CORBY POOL Mechanical and Electrical replacement works

Mechanical Services Specification and Preliminaries

23700-KBS-XX-XX-SP-M-0200 Mechanical Specification_P01

KIER

Kier Property
Design and Business Services

Document Control

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Contents

00-05-10 Project Definition

101 Project description

- **Project reference**: 23700-KBS-XX-XX-SP-M-0200
- **Project title**: Corby East Midlands International Swimming pool refurbishment works
- **Project description**: Corby East Midlands International Swimming Pool mechanical refurbishment and pool cover installations

102 Design standards

- **Standards apply**: Sport England 2013 Design guidance notes, CIBSE guide B, Approved Document Part F and PartL

  Housekeeping: **Protection of the existing Building Fabric, Fittings and Furniture and general housekeeping**

  Photographic record

  Prior to the commencement of the works the contractor shall make a photographic record of the condition of all parts of the site (internally and externally) that will be affected by the works.

  Any accidental damage caused by the contractor during the course of the project will be similarly recorded.

  Protection of surfaces and equipment

  Prior to the commencement of the project the contractor will:

  Protect all floors that might be affected by the works with a suitable covering. The protection to cover the extent of the floor from wall/skirting to wall/skirting. Consideration to also be given to the type of adhesive used to prevent permanent staining.

  All IT equipment, furniture, storage cupboards, bookshelves and exposed surfaces will be covered with dust sheets.

  All exposed wall displays, notice boards and Smart screens will be covered and taped.

  Exposed smoke alarm sensors that might be affected by dust will be covered and taped

  A joint inspection will be held by the contractor and the Council's representative prior to commencement of the works to ensure that the requirements for the protection of surfaces and equipment have been met.

  Dust suppression

  During the course of the works the contractor shall employ an appropriate dust suppression methodology, to be confirmed in the Construction Phase Plan document.

  Making Good

  All openings in wall, floors and ceilings affected by the works will be filled with sand and cement mortar mix, fire stopped and then re-plastered, sanded smooth painted or re-wall papered.

  Any damaged or holed ceiling tiles will be replaced.

  Any damaged or holed carpet tiles will be replaced.

Damaged or holed Vinyl floor coverings will be repaired by a suitable patch.

Painting

Where radiators are removed and replaced leaving behind patches of mismatching paintwork or plaster, the area shall be painted to match the existing décor (extent to be agreed with the Project manager)

All new exposed pipework shall be painted with a primer coat, one coat of undercoat and a gloss finishing coat to match the existing décor, within the associated room.

Any new pipe boxing will be sanded smooth and painted with a primer coat, one coat of undercoat and a gloss finishing coat to match the existing décor, within the associated room

Cleaning

The contractor will use their best endeavours to ensure that the site is kept as clean and tidy as practicably possible during the course of the works.

All working areas will be totally cleaned to the Council's representative's satisfaction after the works have been completed and surface and equipment protection removed.

General

The contractor shall make sufficient allowances to allow to work out of hours when necessary to prevent closure of the pool to public access between normal operational hours. Allow within the programme a sufficient period of time to ensure the site is returned to the condition it was in prior to the commencement of the works to include all making good, painting and cleaning. The works shall be totally completed and commissioned by the date indicated within the contract preliminaries, including all cleaning procedures and restoration of systems.

It is a requirement that the Contractor shall prepare a full phasing programme, which clearly identifies the areas of the swimming pool affected by the works and shall also indicate anticipated completion dates to enable the pool to reoccupy.

In addition, the contractor shall, where practical, complete the installation works area by area basis, which would then enable the re-establishment of the relevant areas by the pool. The detail to be discussed and agreed with the Contract Administrator and Council representative prior to commencement on site.

Allowance shall be made within the contract for the Contractor to co-ordinate the entire contract works with the works of other trades and installations and sub contractors, which shall be on-site during the period of the contract and to lead the other contracting trades by producing co-ordination drawings, where appropriate and supervising the works including all CDM safety duties.

Site information

115 Utilities and services survey

- **Details**: Existing mechanical and electrical systems installation record drawings are available in pdf format and is available on request.

Prior works commencing the contractor shall make allowances within his costs to establish the current achieved ventilation flow rates via the existing 3 off Calorex units and the existing AHU7 (spectator AHU) and existing AHU3 (wet change area) prior to works being carried out and provide the current achieved flow rates to the Contract administrator. The contractor where possible and practicable check and verify the existing main ductwork condition that is serviced by the Calorex units and provide a condition report of the ductwork together with photographic evidence.

The contractor shall carry out site survey to establish and verify the design intent drawings provided for the ventilation of the undercroft plant area. The contractor shall allow within his costs to establish the detail design for the ventilaiton system ductwork and the builderswork

Following refurbishment works of the Calorex units, the Contractor shall allow for re-balancing of the pool hall ventilation systems including:-
3 No Calorex units commissioning (re-commissioning of the units by Calorex specialists)
Existing AHU7 (spectator area) balancing (via dampers)
Existing AHU3 (wet change area) balancing (via dampers)

Once the information of the actual air flow rates are established the contractor shall work with C.A. to commission the pool hall ventilation to ensure that pool hall is under negative pressure at all times.

- **Reference**: Record information is available on request
- **Status**: For tender
- **Format**: Electronic.
- **Provision**: Available for inspection.

137 Environmental policy

- **Details**: Adhere to Corby Council environmental policy
- **Project Environmental Management System**:
  - **General**: Develop a system compatible with the existing policy.

165 Drawings and other documents

- **Details**: Corby international swimming pool mechanical refurbishment information
- **Reference**: Mechanical works:

  23700-KBS-01-00-DR-M-6201 Existing & Proposed Ventilation Layout - Undercroft D2 P01
  23700-KBS-01-GF-DR-M-6202 Existing & Proposed Ventilation Ground First Aid & Poolside D2 P01
  23700-KBS-01-GF-DR-M-6203 Proposed Ventilation Layout Ground Floor D2 P01
  23700-KBS-01-00-DR-M-6601 Existing Ventilation Schematic for AHU's 10 to 12 D2 P01
  23700-KBS-XX-XX-SP-M-0900 Mechanical Specification D2 P01

  Electrical works:
  23700-KBS-01-00-DR-E-5000 Basement Ventilation Supplies D2 P01
  23700-KBS-01-GF-DR-E-5001 Ground Floor Supplies for Pool Covers D2 P01
  23700-KBS-B1-XX-SP-E-0900 Electrical Specification D2 P01

- **Status**: D2 - Suitable for tender.
- **Format**: Electronic.
- **Provision**: Provided.
- **Contract drawings**:
  - **Generally**: The same as the tender drawings.
  - **CAD data**: In accordance with BS EN ISO 19650-1
- **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**: Give immediate notice in writing setting out the nature and assessed impact of the conflict. Do not proceed until instructions are received.
  - **Document precedence**: Specification takes precedence over referenced documents.
- **Dimensions**: Use numbered dimensions only. Do not scale direct from drawings.

170 Preconstruction information

- **Scope**: Integral with the project specification, including but not restricted to the following:
  Description of project.
  Client's consideration and management requirements.
  Environmental restrictions and on-site risks.
  Significant design and construction hazards.
  The Health and Safety File.

00-05-15 Works Terminology

101 Standard Clauses

- **Particulars**: 101 PROJECT PARTICULARS

101.01 CONTRACT ADMINISTRATOR:

The Contract Administrator duties will be carried out by the Engineer

101.02 DESIGN TEAM:

Building Services Engineer - Ozlem Thomson - Kier
Electrical Engineer - Mark Gardiner - Kier

101.03 CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015 (CDM 2015)

The Principal Designer is Ozlem Thomson at Kier DaBS

Perform the duties of the Principal Contractor as defined within CDM 2015 unless notified to the contrary elsewhere within the tender documentation.

Where the contractor is not acting as the Principal Contractor, perform the duties of contractor as defined within CDM 2015.

101.04 EXISTING MAINS / SERVICES:

Existing mains/engineering services comprise

101.05 RISKS TO HEALTH AND SAFETY:

The nature and condition of the site/building(s) cannot be fully and certainly ascertained before opening up. The following risks are or may be present: Refer to Pre construction information H&S designer risk assessment

The accuracy and sufficiency of this information is not guaranteed by the Employer or the CA and the contractor must ascertain for himself any information he may require to ensure the safety of all persons and the Works.

101.06 WORK BY OTHERS AND CO-ORDINATION OF TRADES:

Allow for co-ordinating the subcontract works with the works of other trades and installations which may be on site during the period of the subcontract.

101.07 ELECTRICAL SUPPLY:

Where systems are specified as being maintained 'under fire conditions' ensure wiring selected is suitable for the temperatures to be encountered.

101.08 PLANT OPERATING CONDITIONS:

Ensure all plant items are suitable for operation in the environment in which they are to be located.

101.09 ROOM TERMINAL LOCATIONS:

The positions of all connection points, accessories, apparatus, equipment and other room terminals shown on the tender drawings are approximate and for guidance in the preparation of the tender.

Agree, with CA, which terminals are subject to final positioning on site.

Allow for the movement of all such terminals up to a radius of 2.0m from the positions shown on the drawings.

Mounting heights indicated in tender documents are for tender purposes only. Confirm mounting heights with the CA before commencing work on site.

101.10 ELECTROMAGNETIC COMPATIBILITY:

Ensure all equipment and systems are installed to provide electromagnetic compatibility within the system and with any other systems installed in the same area. Ensure all systems and buildings are assessed for protection to, and that such protection meets the requirements of BS EN 62305. Ensure all equipment meets the requirements of the appropriate electromagnetic compatibility standard.

101.11 PERFORMANCE CHARACTERISTIC DETAILS:

Details of the equipment selected for inclusion into the Works shall include, in a format to be agreed, the following information:

Plant item description, reference identification and serial number
Electrical input rating - kVA, Volts, Phase
Operating mode e.g. duty, standby, emergency, etc.
Starting characteristics - starter type, current, starts/hour and starting time
Performance characteristics - (full load current and power factor)
Noise level
Weight

101.12 SOFTWARE:

Obtain on behalf of the end user all appropriate licences, permissions, copyright waivers, rights of use and the like from the owners of the software rights.

Ensure that the end user is properly registered with the software supplier for support and appropriate updating.

101.13 PROVISION, CONTENT AND USE OF DOCUMENTS

The definitions of technical terms associated with the engineering services installations are those included in:

CIBSE, IOP and BSRIA Technical Publications
Loss Prevention Council - Rules for Automatic Sprinkler Installations
BS 7671 - Requirements for Electrical Installations (IET Wiring Regulations)
British Standards, including Codes of Practice
Associated Statutory Acts

Where used in the documentation the following definitions apply:

Duct: An enclosed space specifically intended for the distribution of services, with direct access for personnel
Trench: A covered horizontal service space in the floor or ground with access from above

Cavity: A space enclosed within the elements of a building within which services are installed, e.g. the space between ceiling and floor above. See Building Regulations
Service Areas: Includes areas within a building with limited finishes such as loading bays, car parks etc.
Concealed Services: Includes installations within ducts, trenches or cavities
Exposed Services: Includes installations within plant rooms, outdoors or unprotected within service or occupied areas
System: System means all equipment, accessories, controls, supports and ancillary items, including supply, installation, connection, testing, commissioning and setting to work necessary for that section of the Works to function
Services: Services means the inclusion of one or more systems

101.14 MANUFACTURER'S REFERENCES:

Manufacturer's references are those current at the time of tender. References mean the particular product as specified in the manufacturer's technical literature current at that time.

101.15 TENDER DRAWINGS:

The tender drawings show the general arrangement of the Engineering Services to be provided and the inter-relationship of the Works with work to be installed by others.

101.16 DRAWINGS:

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 TN 21/97 Appendix A.

101.17 BUILDING INFORMATION MODELLING (BIM) USE ON THE PROJECT:

Work in accordance with the BIM Execution Plan

101.18 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.

101.19 SCHEMATIC DRAWING:

A line diagram describing the interconnection of components in a complex system. The main features of a schematic drawing are as follows:

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
Symbols and line conventions in accordance with BS EN ISO 11091 Recommendations for symbols and other graphic conventions.
Label the drawing with appropriate pipe, duct and cable sizes where these are not shown elsewhere
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
Identify the major components indicated on the schematic drawing so that their whereabouts in specification and on other drawings can be easily determined
Commissioning specification

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

101.20 DETAILED DESIGN DRAWING:

A drawing 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:

Plan layouts to a scale of at least 1:100
Plant areas to a scale of at least 1:50 and accompanied by cross-sections
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-routeing of the services.
Represent pipework by single line layouts
Represent ductwork by either double or single line layouts as required to ensure that the routes indicated are feasible
Indicate on the drawing the space available for major service routing in both horizontal and vertical planes

101.21 CO-ORDINATION DRAWING:

A drawing 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:

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.
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.
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.
Make allowance for those plant items specified by the designer and identified in the design specification.
Make allowance for installation working space and space to facilitate commissioning and maintenance.
Indicate positions of main fixing points and supports where they have significance to the structural design.
Arrange the services so that it is possible to demonstrate a feasible sequence of installation.
Support the drawing with individual services drawings for clarity.
Plantroom layouts to a scale of at least 1:20, accompanied by cross-sections and elevations to a scale of at least 1:20.

101.22 INSTALLATION DRAWING:

A drawing 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:

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
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.

Make allowance for inclusion of all supports and fixings necessary to install the works.

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.

Make allowance for installation details provided from shop drawings.

Make allowance 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.

Make allowance for plant and equipment including those which are chosen as alternatives to the designer's specified option.

Provide dimensions where the positioning of services is considered important enough not to leave to the tradesmen onsite

Plantroom layouts to a scale of at least 1:20, accompanied by cross-sections and elevations to a scale of at least 1:20.

101.23 INSTALLATION WIRING DIAGRAM:

Drawing 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.

Indicate the following; maximum electrical loading for each supply cable; cable termination facilities; and cable identification and all terminal numbers.

101.24 SHOP DRAWINGS:

Drawing 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.

MANUFACTURER'S DRAWING:

Drawing provided by a manufacturer or supplier to indicate a typical representation of the product, components or plant items to be supplied for a particular project.

101.25 MANUFACTURER'S CERTIFIED DRAWING:

Drawing 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 complies.

101.26 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.

101.27 RECORD DRAWING:

Drawing 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:

Provide a record of the locations of all the systems and components installed including pumps, fans, valves, strainers, terminals, electrical switchgear, distribution and components

Use a scale not less than that of the installation drawings

Have marked on the drawings the positions of access points for operating and maintenance purposes

The drawings should not be dimensioned unless the inclusion of a dimension is considered necessary for location

101.28 BUILDER'S WORK DRAWING:

Design stage:

A drawing 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.

Installation stage:

Drawing 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).

101.29 CONTROLS LOGIC DIAGRAMS:

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.

101.30 SWITCHGEAR, STARTER AND CONTROL INSTRUMENTATION PANEL DRAWINGS:

Drawings showing the construction and internal wiring diagrams of the starters, panels and/or other devices.

101.31 PLANTROOM SCHEDULES AND SCHEMATICS:

Frame the following under glass and hang in each plant room or other appropriate location:

Valve schedules in the form of printed sheets showing the number, type, location, application/service and symbol, and normal operating position of each valve
Location of mechanical and electrical plant and equipment items
First aid instructions for treatment of persons after electric shock
Location of isolating switch for electricity supply
Location of main incoming gas valve serving gas meter
Location of sprinkler fire main control valve
Emergency operating procedures and telephone numbers for emergency call out service applicable to any system or item of plant and equipment
All other items required under Statutory or other regulations

101.32 EXAMINATION OF DRAWINGS/INFORMATION:

The CA will examine the propositions submitted for compliance, 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.

101.33 DOCUMENTS TO BE PROVIDED BY SUBCONTRACTOR

DESIGN AND PRODUCTION INFORMATION:

Complete the design and detailing of the work and provide complete production information (including, as appropriate, fabrication/installation drawings, design calculations, specifications, etc.) based on the drawings, this specification and other information provided, liaising with the CA, Principal Designer,

Contractor and others as necessary to help ensure co-ordination of the work with related building elements and services.

Request additional information as necessary from the CA and/or Contractor and provide information as necessary in time to meet the programme.

Submit sufficient copies of the design/production information to the Contractor (or CA if the Contractor has not been appointed). The Contractor (if he has been appointed) will check the information and submit his comments to the CA.

The CA will record his comments and those of the Principal Designer and return to the Contractor (or Subcontractor if Contractor has not been appointed).

Make any necessary amendments immediately. 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.

If submitted design/production information differs from the requirements of the Subcontract documents, each such difference must be the subject of a request for substitution or variation, supported by all relevant information.

Should any amendment required by the CA be considered to involve a variation, which has not already been acknowledged as a variation by the CA, notify the Contractor and/or CA 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.

Submit sufficient copies of the final design/production information to the Contractor (or CA if the Contractor has not been appointed) for distribution to all affected parties.

101.34 PRODUCTION INFORMATION:

Liaise with the CA, Contractor and others as necessary to help ensure co-ordination of the work with related building elements and services.

Provide drawings and other information as specified showing such details of the work as the CA may reasonably require.

Submit to the CA for comment, make any necessary amendments and resubmit for further comment unless the CA confirms that this is not necessary.

Submit sufficient copies of final information to the CA for distribution to the Contractor and all affected parties.

101.35 CO-ORDINATION OF ENGINEERING SERVICES:

Co-ordination of the Engineering Services Installations will be carried out as part of the sub-contract works.

Ensure the installation drawings make due allowance for all building elements, structure and other services.

Prior to submission, check and approve all drawings, schedules and any other information provided by manufacturers, nominated suppliers or specialist sub-subcontractors to ensure that all the requirements of the contract documentation have been incorporated. Accompany all documents submitted with a certificate indicating that they have been checked by the Subcontractor.

101.36 DRAWN AND OTHER INFORMATION:

Provide drawn information for the design team and client in electronic format as follows:

Initial copies for comment - PDF format
Final copies for distribution - PDF format

Schematic drawings
Initial copies for comment (no) 1
Final copies for design team (no) 1

Detailed design drawings
Initial copies for comment (no) 1
Final copies for design team (no) 1

Co-ordination drawings
Initial copies for comment (no) 1
Final copies for design team (no) 1

Installation drawings
Initial copies for comment (no) 1
Final copies for design team (no) 1

Installation wiring drawings
Initial copies for comment (no) 1
Final copies for design team (no) 1

Builder's work information
Initial copies for comment (no) 1
Final copies for design team (no) 1

Shop drawings
Initial copies for comment (no) 1
Final copies for design team (no) 1

Manufacturer's drawings
Initial copies for comment (no) 1
Final copies for design team (no) 1

Manufacturer's certified drawings
Initial copies for comment (no) 1
Final copies for design team (no) 1

Controls logic diagrams
Initial copies for comment (no) 1
Final copies for design team (no) 1

Switchgear, starter and control instrumentation panel drawings
Initial copies for comment (no) 1
Final copies for design team (no) 1

As-installed drawings
Site record copy

Record drawings
Initial copies for comment (no) 1

2 preliminary sets for use during commissioning
One reduced set incorporated into each Operating and Maintenance manual
One set in PDF format for Client's use
One set in AutoCad format for Client's use

Plant room schedules and schematics
Initial copies for comment (no) 1
2 preliminary sets for use during commissioning
One framed set for plantrooms
One reduced set incorporated into each Operating and Maintenance manual
One set in PDF format for Client's use
One set in AutoCAD format for Client use

Provide drawings for construction in form and number as required by the Contractor

101.37 PREPARATION OF DOCUMENTS:

Prepare drawings to commonly recognised scales generally on A1 sheets and details and schedules on A4 sheets.

Agree scales, drawing sheet size and format with the CA before preparing any documents.

Prepare electrical drawings in accordance with BS EN 61082-1.

101.38 DOCUMENT NUMBERING/REGISTRATION SYSTEM:

Document numbering to be in accordance with the BIM Building Implementation Plan. Otherwise, agree with the CA the document numbering/registration system to be used before preparing any documents.

101.39 BUILDER'S WORK INFORMATION:

Confirm and amplify any information provided by the CA.

Builder's work excludes drilling and/or plugging walls, floors, ceilings etc., for fixings for services and such work is included in the Subcontract.

Provide Builder's work Information, appropriate to the stage of design development, and include requirements for foundations, bases and supporting structures for plant and equipment.

Provide fully dimensioned drawings showing both size and position of builder's work.

Mark out on site, all cut holes and chases required, any pockets cast in concrete, any inserts, any built in sleeves or similar items.

Holes may not be cut in steelwork, reinforced or precast concrete without written permission from the CA. Under no circumstances will holes be cut in pre-stressed concrete. Permitted holes in steelwork must be drilled - burning by means of welding equipment is prohibited.

101.40 TECHNICAL LITERATURE:

The Subcontractor is advised to keep copies of the following on site, readily accessible for reference by all supervisory personnel:

Manufacturer's current literature relating to all products to be used in the works
Relevant BS Codes of Practice

101.41 MAINTENANCE INSTRUCTIONS AND GUARANTEES:

Retain copies delivered with components and equipment (failing which, obtain), register with manufacturer as necessary and hand over to CA on or before Practical Completion.

Notify CA of telephone numbers for emergency services by subcontractors after Practical Completion.

101.42 MANAGEMENT OF THE WORKS

PROGRAMME/PROGRESS:

Provide detailed sub-programmes to assist the Contractor in producing a Master Programme for the Contract Works.

