GB-Shrewsbury: RMNB 031 – Ludlow Library – Public Section Decarbonisation Scheme, Heating and BEMS Upgrade

Competitive Contract Notice

1. Title: GB-Shrewsbury: RMNB 031 – Ludlow Library – Public Section Decarbonisation Scheme, Heating and BEMS Upgrade

 Awarding Authority: Shropshire Council Shirehall, Abbey Foregate, Shrewsbury, SY2 6ND, United Kingdom

Contact: Procurement Manager, Attn: Procurement Team 3. Contract Type: Works

Sub Type: Execution

4. Description: Electrical installation work of heating and other electrical building-equipment. This existing site is based in the heart of Ludlow, SY8 2PG. It consists of a three-storey library building that was constructed in circa 2000.

The works associated with the heating renewal project are mainly kept to the existing plantrooms, providing a modern, carbon neutral system, while rectifying the existing heating issues they are currently experiencing on site.

The Contractor needs to keep the heating systems in operation throughout the duration of the project to ensure the buildings contents remain in good condition.

We are currently proposing two locations for the ASHPs and costings are required for both options.

We are looking for a MEP Contractor who has a track record with this type of work and can deliver the project on time, to a budget, as per the design while permitting operation of an existing Library. In addition, a MEP Contractor who can act as Principal Contractor, while sub-contracting the building work elements out to a suitable Contractor.

CDM will require careful consideration throughout the works, with potential use of a crane, hot works and maintaining Library access.

The project will need to be completed by 11/03/2022 without delay, as this is a Government grant funded scheme.

5. CPV Codes:

45315000 - Electrical installation work of heating and other electrical building-equipment.

6. NUTS Codes :

UKG22 - Shropshire CC

7. Main Site or Location of Works, Main Place of Delivery or Main Place of Performance: Shropshire CC,

8. Reference Attributed by the Awarding Authority: RMNB 031

- 9. Estimated Value of Requirement: Category H: 100K to 500K
- Currency: GBP

10. Deadline for Expression of Interest: 16/11/2021 12:00:00

11. Address to which they must be sent:

Not Provided

12. Other Information:

Other Information: The contracting authority considers that this contract may be suitable for economic operators that are small or medium enterprises (SMEs). However, any selection of tenderers will be based solely on the criteria set out for the procurement.

For more information about this opportunity, please visit the Delta eSourcing portal at: https://www.delta-esourcing.com/tenders/UK-GB-Shrewsbury:-RMNB-031-%E2%80%93-Ludlow-Library-%E2%80%93-Public-Section-Decarbonisation-Scheme%2C-Heating-and-BEMS-Upgrade/47ACZB7W2G To respond to this opportunity, please click here: https://www.delta-esourcing.com/respond/47ACZB7W2G

Suitable for VCO: Yes Procedure Type:OPEN Period of Work Start date: 04/01/2022 Period of Work End date: 11/03/2022 Is this a Framework Agreement?: no



Shropshire Council Shirehall Abbey Foregate Shrewsbury Shropshire SY2 6ND

Date:26 h October 2021My Ref:RMNB 031Your RefRMNB 031

Dear Bidder

RMNB 031 – LUDLOW LIBRARY – PUBLIC SECTION DECARBONISATION SCHEME, HEATING AND BEMS UPGRADE

SHROPSHIRE COUNCIL

You have been invited to tender for the above requirement. With this letter please find copies of the following documents:

- Instructions for Tendering
- Tender Response Document
- Ludlow Library Works Prelims Sept 2021 Rev A
- Form of Fixed Price Tender
- Schedule of Amendments to JCT
- Parent Co 1
- 004-053-05-M-000 Proposed Mechanical Ludlow Library-Enabling Works T0
- 004-053-05-M-001 Proposed Mechanical Ludlow Library-GF T0
- 004-053-05-M-002 Proposed Mechanical Ludlow Library-SF T0
- 004-053-05-M-003 Proposed Mechanical Ludlow Library-Schematic T0
- 004-053-05-M-004 Proposed Mechanical Ludlow Library-BEMS T0
- 004-053-05-M-005 Proposed Mechanical Ludlow Library ASHP Option 2 T0
- 5741 Ludlow Library Heating Renewal MEP Specification SP(MEP)001
- 5741 Drawing Issue Sheet 19.10.21
- Annexe 2 Performance Bond
- Drawing 004-053-000-E 01
- Drawing 004-053-000-E 02
- Drawing 004-053-000-E 03
- Drawing 004-053-000-E 04

Tenders should be made on the enclosed Tender Response Document. Your Tender must be completed, signed and returned along with a signed copy of the instructions for tendering through our Delta Tenderbox. Please pay particular attention to the points below concerning the returning of tenders.

www.shropshire.gov.uk General Enquiries: 0345 678 9000

Returning of Tenders

 The deadline for returning tenders is noon on 16th November 2021 any tenders received after this time will not be accepted



ortal n responding prior to the load documents. If you are e document at a time or you to submit by the time and

b stage three and click the uments won't be viewable

- Tenders are received by post, facsimilie or email
- o Tenders are received after 12 noon on the given deadline

Freedom of Information

Under the provisions of the Freedom of Information Act 2000 from 1 January 2005, the public (included in this are private companies, journalists, etc.) have a general right of access to information held by public authorities. Information about your organisation, which Shropshire Council may receive from you may be subject to disclosure, in response to a request, unless one of the various statutory exemptions applies.

Therefore if you provide any information to Shropshire Council in the expectation that it will be held in confidence, you must make it clear in your documentation as to the information to which you consider a duty of confidentiality applies. The use of blanket protective markings such as "commercial in confidence" will no longer be appropriate and a clear indication as to what material is to be considered confidential and why should be given.

Other Details

Please note that if supplementary questions are raised by any tenderer prior to the closing of tenders and Shropshire Council decides that the answers help to explain or clarify the information given in the Tender Documents, then both the questions and the answers will be circulated to all enterprises invited to submit a tender. Please raise all clarification questions before the deadline of **9th November 2021.**

Shropshire Council is purchasing on behalf of itself and any wholly owned local authority company or other entity that is deemed to be a contracting authority by virtue of the Council's involvement

Please also note that Shropshire Council is committed to achieving Social Value outcomes through maximising the social, economic and/or environmental impact of all its procurement activity. Specific requirements for this contract are set out within the Tender Response Document and in addition for your further information the council's Social Value Framework guidance can be found at www.shropshire.gov.uk/doing-business-with-shropshire-council.

If you have any queries relating to this invitation to tender, please contact us through the Delta etendering portal.

Yours faithfully







1. Prelims
2. Mechanical & Public Health Particulars
Above Ground Drainage
Domestic Services
Heating Enabling Works
Temporary Boiler/Heating
Heating Services – Option 2
Ventilation Services
BEMS Installation
Electrical Services – Option 2
Builders Works
Inspection, Testing and Commissioning Installation
Provision of record and O&M information
Project Provisional Sum – ASHP Acoustic Compound
Tender Qualifications & Additional Works
Subtotal
Contingencies at 5% of Subtotal
TOTAL (EXCLUSIVE OF VAT) *

£

p

We, having read the General Technical Specification and Conditions of Contract and Preliminaries, together with the Particular Specification and Drawing(s) delivered to me/us, do hereby offer to execute and complete in accordance with the Conditions of Contract the whole of the work described for the sum of:

***THESE AMOUNTS SHOULD BE IDENTICAL**

This tender remains open for consideration for 90 days from the date fixed for the lodgement of tenders and is made up as detailed.

Please note the following in relation to Covid-19:

- 1) Tender figures will need to remain open for a period of 3 months from submission of tender.
- 2) Due to the current Covid-19 restriction and in line with Government advice, contracts may not be awarded until it is safe to proceed. It is the council's intention to notify the preferred contractor that they, subject to contract, will be appointed as the principal contractor once PSG has confirmed authorisation to do so in a safe and secure manner.
- 3) All tender returns are to provide supporting documentation clarifying the company's position, including a method statement, in regard to Covid-19.

4) The Tenderer must complete all sections and no exclusions will be accepted. If a point of clarification is required prior to submitting your tender, please do this through the Delta.

The work may be commenced **ASAP** and shall be completed by the **11th March 2021**.

DAYWORKS





INSTRUCTIONS FOR TENDERING

RMNB 031 – LUDLOW LIBRARY – PUBLIC SECTION DECARBONISATION SCHEME, HEATING AND BEMS UPGRADE

Shropshire Council Instructions for tendering

Contract Description/Specification:

Please refer to the MEP Specification and read in conjunction with the full tender package, for full details of the scheme.

In essence, the scheme aims to reduce the buildings carbon footprint through electric heating via Air Source Heat Pumps while rectifying the existing heating issues.

Contractor shall maintain the continuity of the heating to the building throughout the duration of the works to protect the items within the Library.

The contract will be part-funded by the Public Section Decarbonisation Scheme.

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1.0 Invitation to Tender

- **1.1** You are invited to tender for Ludlow Library Public Section Decarbonisation Scheme, Heating and BEMS Upgrade as detailed in the tender response document.
- **1.2** The project will commence on 4^h January 2022 and will need to be completed by 11th March 2022 without delay, as this is a Government grant funded scheme. Tenders are to be submitted in accordance with the JCT Intermediate Building Contract, with contractor's design, 2016 Edition and the instructions outlined within this document.
- **1.3** Tenders must be submitted in accordance with the following instructions. Tenders not complying in any particular way may be rejected by Shropshire Council (the Council) whose decision in the matter shall be final. Persons proposing to submit a Tender are advised to read the Invitation to Tender documentation carefully to ensure that they are fully familiar with the nature and extent of the obligations to be accepted by them if their Tender is accepted.
- **1.4** The Invitation to Tender documents must be treated as private and confidential. Tenderers should not disclose the fact that they have been invited to tender or release details of the Invitation to tender document other than on an "in confidence" basis to those who have a legitimate need to know or who they need to consult for the purpose of preparing the tender as further detailed in these Instructions for Tendering.
- **1.5** Tenderers shall not at any time release information concerning the invitation to tender and/or the tender documents for publication in the press or on radio, television, screen or any other medium without the prior consent of the Council.
- **1.6** The fact that a Tenderer has been invited to submit a tender does not necessarily mean that it has satisfied the Council regarding any matters raised in the pretender questionnaire submitted. The Council makes no representations regarding the Tenderer's financial stability, technical competence or ability in any way to carry out the required services. The right to return to any matter raised in any pre-tender questionnaire submitted as part of the formal tender evaluation is hereby reserved by the Council.
- **1.7** The Invitation to Tender is issued on the basis that nothing contained in it shall constitute an inducement or incentive nor shall have in any other way persuaded a tenderer to submit a tender or enter into a Contract or any other contractual agreement.
- **1.8** Shropshire Council is purchasing on behalf of itself and any wholly owned local authority company or other entity that is deemed to be a contracting authority by virtue of the Council's involvement.

2.0 <u>Terms and Conditions</u>

2.1 Every Tender received by the Council shall be deemed to have been made subject to the JCT Intermediate Building Contract, with contractor's design, 2016 Edition and these Instructions for Tendering unless the Council shall previously have expressly agreed in writing to the contrary.

2.2 The Tenderer is advised that in the event of their Tender being accepted by the Council, they will be required to undertake the required services.

3.0 <u>Preparation of Tenders</u>

3.1 Completing the Tender Response Document

- **3.1.1** Tenders should be submitted using the 'Tender Response Document' following the instructions given at the front of the document. The Tenderer's attention is specifically drawn to the date and time for receipt of Tenders and that no submission received after the closing time will be considered.
- **3.1.2** All documents requiring a signature must be signed;
 - a) Where the Tenderer is an individual, by that individual;
 - b) Where the Tenderer is a partnership, by two duly authorised partners;
 - c) Where the Tenderer is a company, by two directors or by a director and the secretary of the company, such persons being duly authorised for the purpose.
- **3.1.3** The Invitation to Tender Documents are and shall remain the property and copyright of the Council

3.2 Tender Preparation and Costs

- **3.2.1** It shall be the responsibility of Tenderers to obtain for themselves at their own expense all information necessary for the preparation of their Tender. No claim arising out of want of knowledge will be accepted. Any information supplied by the Council (whether in the Tender Documentation or otherwise) is supplied only for general guidance in the preparation of tenders.
- **3.2.2** Any Tenderer considering making the decision to enter into a contractual relationship with the Council must make an independent assessment of the Tender opportunity after making such investigation and taking such professional advice as it deems necessary.
- **3.2.3** Tenderers will be deemed for all purposes connected with their Tender submission where appropriate to have visited and inspected the Council, its assets, all the locations in respect of the delivery of the services/supplies/works and to have satisfied themselves sufficiently as to the nature, extent and character of the services supplies/works sought, and the human resources, materials, software, equipment, machinery, and other liabilities and other matters which will be required to perform the contract.
- **3.2.4** The Council will not be liable for any costs incurred by Tenderers in the preparation or presentation of their tenders.
- **3.2.5** Tenderers are required to complete all pricing schedules in the Invitation to tender documents. The terms "Nil" and "included" are not to be used but a zero or figures must be inserted against each item. Unit rates and prices must be quoted in pounds sterling and whole new pence.
- **3.2.6** It shall be the Tenderer's responsibility to ensure that all calculations and prices in the Tender documentation are correct at the time of submission.

- **3.2.7** The Tenderer is deemed to have made him/herself acquainted with the Council's requirements and tender accordingly. Should the Tenderer be in any doubt regarding the true meaning and intent of any element of the specification he is invited to have these fully resolved before submitting his Tender. No extras will be allowed for any loss or expense involved through any misunderstanding arising from his/her failure to comply with this requirement.
- **3.2.8** Any Tender error or discrepancy identified by the Council shall be drawn to the attention of the Tenderer who will be given the opportunity to correct, confirm or withdraw the Tender.
- **3.2.9** The Tender Documents must be treated as private and confidential. Tenderers should not disclose the fact that they have been invited to tender or release details of the Tender document other than on an In Confidence basis to those who have a legitimate need to know or whom they need to consult for the purpose of preparing the Tender.

3.3 Parent Company Guarantee

It is a condition of contract that if the tendering company is a subsidiary then its Ultimate Group/Holding Company must guarantee the performance of this contract and provide a letter to that effect signed by a duly authorised signatory of the Ultimate Group/Holding Company if requested to do so by the Council. Where the direct parent company cannot provide an adequate guarantee in the opinion of the Council, the Council will look to another group or associate company, with adequate assets, to be the guarantor. In cases where the contract is with a Joint Venture Company (JVC) or a Special Purpose Vehicle (SPV) company, which may have two or more parent companies and which may not be adequately capitalised or have sufficient financial strength on its own to support the risk and obligations it has under the contract, 'joint and several' guarantees / indemnities from the parent companies of the JVC or SPV may be sought.

3.4 Warranty

The Tenderer warrants that all the information given in their Tender and if applicable their Request to Participate Questionnaire is true and accurate. The information provided will be deemed to form part of any contract formed under this contract.

The Tenderer warrants that none of their current Directors have been involved in liquidation or receivership or have any criminal convictions

4.0 <u>Tender Submission</u>

- **4.1** Tenders must be submitted strictly in accordance with the letter of instruction accompanying this Invitation to Tender. Tenders must be submitted by the deadline of **noon**, **16**th **November 2021**.
- **4.2** No unauthorised alteration or addition should be made to the Specification and Tender Response Document, or to any other component of the Tender document. If any such alteration is made, or if these instructions are not fully complied with, the Tender may be rejected.
- **4.3** Qualified tenders may be submitted, but the Council reserves the right not to

accept any such tender. The Council's decision on whether or not a Tender is acceptable will be final.

- **4.4** Tenderers should note that their Tender must remain open and valid and capable of acceptance for a period of at least 90 days.
- **4.5** Tenderers should note that Tenders and supporting documents must be written in English and that any subsequent contract, which may or may not be entered into, its formation, interpretation and performance, shall be subject to and in accordance with the laws of England and subject to the jurisdiction of the Courts of England and Wales.
- **4.6** Where Tender submissions are incomplete the Council reserves the right not to accept them.

5.0 Variant Bids

- **5.1** The Council is interested in alternative solutions which would provide and develop opportunities for savings in service costs, service improvement or other financial benefits. In particular, the Council wishes to encourage solutions which also deliver benefits and added value to the local economy, residents and the business community.
- **5.2** Tenderers may submit, at their discretion, a Tender offering a different approach to the project as a "Variant Bid". However, to permit comparability, at least one bid must be submitted strictly in accordance with the Invitation to Tender Documents(the "Compliant Tender"). Any Tender variant proposed must clearly state how it varies from the requirements of the Compliant Tender Documents, and be explicit in demonstrating the benefits that will accrue to the Council from adopting this approach. Tenderers will be required to identify which submission, in their view, demonstrates best value to the Council.
- **5.3** Variant Bids must contain sufficient financial and operational detail to allow any Variant Bid to be compared with the standard Tender, permitting its considerations in written form.

