlet

The Contractor shall include for the supply, delivery and installation of all fittings and shall coordinate the final connection requirements for each item of equipment by detailing this information within the Coordinated Working Drawing packages of information which shall be issued to the Contract Administrator and client side design team for comment.

The Contractor shall ensure setting out of the pipework routes are fully coordinated with all other services and the building, and shall ensure good access is achieved for maintenance to all valves, fittings and equipment.

The Mechanical Contractor shall provide a full set of detailed co-ordinated working drawings for the building services installation prior to commencing work on site. It is particularly important that the Mechanical Contractor includes in his tender for the preparation of detailed co-ordination working drawings and builders work drawings.

This section of the specification shall not be used in isolation and must be read in conjunction with all relevant sections, drawing information, particular clauses and schedules

140 Instantaneous hot water supply system

This Specification covers the supply, delivery, installation and testing of a complete system of domestic hot water supply to the following areas

Install instantaneous water heater for Zip boiler for drinking water.

Install new DHWS Flow from existing undersink water heater to hot tap outlet. Supply local drainage from sink to existing drain run

The Contractor shall include for the supply, delivery and erection of all sanitary fittings and shall coordinate the final connection requirements for each item of sanitary ware or equipment by detailing this information within the Coordinated Working Drawing packages of information which shall be issued to the Contract Administrator and client side design team for comment.

The Contractor shall ensure setting out of the pipework routes is fully coordinated with all other services and the building, and shall ensure good access is achieved for maintenance to all valves, fittings and equipment.

The Mechanical Contractor shall provide a full set of detailed co-ordinated working drawings for the building services installation prior to commencing work on site. It is particularly important that the Mechanical Contractor includes in his tender for the preparation of detailed co-ordination working drawings and builders work drawings.

This section of the specification shall not be used in isolation and must be read in conjunction with all relevant sections, drawing information, particular clauses and schedules.

65-10-95 Ventilation systems

130 Mechanical supply ventilation system
This Specification covers the installation of additional fresh air supply to the first floor meeting room comprising supply duct/ damper/ diffuser.

The Contractor shall ensure setting out of the duct route is fully coordinated with all other services and the building, and shall ensure good access is achieved for access to dampers

The Mechanical Contractor shall provide a full set of detailed co-ordinated working drawings for the building services installation prior to commencing work on site. It is particularly important that the Mechanical Contractor includes in his tender for the preparation of detailed co-ordination working drawings and builders work drawings.

This section of the specification shall not be used in isolation and must be read in conjunction with all relevant sections, drawing information, particular clauses and schedules.

Boosted cold water supply system : MCWS

55-40-40/130 Boosted cold water supply system : MCWS

System outline

55-40-40/130 Boosted cold water supply system : MCWS

- **System performance:** 55-40-40/210 Design and detailing hot and cold water systems; 55-40-40/220 Mains Cold water supply; and 55-40-40/250 Pipeline sizes for hot and cold water systems.
- **130-1 - Water Services Acts, Byelaws and Notices:** The whole of the work to the MCWS shall be executed in accordance with Water Authorities Acts and Bye Laws, and the Contractor is to give all notice and pay all fees demandable made under such Acts and Bye-Laws.

  The design of the MCWS installation shall incorporate single and double check valves as required by the current edition of the Water Supply Bye Laws and shall generally comply with the Bye Laws and BS 8558.

  All water systems within the Site shall be designed and installed in accordance with the measures outlined in the HSE's Approved Code of Practice L8; Legionnaires Disease - The Control of Legionella Bacteria in Water Systems, and other industry best practice guidance including HSG274 Part 2; Legionnaires Disease - The Control of Legionella Bacteria in Hot and Cold Water Systems.
- **130-2 - Mains Cold Water Services:** All MCWS services pipework shall be fully insulated in accordance with the building regulations. Pipework shall, where possible, be concealed within the building in ceiling voids, ducts, risers, accessible proprietary raised floor/floor ducting systems and behind Integrated Plumbing System (IPS) panels as necessary. Only exposed pipework forming final connections to sanitary ware shall be left uninsulated, and this is to be chrome plated in all areas.

  MCWS services shall be installed in accordance with the requirements of BS 8558, the Building Regulations and The WRAS (Water Regulations Advisory Scheme).

  The whole of the new sections of MCWS service shall be chlorinated and sterilized on completion of the works. A certificate is to be issued by the Contractor.

  Legionella and TVC testing will be undertaken on the water systems on completion of the works.
- **Arrangement:** Existing.
- **Pipelines:**
  - **Below ground:** 90-10-65/365 Polyethylene (PE) pipelines for water supply.
  - **Above ground:** 90-10-65/310 Copper pipelines.
- **Pipeline accessories:**
  - **Accessories:** 90-10-60/405 Pipe sleeves; 90-10-60/395 Masking plates; 90-10-60/420 Tundishes; and 90-10-60/400 Pipeline strainers.
  - **Pipeline supports:** 90-90-60/390 Channel supports and 90-90-60/405 Pipe clips.
- **Valves:**
  - **Isolating valves:** 90-10-90/330 Ball valves and 90-10-90/332 Butterfly valves.
  - **Check valves:** 90-10-90/352 Copper alloy check valves.
  - **Draining devices:** 90-10-90/374 Draining taps.

    - **Accessories:** 90-10-90/360 Test points and 90-10-90/318 Backflow prevention devices.
    - **Chlorination:** Chlorination valves to be provided where new piping connects to existing
- **Thermal insulation:**
    - **Pipelines:** 90-90-40/350 Nitrile rubber insulation;
      90-90-40/360 Phenolic foam insulation;
      and 90-90-40/330 Mineral wool pipe section insulation.
- **Vibration isolation:** 90-90-95/320 Compression isolators;
  90-90-95/370 Isolation hangers;
  90-90-95/390 Rubber bellows;
  and 90-90-95/350 Pad mountings.
- **Outlets:** Refer to drawing for details of associated fixtures and fittings.

  The Contractor shall allow for making final connections to all outlet points, connecting to all water outlets. Final connections to existing services shall incorporate a service valve (if not fitted) to allow each item to be isolated as necessary for maintenance purposes.

  Outlet pressure throughout the Site shall be regulated by pressure reducing valves located at on branches and/or at point of use as required. The discharge pressure will be adjusted during the commissioning period.
- **Drinking water outlets:** The domestic cold water services installation shall be designed and installed to provide potable water of a quality suitable for human consumption throughout the Site.
- **Controls:** Refer to Controls / BMS Specification.
- **Plant and equipment identification:** 90-90-55/430 Identifying pipework;
  90-90-55/440 Plastic warning devices for underground cables and pipelines;
  90-90-55/480 Mechanical plant and equipment identification labels;
  90-90-55/490 Valve charts and schematics;
  and 90-90-55/495 Valve identification labels.
- **Procurement of Valves and Accessories:** Valves and accessories which are associated with specific items of plant and equipment (e.g. water heaters, etc.) may, where appropriate, be sourced from the equipment manufacturer as part of a proprietary valve kit as an alternative to the manufacturers identified within this specification.
- **Execution:** 55-40-40/610 Removing hot and cold water systems;
  55-40-40/620 Installing hot and cold water systems generally;
  55-40-40/660 Flushing hot and cold water systems;
  55-40-40/670 Disinfection of hot and cold water systems;
  and 55-40-40/650 Hydraulic pressure testing of hot and cold water supply systems.
- **System completion:** 55-40-40/870 Operating tools;
  55-40-40/820 Inspection and test records;
  55-40-40/860 Spares;
  55-40-40/840 Documentation;
  55-40-40/850 Water quality tests;
  55-40-40/880 Maintenance;
  55-40-40/810 Commissioning of hot and cold water supply systems;
  and 55-40-40/830 Demonstrations.