Due allowance is to be made in the programme(s) for the Works for, but not limited to, the following:

Ordering and installation periods
The completion of drawing, etc. including the minimum working days for comment
Work resulting from instructions issued in respect to the expenditure of provisional sums
Concurrent work by other trades
Any temporary works necessary for the completion of the engineering services installations
Pre-commissioning, commissioning and performance testing of the engineering services installations
Preparation and provision of Record Drawings and Operating and Maintenance Manuals

Provide a separate and detailed commissioning programme for agreement with the CA.

Make due allowance for the following:

Commissioning, demonstration and instruction procedures
Provision of written notice before each (or series of) test, inspection, commissioning or demonstration procedures are to be carried out, not less than 10 days.

Demonstration to the CA that test instruments and equipment are accurate

101.43 COMMISSIONING PROJECT MANAGEMENT:

Compile a detailed commissioning programme and confirm/agree with the main contractor.

Compile and submit to the project supervisor the appropriate health and safety method statements and risk assessments.

Establish a means (such as checklists) of monitoring the progress of the commissioning.

Ensure that all parties involved on the commissioning process have documentation procedures for dealing with variations to contract. Ensure that a control mechanism is set up which includes documentary back-up of what has been changed, how and why.

Establish a consistent numbering system to identify work items.

Ensure the consistent use of mnemonics to identify all BMS components and devices.

Ensure regular database and configuration back-ups are made throughout all stages of the commissioning process.

Ensure attendance of all appropriate and responsible parties for interface pre-commissioning tests (interface between BMS and other plant items/systems).

101.44 ASSESSMENT AND MONITORING:

Record progress of the works weekly on a copy of the programme kept on site. Update or redraft programme immediately if any circumstances arise which affect the progress of the Works.

Mark up "As Installed" details weekly and before any work is hidden from view.

101.45 INSPECTION AND MEASUREMENT OF WORK:

Provide all necessary assistance to enable CA to examine or measure the works.

101.46 BMS WITNESSING REQUIREMENTS:

The project supervisor's nominated representative will implement the following witnessing requirements. Ensure that on-site commissioning staff facilitate the witnessing process.

Verify any operator software and associated graphics.

Witness completely the control of any main and/or critical items of plant along with a random sample of other points.

If less than 300 points, witness all points. Between 300 and 1,000 points witness 50% (minimum of 300 to be witnessed). If more than 1,000 points witness 20% (with a minimum of 500 points witnessed).

Reserve the right to witness 100% of the points if the failure rate is greater than 5%.

Witness a sample of specific functions, e.g. 10% of alarms and 10% of data logging.

Witness one of several identical items of plant in detail with the others witnessed on a random basis.

Verify the system security access.

Verify that all safety-related functions perform to that specified, e.g. plant shutdown on fire condition.

Verify all plant restarts according to that specified after building power failure and local power failure.

Witness all power meter data-points to ensure that they match the meters.

Ensure that trend logs are used when witnessing points in order to monitor the performance of control actions.

Verify the handover of all operating manuals and system documentation.

Verify the handover of backup copies of software.

Verify the completion of any specified system operator training.

101.47 BMS - POST HANDOVER CHECKS:

Ensure that the following post-handover checks are performed:

Global level checks

Internal air temperature.
Relative humidity.
Ventilation.
Energy consumption (ensure that the pulse-input counters match the meters).

Check that each of the above meets the specified requirements.

System level checks:

Control strategies. Check that any suspect control strategies are appropriate for the intended application. Check that the suspect control strategy has been implemented and commissioned correctly. Check that the control strategy is still appropriate for the intended use.

Network communications. Check that all relevant field controllers communicate properly. Check for correct sharing between controllers of relevant data and correct inter-controller operation.

Control set-points. Check that the set-points in question are correct and appropriate for the actual operating conditions.

Control loop settings. Check that the control loop settings result in accurate and stable control. Check that all self-learnt characteristics are valid.

Control zones. Check that the control zones are appropriate.

Occupant controls. Check that occupant controls work correctly.

Sub-system/component level:

Check the accuracy and location of any suspect sensors
Check that actuators operate correctly
Check that any dampers and valves are not jammed and that they operate as intended

101.48 COVERING-UP:

Ensure no section of the Works are covered, concealed or insulated until completion of a witnessed satisfactory test.
Give notice to the CA when works which are to be covered or concealed are ready for examination and/or measurement, not less than 5 working days

101.49 STATUTORY AUTHORITIES:

Orders for the incoming services will be placed by tbc

Liaise with the Statutory Authorities and provide any test notices required to ensure final connections are made in accordance with the requirements of the testing and commissioning programme.

101.50 TEST NOTICES:

Provide all formalities in connection with Test Notices, Agreement and Application for Supply Forms etc. Ensure all documents requiring the Employer's signature are forwarded to the CA in time to meet the building programme in order for the necessary test and supply arrangements to be made. No additional payments will be made for expenses incurred due to reconnections, re-visits etc., by Supply Authorities or any other officials.

101.51 QUALITY STANDARDS/CONTROL

MAIN CONTRACT PRELIMINARIES:

Quality Standards/control

Applies to the whole of the Works, including this Subcontract. Comply with the requirements stated therein insofar as they relate or apply to the Subcontract Works, and co-operate with and assist the Main Contractor in complying with them generally.

101.52 SUBCONTRACTOR'S PERSON-IN-CHARGE:

Appoint a foreman-in-charge and/or site agent to ensure constant management and supervision of the Subcontract Works.

Give maximum possible notice to the contractor and CA before changing the foreman-in-charge or site agent.

101.52 DIMENSIONS:

Where installations are dependent upon site dimensions, 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, specification or schedules.

101.53 SETTING OUT FOR THE SUBCONTRACT WORK:

Where this is done by the Main Contractor check its accuracy and obtain his approval before proceeding with the work.

101.54 SITE MODIFICATIONS:

Do not make site modifications to assemblies without authorisation.

Where site modifications to assemblies are authorised make in accordance with manufacturer's certified drawings and instructions.

Ensure that modifications made comply with any type test certificate obtained for arrangement of components.

101.55 STANDARDS, REGULATIONS AND BREEAM REQUIREMENTS:

Provide all materials and works in accordance with the appropriate British Standard or Code of Practice and where no BS or CP is applicable the Agrement Certificate for the particular item.

Comply with all statutory instruments and regulations, and local byelaws relating to the area of the site current at the date of tender.

Notify all authorities in accordance with their regulations and obtain any required approvals for the installation.

Where no specific design, performance or installation standards are quoted, the following shall apply:

CIBSE, Guide Books A, B and C.
CIBSE, Commissioning Codes.
CIBSE Code for Lighting.
CIBSE, Technical Reports.
CIBSE, Technical Memoranda.
Institute of Plumbing, Plumbing Engineering Services Design Guide.

Ensure all equipment and systems are designed and installed in accordance with the relevant standards and that operational compatibility exists between the systems and any other system installed at the same location.

Supply plant and equipment to achieve the specified design conditions and to provide stable control.

Comply with requirements for all targeted BREEAM credits and supply relevant information to the BREEAM Assessor. Targeted credits will be as agreed with the client and BREEAM assessor/advisor.

101.56 TYPE TESTS:

Provide certificates of verification of type tests. Ensure that drawings and other documents forming part of certificate are available prior to any order being placed.

101.57 TEST CERTIFICATES:

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

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

101.58 INSPECTION AND TESTS - ON OR OFF SITE:

Submit schedules 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, 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. 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.

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.

Carry out all tests required by legislation under the direction of a competent person.

101.59 INSPECTIONS AND TEST RECORDS:

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

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

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

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

Maintain all records on site for inspection. On completion of the Works, include copies in the operating and maintenance manuals.

Submit copies of records within one week of request.

101.60 TESTING AND COMMISSIONING OF SERVICES:

Commissioning shall be carried out by an approved specialist who shall be a registered as a corporate member of the Commissioning Specialists Association (CSA). The commissioning specialist is to be engaged by the contractor from the outset of the project. The commissioning specialist shall provide a commissionability statement along with a detailed programme of his works for inclusion in the main contractor's overall programme.

Agree with the Contractor a programme for pre-commissioning checks, setting to work, commissioning and performance testing, and allow for all costs incurred

Where required, provide formal method statements supported by risk assessments detailing all commissioning procedures.

Give not less than 10 working day's notice to the Contractor and CA and state any requirements for the attendance and co-operation of others.

Provide all necessary facilities to enable tests to be witnessed and inspections carried out either on site or at manufacturer's works.

The CA will only witness test proceedings to 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 CA will reject such defective parts by written notice, within reasonable time, indicating the area of dispute.

Appoint an "approved engineer", to supervise the whole of the testing, commissioning, performance testing and instruction of client's staff.

Provide all specialised personnel (including manufacturer's representatives) and co-ordinate their activities.

Test all equipment, material and systems as detailed in Sections. If an inspection or test fails, repeat the procedure, until satisfactory results are obtained.

Complete all tests 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, as necessary, to meet the specified design requirements.

Provide all necessary instruments and recorders to monitor systems during commissioning and performance testing.
Provide test equipment subject to a quality assurance procedure.

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 CA.

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.

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

Gas, fuel oil, electricity and water for testing and commissioning will be provided by the Contractor unless otherwise noted within the particular specification.

101.61 COMMISSIONING PROCEDURES:

Observe the following requirements when commissioning the Engineering Services.

Progressive static testing will be witnessed by the CA when work is presented for testing. This will include:

Insulation resistance tests.
Earth fault loop impedance tests.
Earth continuity tests.
Pipeline pressure tests.
Air Ductline Pressure Tests.

Finalise commissioning, taking into account site progress and availability of related services, with CA and Contractor, and agree access required for controls, etc.

Completion for operational purposes implies the bulk of snagging has been offered to the CA and that remedial work has been completed. All fans, pumps etc., to be tested for operation, polarity, phase sequence and impedance etc.

Pre-commissioning examination and testing to ensure that each system or item of equipment is complete, in a safe condition and all notices are displayed.

101.62 OPERATIONAL DEMONSTRATION:

Provide a written statement to the CA confirming that each installation has been correctly tested and commissioned and that the performance requirements can be achieved.

Demonstrate to the CA that all system components are operating correctly, and the completely integrated installation will function in accordance with the specified performance requirements.

Carry out performance testing in both summer and winter conditions.

101.63 OUTSTANDING ACCEPTANCE TESTS:

Any items which have failed their acceptance tests or where such tests are delayed by the client are to be listed and dates agreed, during the defects liability period when reasonable demands for consumer requirements are available.

101.64 SYSTEMS USED BEFORE PRACTICAL COMPLETION:

Systems may not, without the prior written approval of the CA be used before Practical Completion. Systems to be used before practical completion for the benefit of the Contractor and/or Subcontractor 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 in accordance with the following procedure:

Following the receipt of written instructions, the Subcontractor shall operate designated parts of the Subcontract Works, if such operation is practicable and does not prejudice the Subcontractor's responsibilities and obligations under the Subcontract.

Additionally and with adjustment to the Subcontract sum, the Subcontractor, shall if instructed, provide:

Comprehensive insurance including indirect loss for any plant being operated
Maintenance of the installation
Re-instatement of the installation to as new condition prior to handover to the Employer
Allow the defects liability period to commence on handover.

101.65 OPERATION OF SYSTEMS BEFORE THE PRODUCTION OF DRAWINGS AND/OR OPERATING AND MAINTENANCE MANUALS:

Provide attendance, 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 CA, otherwise qualify for Practical Completion.

In the event of the Subcontractor failing to provide this service satisfactorily the Employer shall be entitled to make his own arrangements and recover the full cost through the Contract.

101.66 INSPECTION BY EMPLOYER'S INSURANCE COMPANY:

Where indicated in the Work Sections items are to be inspected by a competent person acting for the Employer's Insurance Company appointed under the provisions of the Factories Act or other relevant legislation. The installations concerned shall satisfy the Insurance Company's requirements in all respects.

Agree a programme for inspection and certification of specified equipment.

Inform the CA when equipment is to be ready for examination.

The Employer will place an order with the Insurance Company. Details and nature of the order will be provided to all interested parties.

Provide all detailed drawings etc. of the equipment to enable the Insurance Company to approve design before manufacture.

Arrange for the attendance of the Insurance Company's Engineer/Surveyor at each stage of manufacture and installation and provide all necessary access and facilities for inspecting and testing as may be required.

No plant which is subject to inspection will be accepted on behalf of the employer until a satisfactory certificate has been received by the Employer from the Insurance Company.

All Insurance Company charges for examination and approval of drawing, inspection of works during construction and inspection and certification of the completed work will be paid by the Employer.

101.67 SECURITY/SAFETY/PROTECTION

DELIVERY:

Provide an adequate and safe protection for all materials and products during transport to site.

Deliver all tubes, conduit, trunking and associated equipment with open ends effectively plugged, capped or sealed.

Deliver all ductwork, tubes, conduit, trunking and associated equipment with open ends effectively plugged, capped or sealed.

HANDLING:

Offload and transport about the Works all materials and products as recommended by manufacturers.

STORAGE:

Store all materials and products as recommended by manufacturers.

Provide sufficient, safe and secure storage for all materials and products.

Provide racks to prevent distortion for storage of conduits, pipes and similar materials.

Store all fittings, accessories and sundry items in clean bins or bagged and stowed in racks and maintained under suitable weatherproof cover.

PROTECTION OF SUBCONTRACT WORKS:

Check regularly the protection provided after installation of equipment and inform the Main Contractor if inadequate.

Install items such as grilles, diffusers, lighting fittings, switches, accessories etc. as near to completion as practicable.

Only install filter media when the plant items concerned are being commissioned and tested.

Leave plant and equipment in a ready to paint condition where specified as part of the Works or to be carried out by others.

Paint parts liable to corrosion immediately after removal of any temporary protection.

Replace material, plant or equipment where deterioration or damage has occurred prior to handover.

Replace all filter media immediately before handover

Provide weather protection covers to all exposed electrical equipment, including control valve motors, control sensors, inverter drives, etc. not otherwise protected by means of having a minimum ingress protection rating of IP56.

Provide adequate and safe protection for all materials and products after installation.

Ensure all items are protected against ingress of water and dust, formation of condensation, extremes and rapid changes of temperature, building works and operations of others.

Protect during erection all easily damaged materials with hardboard covers or heavy duty polythene sheet. Such items include, but are not limited to the following:

control panels,
switchboards,
distribution boards,
heater batteries,
finned pipework,
gauge glasses,

Protect all finished items from damage and paint splashes.

Cover all plant items with polythene sheeting except when being worked on.

Cap all open ends of pipes, ducts, conduit, trunking etc. except when being worked on.

101.68 IDENTIFICATION:

Where appropriate, ensure that materials, plant and equipment bear the brand name, serial/batch number and any other data required to identify their nature in relation to the Works.

101.69 ROTATING PLANT:

Immediately prior to Practical Completion, adjust, ease and lubricate moving parts as necessary to ensure easy and efficient operation.

Ensure that, whenever necessary, temporary supplies are provided to enable motive plant items delivered and/or installed to be run at regular intervals to avoid damage or deterioration.

Ensure that rotating plant is hand-turned periodically if temporary supplies are not available.

101.70 MAINTENANCE OF EXISTING SERVICES:

Fully maintain all existing services to existing premises during the progress of the Works.

Do not interrupt existing services without the prior agreement of the CA and building user.

Provide any additional work and materials necessary to maintain these services at all times during the duration of the Contract. Any existing services disturbed by the Works are to be reinstated fully in accordance with the standards of quality defined in the specification and to the satisfaction of the CA.

101.71 BUILDING USER GUIDE

Provide contents applicable to the Building Services systems for incorporation into a Building Users Guide that will be produced by the Contractor or other Specialist including:

Information on heating, cooling and ventilation systems and how they can be adjusted
Information on energy-efficient features and strategies and how they should be used
Information on water-use and water saving features/benefits

101.72 OPERATION/MAINTENANCE OF THE FINISHED BUILDING

SUBMISSION OF RECORD DOCUMENTS:

To satisfy the provisions of the Health and Safety at Work Act the Employer will not accept handover of the installations until full and adequate information concerning the installations is in the possession of his operating and maintenance staff.

Provide Record Documents - being part of the Works - prior, and as a prerequisite, to Practical Completion to the satisfaction of the CA.

Prepare manuals in draft as the Works progress and make suitable arrangements where the Works are subject to Partial Possession or Sectional Completion.

Prepare a temporary Manual with provisional record drawings and preliminary performance data available at commencement of commissioning to enable Employer's staff to familiarise themselves with the installation. These should be of the same format as the final Manuals with temporary insertions for items which cannot be finalised until the installations are commissioned and performance tested.

Provide the CA with the final Manual one week prior to Practical Completion.

Prepare manuals in draft as the Works progress and make suitable arrangements where the Works are subject to Partial Possession or Sectional Completion.

RECORD DOCUMENTS:

Provide:

Record Drawings and Schedules
Plant room and switch room drawings, schedules and schematics.
Operating and Maintenance Manuals
Blank maintenance logs.
Log book

Ensure record documents clearly record the arrangements of the various sections of the Works as actually installed and identify and locate all component parts.

Ensure record documents make it possible to comprehend the extent and purpose of the Works and the method of operation thereof.

Ensure record documents set out the extent to which maintenance/servicing is required and how, in detail, it should be executed.

Ensure record documents provide sufficient, readily accessible and proper information to enable spares and replacements to be ordered.

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.

Demonstrate 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.

Ensure the building log book contains the information outlined in Section 3 of the Building Regulations Part L2A, Conservation of fuel and power in new buildings other than dwellings.

Provide the system records and full documentation as required in the appropriate standard.

Ensure Record Documents clearly record the arrangements of the various sections of the Works as actually installed and identify and locate all component parts.

Ensure Record Documents make it possible to comprehend the extent and purpose of the Works and the method of operation thereof.

Ensure Record Documents provide sufficient, readily accessible and proper information to enable spares and replacements to be ordered.

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.

Demonstrate 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.

RECORD DRAWINGS AND SCHEDULES:

Prepare Record Drawings and Schedules to a scale not less than 1:50 from the "As Installed Drawings" maintained on site as the Works progress.

Endorse all such documents 'RECORD DRAWINGS'. Where agreed with the CA certain detailed information may be provided in schedule form. Prepare electrical drawings in accordance with BS EN 61082-1.

Provide reduced scale copies for inclusion in the operating and maintenance manuals as detailed in clause A37.150.000.

Record Drawings and Schedules must include, but are not limited to the following:

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 other relevant information
Disposition 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 inter-connections 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, builders' 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, 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 plantrooms, service subways, trenches, ducts and other congested areas where in the opinion of the CA 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.

PLANTROOM AND SWITCHROOM DRAWINGS, SCHEDULES AND SCHEMATICS:

Provide good quality plant and switchroom drawings, schedules and schematics.

Hang the following in each plant room and switch room, any other appropriate location or where directed by the CA:

Schematic drawings of circuit layouts showing identification and duties of equipment, numbers and locations, controls and circuits
Schedules in the form of printed sheets showing the number, type, location, application/service and symbol, and normal operating position of each means of isolation
Control schematics
Location of all plant and equipment items including plans and elevations of main switchgear showing physical disposition of switches
First aid instructions for treatment of persons after electrical shock

All other items required under Statutory or other regulations
Location of all incoming service isolating and metering facilities
Emergency operating procedures and telephone numbers for emergency call out service applicable to any system or item of plant and equipment

Protect surface of drawings by framing under glass or other rigid, transparent, cleanable and protective surface.

OPERATING AND MAINTENANCE MANUAL SPECIALIST:

Employ a specialist to prepare manuals.

OPERATING AND MAINTENANCE MANUALS:

The operating and maintenance manuals must include:

A full description of each 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.
Details of how to re-commission so that complex plant services within the building can be re-commissioned by an engineer without any historic knowledge of the systems
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 manufacturers' guarantees or warranties, together with maintenance agreements offered by subcontractors 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 change-overs 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 tests to be carried out (e.g. 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 programmes
Instructions for the creation of control procedure routines and graphic diagrams
Details of the software revision for all programmes provided
Two back-up copies of all software items, as commissioned
Contractual and legal information including but not limited to details of local and public authority consents; details of design team, consultants, installation contractors and associated subcontractors; start date for installation, date of practical completion and expiry date for the defects liability period; details of warranties for plant and systems including expiry dates, addresses and telephone numbers.

BMS OPERATION AND MAINTENANCE MANUALS:

Confirm that an initial draft of the O & M manual has been submitted for approval prior to commissioning. Ensure that the O & M documentation is produced as the work proceeds and is updated when necessary. Ensure that this work commences at the start of the contract and is added to/updated as the contract progresses. Confirm that approved final copies of the O & M manuals are provided at handover. Ensure that the O & M manual is properly indexed. Ensure that terminology and references are consistent with the physical identification of
component parts.

Confirm that the O & M manual includes the following and is included in the site health and safety file:

A written description of plant operation
Control strategy/logic diagrams recording the final version of configuration software installed at handover
Details of system application software configuration
A points list including hard and soft-points (all points should have a unique mnemonic)
A description of user adjustable points
Commissioning record details
Detailed data sheets for all control components and equipment
Wiring circuit details including origin, route and destination of each cable
Basic security access to the system
Comprehensive instructions for switching on, operation, switching off, isolation, fault finding and procedures for dealing with emergency conditions
Instructions for any precautionary measures necessary
Instructions for the routine operation of the control system including simple day-to-day guidance for those operating the control system with limited technical skill
Instructions for servicing and system upkeep
A provision for update and modification

Confirm that the O & M manual includes comprehensive system operating instructions.

EPC AND DEC REQUIREMENTS:

The contractor shall provide an EPC and DEC (where appropriate) for the completed building(s).

A DEC and advisory report are required for buildings with a total useful floor area over 250m2 that are occupied in whole or part by public authorities and by institutions providing public services to a large number of persons and therefore frequently visited by those persons.