6.0 <u>Tender Evaluation</u>

- 6.1 The Tenderers may be called for interview to seek clarification of their tender or additional or supplemental information in relation to their tender. The presentations will not carry any weighting to the final score achieved by Tenderers, but will be used to clarify and moderate issues raised in the Tenderer's submissions. Any areas of discrepancy between submissions and information gained from the presentations will be reviewed and scores previously awarded will be amended if necessary.
- **6.2** If the Council suspects that there has been an error in the pricing of a Tender, the Council reserves the right to seek such clarification, as it considers necessary from the Tenderer in guestion.

7.0 <u>Clarifications</u>

- **7.1** Tenderers are responsible for clarifying any aspects of the tendering process and/or the Invitation to Tender documents in the manner described below.
- 7.2 If you are unsure of any section and require further clarification, please contact via

our Delta Tenderbox.

- **7.3** Where appropriate, the Authorised Officer named above may direct the Tenderer to other officers to deal with the matter.
- 7.4 All queries should be raised as soon as possible (in writing), in any event not later than 9th November 2021.
- **7.5** All information or responses that clarify or enhance the tendering process will be supplied to all Tenderers on a uniform basis (unless expressly stated otherwise). These responses shall have the full force of this Instruction and where appropriate the Conditions of Contract. If a Tenderer wishes the Council to treat a question as confidential this must be expressly stated. The Council will consider such requests and will seek to act fairly between the Tenderers, whilst meeting its public law and procurement duties in making its decision.
- **7.6** Except as directed in writing by the Authorised Officer, and confirmed in writing to a Tenderer, no agent or officer or elected Member (Councillor) of the Council has any express or implied authority to make any representation or give any explanation to Tenderers as to the meaning of any of the Tender Documents, or as to anything to be done or not to be done by a Tenderer or to give any warranties additional to those (if any) contained in the ITT or as to any other matter or thing so as to bind the Council in any way howsoever.

8.0 Continuation of the Procurement Process

- 8.1 The Council shall not be committed to any course of action as a result of:
 - i) issuing this Invitation to Tender;
 - ii) communicating with a Tenderer, a Tenderer's representative or agent in respect of this procurement exercise;
 - iii) any other communication between the Council (whether directly or through its agents or representatives) and any other party.
- **8.2** The Council reserves the right at its absolute discretion to amend, add to or withdraw all, or any part of this Invitation to Tender at any time during the tendering stage of this procurement exercise.
- 8.3 At any time before the deadline for receipt of tender returns the Council may modify the Invitation to Tender by amendment. Any such amendment shall be numbered and dated and issued by the Council to all participating tenderers. In order to give prospective Tenderers reasonable time in which to take the amendment into account in preparing its Tender return, the Council may in its sole discretion, extend the deadline for submission of the tender returns. The Council reserves the right to amend, withdraw, terminate or suspend all or any part of this procurement process at any time at its sole discretion.

9.0 <u>Confidentiality</u>

9.1 All information supplied by the Council in connection with or in these Tender Documents shall be regarded as confidential to the Council unless the information is already within the public domain or subject to the provisions of the Freedom of

Information Act 2000.

- **9.2** The Contract documents and publications are and shall remain the property of the Council and must be returned upon demand.
- **9.3** Tenderers shall ensure that each and every sub-contractor, consortium member and/or professional advisor to whom it discloses these papers complies with the terms and conditions of this ITT.
- **9.4** The contents of this Invitation to Tender are being made available by the Council on condition that:
- **9.4.1** Tenderers shall at all times treat the contents of the Invitation to tender and any related documents as confidential, save in so far as they are already in the public domain and Tenderers shall not, subject to the provisions relating to professional advisors, sub-contractors or other persons detailed below, disclose, copy, reproduce, distribute or pass any of the contents of the Invitation to tender to any other person at any time or allow any of these things to happen;
- **9.4.2** Tenderers shall not use any of the information contained in this Invitation to tender for any purpose other than for the purposes of submitting (or deciding whether to submit) the tender; and
- 9.4.3 Tenderers shall not undertake any publicity activity within any section of the media.
- **9.5** Tenderers may disclose, distribute or pass this Invitation to tender to their professional advisors, sub-contractors or to another person provided that:
- **9.5.1** this is done for the sole purpose of enabling an Invitation to tender to be submitted and the person receiving the Information undertakes in writing to keep the Invitation to Tender confidential on the same terms as if that person were the Tenderer; or
- **9.5.2** the Tenderer obtains the prior written consent of the Council in relation to such disclosure, distribution or passing of the Invitation to Tender; or
- **9.5.3** the disclosure is made for the sole purpose of obtaining legal advice from external lawyers in relation to the procurement or to any Contract(s) which may arise from it; or
- **9.5.4** the Tenderer is legally required to make such a disclosure.
- **9.6** The Council may disclose detailed information relating to the Invitation to Tender to its officers, employees, agents, professional advisors or Governmental organisations and the Council may make any of the Contracts and procurement documents available for private inspection by its officers, employees, agents, professional advisors, contracting authorities or Governmental organisations.

9.7 Transparency of Expenditure

Further to it's obligations regarding transparency of expenditure, the Council may be required to publish information regarding tenders, contracts and expenditure to the general public, which could include the text of any such documentation, except for any information which is exempt from disclosure in accordance with the provisions of the Freedom of Information Act to be determined at the absolute discretion of the Council.

10.0 Freedom of Information

- **10.1** Please note that from 1 January 2005 under the provisions of the Freedom of Information Act 2000, the public (included in this are private companies, journalists, etc.) have a general right of access to information held by public authorities. One of the consequences of those new statutory responsibilities is that information about your organisation, which Shropshire Council may receive from you during this tendering process may be subject to disclosure, in response to a request, unless one of the various statutory exemptions applies.
- **10.2** In certain circumstances, and in accordance with the Code of Practice issued under section 45 of the Act, Shropshire Council may consider it appropriate to ask you for your views as to the release of any information before we make a decision as to how to respond to a request. In dealing with requests for information under the Act, Shropshire Council has to comply with a strict timetable and it would therefore expect a timely response to any such consultation within five working days.
- **10.3** If, at any stage of this tendering process, you provide any information to Shropshire Council in the expectation that it will be held in confidence, then you must make it clear in your documentation as to the information to which you consider a duty of confidentiality applies. The use of blanket protective markings such as "commercial in confidence" will no longer be appropriate and a clear indication as to what material is to be considered confidential and why should be given.
- **10.4** Shropshire Council will not be able to accept that trivial information or information which by its very nature cannot be regarded as confidential should be subject to any obligation of confidence.
- **10.5** In certain circumstances where information has not been provided in confidence, Shropshire Council may still wish to consult with you as to the application of any other exemption such as that relating to disclosure that will prejudice the commercial interests of any party. However the decision as to what information will be disclosed will be reserved to Shropshire Council.

For guidance on this issue see: http://www.ico.gov.uk

11.0 Disqualification

- **11.1** The Council reserves the right to reject or disqualify a Tenderer's Tender submission where:
- **11.1.1** The tenderer fails to comply fully with the requirements of this Invitation to tender or is in breach of clause 23 of the Council's Draft Contract relating to Bribery and Corruption or is guilty of a serious or intentional or reckless misrepresentation in supplying any information required; or
- **11.1.2** The tenderer is guilty of serious or intentional or reckless misrepresentation in relation to its tender return and/or the procurement process.
- **11.1.3** The tenderer directly or indirectly canvasses any member, official or agent of the Council concerning the award of the contract or who directly or indirectly obtains or attempts to obtain information from any such person concerning any other Tender or proposed Tender for the services. The Canvassing Certificate must be

completed and returned as instructed.

- **11.1.4** The Tenderer :
 - a) Fixes or adjusts the amount of his Tender by or in accordance with any agreement or arrangements with any other person; or
 - b) Communicates to any person other than the Council the amount or approximate amount of his proposed Tender (except where such disclosure is made in confidence in order to obtain quotations necessary for preparation of the Tender for insurance purposes); or
 - c) Enters into an agreement or arrangement with any other person that he shall refrain from tendering or as to the amount of any Tender to be submitted; or
 - d) Offers or agrees to pay or give or does pay or gives any sum of money, inducement or valuable consideration directly or indirectly to any person for doing or having done or causing or having caused to be done in relation to any Tender or proposed Tender for the services any act or omission.
- **11.2** Any disqualification will be without prejudice to any other civil remedies available to the Council and without prejudice to any criminal liability which such conduct by a Tenderer may attract. The Non-Collusive Tendering Certificate must be completed and returned as instructed.
- **11.3** The Council reserves the right to disqualify an Applicant from further participating in this procurement process where there is a change in the control or financial stability of the Tenderer at any point in the process up to award of a contract and such change of control or financial stability has a materially adverse effect on the Tenderer's financial viability or ability to otherwise meet the requirements of the procurement process.

12.0 <u>E-Procurement</u>

As part of its procurement strategy Shropshire Council is committed to the use of technology that can improve the efficiency of procurement. Successful Tenderers may be required to send or receive documents electronically. This may include purchase orders, acknowledgements, invoices, payment advices, or other procurement documentation. These will normally be in the Council's standard formats, but may be varied under some circumstances so as not to disadvantage small and medium suppliers.

13.0 Award of Contract

13.1 Award Criteria

The Award Criteria has been set out within the Tender Response Document accompanying this invitation to tender. The Council is not bound to accept the lowest or any Tender.

13.2 Award Notice

The Council will publish the name and addresses of the successful Tenderers where appropriate. The Contracting Authority reserves the right to pass all

information regarding the outcome of the Tendering process to the Office of Fair Trading to assist in the discharge of its duties. Additionally, the Council will adhere to the requirements of the Freedom of Information Act 2000 and Tenderers should note this statutory obligation.

13.3 Transparency of Expenditure

Further to it's obligations regarding transparency of expenditure, the Council may also be required to publish information regarding tenders, contracts and expenditure to the general public, which could include the text of any such documentation, except for any information which is exempt from disclosure in accordance with the provisions of the Freedom of Information Act to be determined at the absolute discretion of the Council.

14.0 Value of Contract

Shropshire Council cannot give any guarantee in relation to the value of this contract.

15.0 <u>Acceptance</u>

- **15.1** Tenders must be submitted strictly in accordance with the terms of the Council's Invitation to Tender documentation and acceptance of the tender shall be conditional on compliance with this Tender Condition.
- **15.2** The Tender documentation including, the Draft Contract, the Tender Response document, these Instructions to Tender, together with the formal written acceptance by the Council will form a binding agreement between the Contractor and the Council.
- **15.3** The Tenderer shall be prepared to commence the provision of the services on the start date of the contract arrangement being 4th January 2022.

16.0 Payment Terms

Tenderers should particularly note that the principles governing public procurement require that, as far as is reasonably possible, payments for Goods, Works or Services are made after the provision. Therefore any indication of a pricing strategy within a Tender which provides for substantial payments at the outset of the Contract will be examined carefully to decide whether or not a Tender in such form can be accepted. If in the opinion of the Council such substantial payments appear excessive in relation to the requirements of the Contract the Council reserves, without prejudice to any other right to reject any Tender it may have, the right to require the Tenderer to spread such proportion of the costs as are considered excessive over the duration of the Contract.

17.0 Liability of Council

- **17.1** The Council does not bind himself to accept the lowest or any tender.
- **17.2** The Council does not accept any responsibility for any pre-tender representations made by or on its behalf or for any other assumptions that Tenderers may have drawn or will draw from any pre-tender discussions.
- **17.3** The Council shall not be liable to pay for any preparatory work or other work undertaken by the Tenderer for the purposes of, in connection with or incidental to

this Invitation to Tender, or submission of its Tender response or any other communication between the Council and any other party as a consequence of the issue of this Invitation to Tender.

- **17.4** The Council shall not be liable for any costs or expenses incurred by any Tenderer in connection with the preparation of a Tender return for this procurement exercise, its participation in this procurement whether this procurement is completed, abandoned or suspended.
- **17.5** Whilst the Tender Documents have been prepared in good faith, they do not purport to be comprehensive nor to have been formally verified. Neither the Council nor any of its staff, agents, elected Members, or advisers accepts any liability or responsibility for the adequacy, accuracy or completeness of any information given, nor do they make any representation or given any warranty, express or implied, with respect to the Tender Documents or any matter on which either of these is based (including, without limitation, any financial details contained within the Specification and Contract Documentation). Any liability is hereby expressly disclaimed save in the event of fraud, or in the event of specific warranties provided within the Contract Documentation.
- **18.0** The Contractor agrees that where requested in writing during the term of any Agreement for the supply Goods Works or Services it will ensure that an appropriately authorised representative of the Contractor shall attend a Committee meeting of the Council upon being invited to do so by the Council

19.0 Declaration

We, as acknowledged by the signature of our authorised representative, accept these Instructions to Tender as creating a contract between ourselves and the Council. We hereby acknowledge that any departure from the Instructions to Tender may cause financial loss to the Council.



Tender Response Document

RMNB 031 – LUDLOW LIBRARY – PUBLIC SECTION DECARBONISATION SCHEME, HEATING AND BEMS UPGRADE

Name of TENDERING ORGANISATION (please insert)

Please also add your company name to the footer of each page of the returned document

Shropshire Council Tender Response Document

Contract Description/Specification:

Please refer to the MEP Specification and read in conjunction with the full tender package, for full details of the scheme.

In essence, the scheme aims to reduce the buildings carbon footprint through electric heating via Air Source Heat Pumps while rectifying the existing heating issues.

Contractor shall maintain the continuity of the heating to the building throughout the duration of the works to protect the items within the Library.

The contract will be part-funded by the Public Section Decarbonisation Scheme.

Instructions for the completion of this document

- 1. This document must be completed in its entirety with responses being given to <u>all</u> questions. If you are unsure of any section/question and require further clarification, please contact us via our Delta Tenderbox. You are recommended to keep a copy of all tender documents and supporting documents for your own records.
- Tenderers must also complete and sign the four certificates in Sections A1 to A4. These
 must be signed;
 - a) Where the tenderer is an individual, by that individual;
 - b) Where the tenderer is a partnership, by two duly authorised partners;
 - c) Where the tenderer is a company, by two directors or by a director and the secretary of the company, such persons being duly authorised for the purpose.
- All questions require specific responses from you relating to the organisation named in Section B Part 1 Question 1.1 (a). All information supplied must be accurate and up to date. The Council reserves the right to refuse to consider your application if the Tender Response Document is not fully completed or is found to be inaccurate.
- 4. Where copies of certificates and other details are requested **a copy must** accompany your tender response.

Section	Description			
A1	Form of Tender	7		
A2	Non-Canvassing Certificate	8		
A3	Non-Collusive Tendering Certificate	9		
A4	A4 Declaration of Connection with Officers or Elected Members of the Council			
You must sign all 4 certificates in sections A1 to A4				
B Part 1	Supplier Information – For information only	11		
B Part 2 Grounds for Mandatory Exclusion		12		
B Part 3	B Part 3 Grounds for Discretionary Exclusion			
С	C Tender and Pricing Schedule			

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Evaluation Criteria

Tenders will be evaluated on the answers provided in this 'Tender Response Document'. The following criteria is made up of 'pass/fail' (selection criteria) questions and 'weighted marked' (award criteria) questions and shows how each section is to be marked.

Selection Criteria Pass/Fail Questions (Section B)

This information will be provided for proof of compliance and will be judged on a pass or fail basis. Applicants must comply with these issues to demonstrate their proven competency, financial stability, resources and other arrangements. Questions marked 'For information only' will <u>not</u> be assessed; however they must still be answered in full.

Section / Question No.	Selection Criteria	
Section B Part 1	Supplier Information – For information only	
Section B Part 2	Grounds for Mandatory Exclusion	
Section B Part 2	Chas Accreditation	
Section B Part 2	NICIEC's Approved Contractor scheme or a certified	
	member of the ECA and accredited to work on	
	Commercial & Industrial Electrical Installations	
Section B Part 2	Asbestos Awareness Training to your employees	
Section B Part 2	Gas Safe Membership	
Section B Part 2	F-Gas Membership	
 Section B Part 3	Grounds for Discretionary Exclusion	
In relation to discretionary ex	clusion grounds:	
	na na hAlf Shara a ta sa	
Financial viability: Response	ses will be analysed and evaluated by the Authority's	
Audit sections and will in	clude checks via an independent agency (currently	
Equifax).		
If the financial analysis of the Applicant (please note financial information provided by consortium members will be evaluated to assess the Applicant consortium as a whole) gives cause for concern as to its ability to deliver the Contract, the Applicant will fail this section.		
If the financial analysis of the Applicant does not give any cause for concern as to its ability to deliver the Contract – it shall be deemed to have passed the section.		
Please note the Contracting Authority reserves the right to further check the Financial Stability and Capacity of an applicant prior to any award of contract in the manner set out above in order to ensure that they still pass that requirement.		
For other Discretionary exclusion grounds: If in the opinion of the Contracting Authority the responses provided casts serious doubt on the Tenderer's ability to perform this contract, they may be excluded.		