System performance

55-40-40/210 Design and detailing hot and cold water systems

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Design:** Complete the design and detailing of the hot and cold water supply.
- **Standard:** To BS 8558 or BS EN 806-2 and in accordance with HSE publication L8: Legionnaires' disease. The control of Legionella bacteria in water systems. Approved Code of Practice and guidance on regulations.
- **Requirement:** Submit proposals including detailed design drawings, technical information, calculations and manufacturer's literature.

55-40-40/220 Mains Cold water supply

- **Incoming mains water supply:** Identify possible problems and submit report.
- **Type of system:** Pumped from storage provision.
- **Design parameters:** To BS 8558;
  To BS EN 806-2;
  and In accordance with CIPHE Plumbing engineering services design guide.
- **Daily consumption:** Submit proposals.
- **Storage capacity:** 4300 litres

55-40-40/250 Pipeline sizes for hot and cold water systems

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Sizing:** Calculate sizes to meet simultaneous demand for the building in accordance with BS EN 806-3.
- **Proposals:** Submit drawings with pipe sizes shown.
- **Performance:**
  - **Water velocity (maximum):** 1.3 m/s for hot water and 2.0 m/s for cold water.

Products

90-10-60/375 Pressure and altitude gauges

- **Manufacturer:** Submit proposals.
- **Standard:**
  - **Bourdon:** To BS EN 837-1.
  - **Diaphragm:** To BS EN 837-3.
- **Diameter:** 100 mm.
- **Case:** Black stove enamel.
- **Gauge Reference:** Calibrated in bar to between 1.5 and 2 times the maximum working pressure in the system with an adjustable red pointer which, in the case of the permanently mounted gauges, set to indicate the normal working pressure at that point in the system.
- **Connections:** Each gauge connector shall comprise a short branch from the main incorporating a U or O syphon and terminating with a gauge cock. Branches shall be of sufficient length to clear pipe insulation. Gauge cocks shall be of copper alloy with lever handles and ends screwed to BS 21 to suit the connections on the specified pressure gauges. Each connector shall be arranged to allow a fitted pressure gauge to be easily read from floor level.
- **Execution:** 90-10-60/630 Installing pressure gauges.

90-10-60/380 Temperature gauges

- **Manufacturer:** Submit proposals.
- **Standard:** To BS EN 13190.

- **Format:** Mercury in steel.
- **Diameter:** 100 mm.
- **Case:** Black stove enamel.
- **Gauge Reference:** Calibrated in degrees centigrade to between 1.5 and 2 times the normal operating temperature.
- **Connections:** Pockets shall be brass and screwed to BS 21 and be of length and diameter to suit the bulbs of the specified thermometer. The entrance to each pocket shall be positioned clear of the pipe insulation.
- **Integral accessories:** 100 mm immersion length pocket.

90-10-60/395 Masking plates

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Contractor's choice.
- **Material:**
  - **All pipes except chromium plated copper:** Plastic.
  - **Chromium plated copper pipes:** Chromium plated.
- **Format:** Split.

90-10-60/400 Pipeline strainers

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Hattersley Fig. 807, Fig. 808 or Fig 817 to suit application.
- **Pattern:** Y pattern.
- **Baskets:**
  - **Perforation size:** To suit application.
  - **Mesh size:** To suit application.
- **Material:** Bronze.
- **Connections:** Compression;
  Flanged;
  and Threaded.
- **Integral accessories:** Plugged connections for drain, air vent and differential pressure monitoring.
- **Execution:** 90-10-60/650 Installing strainers.

90-10-60/405 Pipe sleeves

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Contractor's choice.
- **Material:** Ensure that the material is compatible with the pipe the sleeve is carrying and with the material the sleeve is penetrating.
- **Form:** Manufacturer's standard.

90-10-60/420 Tundishes

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Contractor's choice.
- **Material:** Contractor's choice.

- **Connections:** Diameter to suit drain line.

90-10-65/310 Copper pipelines

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **General requirements:** 90-10-65/320 Copper pipeline jointing materials and 90-10-65/315 Copper pipeline fittings.
- **Manufacturer:** Submit proposals.
- **Standard:** To BS EN 1057.
- **Grade:** R250.
- **Finish:** Plain or, where exposed, Chrome-plated to BS EN ISO 1456.
- **Options:** .
- **Execution:** 90-10-65/630 Installing copper pipelines and 90-10-65/635 Brazed joints in copper and copper alloy pipes.

90-10-65/315 Copper pipeline fittings

- **Manufacturer:** Contractor's choice.
- **Standards:**
  - **Capillary:** To BS EN 1254-1, solder ring.
  - **Compression:** To BS EN 1254-2, type A.
    Compression fittings shall only be used at valves and connections to sanitary appliances or on exposed chrome plated pipework.
  - **Flanges:** To BS EN 1092-3
  - **Press fittings:** Geberit Mapress, subject to agreement by the Client / End User.

90-10-65/320 Copper pipeline jointing materials

- **Manufacturer:** Contractor's choice.
- **Standards:**
  - **Lead free solder for capillary fittings:** To BS EN ISO 9453.
  - **Brazing filling:** To BS EN ISO 17672.
  - **Flange jointing rings:** To BS EN 1514-4.

90-10-65/365 Polyethylene (PE) pipelines for water supply

- **General requirements:** 90-10-65/380 Jointing materials for plastics tubes.
- **Manufacturer:** Submit proposals.
- **Standards:**
  - **Pipes:** To BS EN 12201-2.
  - **Fittings:** To BS EN 12201-3.
- **Colour:** Blue.
- **Execution:** 90-10-65/700 Installing buried pipelines;
  90-10-65/645 Installing plastics pipelines;
  and 90-10-65/705 Protection of buried pipelines.

90-10-65/380 Jointing materials for plastics tubes

- **Manufacturer:** Submit proposals.
- **Standards:**
  - **Compression:** To BS EN 1254-3.

    - **Electrofusion:** To BS EN 12201-3.
    - **Socket and spigot:** To BS EN 12201-3.
    - **Solvent cement:** To BS EN 14814.
    - **Elastomeric ring seal:** To BS EN 681-1.

90-10-90/318 Backflow prevention devices

- **Manufacturer:** Submit proposals.
- **Standards:**
    - **Anti-pollution check valves:** To BS EN 13959.
    - **Hose union:** To BS EN 14454.
    - **In-line anti-vacuum valves:** To BS EN 14451.
- **Arrangement:** EA and EC.
- **Material:** Copper alloy.
- **Connections:** Compression to BS EN 1254-2 and Threaded joints to BS EN ISO 228-1.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-10-90/330 Ball valves

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Hattersley Fig. 100
- **Material:** Brass copper alloy.
- **Connections:** Threaded joints to BS EN ISO 228-1.
- **Finish:** Natural for general use or chrome plated where exposed.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-10-90/352 Copper alloy check valves

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Hattersley Fig. 249C, Fig. 249, Fig. 47 or Fig. 5870 to suit application.
- **Standard:** To BS 5154.
- **Third party certification:** WRAS Approved
- **Lift type:**
    - **Design:** Disk.
    - **Body pattern:** Straight.
- **Swing type:**
    - **Arrangement:** Horizontal.
- **Series:** B.
- **Material:** Copper alloy or Bronze.
- **Connections:** Compression to BS EN 1254-2;
  Flanged to BS EN 1092-3;
  and Threaded joints to BS EN ISO 228-1.
- **Options:** Manufacturer's standard.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-10-90/360 Test points

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Hattersley Fig. 631
- **Arrangement:** Self-sealing.
- **Material:** Copper alloy, elastomer core
- **Connections:** 6 mm (¼ inch) standard length.