PRESENTATION OF THE OPERATING AND MAINTENANCE MANUALS:

Encase the Manuals in A4 size, plastic-covered, loose leaf, four ring binders with hard covers, each indexed, divided and appropriately cover- titled.

Fold drawings larger than A4 and include in the binder so that they may be unfolded without being detached from the rings.

Provide a PDF copy of the completed O & M in electronic format.

RECOMMENDED SPARE PARTS:

One month before practical completion, submit to the CA a schedule of spare parts as called for in individual sections and any others that the Subcontractor recommends should be obtained and kept in stock by the Employer for maintenance of the services installations included in the Subcontract.

RECOMMENDED TOOLS:

One month before practical completion, submit to the CA a schedule of tools and portable instruments as called for in individual Sections and any others that the Subcontractor recommends should be obtained and kept in stock by the Employer for maintenance of the services installations included in the Subcontract.

TRAINING OF EMPLOYER'S STAFF:

Before practical completion explain and demonstrate to the Employer's staff and FM contractor, the purpose, function and operation of the installations including all items and procedures listed in the Operation and Maintenance Manual:

Training:

Include for the training of up to 4 people
Include for not less than five operating days for this purpose and demonstrate the safe day to day running and maintenance of all systems, plant and equipment
Provide training for the operation of the controls, monitoring or BMS installations for one or more of the following levels of operator:

Basic operator - Ensure that the operator is trained to:

Call up and view point-data from plant schematics and/or points lists.
Acknowledge system alarms.
View trend logs.

Intermediate operator - In addition to the requirements for a basic operator, ensure that the operator is trained to make basic alterations to the BMS including changes to:

Time and occupancy programmes
Control set-points
Setting up trend logs
Setting up alarm routines

Ensure that the operator is also trained for testing and routine inspection of sensors and actuators.

Ensure that training is completed before the BMS is handed over.

Ensure that each trained operator signs a training acceptance certificate(s).

Provide appropriate reference and training manuals for the operator.

READING OF METERS:

Record readings of all water, gas and electricity meters immediately on completion of the Works and forward, via the Main Contractor, to the CA.

101.73 OBLIGATIONS DURING DEFECTS LIABILITY PERIOD:

Prepare and submit records of failures or malfunctions of any part of the Subcontract Works during the Defects Liability Period, together with details of remedial action taken, subsequent re-testing and the results.

Notify the Main Contractor of damage, failures or malfunctions to the Subcontract Works demonstrably caused by incorrect operation of the installations, vandalism or other actions by a third party.

Inform the CA, via the Main Contractor, in writing when all defects are finally rectified so that an inspection may be carried out prior to the issue of a Final Certificate.

101.74 WORKS/PRODUCTS BY/ON BEHALF OF THE EMPLOYER

PRODUCTS:

Products provided by or on behalf of the Employer.

Details of such products are given in the relevant Sections, for fixing by the Subcontractor.

Take delivery, check condition, mark receipts and take into appropriate storage. Advise the CA of details and number of items.

Use for no other purpose than the Subcontract Works.

Keep safe any surplus to requirements and obtain instructions in relation thereto.

Once products provided by or on behalf of the Employer are in the possession of the Subcontractor all conditions of the Contract and technical specifications are applicable to such items, including all requirements for protection, storage, distribution, fixing, insurances, replacement if damaged/stolen/lost etc., painting, identification, setting to work and commissioning.

WORKS:

Works provided by or on behalf of the Employer.

Details of such works are given in the relevant Sections.

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**: Includes
  The use of the Main Contractor's temporary roads, pavings and paths, standing scaffolding, standing power operated hoisting plant;
  The provision of temporary lighting of an equivalent brightness to the finished lighting brightness;
  The provision of water;

The clearing away of rubbish and paying all charges in connection with its disposal, the provision of secure hard standing space for the sub-contractor's own offices, plant and material storage;
The use of standing mess rooms, sanitary accommodation and welfare facilities and
The provision of all Health and Safety facilities and all Fire Safety precautions, services, equipment, signage, facilities, marshals and the like necessary to comply with the relevant parts of the Joint Fire Code.
Additional requirements should be described as 'Special attendance'.

- **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.
- **Construction Work**: Permanent work together with temporary work.
- **Contractor**: The party who undertakes to perform the services, supply goods or carry out work defined in a contract. Includes Main Contractor, Prime Contractor, Supplier, Service provider, Builder, Subcontractor, etc. as the context dictates, which may be defined terms in certain standard contract forms.
- **Contractor's choice**: Selection delegated to the Contractor, but liability to remain with the specifier.
- **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, supplies or services.
- **Designer**: A person or organization carrying out design on a project.
- **Deviation**: Difference between a specified dimension or position and the actual dimension or position.
- **Drawings**: Definitions as BSRIA Building Applications Guide: Design framework for building services. 5th edition
- **Employer**: The party to the Contract for whom the goods, work, supplies 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 quantity, number, extent, 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.
- **Existing**: Items retained in place to receive new work.
- **Fastener**: Device for mechanically attaching something to something else.
- **Manufacturer and Product reference**: Manufacturer – the person or legal entity under whose name or trademark the particular product, component or system is marketed.
  Product reference – the proprietary brand name and/ or identifier by which the particular product, component or system is described.
  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, supplies 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 wants another to undertake, design and/or construct.
- **Schedule of rates**: The subdivision of product and execution prices by a pre-determined unit basis.

- **Schedule of Work/ Work Schedule**: 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 an item excludes removal and disposing of associated pipework, wiring, ductwork or other services.
  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 products to be fixed or used in the project or other buildings without the requirement for recycling.
- **Submit**: Deliver 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 everything necessary for their fixing.

00-05-20 Project Participants

Management and delivery roles

120 Client

- **Name**: Corby Borough Council
- **Address**: Corby Borough Council, Deene House, New Post Office Square, Corby, Northants, NN171GD
- **Contact**: Chris Stephenson
- **Telephone**: 01536 464000
- **Email address**: Roger.Jones@corby.gov.uk

130 Contract Administrator

- **Name**: Kier Design and Business Services
- **Address**: Tempsford Hall, Sandy, Bedfordshire, SG19 2BD
- **Contact**: Ozlem Thomson
- **Telephone**: 07429055576
- **Email address**: ozlem.thomson@kier.co.uk

150 Facilities Manager

- **Name**: Corby Borough Council
- **Address**: The Corby Cube, George Street, Parklands Gateway, Corby NN171QG
- **Contact**: Roger Jones
- **Telephone**: 01536 464000 I Direct Dial I 07540 783 885 Mobile
- **Email address**: Roger.Jones@corby.gov.uk

Statutory roles

205 Principal Designer

- **Name**: Kier - Design and Business Services
- **Address**: Tempsford Hall, Sandy, Bedfordshire, SG19 2BD
- **Contact**: Ozlem Thomson
- **Telephone**: T: 01767 358418 I M: 07989 532456
- **Email address**: ozlem.thomson@kier.co.uk

210 Principal Contractor

- **Name**: Appointed Contractor - TBC
- **Address**: TBC
- **Contact**: TBC
- **Telephone**: TBC
- **Email address**: TBC

Design roles

270 Electrical services engineer

- **Name**: Kier Design and Business Services
- **Address**: Kier Specialist Services | Design and Business Services I Exchange Station, Tithebarn Street, Liverpool, L2 2QP
- **Contact**: Mark Gardiner
- **Telephone**: T-Office +44 (0)1522 836560 | T-MOB (0)7860 866814 |
- **Email address**: Mark.Gardiner@kier.co.uk

280 Mechanical services engineer

- **Name**: Kier- Design and Business Services
- **Address**: Tempsford Hall, Sandy, Bedfordshire, SG19 2BD
- **Contact**: Ozlem Thomson
- **Telephone**: T: 01767 358418 I M: 07989 532456
- **Email address**: ozlem.thomson@kier.co.uk

300 Quantity surveyor

- **Name**: Kier- Design and Business Services
- **Address**: Kier Specialist Services | Design and Business Services I Exchange Station, Tithebarn Street, Liverpool, L2 2QP
- **Contact**: Teresa Tai
- **Telephone**: M: 07920 275 789
- **Email address**: Teresa.Tai@kier.co.uk

00-05-70 Project Location

110 Project location

- **Details**: Corby East Midlands International Swimming Pool
- **Address**:
  - **Number/ Street**: Parkland Gateway, George St
  - **Town/ City**: Corby
  - **Post code**: NN17 1QB

130 Existing buildings on, or adjacent to the site

- **Details**: Car park

170 Access

- **Details**: Existing building - contractor to survey the site to establish the access, parkinglimitations

00-10-70 Works Contract Content

120 The Works/ Services

- **Details**: The Works include following main works:-
  - Undercroft ventilation works: Provision of mechanical supply and extract ventilation systems including new Air handling units, attenuators, ductwork and grilles and all ancillary equipment, power and controls and Builderswork in connection with works.
  - Pool Hall ventilation improvement works: Ascertaining site pool hall existing ventilation flow rates, refurbishment works to existing Calorex (Pool hall dehumidifier AHU's) by employing Calorex specialist contractor, recommissioning the flow rates and BMS controls company to be brought to site for full training and re-setting of the existing AHU's throughout the site.
  - Pool cover installation works: Allow to employ a specialist pool cover installation contractor to design, install and commission pool cover to Main pool and learning pools. Allow for electrical services to be provided to specialists requirements as per indicated in the tender documentation. Allow for all builderswork in connection for installation.
  - Undercroft area heating plate heat exchanger insulation installations. Provide suitable insulation jackets to the existing plate heat exchangers within the Zone1 area of the undercroft plant room.
- **Related works**: Provide trades with necessary details of related types of work. Before starting each new type or section of work ensure previous related work is complete, in accordance with the project documents, to a suitable standard and in a suitable condition to receive new work.

130 Work by others concurrent with the Contract

- **Details**: It is envisaged that the boiler room minor mechanical ventilation (not the undercroft) will be installed by others. Include for all tender documents and drawings within your costs - this works is carried out where the boilers are located not within the Undercroft area.
- **Timescale**: TBA - estimated 2 weeks.

150 Work by, or on behalf of employer/ client/ purchaser

- **Details**: It is envisaged that the boiler room minor mechanical ventilation (not the undercroft) will be installed by others. Include for all tender documents and drawings within your costs - this works is carried out where the boilers are located not within the Undercroft area.
- **Carried out by**: TBA
- **General attendance**: Provide.
- **Special attendance**: Not required

160 Products provided by, or on behalf of, employer/ client/ purchaser

- **General**: Details of products to be fixed as part of the contract work are given in the work sections. Use for no other purpose than the Works.
- **Handling**: Accept delivery, check against receipts and take into appropriate storage.
- **Surplus products**: Keep safe and obtain instructions.

170 Work subject to nominated or named subcontract

- **Title**: Calorex units improvement refurbishment works
- **Description of work**: Existing Calorex AHU's refurbishment works shall be carried out by the units specialist contractor
- **Subcontractor**: Air Systems Limited AC & Ref ltd or other approved equal
- **Subcontractor's production information**: 1- Design information on the selected equipment (fans, motors etc.) to achieve required flow rates
  2- Certificates of installers i.e. NICEIC, Part P, F-Gas etc.
  3- Controls design information including production, wiring drawings and submission to Contract administrator for comments

4- All relevant design information and drawings such as data cable installation to allow for interlocking of the Calorex units and the backwashing cycle. The design drawings shall be submitted to C.A. for comments prior to works.
5- Pre-works condition report of the Calorex unit and current achieved flow rates and following refurbishment of the units the achieved flow rates and commissioning of the Calorex units.
6- Provision of Calorex units commissioning information and as installed drawings.

- **Period for comment**: 1 week
- **Periods required for**:
  - **Off-site work**:
  - **On-site work**:
- **Notice required to commence on site**: As per sub contractors terms and conditions - liaise with Air Systems Limited AC& Ref to establish notice required
- **Special attendance**:
  - **Scaffolding**: If required by specialists provide. Liaise with specialist during tendering to determine the amount of special attendance.

175 Work undertaken by 'listed' domestic subcontractor

- **General**: The following work and/ or services will be carried out by persons selected from a list.
- **Details**:
  - **Description**: BMS integration of the Fan units and control wiring within the undercroftarea
  - **List**: AES building Services or other approved Trend controls partner
- **Additional persons**: If fewer than three persons named in the list are able and willing to carry out the relevant work and/ or services, give notice, Submit proposals, together with evidence of suitability, and obtain instructions before proceeding.
- **Agreement**: Before the start of the work to which the list relates, enter into a binding subcontract agreement and submit evidence.

250 Other contract work

- **Details**:

300 Provisional sum for defined work

- **Details**:Allow for provisional sum below for steel support and protective caging around the extract ventilation termination unit (for Undercroft ventilation)
- **Provisional Sum**: £1,500
- **General attendance**: Required

310 Provisional sum for undefined work

- **Details**: Allow for contingencies for undefined work
- **Provisional Sum**: £ 12,000
- **General attendance**: Allow for general attendance within your costs

320 Prime Cost sum

- Not applicable

00-20-70 Works Contract

JCT Minor Works Building Contract (MW)

• **The Contract:** JCT Minor Works Building Contract with contractor design 2016

• **Requirement:** Allow for the obligations, liabilities and services described

THE RECITALS

First The Works and the Contract Administrator

• **The work comprises:** The works comprise of installation of new ventilation systems to Undercroft plant room, associated controls and electrical works, Calorex units refurbishment and improvements, swimming pool cover installation and electrical installation and all associated builderswork.

• **Architect/ Contract Administrator:** Kier DaBS

Second Contract documents

• **Contract drawings:** See section 00-05-10.

• **Contract documents:** See section 00-05-10.

- **The following have been prepared which show and describe the work to be done:** A specification and the tender drawings.

Third Priced documents

• **Documents to be priced or provided by the Contractor:** Contract specification;

ARTICLES

3 Architect/ Contract Administrator

• **Architect/ Contract Administrator:** Kier Design and Business Services

4 and 5 Principal Designer/ Principal Contractor

• **Principal Designer:** TBC

• **Principal Contractor:** TBC.

CONTRACT PARTICULARS

Fourth Recital and Schedule 2 Base date

• **Base date:** TBC

Fourth Recital and clause 4.2 Construction industry scheme (CIS)

• **Employer at the Base Date:** Is not a 'contractor' for the purposes of the CIS.

Fifth Recital CDM Regulations

• **The project:** is not notifiable.

Sixth Recital Framework agreement

• **Framework agreement:** Does not apply.

Seventh Recital and Schedule 3 Supplemental provisions

• **Collaborative working:** Supplemental Provision 1 applies.

• **Health and safety:** Supplemental Provision 2 applies.

• **Cost savings and value improvements:** Supplemental Provision 3 applies.

• **Sustainable development and environmental considerations:** Supplemental Provision 4

• applies.

• **Performance indicators and monitoring:** Supplemental Provision 5 applies.

• **Notification and negotiation of disputes:** Supplemental Provision 6 applies.

• **Where Supplemental Provision 6 applies:** – **Employer's nominee (Or such replacement as may be notified):** TBA.

– **Contractor's nominee (Or such replacement as may be notified):** TBA.

Article 7 Arbitration
• **Article 7 and Schedule 1:** Apply.

Clause 2.2 Commencement and Completion
• **Works commencement date:** No later than 3 weeks from the date for receipt of Tenders

• **Date for Completion:** A date 8 weeks from the site commencement date and no later than 27th March 2020

Clause 2.8 Liquidated damages
• **Damages:** – **Rate: £ 6,800**

– **Per:** per week

Clause 2.10 Rectification period
• **Period:** 12 months from the date of practical completion.

Clause 4.3 Interim payments
• **Interim Valuation Dates:** – **The first Interim Valuation Date:** One month from works commencement date.

– **Thereafter at intervals of:** Every calendar month

• **Payments due prior to practical completion:**

– **Percentage of the total value of the work, etc.:** 95 per cent

• **Payments becoming due on or after practical completion:** – **Percentage of the total amount to be paid:** 97½ per cent

Clause 4.3 and 4.8 Fluctuations provision
• **The following fluctuations provision applies:** No fluctuations provision applies.

Clause 4.8.1 Supply of documentation for computation of amount to be finally certified
• **Period:** Three months from the date of practical completion.

Clause 5.3. Contractor's Public Liability insurance – injury to persons or property
• **Insurance cover:** For any one occurrence or series of occurrences arising out of one event.

• **Amount:** Not less than £10,000,000

Clauses 5.4A, 5.4B and 5.4C Insurance of the works etc. – alternative provisions
• **Clause:** 5.4C (Works and existing structures insurance by other means) applies.

• **Where Clause 5.4A or 5.4B applies, percentage to cover professional fees:** 15 per cent.

Clause 7.2 Adjudication
• **The Adjudicator is:** President or Vice President.

• **Nominating body:** The Royal Institution of Chartered Surveyors.

CONDITIONS
Section 1: Definitions and Interpretation
Section 2: Carrying out the Works
Section 3: Control of the Works
Section 4: Payment
Section 5: Injury, Damage and Insurance
Section 6: Termination
Section 7: Settlement of Disputes
EXECUTION
• **The Contract:** Will be executed as a deed.

CONTRACT GUARANTEE BOND
• **Contract Guarantee Bond:** is not required.

00-30-70 Works Contract Procurement

110 Compliance with Tender rules

- **Compliance**: Failure to comply may result in Tenders being rejected at the sole discretion of the Employer.
- **Costs**: No liability is accepted for costs incurred in the preparation of a Tender.

130 Tenders to be invited

- **Number of tenders to be invited (maximum)**: 6

135 Project Team Agreement

- **Execution**: TBA.

140 Framework Agreements

- **Agreements in place**:
  - **Details**:
  - **Proposed agreements**: Provide details of all subcontractors/ suppliers who will be entering into framework agreements to undertake the tasks listed.
  - **Submittal date**:

150 Tender Programme

- **Details**: Proposed programme- if dates provided here are different within the tender invitation letter the tender invitation letter will supersede the dates below

  Tender issue date: 25th November 2019
  Tender return date (6 weeks period) : 6 Jan 2019
  Tender evaluation period (2 weeks)
  Contractor award: 20th January 2020
  2 weeks standstill period
  On site: 3rd February 2020
  Completion by: 27th March 2020 - **LATEST (8 weeks site period - 10 weeks contract period)**
- **Key dates**: It is imperative the works are finalised by 27th March 2020 LATEST to agree final account.
  Provide proposed contract programme with your tender.
  Ensure liaising with all sub contractor parties to meet the proposed dates.
  Particular attention shall be given to ordering of the sub contracting works such as the Pool cover sub contractor in time for the detailed survey, production of working design drawings and ordering of the materials.

160 The Invitation to Tender

- **Form**: In line with Corby Council requirements and letter of invitation to tender
- **Location of Tender documents**: Provided within the documentation

165 Tender acceptance

- **Tender acceptance period**: Tenders must remain open for acceptance, unless previously withdrawn, for a minimum of 13 weeks from the date for return of Tender.
- **Assurance**: Nothing contained in this Document or its application should be inferred to guarantee that a Tender will be recommended for acceptance or be accepted, or that reasons for non-acceptance will be given.

170 The Tender documents

- **The Tender documents**: As per the attached package.
- **Number of hardcopy documents provided**: 1 CD copy for tendering purposes containing all M&E works Services PDF's

180 Tender queries

- **Notification requirements**: All tender queries should be raised through the tender portal.

  Give notice in writing to the Issuing Authority (with a copy to the Quantity Surveyor) as soon as possible and not less than ten working days before the date for return of Tenders.

190 Tender instructions

- **Qualifications**: Do not amend or alter documents without written instruction.
- **Confidentiality**: Do not reveal details of parts of the Tender or supporting documents (except for the necessary purposes of preparing that Tender) without the Employer's express written permission.

210 Pricing

- **Pricing**: Price and extend each item individually as instructed. Do not group items together.
- **Currency**:

220 Site visit

- **Nature of the site**: Ascertain before Tendering, including access thereto and local conditions and restrictions likely to affect the execution of the Work.
- **Arrangements for visit**:

230 Return of Tender

- **Return of Tender**:
  - **Destination**: As detailed on in invitation/tendering portal.
  - **Time and date**: TBA in letter of invitation.
  - **Format**: TBA advised in the letter of invitation.
- **Documents to be returned with the Tender**: TBA advised in the letter of invitation.
- **Inability to tender**: Advise immediately if the work as defined in the Tender documents cannot be tendered. Define those parts, stating reasons for the inability to tender.

310 Assessment

- **Assessment of Tenders**:
  - **Number to be assessed in detail**: All.
  - **Assessment criteria**: Best option with regards price, timescales and experience of undertaking work of a similar nature.
  - **Assessment model details**: Weighting score as per information provided within tender documentation.

320 Error resolution

- **Arithmetical errors**: Tender price will prevail. An opportunity will be given to confirm the Tender or withdraw.
- **Technical errors**: The Tender is deemed to meet or exceed the requirements of the Tender documents. Amendment of the Tender to reflect this will not constitute a variation and no claim for additional costs will be accepted.
- **Corrections**: An endorsement will be added to the priced documents indicating that rates or prices (excluding preliminaries, contingencies, Prime cost and Provisional sums) inserted therein will be adjusted in the same proportion as the corrected total differs from that stated incorrectly.

340 Post-Tender negotiations

- **Negotiations**: May be required.
- **Details**: Some works may be omitted - provide full breakdown of the works requested

410 Notification to Tenderers

- **Notification method**: in an electronic format.

00-40-70 Works Contract Establishment

ACCESS

110 Access to the site

- **Details**: Existing swimming pool building. Survey the site to determine access restrictions
- **Limitations**: The facility is open between 6.30am and 10pm Monday to Friday. Should works dictate access be between 10pm and 6am this can be arranged, if requested
- **Access for inspections**: Provide access at reasonable times for both on-site and off-site work.