Award Criteria – Weighted Marked Questions

Tenders will be evaluated on the answers provided in this Tender Response Document and judged against the criteria shown in the table below. The following award criteria is made up to respond primarily to 'Quality' with the response to 'Price' answered within Q2 'response to the brief' and shows how each criteria is to be weighted against each other.

Section / Question No.	Award Criteria	Weighting / Max Marks Available			
	Price 40% (200 marks)				
Section C / Q 1.1 Price – Tendered sum for works.		200 max marks			
	Total for price 200 max marks				
Quality 50% (250 marks)					
Section C / Q 2.1	Project management	7.5 / 75 max marks			
Section C / Q 2.2	Project team	5 / 50 max marks			
Section C / Q 2.3	After sales service	2.5 / 25 max marks			
Section C / Q 2.4	Risk Assessment and method statement.	2.5 / 25 max marks			
Section C / Q 2.5	Continuity	5 / 50 max marks			

Section C / Q 2.6	Issues on site	2.5 / 25 max marks		
	Total for quality 25 / 250 max marks			
Social Value 10% (50 marks)				
Section C / Q 3.1	Social Value Framework	2.5 / 25 max marks		
Section C / Q 3.2	Carbon Emissions	2.5 / 25 max marks		
	Total for Social Value	5 / 50 max marks		

Quality Questions/ Scoring Scheme

Questions within the section shown above will be scored using the following scoring scheme:

Assessment	Mark	Interpretation	
Excellent	10	Exceeds the requirement. Exceptional demonstration by the Tenderer of how they will meet this requirement by their allocation of skills and understanding, resources and quality measures. Response identifies factors that demonstrate added value, with evidence to support the response.	
	9		
Good 8		Satisfies the requirement with minor additional benefits Above average demonstration by the Tenderer of how they will meet this requirement by their allocation of skills and understanding, resources and quality measures. Response identifies factors that demonstrate added value, with evidence to support the response.	
	7		
Acceptable	6	Satisfies the requirement. Demonstration by the Tenderer of how they will meet this requirement by their allocation of skills and understanding, resources and quality measures, with evidence to support the response.	
	5		
Minor Reservations	4	Satisfies the requirement with minor reservations Some minor reservations regarding how the Tenderer will meet this requirement by their allocation of skills and understanding, resources and quality measures, with limited evidence to support the response.	
	3		
Serious Reservations	2	Satisfies the requirement with major reservations. Considerable reservations regarding how the Tenderer will meet this requirement by their allocation of skills and understanding, resources and quality measures, with little or no evidence to support the response.	
	1		
Unacceptable0Does not meet the requirement Does not comply and/or insufficient inform demonstrate how the Tenderer will meet to their allocation of skills and understanding quality measures, with little or no evidence response.		Does not meet the requirement Does not comply and/or insufficient information provided to demonstrate how the Tenderer will meet this requirement by their allocation of skills and understanding, resources and quality measures, with little or no evidence to support the response.	

The use of odd numbers indicates an answer's allocated mark lies between definitions.

The tender receiving the highest initial mark for Quality Criteria overall will receive the full 250 marks available for Quality. Other tenders will receive a final mark that reflects the final % difference in the initial marks between those tenders and the tender receiving the highest initial mark for Quality overall.

Price Evaluation and scoring

The most competitively priced tender will receive the maximum mark for price being **200**. Less competitive tenders will receive a % of the maximum mark that represents the difference in cost between that tender and the most competitively priced tender.

The sum used for this purpose will be the "Total (Exclusive of VAT)" from the Form of Fixed Priced Tender document.

Validating Prices and overall cost tendered:

Please note any contract awarded at the conclusion of this procurement process must be able to viably operate and be sustainable. Tendered prices and overall costs will therefore be subject to scrutiny, and may be rejected if considered by Shropshire Council not to be sustainable over the duration of the contract or not to be affordable. Clarifications sought may require the provision of the tenderer's calculations of their tendered Prices or any other aspect of the overall cost.

Failure to provide satisfactory evidence to support any part of this aspect of the tender may result in the tender being rejected.

Social Value Evaluation and Scoring

Proposals for delivery of Social Value in accordance with Shropshire Council's Social Value Framework will be scored using the scoring scheme applied to responses in the 'Quality' section of this tender response. Where we have not set out any particular measures for you to consider we will take into account the nature and proportionality of your Social Value commitment in relation to this contract. Where we have set out measures for you to consider we will take into account the extent to which your response meets these particular requirements.

The tender receiving the highest initial mark for Social Value overall will receive the full 50 marks available for Social Value. Other tenders will receive a final mark that reflects the final % difference in the initial marks between those tenders and the tender receiving the highest initial mark for Social Value overall.

Section A: 1. Form of Tender

Form of Tender

Shropshire Council Tender for RMCB 031 - 5741 – LUDLOW LIBRARY – PUBLIC SECTION DECARBONISATION SCHEME, HEATING AND BEMS UPGRADE

We confirm that this, our tender, represents an offer to Shropshire Council that if accepted in whole, or in part, will create a binding contract for the Public Section Decarbonisation Scheme, Heating and BEMS Upgrade at the prices and terms agreed and subject to the terms of the invitation to tender documentation and the Terms and Conditions, copies of which we have received.

Section A: 2. Non – Canvassing Certificate

Non-Canvassing Certificate

To: Shropshire Council (hereinafter called "the Council")

I/We hereby certify that I/We have not canvassed or solicited any member officer or employee of the Council in connection with the award of this Tender of any other Tender or proposed Tender for the Services and that no person employed by me/us or acting on my/our behalf has done any such act.

I/We further hereby undertake that I/We will not in the future canvass or solicit any member officer or employee of the Council in connection with the award of this Tender or any other Tender or proposed Tender for the Services and that no person employed by me/us or acting on my/our behalf will do any such act.

Non-collusive Tendering Certificate

To: Shropshire Council (hereinafter called "the Council")

The essence of selective tendering is that the Council shall receive bona fide competitive Tenders from all persons tendering. In recognition of this principle:

I/We certify that this is a bona fide Tender, intended to be competitive and that I/We have not fixed or adjusted the amount of the Tender or the rates and prices quoted by or under or in accordance with any agreement or arrangement with any other person.

I/We also certify that I/We have not done and undertake that I/We will not do at any time any of the following acts:-

- (a) communicating to a person other than the Council the amount or approximate amount of my/our proposed Tender (other than in confidence in order to obtain quotations necessary for the preparation of the Tender for insurance); or
- (b) entering into any agreement or arrangement with any other person that he shall refrain from Tendering or as to the amount of any Tender to be submitted; or
- (c) offering or agreeing to pay or give or paying any sum of money, inducement or valuable consideration directly or indirectly to any person for doing or having done or causing or having caused to be done in relation to any other Tender or proposed Tender for the Services any act or omission.

4. Declaration of Connection with Officers or Elected Members of the Council

Are you or any of your staff who will be affected by this invitation to tender related or connected in any way with any Shropshire Council Elected Councillor or Employee?

If yes, please give details:

Name	Relationship

Please note:

This information is collected to enable the Council to ensure that tenders are assessed without favouritism. Whether or not you have a connection with elected members or employees will have no bearing on the success of your tender, but your tender will not be considered unless this declaration has been completed.

Part 1: Potential supplier Information

Please answer the following questions in full. Note that every organisation that is being relied on to meet the selection must complete and submit the Part 1 and Part 2 self-declaration.

Section 1	Potential supplier information	
Question number	Question	Response
1.1(a)	Full name of the potential supplier submitting the information	
1.1(b) – (i)	Registered office address (if applicable)	
1.1(b) – (ii)	Registered website address (if applicable)	
1.1(c)	Trading status a) public limited company b) limited company c) limited liability partnership	
	 d) other partnership e) sole trader f) third sector g) other (please specify your trading status) 	
1.1(d)	Date of registration in country of origin	
1.1(e)	Company registration number (if applicable)	
1.1(f)	Charity registration number (if applicable)	
1.1(g)	Head office DUNS number (if applicable)	
1.1(h)	Registered VAT number	
1.1(i)	Are you a Small, Medium or Micro Enterprise (SME)?	

Contact details and declaration

I declare that to the best of my knowledge the answers submitted and information contained in this document are correct and accurate.

I declare that, upon request and without delay I will provide the certificates or documentary evidence referred to in this document.

I understand that the information will be used in the selection process to assess my organisation's suitability to be invited to participate further in this procurement.

I understand that the authority may reject this submission in its entirety if there is a failure to answer all the relevant questions fully, or if false/misleading information or content is provided in any section.

I am aware of the consequences of serious misrepresentation.

Section 1	Contact details and declaration	
Question Number	Question	Response
1.3(a)	Contact name	
1.3(b)	Name of organisation	
1.3(c)	Role in organisation	
1.3(d)	Phone number	
1.3(e)	E-mail address	
1.3(f)	Postal address	
1.3(g)	Signature (electronic is acceptable)	
1.3(h)	Date	

Part 2: Exclusion Grounds

Please answer the following questions in full. Note that every organisation that is being relied on to meet the selection must complete and submit the Part 1 and Part 2 self-declaration.

Section 2	Grounds for mandatory exclusion		
Question number	Question	Response	
2.1	Do you currently have CHAS Accreditation, an external health and safety accreditation, (Contractors Health and Safety Assessment Scheme) OR an equivalent as mutually recognised under SSIP (Safety Schemes in Procurement)? Accepted certificates:- NHBC, EXOR, SAFE Contractor, SMAS Worksafe, Altius VA, Eurosafe UK, BSI OHSAS – 18001 or 45001, Safe-T-Cert, FSG-Facilities Services Group & CHAS Accreditation.		
	This is a mandatory requirement.		
	Contractor to be a member of either the NICIEC's Approved Contractor scheme or a certified member of the ECA and accredited to work on Commercial & Industrial Electrical Installations		
	Please provide registration number, and copy of certificate.		
	This is a mandatory requirement.		
	Do you provide yearly Asbestos Awareness Training to your employees, appropriate to their role within the Company, which is in		

accordance with United Kingdom Asbestos Training Association (UKATA) Category A requirements? If so, please provide evidence. This is a mandatory requirement.	
It is a requirement for the tendering Contractor to be a member of Gas Safe, to work on commercial gas installations. Please provide registration number and	
copy of certificate. This is a mandatory requirement.	
Contractor to be a member of F-Gas, to work on commercial refrigerant installations.	
Please provide registration number and copy of certificate. This is a mandatory requirement.	

Section 3	Grounds for discretionary exclusion	
Question number	Question	Response
3.1	Do you have any conflicts of interest which should be considered in relation to other current or future work being undertaken by the tenderer or their team.	
3.2	If you have answered yes to question 2.1 please provide an explanation	

	Economic and Financial Standing	
Question number	Question	Response
4.1	Are you able to provide a copy of your audited accounts for the last two years, if requested? If no, can you provide one of the following: answer with Y/N in the relevant box.	
	(a) A statement of the turnover, Profit and Loss Account/Income Statement, Balance Sheet/Statement of Financial Position and Statement of Cash Flow for the most recent year of trading for this organisation.	
	(b) A statement of the cash flow forecast for the current year and a bank letter outlining the current cash and credit position.	
	(c) Alternative means of demonstrating financial status if any	

	of the above are not available (e.g. forecast of turnover for the current year and a statement of funding provided by the owners and/or the bank, charity accruals accounts or an alternative means of demonstrating financial status).
4.2	Where we have specified a minimum level of economic and financial standing and/ or a minimum financial threshold within the evaluation criteria for this procurement, please self-certify by answering 'Yes' or 'No' that you meet the requirements set out.

Question number	Question Modern Slavery Act 2015: Requirements under Modern Slavery Act 2015 number	
5.1	Are you a relevant commercial organisation as defined by section 54 ("Transparency in supply chains etc.") of the Modern Slavery Act 2015 ("the Act")?	
5.2	If you have answered yes to question 7.1 are you compliant with the annual reporting requirements contained within Section 54 of the Act 2015?	

Additional Questions

Suppliers who self-certify that they meet the requirements to these additional questions will be required to provide evidence of this if they are successful at contract award stage.

Question number	Additional Questions
6.1	Insurance
	Please self-certify whether you already have, or can commit to obtain, prior to the commencement of the contract, the levels of insurance cover indicated below:
	Employer's (Compulsory) Liability Insurance = £5 Million
	Public Liability Insurance = £5 Million
	*It is a legal requirement that all companies hold Employer's (Compulsory) Liability Insurance of £5 million as a minimum. Please note this requirement is not applicable to Sole Traders.

6.2 - Compliance with equality legislation

For organisations working outside of the UK please refer to equivalent legislation in the country that you are located.
1. In the last three years, has any finding of unlawful discrimination been made against your organisation by an Employment Tribunal, an Employment Appeal Tribunal or any other court (or in comparable proceedings in any jurisdiction other than the UK)?

	2.	In the last three years, has your organisation had a complaint upheld
		following an investigation by the Equality and Human Rights Commission or its predecessors (or a comparable body in any jurisdiction other than the UK), on grounds or alleged unlawful discrimination?
		If you have answered "yes" to one or both of the questions in this module, please provide, as a separate Appendix, a summary of the nature of the investigation and an explanation of the outcome of the investigation to date.
		If the investigation upheld the complaint against your organisation, please use the Appendix to explain what action (if any) you have taken to prevent unlawful discrimination from reoccurring. You may be excluded if you are unable to demonstrate to the Authority's satisfaction that appropriate remedial action has been taken to prevent similar unlawful discrimination reoccurring.
	3.	If you use sub-contractors, do you have processes in place to check whether any of the above circumstances apply to these other organisations?
(6.3 –	Environmental Management
	1.	Has your organisation been convicted of breaching environmental legislation, or had any notice served upon it, in the last three years by any environmental regulator or authority (including local authority)? If your answer to the this question is "Yes", please provide details in a separate Appendix of the conviction or notice and details of any remedial
		action or changes you have made as a result of conviction or notices served. The Authority will not select bidder(s) that have been prosecuted or served notice under environmental legislation in the last 3 years, unless the Authority is satisfied that appropriate remedial action has been taken
	2.	to prevent future occurrences/breaches. If you use sub-contractors, do you have processes in place to check whether any of these organisations have been convicted or had a notice

6.4 - Health & Safety

1.	Please self-certify that your organisation has a Health and Safety Policy that complies with current legislative requirements.
2.	Has your organisation or any of its Directors or Executive Officers been in receipt of enforcement/remedial orders in relation to the Health and Safety Executive (or equivalent body) in the last 3 years?
	If your answer to this question was "Yes", please provide details in a separate Appendix of any enforcement/remedial orders served and give details of any remedial action or changes to procedures you have made as a result.
	The Authority will exclude bidder(s) that have been in receipt of

	enforcement/remedial action orders unless the bidder(s) can demonstrate
	to the Authority's satisfaction that appropriate remedial action has been
	taken to prevent future occurrences or breaches.
3.	If you use sub-contractors, do you have processes in place to check
	whether any of the above circumstances apply to these other
_	organisations?

SECTION C - TENDER SCHEDULE

1.	Pricing Schedule	
		Max marks
1.1	The Contractor is to populate and return the Form of Fixed Price Tender document.	200 max marks

2.	Tender Specification Response Please respond to all the following questions and create sufficient space for your responses by expanding the table.	Weighting / Max marks	
2.1	Can you please confirm how you will manage the delivery of the project to ensure the project is completed on time and within budget i.e. provide details of your programme and financial management/cost control procedures.	7.5 / 75 max marks	
2.2	Please provide details of your proposed project team (including CV's)	5 / 50 max	
	who will be assigned to deliver this project including their project role, their experience, skills and knowledge, and in particular experience of working in historic buildings.	marks	
2.3	Please provide details of your after sales (post completion) service for responding to the making good of any defects to ensure they are dealt with swiftly and not affect the day to day operation of the library and public's perception of the facility.	2.5 / 25 max marks	
-----	--	-----------------------	--
2.4	Please provide your risk assessment and method statement for undertaking these works.	2.5 / 25 max marks	
2.5	Please can you clarify how you intend on keeping the continuity of the heating system to the Library throughout the proposed contract?	5 / 50 max marks	

2.6	What issues do you see as being the most challenging to your team and delivery of the project?	2.5 / 25 max marks

3.	Social Value Schedule	n
	Please respond to all the following questions and create sufficient space for your responses by expanding the table.	Weighting / Max marks
	Shropshire Council is committed to securing Social Value through all its procurement activity. By requiring contractors to deliver Social Value we will improve social, economic and environmental outcomes for Shropshire and beyond. Our Social Value Framework sets how the Council's priorities can be met by a range of Social Value measures. <u>https://www.shropshire.gov.uk/social-value/</u>	
3.1	Please describe how you will deliver Social Value in accordance with our Social Value Framework for this contract. Your response must identify outcomes and measures from the Framework, including targets and timescales for delivery. In particular you should consider including one or more of the following measures: (XX marks / X%)	2.5 / 25 max marks
	NT18 - Total amount (£) spent in LOCAL supply chain through the contract NT19 - Total amount (£) spent through contract with LOCAL micro, small and medium enterprises (MSMEs) NT10b - No. weeks on the contract of apprenticeships relating to the low carbon economy - opportunities that will be supported by the organisation to completion in the following years - Level 2,3, or 4+ NT12 - No. of weeks spent on meaningful work placements or pre- employment course; 1- 6 weeks student placements (unpaid) NT13 - Meaningful work placements that pay Minimum or National Living wage according to eligibility - 6 weeks or more (internships)	

3.2	 Shropshire Council has declared a Climate Emergency and is working towards an objective of zero net carbon emissions by 2030. Carbon emissions from the operation and maintenance of Council buildings makes a significant contribution to the Council's carbon footprint and the Council will therefore expect tenderers to identify: How they intend to minimise carbon emissions from undertaking these works, and active ways adopted to reduce emissions. 	2.5 / 25 max marks

SHROPSHIRE COUNCIL – PROPERTY SERVICES GROUP

MECHANICAL, ELECTRICAL & PUBLIC HEALTH SPECIFICATION

PROJECT: LUDLOW LIBRARY HEATING RENEWAL SCHEME

JOB NO: 5741

TENDER ISSUE

SP(MEP)001

Contract Ref: RMNB 031

Revised: September 2021

Revision / Issue No	Т0		
Date	Oct'21		
Prepared By	JC/GC		
Checked / Approved By	SR/LB		

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SITE

The existing site is based in the heart of Ludlow, SY8 2PG and currently an existing three storey library building. The building was constructed in 2000's.