90-10-90/374 Draining taps

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Submit proposals.
- **Standard:** To BS 2879.
- **Size:** ¾ inch.
- **Arrangement:** Type 1.
- **Material:** Copper alloy.
- **Connections:** Threaded joints to BS EN 10226-1.
- **Accessories:** Lever pattern key and Spare hose union.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-90-40/330 Mineral wool pipe section insulation

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Submit proposals.
- **Standard:** To BS EN 14303.
- **Recycled content:** 50% (minimum) to BS EN ISO 14021.
- **Thermal conductivity:** 0.032 W/m·K at 0°C.
  0.034 W/m·K at 10°C.
  0.037 W/m·K at 50°C.
  0.040 W/m·K at 75°C.
  0.044 W/m·K at 100°C.
- **Finish:** Aluminium foil faced.
- **Reaction to fire classification:** In accordance with BS EN 13501-1.
- **Insulation thickness (minimum):** To BS 5422.
- **Vapour barrier:**
  - **Material:** Manufacturer's standard.
  - **Vapour permeability:** To BS 5422, clause 5.6.
- **Protection:** 90-90-40/390 Protection.
- **Accessories:** 90-90-40/380 Vapour barrier;
  90-90-40/390 Protection;
  90-90-40/480 Insulation for valves and flanges;
  and 90-90-40/485 Insulation at loadbearing pipeline supports.
- **BREEAM:** The Insulation Index (calculated in accordance with BREEAM 2014 Mat 04) for the insulation shall be equal to or greater than 2.5.
- **Execution:** 90-90-40/755 Installing at non-loadbearing pipelines supports and 90-90-40/625 Installing foil faced mineral wool insulation on pipelines.

90-90-40/350 Nitrile rubber insulation

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Contractor's choice.
- **Standard:** To BS EN 60684-3-151.
- **Form:** Pipe section.
- **Recycled content:** 60% (minimum) to BS EN ISO 14021.
- **Thermal conductivity:** 0.035 W/m·K at 0°C.
  0.037 W/m·K at 10°C.
  0.040 W/m·K at 50°C.
  0.043 W/m·K at 75°C.
- **Finish:** Contractor's choice.
- **Reaction to fire classification:**
- **Insulation thickness (minimum):** To BS 5422.
- **Vapour barrier:**
  - **Material:** Manufacturer's standard.
  - **Vapour permeability:** To BS 5422, clause 5.6.
- **Protection:** 90-90-40/390 Protection.
- **Accessories:** 90-90-40/380 Vapour barrier;
  90-90-40/390 Protection;
  90-90-40/480 Insulation for valves and flanges;
  and 90-90-40/485 Insulation at loadbearing pipeline supports.
- **Execution:** 90-90-40/755 Installing at non-loadbearing pipelines supports and 90-90-40/630 Installing nitrile rubber insulation on pipelines.

90-90-40/360 Phenolic foam insulation

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Kingspan
- **Standard:** To BS EN 13166.
- **Form:** Pipe section.
- **Thermal conductivity:** 0.018 W/m·K at 0°C.
  0.018 W/m·K at 10°C.
  0.023 W/m·K at 50°C.
  0.025 W/m·K at 75°C.
- **Finish:** Finish: Above Ceiling system in teaching spaces- theatre black (matt) aluminium foil
  Concealed in corridor ceiling void - aluminium foil
  Concealed from general view in service ducts/risers - aluminium foil
  External - PIB
- **Insulation thickness (minimum):** To BS 5422.
- **Accessories:** 90-90-40/380 Vapour barrier;
  90-90-40/390 Protection;
  90-90-40/480 Insulation for valves and flanges;
  and 90-90-40/485 Insulation at loadbearing pipeline supports.
- **Items to be insulated:** Cover plates and Removable access covers.
- **Execution:** 90-90-40/640 Installing phenolic foam insulation on pipelines;
  90-90-40/690 Installing phenolic foam insulation on vessels;
  and 90-90-40/755 Installing at non-loadbearing pipelines supports.

90-90-55/430 Identifying pipework

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Contractor's choice.
- **Standards:** To BS 1710.
- **Identification type:** Adhesive colour bands.
- **Execution:** 90-90-55/660 Installing identification on pipework.

90-90-55/480 Mechanical plant and equipment identification labels

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Submit proposals.
- **Material:** Face engraved rigid plastic laminate.
- **Colour:**
  - **Background:** White.
  - **Lettering:** Black.
- **Typography:**
  - **Font:** Helvetica medium.
  - **Size:** Manufacturer's standard.
- **Information to be included:** Equipment name;
  Equipment reference number;
  and Service.
- **Execution:** 90-90-55/610 Installing mechanical plant and equipment identification.

90-90-55/490 Valve charts and schematics

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Submit proposals.
- **Material:** Paper print, glazed frame.
- **Information to be included:** Location and identification of pipework regulating, isolating and control valves.
- **Execution:** 90-90-55/620 Installing valve charts and schematics.

90-90-55/495 Valve identification labels

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Submit proposals.
- **Material:** Face engraved rigid plastic laminate.
- **Colour:**
  - **Background:** White.
  - **Lettering:** Black.
- **Typography:**
  - **Font:** Helvetica medium.
  - **Size:** Manufacturer's standard.
- **Information:** Purpose and reference number.
- **Execution:** 90-90-55/630 Installing valve identification labels.

90-90-60/390 Channel supports

- **Manufacturer:** Unistrut
- **Third party certification:** Manufacturer's standard.
- **Channels:**
  - **Load capacity:** As required to suit the specific application.
  - **Format:** Slotted.
  - **Dimensions:** 41 x 21 x 2.5 mm and 41 x 41 x 2.5 mm.
  - **Type:** Single.
  - **Material:** Steel, grade S315MC to BS EN 10149-2
  - **Finish:** Hot dip galvanized to BS EN ISO 1461
  - **Accessories:** 90° brackets;
    Base plates;
    Channel type cantilever arms;
    End caps;
    Internal connectors;
    6 mm threaded rod;
    8 mm threaded rod;
    10 mm threaded rod;
    and Trapeze hangers.

90-90-60/405 Pipe clips

- **Manufacturer:** Submit proposals.
- **Clip type:** Two piece and Insulated.
- **Material:** Manufacturer's standard.
- **Execution:** 90-10-65/695 Installing pipeline supports.

90-90-95/320 Compression isolators

- **Manufacturer:** Submit proposals.
- **Compression isolators type:** Spring.
- **Colour code:** Manufacturer's standard.
- **Load:** Manufacturer's standard.
- **Deflection:** Manufacturer's standard.

90-90-95/370 Isolation hangers

- **Manufacturer:** Submit proposals.
- **Isolation hangers type:** Spring.
- **Colour code:** Manufacturer's standard.
- **Load:** Manufacturer's standard.
- **Deflection:** Manufacturer's standard.
- **Drop rod misalignment capability:** 20%.