120 Use of the site

- **General**: Do not use the site for any purpose other than carrying out the contract work.
- **Limitations**: No access to swimming pool area prior written notification to the facilities manager

145 Traffic and vehicles

- **Limitations**: Limited access - limited parking on site. Parking arrangements will be discussed during pre contract meeting.

150 Storage, accommodation, mechanical plant, temporary works and services

- **Position**: Submit proposed details of intended siting.
- **Maintenance**: Alter, adapt and move as necessary. Remove when no longer required and make good.

GENERAL INFORMATION

160 Cash flow forecast

- **Submission**: Before starting work on site, submit a forecast showing the gross valuation of the Works at the date of each Interim Certificate throughout the Contract period and based on the programme for the Works.

210 Considerate Constructors Scheme

- **Registration**: Before starting work, register with the Considerate Constructors Scheme and pay the appropriate fee.
- **Address**: Considerate Constructors Scheme Office, PO Box 75, Great Amwell, Ware, Hertfordshire, SG12 0YX.
  - Tel. 01920 485959.
  - Fax. 01920 485958.
  - Free phone 0800 7831423
  - Web. www.ccscheme.org.uk
  - E mail. enquiries@ccscheme.org.uk
- **Standard**:
  - **Minimum compliance level**: Compliance.

220 Constructing Better Health Scheme

- **Membership**: Register and provide evidence of registration
- **Address**: Constructing Better Health, B&CE Building, Manor Royal
  Crawley, West Sussex
  RH10 9QP
  Tel: 0845 873 7726
  Email: info@cbhscheme.co.uk
  Website:www.cbhscheme.co.uk
- **Submittal date**:

225 Freight Vehicle safety requirements

- **Vehicle equipment (minimum)**: Audible alert to other road users to the planned movement of the vehicle when the vehicle's indicators are in operation. Prominent signage at the rear of the vehicle to warn cyclists of the dangers of passing the vehicle on the inside.

Properly adjusted class VI mirror/s or Fresnel lens to eliminate the near side blind spot.
Side under run guards.

- **Drivers**: Trained on vulnerable road user safety through an approved course.
  Hold a current valid Certificate of Competence.
  Have a valid driving licence and be legally able to drive the vehicle.
- **Registration Scheme membership**: Submit evidence of registration with and accreditation to the Fleet Operator Recognition Scheme (FORS).
- **Level of accreditation**:
- **Submittal date**:

PROGRAMME

250 Programme

- **Master programme**: When requested and before starting work on site, submit in an approved form a master programme for the Works.
- **Include**:
  - **Information**: Design, production information and proposals provided by the Contractor, subcontractors or suppliers, including inspection and checking.
- **Planning**: Planning and mobilization by the Contractor.
- **Dates**: Earliest start and finish dates for each activity and identification of critical activities.
- **Engineering services**: Running in, adjustment, commissioning and testing of engineering services and installations.
  - **Instructions**: Work resulting from instructions issued in regard to the expenditure of provisional sums.
- **Concurrent work**: Work by or on behalf of the Employer and concurrent with the contract. The nature and scope of which, the relationship with preceding and following work and relevant limitations are suitably defined in the Contract Documents.
- **Exclusions**: Work that is not well defined: where and to the extent that the programme implications for this are impossible to assess, the Contractor should exclude it and confirm this when submitting theprogramme.
- **Number of copies**: One copy.
- **Submittal date**: Submit with tender return

280 Notice of commencement of work

- **Part of the works**: Work on site
- **Notice period (minimum).**: 1 week

HEALTH AND SAFETY INFORMATION

300 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.
- **Submittal date**: With the tender and One week prior to pre-contract meeting.

320 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 betweencontractors.
  - **Emergency**: Procedures including those for fire prevention and escape.
  - **Records**: Arrangements for ensuring that accidents, illness and dangerous occurrences arerecorded.
  - **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.
- **Submittal date**: With the tender and One week prior to pre-contract meeting.

330 Health and safety hazards

- **Hazards**:
- **Limitations**: The nature and condition of the site and/ or buildings cannot be fully ascertained before they are opened up.
- **Information**: The accuracy and sufficiency of this information provided about existing hazards is not guaranteed by the Employer/Purchaser or their representative. Ascertain if additional information is required to ensure the safety of persons and the Works.
- **Training**: Ensure that all relevant personnel are aware of the hazards listed and have received appropriate training to deal with them.

340 Preconstruction information

- **Availability**: Integral with the project specification, including but not restricted to the following:
  Description of project.
  Client's consideration and management requirements.
  Environmental restrictions and on-site risks.
  Significant design and construction hazards.
  The Health and Safety File.

350 Execution hazards

- **Common hazards**: Not listed. Control by good management and site practice.
- **Significant hazards**: Check designer health and safety information and include within pre construction method statement

360 Product hazards

- **Hazardous substances**: Site personnel levels must not exceed occupational exposure standards and maximum exposure limits stated in the current version of HSE document EH40
- **Common hazards**: Not listed. Control by good management and site practice.

370 Construction phase health and safety plan

- **Delivery to the Client**: No later than two weeks before commencement on site.
- **Confirmation**: Do not start construction work until written confirmation is received that the Construction Phase Health and Safety Plan includes the procedures and arrangements required by the CDM Regulations.
- **Content**: Develop the plan from and draw on the Outline Construction Phase Health and Safety Plan and the Preconstruction information.

MANAGEMENT AND STAFF

400 Management and staff – Contract minimum requirement

- **Details**: Allow for compliance with contract obligations.

TEMPORARY ACCOMMODATION

460 Temporary accommodation made available

- **Accommodation made available by the Employer**: The following may be used for the duration of the Contract without charge provided that:
  It is used solely for the purposes of carrying out the Works.
  The use to which it is put does not involve undue risk of damage.
  Temporary adaptations are approved by or on behalf of the Employer before being carried out.
  It is vacated on completion of the Works or determination of the Contract.
  When vacated, its condition is at least equivalent to its condition at the start of the Contract.

480 Parking

- **Requirement**: Provide and maintain exclusively for use by Employer/ Purchaser and their representatives and consultants.
- **Details**: To be discussed during pre contract meeting

TEMPORARY SERVICES

500 Temporary Services – contract minimum requirement

- **Details**: Allow for compliance with Contract obligations.

510 Water

- **Supply**: The existing mains may be used for the Works as follows:
- **Continuity**: No liability will be accepted for the consequences of failure or restriction in supply.

520 Water restrictions

- **Emergency legislation**: If the water supply is or is likely to be restricted, inform without delay and ascertain the availability of water from alternative sources.
- **Suitability**: Check pH value of water from a proposed new source and ensure that it is suitable for the plants, soil and turf being watered.

530 Gas

- **Supply**: The existing mains may be used for the Works as follows:
- **Continuity**: No liability will be accepted for the consequences of failure or restriction in supply.

540 Lighting and power

- **Supply**: Electric power from the existing mains may be used for the Works as follows:
- **Continuity**: No liability will be accepted for the consequences of failure or restriction in supply.

550 On site communications

- **Communications**:
  - **General**: Provide and maintain for the sole use of the other members of the project team and their representatives:

- **Costs**: Pay fees and charges associated with connection, rental subscriptions and the like.

560 Employer's site telephones

- **Temporary on site telephone**: Provide as soon as practicable after the start on site for the sole use of those acting on behalf of the Employer.

580 E-mail and internet facility

- **General**: As soon as practicable after the start on site provide a suitable e-mail facility on site, with a separate dedicated connection, for the use of the Contractor, Subcontractors and other members of the project team.
- **Use on behalf of Employer**: Allow for the cost of a reasonable number of transmissions made by other members of the project team.

585 Photocopier

- **General**: Provide reasonable access to and limited free use of an on-site photocopier, which may be located in the Contractor's own site offices.

590 Meter readings

- **Charges for service supplies**: Where to be apportioned ensure that:
  Meter readings are taken by relevant authority at possession and/ or completion as appropriate.
  Copies of readings are supplied to interested parties.

TEMPORARY SECURITY

600 Security – contract minimum requirement

- **Details**: Allow for compliance with Contract obligations.

TEMPORARY SAFETY AND CONTROL

630 Safety and environmental protection – contract minimum requirement

- **Details**: Allow for compliance with Contract obligations.

650 Temporary protection to existing trees and vegetation

- **Trees and vegetation**:
  - **Requirement**: Protect before starting work.
  - **Standard**: Relevant measures to BS 5837.
- **Areas of structural landscaping to be protected from constructionoperations**:
  - **Requirement**: Protect from effects of constructionoperations.
- **Integrity of protection**: Maintain for the duration of the Works.
- **Completion**: Remove on completion of the Works and make good disturbedareas.

670 Control and protection – contract minimum requirement

- **Details**: Allow for compliance with Contract obligations.

690 Environmental conditions

- **Levels required**: Maintain the following:
- **Temperature**: Within pool hall the temperature of the pool hall shall be retained at 29'C (1'C above pool water) at normal operating days and a reduced maximum 28'C for holding sportsgalas
  Within undercroft it is aimed that with the introduction of mechanical ventilation the temperature within the area shall not exceed 28'C and humidity levels are controlled
- **Humidity**: 60% RH +-10% within swimming pool hall area
- **Other**: Provide new fans acoustics noise data for CA to comment prior ordering

700 Use of permanent heating system

- **Permanent heating system**: May be used for drying out the Works and/ or services, and for controlling temperature and humidity levels.
- **Requirements**: Take responsibility for operation, maintenance and remedial work. Arrange supervision by and indemnification of the appropriate Subcontractors. Pay fuel and associated costs.

710 Beneficial use of installed systems

- **Permanent systems**: Do not use for any purpose other than running in, testing and commissioning.
- **Other uses**: If permission is given for any other use of a system before the Works are accepted as complete, enter into a separate written agreement recording details of the terms and conditions of use.

730 Mechanical plant – contract minimum requirement

- **Details**: Allow for compliance with Contract obligations.

TEMPORARY WORKS

760 Temporary works – contract minimum requirement

- **Details**: Allow for compliance with Contract obligations.

790 Name boards and advertisements

- **Name boards and advertisements**: Not permitted.

830 Surveying equipment

- **General**: Provide on site and maintain in accurate condition the following:
  Swimming pool hall during works

840 Personal protective equipment

- **General**: Provide for the sole use of other members of the project team, in sizes to be specified, the following:
- **Safety helmets**: Provide.
  - **Standard**: To BS EN 397, neither damaged nor time expired.
- **High visibility waistcoats**: Provide.
  - **Standard**: To BS EN ISO 20471, Class 2.
- **Safety boots**: Provide.
  - **Standard**: To BS EN ISO 20345, with steel insole and toecap.
- **Disposable respirators**: Provide.
  - **Standard**: To BS EN 149.FFP1S.
- **Eye protection**: Provide.
  - **Standard**: To BS EN 166.
- **Ear protection**: Provide.
  - **Standard**: Muffs to BS EN 352-1, plugs to BS EN 352-2.
- **Hand protection**: Provide.
  - **Standard**: To BS EN 388, 407, 420 or 511 as appropriate.

00-50-70 Works Contract Management

GENERALLY

SUPERVISION, COOPERATION AND COORDINATION

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.
- **Evidence**: Submit, including details of the person proposed; their relevant skills, training and knowledge; practical experience; qualifications; membership or registration with professional bodies; employment history; work related assessments and management structure.
- **Submittal date**: One week before start on site.
- **Replacement of supervisory personnel**: Give maximum possible notice before changing supervisory personnel.

140 Coordination of engineering services

- **Suitability**: Site organization staff must include one or more persons with appropriate knowledge and experience of mechanical and electrical engineering services to ensure compatibility between engineering and the Works generally.
- **Evidence**: Submit on request, including details of the person proposed; their relevant skills, training and knowledge; practical experience; qualifications; membership or registration with professional bodies; employment history; work related assessments and management structure.

PROGRESS

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**: Where progress falls below target, Submit proposals.
  - **Submittal date**: As soon as possible.
  - **Completion forecast**: Submit on the last working day of each week.
- **Key Performance Indicators**:
  - **Performance**: Record performance against each KPI.
  - **Corrective action**: Where performance falls below target, Submit proposals.
  - **Submittal date**: As soon as possible.

160 Progress meetings

- **General**: Meetings will be held to review progress and other matters arising from administration of the Contract.
- **Frequency**: Every two weeks.
- **Venue**: Contractors temporary accomodation.
- **Accommodation**: Ensure availability at the time of such meetings.
- **Attendees**: Contracts manager, site manager.

170 Progress report

- **Submittal date**: At least three business days before the site meeting.
- **Requirement**: Notwithstanding the Contractor's obligations under the Contract the report must include the following.

- **Content**: Provide any proposals for varying the times for release of information given in the Information Release Schedule. Further information must be provided in sufficient time by the Architect/ Contract Administrator to allow the Contractor to complete the Works. Conditions of Contract clause 2.11.3 states that: 'Where the Contractor has reason to believe that the Architect/ Contract Administrator is not aware of the time by which the Contractor needs to receive such further drawings, details or instructions, he shall, so far as reasonably practicable, advise the Architect/ Contract Administrator sufficiently in advance as to enable the Architect/ Contract Administrator to comply with this clause 2.11'. There is no qualification requiring the Contractor to apply in writing.
- **Progress statement**: Detailing matters materially affecting the regular progress of the Works with reference to the master programme.
- **Progress reports**: Subcontractors and suppliers.
  - **Information**: Requirements for further drawings or details or instructions to fulfil obligations under the Conditions of Contract.

180 Contractor's progress meetings

- **General**: Hold meetings with appropriate subcontractors and suppliers shortly before main site meetings to facilitate accurate reporting of progress.

OPERATION

200 Safety provisions for site visits

- **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 when visiting the site.
- **Protective clothing and/ or equipment**: Provide and maintain on site for visitors to the site.

210 Removal or replacement of existing work

- **Extent and location**: Agree before commencement.
- **Execution**: Carry out in ways that minimize the extent of work.

220 Ownership of materials

- **Alteration or clearance work**: Materials arising become the property of the Contractor except where otherwise stated. Remove from site as work proceeds.

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.

290 Occupied premises

- **Extent**: Existing buildings will be occupied and/ or used during the Contract.
- **Details**:
- **Works**: Carry out without undue inconvenience and nuisance and without danger to occupants and users.
- **Overtime**: If compliance with this clause requires certain operations to be carried out during overtime, and such overtime is not required for any other reason, the extra cost will be paid to the Contractor, provided that such overtime is authorized in advance.

310 Occupier's rules and regulations

- **Occupier's rules and regulations**: Comply.

320 Mobile telephones and portable electronic equipment

- **Restricted area**: Swimming pool area - no photos can be taken if occupied by others
- **Restriction**: Will be discussed during pre contract meeting

330 Working precautions and restrictions

- **Hazardous areas**:
  - **Description**: Plant rooms, undercroft ventilation area, swimming pool
  - **Precautions**: As per identified within pre construction information pack
- **Permit to work**:
  - **Area**: Swimming pool hall, any plant rooms
  - **Procedures**: Written notice to C.A. and permission from site is required (1 week notice)

340 Livery

- **Requirements**:
  - **Operatives**: All operatives to have hi viz with name of employer on.

370 Explosives

- **Use**: Not permitted.

380 Noise - consent by Local Authority

- **Consent**: Granted by the Local Authority under Part III of the Control of Pollution Act relating to the Works providing the following are met.

390 Noise and vibration

- **Noise control**: In accordance with BS: Code of practice for noise and vibration control on construction and open sites. Noise,
- **Noise levels from the Works**: 85dB(A) when measured from nearest adjacent quiet (office) 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, noise, dust, rubbish, vermin and other causes.
- **Surface water**: Prevent hazardous build-up on site, in excavations and to surrounding areas and roads.

440 Asbestos containing materials

- **Requirement**: Report immediately suspected materials discovered during execution of the Works. Do not disturb and agree methods for safe removal or encapsulation.

445 Antiquities

- **Requirement**: Report immediately fossils, antiquities and other objects of interest or value discovered during execution of the Works.
- **Preservation**: Keep objects in the exact position and condition in which they were found.

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 other susceptible apparatus.

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 Powder 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.

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 anddebris.
- **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.

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.

680 Especially valuable or vulnerable items

- **Protection**: Ensure provision and maintenance of special protective measures to prevent damage.
- **Method statement**: Submit within one week of request describing special protection to be provided.

730 Adjoining property

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

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.

760 Materials for recycling or reuse

- **Duty**: Sort and prevent damage to stated products or materials, clean off bedding and jointing materials and other contaminants.
- **Storage**: Stack neatly and protect until required by the Employer or for use in the Works as instructed.

770 Scaffolding

- **Scaffolding**: Make available to subcontractors and others at all times.

790 Working hours

- **Specific limitations**: The facility is open between 6.30am and 10pm Monday to Friday.
  Should works dictate access be between 10pm and 6am this can be arranged, if requested. No additional payment to the contractor is available for weekend or out of hours work.

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 thespecification.

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 theUK.
- **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.

210 Record drawings and information

- **Record drawings**:
  - **Drawings scope**: As-built drawings to be provided within one month of Practical Completion.
  - **Drawings format**: CAD format to be specified by CA and PDF format to be specified by CA.

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 Evidence of Compliance

- **Proprietary products**: Retain on site evidence that the proprietary product specified has been supplied.
- **Performance specification**: Submit on request 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.

290 Manufacturer's recommendations and instructions

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

SAMPLES AND APPROVALS

330 Samples

- **Products or executions**: Comply with specification requirements and in respect of the stated or implied characteristics:
  To an express approval.
  To match a sample expressly approved as a standard for the purpose.

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.
- **Complying sample**: Retain in good, clean condition on site. Remove when no longerrequired.

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.
- **Complying sample**: Retain in good, clean condition on site. Remove when no longerrequired.

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 theWorks.
- **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.

450 Water regulations and byelaws Contractor's certificate

- **Content**:
  - **Installation**: Describe the new installation and/ or the work carried out to an existing installation, including the address.
- **Statement**: Confirm that the installation complies with the relevant Water Regulations or Bylaws.
  - **Inspection**: Provide the Contractor's name and address, the name and signature of the individual responsible for checking compliance and the date on which the installation was checked.
- **Submit**: Certificate on completion of the work, include a copy to the Water Undertaker.

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.

500 Continuity of thermal insulation

- **Record and report**: Confirm that work to new, renovated or upgraded thermal elements has been carried out to conform to the Specification.
  - **Content**: Address of premises, the Contractor's name and address, the name, qualification and signature of a competent person responsible for checking compliance and the date on which the installation was checked.
- **Submit**: Before completion of the Works.
- **Copy**: 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**:
  - **Opening up, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution**: Submit proposals
  - **Submittal date**: So 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.

560 Quality control

- **Procedures**: Establish and maintain to ensure that the Works, including the work of subcontractors, comply with specified requirements.
- **Records**: Maintain full records, keep copies on site for inspection, and submit copies on request.
- **Content of records**:
  - **Identification**: Of each element, item, batch or lot including location in the Works.
- **Inspections, tests and approvals**: Purpose and dates.
  - **Description**: Nature and extent of nonconforming work found.
  - **Corrective action**: Details of work carried out.

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.
  - **Submittal date**:

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.
- **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.

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.

200 Electronic Data Interchange (EDI)

- **Types and classes of communication**:
- **Parties**:
- **Requirements**:

260 Priced Activity Schedule

- **Submittal date**: With the tender.

370 Information Release Schedule

- **Compatibility with programme**: When submitting programme, confirm that it is compatible with the Information Release Schedule.
- **Alternative information release times**: Submit proposals.

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.

410 Alternative time proposals

- **General**: In addition to and at the same time as undertaking to complete the contract work by the date for completion or period specified in the Contract, an alternative proposal based upon a different date or period may be submitted.
- **Date for Completion**: If any such proposal is accepted, the date for completion or period inserted in the Contract will be the date stated in or determined from the alternative proposal.

420 Design Proposal Information

- **Scope**: Include the following in the Contractor's Proposals.

- **Design drawings**: Calorex units refurbishment works controls wiring diagrams, Undercroft ventilation systems full working drawings
- **Technical information**: Proposed equipment technical datasheets to be submitted to C.A.
- **Submittal date**: With the tender.

440 Quality control resource statement

- **Resources**: Describe the proposed organization and resources to control the quality of the Works, including the work of subcontractors.
- **QA staff**: Identify in the statement the number and type of staff responsible for quality control, with details of their qualifications and duties.
- **Submittal date**: With the tender.

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.
- **Submittal date**: Two weeks prior to Works Commencement Date.

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.
- **Submittal date**: Within one week of request.

480 Health and safety file information

- **Information**: Provide as required by Principal Designer.
- **Details**: Records of previous works are within the site office. Contractor to update the pre construction information to develop the Health and safety file information of the site as per CDM 2015 regulations.

SUBLETTING AND SUPPLY

600 Domestic subcontracts - list

- **Content**: Details of proposed subcontractors and the work for which they will beresponsible.
- **Submittal date**: With the tender.