The works associated with the heating renewal project are mainly kept to the existing plantrooms, providing modern, carbon neutral systems, while rectifying the existing heating issues they are currently experiencing on site.

The Principal Contractor shall be the MEP Contractor on the job and be responsible for sub contracting out the proposed builders works elements.

The Contractor needs to keep the heating systems in operation throughout the duration of the project to ensure the buildings contents remain in good condition.

DESIGN TEAM

Shropshire Council
PSG – Shropshire Council
PSG – Shropshire Council
PSG – Shropshire Council

DESIGN RESPONSIBILITY

The mechanical, electrical and public health drawings and specification issued represent the design strategy for this project, for which the Council takes responsibility, and describe the design, materials, products and standards of workmanship to be employed and the Codes of Practice which shall be maintained by the contractor to achieve the requirements of the Council.

The drawings are not, and can never be, exhaustive and it shall be deemed to be agreed upon commencement of this contract that the contractor shall execute the works in full compliance with all relevant legislation and incorporate all features and components which are generally accepted good practice for any particular configuration whether or not they are explicitly described on the drawings or in this specification.

In the event of the contractor discovering any issues arising with regard to the design, layout, routing, practicability, availability of specified components, site coordination etc then he shall report his concerns promptly to the Council's Mechanical Engineer for a judgement.

As-built drawings shall reflect the installations as finally constructed and shall therefore be prepared by the contractor and not be over-printed copies of the Council's drawings.

In the following where the manufacturer is prefixed by "or equal" the make/model is illustrative, in all other cases it is mandatory.

SCOPE OF WORKS

The works shall include the provision (survey, design, delivery, supply, loading, site handling, construction, commissioning, testing, adjusting, leaving in situ, ordering and maintaining during the Defects Liability Period) to the satisfaction of the Contract PSG

Administrator. The Contractor shall re-certify and issue all annual MEP certification prior to the end of the Defects Liability period, as follows:

- Strip out works in line with the phasing plan
- New above ground drainage
- New/modified heating services
- New/modified ventilation services
- New BEMS
- New electrical services
- All testing, commissioning, proving & demonstration
- Provision of spares & tools
- Operation & Maintenance Manual, Logbook and Record Drawings
- Repair of defects & faults during 12-month defects period
- 12 months maintenance of new installations

It is important that the Contractor completes all aspects of the Form of Tender.

SCHEDULE OF DRAWINGS

Refer to the latest Drawing Issue Register for further information.

INSTALLATION DESIGN STANDARDS

The MEP installation shall comply with all relevant and current statutory standards and regulations and approved best practices in line with the manufacturers recommendations at the time of placing the order.

This will include any Client specifications that may be more onerous than this specification and shall be considered to overrule this document. These include:

- International Standards (ISO)
- European Standards (IEC/EN)
- British Standards (BS)
- British Standard Codes of Practice
- British Standard Specifications
- Local Authority Bye Laws and Building Regulations
- The Licensing Justices Requirements
- All Building Bulletins
- HMG Non-Domestic Building Services Compliance Guide 2013
- The Clean Air Act
- Control of Pollution Act
- Any Act of Parliament
- British Board of Agreement Documents
- All Enforcing Authority Requirements
- The Disabled Authorities for Facilities for the Disabled
- Energy Conservation Act
- The Health and Safety at Work Act
- Control of Substances Hazardous to Health (COSHH) Regulations

- Control of Asbestos at Work Regulations
- Electricity at Work Regulations
- Construction (Design and Management) Regulations
- Any Other Statutory Requirement
- Standard Specifications, Layouts and Dimensions for Lighting Systems in Schools
- Regulations under the Offices, Shops and Railway Premises Acts
- CIBSE Energy Codes
- CIBSE Current Codes of Practice and Design Guides
- CIBSE Commissioning Codes
- CIBSE Technical Memoranda
- National Joint Utilities Group Recommendations
- Institution of Engineers and Technology BS7671 Requirements for Electrical Installation (17th Edition) and Associated Guidance Notes
- Electricity Supply Regulations and Electrical (Factories Act) Special Regulations.
- BAFE for Installation, Commissioning of Emergency Lighting & Fire Alarms Systems
- British Approval Service for Electrical Cables
- Electricity Board Requirements and Recommendations
- Lightning Protection (BS EN 62305:2006)
- CIBSE Lighting Guide LG6: 1992 The Outdoor Environment
- CIBSE Code for Interior Lighting
- CIBSE Code: Areas for Visual Display Terminals.
- British Gas and Gas Safe Regulations and Recommendations
- The Gas Supply (Installation and Use) Regulations
- The Fluorinated Gas Regulations
- The European Union Ozone Regulation
- Guidance and Recommendations of the Oil Firing Technical Association (OFTEC)
- The Control of Pollution (Oil storage) Regulations
- The Water (Supply and Fittings) Regulations
- Water Board Requirements and Recommendations and Bye Laws.
- Recommendations of the Employers Insurers

Generally, all MEP services shall be concealed within voids or builders work boxing.

DESIGN STANDARDS

The works shall comply with the following:

- Recommendations of the Chartered Institution of Building Services Engineers (CIBSE) as stated in: Current Guides, Energy Codes, Application Manuals, Commissioning Codes, Guidance Notes, Technical Memoranda, Sundry Papers
- International Standards (ISO), European Standards (IEC/EN), British Standards (BS)
- All statutory requirements including Building Regulations

- Health & Safety at Work Act and associated regulations including the Electricity at Work Regulations, COSHH and the Prevention of Legionella
- The CIBSE and BSRIA Commissioning Codes
- Water Regulations
- CDM Construction (Design & Management) Regulations
- Institute of Plumbing Engineering Services Design Guides
- Disability & Discrimination Act
- BS 5440 Ventilation for Gas Appliances Rated at Less Than 70kW
- BS 6173 Installation and Maintenance of Domestic Gas Cooking Appliances
- Local Environmental Health offices, Fire Offices and Building Control Officer
- IET Regulations (BS 7671)
- All Requirements of Local Utility Companies
- The Heat Network (Metering and Billing) Regulations

CDM REGULATIONS

The Contractor shall comply with the Health, Safety and Welfare Legislation relating to the Health and Safety at Work Act and current Construction (Design & Management) Regulations.

The Contractor will contribute to the main Contractors Construction Phase Health and Safety Plan.

The Contractor shall provide details of the Welfare provision to the Principal Designer and maintained throughout the contract.

DELIVERY OF MATERIALS & EQUIPMENT

The Contractor upon receipt of the order for the work of this specification shall ensure materials and goods are placed on order to allow sufficient delivery time to avoid delay in the proposed works inline with the Contract programme.

Contractor shall ensure all equipment and associated ancillaries can maintain sufficient access for maintenance and repair as required by the CDM regulations and British Standards. The Contractor shall allow coordination of the works with other trades and installations.

The Contractor shall obtain from the various manufacturers/suppliers written confirmation of actual delivery dates for equipment. In the event of any materials at that particular time being considered to be on extended delivery such that the progress of the works could be affected then The Contractor shall immediately notify the Contract Administrator so that the matter may be considered further and an alternative solution provided if found necessary.

The Contractor shall ensure that all items of equipment are off-loaded and positioned whilst sufficient access to the area(s) is available. Any costs incurred in abortive builder's work, dismantling/re-erection of equipment due to late arrival of the equipment shall be borne by The Contractor.

ASBESTOS

The Contractor shall familiarise themselves with the Site Asbestos Log prior to commencing works on site.

If any asbestos is encountered, works should stop immediately and notify the Principal Contractor, Contract Administrator, Client and Building Facilities Manager.

SECURITY/SAFETY/PROTECTION

The Contractor shall be responsible for leaving all works in progress in a safe condition at the end of each day to protect from interference, damage and injury to any other user accessing the live site.

BUILDERS WORKS

Openings through floors, walls and roofs etc and through structure / steelwork for MEP services up to and including 50mm in diameter shall be undertaken by the Contractor. Service penetrations may only be grouped together in areas already agreed with the Structural Engineer.

The Contractor is responsible for providing the Principal Contractor with all necessary information to enable them to undertake this work, including fully dimensioned working drawings and marking out on site.

The method of construction of the floors of the building and structure / steelwork requires hole locations and sizes to be accurately determined at an early stage of the contract works.

All proposed structural penetrations must be approved by the Structural Engineer before the Principal Contractor undertakes the work.

PROVISION OF DRAWINGS

The Contractor shall be responsible for the development and issue of all 'Working Drawings' in line with BSRIA BG 6 design framework. These drawings shall be submitted at least two weeks before the works commence on site.

FINISHING

The Contractor shall ensure that all plant, equipment, pipe work, trunking, conduit, fittings, brackets, supports etc shall be protected against corrosion and oxidation, and if in the opinion of the Contract Administrator the condition of the surfaces is deteriorating The Contractor shall wire brush and paint all surfaces at his own cost.

Surfaces inaccessible after installation shall be painted by The Contractor during installation.

Surfaces inadequately primed when arriving on site shall be re-primed by The Contractor.

The Contractor shall ensure that where painting is called for it is carried out by experienced tradesmen employing paint of approved quality and colour and is applied in accordance with the manufacturer instructions.

Ensure all paints used are of quality and type to suit application and primers have good adhesion, covering power, rust-inhibiting and grain filling properties; gloss finishing paints are of machine finish giving high adhesion and high resistance to solvents, mineral oils, cutting oils, detergents, chipping and impact damage.

Labels shall be removed before painting and reaffixed after the paint is dry.

All fittings, plant, supports and any other items of equipment shall have a primer and finishing coats shall be fit for purpose intended, without detriment to the covering, fitting or appliance coat and applied by The Contractor. All compressed air, pipework, conduits and trunking within plant rooms shall be painted in accordance with BS1710.

LABELS & CHARTS

The Contractor shall be responsible for the provision of all plant, valve and system identification, as detailed below:

- Plant and Equipment: Identify each item of plant and equipment (including all potable mains cold water draw offs as drinking points) by name and where appropriate by agreed reference characters each shall be cross-referenced with the plant identification chart and control panel markings.
- Valve Identification: Each valve, cock, stop valve, air vent, drain valve etc. shall be identified by a circular disc engraved with a numerical reference corresponding to the system schematic chart and control panel markings.
- Air Volume Control Damper: Each volume control damper shall be identified as by a circular disc engraved with a numerical reference corresponding to the system schematic chart clearly indicating the commissioning set point.
- Gas Installation: Schematic layouts to the requirements of The Gas Safety Regulations and Institute of Gas Engineers current publications.
- Services identification on the distribution

All labels shall be Traffolyte white with black letters and fixed to the wall adjacent to the plant and equipment. Valve discs shall be securely attached, minimum diameter 35mm with permanent characters of 6mm height.

The Contractor shall supply and fix a schematic diagram of all systems installed including equipment and ancillary schedules to the plantroom wall, inside Distribution Boards covers within a Perspex frame.

Duties, manufacturer's references and positions shall be tabulated within the Construction (Design and Management) Regulations Health and Safety file Operating and Maintenance instructions.

SIZING OF SERVICES & DEMONSTRATION OF COMPLIANCE

MEP services sizes indicated on the Contract drawings will remain at the size indicated. The Contractor shall verify performance of the specified equipment and plant items prior to order to ensure the design parameters are met.

Commissioning results shall demonstrate compliance of the installation and submitted to the Contract Administrator, along with supporting calculations.

FIRE SAFTEY

The design, storage of materials and arrangement shall ensure fire risk is minimised. This includes proposed hot works and other processes uncounted as part of the installation and comply with the Health and Safety at Work Act.

The Contractor shall comply with all HSE Guidance Notes particular reference being drawn to Control of Substances Hazardous to Health (COSHH) Regulations & HSE Guidance Note.

The Contractor shall be responsible for reinstating the integrity of all fire barriers penetrated during the MEP installation.

Ductwork shall be installed complete with fire dampers when transitioning a fire compartmentation.

Generally where a fire barrier is penetrated by pipework, cables etc that passes through a wall, ceiling, floor, the fire barrier shall be of the intumescent type or fire resistant 'pillow' bags.

NOISE

Noise levels shall not exceed the recommended figures by CIBSE. The noise levels shall not exceed NR35 (NR25 in bedrooms) in occupied spaces. Transmission of vibrations from plant items shall be prevented.

EXTERNAL SERVICES UNDERGROUND

Services shall be installed in accordance with the recommendations of 'Guidelines on the Installation and Colour Coding of Utility Apparatus', inline with the National Joint Utilities Group.

Services shall be identified and traceable inline with BS EN 12613:2001.

PART E BUILDING REGULATIONS COMPLIANCE

The Contractor shall ascertain via the Contract Administrator prior to tendering if the construction elements comply with the requirements of Robust Details Ltd. If they haven't been designed to comply with Robust Details Ltd, any services that run within or penetrate voids, compartment floors, ceilings and walls shall be verified by the sound testing engineer to ensure compliance with Part E of the Building Regulations.

COORDINATION OF SERVICES

The Contractor shall carryout all coordination of the MEP Installations with the building fabric, existing services and other specialist services and associated sub-Contractors to full detail positions, dimensions, heights and locations of all other services, FF&E and building elements, to ensure no clashes. This shall take the form of:

Regular coordination meetings

Issuing working drawings to specialist sub-Contractors for review.

Reviewing the Specialist sub-Contractors proposals to ensure satisfactory layout and routing.

In the event of a clash the Contactor shall inform the Contract Administrator before carrying out the installation works to allow an alternative solution to be implemented.

STRUCTURAL LIMITATIONS & SUPPORTS

The Contractor is to allow for all necessary materials and labour to securely and neatly support equipment, ductwork and pipework, etc. and in accordance with manufacturers requirements and recommendations. All fixings shall be suitable for the proposed building construction and fit for purpose intended.

Unless specifically designed no holes are to be made in steelwork or welding to steelwork carried out. If fixing by other means is impractical, specific permission must be obtained from the Contract Administrator/ Structural Engineer.

The Contractor shall be responsible for the detail and design of supports and fixings, and prior to delivery and installation of equipment the Contractor shall submit full working drawings or written details giving all fixing and supporting details to the Structural Engineer for comment. Information on loadings must be provided to ensure the roof, etc. structure is designed to support the imposed load.

The Contractor shall allow for supplying and installing all necessary 'steelwork' required for the support of plant, equipment and services installations generally.

The Contractor shall provide and install suitable support systems for the external ASHP units and associated interconnecting external refrigerant pipework.

The Contractor shall provide manufacturers proposed working drawing for comment prior to order and installation.

All supports shall allow the correct installation of insulation.

The pipework insulation shall pass through the pipe support in a continuous fashion. The use of cable ties will not be permitted. Copper pipework shall be supported in accordance with the manufacturer's recommended distances. The supports shall not allow any vibration to be transmitted to the structure. Pipework shall be supported and secured at regular intervals, not exceeding 1.5m. Due care and attention shall be taken at all times to allow pipework to freely expand and contract naturally.

Generally supports and fixings shall be of type as designed, detailed and manufactured by Industrial Hangers Ltd., Lindapter, B.S.S. Boss Flamco, Unistrut Ltd., or equivalent.

CONTRACT DRAWINGS & SPECIFICATION

The specification shall be read in connection with the tender drawings.

The Contractor shall not scale from the drawings provided.

The drawings issued by the Contract Administrator show generally the arrangement of the proposed works as a guide to the Contractor. The may not cover the works in every detail and are diagrammatic. The Contractor shall allow for supply, delivery and installation of all necessary bends etc to permit the proposed routes of MEP services to suite the building contours and coordination with existing services, to the approval and satisfaction of the Contract Administrator.