Ω End of system

Instantaneous hot water supply system

55-40-40/140 Instantaneous hot water supply system

System outline

55-40-40/140 Instantaneous hot water supply system

- **System performance:** 55-40-40/210 Design and detailing hot and cold water systems; 55-40-40/250 Pipeline sizes for hot and cold water systems; and 55-40-40/230 Instantaneous hot water supply.
- **140-1 - Water Services Acts, Byelaws and Notices:** The whole of the work to the domestic water services shall be executed in accordance with Water Authorities Acts and Bye Laws, and the Contractor is to give all notice and pay all fees demandable made under such Acts and Bye-Laws.

  The design of the domestic water installation shall incorporate single and double check valves as required by the current edition of the Water Supply Bye Laws and shall generally comply with the Bye Laws and BS 8558.

  All water systems within the building shall be designed and installed in accordance with the measures outlined in the HSE's Approved Code of Practice L8; Legionnaires Disease - The Control of Legionella Bacteria in Water Systems, and other industry best practice guidance including HSG274 Part 2; Legionnaires Disease - The Control of Legionella Bacteria in Hot and Cold Water Systems.
- **140-2 - Domestic Water Services:** Domestic water services are to be distributed through the building to serve the various needs of the users.

  All domestic water services pipework shall be fully insulated in accordance with the building regulations. Pipework shall, where possible, be concealed within the building in ceiling voids, ducts, risers, accessible proprietary raised floor/floor ducting systems and behind Integrated Plumbing System (IPS) panels as necessary. Only exposed pipework forming final connections to sanitary ware shall be left uninsulated, and this is to be chrome plated in all areas.

  Domestic water services shall be installed in accordance with the requirements of BS 8558, the Building Regulations and The WRAS (Water Regulations Advisory Scheme).

  The whole of the new domestic water service shall be chlorinated and sterilized on completion of the works. A certificate is to be issued by the Contractor.

  Legionella testing will be undertaken on the domestic water systems on completion of the works.
- **Instantaneous water heater:** 90-15-35/420 Instantaneous water heaters, packaged plate heat exchangers and 90-15-35/400 Instantaneous water heaters, electric.
- **Pipelines:** 90-10-65/310 Copper pipelines.
- **Pipeline accessories:** 90-10-60/405 Pipe sleeves; 90-10-60/395 Masking plates; 90-10-60/420 Tundishes; and 90-10-60/400 Pipeline strainers.
- **Valves:**
- **Isolating valves:** 90-10-90/330 Ball valves and 90-10-90/332 Butterfly valves.
- **Check valves:** 90-10-90/352 Copper alloy check valves.
- **Draining devices:** 90-10-90/374 Draining taps.
- **Accessories:** 90-10-90/360 Test points.

- **Thermal insulation:** 90-90-40/350 Nitrile rubber insulation;
  90-90-40/360 Phenolic foam insulation;
  and 90-90-40/330 Mineral wool pipe section insulation.
- **Outlets:** Refer to Architectural Specification for details of sanitaryware and associated fixtures and fittings.
  The Contractor shall allow for making final connections to all outlet points, connecting to all cisterns and tap outlets. Final connections shall incorporate a service valve to allow each item to be isolated as necessary for maintenance purposes.

  Outlet pressure throughout the building shall be regulated by pressure reducing valves located at each level and/or at point of use as required. Flow regulators shall be fitted to all spray-type taps fitted to wash basins, with a maximum flow rate of 3.5 litres/minute. The discharge pressure will be adjusted during the commissioning period.
- **Controls:** Refer to Controls / BMS Specification.
- **Plant and equipment identification:** 90-90-55/430 Identifying pipework;
  90-90-55/440 Plastic warning devices for underground cables and pipelines;
  90-90-55/480 Mechanical plant and equipment identification labels;
  90-90-55/490 Valve charts and schematics;
  and 90-90-55/495 Valve identification labels.

System performance

55-40-40/210 Design and detailing hot and cold water systems

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Design:** Complete the design and detailing of the hot and cold water supply.
- **Standard:** To BS 8558 or BS EN 806-2 and in accordance with HSE publication L8: Legionnaires' disease. The control of Legionella bacteria in water systems. Approved Code of Practice and guidance on regulations.
- **Requirement:** Submit proposals including detailed design drawings, technical information, calculations and manufacturer’s literature.

55-40-40/230 Instantaneous hot water supply

- **Type of water heater:** Electric.
- **Water supply:** Mains Cold Water. (MCWS)

55-40-40/250 Pipeline sizes for hot and cold water systems

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Sizing:** Calculate sizes to meet simultaneous demand for the building in accordance with BS EN 806-3.
- **Proposals:** Submit drawings with pipe sizes shown.
- **Performance:**
  - **Water velocity (maximum):** 1.3 m/s for hot water and 2.0 m/s for cold water.

Products

90-10-60/395 Masking plates

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Contractor's choice.
- **Material:**
  - **All pipes except chromium plated copper:** Plastic.
  - **Chromium plated copper pipes:** Chromium plated.
- **Format:** Split.

90-10-60/400 Pipeline strainers

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Hattersley Fig. 807, Fig. 808 or Fig 817 to suit application.
- **Pattern:** Y pattern.
- **Baskets:**
  - **Perforation size:** To suit application.
  - **Mesh size:** To suit application.
- **Material:** Bronze.
- **Connections:** Compression;
  Flanged;
  and Threaded.
- **Integral accessories:** Plugged connections for drain, air vent and differential pressure monitoring.
- **Execution:** 90-10-60/650 Installing strainers.

90-10-60/405 Pipe sleeves

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Contractor's choice.
- **Material:** Ensure that the material is compatible with the pipe the sleeve is carrying and with the material the sleeve is penetrating.
- **Form:** Manufacturer's standard.

90-10-60/420 Tundishes

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Contractor's choice.
- **Material:** Contractor's choice.
- **Connections:** Diameter to suit drain line.

90-10-65/310 Copper pipelines

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **General requirements:** 90-10-65/320 Copper pipeline jointing materials and 90-10-65/315 Copper pipeline fittings.
- **Manufacturer:** Submit proposals.
- **Standard:** To BS EN 1057.
- **Grade:** R250.
- **Finish:** Plain or, where exposed, Chrome-plated to BS EN ISO 1456.
- **Options:** .
- **Execution:** 90-10-65/630 Installing copper pipelines and 90-10-65/635 Brazed joints in copper and copper alloy pipes.

90-10-65/315 Copper pipeline fittings

- **Manufacturer:** Contractor's choice.
- **Standards:**
  - **Capillary:** To BS EN 1254-1, solder ring.
  - **Compression:** To BS EN 1254-2, type A.
    Compression fittings shall only be used at valves and connections to sanitary appliances or on exposed chrome plated pipework.
  - **Flanges:** To BS EN 1092-3
  - **Press fittings:** Geberit Mapress, subject to agreement by the Client / End User.

90-10-65/320 Copper pipeline jointing materials

- **Manufacturer:** Contractor's choice.
- **Standards:**
  - **Lead free solder for capillary fittings:** To BS EN ISO 9453.
  - **Brazing filling:** To BS EN ISO 17672.
  - **Flange jointing rings:** To BS EN 1514-4.