INFORMATION

740 Proposed instructions

- **Estimates**: If a proposed instruction requests an estimate of cost, submit without delay and in any case within seven days.
- **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 Production information

- **Draft version**:
  - **Scope**: Submit two copies, one may be returned with comments.
    Ensure that necessary amendments are made without delay and resubmit unless it is confirmed that it is not required.
  - **Format**: Electronic
  - **Submittal date**: Prior to ordering allow sufficient time for C.A. to makecomments
- **Proposed amendments**: Support any request for substitution or variation contained in the production information with relevant details to demonstrate compliance with the specified requirements.
- **Instructions issued during review**: If review comments are considered to involve a variation which has not already been acknowledged as such, give notice without delay, and do not proceed untilinstructed.
- **Matters likely to affect programme**: Make reasonable allowance for completing production information, submission (including for CDM purposes), comment, inspection, amendment, resubmission and reinspection.
- **Final version**:
  - **Format**: Electronic
  - **Submittal date**: At a date suitable to allow C.A. sufficient time to comment to prevent delay in the contractors programme

765 Named subcontractors: Production information

- **General**: Certain Subcontractors are or will be required to provide design and production information during the Contract.
- **Master programme**: Make reasonable allowance for completing design and production information, checking, submission (including for CDM purposes), comment, inspection, amendment, resubmission and reinspection.
- **Information from Subcontractors**:

  - **Programme**: Obtain in time to meet the programme and in accordance with NAM/T where applicable.
- **Examination**: Check dimensions are correct, account is taken of related work, and construction is practicable. Note comments on copies of the design and production information then submit to CA and subcontractor. Such checking will not relieve the CA or the subcontractors of their respective responsibilities for design, co-ordination and documentation. Ensure that necessary amendments are made without delay and resubmit unless it is confirmed that it is not required.
- **Final version of information**: Distribute copies to affected subcontractors and others and keep one copy on site.

800 Insurance

- **Documentary evidence**: Before starting work on site submit details and/ or policies and receipts for the insurances required by the Conditions of Contract.

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/ Client, the person administering the contract on their behalf and the Insurers.
- **Failure to notify**: Indemnify the Employer/ Client against loss, which may be caused by failure to give such notice.

830 Climatic conditions - records

- **Climatic conditions**: Record accurately and retain.
- **Information**:
  - **Air temperatures**: Daily maximum and minimum, including overnight.
  - **Delay records**: Due to adverse weather, include description of the weather, types of work affected and number of hours lost.

840 Ownership of products

- **Ownership**: At the time of each valuation, supply details of those products not incorporated into the Works which are subject to reservation of title inconsistent with passing of property as required by the Conditions of Contract, together with their respective values.
- **Evidence**: When requested, provide evidence of freedom of reservation of title.

850 Listed products stored off site

- **Evidence of title**: Submit reasonable proof that the property in 'listed items' is vested in the Contractor
- **Supplier**: For products purchased from a supplier include a copy of the contract of sale and a written statement from the supplier that conditions of the sale relating to the passing of property have been fulfilled and the products are not subject to encumbrance or charge.
- **Subcontractor**: For products purchased from a supplier by a subcontractor or manufactured or assembled by a subcontractor, copies of the subcontract with the Subcontractor and a written statement from the Subcontractor confirming that conditions relating to the passing property have been fulfilled and the products are not subject to encumbrance or charge.

860 Labour and equipment returns

- **Records**: Provide for verification at the beginning of each week in respect of each of the previous seven days.
- **Include**:
  - **Labour**: The number and description of craftsmen, labourers and other persons directly or indirectly employed on or in connection with the Works or services, including those employed by subcontractors.

  - **Equipment**: The number, type and capacity of mechanical, electrical and power operated equipment employed in connection with the Works or service.

870 Overtime working schedule

- **Requirement**: Prior to overtime being worked, submit notice of times, types and locations of work to be done.
- **Notice period (minimum)**: One week prior to overtime being worked.
- **Concealed work**: If executed during overtime for which notice has not been submitted, it may be required to be opened up for inspection and reinstatement at the Contractor's expense.

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.

900 Commissioning programme

- **Submittal date**: One week (minimum) before commissioning commences.
- **Format**: Electronic
- **Commissioning manager**: Submit proposals.

910 Performance testing programme

- **Submittal date**: One week (minimum) before performance testing commences.
- **Format**: Electronic
- **Commissioning manager**: Submit proposals

920 Maintenance instructions and guarantees

- **Components and equipment**: Obtain or retain copies, register with manufacturer and hand over on or before completion of the Works.
- **Information location**: In Building Manual.
- **Emergency call out services**:
  - **Telephone numbers**: Provide for use after completion.
  - **Extent of cover**: Manufacturers warranty cover and 12 months defects period apply

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.

140 Partial possession by Employer

- **General**: If clauses 2.25 to 2.29 of the Condition of Contract are applied ensure necessary access, services and other associated facilities are also complete.

150 Completion in sections or in parts

- **General**: Where it is proposed to take possession of a Section or part of the Works and such Section or part will, after its practical completion, depend for its adequate functioning on work located elsewhere on the site, complete that other work in time to permit such possession to take place.
- **Remainder of the Works**: During execution, ensure that completed Sections or parts of the Works have continuous and adequate provision of services, fire precautions, means of escape and safe access.

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.
- **Security at completion**:
  - **General**: Leave the Works secure with accesses closed and locked, where appropriate.
  - **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**: Arrange access with the CA.
- **Completion**: Give notice when remedial works have been completed.

INFORMATION

240 The Building Manual

- **Purpose**: The Building Manual is to be a comprehensive information source and guide for owners and users of the completed Works. It must provide 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.

- **Scope**:
  - **Part 1**: General.
  - **Part 2**: Fabric.
  - **Part 3**: Services.
  - **Part 4**: The Health and Safety File
  - **Part 5**: Building User Guide.
- **Responsibility for production**: The Contractor.
- **Date required**: Draft required at pre-handover meeting. Complete item by Practical Completion.
- **Information provided by others**: Provide all necessary information from sub contractors and include within the manual
- **Compilation**: Prepare all information for Contractor designed or performance specified work including as-built drawings. Obtain or prepare all other information to be included in the Manual.
- **Reviewing the Manual**: Prepare and circulate a complete draft. Amend in the light of any comments and recirculate. Do not proceed with production of the final copies until authorized.
- **Final copies of the Manual**:
  - **Number of copies**: One hard copy, minimum two copies on CD/DVD.
  - **Format**: Electronic
  - **Latest date for submission**: Two weeks before the date for completion stated in the contract.
- **As-built/ record drawings and schedules**:
  - **Number of copies**: 1
  - **Format**: Electronic

250 The Health and Safety File

- **Responsibility for production**: The Principal Designer and The Contractor.
- **Content**: Obtain and provide the following information: residual hazards, health & safety ifo about equipment for cleaning or maintaining, location of services.
- **Format**: Electronic
- **Delivery to**: Corby Council - TBC
- **Latest date for submission**: two weeks prior to completion.

260 Content of the Building Manual part 1: General

- **Content**: Obtain and provide the following, including all relevant details not included in other parts of the Manual:
- **Index**: List the constituent parts of the Manual, together with their location in the document.
- **The Works**: Description of the buildings and facilities.
  Ownership and tenancy, where relevant.
  Health and Safety information – other than that specifically required by the Construction (design and management) regulations
- **The Contract**: Names and addresses and contact details of all significant consultants, contractors, subcontractors, suppliers and manufacturers.
  Overall design criteria.
  Environmental performance requirements.
  Relevant authorities, consents and approvals.
  Third party certification, such as those made by 'competent' persons in accordance with the Building Regulations.
- **Operational requirements and constraints of a general nature**: Maintenance contracts and contractors. Fire safety strategy for the buildings and the site. Include drawings showing emergency escape and fire appliance routes, fire resisting doors, location of emergency alarm and fire fighting systems, services, shut off valves switches, etc.

Emergency procedures and contact details in case of emergency.
Other specific requirements.

- **Timescale for completion**: 2 weeks before prior practical completion

270 Content of the Building Manual Part 2: Building fabric

- **Content**: Obtain and Provide the following, including all relevant details not included in other parts of the Manual:
  - **Detailed design criteria**: Including:
    Floor and roof loadings
    Durability of individual components and elements
    Loading restrictions
    Insulation values
    Fire ratings
    Other relevant performance requirements
    Pool cover installation information
    Specific builderswork information (any large holes and how it is supported etc)
  - **Construction of the building**: A detailed description of methods and materials used.
    As-built drawings recording the construction, together with an index.
    Information and guidance concerning repair, renovation or demolition/ deconstruction.
  - **Periodic building maintenance guide chart**: Provide for all significant items of work
  - **Inspection reports**:
  - **Manufacturer's instructions index,**: Include relevant COSHH data sheets and recommendations for cleaning, repair and maintenance of components.
  - **Fixtures, fittings and components schedule and index**: Provide
  - **Guarantees, warranties and maintenance agreements – obtain from manufacturers, suppliers and subcontractors**: Obtain from manufacturers, suppliers and subcontractors.
  - **Test certificates and reports required in the specification**: Obtain, including:
    Air permeability.
    Resistance to passage of sound.
    Continuity of insulation.
    Electricity and Gas safety.
- **Timescale for completion**: 2 weeks prior practical completion

280 Content of the Building Manual Part 3: Building services

- **Content**: Obtain and Provide the following, including all relevant details not included in other parts of the Manual:
  - **Detailed design criteria and description of the systems, including**: Including:
    Services capacity, loadings and restrictions.
    Services instructions.
    Services log sheets.
    Manufacturers' instruction manuals and leaflets index.
    Fixtures, fittings and component schedule index.
  - **Detailed description of methods and materials used**: For all items.
  - **As-built/ record drawings**: For each system recording the construction, together with an index, including:
    Diagrammatic drawings indicating principal items of plant, equipment and fittings.
    Record drawings showing overall installation.
    Schedules of plant, equipment, valves, etc. describing location, design performance and unique identification cross referenced to the record drawings.
    Identification of services – a legend for colour coded services.
  - **Product details**: Including for each item of plant and equipment:
    Name, address and contact details of the manufacturer.

Catalogue number or reference.
Manufacturer's technical literature, including detailed operating and maintenance instructions.
Information and guidance concerning dismantling, repair, renovation or decommissioning.

- **Operation**: A description of the operation of each system, including:
  Starting up, operation and shutting down.
  Control sequences.
  Procedures for seasonal changeover.
  Procedures for diagnostics, troubleshooting and faultfinding.
- **Guarantees, warranties and maintenance agreements – obtain from manufacturers, suppliers and subcontractors**: Obtain from manufacturers, suppliers and subcontractors.
- **Commissioning records and test certificates list for each item of plant, equipment, valves, etc. used in the installations – including**: List for each item of plant, equipment, valves, etc. used in the installations, including:
  Electrical circuit tests.
  Corrosion tests.
  Type tests.
  Work tests.
  Start and commissioning tests.
- **Equipment settings**: Schedules of fixed and variable equipment settings established during commissioning.
- **Preventative maintenance**: Recommendations for frequency and procedures to be adopted to ensure efficient operation of the systems.
- **Lubrication**: Schedules of all lubricated items.
- **Consumables**: A list of all consumable items and their source.
- **Spares**: A list of recommended spares to be kept in stock, being those items subject to wear and tear or deterioration and which may involve an extended delivery time when replacements are required.
- **Emergency procedures**: For all systems, significant items of plant and equipment.
- **Annual maintenance summary chart**: For all systems.

- **Timescale for completion**: 2 weeks prior practical completion

290 Content of the Building Manual Part 4: the Health and Safety File

- **Content**: Obtain and provide the following, including all relevant details not included in other parts of the Manual, including:
  Residual hazards and how they have been dealt with.
  Hazardous materials used.
  Information regarding the removal or dismantling of installed plant and equipment.
  Health and safety information about equipment provided for cleaning or maintaining the structure.
  The nature, location and markings of significant services.
  Information and as-built drawings of the structure, its plant and equipment.
- **Information prepared by others**: Include for any sub contractors information for Calorex units and pool cover installation
- **Timescale for completion**: 2 weeks prior practical completion
- **Submit to**: Contract administrator

300 Content of the Building Manual Part 5: the Building User Guide

- **Content**: Obtain and provide the following:
  Building services information.
  Emergency information.
  Energy and environmental strategy.
  Water use.

Transport facilities.
Materials and waste policy.
Re-fit/ re-arrangement considerations.
Reporting provision.
Training.
Links and references.

- **Timescale for completion**: 2 weeks prior 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.

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**: Ensure following training shall be given to the Facility engineer and manager with training forms signed:-

  - Control Operation of Calorex units by the specialist to explain how to adjust Calorex systems operation set points
  - Controls Operation of Swimming pool cover systems including how to operate, troubleshooting etc.
  - Controls of Trend BMES systems by AES Systems training (to be provided) with set points are re-configured to end users requirements (full day of training and adjustment of timing control of the units)

- **Time Allowance (minimum)**: Prior hand over of the systems. C.A. will not be satisfied without training carried out is documented and signed by the site operatives indicating they fully understood how to operate the systems.

390 Maintenance service

- **Scope**: Provide a comprehensive maintenance service. Include all planned preventative maintenance, as set out within the maintenance schedule and replacement of all consumable items.
- **Plant and equipment to be maintained**: All newly installed plant
- **Terms**: 12 months of defects liability period apply. Allow to undertake the maintenance of the Calorex units, new fans within Undercroft area etc. for the first 12 months.
- **Commencement**: From the date of the practical completion
- **Duration**: 12 months from the date of the practical completion

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**: Two weeks before completion.

410 Tools and consumables

- **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.
- **Consumables**: Supply a complete list of all consumables necessary for the operation.
- **Submittal date**: At completion.

Outline Specification

20/11/2019 - 15:34

Outline Specification

35-35-60 Swimming pool fittings, furnishings and equipment (FF&E) systems

110 Main Pool and learner pool Swimming pool cover systems

Employ a specialist swimming pool cover manufacturer to design, manufacture, install and commission fully working swimming pool covers to the following pools:

Main Pool Cover Size: 50m x 18.5m
Teaching Pool Cover Size: 20m x 8m

The specialist contractor shall provide in full working production drawings following a detailed survey of the site. The drawings shall be supplied to the Contract Administrator for comments. Allow minimum 1 week for liaison over the pool covers working drawings within contract programme.

Allow sufficient time to order the works with specialists so that they can provide full working drawings, design and order the installation to prevent any delay to contract programme. Indicate within the programme of works when the swimming pool cover will be installed and how long the pool will need to stay closed to meet the swimming pool facilities expectations.

Allow to provide electrical supply requirements to the pool cover mechanisms as per indicated within the electrical installation tender drawings and detailed within the specifications. ALLOW FOR ALL BUILDERSWORK IN CONNECTION WITH ELECTRICAL INSTALLATION. The drilling of the floor to support the swimming pool covers will be carried out by the manufacturer.

Contact:
Glatz Pioneer, Brian Kinghorn at
Telephone No: 01582 668719
Web site: www.glatzpioneer.co.uk
Email: glatzpioneer@aol.com / info@glatzpioneer.co.uk

Address
GLATZ PIONEER (UK) LIMITED
Unit D6, Ivinghoe Business Centre
Blackburn Road
Houghton Regis
Dunstable
Bedfordshire
LU5 5BQ

QUOTATION reference : INTERNATIONAL POOL (CORBY) - POOL COVERS
Revised Quotation No: 937/19-27.09.19
Main Pool Cover Size: 50m x 18.5m
Teaching Pool Cover Size: 20m x 8m

or other approved equal.

Should the contractor wishes to choose another manufacturer for the works within his tender submission the contractor shall supply all the information over the alternative manufacturer / contractor and as a minimum matching the quality of the materials and warranty period offered by specified specialist contractor.

The quotation includes all the Contractors (Glatz Pioneer UK Limited) work, that is to provide four in number column mounted motorised pool covers for the Main Pool and one in number for the Training Pool. These units will be

fabricated from Stainless Steel (Grade 316) for box section steel for the columns and (Grade 304) stainless steel for the motorised rollers. The reason for the 304 on the rollers is that it gives a better tensile strength for the roller structure. The columns will be epoxy powder coated for a good protective finish and the rollers will be hand painted with gloss hammerite type product for protection.
The drilling of the floors will be conducted by specialists his setting out drawings are approved. The motors will be provided that are 24v dc for safe pool side use and will be hooked up to the power supply already provided. Our quotation also provides for the supply and fitting of the "Hands Free" covers and in a colour of light grey. All of covers will be commissioned once installed and the staff trained in their use.
The covers shall come with a five year warranty and a Service Contract to meet with its warranty criteria.

CORBY INTERNATIONAL SWIMMING POOL -
SPECIFICATION FOR THE GLATZ PIONEER "HANDS FREE" COLUMN MOUNTED
ROLLER SYSTEM AND THERMO-ROLL POOL COVER
This is a unique Motorised Roller system with a specially designed cover that will glide across the pool from side entry to the water without the need for staff to pull the covers over the water.
The roller system shall be provided in four individual motorised units for the 50 m pool. They will be installed along the side of the pool, sited to offset the booms to allow their flexibility they offer to swimmers. They will be positioned in such a way (Copyright) that the rollers will sited over the water by approx. 900 mm to allow the covers to glide down onto the water without the staff having to touch them. We do not advise the use of tow ropes to deploy the covers as this will increase the time and staff effort to use the system and loose good faith in theirworkload.
The rollers will be sited onto our unique design columns that will support the motorised rollers that will deliver the self-drive Thermo-Roll covers (6mm) to the pool water. We do not advise to put thicker covers onto the pool as they will only increase the load on the rollers when they eventually become wet and the additional thickness shows the savings advantage is minimal.
All the columns will be manufactured from Stainless Steel and will be epoxy powder coated to protect the steel from acid attack.
The floor will be set out to our design specification so that they can be drilled prior to installation which should take one day. Drawings will be provided prior to drilling for approval. Designing our "Hands Free" Pool Cover System in this way allows us to Guarantee the Rollers and Covers for a period of 5 years but a Service Contract must be concluded with us for that period of time and is renewable annually.

SPECIFICATION FOR GLATZTHERMO-ROLL COLUMN MOUNTED MOTORISED POOL COVER SYSTEM
1. The new pool cover should be manufactured in 7mm thick THERMO-ROLL ®. Top layer ultra violet resistant polyolefine PROPEX (reg) with no plasticisers in light blue, white or light grey colours. Cover to be reinforced with a polyproplene fibre which is laminated both sides as per top layer. Insulating layer of polyethylene closed cell foam 300g/m2 coated both sides with special designed SARANEX laminate made of PE/Butyl/PE bonded over entire surface for a hygienic finish. The foam shall be of a pyramid shape to improve capacity and to minimise water accumulation.
2. The new Pool Covers shall be resistant to any possible damage by chemically treated swimming pool water.
The new Pool Covers shall be unsinkable.
The new Pool Covers shall be tear resistant.
The edges of the new Pool covers shall be seamed/sealed to prevent fraying.
If exposed to fire the Pool Covers shall be of a material that shall NOT produce noxious, toxic or fumes harmful to humans.
7. Suitable means of storage/support shall be provided for the new Pool Covers when it is not in use. The storage/support system shall be in the form of a floor mounted, free-standing, column support "Goal Posts" with the "cross bar"/roller mounted sufficiently high to preclude interference by members of the Public (2500mm min.) and laterally in such positions that hand rails and pool sides shall not interfere with the operation of the cover,

thereby reducing the risk of any damage which could be caused to the pool by being lifted or dragged over said fixtures. The storage/support system and cover roller shall be manufactured from stainless steel and painted in a white epoxy paint to prevent any possible damage by chemically treated swimming pool water. The motor driving the pool roller shall be 24 volt DC, single phase, splash proof direct drive unit to DIN 7168. Installed in accordance with the current electrical regulations.
8. The systems installed shall be "FULLY AUTOMATIC" in operation and designed so that they can be supervised by one person. The covers shall push onto and subsequently retract themselves from the pool surface. This operation shall be controlled by means of a water proof key switch mounted conveniently on the Wall or in the Plant Room in accordance with current electrical regulations. There must not be any requirement for the covers to be manually guided or assisted onto or off the pool surface.
9. Disturbance to the Pool Halls and surrounding areas should be kept to a minimum when installing the Pool Covers since it is intended to keep the pools operational throughout the duration of the Contract.
10. The Contractor shall guarantee the new pool covers and associated ancillary equipment, including installation for a period of not less than 5 (five) years from the release of final payment. The Contractor shall also provide a Service Contract for the first 5 years after installation.

HEAT RETENTION (k-Coefficient)
Thermal conductivity (Lamda coefficient) : DIN r>26\2
THERMO-ROLL approx. 6 mm thick, little wind <c< - 10)
strong wind (X. = 20)
0,036 W/mJk
approx. 3,7W/rrrk
approx. ii,3W/m:k
WEATHERING RESISTANCE
Weather exposure test according to DIN V5387 about 7000 h. Weather exposure test according to ASTM rj 26-70 about 4000 h. Resistance to oil resisdues (according to VQK recommendation1;) cjood. Resistance of color to licjht 'according to DIN 'j 5 3813) : 7 (very good,. Caleulfited life expectancy in normal pool water, some 1200-1'jQO days of operation.
CLEANING CAPACITY
Absolutely even and smooth surface without recesses, easily sprayed off.
Resistant to chemicals used to remove oil residues.
HYGIENE
1. The first full-scale physical-chemical and microbiological long-term analysis in accordance with the latest DIN 19643 and KSW guidelines in a 30 x 21m outdoor swimming pool in Herning, Denmark, during the 1982 battling season completed without cristicism. Commuanl Joint Laboratory, DK-Herning.
Further tests passed successfully:
2. Physical-chemical test of the Ruhr region Hygiene Institute passed on 2nd October 1980
3. Microbiological test of the quality of Thermo-Roll-PE (hygienically comparable to TR-NORM) by the Hygiene Institute, Kiel 1981
4. Regular control by regional hygiene institutes of more than 200 European public swimming pools using Pioneer covers.
RCPAIRAOILITY
Repair is made only of surface layer. After short practice it can be welded by hot air at approx. 450°C. Remains weldable after years, because free of plastifier. Since structure is practically water-proof, no drainage is reguired prior to repairing.
RESISTANCE TO TEMPERATURE
Unchanged flexibility - 20° to + 80°C
Cohesion between windings of cover during frost and ice none
Experiences gained in numerous all-year thermal baths up to

35°C water temperature favourable

60-45-35 Heat pump systems

110 Swimming Pool Hall 3 No Calorex units Air source heat pump systems

Existing three off Calorex units AHU heat pumps systems to be retained (ventilation and controls to be refurbished) but the specialists shall allow for the control of the refrigeration cycle to interlock with the below functions:-
1- to prevent working of the refrigeration cycle during 'backwashing'
2- to operate refrigeration cycle to allow for reduced water temperature for swimminggalas

All necessary equipment change to allow for above to happen shall be allowed for within the tender costs

60-45-40 Heating systems

110 Low temperature hot water heating system

Retain existing heating systems and services. Provide and install new thermal insulation jackets to the existing Plate heat exchangers located within the Undercroft Zone1 area. The contractor shall survey the site and provide suitable size thermal jackets to all plate heat **exchangers** within the area.