If there are any discrepancies between the drawings and the specification discovered by the tenderer, they shall inform the Contract Administrator in writing at least 4 days before the tender return. Otherwise, they shall be deemed true to the design and claims for additional costs will not be considered.

CONTRACT PROGRAMME

New incoming utility supplies such as gas, water and electrical supplies will be programmed by the Contractor. Allowing for coordination and liaison to suit the contract programme.

Specialist sub-Contractor work elements shall be agreed and coordinated with the Contractors programme and have reasonable precautions to avoid causing excessive nuisance to the building occupants. The Contractor shall agree (7 days' notice required) with the Building Administrator when work is to be carried out to an occupied room or when existing services are to be isolated.

Contractor shall make allowance for carrying out the service installation outside of a normal working day i.e. during the weekends or statutory holidays.

FUEL AND POWER

Until acceptance of the services installation, the cost of gas, electrical and water for testing, commissioning and providing of the works shall be provided by the Contractor.

Read and record all water, gas and electricity meters at practical completion of the works.

ALTERATIONS, MODIFICATION & REMOVAL OF EXISTING SERVICES

At a time to suit the contract programme The Contractor shall allow for all costs associated with the decommissioning, disconnection, careful dismantling, removal and disposal of all redundant mechanical and electrical services. (This requirement will exclude items, which are deemed inaccessible).

In order to carry out the new and modify/ replace the existing services installations (as detailed within the drawings, contract preliminaries and technical specifications) The Contractor shall include all costs and associated works for installing any additional and

temporary isolation valves (and bypass where applicable) necessary to maintain the new and/ or existing services during the progress of the phased works to the contract programme.

Where there are a number of services requiring either abandonment/removal or diverting at different times during the contract. It will be necessary for EACH section to be carried out only when the installation of new plant can facilitate the diversion/replacement coming on-line by maintaining services to other areas of the building(s). These buildings will invariably be in use when these works are required to be undertaken. The Contractor must allow for each service to be operated upon totally outside of normal working hours, in accordance with a programme agreed with the Building Facilities Manager or Administrator and The Contractor, such that the service is not interrupted during the hours of normal building operation (including evenings). Clearly allowances must be made to such abnormal working to be carried out on a number of occasions.

Where new or temporary connections are made to or removed from the existing services, allowances shall be made for re-balancing, commissioning, complete draining, all air venting, cleaning, flushing out and all purging necessary for each system to revert back to normal working and correct operation. These works may be required to be carried out outside of normal working hours.

MAINTENANCE & ROUTING TESTING

Testing and commissioning of the Building Services Installation will be carried out towards the end of the various phases and in strict accordance with the Contract preliminaries and programme.

If it is necessary to shut the plant (or parts of the plant) down before the installation is handed over, The Contractor shall take any steps necessary to prevent damage during the period the plant must remain out of use.

Thereafter, The Contractor shall service, maintain and undertake routine testing of all mechanical and electrical equipment and plant for a period of 52 weeks after the completion of the installation. These works shall be carried out in accordance with the various manufacturers' instructions and/or SFG20 for the appropriate service. During this period The Contractor shall allow for the following:

- The answering of all breakdown calls at any time of day or night by sending a competent Engineer to the site by the quickest available transport (this shall not exceed 24 hours or the following working day). Category of call outs and response times to be agreed with client:
- Failure affecting the client's business operation of safety, phone call within one hour giving advice, on site within 4 hours.
- Failure not affecting the clients business operation, Phone call within one hour giving advice, on site within 8 hours.
- Failure of duty plant causing standby plant to operate, Phone call within one hour giving advice, on site in 24 hours.
- The replacement of damaged or defective materials, equipment or parts, showing undue wear.
- The carrying out of two comprehensive examinations (6 month and 12 months) to check the operation of all equipment making any necessary adjustments, and

replacing as necessary any damaged or defective parts (see also ii), checking and clearing away all building dust which has accumulated in the equipment.

- Undertaking further balancing during the period corresponding to maximum design condition in order to check and rectify any local difficulties.
- The servicing and maintenance shall be carried out by the Manufacturer or Specialist as appropriate and shall be at intervals recommended by the Manufacturer, Specialist or as defined in British Standards where available.
- Before any servicing or maintenance is undertaken, The Contractor, Manufacturer or Specialist shall arrange a suitable date for the works by agreement with the Building Administrator.
- A copy of all service sheets shall be retained with the Buildings Administrator with a copy forwarded to the CA.

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At time of Practical Completion (inc. Phased works) should there be any Outstanding Works listed on the Certificate of Practical Completion then The Contractor shall ensure that these are completed within the 2 weeks, unless of a Health and Safety nature which shall be attended to immediately.

Following each comprehensive examination The Contractor shall submit to the Contract Administrator details of the examinations, items found and remedial action taken. The Buildings Administrator will sign a declaration provided by The Contractor, stating that the above has been undertaken to their satisfaction.

TESTING & COMMISSIONING

Full testing and commissioning of the installation shall be carried out in the presence of the Contract Administrator and, on a separate occasion, a representative of the user.

The cost of all tests, instruments, plant, supervision and labour shall be included for, both on and off site. All instruments shall have current calibration certificates and be available for inspection upon request.

The accuracy of the test instruments and the method shall be demonstrated if so requested.

Any defects of workmanship, materials and performance, adjustments or other irregularities which become apparent during testing or commissioning shall be rectified by The Contractor and the relevant part of the testing and commissioning procedure shall be repeated, all at The Contractor's expense.

The entire commissioning procedure shall be undertaken by specialist staff or by a competent independent commissioning specialist nominated by and acting for The Contractor and approved by the Contract Administrator.

The electrical installation shall in particular be tested in accordance with Part 6 of the IET Regulations (17th Edition) BS 7671:2008 and appropriate Certificates of Completion and Inspection shall be completed and signed.

The Fire Alarm installation shall be tested in accordance with Appendix B of BS 5839 Part 1 and the certificate completed and signed on completion of testing, including the relevant Fire & Rescue Service Certificate.

An Approved Contractor who is competent to BAFE and LPCB standards shall undertake all final design verification and installation works in liaison and co-ordination with alarm systems

Before installations are handed over or subjected to the inspection and test, the entire installation shall be thoroughly cleaned, both internally and externally.

The Contractor shall provide all labour and equipment required for carrying out the testing of all services. Test certificates shall include the project title, details and date of test, signature of those witnessing test, The Contractor's name and the specific location of the item in the Works.

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 confirm compliance.

Three day's notice of all tests shall be given to the Contract Administrator to enable their authorised representatives to be present. Where a test indicates, non compliance with the Specification The Contractor shall immediately submit details of the non compliance and proposals for corrective action.

Arrange access for the Contract Administrator's personnel, who require being in attendance, to manufacturer's or other off site premises when any inspections and tests are carried out.

Attendance or otherwise of the Contract Administrator during specified inspections or tests shall not reduce the obligations or restrictions of The Contractor.

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 the period agreed with the Contract Administrator.

Agree with the Contract Administrator a programme for system cleaning and flushing, pre commissioning checks, setting to work and regulating, commissioning and performance testing. All works shall be in accordance with recommendations and guidelines referred above and/ or referenced within the respective work sections.

The Contractor is to programme the commissioning works to be complete by the penultimate week prior to the issue of contract practical completion.

All commissioning of MEP systems as a whole shall be undertaken by an independent certified commissioning engineer preferably a member of the Commissioning Specialists Association (CSA).

Give the period of notice agreed with the Contract Administrator and state any requirements for the attendance and co operation of others.

Performance tests of all systems. Do not start performance testing, including system demonstration, system proving or environmental and capacity testing, until commissioning of the system is completed to the satisfaction of the Contract Administrator. Provide all necessary instruments and recorders to monitor systems during commissioning and performance testing.

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.

Carry out environmental and capacity tests as specified for each work section. Performance testing of the Mechanical and Electrical systems shall demonstrate, but not limited to the following:

Full, partial and minimum loads
Response to load change
Efficiency and air leakage
Noise levels
Noise level measurements shall be taken in all areas with fully operational plant and in conditions of insignificant background levels (such as night time).

All testing and commissioning shall be in accordance with all current and relevant Commissioning Codes, CIBSE and BSRIA commissioning guidelines.

The Contractor shall allow the Client and Contract Administrator to witness, with a minimum 3 working days notice, the verification, commissioning and setting to work of the Engineering Systems. The Contractor shall allow for the following:

Provision of copies of installation drawings for comment by the CA on the facilities included for commissioning (i.e., a commission review for flushing, balancing of flow measurement).

Liaison with the CA regarding commissioning activities and programme issues. The Contractor will prepare a co-ordinated commissioning programme comprising testing, pre-commissioning, commissioning and performance testing, as-built documentation and client training. This programme will be agreed between The Contractor, Specialist Contractors, CA and Client.

Submission of detailed Method Statements and Pro-Forma results sheets for comment/acceptance by the CA in accordance with the agreed programme.

Liaison with the CA regarding the witnessing of offsite tests of major plant items and equipment.

Liaison with the CA regarding the witnessing of all site testing and the management of the dynamic balancing of E & HVAC systems.

Liaison with the CA regarding specialist supplier/manufacturer site commissioning.

Submission of Method Statements regarding training sessions for the staff.

Liaison with the CA regarding the preparation of the 'As Built' Drawings and O&M manuals. The CA prior to issue shall approve the manuals and drawings.

The cost of the above items shall be shown separately.

BREEAM

BREEAM has not been included for within the contract.

OPERATIONS & MAINTENANCE MANUALS

The Contractor shall allow for provision of all Operation & Maintenance manuals, together with record drawings, operating instructions, manufacturers literature, plant maintenance, as outlined later on in this specification. The Operating and Maintenance Manual shall be supplied with the building Log Book and copies of the 'As Installed' drawings in accordance with CIBSE TM31.

Contractor shall allow for one electronic copy and a master hard copy.

MAINTENANCE AGREEMENT

The Contractor shall allow to provide inspection and routing maintenance to the completed contract works for a period of 12 months or detailed otherwise in the project preliminaries. This shall be at no additional cost to the Client.

BIM MODELLING

This has not been included for within the contract.

PART B – MECHANICAL & PUBLIC HEALTH PARTICULARS

GENERAL MECHANICAL SERVICES

The works shall include the provision (survey, design, supply, delivery, on and offloading, site-handling, construction, commissioning, testing, adjusting, leaving in complete working order and maintaining during the defects liability period), of the complete mechanical installation and associated works as detailed in this specification and on the attached drawings to the complete satisfaction of the Contract Administrator.

All works shall meet or exceed the requirements of this specification.

The term Contractor within this Section shall mean Contractor.

STRIP OUT WORKS

Following consultation with the specialist Asbestos Contractor, Main Contractor and the Refurbishment & Demolition Survey documentation the Contractor shall remove all existing redundant services as required to facilitate the works.

The Contractor shall complete the Contract Completion PPM Form to include information about removed and new services.

At a suitable point in the programme the Contractor shall further open up and inspect all services running in existing chambers, risers, ducts, ceilings and cupboards to assess their condition & suitability for re-use.

The Contractor shall submit a detailed report to the Contract Administrator highlighting any defects in the existing retained installation. The report shall detail the condition and suitability of all the proposed retained services and be complete with a priced schedule for any remedial works required to enable instruction of the works within the proposed contract programme.

In areas where the proposal currently indicates the use of existing services the Contractor shall allow to modify / adapt the existing installation at the point of connection as indicated on the contract drawings as required to facilitate the works.

All redundant materials and plant shall be disposed of strictly in accordance with the Environmental Agency requirements and all Waste Management Environmental Protection Regulations with copies of the waste transfer notes to be provided to the Contract Administrator.

Any key plant items to be removed i.e. boilers, pumps etc shall be offered to the Client prior to being removed from site.

The Contractor shall ensure that all debris is cleared away at the end of each working day. Skips must be cleared from site frequently and must be located within the designated compound. The site must be left safe and secure at the end of each working day and at any time when the works area is left unattended

MECHANICAL SERVICES DESIGN

The Contractor shall be responsible for producing working and co-ordination drawings in line with the Preliminaries. The positions and arrangement of all equipment shall be identified on working drawings and agreed with the C.A. and or Engineer prior to installation.

The Contractor shall visit site during the tender period to inspect the site and ensure they are fully aware of all the works required to complete the contract. They shall establish the extent of the existing services that have to be disconnected, retained for re-use, cleaned, refitted and re-commissioned to enable the contract works to be undertaken, and the extent of any diversions of existing services necessary to accommodate the new mechanical and electrical services.

The Contractor shall also undertake all necessary site investigation works to determine accurately what all services serve, and to ensure correct reconnection of all remaining existing services into new systems. The Contractors shall make themselves familiar with the asbestos register prior to undertaking any survey works.

INCOMING UTILITIES

The incoming gas and water utilities to remain as existing.

Contractor to allow pipework modifications to the existing gas supply to suit the revised boiler updates, as per the tender drawings. The new connection shall be installed in strict accordance with NJUG and IGEM Regulations by a suitable qualified Gas Safe Registered engineer.

The above ground pipe shall be medium grade mild steel BS 1387, <=25mm bore screwed joint and >25mm bore welded joint.

The entire installation shall be strength tested, purge and certified in strict accordance with current regulations by a suitably qualified Gas Safe registered engineer before being brought back into service.

The existing gas solenoid valve shall interface with the new BEMS system and new emergency knock off button on the exit.

ABOVE GROUND DRAINAGE

General

The scope of the above ground drainage is generally limited to works within the existing second floor plantroom to convey pressure/temperature release to an internal floor gulley.

The above ground drainage installation shall be in accordance with BS EN12056, Building Regulations, Local Authority Requirements and manufacturers requirements.

Pressure/Temperature Release Pipework - Black Steel Pipes and Fittings

Use black carbon steel pipe, with screwed ends, to BS EN 10241, heavy grade.

DOMESTIC HOT & COLD SERVICES

Existing Direct Electric hot water calorifier within the second floor boiler room, remain as existing along with associated domestic hot water flow and return pipework distributed throughout the central toilet areas.

Contractor to allow minor modifications to the domestic cold water supply as per the tender drawings to accommodate the new equipment and associated works.

General

Generally all water services are to be installed to comply with the requirements of BS EN 806; HSE Approved Code of Practice: L8, BREEAM, current Water Regulations and HSG 274 Part 2.

Contractor shall allow for the existing domestic hot and cold water pipework to the reinstated/reconfigured as indicated on the Tender drawings.

Provide hot water service to meet the domestic hot water requirements of the building.

To control the risk of legionella by generating hot water at 65°C and distributing at not less than 60° for primary distribution. Also, ensure that the hot water return does not fall below 50°C.

To enable the system to be sterilised by having the capability for raising the hot water generation plant to 70°C, for one hour on a weekly basis via the BEMS (parameters to be defined by SC) via the electric immersion heater.

The Contractor shall ensure that the domestic hot water remains functional during the period of the works.

The contractor shall not use any flexible rubber hoses on any part of the hot or cold water distribution system. All connections to appliances shall be completed using copper and hard piped directly into all appliances.

All new equipment shall be WRAS (Water Regulations Advisory Scheme) approved.

All new domestic services pipework shall be insulated.

The cold water supplies to the building shall incorporate all necessary pressure reducing sets

Pipework

All domestic services shall be run in kitemarked copper tube to BS EN 1057, grade R250 (Half hard) with soldered or brazed fittings.

This shall be with 'press fit' compression 'O' ring type fittings as Yorkshire Xpress Copper or equal.

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All domestic pipework shall be insulated with Rockwool foil faced insulation to achieve a minimum thermal performance of $0.021 \text{ W/m} \cdot \text{K}$. Where hot and cold water pipework run parallel to each other, the cold water pipework will be installed below the hot water pipework to minimise heat transfer from the hot water. Insulation on cold water pipework shall be vapour sealed.

Pressure Reducing Valves

The Contractor shall install all necessary pressure reducing sets to the cold water supplies to the building and the equipment, where the pressure exceeds the operating limitations of the proposed brassware and sanitaryware.

The Contractor shall include, as necessary, for the provision in the appropriate branch pipework for pressure reducing valves, to limit the pressure at draw off points.

Testing, Commissioning, Flushing & Chlorination

The Contractor shall ensure that all works are carried out in strict compliance with the requirements for water hygiene including but not limited to flushing, chlorination, sterilising and testing, with all necessary certification to be provided and included within the O&M Manuals. All works shall comply with current British Standards and Water Regulations requirements and shall be fully compliant with the current HSE 274 technical guidance.

On completion of the installation, and prior to the installation of pipework insulation, the Contractor shall allow to pressure test the new domestic installation in line with BS 806-4, including of all pipework and ancillaries. The system shall be filled with clean water to exclude all air. A test pressure measured at the inlet of the maximum working pressure plus 110% shall be maintained for 15 minutes without further pumping. There shall be no pressure drop or visual evidence of leakage.

Following the successful pressure test of the installation the Contractor shall allow to flush in line with BS 806-4 and chlorinate the installation with all certification to be provided to the Contract Administrator. Water test samples are to be taken and sent for testing.