90-10-90/330 Ball valves

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Hattersley Fig. 100
- **Material:** Brass copper alloy.
- **Connections:** Threaded joints to BS EN ISO 228-1.
- **Finish:** Natural for general use or chrome plated where exposed.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-10-90/352 Copper alloy check valves

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Hattersley Fig. 249C, Fig. 249, Fig. 47 or Fig. 5870 to suit application.
- **Standard:** To BS 5154.
- **Third party certification:** WRAS Approved
- **Lift type:**
  - **Design:** Disk.
  - **Body pattern:** Straight.
- **Swing type:**
  - **Arrangement:** Horizontal.

- **Series:** B.
- **Material:** Copper alloy or Bronze.
- **Connections:** Compression to BS EN 1254-2;
  Flanged to BS EN 1092-3;
  and Threaded joints to BS EN ISO 228-1.
- **Options:** Manufacturer's standard.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-10-90/360 Test points

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Hattersley Fig. 631
- **Arrangement:** Self-sealing.
- **Material:** Copper alloy, elastomer core
- **Connections:** 6 mm (¼ inch) standard length.

90-10-90/374 Draining taps

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Submit proposals.
- **Standard:** To BS 2879.
- **Size:** ¾ inch.
- **Arrangement:** Type 1.
- **Material:** Copper alloy.
- **Connections:** Threaded joints to BS EN 10226-1.
- **Accessories:** Lever pattern key and Spare hose union.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-15-35/400 Instantaneous water heaters, electric

- **Manufacturer:** Zip Heaters UK
- **Model / Type:** 7.5 litre Oversink
- **Standards:** To BS EN 60335-1 and BS EN 60335-2-35.
- **Third party certification:** BEAB-approved and CE marked.
- **Arrangement:** Single- or Multi-point as to suit local sanitaryware to be served.
- **Rating:** 2.4kW or closest similar rating.
- **Insulation:** CFC/HCFC free (ODP zero) flame-retardant expanded polystyrene.
- **Vessel material:** Heavy gauge copper.
- **Accessories:** Manufacturers proprietary accessory kits, where appropriate;

90-90-40/330 Mineral wool pipe section insulation

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Submit proposals.
- **Standard:** To BS EN 14303.
- **Recycled content:** 50% (minimum) to BS EN ISO 14021.

- **Thermal conductivity:** 0.032 W/m·K at 0°C.
  0.034 W/m·K at 10°C.
  0.037 W/m·K at 50°C.
  0.040 W/m·K at 75°C.
  0.044 W/m·K at 100°C.
- **Finish:** Aluminium foil faced.
- **Reaction to fire classification:** In accordance with BS EN 13501-1.
- **Insulation thickness (minimum):** To BS 5422.
- **Vapour barrier:**
  - **Material:** Manufacturer's standard.
  - **Vapour permeability:** To BS 5422, clause 5.6.
- **Protection:** 90-90-40/390 Protection.
- **Accessories:** 90-90-40/380 Vapour barrier;
  90-90-40/390 Protection;
  90-90-40/480 Insulation for valves and flanges;
  and 90-90-40/485 Insulation at loadbearing pipeline supports.
- **BREEAM:** The Insulation Index (calculated in accordance with BREEAM 2014 Mat 04) for the insulation shall be equal to or greater than 2.5.
- **Execution:** 90-90-40/755 Installing at non-loadbearing pipelines supports and 90-90-40/625 Installing foil faced mineral wool insulation on pipelines.

90-90-40/350 Nitrile rubber insulation

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Contractor's choice.
- **Standard:** To BS EN 60684-3-151.
- **Form:** Pipe section.
- **Recycled content:** 60% (minimum) to BS EN ISO 14021.
- **Thermal conductivity:** 0.035 W/m·K at 0°C.
  0.037 W/m·K at 10°C.
  0.040 W/m·K at 50°C.
  0.043 W/m·K at 75°C.
- **Finish:** Contractor's choice.
- **Reaction to fire classification:**
- **Insulation thickness (minimum):** To BS 5422.
- **Vapour barrier:**
  - **Material:** Manufacturer's standard.
  - **Vapour permeability:** To BS 5422, clause 5.6.
- **Protection:** 90-90-40/390 Protection.
- **Accessories:** 90-90-40/380 Vapour barrier;
  90-90-40/390 Protection;
  90-90-40/480 Insulation for valves and flanges;
  and 90-90-40/485 Insulation at loadbearing pipeline supports.
- **Execution:** 90-90-40/755 Installing at non-loadbearing pipelines supports and 90-90-40/630 Installing nitrile rubber insulation on pipelines.

90-90-40/360 Phenolic foam insulation

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Kingspan
- **Standard:** To BS EN 13166.
- **Form:** Pipe section.
- **Thermal conductivity:** 0.018 W/m·K at 0°C.
  0.018 W/m·K at 10°C.
  0.023 W/m·K at 50°C.
  0.025 W/m·K at 75°C.
- **Finish:** Finish: Above Ceiling system in teaching spaces- theatre black (matt) aluminium foil
  Concealed in corridor ceiling void - aluminium foil
  Concealed from general view in service ducts/risers - aluminium foil
  External - PIB
- **Insulation thickness (minimum):** To BS 5422.
- **Accessories:** 90-90-40/380 Vapour barrier;
  90-90-40/390 Protection;
  90-90-40/480 Insulation for valves and flanges;
  and 90-90-40/485 Insulation at loadbearing pipeline supports.
- **Items to be insulated:** Cover plates and Removable access covers.
- **Execution:** 90-90-40/640 Installing phenolic foam insulation on pipelines;
  90-90-40/690 Installing phenolic foam insulation on vessels;
  and 90-90-40/755 Installing at non-loadbearing pipelines supports.

90-90-55/430 Identifying pipework

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Contractor's choice.
- **Standards:** To BS 1710.
- **Identification type:** Adhesive colour bands.
- **Execution:** 90-90-55/660 Installing identification on pipework.

90-90-55/480 Mechanical plant and equipment identification labels

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Submit proposals.
- **Material:** Face engraved rigid plastic laminate.
- **Colour:**
  - **Background:** White.
  - **Lettering:** Black.
- **Typography:**
  - **Font:** Helvetica medium.
  - **Size:** Manufacturer's standard.
- **Information to be included:** Equipment name;
  Equipment reference number;
  and Service.
- **Execution:** 90-90-55/610 Installing mechanical plant and equipment identification.

90-90-55/490 Valve charts and schematics

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Submit proposals.

- **Material:** Paper print, glazed frame.
- **Information to be included:** Location and identification of pipework regulating, isolating and control valves.
- **Execution:** 90-90-55/620 Installing valve charts and schematics.

90-90-55/495 Valve identification labels

Shared by: 55-40-40/130 Boosted cold water supply system : MCWS; and 55-40-40/140 Instantaneous hot water supply system.

- **Manufacturer:** Submit proposals.
- **Material:** Face engraved rigid plastic laminate.
- **Colour:**
  - **Background:** White.
  - **Lettering:** Black.
- **Typography:**
  - **Font:** Helvetica medium.
  - **Size:** Manufacturer's standard.
- **Information:** Purpose and reference number.
- **Execution:** 90-90-55/630 Installing valve identification labels.