Insulation Jackets for existing Plate Heat Exchangers
Supply existing plate heat exchangers with Insulation Jackets to reduce energy loss or protect against freezing. The jackets shall be flexible and secured with Velcro fasteners so can be installed and removed to allow access to the heat exchangers for servicing.

Jackets shall be retro-fitted onto existing heat exchangers. Please advise model number and serial number of the heat exchanger to the below:

UK Exchangers Ltd
Unit 55, Stilebrook Road
Olney, Buckinghamshire MK46 5EA
Tel: 01234-244320
Fax: 01234-714978
E-Mail: sales@ukeltd.com
Web Site: www.uk-exchangers.com

Specification
Jacket & Liner Cloth
Silicone coated glass fabric coated on one side with a water resistant flexible coating.
Colour ¡X Grey Insulation
25 Rockwool RW3 25 mm BCO covered
Fastenings
Fire retardant Velcro.
Maximum Operating Temperature
220¢XC
Thermal Conductivity
h 0.044 W/mK
Non flammable conforming to BS 476

65-10-95 Ventilation systems

130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A

Provide and install new supply ventilation system to work with the extract ventilation system within the Undercroft plant room area to prevent excessive build up of heat and humidity within the area. The contractor shall allow for all equipment including fans, ductwork, louvres, attenuators, grilles and support systems. Allow for all builders work in connection with the works.

Ensure the finishes to the areas are to the highest standard and allow for a competent builder to provide builderswork in order to achieve a very high standard on the finishes. Ensure fire compartmentation to the zones , floors are not comprimised by the indicative design and allow for all necessary fire stoppage in order to comply with the buildings current fire escape procedures. Installed equipment shall not detriment the buildings current maintenance access or fire escape routes.

Allow within costs to survey the areas in full and produce detailed working manufacturer drawings from a ductwork specialists company. The working drawings shall be produced along with the details of the builderswork to be issued to the Contract Administrator for comments prior manufacturing of ductwork or ordering of the units.

For supply and extract fan installations including the terminal unit (note: Contractor to allow for provision of the suitable sized upstand for the termination unit) contact Nuaire with ref. 19/22318/COM, Corby International Swimming Pool

Include within the electrical costs to provide and install all necessary power wiring to the new supply and extract fans as per detailed within the electrical specifications and tender drawings.

FAN CONTROLS
Employ the building existing BMES Trend contractor specialists to provide control wiring including temperature and humidity sensors.
Contact AES controls systems with quotation ref. Undercroft Vent. Control REF. ENQ3704

72 Tenter Road, Moulton Park
Northampton, NN3 6AX
Tel: 01604 790606
Website: aescontrols.co.uk
davidredmond@aescontrols.co.uk

CONTROLS SPECIFICATIONS:
1 Trend IQ4 I/O module
2 Space temp./RH sensors

ELECTRICAL INSTALLATION
From existing control panel install control wiring to aforementioned sensors, supply fan and extract fan
The installation will comply with the latest IEE regulations. Controls cabling to be CY screened. This cabling will be installed in galvanised conduit/trunking within plant room and risers.
COMMISSIONING
Fit a forementioned I/O module into existing control panel and wire internally to new outgoing terminals
Upon completion of the installation the control system will be fully tested and commissioned assuming the following:-
i. Any electrical installation not covered by the scope of our quotation is complete and tested.
ii. Gas/oil is available and systems are filled.
iii. A permanent electrical supply is available.
iv. Continuity of the site work is available.
Any handover or pre-commissioning visits are excluded unless specifically mentioned within our quotation.
Abortive visits due to circumstances beyond our control will be charged at the rate applicable at the time.
GRAPHICS
Engineer, install and commission project specific graphics onto existing Trend 963 BMS supervisor.

Allow within your costs for AES Controls systems engineer to visit the site separately to provide a full day of visit for training the end user and to set the whole BMES systems time settings to ensure the units to all areas of the building that is controlled via BMES systems are operating in accordance with the time settings the areas are occupied.

TRANSFER GRILLES, LOUVRES, DIFFUSERS AND EXTRACT VALVES

For supply, extract and transfer grilles and diffusers contact:
Glenn Jordan
Sales Agent T: 01622 717861
M:07795 566767
Waterloo Air Products plc E: glenn.jordan@waterloo.co.uk
Mills Road, Aylesford, Kent. ME20 7NB W: www.waterloo.co.uk
with quotation ref. Corby international swimming pool

FIRE DAMPERS
Provide and install new fire dampers to the areas where new ductwork passes any fire barrier. Provide as a minimum the number of the Fire dampers indicated to protect the fire integrity of the building.

BSB ENGINEERING SERVICES LTD
UNIT 56, TRINITY TRADE CENTRE
MILL WAY
SITTINGBOURNE, KENT, ME10 2PD
Tel: 01795 422609
Fax: 01795 429543
orders@bsb-dampers.co.uk
enquiries@bsb-dampers.co.uk
www.bsb-dampers.co.uk

Quotation ref.QU-0058757 or other approved equal

130 Swimming Pool Hall Calorex units supply and exract ventilation system type B
Employ Calorex units specialist contractor to provide design to carry out the following improvements to the 3 off Calorex units.

Contact Christopher James at Air Systems Air Conditioning & Refrigeration Ltd

Unit 5 Goosey Lodge Farm
Wymington
Northamptonshire
NN10 9LU

Tel: 01933 418860
Mobile: 07770901530
Fax: 01933 317194

Email: info@airsystemsgroup.com

Project ref. Corby Pool Calorex HRD Recommended Improvements

The specialist contractor shall design, install and commission the Calorex dehumidifier Air handling units to provide following improvements:

1- Back washing Interlink HRD control Interface.
The current application offers no interlink whilst the pool management team perform a backwash to stop the refrigeration cycle of the HRD system, The backwash process turns off the heat recovery pumps which feed the pool water from the undercroft up to each Calorex HRD unit this was immitted from the original installation presumably and therefore risks the high pressures building up within the refrigeration circuits of the HRD unit that can cause the tripping of the HP switch due tono flow of the pool water within the internal heat exchanger. A control measure shall be installed and integrated within the Calorex control circuit to stop the compressor control whilst

in a no flow condition and resume once flow is reinstated. The specialists contratcor shall provide a simple interlink control with the heat recovery pumps located within the undercroft plant room and the Calorex units.

2- Time Clock HRD Control.
The current time clock electronic controllers incorporated within the Calorex HRD units are inoperative and require replacement due to contact corrosion. An upgraded 7-day digital controller is recommended to installed to allow for the pool hall air "Night Set Back" to be set back to a lower temperature only if a pool cover is in place. Replace the night set back time clock controllers with new.

3- External Location of Interlocked Controllers
The 3 electronic digital controllers mounted within each of the Calorex HRD units are prone to malfunction due to corrosion. Allow sppecialist to externally mount these Humidity, Air and Water digital controllers within a suitable sealed enclosure necessary to prolong the useable life of each controller. The specialists shall provide wiring drawings and position of the controllers shall be agreed on site with Contract administrator prior installation.

4- Retrofitting of IE4 Main/Exhaust Fan motors with VSD drivers
The Calorex HRD units have currently 2 fans fitted 1 x Main fan a fixed speed 15Kw Star Delta start and a two speed 11Kw Exhaust fan. It is recommended to enhance the energy conservation and efficiency of the Calorex HRD units performance by retrofitting with IE4 rated motor efficiency with VSD drivers, Inverter Controlled motors offering flexible speed control which also can be interlinked with the night setback timers offering greater savings during off peak and unoccupied periods. Allow specialists to retrofit with VSD controlled IE4 motors to the Main fan and Exhaust fan for each unit.

5- Retrofitting of a Polychain Belt and Pulley system.
Currently the dive chain on both main fan and exhaust fan on the Calorex HRD units are of the V-Belt drive system from motor to impeller to further enhance the potential efficiency. Specialists shall retrofit employing the latest Polychain belt and pulley system.

6- Retrofitting of an Air Quality Sensor CO2
The Calorex HRD units can be retrofitted with Air Quality Sensors where spectator numbers exhibit large variations the monitor enables the HRD unit to respond more quickly to changes in CO2 loadings driving the exhaust dampers to maximum if the air quality drops below the required level. Allow specialists to install AQS CO2 sensor to suitable position within pool hall.

The specialists shall provide 12 months manufacturer warranty and 12 months defects liability within the contract. The rest of the Calorex unit maintenance regime shall continue (i.e. refrigerant cycle) under current maintenance contract Air Systems have with the Swimming pool.

Allow for the Calorex unit specialist to commission the units to below design parameters:-

Each unit supply air fan to achieve design flow rate of 8.8 m3/s @ 500Pa (additional 100Pa allowance since original design for potential aging of duct, leakage and dirt in the system)

Each unit return air fan to achieve design flow rate of 9.72m3/s @ 250Pa please (allowance fo 150Pa additional pressure allowance is made for a greater pressure loss due to increased volume through attenuator and dirt)

This will shall give a total 26.4 m3/s of supply air and 29.16 m3/s of return air circulation.

Please allow within controls to provide sufficient levels of fresh air supplement and no less than 30% Fresh air input during winter to prevent any chlorine build up in the space.

Allow for sub contractor to provide following information and services:-

1- Design information on the selected equipment (fans, motors etc.) to achieve required flow rates to be submitted to Contract administrator for comments
2- Certificates of sub contractors installers i.e. NICEIC, Part P, F Gas etc.
3- Controls design information including production, wiring drawings and submission to Contract administrator for comments
4- All relevant design information and drawings such as data cable installation to allow for interlocking of the Calorex units and the backwashing cycle. The design drawings shall be submitted to C.A. for comments prior to works. Note: the design drawings for the cable / data installation shall be schematics of the installation.
5- Pre-works condition report of the Calorex unit and following refurbishment of the units the achieved flow rates and commissioning of the Calorex units.
6- Provision of Calorex units commissioning information, warranties and any as installed drawings.
7- Training of the end user to train them on the Calorex units modified controls and how to adjust controllers to operate units prior swimming galas.

75-75-50 Mechanical engineering services control and management systems

155 Mechanical ventilation systems control - Undercroft ventilation

FAN CONTROLS
Employ the building existing BMES Trend contractor specialists to provide control wiring including temperature and humidity sensors.
Contact AES controls systems with quotation ref. Undercroft Vent. Control REF. ENQ3704
72 Tenter Road, Moulton Park
Northampton, NN3 6AX
Tel: 01604 790606
Website: aescontrols.co.uk
davidredmond@aescontrols.co.uk
CONTROLS SPECIFICATIONS:
1 Trend IQ4 I/O module
2 Space temp./RH sensors
ELECTRICAL INSTALLATION
From existing control panel install control wiring to aforementioned sensors, supply fan and extract fan
The installation will comply with the latest IEE regulations. Controls cabling to be CY screened. This cabling will be installed in galvanised conduit/trunking within plant room and risers.
COMMISSIONING
Fit a forementioned I/O module into existing control panel and wire internally to new outgoing terminals
Upon completion of the installation the control system will be fully tested and commissioned assuming the following:-
i. Any electrical installation not covered by the scope of our quotation is complete and tested.
ii. Gas/oil is available and systems are filled.
iii. A permanent electrical supply is available.
iv. Continuity of the site work is available.
Any handover or pre-commissioning visits are excluded unless specifically mentioned within our quotation.
Abortive visits due to circumstances beyond our control will be charged at the rate applicable at the time.
GRAPHICS
Engineer, install and commission project specific graphics onto existing Trend 963 BMS supervisor.
Allow within your costs for AES Controls systems engineer to visit the site separately to provide a full day of visit for training the end user and to set the whole BMES systems time settings to ensure the units to all areas of the building that is controlled via BMES systems are operating in accordance with the time settings the areas are occupied.

35-35-60/110 Main Pool and learner pool Swimming pool cover systems

System outline

35-35-60 /110 Main Pool and learner pool Swimming pool cover systems

- **System performance**: 35-35-60/205 Design submittals; 35-35-60/210 Safety performance; 35-35-60/220 Durability; and 35-35-60/290 Compliance with performance requirements.
- **System manufacturer**: Existing.
- **Fittings**: Existing.
- **Furnishings**: 45-35-90/380 Pool covers (public use).
- **Equipment**: Existing.
- **Samples required**: Existing.
- **Execution**: 35-35-60/610 Work on swimming pool fittings, furnishing and equipment
- **System completion**: 35-35-60/810 Requirements for completion and 35-35-60/890 Verification of performance.

System performance

35-35-60 /205 Design submittals

- **Detailed design**:
  - **Requirement**:
  - **Purpose**:
  - **Submittals**: Typical plan, elevation and section drawings at suitable scales. Drawings, schedules, technical information, calculations and manufacturer's literature.
  - **Timing**:
  - **Format**:

35-35-60 /210 Safety performance

- **Safety performance generally**: In accordance with BS EN 15288-1.

35-35-60 /220 Durability

- **Design life (minimum)**:
- **Secondary components**: Submit details together with required maintenance regime, replacement periods and methods of replacement.

35-35-60 /290 Compliance with performance requirements

- **Requirements**: Proof of compliance with specified performance.
- **Method**:
  - **Laboratory project testing**:
  - **Previous test results**:
  - **Computer simulation testing**:
- **Testing authority**:
- **Submissions**:
  - **Format**:
  - **Timing**:

Products

45-35-90 /380 Pool covers (public use)

- **Manufacturer**: GLATZ PIONEER (UK) LIMITED
- **Product reference**: Quotation ref. 937/19-27.09.19

Execution

35-35-60 /610 Work on swimming pool fittings, furnishing and equipment

- **Metal fixings**: Protect from corrosion.
- **In situ welding**:
- **Treatment of minor damage to galvanized surfaces**:
  - **Method of repairs to areas of damage less than 40 mm²**:
  - **Zinc coating thickness (minimum)**: Thickness of the original layer.
- **Site cutting of wood**:
  - **Components generally**: Minimize cutting.
  - **Wood below or near ground level**: Do not cut.
  - **Treatment of surfaces exposed by minor cutting and drilling**:

    Method: Apply sufficient material to provide a coating equal to the original preservative.

    Number of coats:
- **Site applied finishes**: Prepare surfaces and apply finishes as soon as possible after fixing.

System completion

35-35-60 /810 Requirements for completion

- **Condition**: Leave the works in a clean, tidy condition. Clean immediately before handover.
- **Spares to be supplied**:
- **Tools**: Supply tools required for operation, maintenance and cleaning purposes.

35-35-60 /890 Verification of performance

- **Requirements**: Check completed system and provide assurance of compliance with specified performance.
- **Submissions**:
  - **Certificates, records, guarantees and other documents**:
  - **Format**: Description of inspections, remedial works carried out and certification of compliance.
  - **Timing**:

Ω End of system

60-45-35/110 Swimming Pool Hall 3 No Calorex units Air source heat pump systems

System outline

60-45-35 /110 Swimming Pool Hall 3 No Calorex units Air source heat pump systems

- **System manufacturer**: Calorex
- **Arrangement**: Existing.
- **Heat pump type**: Existing.
- **Supplementary equipment**: Existing.
- **Pumps**: Existing.
- **Refrigerant lines**: 90-10-65/390 Refrigerant pipelines and fittings.
- **Thermal insulation**: Existing.
- **Outlets**: Existing.
- **Controls**: Heat pump system control.
- **System accessories**: Contractor's design.
- **Plant and equipment identification**: 90-90-55/390 Equipment labels and warning notices; 90-90-55/430 Identifying pipework; 90-90-55/480 Mechanical plant and equipment identification labels type B; 90-90-55/490 Valve charts and schematics; and 90-90-55/495 Valve identification labels.
- **Execution**: 60-45-35/620 Installing heat pump systems.
- **System completion**: 60-45-35/810 Commissioning of heat pump systems; 60-45-35/820 Performance testing; 60-45-35/830 Inspection and test records; 60-45-35/840 Demonstrations; 60-45-35/850 Documentation; and 60-45-35/860 Servicing and maintenance.

Products

90-10-65 /390 Refrigerant pipelines and fittings

- **Manufacturer**: Existing within Calorex units
- **Standard**: To BS EN 378-2.
- **Pipelines**: To BS EN 12735-1.
- **Execution**: 90-10-65/665 Installing refrigerant pipework.

90-90-55 /490 Valve charts and schematics

- **Manufacturer**: Submit proposals.
- **Material**: Submit proposals.
- **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

- **Manufacturer**: Submit proposals.
- **Information**: Purpose and reference number.
- **Execution**: 90-90-55/630 Installing valve identification labels.

Execution

60-45-35 /620 Installing heat pump systems

- **Standards**: To BS EN 378-2, BS EN 378-3 and BS EN 378-4.
- **Fixing of equipment, components and accessories**: Fix securely on purpose-made bases or supports.

- **External units**: Away from windows and adjacent buildings. Protect from high winds. Prevent snow, leaves and debris from blocking air flow.
- **Access**: Provide for inspection and servicing of heat pumps and ancillary equipment.
- **Refrigerant lines**: Short and straight.
- **Condensate**: To drain away rapidly, without risk of freezing.

90-10-65 /665 Installing refrigerant pipework

- **General requirements**: 90-10-65/610 Pipelines installation generally.
- **Standards**: To BS EN 378-3 and BS EN 378-4.
- **Refrigerant lines**: Submit proposals.

90-90-55 /630 Installing valve identification labels

- **Fixing**: Match existing arrangement

System completion

60-45-35 /810 Commissioning of heat pump systems

- **Pre-commissioning**: In accordance with CIBSE Commissioning Code A;
  In accordance with CIBSE Commissioning Code C;
  In accordance with CIBSE Commissioning Code R;
  and In accordance with CIBSE Commissioning Code W.
- **Commissioning**: In accordance with CIBSE Commissioning Code A;
  In accordance with CIBSE Commissioning Code C;
  In accordance with CIBSE Commissioning Code R;
  and In accordance with CIBSE Commissioning Code W.
- **Notice (minimum)**: 1 week.

60-45-35 /820 Performance testing

- **General**: Demonstrate the performance of the installations.
- **Guaranteed efficiency**: Submit proposals.
- **Environmental tests**: Carry out environmental testing. If necessary, use artificial loads to simulate operating conditions.
- **Recorders**:
  - **Type**: Supply and maintain portable seven day space temperature and relative humidity recorders, complete with charts.
  - **Number**: Submit proposals.
  - **Duration of loan**: Submit proposals.
- **Reports**: Submit on completion.

60-45-35 /830 Inspection and test records

- **Construction phase reports**: System design is commissionable;
  Post-installation;
  System cleanliness;
  and System commissionable.
- **Records for water systems**: In accordance with BSRIA BG 2/2010.
- **Records for air systems**: In accordance with BSRIA BG 49/2015.
- **Record sheets**:
  - **Submission**: On completion.
  - **Number of copies**: Three.

60-45-35 /840 Demonstrations

- **Running of plant**:

  - **Operation**: Run, maintain and supervise the installations under normal working conditions.
  - **Duration**: 1 week.
- **Instruction**: Instruct and demonstrate the purpose, function and operation of the installations.

60-45-35 /850 Documentation

- **Operating and maintenance instructions**:
  - **Scope**: Submit for the system giving optimum settings for controls.
  - **Product information**: Include product description, date of purchase, performance characteristics, application (suitability for use), method of operation and control, and cleaning and maintenance requirements.
  - **Format**: Paper copy.
  - **Number of copies**: Two.
- **Record drawings**:
  - **Content**: Location and identification of pipework regulating, isolation and control valves.
  - **Format**: A1 paper print drawing and Electronic drawing.
  - **Number of copies**: Two.
- **Submittal date**: At handover.

60-45-35 /860 Servicing and maintenance

- **Requirement**: Undertake for 12 months after completion.

Ω End of system

60-45-40/110 Low temperature hot water heating system

System outline

60-45-40 /110 Low temperature hot water heating system

- **Heat source**: Existing.