LOW TEMPERATURE HOT WATER HEATING SYSTEM

The Contractor to maintain heating to the building throughout the duration of the building works. It is proposed that a temporary oil-fired boiler is hired and located in the main court yard adjacent to the ASHP. Note, this item may need to be craned into position or use of a 'lift and shift' company to meet HSE requirements; additionally the siting of the separate oil storage tank needs to be agreed with the Hire Company prior to works commencing to meet legislative requirements. Contractor to investigate further. Propose the Waktins Hire 110kW Oil Fired Boiler (Heat Gen MBR 110), complete with associated ancillaries and pump set and 3'000ltr oil storage tank (subject to time anticipated on site) 2300Lx1550Wx1340H, 1072kg empty and 3772kg full.

The Contractor shall supply, install, test and commission the new LTHW plant items, pipework and associated ancillaries in and around the second floor plantroom, as indicated upon the Tender drawings and schedules.

The proposed works account for upgrading the existing gas fired boilers with a new carbon neutral ASHP system with gas fired boiler top up to meet the design flow rates.

Existing CT circuit to serve UFH manifolds and VT to radiators/convectors to remain with pump upgrades.

New dedicated CT circuit to serve the existing AHU heater batteries.

Boilers

The Contractor shall allow to supply and install 1No. floor standing, pre mixed, high efficiency, gas condensing, boiler providing up to 63kW heat output at 80deg flow.

The compact boiler permits access through a standard doorway.

Include manufacturers external sensor to permit weather compensation,

The boiler has a cast iron heat exchanger, which includes a manufacturers 10-year warranty.

Pressure safety relief valve, fully modulating pre mix burner, gas train, flue gas temperature protection, condensate management, flue terminal, ducted air inlet and BEMS interface.

The boiler shall offer a gross seasonal efficiency of 95% and a Class 5 Low NOx emission of 21.3 mg/kWh. The boiler shall operate at 85°C flow and 65°C return.

Modular boiler shall be supplied with the manufactuers primary header kit.

The boiler shall be as Hamworthy Purewell Variheat mk2 - Natural Gas, or equal and approved:

The boilers and all ancillaries, flues and components shall be supplied and installed in strict accordance with the manufactures recommendations.

Air Source Heat Pumps (ASHPs)

Supply 2No. Air to Water Heat Pumps suitable for external use.

Contractor shall provide adequate support systems for the external ASHPs.

Produce high temperature hot water up to 65deg for central heating.

Each supplied with Hydonic module with pump set.

R407C refrigerant.

The ASHPs shall be as CIAT Caleo TD200, or equal and approved:

UFH Manifolds

Supply and install 2No. new UFH manifolds to replace existing as per the equipment schedules.

Connect onto the existing CT LTHW distribution pipework and the existing embedded pipe coils via a 3-port control valve, pumped system from a space mounted black blub temperature detector and utilise night time set back.

Provide a failsafe spring closed direct acting valve to close in the event of unsafe water temperature passing through the valve and thus protect the flooring.

Ensure that the embedded pipework can be suitably filled and vented.

Flue Systems

The Contractor shall allow to employ a specialist to design, manufacture, and supply and install a new flue system to serve the new boiler(s).

The flue system shall comprise a multi-application product suitable for gas applications. All flue components shall be manufactured to BE EN 1856-1 and the construction shall be 316 grade stainless steel liner, 304 stainless steel outer casing and 25mm (nominal) void packed with dense mineral wool fibre. All joints shall include proprietary seals and cover and locking bands. The flue shall be fully welded, high temperature seal and impervious to water and vapour. All flue components shall be CE marked for positive pressure application.

Each flue shall rise from the back of the boiler into a common header, which shall enter the existing flue route in the boiler room.

The Contractor shall allow to line the exiting flue stack with a new 316 grade stainless steel flue liner, flexible 316 grade Class 1 flexible liner or glass fibre reinforced thermosetting resin liner as recommended by the specialist flue sub-contractor. The Contractor shall allow for all access arrangements required for installing the liner including scaffolding to the outside of the building.

The Contractor shall allow for modifying the existing roof penetration, installation of the new flue liner and new roof flashings and weatherproofing, flue cowls as required. The Contractor shall allow for any associated making good with the new flue installation.

The flues shall be as designed and manufactured by Midtherm Flue Systems Ltd (or equal and approved):

Midtherm Flue Systems Ltd, New Road, Dudley, West Midlands, DY2 8SY Tel: +44(0) 1384 458 800.

All flue lengths and fittings shall be installed with the necessary sealing collars in accordance with the manufacturer's instructions.

The flue system shall be installed in accordance with the requirements of BS 6644. The flues shall be supported as close to the boilers as possible with purpose made steel brackets to prevent the transmission of weight onto the appliances.

The flue system must be capable of handling saturated flue gasses in a positive pressure system. All flue components shall have a maximum operating temperature of 550°C (negative pressure) and 200°C (positive pressure), carry a 4 hour fire rating and shall be manufactured and installed in accordance with ISO 9001.

Draught conditions generated from vertical risers shall not exceed 10Pa. Where draught conditions are likely to exceed 10Pa the Contractor shall allow to supply and install a draught stabilisers located on each boiler outlet. A suction condition within the flue is not required; however the installation must comply with the Clean Air Act 1956 memorandum.

All flues must be checked on completion of the installation and a report must be submitted to the Contract Administrator. It is recommended that the report included a completed flue inspection check list as included in Approved Document Part J of the Building Regulations, with copies to be included in the Operation & Maintenance Manuals.

Safety Valves & Condense Drainage

The contractor shall allow to fit an additional spring loaded safety pressure release valve to the primary circuit of the heating system as indicated on the contract drawings which shall be piped externally to the rainwater gulley. Condense pipework shall be installed in accordance with BS 6644.

Condense disposal from the boiler is to be via ABS or PVCu plastic waste pipe (suitable to handle fluids at 90°C) securely fixed at low level into a tundish, the pipework and disposal method being in accordance with the manufacturer's instructions.

The Contractor shall allow to supply and install a Salamander Condensafe unit on the condense pipework from the boilers to neutralise any acidic waste as supplied by Salamander Engineering Ltd or equal and approved:

Pressure Independent Control Valves (PICVs)

The PICVs shall be Oventrop Cocon QTZ or equal and approved.

Automatic flow control where indicated (BEMS). PSG

A nominal flow regulation controller settable via an integrated hand wheel.

Suitable for LTHW Heating installations.

Energy Saving Heating Additive

Dose the new proposed heating system with an energy saving central heating additive. That meet the following requirements:

Proven 15% energy saving by a leading R&D laboratory

100% organic - non corrosive

EndoTherm is to be specified at 1% of the total water volume. If the system is open vented then we would recommend adding 10% to the quantity. The product is to be installed by a trained engineer or plumber (or competent person)

EndoTherm should be installed alongside a BuildCert approved inhibitor.

Supply EndoTherm heating additive or equal and approved:

Pipework

Heating pipework shall be heavy grade, steel with screwed type fittings.

Heating pipework shall be carbon steel press fit Yorkshire XPress Carbon or equal and approved for sizes up to and including 108mm diameter manufactured from EN 100 27-1S205G2T carbon steel.

A minimum flow rate through by-pass vales on index run circuits shall protect circulation pumps from closed head conditions.

All heating pipework shall be distributed throughout the ceiling voids, dropping to serve heat emitters. Distribution pipework shall be co-ordinated with the architectural design with all vertical pipe runs are concealed where possible.

Dosing Pots

Means of dosing the system the system shall be supplied and installed by the Contractor, and fitted to the primary pipework arrangement to facilitate the addition of inhibitors to the system.

Pumps

The Contractor shall allow to supply and install the LTHW pumps as detailed on the tender drawings and schedules.

The primary shunt pumps shall be twin head, single cased, in line LTHW circulators as Grundfos Ltd or equal and approved.

The secondary pumps shall be inverter driven, twin headed, single cased, inline LTHW circulators as Grundfos Ltd.

Each pump is to have an engraved label giving its identification number securely attached.

All pumps are to be separately supported by purpose made brackets with vibration isolation. Under no circumstances shall the pumps be supported by the pipework.

All pumps are to be monitored via differential pressure switches installed across the pump or internal output directly from the manufactures on board control / drive which shall be linked back to the BEMS / Control System.

Suitable starters shall be provided within the new control panel. Local electrical isolation shall be provided for each pump and suitably labelled with engraved white/black/white traffolyte labels for each pump. Local isolators are to be rotary type as manufactured by MK or equal and approved.

LTHW Pressurisation and Expansion Unit

Supply and install wall mounted Mikrofill 3, EFD electronic filling device, to independently serve the LTHW system.

The filling device shall comprise an enclosed cabinet containing a microprocessor controller, control valves and high and low limit switches.

The filling device shall be installed complete with all necessary interconnecting pipework between the filling device, mains cold water supply and heat recovery system including anti-gravity loop and automatic air vents.

The filling device and expansion vessel shall be suitable for the following heating system conditions.

System water content	1600 L
Maximum system working pressure	1.5 bar
System flow temperature	85 C
Cold fill pressure	0.8 bar
Expansion vessel	TBC Itr

The expansion vessel to be selected to contain the system expansion.

The filling device shall be complete with integral controls panel incorporating the following:

- LCD display panel.
- Incoming water pressure gauge.

- High and low pressure alarm indicators.
- System pressure gauge.

The filling device shall be complete with all necessary connections for monitoring by a BEMS including connections for monitoring low pressure and high pressure, etc.

A 15mm mains cold water supply shall be extended from the nearest supply to the filling device complete with 1/4 turn isolation valve.

A 22mm overflow shall be extended from the filling device unit to discharge over the nearest external gulley.

The pressurisation unit shall be suitable for a 230 Volts, 1 phase, 50 Hz electrical supply (10W standby and 30W fully operational, 3A fuse rating).

The Mechanical Contractor shall include for the services of the Manufacturer's Engineer to commission the above filling device and on completion of commissioning prepared and submitted to the Consulting Engineers.

Side Stream Filtration Unit

Combined side stream filtration and water treatment for the closed system shall be provided by the installation of an EnwaMatic[®] EM825 water conditioning unit, capable of treating system water volumes to 5,000 litres.

The unit shall provide:

- Side-stream filtration to less than 5 microns.
- pH control, maintaining a level of 9.0 10.5.
- Inhibition of corrosion maintaining a total iron level of < 1.0 mg/l.
- Regulation of hardness and scaling through calcite / dolomite media filtration.
- Removal of air through integral air separation device.
- Environmental restriction of bacterial growth.

Units shall be constructed from stainless steel (SIS 2343, pressure tested to 15 bar) and shall incorporate all necessary connection points, valves, flow regulators and manometers for normal operation.

The Side Stream Filtration unit shall incorporate full automation of the backwash facility, controlled by a wall mounted, IP 44 enclosed control panel. To include BMS connection via volt free contacts for 'Run', 'Backwash' and 'Fault' conditions and control of dedicated circulation pump where required.

65ltr Fluid Category 4 approved air-break type back flow protection device is required for the MCW supply that connects to the EM unit. The ENWA break tanks are designed

to deliver the correct flow rate and pressure to effectively backwash the EM models. The break tank assembly incorporates a submersible booster pump to ensure flow rates where mains water pressure is low.

VENTILATION SYSTEM

Contractor shall 'bring back' the existing fresh air intake and exhaust ductwork to allow accommodation of new plant items with in the bunded area, as per the tender drawings. Contractor shall maintain the existing size of ductwork to prevent pressure issues.

Existing ductwork runs, bends and silences utilised where possible. New metal ductwork shall be galvanised sheet metal and constructed and installed in accordance with HVAC ductwork specification DW/144 Low Pressure Classification.

Heater Battery

Contractor shall replace the existing Pre-Heat and Main Heater Batteries within the existing Dalair Air Handling Unit (AHU/01).

Contractor shall replace the existing local isolation and balancing valves with new.

1No. AHU/01 Frost Coil – 0.5m3/s Volumetric Flow Rate, 5.5kW duty at -4deg external temperature. Face size: 550Wx356H. Maximum face velocity 2.6m/s. 3.0kPa pressure drop on the water side. Copper tube with aluminium fin material, housed in a galvanised casing.

1No. AHU/01 Heater Battery – 0.5m3/s Volumetric Flow Rate, 5.5kW duty at -4deg external temperature and 5deg on coil/24deg off coil temperature. Face size: 550Wx356H. Maximum face velocity 2.6m/s. 8.2kPa pressure drop on the water side. Copper tube with aluminium fin material, housed in a galvanised casing.

This shall be carried out by a Specialist AHU Refurbishment Specialist to ensure that new parts fit within the existing housing of the existing AHU by Dalair Ltd or equal (Tel: 0121 556 9944).

AUTOMATIC CONTROLS & BUILDING ENERGY MANAGEMENT SYSTEM

General

Currently the building has a Siemens Building management system.

The Building Energy Management System (BEMS) Specialist Contractor shall reinstate the existing sensors, controls, actuators etc onto the new BEMS system, as per the existing BEMS systems schematic within the existing O&M Manual, available upon request. Any existing points/sensors/actuators etc that are faulty, shall be replaced with new.

It was noted at the time of visit that Direct Digital Controllers were externally mounted and likely limited space within the current panel to house additional controllers. Specialist Contractor shall assess the requirement for new BEMS housing and its spatial requirement.

A Specialist Contractor shall allow for modifications to the existing comprehensive Direct Digital Control (DDC), automatic Building Energy Management System (BEMS). To provide energy efficient control, logging and reporting of the complete new mechanical services as described and detailed within this Tender Document and associated Tender drawings.

The existing Building Management System is currently located in the existing second floor plantroom.

The Contractor will employ a specialist to fully design, install and commission a fully functioning open protocol system in line with the requirements listed within this specification. This could be carried out by Trend approved installer or equal.

The BEMS shall be a **Trend IQ4** system.

The control and management of the building service elements will, as a minimum encapsulate the points listed on the Building Energy Management Diagram drawing, existing BEMS points and tie up with the requirements listed within the specification.

The extent of the BEMS will need to be agreed with the Shropshire Councils Specialist/Facilities Manager, in order to conclude the scope / level of controls.

The whole of the Contract installation works will be carried out strictly in accordance with British Standards (particularly BS 7671) and the latest edition of the I.E.T Regulations for the Electrical Equipment to Buildings issued by the Institution of Electrical Engineers and the Standards laid down by the National Inspection Council for the Electrical Contracting Industry and will also comply with the following EC Directives and guidelines:

- Low Voltage Directive 73/23/EEC and amendment 93/68/EEC
- Electromagnetic Compatibility (EMC) Directive 89/336/EEC
- BS EN 61000-6.3:2001 Standard Specifications for BEMS
- CIBSE Commissioning Code C Automatic Controls
- CIBSE Application Manual Guide H Building Control Systems.
- Construction Products Directive 89/106/EEC
- General Product Safety Directive 92/59/EEC

The Specialist Contractor shall allow for the design, supply, delivery, off loading, installation, fixing, connection, wiring and containment for each and every item of equipment, testing and commissioning including witness testing and setting to work of the entire control system, in accordance with the tender drawings and this specification.

Indicator lamps shall be provided for all plant alarms and status as: motor trip, motor run, inverter fault, filter dirty, frost trip, flow failure, boiler on and fault, etc with status indication monitored within the BEMS system.
All the forgoing shall be designed supplied and installed by an approved specialist Contractor who is a current approved system partner/Contractor for the selected manufactures system. Full wiring and control schematics, function charts, cause and effect diagrams and charts panel layout drawings etc. shall be forwarded to the Contract Administrator for approval before to manufacturing, with the final approved drawings included in the Operation & Maintenance Manuals.

The system shall allow future visual display of the recorded energy, water and renewable energy consumption / generation.

The system shall be complete with graphical user interface and facia display panel mounted in the front door of the main control panel to generally allow display/ adjustment of:

- Alarms
- Time Zones
- Temperature Setting
- Plant Operation
- Holiday Schedules

Components located external to the building will be to IP65.

The system shall include a web connection module and all software required for remote interrogation and adjustment using access codes. Separate codes shall be used to provide:

- Demo access (view whole system but unable to adjust any settings)
- Staff access (can view whole system but adjust timing settings only)
- Engineer access (view whole system & adjust all non-critical settings)

N.B. Staff and demo access levels shall be complete with simple user graphical representations to enable non technical staff to operate the system. The type and style shall be agreed with the client during & C.A. during the construction period.

The system shall be capable of providing control to all items of mechanical and electrical equipment to conform with all current building regulations and CIBSE/ BRSIA guidance.

The system shall provide control of the complete mechanical services system including, but not limited to three stage frost protection, optimum start facilities, a 7 day 24 hour timer, weather compensation, run, fault and trip indication.

All new gas, water and electrical meters/ sub meters shall be provided with pulsed outputs to enable the client to monitor the energy and water usage in accordance the Approved Document L2A

MCCP/01

Contractor shall provide a new Mechanical Control Center Panel (subject to spare capacity) in the existing second floor plantroom.