Ω End of system

Mechanical supply ventilation system

65-10-95/130 Mechanical supply ventilation system

System outline

65-10-95/130 Mechanical supply ventilation system

- **System performance:** 65-10-95/230 Design parameters for ventilation systems.
  Unit airflows
  108l/s:
  72 l/s:
  36l/s:
- **Location of plant:** Installed high level in each pod
- **Route of distribution:** See drawings
- **Type of system:** Fresh air heat recovery
- **External air intake:** 300x300mm external wall louvres
- **Air filters:** Manufacturers standard
- **Heat recovery:** Manufacturers standard
- **Air handling units:** Mitsubishi Lossnay
  LGH-50RX5E
  LGH-35RX5E
  LGH15RX5E
- **Supply fans:** Manufacturers Standard
- **Acoustic treatment:** Manufacturers Standard
- **Air ductwork and accessories:**
  - **Ductwork:** 90-45-25/315 Circular sheet metal ductwork and fittings.
  - **Accessories:** 90-45-25/480 Shut off dampers.
- **Thermal insulation on supply air ductwork:** 90-90-40/340 Mineral wool slabs insulation.
- **Vibration isolation mountings:** Manufacturers standard
- **Reheat batteries:** Frost coil 90-45-50/320 Electric heater batteries.
- **Room supply air terminal devices:** 150mm diameter Jet nozzles
- **Accessories:** Contractor's design.
- **Controls:** AE200 Control PAC-YG10HA
- **Identification of ductwork and equipment:** 90-90-55/420 Identifying ductwork.
- **Testing:** 90-45-25/785 Air leakage testing of medium pressure ductwork.
- **Execution:** 65-10-95/630 Installing ductwork on air handling units.
- **System completion:** 65-10-95/810 Commissioning of air distribution systems.

System performance

65-10-95/230 Design parameters for ventilation systems

- **External climatic data:**
  - **Winter:**

    Outside temperature: -5C

    Wind speed:

- **Summer:**

  Outside temperature: 30C
  Humidity: 50%
  Solar radiation:

- **Internal data:**
  - **Human occupancy:** 12.0l/s per person fresh air
  - **Ventilation Unit schedules:** AHU 01 First Floor offices Existing
    AHU 02 Second Floor Offices Existing
- **Internal parameters:**
  - **Room:** 21C

Products

90-45-25/315 Circular sheet metal ductwork and fittings

- **Manufacturer:** Submit proposals.
- **Standards:** To BESADW/144, BS EN 1506 and BS EN 12237.
- **Classification:** Class B.
- **Material:** Zinc coated steel to BS EN 10346 grade DX51D+Z140.
- **Construction:** Spirally wound.
- **Regulating dampers:**
  - **Standard:** As BESADW/144.
  - **Regulating function:** Balancing.
  - **Damper type:** Volume control dampers (VCD's) shall be fitted to each grille run-out, each sub-branch, main branch and primary mains.
    All VCD's shall be of the multi-leaf single skin opposed blade type, constructed of galvanised steel frame and blades with nylon bearings.
    No flap dampers will be accepted.
    Opposed blade dampers may be provided for final terminal regulation.
  - **Operation:** Manual.
  - **Material:** Zinc coated steel to match ductwork.
- **Access openings:**
  - **Purpose:** Inspection;
    Cleaning;
    and Maintenance.
  - **Sizes:** To BS EN 12097 and BESADW/144.
- **Execution:** 90-45-25/610 Air ductwork generally;
  90-45-25/640 Installing sheet metal ductwork;
  90-45-25/670 Ductwork support for vapour seal continuity type B;
  90-45-25/700 Test holes in ductwork type B;
  90-45-25/720 Weatherproofing ductwork penetrations;
  90-45-25/740 Installing control equipment and instruments in metal ductwork;
  90-45-25/785 Air leakage testing of medium pressure ductwork;
  and 90-45-25/690 Drainage of ductwork type B.

90-45-25/480 Shut off dampers

- **Manufacturer:** Contractor's choice.
- **Standard:** To BS EN 1751.
- **Leakage through closed blades:**

- **Casing leakage:**
- **Pressure:**
- **Setting:**
- **Material:**
- **Control method:**
- **Execution:**

90-90-40/340 Mineral wool slabs insulation

- **Manufacturer:** Submit proposals.
- **Standard:** To BS 3958-5 and To BS EN 14303.
- **Form:** Flexible slabs;
  Rigid slabs;
  and Semi-rigid slabs.
- **Recycled content:** 50% (minimum) to BS EN ISO 14021.
- **Thermal conductivity:** 0.032 W/m·K at 0°C.
  0.034 W/m·K at 10°C.
  0.037 W/m·K at 50°C.
  0.040 W/m·K at 75°C.
  0.044 W/m·K at 100°C.
- **Finish:** Aluminium foil faced.
- **Reaction to fire classification:** Manufacturer's standard.
- **Insulation thickness (minimum):** To BS 5422.
- **Vapour barrier:**
  - **Material:** Manufacturer's standard.
  - **Vapour permeability:** To BS 5422, clause 5.6.
- **Protection:** 90-90-40/390 Protection.
- **Accessories:** Manufacturer's standard.
- **Items to be insulated:** Submit proposals.
- **Execution:** 90-90-40/780 Installing vapour barriers;
  90-90-40/660 Installing foil faced mineral wool insulation on ductwork;
  and 90-90-40/770 Insulation carried through ductwork supports.

90-90-55/420 Identifying ductwork

- **Manufacturer:** Submit proposals.
- **Standard:** To BS 1710.
- **Identification type:** Self-adhesive plastics or transfers.
- **Execution:** 90-90-55/650 Installing ductwork identification.

Ω End of system

SUMMARY OF TENDER –

PROJECT: Seaton House CQC Office upgrades – Nottingham
JOB NUMBER: 190976

THIS SHEET MUST BE COMPLETED IN FULL AND RETURNED WITH TENDER

The Services Contractor shall complete in the space below, the costs associated with the design, supply, delivery, installation, testing and commissioning of the following elements: -
If the element is not priced, then is deemed to have been included in the tender.

	CQC Offices Services	
1.0	**Preliminaries**	£
2.0	**Ventilation ductwork - Meeting Rooms**	
2.1	Supply and Install new Fresh air ducting / VCD to FF Meeting Room	£
2.2	Testing and Commissioning	£
2.3	Reposition Grilles in 2F Meeting room	£
3.0	**Mains Cold Water**	
3.1	Install New MCWS services piping to Sink / Zip Boiler	£
3.2	Install new DHWS services piping to new sink	£
3.3	Relocate existing services to suit new Kitchen base units	£
3.4	Install new Zip water boiler	£
3.5	Thermal Insulation to pipework	£
3.6	Testing & Commissioning	£
4.0	**Foul Drainage**	
4.1	Install new Drainage to S/S sink and water boiler	£
5.0	**Electrical**	
5.1	New Electrical Wiring to Zip Boiler - See Elect Specification	£
5.2	Alterations to lighting in 2nd floor Small Meeting Room	£
5.3	New power supply to Zip water boiler	£
6.0	**Maintenance**	
6.1	12 months Servicing and Maintenance of the Zip Boiler	£
6.2	Additional 12 months Warranty, Servicing and Maintenance	£
7.0	**Documents & Handover**	
7.1	Record Drawings and O&M Manuals	£
7.2	Building User Guide	£
7.3	Client Training	£
8.0	**Provisional Sum**	
	Access / Builders work / fire stopping underside flooring for MCWS	£ 1000
9.0	**Total**	**£**

SUMMARY OF TENDER

PROJECT: Seaton House CQC Office upgrades – Nottingham
JOB NUMBER: 190976

THIS SHEET MUST BE COMPLETED IN FULL AND RETURNED WITH TENDER

Contractor .....