Ω End of system

65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation - type A

System outline

65-10-95 /130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A

- **System performance**: 65-10-95/210 Design of ventilation systems and 65-10-95/250 Fan performance.
- **Location of plant**: Undercroft Plant room Areas Zone1, Zone2 and Zone3
- **Route of distribution**: As indicated on drawings.
- **Type of system**: Multizone, constant volume.
- **External air intake**: 45-25-50/312 Supply louvre panel units.
- **Supply fans**: 90-45-30/320 Centrifugal supply fan type A and 90-45-30/320 Centrifugal extract fan type B.
- **Acoustic treatment**: 90-45-75/330 Rectangular silencers.
- **Air ductwork and accessories**:
  - **Ductwork**: 90-45-25/315 Circular sheet metal ductwork and fittings and 90-45-25/365 Rectangular sheet metal ductwork and fittings.
  - **Accessories**: 45-35-22/430 Bird guards type A;
    45-35-22/435 Insect guards;
    90-45-25/400 Access doors;
    90-45-25/420 Fire and smoke dampers;
    90-45-25/445 Intumescent fire and smoke dampers;
    90-45-25/460 Non-return dampers;
    90-45-25/465 Pressure control flaps;
    90-45-25/470 Pressure relief dampers;
    90-45-25/480 Shut off dampers;
    and 90-45-25/482 Smoke dampers.
- **Fire stopping**: Individual services penetrations fire stopping system;
  Linear gap fire stopping system;
  Loose fire stopping system;
  and Multiple services penetration fire stopping system.
- **Thermal insulation on supply air ductwork**: 90-90-40/360 Phenolic foam insulation.
- **Vibration isolation mountings**: 90-90-95/370 Isolation hangers.
- **Room supply air terminal devices**: 90-45-20/320 Diffusers.
- **Accessories**: 90-90-60/380 Roof equipment supports;
  90-90-60/390 Channel supports;
  90-90-60/395 Beam clips;
  and 90-90-60/400 Beam clamps.
- **Controls**: 75-75-50/155 Mechanical ventilation systems control - Undercroft ventilation.
- **Identification of ductwork and equipment**: 90-90-55/480 Mechanical plant and equipment identification labels type A.
- **Testing**: 90-45-25/790 Air leakage testing of plant items type A.
- **Execution**: 65-10-95/630 Installing ductwork on air handling units and 65-10-95/640 Ductwork systems cleaning.
- **System completion**: 65-10-95/810 Commissioning of air distribution systems;
  65-10-95/820 Performance testing;
  65-10-95/830 Inspection and test records;
  65-10-95/840 Demonstrations;
  and 65-10-95/850 Documentation for ventilation systems.

System performance

65-10-95 /210 Design of ventilation systems

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Design**: Complete the design of the ventilation systems.
- **Method**: In accordance with BS EN ISO 52016-1 and In accordance with CIBSEApplications Manual AM 11.
- **Requirement**: Submit proposals.

65-10-95 /250 Fan performance

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Standard**: In accordance with BS 6583 and In accordance with BS EN 16798-3.
- **Flow rate**: 1.5 m3/s
- **System pressure**: 270 Pa including attenutators
- **Operation**: Continuous with speed regulated via temperature / humidity sensor (BMES control)
- **Specific fan power**: To meet Building Regulations.

Products

45-25-50 /312 Supply louvre panel units

- **Manufacturer**: Waterloo air products
- **Product reference**: DF41/450X450/PPM9010/OBSS 2 Pack Primer (included within quote ref.Corby International Swimming Pool)

90-45-20 /320 Diffusers

- **Manufacturer**: Waterloo air products
- **Product reference**: Provide reference: Corby International Swimming Pool
- **Execution**: 90-45-20/620 Installing circular and rectangular diffusers and 90-45-20/690 Support of air terminal units in ceiling grids.

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

- **Manufacturer**: Submit proposals.
- **Product reference**: Submit proposals.
- **Standards**: To BESADW/144, BS EN 1506 and BS EN 12237.
- **Classification**: Class A.
- **Special installations**: Provide & install new supply ductwork at H.L. c/w epoxy coating.
- **Material**: Galvanised with epoxy coatings
- **Construction**: Submit proposals.
- **Regulating dampers**:
  - **Standard**: As BESADW/144.
  - **Regulating function**: Balancing and Control.
  - **Damper type**: Opposed blade.
  - **Operation**: Automatic. Provide extended spindle for mounting actuator.
  - **Material**: To match ductwork.
- **Access openings**:
  - **Purpose**: Inspection;
    Cleaning;
    and Maintenance.
  - **Sizes**: To BS EN 12097.
- **Execution**: 90-45-25/790 Air leakage testing of plant items type A;

90-45-25/640 Installing sheet metal ductwork;
and 90-45-25/720 Weatherproofing ductwork penetrations.

90-45-25 /365 Rectangular sheet metal ductwork and fittings

- **Manufacturer**: Submit proposals.
- **Standards**: To BESADW/144, BS EN 1505 and BS EN 1507.
- **Classification**: Class A.
- **Special installations**: Chlorine rich environment
- **Material**: Galvanised with epoxy coatings
- **Regulating dampers**:
  - **Standard**: To BESADW/144.
  - **Regulating function**: Balancing and Control.
  - **Damper type**: Backdraft and Opposed blade.
  - **Operation**: Automatic. Provide extended spindle for mounting actuator.
  - **Material**: To match ductwork.
- **Access openings**:
  - **Purpose**: Inspection;
    Cleaning;
    and Maintenance.
  - **Sizes**: To BS EN 12097.
- **Execution**: 90-45-25/640 Installing sheet metal ductwork;
  90-45-25/720 Weatherproofing ductwork penetrations;
  90-45-25/790 Air leakage testing of plant items type A;
  90-45-25/670 Ductwork support for vapour seal continuity;
  90-45-25/690 Drainage of ductwork;
  90-45-25/700 Test holes in ductwork;
  90-45-25/790 Air leakage testing of plant items type B;
  and 90-45-25/795 Air leakage testing of low pressure ductwork.

90-45-25 /400 Access doors

- **Manufacturer**: Submit proposals.
- **Material**: To match ductwork material.

90-45-25 /420 Fire and smoke dampers

- **Manufacturer**: BSB ENGINEERING SERVICES LTD
- **Product reference**: QU-0058757
- **Execution**: 90-45-25/725 Installing fire and smoke control dampers and 90-45-25/750 Access to dampers for resetting and maintenance.

90-45-25 /470 Pressure relief dampers

- **Manufacturer**: Submit proposals.
- **Execution**: 90-45-25/750 Access to dampers for resetting and maintenance.

90-45-25 /480 Shut off dampers

- **Manufacturer**: Submit proposals.
- **Standard**: To BS EN 1751.
- **Execution**: 90-45-25/750 Access to dampers for resetting and maintenance.

90-45-30 /320 Centrifugal supply fan type A

- **Manufacturer**: Nuaire
- **Product reference**: AM43ES-QA14151

Nuaire Airmover centrifugal square cased unit with double skinned acoustic panels c/w frequency inverter with full ECOSMART compatibility in a remote control box Inverter supplied with fan needs to be mounted internally within the building unless weather enclosure is ordered. QA = Unit has been treated for use in chlorinated atmosphere.
DOUBLE FLANGED FLEXIBLE CONNECTORS
NAV2 ANTI-VIBRATION MOUNTING KIT. (540822)

- **Execution**:

90-45-30 /320 Centrifugal extract fan type B

- **Manufacturer**: Nuaire
- **Product reference**: AM43ES-QA14151

  Nuaire Airmover centrifugal square cased unit with double skinned acoustic panels c/w frequency inverter with full ECOSMART compatibility in a remote control box Inverter supplied with fan needs to be mounted internally within the building unless weather enclosure is ordered. QA = Unit has been treated for use in chlorinated atmosphere.
  DOUBLE FLANGED FLEXIBLE CONNECTORS
  NAV2 ANTI-VIBRATION MOUNTING KIT. (540822)

  Please Note: Upstand will be provided by Contractor (not supplied with fans)
  TRTS-C-QA14151 Terminator terminal size C c/w shutters QA = Unit has been treated for use in chlorinated atmosphere

- **Execution**: 90-45-30/610 Installing fans generally.

90-45-75 /330 Rectangular silencers

- **Manufacturer**: Allaway Acoustics
- **Product reference**: PROJECT No: 71194

  ITEM SYSTEM REF/DESCRIPTION MODEL

  2 off EF1 - INTAKE/EXHAUST SP3033 GKX A02G 900 600 600 , 50Pa @ 1.5m3/s
  2 off SF1 - INTAKE/EXHAUST SP3033 GKX A02G 900 600 600 , 50 Pa @ 1.5m3/s

90-90-40 /360 Phenolic foam insulation

- **Manufacturer**: Kooltherm FM Pipe Insulation System.
- **Standard**: To BS EN 13166.
- **Form**: Duct slab;

  Duct wrap;

  All insulation shall be CFC and HCFC free, non-fibrous, with zero Ozone Depleting Potential (ODP) and Global Warming Potential (GWP) less than 5.;
  Phenolic Pipe Insulation shall include passivated, impregnated, liner technology with a passivating foam additive, creating a fully bore coated product.;
  and Phenolic pipe insulation shall be CE Marked in accordance BS EN 14314:2009+A1:2013 as required by the Construction Products Regulation (EU) No 305/2011 (CPR).
- **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**: Insulation in plantrooms to have hammerclad aluminium sheeting protective covering.
- **Reaction to fire classification**: In accordance with BS EN 13501-1 Clause 14.3
- **Insulation thickness (minimum)**: To BS 5422.

- **Vapour barrier**:
  - **Material**: Flexible sheet
  - **Vapour permeability**: To BS 5422, clause 5.6.
- **Items to be insulated**: All supply ductwork within plantroom (under the risk of condensation forming) and any ductwork running within an unheated area or exposed externally (under the risk of condensation forming)
- **Execution**: 90-90-40/645 Installing phenolic foam insulation on ductwork;
  90-90-40/780 Installing vapour barriers;
  and Thermal Insulation Sub-contractor to be a registered member of the Thermal Insulation Contractors Association (TICA).

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

- **Manufacturer**: Contractor's choice.
- **Material**: Manufacturer's standard.
- **Label size**: Manufacturer's standard.
- **Colour**:
  - **Background**: Manufacturer's standard.
  - **Lettering**: Manufacturer's standard.
- **Typography**:
  - **Font**: Manufacturer's standard.
  - **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.

90-90-60 /390 Channel supports

- **Manufacturer**: Submit proposals.
- **Third party certification**: Submit proposals.

90-90-60 /395 Beam clips

- **Clip type**: Submit proposals.
- **Material**: Submit proposals.
- **Flange size**: Submit proposals.

90-90-60 /400 Beam clamps

- **Clamp type**: Submit proposals.
- **Material**: Submit proposals.

90-90-95 /370 Isolation hangers

- **Manufacturer**: Submit proposals.
- **Isolation hangers type**: Submit proposals.
- **Colour code**: Submit proposals.
- **Drop rod misalignment capability**: Submit proposals.

Execution

65-10-95 /630 Installing ductwork on air handling units

- **Air discharge**: Connect ductwork to allow air to straighten as it leaves the air handling unit.

65-10-95 /640 Ductwork systems cleaning

- **Standards**: In accordance with BESATechnical Report TR/19 and to BS EN 15780.

- **Specialist**: Submit proposals.

90-45-20 /610 Installing air terminal devices

- **General**: Do not distort air terminal devices. Fix securely.
- **Air leakage**: Prevent. Seal joints with self adhesive foam strip or equivalent.
- **Appearance**: Finish visible edge joints neatly. Do not leave sharp edges and protruding screws.
- **Operation**: Fit so that moving parts operate correctly and removable cores can be taken out and replaced.
- **High level and ceiling applications**: On removable cores, provide safety wires with quick release ends.

90-45-20 /620 Installing circular and rectangular diffusers

- **General requirements**: 90-45-20/610 Installing air terminal devices.
- **Method**: Submit proposals.

90-45-25 /640 Installing sheet metal ductwork

Shared by: 90-45-25/315 Circular sheet metal ductwork and fittings; and 90-45-25/365 Rectangular sheet metal ductwork and fittings.

- **Standard**: To BESADW/144.
- **Hangers and supports**: Install in accordance with BSRIABG 10/2010 and Strength requirements to BS EN 12236.

90-45-25 /670 Ductwork support for vapour seal continuity

- **Method of support**: Submit proposals.

90-45-25 /690 Drainage of ductwork

- **Ductwork**: Install to drain entrained moisture.
- **Joints**: Lap to minimize moisture leakage.

90-45-25 /700 Test holes in ductwork

- **Position**: In accordance with CIBSECommissioning Code Series A and BESADW/144.

90-45-25 /720 Weatherproofing ductwork penetrations

Shared by: 90-45-25/315 Circular sheet metal ductwork and fittings; and 90-45-25/365 Rectangular sheet metal ductwork and fittings.

- **Roof penetrations**: Submit proposals.
- **Wall penetrations**: Submit proposals.

90-45-25 /725 Installing fire and smoke control dampers

- **Standard**: In accordance with ASFPVolume 1: EN fire dampers. (Grey book);
  In accordance with BESADW/145;
  and To BS EN 12101-8.

90-45-25 /750 Access to dampers for resetting and maintenance

Shared by: 90-45-25/420 Fire and smoke dampers; 90-45-25/470 Pressure relief dampers; and 90-45-25/480 Shut off dampers.

- **Position**: Provide access to damper mechanisms on fire dampers; smoke dampers; combined smoke and fire dampers, and volume control dampers through access doors, suspended ceilings, etc. Where more than one fire damper is installed in a frame provide access to all fire dampers.
- **Fire links**: Provide access for replacement.

90-45-25 /790 Air leakage testing of plant items type A

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; 90-45-25/315 Circular sheet metal ductwork and fittings; and 90-45-25/365 Rectangular sheet metal ductwork and fittings.

- **Standard**: To BESADW/144.

- **Procedure**: Include in-line plant with certificate of conformity for pressure class and air leakage classification for system under test.
- **Report**:
  - **Format**: Electronic and Paper copy.
  - **Submit**: At handover.
  - **Number of copies**: Three.

90-45-25 /790 Air leakage testing of plant items type B

- **Standard**: To BESADW/144.
- **Procedure**: Include in-line plant with certificate of conformity for pressure class and air leakage classification for system under test.
- **Report**:
  - **Format**: Electronic and Paper copy.
  - **Submit**: At handover.
  - **Number of copies**: Three.

90-45-25 /795 Air leakage testing of low pressure ductwork

- **Standard**: To BESADW/144 and DW/143.
- **Extent**: Random testing of 10% maximum of the ductwork system.
  Carry out tests as work proceeds before thermal insulation is installed.
  Where a test fails, select two further sections for testing.
  Carry out remedial work where tests fail.
- **Test pressure**: To BESADW/144, Table 22.
- **Documentation**: Air leakage test sheet.
- **Report**:
  - **Format**: Electronic and Paper copy.
  - **Submit**: At handover.
  - **Number of copies**: Submit proposals.

90-45-30 /610 Installing fans generally

- **Fixing**: Use fixing points provided. Do not strain the fan structure when bolts are tightened.
- **Alignment**: Install fan to allow optimum air flow path.

90-90-40 /610 Installing insulation and protection products generally

- **Standard**: In accordance with BS 5970.
- **Timing**: Insulate after installed system has been fully tested and joints proved sound.
- **Insulation**: Do not enclose adjacent units together.
- **Clearance**: Maintain between pipes.
- **Finish**: Neatly finish joints, corners, edges and overlaps.

90-90-40 /645 Installing phenolic foam insulation on ductwork

- **General requirements**: 90-90-40/610 Installing insulation and protection products generally.
- **Ducts**:
  - **Rectangular**: Apply slabs.
  - **Circular**:
  - **Flat oval**: Apply slabs and pipe sections.
- **Joints**: Close butt slabs or section and seal with 100 mm wide Class 0 foil tape.
- **Duct supports**:

90-90-40 /780 Installing vapour barriers

- **Integrity**: Seal to maintain throughout.

90-90-55 /610 Installing mechanical plant and equipment identification

- **Fixing**: Fix with adhesive to equipment and Fix with adhesive to wall.
- **Position**: On equipment and On wall adjacent equipment.

System completion

65-10-95 /810 Commissioning of air distribution systems

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Pre-commissioning**: In accordance with BSRIABG 49/2015 and CIBSECommissioning code A.
- **Commissioning**: In accordance with BSRIABG 49/2015 and CIBSECommissioning code A.
- **Notice (minimum)**: One week.

65-10-95 /820 Performance testing

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **General**: Demonstrate the performance of the installations.
- **Guaranteed efficiency**: Tolerances defined in this specification.
- **Environmental tests**: Carry out environmental testing. If necessary, use artificial loads to simulate operating conditions.
- **Recorders**:
  - **Type**: Supply and maintain portable seven day space temperature and relative humidity recorders, complete with charts.
- **Reports**: Submit on completion.

65-10-95 /830 Inspection and test records

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Reports**:
  - **Construction phase**: System design is commissionable;
    Post-installation;
    and System commissionable.
- **Records for air systems**: In accordance with BSRIABG 49/2015.
- **Record sheets**:
  - **Submission**: Electronic and Paper.
  - **Number of copies**: Three.

65-10-95 /840 Demonstrations

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Running of plant**:
  - **Operation**: Contractor's choice.
  - **Duration**: Contractor's choice.
- **Instruction**: Instruct and demonstrate the purpose, function and operation of the installations.

65-10-95 /850 Documentation for ventilation systems

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Operating and maintenance instructions**:

  - **Scope**: Submit for the system as a whole giving optimum settings for controls.
  - **Product information**: Include product description, date of purchase, performance characteristics, application (suitability for use), method of operation and control, and cleaning and maintenance requirements.
  - **Format**: Paper copy.
  - **Number of copies**: Three and Refer to section 101 - Mech Services Standard Clauses.
- **Record drawings**:
  - **Content**: Location and arrangement of plant in plant rooms and Location of outlets.
  - **Format**: A1 paper print;
    Electronic;
    and Refer to section 101 - Mech Services Standard Clauses.
  - **Number of copies**: Three and Refer to section 101 - Mech Services Standard Clauses.
- **Submittal date**: At handover.

Ω End of system

65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system - type B

System outline

65-10-95 /130 Swimming Pool Hall Calorex units supply and exract ventilation system type B

- **System performance**: 65-10-95/210 Design of ventilation systems; 65-10-95/250 Fan performance; and 65-10-95/255 Variable duty fan performance.
- **Location of plant**: Existing.
- **Route of distribution**: Existing.
- **Type of system**: Existing.
- **External air intake**: Existing.
- **Air filters**: Existing.
- **Heat recovery**: Existing.
- **Air handling units**: 90-45-15/325 Existing Calorex air handling units.
- **Supply fans**:
- **Acoustic treatment**: Existing.
- **Air ductwork and accessories**:
  - **Ductwork**: Existing.
  - **Accessories**:
- **Fire stopping**:
- **Thermal insulation on supply air ductwork**:
- **Vibration isolation mountings**:
- **Reheat batteries**:
- **Room supply air terminal devices**:
- **Accessories**:
- **Controls**:
- **Identification of ductwork and equipment**:
- **Testing**:
- **Execution**:
- **System completion**: 65-10-95/810 Commissioning of air distribution systems; 65-10-95/820 Performance testing; 65-10-95/830 Inspection and test records; 65-10-95/840 Demonstrations; 65-10-95/850 Documentation for ventilation systems; 65-10-95/860 Spares and consumables; and 65-10-95/870 Maintenance.

System performance

65-10-95 /210 Design of ventilation systems

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Design**: Complete the design of the ventilation systems.
- **Method**: In accordance with BS EN ISO 52016-1 and In accordance with CIBSEApplications Manual AM 11.
- **Requirement**: Submit proposals.

65-10-95 /250 Fan performance

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Standard**: In accordance with BS 6583 and In accordance with BS EN 16798-3.
- **Flow rate**: 1.5 m3/s
- **System pressure**: 270 Pa including attenutators
- **Operation**: Continuous with speed regulated via temperature / humidity sensor (BMES control)
- **Specific fan power**: To meet Building Regulations.

65-10-95 /255 Variable duty fan performance

- **Turn down ratio**: Submit proposals.
- **Static pressure at full volume**: Each unit supply air fan to achieve design flow rate of 8.8 m3/s @ 500Pa (additional 100Pa allowance since original design for potential aging of duct, leakage and dirt in the system) Each unit return air fan to achieve design flow rate of 9.72m3/s @ 250Pa please (allowance fo 150Pa additional pressure allowance is made for a greater pressure loss due to increased volume through attenuator and dirt)
- **Means of varying fan duty**: Dampers and Inverter motor speed control.

Products

90-45-15 /325 Existing Calorex air handling units

- **Manufacturer**: Calorex
- **Product reference**: Allow to employ Calorex specialist Air systems to refurbish and improve operation of the existing 3 off Calorex HRD (Z) 30B Dehumidification Heat Pump units
- **Execution**: 90-45-15/645 Installing fans;
  90-45-15/680 Air leakage testing;
  and 90-45-15/685 Testing.

Execution

90-45-15 /645 Installing fans

- **Blow through units**: Arrange section to allow uniform velocity profile downstream.
- **Accessories**:

90-45-15 /680 Air leakage testing

- **Testing**: In accordance with BS EN 1886.

90-45-15 /685 Testing

- **Test location**:
- **Tests**:
- **Test results**: Submit on completion.

System completion

65-10-95 /810 Commissioning of air distribution systems

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Pre-commissioning**: In accordance with BSRIABG 49/2015 and CIBSECommissioning code A.
- **Commissioning**: In accordance with BSRIABG 49/2015 and CIBSECommissioning code A.
- **Notice (minimum)**: One week.

65-10-95 /820 Performance testing

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **General**: Demonstrate the performance of the installations.
- **Guaranteed efficiency**: Tolerances defined in this specification.
- **Environmental tests**: Carry out environmental testing. If necessary, use artificial loads to simulate operating conditions.
- **Recorders**:
  - **Type**: Supply and maintain portable seven day space temperature and relative humidity recorders, complete with charts.
- **Reports**: Submit on completion.

65-10-95 /830 Inspection and test records

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Reports**:
  - **Construction phase**: System design is commissionable;
    Post-installation;
    and System commissionable.
- **Records for air systems**: In accordance with BSRIABG 49/2015.
- **Record sheets**:
  - **Submission**: Electronic and Paper.
  - **Number of copies**: Three.