Co-ordinate the designs of all interconnected units, their wiring and terminal connections so that they are mutually compatible and function as a whole in accordance with the design intent. Ensure that the cable access systems required are adequately sized, supported and spatially co-ordinated with other equipment and the building structure.

Ensure that all cable terminals are big enough to take the sizes of cables specified. Ensure there is ample space within panels, isolators, etc. to accept the cables specified.

Prepare schematic, wiring and general arrangement drawings of the Control Panels and all equipment connected and submit the drawings to the engineer for comment at least four weeks before manufacture is required to begin. Include details of the motor drives finally ordered. The drawings shall be A3 size at least.

Design and manufacture all purpose-built assemblies such as those incorporating motor control gear and associated equipment and components to comply with the standards referred to in this specification and with the component manufacturers' recommendations.

Protect equipment against physical damage and from ingress of water, dust and other contaminants during delivery, storage and installation.

Construct the Control Panels with rigid framed enclosures and with panels in zinc coated mild steel at least 1.6mm thick for panels up to 600mm x 600mm and at least 2mm thick for larger panels. Round all edges and corners to a minimum radius of 3mm. Passivate the panels and finish all surfaces with a wear resistant paint system in the specified colour. Provide details of the proposed panel construction and paint system with the drawings submitted to the engineer for comment.

Design and construct the panels with protection to IP54 and design the panels for continuous operation. Construct the panels of ample size and/or provide ventilation to maintain all internal components within their maker's specified temperature limits with a plant room temperature up to 40°C.

Mount proprietary equipment such as Inverters and Motor Soft Starters in accordance with their makers' recommendations. Ensure that heat generated can be safely dissipated.

Fit control panels containing Inverters or Motor Soft Starters with temperature detectors to warn when the panel limiting temperature is reached.

For panels weighing more than 40 Kg provide 4-no removable lifting eye bolts on the top of each panel. Provide blanking plugs to seal the holes when the lifting eyes are removed.

Assemble floor-mounted units on a plinth at least 100mm deep made of channel iron or zinc-coated sheet steel, with holes provided to bolt the complete assembly to the floor. The maximum height of floor-standing units shall be 2m above the plinth.

Ensure that the panel dimensions, particularly the height, do not prevent proper installation of the panel and of the cables and cable access systems associated with it. Do not mount any live panel components on the floor, roof or sides of the panel, or less than 150mm from the bottom of the panel.

Provide panel doors with lockable hand-operated fastenings.

Fit appropriately rated anti-condensation heaters which are automatically energised when the panel is switched off.

Control Strategy

Domestic Hot Water Storage

Provide fault/enable monitoring of the domestic hot water circulator.

The domestic hot water pump shall operate continuously, with pump failure by a differential pressure sensor.

The BEMS shall monitor the new calorifier to ensure the stored water temperature is maintained at 65°C via the integral thermostat. In addition, monitor the domestic hot water flow and return thermostats to monitor circulation temperature.

Flow temperature - 60°C Return temperature - 50°C(min)

The hot and cold water distribution system shall include all associated temperature sensors, in accordance with HSE 274 Part 2, for monitoring purposes.

To enable the system to be sterilised by having the capability for raising the hot water generation plant to 70°C, for one hour (time TBC) on a weekly basis (parameters to be defined by SC) via the immersion heater(s).

Calorifier shall be controlled via the secondary twin head, inverter drivern pump and 2-port control valve.

Provide suitable safety devices to comply with Building Regulations Part G3.

Provide uninterrupted 24-hour power supply to the electric anode protection system.

Natural Gas

Ensure that all solenoid gas isolation valves are connected to the BEMS-their respective stand alone control system complete with emergency shut-off buttons on emergency exits. These shall de-energise to the closed position under the following events:

- fire alarm signal
- operation of the emergency knock-off button
- mains power failure
- gas leak detection

Side Filtration Unit

PSG

Provide fault/enable to the side filtration unit and automatic backwash facility.

Heating System

The BEMS shall allow permit control of two zones to account for unoccupied areas in line with the Non Domestic Services Guide 2013.

The heating system to be configured to provide LTHW at 85/65deg flow and return temperatures.

Full 24/7 time control sequencing.

Provide an external air sensor mounted on the north elevation.

Provide two stage frost protection:

- Stage 1 air temperature starts the circulation pumps to move heat around the circuit from within the building, protecting the building and its fabric.
- Stage 2 water temperature starts the ASHPs to prevent the systems water from freezing.

Weather compensation shall be achieved by adjusting the 3-port valves on the variable circuit or UFH manifolds, based upon the weather compensation signals.

Boiler/ASHP module sequencing shall be enabled to maximise systems efficiency and lead boiler/ASHP rotation provided by the BEMS

Defrost control of external ASHPs.

Provide boiler optimum start/stop facility.

Automatic duty/stand-by changeover of heating pumps.

Provide weather compensation to all Variable Temperature circuits by modulating the 3-port valve.

The BEMS will control the flow temperature according to the outside temperature and the internal temperature sensors within the building.

The primary circuit shunt pumps shall remain in continuous operation.

The secondary circuit heating pumps are inverter driven via differential pressure switches located on either side of the pumps. The pump will automatically vary its flow according to the system demands (as the manifold motorised valves close, system pressure increases, pump speed decreases). The pump shall be enabled by the Master Control panel based on optimised signals from the internal and external master thermostats and the programmed occupancy hours. A disable signal shall be sent to the heating pumps if either the master thermostats have been satisfied or the time clock is in the off or out of hours position. Existing radiators generally have thermostatic radiator valves.

New UFH Manifolds shall modulate circuit flow according to the local black bulb thermostats linked to the manifold. Weather compensation to be used to vary the system flow rate temperatures according to requirements. Night set back to 14-15deg to maintain fabric temperature during unoccupied periods.

The existing CT circuit is at present controlled to maintain the set point temperature within the domestic hot water calorifier.

The Contractor is to ensure that on completion of all their works that the existing control strategy for the retained equipment is functioning in the correct manner and to the satisfaction of the Contract Administrator

Fire Alarm

Arrange for the BMS to interface with the Fire Alarm system. Comply with the requirements of BS 5839. The BMS will not be affected by the failure of the Fire Alarm system. Ensure that any specific building services control actions operate correctly in response to the status of the fire detection system.

Metering

The BEMS shall automatically monitor, control and log all meter readings to provide data collection to the end user.

The BEMS shall have automatic meter reading and data collection the heatings heat meters.

BEMS operating and supervisory software

Provide operating and supervisory software as necessary to meet the requirements of this specification and the BEMS. Verify that licences to use software applications are owned by the client.

Supply software with the following features:

- Complete control and monitoring of BEMS system from colour graphics pages on the supervisor machine, or from a remote web browser.
- Full client-server operation.
- SQL server database.
- Comprehensive alarm handling with alarm retransmission and logging.
- Scheduled recording of logged data from controllers.
- Management of multiple controller occupation times.
- Multilevel security system.
- International language support
- Display of HTML pages from company Intranet, or Internet.
- Display of live, logged, or recorded data in multi-trace graphs.
- Simple engineering path using drag and drop operations.
- Self-learning of all local networks.

- Simple connection to autodialed sites.
- System documentation, covering all operator functions and system fault conditions, supplied as a Help file and in PDF format for viewing or printing. The help facility is to be resident in software in the operator workstation and not rely on access to the internet.
- Access to the configuration mode of control devices.
- Display all devices on the system connected via LANs, internetworks, autodialed links and ethernet network connections.
- A connection to the BEMS network.

Provide software that includes dynamic data exchange (DDE) to allow exchange of data with other proprietary management software, such as planned maintenance packages, databases and spreadsheets. Incorporate in the software the capability to interface with an Autocad 2010 or later version.

Structure the software to allow modification of application programmes and data files with the supervisory system on-line and without interruption of the monitoring and control programmes.

Provide and/or generate control programmes for each mechanical system or subsystem as detailed on the schematic drawings. Enable the control system to modulate the loop control actions directly and compare any translated signals from sensors with closed loop algorithms. Provide the capability for control programmes to use three-term control techniques (PID) which will minimise control characteristics, such as tracking errors, offsets, transients etc. Provide the capability to produce variable single and multiloop linear and non-linear control functions as necessary.

Handover

Following satisfactory commissioning and testing, demonstrate and handover the system in accordance with BSRIA AG 9/2001, Part C3.

Ensure the following are completed at hand-over:

- Any snagging to be documented and agreed date determined for clearance.
- All passwords/PIN numbers, levels and operators recorded.
- Disk copies of all system and data files supplied.
- Proprietary software manuals & disks.
- All equipment access keys handed over.
- Complete sets of O&M manuals left with system, any agreed amendments/additions required to be documented and a target date for completion agreed.
- Training of engineers and operators to be complete or program for completion agreed.

Post handover attendance

The purpose of these visits is to allow for fine tuning/adjustments/recommissioning due to differences in dynamic thermal performance due to:

- Occupation of people and equipment.
- Seasonal variations from those at initial commissioning stage.
- Changes in the control system load conditions.
- "Bedding-in" of plant.

At the end of the 12 months defects liability period, allow for the controls specialist to update the operating and maintenance documentation, schematic drawings etc. to include any adjustments made in this period.

BEMS Specialist to allow for a minimum of 3No. site visits.

Inherent Issues – Atrium Space

The Contractor shall allow time allocation for site visits, programming and end user interface to resolve the existing poor heating performance within the main Atrium space. The existing space utilises a passive stack effect via low level and high-level louvres (via motorised dampers). Contractor to investigate particularly in the winter season temperature/CO2/Motorised dampers/wind and rain sensors modulation set points and modify them to reduce heat loss within this space while preventing excessive temperatures within the space. Contractor to allow for a manual user override located behind the Reception Desk.

FIELD WIRING

The Contractor shall allow for all power and controls wiring as required to form a complete and fully functional system. All wiring shall be in strict accordance with current wiring regulations and manufactures instructions. They shall allow for all interfaces, interlock, relays and subsidiary equipment as necessary to achieve the required level of control to all plant and equipment. Allowances shall be made for any modifications\ adaptations to new and or existing mechanical and electrical equipment as required to complete the installation.

The Contractor shall ensure that all works are to be carried out in accordance with this specification and BS 7671 The IEE Wiring Regulations.

The Contractor shall allow to provide wiring connections to all items of mechanical and electrical plant within designated plant spaces, circulation spaces, accommodation spaces, WC/welfare facilities and general office spaces and controls to and from any control panels and or BEMS systems as required.

The contractor shall liaise with the electrical contractor to ensure that electrical supplies and all associated controls wiring is installed to all items of mechanical and electrical plant that require an electrical supply.

THERMAL INSULATION

Pipework and ductwork insulation shall be the MMMF type installed in line with BS 5422 installed with RockLap pipe supports.

Thermal insulation to cooled water, hot water and low temperature heating pipework shall be Rockwool Pipe Insulation as manufactured and supplied by Rockwool Ltd.

Where hot and cold-water pipework run parallel to each other, the cold-water pipework will be installed below the hot water pipework to minimise heat transfer from the hot water. Insulation on cold water pipework shall be vapour sealed.

Close attention shall be given to co-ordinating the mechanical installation equipment with other services and structural restraints to enable insulation to be applied completely and separately to all individual pipes.

All insulated services shall be identified by colour banding and labels with flow direction arrows applied, all conforming to British Standards.

The Contractor shall ensure that adequate insulation provision is made to include the following minimum requirements:

- LTHW pipework systems.
- Hot and cold water pipework systems.
- Ventilation ductwork systems
- Identification labels, system names, flow direction arrows, valve labels, plant identification labels.
- Insulation and/or vapour seals shall not be cut to facilitate the installation of other services.
- Valve jackets to all valves

General

Pipe Insulation shall have a declared thermal conductivity of 0.025 W/mK at 10oC mean temperature in accordance with BS EN 14314 and based on the time averaged value over 25 years, plus a safety increment.

The pipe insulation systems shall comprise Rockwool Insulation and RockLap Pipe Support Inserts and be in accordance with BS 5422 and BS 5970.

Pipework supports shall be insulated from the pipework on all HVAC services. On cold and chilled applications RockLap Insulated Pipe Support Inserts shall be used to minimise the risk of thermal bridging, limit the formation of condensation and facilitate the installation of a continuous vapour barrier. On hot water and LTHW services RockLap Insulated Pipe Support Inserts shall be used to limit overall system heat loss, and to minimise the risk of heat transfer through supporting structures.

FireSleeves shall be used as in accordance within the manufacturer's instructions where the insulation system passes through 2 hour fire rated walls.

Thermal insulation to HVAC ductwork shall be Rockwool Ductwrap Insulation as manufactured and supplied by Rockwool Ltd.

NOISE & VIBRATION CONTROL

The Contractor shall include all measures available to isolate the transmission of noise and vibration from mechanical plant to the structure. The Contractor shall be responsible for the selection and performance of all anti-vibration isolation material for all items of mechanical plant to satisfy the design requirements.

BUILDERS WORK IN CONNECTION WITH MECHCANICAL, ELECTRICAL & PUBLIC HEALTH SERVICES

The Main Contractor shall allow for all builders work and making good required to complete the mechanical installation. Builders work is to include, but is not limited to, all breaking out of existing structures, internal and external cutting, chasing, core drilling, holes, fixings, provision of temporary access, and alterations to the building fabric as required.

The Mechanical Contractor shall be expected to produce builders work holes. up to 50mm diameter.

The Contractor is to allow to carry out repairs and make good all disturbed surfaces including where existing equipment is removed, infilling holes and chases. All repairs shall match the existing finishes.

The Contractor shall include for fire stopping all service penetrations with intumescent foam to provide a minimum of 60 minutes fire resistance. The Contractor shall allow for sleeving all services as necessary to provide a sufficient fire barrier.

Allow for weatherproofing all penetrations to the external building fabric to comprise infilling external brickwork or blockwork to seal holes, making good internal surfaces and preparing to receive decoration, application of mastic sealant, installation of weather louvres, cowls or other service termination devices.

The Contractor shall allow to form all new plinths for mechanical services as detailed on the contract drawings. Plinths for mechanical plant shall be raised 100mm from the finished floor level and shall be cast in-situ using a concrete mix suitable for supporting the weight of the mechanical plant. Once fully cured the Contractor shall allow to paint the plinths in either Traffic Red (RAL 3020), Yellow (RAL 1018) or a colour of the client's preference.

TESTING & COMMISSIONING

The new mechanical services installations are to be fully tested, regulated and commissioned and left in full working order to the satisfaction of the Consulting Engineers; as previously detailed within the Preliminaries.

All services shall be thoroughly pre-commissioned, mechanically and electrically, balanced and regulated then commissioned and set to work in accordance with all the relevant C.I.B.S.E. commissioning codes and equipment manufacturer's requirements. Full use shall be made of manufacturer's specialist commissioning engineers.

Full commissioning of and documentation for all services will be required including: water flow rates, control sensor and controller set points, time zones etc. overload settings, fan speeds, manufacturer's equipment test sheets and commissioning, etc.

The Mechanical Contractor shall upon satisfactory setting to work of the installation provide the following documentation within the O&M Manual: Commissioning results, PSG

Test certificates. Electrical completion certificates, Record drawing, Manufacturers O&M manuals.

RECORD DOCUMENTATION

The contractor shall include for the provision of all information, as installed/record drawings, test certification, product literature, etc. to be included in the Operation and Maintenance Manual as detailed earlier in the Preliminaries, upon handover.

MAINTENANCE AGREEMENT

The contractor shall include for twelve months maintenance, as detailed earlier in the Preliminaries, starting from the date of the handover of all phases.

PART B - ELECTRICAL PARTICULARS

SITE VISITS

The Contractor shall be entirely responsible for verifying and investigating on site information given regarding the proposed works, since no claim will be entertained for additional work due to inadequacy of site information.

The Contractor shall make all provision after the completion of final fixing for return visits to site for safety connections and adjustments of equipment over and above that already to be provided for in other sections of this specification.

MAINTENANCE

The Contractor shall, at his own expense, rectify any faulty workmanship, carry out repairs etc. and maintain the installation to the recommendations of the original equipment suppliers to maintain their warranty for a period of 12 months from the date of handing over the installation as complete.

BUILDERS WORK

All cutting of chases, pockets, etc for switch and socket boxes and other items requiring to be sunk and made flush with the particular type of construction etc will be carried out by the Main Contractor to the requirements of the Electrical Contractor. All sundry and minor cutting and plugging, etc for rawlplugs or other fixing shall be carried out by the Electrical Contractor. The Electrical Contractor shall be fully responsible for the accurate marking out for the Main Contractor, together with accurate dimensions of boxes, brackets etc required to be 'built in'.

The Electrical Contractor must fully co-operate at all times with the Main Contractor in all aspects of his contract.

PROJECT DRAWINGS

ALL PARTICULARS GIVEN ON THE DRAWINGS ARE INTENDED TO BE ACCURATE BUT THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION THEREOF AND FOR TAKING OFF AND CALCULATING ALL OTHER REQUIREMENTS WHICH HE MAY REQUIRE.