Signed: .....

Position within Company: .....

On behalf of: .....

Address: .....

.....

.....

.....

.....

Date: .....

Drawing Schedule –

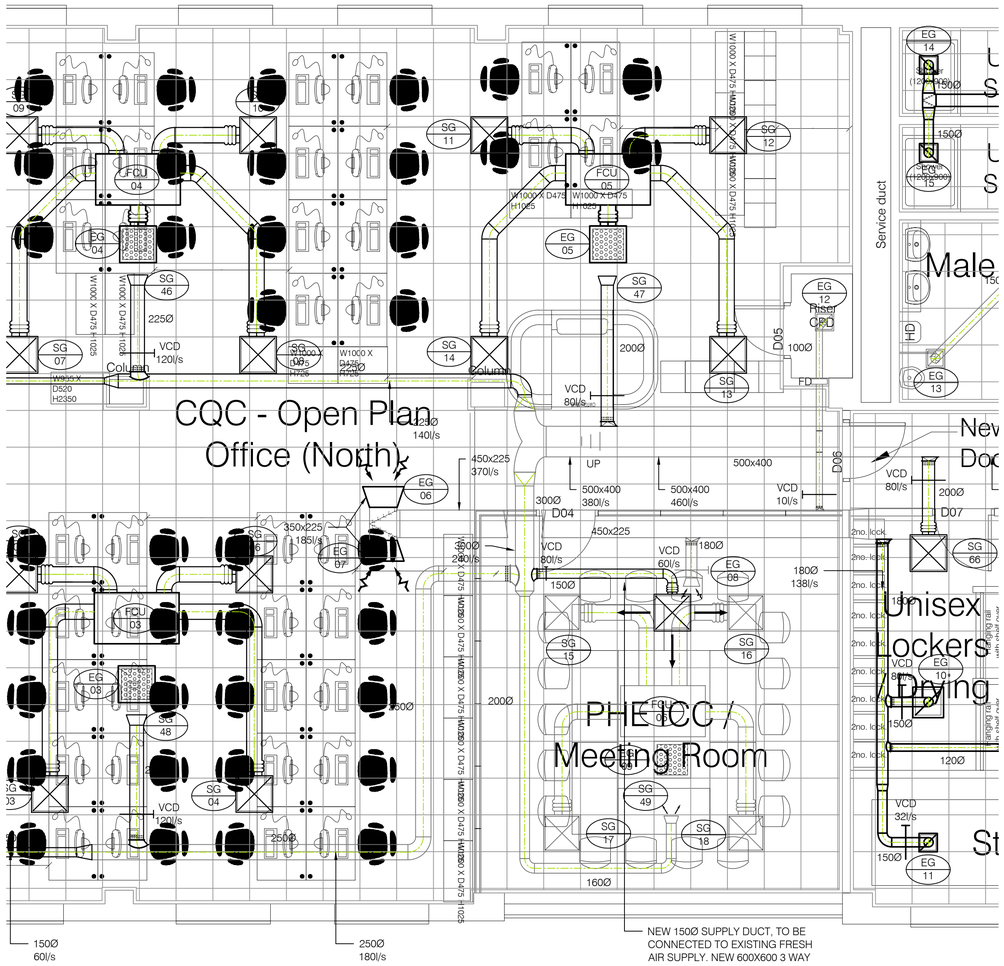
PROJECT: Seaton House CQC Office upgrades – Nottingham
JOB NUMBER: 190976

	CQC Office Mechanical Services	
	Documents	
	976-PEV-XX-XX-RP-ME-0001_Mechanical Scope	
	976-PEV-XX-XX-SP-ME-0002_Mechanical Services Specification	
	976-PEV-XX-XX-TS-ME-0003_Tender Summary	
	976-PEV-XX-XX-SH-ME-0004_Mechanical Drawings Schedule	
	976-PEV-XX-XX-HS-ME-0005_Mech Services Design Risk Assessment	
	Drawings	
	190976-PEV-XX-XX-DR-M-0050_Proposed Ventilation & Domestic Water Amendments	
	976-PEV-XX-ZZ-DR-B-1213_Proposed Tea Point	

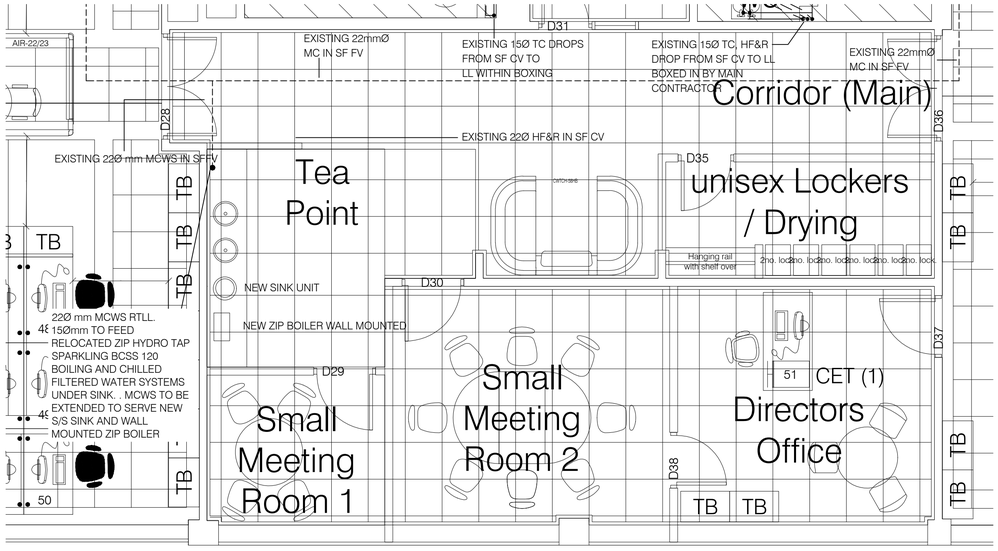
NO DIMENSIONS TO BE SCALED FROM THIS DRAWING

CDM - RESIDUAL HAZARDS The following are considered to be significant risks relevant to this drawing, which could not be fully mitigated or removed through design:

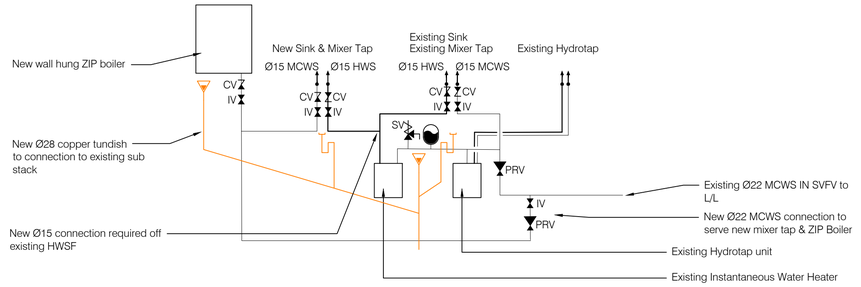
	CDM - RESIDUAL HAZARDS
1	
2	
3	etc.
	Further possible control measures have been identified within the Design Risk Assessments which may help to mitigate these and other identified risks further during the construction / maintenance process.