65-10-95 /840 Demonstrations

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Running of plant**:
  - **Operation**: Contractor's choice.
  - **Duration**: Contractor's choice.
- **Instruction**: Instruct and demonstrate the purpose, function and operation of the installations.

65-10-95 /850 Documentation for ventilation systems

Shared by: 65-10-95/130 Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A; and 65-10-95/130 Swimming Pool Hall Calorex units supply and exract ventilation system type B.

- **Operating and maintenance instructions**:
  - **Scope**: Submit for the system as a whole giving optimum settings for controls.
  - **Product information**: Include product description, date of purchase, performance characteristics, application (suitability for use), method of operation and control, and cleaning and maintenance requirements.
  - **Format**: Paper copy.
  - **Number of copies**: Three and Refer to section 101 - Mech Services Standard Clauses.
- **Record drawings**:
  - **Content**: Location and arrangement of plant in plant rooms and Location of outlets.
  - **Format**: A1 paper print;
    Electronic;
    and Refer to section 101 - Mech Services Standard Clauses.
  - **Number of copies**: Three and Refer to section 101 - Mech Services Standard Clauses.
- **Submittal date**: At handover.

65-10-95 /860 Spares and consumables

- **Filters**:

  - **Filter media**: Supply two sets of filters, the first for use before commissioning and the second for final commissioning.
  - **Retaining clips and rubber gaskets**: Two sets for each type of filter.
  - **Cleaning solution**: Supply coating solution for one complete cleaning of metal plate filters.
- **Detectors**: Supply two of each type.
- **Air terminal device keys**: Submit proposals.

65-10-95 /870 Maintenance

- **Servicing and maintenance**: Undertake for 12 months after completion.

Ω End of system

75-75-50/155 Mechanical ventilation systems control - Undercroft ventilation

System outline

75-75-50 /155 Mechanical ventilation systems control - Undercroft ventilation

- **System performance**: 75-75-50/201 Design and 75-75-50/212 Time control.
- **Objectives**: Extraction of moisture and odours and to retain a comfortable environment to prevent over heating of the Undercroft plant room area
- **Start and stop control**: Contractor's design.
- **Supply fan control strategies**: Contractor's design. Inverter driven fan to be controlled via BMES temperature and humidity sensors

  Allow to increase the speed of the fans to retain internal temperatures to maximum 28'C or 60% Humidity for comfort.

  The fans shall come on to work when the internal temperatures raise the set point (suggest 25'C set and at 70% RH) and speed will increase to keep the internal environment at this temperature / humidity level.

  Supply and extract fans shall work at the same speed and if temperature or RH require more speed this shall take presedence.

- **Extract fan control strategies**: Contractor's design. Inverter driven fan to be controlled via BMES temperature and humidity sensors
  Allow to increase the speed of the fans to retain internal temperatures to maximum 28'C or 60% Humidity for comfort.
  The fans shall come on to work when the internal temperatures raise the set point (suggest 25'C set and at 70% RH) and speed will increase to keep the internal environment at this temperature / humidity level.
  Supply and extract fans shall work at the same speed and if temperature or RH require more speed this shall take presedence.

- **Supply air temperature control strategies**: Existing.
- **Additional functions**: 75-75-50/296 Plant monitoring.
- **Equipment**: 90-65-50/340 Control panels.
- **Sensors**: Existing.
- **Equipment interconnectivity**: Wired.
- **Cables**: 90-55-15/405 Balanced twisted-pair cables.
- **Containment**: 90-55-10/410 Cable trunking and cable ducting for wall and floormounting.
- **Containment accessories**: 90-55-10/460 Conduit fittings.
- **Rewireable installations**: Required.
- **Concealed installations**: Required.
- **Control equipment power supply**: Mains supply.
- **Execution**: 75-75-50/610 Removing mechanical engineering services control and management systems.
- **System completion**: 75-75-50/810 Inspection and testing;
  75-75-50/820 Start up and commissioning;
  75-75-50/830 Commissioning of automatic control systems;
  75-75-50/850 Keys;
  75-75-50/860 Documentation;
  and 75-75-50/870 Servicing and maintenance.

System performance

75-75-50 /201 Design

- **Design**: Complete the design of the mechanical engineering services controls and monitoring system.
- **Submit including the following information**: Operation statements, point schedules, control logic diagrams, network topology schematics, panel diagrams and fascia drawings, method statements for testing and commissioning, method statements for witness testing and graphics.

75-75-50 /212 Time control

- **Time clock**: BMS.

75-75-50 /296 Plant monitoring

- **Fan**:
  - **Input**: Differential pressure switch.
- **Heating plant**:
  - **Input**: Boiler fault alarm and Burner firing.

Products

90-55-10 /410 Cable trunking and cable ducting for wall and floor mounting

- **Manufacturer**: Cable Duct
- **Standards**: To BS EN 50085-1 and BS EN 50085-2-1.
- **Installation position**: Surface mounted on the wall.
- **Format**: Manufacturer's standard.
- **Resistance to compression**: Manufacturer's standard.
- **Resistance to impact**: Manufacturer's standard.
- **Temperature properties**:
  - **Storage and transport temperature (minimum)**: Manufacturer's standard.
- **Resistance to flame propagation**: Non-flame propagating.
- **Electrical properties**: With electrical continuity characteristics.
- **Protection by enclosure**:
  - **Protection against ingress of solid objects (minimum)**: To BS EN 60529, IP4X.
  - **Protection against ingress of water (minimum)**: To BS EN 60529, IPX1.
  - **Protection against access to hazardous parts (minimum)**: To BS EN 60529, IPXXD.
- **Access method**: With tools.
- **Screening**: Required.
- **Sizes**: 150 x 50 mm.
- **Compartments**: Two.
- **Accessories and fittings**:
  - **Generally**: Factory made by the cable trunking or ducting manufacturer and of the same material type and finish as the cable trunking or ducting.
  - **Types**: Manufacturer's standard.
- **Execution**: 90-55-10/740 Installing trunking generally.

90-55-10 /460 Conduit fittings

- **Manufacturer**: Match conduit.
- **Standards**: To BS EN 61386-1 and to BS EN 61386-21, BS EN 61386-22, or BS EN 61386-23 as appropriate; or to BS 4607-1.
- **Material**:
  - **Type**: Malleable iron.

  - **Finish**: Match conduit.
- **Conduit boxes**: Fit covers of same material and finish as boxes. Include brass earthing terminals in PVC-U boxes.
- **Plugs**:
  - **For metallic boxes**: Hexagonal malleable iron.
  - **For non metallic boxes**: Hexagon screwed PVC-U.
- **Locknuts.**:
  - **For metallic boxes**: Hexagonal carbon steel.
  - **For non metallic boxes**: Manufacturer's standard.
- **Execution**: 90-55-10/700 Installing conduit, trunking and ducting.

90-55-15 /405 Balanced twisted-pair cables

- **Manufacturer**: Contractor's choice.
- **Standard**: To BS EN 50173-1.
- **Category**: Manufacturer's standard.
- **Cable type**: Manufacturer's standard.
- **Number of pairs**: Manufacturer's standard.
- **Size**: Manufacturer's standard.
- **Sheath**:
  - **Type**: LSHF.
  - **Colour**: Manufacturer's standard.
- **Execution**: 90-55-15/660 Installing low voltage cables in conduit and trunking and 90-55-15/635 Installing low voltage cables.

90-65-50 /340 Control panels

- **Manufacturer**: Controls Specialist.
- **Enclosure**:
  - **Size**: Manufacturer's standard.
  - **Mechanical protection (minimum)**: Manufacturer's standard.
  - **Material**: Steel.
  - **Finish**: Externally polyester powder coated and Internal partitions, zinc coated.
  - **Colour**: Manufacturer's standard.
  - **Doors and panels**:
    Swing: Manufacturer's standard.
    Hardware: Corrosion-resistant lever type handles with latching mechanism.
    Locks: Cylinder. Standardize key type.
  - **Form**: Right angle return construction with rounded edges and corners, concealed hinges and internal gaskets.
- **Switches**: Provide the following On/Off/Auto rotary switches on the panel front:;
  Boilers;
  and Heating Pumps.
- **Lamps**: Provide the following lamps on the panel front:;
  Panel 'live';
  Control circuit fuse 'fail';
  Fault & enabled lamp for each pump;
  Fire control circuit activated;
  Fault and enabled lamp for each boiler;
  Pressurisation unit fault lamp;
  High pressure tripped lamp;

and Low pressure tripped lamp.

- **Miscellaneous**: Provide the following on the panel front:;
  Summer/Winter switch;
  Plant extension override button (programmable 0 - 4hrs);
  Lamp test button;
  and IQView8 Touch Screen Display.
- **Power Socket**: Provide 13amp power socket for engineer's PC.
- **Ingress protection (minimum)**: To BS EN 60529, IP44.
- **Isolator**:
  - **Standard**: Manufacturer's standard.
  - **Type**: Door interlocked switched isolator.
  - **Rated operational current (In)**: Contractor to determine in collaboration with the controls' specialist.
  - **Rated operational voltage (Ue)**: Manufacturer's standard.
  - **Rated operational frequency**: 50 Hz.
  - **Number of poles**: Manufacturer's standard.
  - **Rated short-time withstand current (Icw) for 1 s**: Manufacturer's standard.
  - **Rated short-circuit making capacity (Icm)**: Manufacturer's standard.
  - **Rated short-circuit breaking capacity (Icu)**: Manufacturer's standard.
  - **Utilization category**: Manufacturer's standard.
  - **Terminals**: Suitable for the connection of copper conductors.
  - **Mechanical interlocking**: Door-interlocked operating handles. Rotary handle.
- **Internal separation**:
  - **Form**: Manufacturer's standard.
- **Cable entry**: Suitable for front access cabling. Entry via gland plates facilitating either top and/or bottom entry.
- **Gland plate gaskets**: Match the assembly's degree of ingress protection.
- **Internal cable zones**: Sufficient to allow cabling to be neatly routed and terminated.
- **Interconnecting cable**: Manufacturer's standard.
- **Terminals**:
  - **Mounting**: Suitable for mounting to 35 mm DIN rail.
  - **Identification**:
    Neutral and earth bar terminals: Label with the outgoing circuit reference.
    Cable terminations: Label with circuit reference, with push-on plastics markers.
- **Trunking**:
  - **Standard**: To BS EN 50085-2-3.
  - **Material**: PVC-U.

Execution

90-55-10 /700 Installing conduit, trunking and ducting

- **Standards**: In accordance with BS 7671 and IET Guidance Note 1.
- **Preparation**: Cut square. Remove burrs and sharp edges to make smooth.
- **Protection of metallic conduit, trunking and ducting**:
  - **Joints and ends**: Remove grease, oil, dirt and rust before applying protective paint. Paint immediately following installation.
  - **Protective paint**:
    Generally: Compatible with conduit, trunking and ducting finish.

Type: Match factory finish.

- **Cross-sectional area**: Maintain throughout the conduit, trunking and ducting length.
- **Arrangement**: Position vertically and horizontally in line with equipment served, and parallel with building lines.
- **Spare containment**: Install one spare 25 mm diameter conduit from each distribution board to the nearest accessible void space, terminating in a conduit box with lid.
- **Draw wires**: Install nylon tapes galvanized soft iron wires within spare conduit, trunking and ducting.
- **Distance from other services running parallel (minimum)**:
  - **Generally**: 150 mm.
  - **Above radiators**: 1000 mm.
  - **Steam services**: 300 mm.
- **Drainage of conduit, trunking and ducting**: Locate drainage outlets at lowest points in conduit, trunking and ducting installed externally, and where condensation may occur.
- **Fire barriers**: Provide to maintain integrity of fire compartments.
- **Rewireable installations**: Enable rewiring from accessible boxes or accessories only.
- **Support**: Independently fix and support conduit, trunking and ducting from building structure.
- **Cleaning**: Clean insides of conduit, trunking and ducting before installing cables.
- **Cabling**: Install when conduit, trunking and ducting enclosure is complete.
- **Submittals**: Submit manufacturer's technical information. Submit drawings showing the proposed routes of conduit, trunking and ducting and the location of service outlets.

90-55-10 /740 Installing trunking generally

- **Changes of direction**: Manufacturer's bends and tees.
- **Joints**:
  - **Generally**: Manufacturer's jointing fittings. Maintain rigidity of trunking across joint.
  - **Number of joints**: Minimize.
  - **Lengths of trunking**: Maximize.
  - **Open ends**: Blank using manufacturer's removable end caps.
  - **Metal edging**: Protect with PVC edging strip.
  - **Electrical continuity**: Maintain at each joint with a copper link fitted on the outside of the trunking.
- **Connections to conduit, boxes, equipment and accessories**: Screwed couplings, adaptors, connectors and glands, with rubber bushes at open ends.
- **Connections to trunking covers**: Minimize.
- **Electrical continuity of covers**: Electrically continuous with the trunking or provide protective conductors.
- **Access**: Provide space around trunking to permit access for installing and maintaining cables. Set out access with covers on a continuous face to allow cabling to be laid in throughout its entire length.
- **Trunking passing through building fabric openings**: Provide fixed trunking covers. Extend covers 50 mm from both sides of the opening.
- **Cable retaining straps**: Required except when trunking cover is on top.

90-55-15 /635 Installing low voltage cables

- **Standard**: In accordance with BS 7671.
- **Timing**: Do not start internal cabling until building enclosure provides permanently dry conditions.
- **Preparation**: Store cables above 5°C for 24 hours before installation.
  Clear cable path of debris.
- **Installation temperature (minimum)**: 5°C.
- **Cables**: Install in one length. Dress cables flat, free from twists, kinks and strain.
- **Cable pulling**: Do not overstress. Prevent kinks and twisting of the cable.

- **Cable protection**: Cables passing through walls and floors to be sleeved with conduit or pipeduct to a minimum of 300 mm. Bush at both ends. Ensure that appropriate fire stopping materials are used to maintain the original fire integrity of the wall or floor around the penetration.
- **Concealed cable runs to wall accessories**: Run vertically from the accessory.
- **Exposed cable runs**: Direct to surface.
- **Distance from other services running parallel (minimum)**: 150 mm. Position cables below heating pipes.
- **Jointing and termination**:
  - **Final circuit cables**: At electrical accessories only.
  - **Core connections**: Using compression lugs to equipment without integral clamping terminals.
  - **Terminating cables when not using glands**: Take sheathing of cables into accessory boxes and equipment and protect against abrasion with grommets.

90-55-15 /660 Installing low voltage cables in conduit and trunking

- **Cable installation**: Orderly and capable of being withdrawn.
- **Single core wiring**: Arrange using the loop-in method.
- **Cables within trunking**: Tie at 2 m intervals for cables of the same circuit reference. Label ties with circuit reference number at 10 m intervals.
- **Cables in vertical conduit**: Provide cable clamps in accessible conduit boxes at 10 m intervals.
- **Extra low voltage cables**: Install within a separate partition from low voltage cables where installed in multi compartment trunking.

System completion

75-75-50 /810 Inspection and testing

- **Standard**: In accordance with BS 7671.
- **Notice before commencing tests (minimum)**: 1 week.
- **Certificates**: Submit three.
- **Test equipment identity**: Record on test certificates.
- **Certificates of calibration**: Submit for each test instrument.
- **Control panel test certificates**: Submit three.

75-75-50 /820 Start up and commissioning

- **Standard**: In accordance with BCIA Start up and commissioning guide.

75-75-50 /830 Commissioning of automatic control systems

- **Pre-commissioning**: In accordance with Commissioning Code C.
- **Commissioning**: In accordance with Commissioning Code C.
- **Notice (minimum)**: One week.

75-75-50 /850 Keys

- **Control panel door keys**: Supply.
- **Number**: Three of each type used.

75-75-50 /860 Documentation

- **Operating and maintenance instructions**:
  - **Scope**: Submit giving optimum settings for controls.
  - **Product information**: Include product description, date of purchase, performance characteristics, application (suitability for use), method of operation and control, and cleaning and maintenance requirements.
  - **Format**: Paper copy.

  - **Number of copies**: Three and Refer to section 101 - Mech Services Standard Clauses.
- **Record drawings**:
  - **Content**: For all controls cabling, the cable origin, circuit designation, route, conductor material and insulation type and colour, number of cores per cable, number of cables in ducts, on tray or ladder and Location of control panels, equipment and repeater panels.
  - **Format**: A1 paper print;
    Electronic;
    and Refer to section 101 - Mech Services Standard Clauses..
  - **Number of copies**: Three and Refer to section 101 - Mech Services Standard Clauses.
- **Submittal date**: At handover.

75-75-50 /870 Servicing and maintenance

- **Requirement**: Undertake until 12 months after completion.

Ω End of system

Manufacturer report

Allaway Acoustics
Old Police Station, , 1 Queens Road,, Hertford , SG14 1EN

Parent system	Clause	Product reference
Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A	90-45-75/330 Rectangular silencers	PROJECT No: 71194ITEM SYSTEM REF/DESCRIPTION MODEL 2 off EF1 - INTAKE/EXHAUST SP3033 GKX A02G 900 600 600 , 50Pa @ 1.5 m3/s2 off SF1 - INTAKE/EXHAUST SP3033 GKX A02G 900 600 600 , 50 Pa @ 1.5 m3/s

BSB ENGINEERING SERVICES LTD
www.bsb-dampers.co.uk | orders@bsb-dampers.co.uk
T: 01795 422609
BSB ENGINEERING SERVICES LTD, UNIT 56, TRINITY TRADE CENTRE, MILL WAY, SITTINGBOURNE, KENT, ME10 2PD

Parent system	Clause	Product reference
Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A	90-45-25/420 Fire and smoke dampers	QU-0058757

Cable Duct

Parent system	Clause	Product reference
Mechanical ventilation systems control - Undercroft ventilation	90-55-10/410 Cable trunking and cable ducting for wall and floor mounting	

Calorex
https://www.airsystems-group.co.uk/ | info@airsystemsgroup.com
T: 01933 418860
Air Systems Air Conditioning & Refrigeration Ltd, Unit 5 Goosey Lodge Farm, Wymington , Northamptonshire , NN10 9LU

Parent system	Clause	Product reference
Swimming Pool Hall Calorex units supply and exract ventilation system type B	90-45-15/325 Existing Calorex air handling units	Allow to employ Calorex specialist Air systems to refurbish and improve operation of the existing 3 off Calorex HRD (Z) 30B Dehumidification Heat Pump units

Calorex

Parent system	Clause	Product reference
-	60-45-35/110 Swimming Pool Hall 3 No Calorex units Air source heat pump systems	

Controls Specialist.

Parent system	Clause	Product reference
Mechanical ventilation systems control - Undercroft ventilation	90-65-50/340 Control panels	

Existing within Calorex units

Parent system	Clause	Product reference
Swimming Pool Hall 3 No Calorex units Air source heat pump systems	90-10-65/390 Refrigerant pipelines and fittings	

Existing.

Parent system	Clause	Product reference
-	35-35-60/110 Main Pool and learner pool Swimming pool cover systems	

GLATZ PIONEER (UK) LIMITED
www.glatzpioneer.co.uk | glatzpioneer@aol.com
T: 01582 668719
Unit D6, Ivinghoe Business Centre,, Blackburn Road,, Houghton Regis, Dunstable, Bedfordshire , LU55BQ

Parent system	Clause	Product reference
Main Pool and learner pool Swimming pool cover systems	45-35-90/380 Pool covers (public use)	Quotation ref. 937/19-27.09.19

Kooltherm FM Pipe Insulation System.

Parent system	Clause	Product reference
Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A	90-90-40/360 Phenolic foam insulation	

Match conduit.

Parent system	Clause	Product reference
Mechanical ventilation systems control - Undercroft ventilation	90-55-10/460 Conduit fittings	

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Jay.Arnold@nuaire.co.uk
T: 029 2085 8395
NUAIRE • WESTERN INDUSTRIAL ESTATE • CAERPHILLY • CF83 1NA, CAERPHILLY , CF83 1NA

Parent system	Clause	Product reference
Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A	90-45-30/320 Centrifugal extract fan type B	AM43ES-QA14151Nuaire Airmover centrifugal square cased unit with double skinned acoustic panels c/w frequency inverter with full ECOSMART compatibility in a remote control box Inverter supplied with fan needs to be mounted internally within the building unless weather enclosure is ordered. QA = Unit has been treated for use in chlorinated atmosphere.DOUBLE FLANGED FLEXIBLE CONNECTORSNAV2 ANTI-VIBRATION MOUNTING KIT. (540822)Please Note: Upstand will be provided by Contractor (not supplied with fans)TRTS-C-QA14151 Terminator terminal size C c/w shutters QA = Unit has been treated for use in chlorinated atmosphere
Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A	90-45-30/320 Centrifugal supply fan type A	AM43ES-QA14151Nuaire Airmover centrifugal square cased unit with double skinned acoustic panels c/w frequency inverter with full ECOSMART compatibility in a remote control box Inverter supplied with fan needs to be mounted internally

		within the building unless weather enclosure is ordered. QA = Unit has been treated for use in chlorinated atmosphere.DOUBLE FLANGED FLEXIBLE CONNECTORSNAV2 ANTI-VIBRATION MOUNTING KIT. (540822)
Waterloo air products glenn.jordan@waterloo.co.uk T: Tel: +44 (0)1622 711 500 Mills Road, Aylesford,, Maidstone, Kent , ME20 7NB		
Parent system	**Clause**	**Product reference**
Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A	90-45-20/320 Diffusers	Provide reference: Corby International Swimming Pool
Mechanical supply and extact ventilation systems - Undercroft Plant room Ventilation type A	45-25-50/312 Supply louvre panel units	DF41/450X450/PPM9010/OBSS 2 Pack Primer (included within quote ref.Corby International Swimming Pool)