FIRST FLOOR PROPOSED MEETING ROOM VENTILATION LAYOUT



SECOND FLOOR PROPOSED NEW TEA POINT LAYOUT



SECOND FLOOR PROPOSED NEW TEA DOMESTIC SCHEMATIC

Revision		Date	Drn	Chk
P01	For Information	27.11.19	AGM	RNE

Client
Public Health England

Project
Seaton House
Nottingham

Drawing Title
Proposed Ventilation & Domestic Hot & Cold Water Upgrades

Suitability Status
S2 - Suitable for Information

Job No.	Scale	Size	Rev
190976	**1:50**	**@ A1**	**P01**

Drawing Number
190976-PEV-XX-XX-DR-M-0050
Project Code - Originator - Zone - Level - Type - Role - Number

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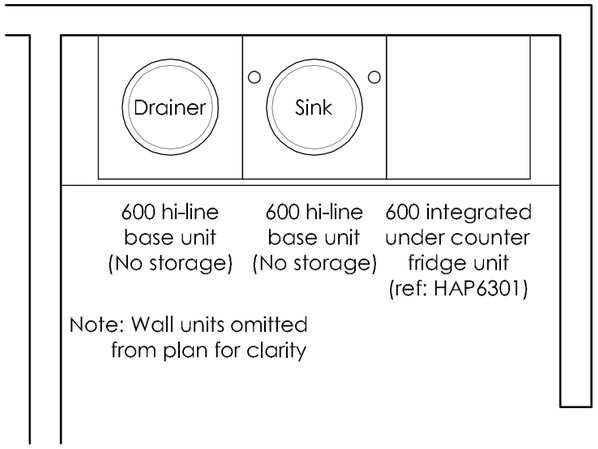
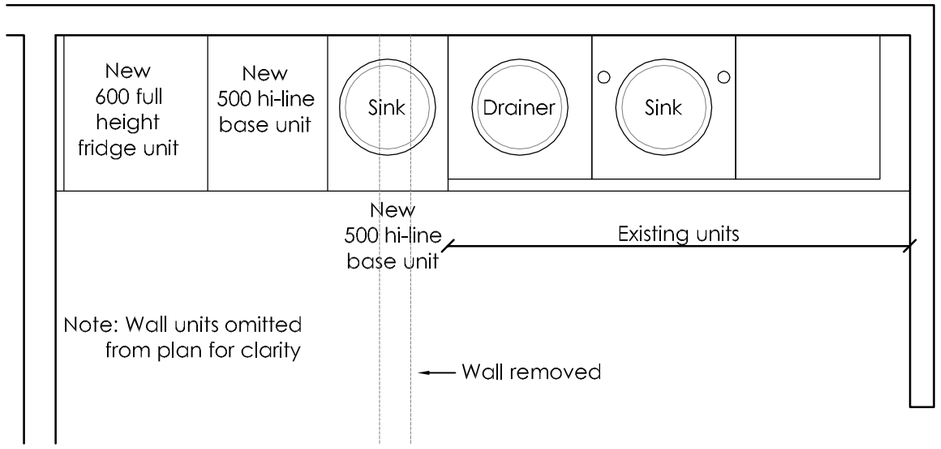
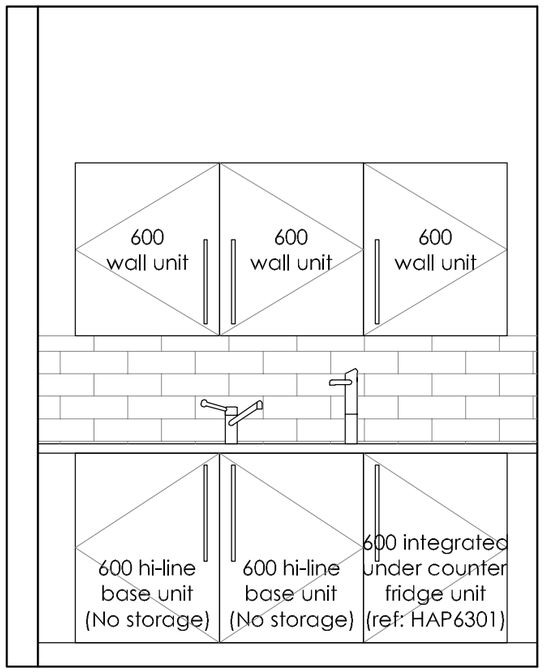
NO DIMENSIONS TO BE SCALED FROM THIS DRAWING



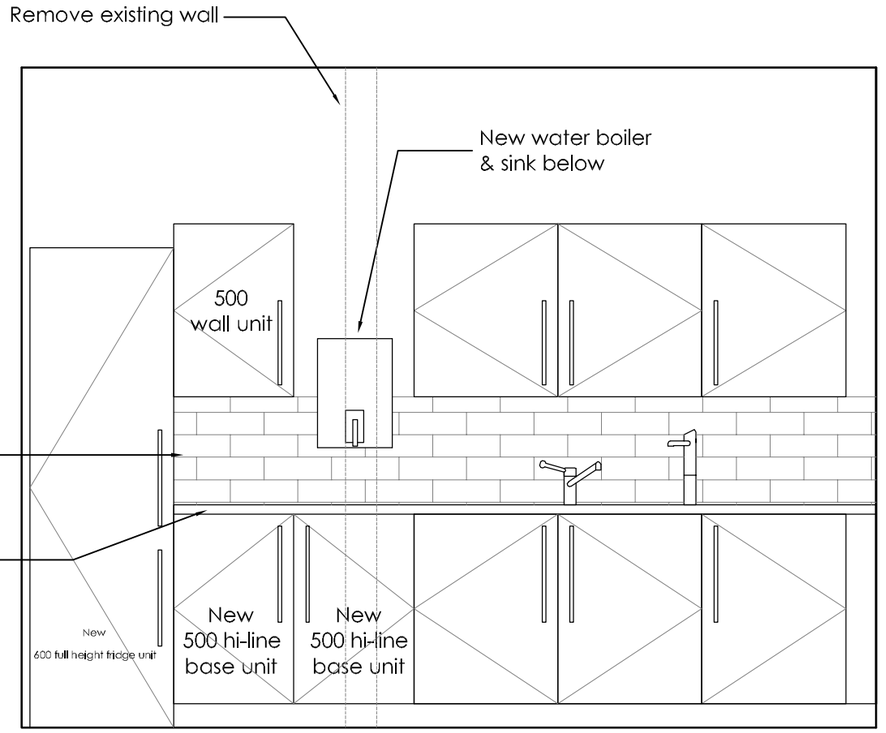
Existing Tea Point Plan



Proposed Tea Point Plan



Existing Tea Point Elevation



Proposed Tea Point Elavation

New kitchen units to tea point with upgrade units and nickel effect bar handles (403mm - HKB1236) and high gloss worktop (Cairngorn), all from Howdens Joinery (except door fronts).

Door fronts to be Reflections Burgundy Gloss range from Better kitchens.

Revision		Date	Drn	Chk
P01	Tender Issue	19.11.19	ROM	DLN

Client

Public Health Eng;and

Project

Seaton House

Proposed Works

Drawing Title

Proposed Tea Point

Suitability Status

D2 - Suitable for Tender

Job No.	Scale	Size	Rev
190976	**1:25**	**@ A3**	**P01**

Drawing Number

190976-PEV-XX-ZZ-DR-B-1213

Project Code - Originator - Zone - Level - Type - Role - Number

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