All drawings and this specification remain the property of Shropshire Council.

Stripping Out N/A	Drg no	000-000- 000-E0
AHP DB & AHP Submain & Dist Cables opt 1	"	004-053- 000-E01

AHP DB & AHP Submain & Dist Cables opt 2

004-053-000-E-02

000-000-000-E-03

"

"

FA Lighting Systems opt2

ELECTRICAL INSTALLATION PARTICULARS

Generally, the electrical installation will utilise 450/750 volt low smoke halogen free insulated single, 300/500 volt low smoke halogen free sheathed single circular, twin and three core flat cables (with integral protective conductor) cables to BS 7211-2012. The cables to be concealed in all elevations utilising ceiling voids, ceiling ducts, conduit/trunking and oval pvc tube drops in light chases in wall plaster and as further described on the drawing installation notes.

The exceptions to the above type of installation are as follows:-

Fire Alarm Systems, Intruder Alarm Systems, Telephone, Data Communication Systems and CCTV System

The Contractor shall provide above the ceilings such wireways as required to carry the new circuits utilising catenary wires, cable tray or trunking as the site conditions

dictate, to produce an acceptable installation and should include for the cost of same in his costings.

The power and arrangements to be as shown and depicted on drawing number 004-053-000-E $-01\ 02\ 03$ and installation notes thereon.

The general power installation is to include all circuit wiring, final sub-circuit wiring, submains and final connections to all equipment supplied by the Contractor or others

The Electrical Contractor

Shall supply, fix and erect the galvanised steel cable tray as described on the contract drawings and in the installation notes. The tray to be of the Galvanised return edge pattern and of the light duty range. Make provision for utilising the Flat 90° riser bends, flat equal tee, straight couplers, reducers bridge brackets etc. as required. All cables attached to the tray are to be secured utilising Stainless TY Wraps through out Where and if required Supply and fix cable trunking as called for on the contract within the installation notes. All trunkings shall be as manufactured to BS.4678: Part 1.

The Contractor shall make all provision for the supplying and fixing of accessories, bends, sleeves, cable supports etc, as required to produce an acceptable trunking installation to comply with the appropriate clause of this Specification

SWITCHGEAR

The Electrical Contractor

Is to provide, fix and wire the following MCCB INTO EXISTING PANEL BOARD AND THE DB-AHP AND ASSOCIATED COMPONENTS which shall be as manufactured by Merlin Gerin Ltd, including all mccbs/mcbs in accordance with the Distribution Board schedules, (see the same for rating and type); Any unused capacity is to be covered with blanking pieces.

DB-PANEL BOARD – Library Power Distribution Board

1 TP SPARE 2 TP SPARE 3 TP SPARE TO BE USED FOR DB-AHP 4 SP Br DB-F 4 SP BI SPARE 4 SP Gr SPARE 5 TP LIFT PANEL 6 SP BI SPARE 6 SP BI LIFT DB 7 TP MECH CONTROL PANEL 8 TP DB-X 9 TP DB-L 10TP DB-M 11 TP DB-S 12 TP SURGE PROTECTION

MGP 1603X

DB- AHP - Power Distribution Board 4way TP Board Isolator//Incomer TP WAY 1 AHP 1 TP WAY 2 AHP2 TP WAY 3 TP WAY 4 **Option 2** SP Way 3Br Lighting

SEA9BN4 SEA9NI1604 A9F55363 A9F55363 SPARE SPARE

A9F53106

The Contractor is to supply and fit adjacent to DB-SP sub metering to record the power consumption of the new facility. To this end provide an external fitted electricity sub meter with CT's to suit the incoming cable size of 50mm². Provide all connections and inter connections as required.

The Contractor shall supply and fix, internal to each distribution board, a clearly typed and varnished (or enclosed in a polythene cover), circuit chart giving precise details of the circuit controlled and protected by each individual protective device.

PSG

N.B. The Contractor shall be fully responsible for the checking and re-connection, if found to be necessary, of all switchgear manufacturers pre-wired connections.

SUB MAIN CABLES

The cables shall be 2,3 and 4 core copper conductors, 600/1000v grade XLPE insulated and sheathed steel wire armoured, minimum size as indicated on the drawings and to BS.5467, unless otherwise stated.

The cables shall be manufactured by BICC Ltd, or other equal and approved make. All cables shall be of one manufacturer.

The cables <u>shall</u> be routed as indicated on the contract drawings, finally routed on site with the Head of Building Services Officer's Electrical Engineer.

The routes of all sub-mains cables shall be carefully considered and approved by the Head of Building Services Officer's Engineer before installation is commenced and all cables shall be installed strictly in accordance with IEE Regulations and the recommendations of the cable manufacturers.

The cables shall be continuous in length without joints, terminating only at terminals on the switchgear and control gear items unless otherwise indicated on the contract drawings or in further relevant clauses.

Cable terminations shall be by means of dry compression type glands to BS.4121 type EIW. The Engineer shall supply and install cable glands of the above type to all items of switchgear - see later Earthing Clause.

All sub-main cables shall be carefully run off the drums of reels and sharp bends and kinking of cables must be carefully avoided. <u>Any cables</u> considered to be not in first class condition due to bad handling or any other reason will be rejected at the discretion of the Head of Building Services Officer's Engineer. The bending radius of all sub-mains cables shall be not less than that recommended by the manufacturers.

At all positions where sub-mains cables are run on the surface on walls either horizontally or perpendicularly, they shall be neatly secured using approved type clips to timber battens and run in an unobtrusive manner at true right angles and levels to the building structure.

The following cables shall be installed along the routes described on the drawing installation notes.

The Electrical Contractor

Is to supply and Install option 1/2

 (a) 1 no 4 core 50mm xlpe/swa + 25mm CPC between DB-PANEL BOARD TP WAY3 and DB- AHP the new AHP Distribution Board. Location to be finalised /agreed option 1-2

Drg 004-053-000-E01 &02

 (b) 2 No 3 core 10mm xlpe/swa + separate 6mm CPC Distribution Circuits between DB-AHP to 2 no 63a IP65 Rotary isolators serving 2no Ciat AHP's Location to be finalised/adjacent option 1-2
Drg 004-053-000-E01 & 02

The Electrical Contractor

Is to supply and fit into the existing Library Mains Distribution DB -PANEL BOARD, a new 160ATP MCCB to supply the new Sub main to the DB-AHP Location as Drg 004-053-000-E-01 & 02

The MCCB to be as manufactured by Merlin Gerin Ltd. to suit the Distribution Board style and existing NSX range and to be adjusted set back as per commissioning requirements.

The Electrical Contractor

Option 2 it may be necessary to manufacture a support system for the DB-ASHP this to be from 50mm x 50mm Galvanised Unistrut or equivalent with manufactured accessories feet, brackets etc.

The Electrical Contractor should include in his costings for the supply, installation of the same.

The Electrical Contractor

Option 2 Lighting /EM lighting

will be required in position to be agreed within under croft area as to be used for the siting of the 2 no ASHP's this to be from the current Dextra Lighting product range and to be served from the DB-ASHP Light Sw and EM test key to be provided in suitable location, Containment to be Galvanised Conduit and associated fittings sized accordingly

The Electrical Contractor should include in his costings for the supply, installation, and commissioning of the same. Drg 004-053-000-E-03

The Electrical Contractor

Option 2 FIRE ALARM SYSTEM

The Contractor is to provide/add a new Fire Alarm Detector to under croft area exact area to be decided at time of install this is to be added to the existing FA Loop and addressed accordingly.

FA Contractor for costs can be gathered from RMW Electrical Mr P Harte 01743 240400 The Electrical Contractor should include in his costings for the supply, installation, and commissioning of the same.

Drg-004-053-000-E-03

The Electrical Contractor

Pumped Underfloor Heating Maniofold's

Shall allow for the supply install and connection within Main office of 2 no 230v 13a single phase supplies to 2 no Heating Manifolds from adjacent DB. The thermostatic control for theses will be the responsibility of the appointed BMS contractor

The Electrical Contractor should include in his costings for the supply, installation, and commissioning of the same. Drg 004-053-000-E-04

The Electrical Contractor CONTROL SYTEM WIRING

Control wiring is to be as manufacturers recommendations/specifications and to be continuous from BMS Panel to locations of ASHP's this is to be installed in parallel with the Vertical riser Pipework again via new Galvanised return edge tray sized accordingly or existing Basket tray containment, cables to be secured with Stainless Ty Wraps throughout. This to be discussed between the appointed Electrical Contractor and the BMS Installers

COMPUTER NETWORKING SYSTEM

is to arrange for the extension of the Computer Networking system 1 NO CAT 6 DATA POINT IS TO BE INCLUDED ADJACENT TO BMS PANEL Second Floor Plant in accordance with the information given on drawing no 000-000

The installation is to be carried out by the following specialist Contractor: -Stoneleigh Consultancy, The Ditches Hall, Ellesmere Road, Wem, SY4 5TX, Tel 01939 238800. Contact: Mr Tony Rutter The Electrical Contractor should include in his costings for the supply installat

The Electrical Contractor should include in his costings for the supply, installation and commissioning of the same.

The Electrical Contractor

ELECTRICAL EQUIPMENT

The Electrical Contractor should include in his costings for the supply, installation and commissioning of same

PART C – MECHANICAL & PUBLIC HEALTH GENERIC SPECIFICATION

To be read in conjunction with other contract documents and drawings to provide detailed explanations of requirements for the materials and workmanship to be employed on Shropshire Council Projects.

Specification notes on drawings and in the Scope of the Works take precedence where they differ from the standard clauses herein.

Not all clauses may be relevant to this project.

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GENERAL

Mechanical Installation shall not be commenced in any building until such time as the building, or respective building parts, have been made weather proof and water tight in a permanent manner.

This section shall be read in conjunction with the specification and drawings prepared for the Contract. The following clauses may not apply to all the services of the Contract, therefore only relevant parts should be considered where applicable.

INSTALLATION OF PIPEWORK

All pipework shall be installed in a first-class workmanlike manner in accordance with best modern practice with full provision for venting and draining, expansion and contraction, maintenance, renewal and appearance.

Unless otherwise stated on the drawing, or instructed on site, all pipes shall have a minimum clearance of 100 mm. from floors, 75 mm. from ceilings and 25 mm. from the finished faces of walls or other surfaces. Additional allowance is to be made where pipes are to be insulated, particularly in plant rooms where allowance is also to be made for electrical trunking, running at the rear of pipework.

All pipework shall be fixed mutually parallel where adjacent and all vertical pipes shall be parallel to adjacent vertical walls, and in 'plumb'.

Care is to be taken in setting out mains and branches of the various services generally throughout the buildings to facilitate subsequent maintenance, enable insulated mains to be covered to the specified thickness and to provide accommodation for the Electrical Contractor and other trades, with whom the Mechanical Contractor shall work in close collaboration. Overall co-ordination of services shall be the responsibility of the main contractor.

No hot water, cold water or gas main shall be run in contact with any electrical cable or conduit and shall maintain a clearance of 150 mm from any electrical service.

All sets or pulled bends on steel or copper pipes shall be free from flattening and distortion, ridging and rippling.

Open ends of pipe when left unattended shall be properly capped or plugged off, the use of paper, rag, cotton waste, or similar materials will not be permitted.

All steel and copper pipes laid underground shall be wrapped with two layers of Denso tape, or equal approved, with an minimum of 12 mm. overlap per turn, unless stated otherwise in particular specification or on drawing.

Burred ends of pipes are to be reamed or filed to ensure that the full bore of the pipe is maintained. All pipes shall be fitted clean and free from rust internally and externally, and from corrosion or obstruction.

External Steel Pipework, For Gas. Steel pipes crossing open flat roof surfaces to be supported at not less tham 1800mm centres of 400mm long Bigfoot "Fix-it" pads to which are bolted Crane 501 pipe-brackets. On completion the whole system should be primed and painted yellow. Other services to be weatherproof insulated or painted silver.

At all times when the Mechanical Contractor finds difficulty on site in complying with the foregoing paragraphs, he shall obtain a ruling from the Engineer.

The tender shall cover for the opening up of completed pipework in three positions, and its replacement where so required, for inspection by the Engineer. In the event of the inspection revealing faulty workmanship or material, the Engineer reserves the right to require further openings up of completed pipework at the Mechanical Contractor's expense.

If further faulty workmanship is found, i.e. pipe burrs, etc, then the Mechanical Contractor shall dismantle and remove part or whole of the installation as directed by the mechanical engineer and replace all at his own expense.

Provision For Expansion.

Provision for accommodating expansion shall be included on all straight metal pipe runs where significant cycles of temperature may occur, such as domestic hot water and space heating circuits. Because the requirement is dependent on the final installed routes, unless they are shown individually on drawings it is left to the installer to use industry good practice to select the appropriate type, eg bellows, ball, pipe loop etc, and location. If the installer is in any doubt he shall raise the matter with Shropshire Council's mechanical engineer for guidance.

STEEL TUBE AND FITTINGS APPLICATIONS:

- LTHW Heating
- Gas Carcassing (Distribution)

Shall be in accordance with current B.S. 'Heavy' quality and shall be used for all oil, gas and heating mains, coils, etc, unless otherwise definitely indicated to the contrary. Galvanised 'heavy' quality tube shall be used for vent pipes (other than those specified to be copper), overflow pipes, feed and expansion pipes, drain pipes, drip and discharge pipes, compressed air lines and where specifically detailed for hot water service connections to galvanised cylinders.

Galvanised fittings, unions, nipples, brackets, etc; shall be used with galvanised pipework.

Pipes shall be screwed and socketed where used with fittings, with plain ends when welded and with site welded or factory fitted flanges when required flanged. See also paragraphs regarding flanged joints and welding below.

Steel pipes in the Boiler House shall be flanged for sizes 65 mm. and greater, otherwise steel pipes shall be screwed and socketed or welded where required. (See later paragraph.)

Oil pipework from storage tanks to burners shall be steel to BS 1387, 'Heavy' quality, with seamless butt-welding fittings to BS 1965, 'Heavy' grade. Welding shall be by the oxy-acetylene process and the installation shall be finished with micaceous anticorrosive paint. Buried oil lines shall, in addition, receive two layers of 'Denso' tape, spiral wound, in opposing directions. Provisions shall be made for the regular pressure testing of oil pipework to verify its continued serviceability.

Screwed fittings on steel pipework shall be malleable iron in accordance current B.S.

All fittings shall be of Crane or George Fischer manufacture and of single manufacture throughout each installation.

Tees shall be of sweep pattern on pipe circuits. Square tees shall be used for vent, drain and thermometer positions and also on gas pipework.

Bends and easy sweep fittings shall be used on all circulating services, except where visible within rooms, when elbows shall be used. On two-pipe systems, the returns from radiators shall pass the top (flow) pipe by means of crossover bends in the top pipe, in true vertical alignment.

Reduction in diameter of pipes shall be made by the use of:

- 1. Eccentric reducing sockets on horizontal pipe, concentric on vertical.
- 2. Reducing bends.
- 3. Reducing tees.

Reducing bushes will not be permitted except for radiator tappings or with the express permission of the Engineer.

Unions shall be malleable iron navy pattern, with bronze to bronze seats, unless otherwise indicated.

Long screw connectors and back-nuts will not be allowed.

Flanged fittings shall be fitted to pipes by screwing, welding or, where this is done by the tube manufacturer, the face of the flanges to be flush with the ends of the pipes.

Flanges where welded shall be welded internally and externally.

Flanges forming a joint must be flush with one another all round when in position with all bolt holes in correct alignment with washers under each nut and with three threads showing on the bolt, beyond the nut.

Screwed joints shall be made with P.T.F.E. tape or best quality approved jointing compound and hemp. Excess material is to be removed from joints after making in and prior to painting by others.

Flanged joints shall be made with corrugated brass rings and an approved jointing compound, or with rubber packings and approved oil free jointing compound.

When flanged joints are made on expansion loops, bellows or bends, the correct amount of cold draw shall be made, which shall be checked and approved by the Engineer before the joint is made.

Welded joints on mild steel mains where specified to be oxyacetylene welded are to be in accordance with current B.S.

No screwed, capillary or manipulating fittings of any type on any service shall be embedded in the thickness of walls, floors or ceilings, or in any inaccessible position, including dips into floors to cross doorways, in which case changes in direction shall be made by setting the pipes.

On all mains and branches an adequate number of connectors shall be provided for ease of erection and subsequent maintenance. Hot water, gas, oil, cold water, waste and vent pipes of 65 mm. diameter and over, connectors shall be flanged to B.S. Table 'D'. Sizes 54 mm. and under they shall be unions as specified later. No major item of equipment shall be so installed that it cannot be readily removed from the service pipes.

On heating flow and return pipework and incoming gas main in boiler room, earthing clamps shall be installed, long enough to clear insulation. These shall be welded to steel pipework accessible positions for main bonding by the Electrical Contractor.

All pipework within floor ducts, inaccessible ceilings and wall ducts shall be welded. Any doubts the Mechanical Contractor may have regarding the requirement for welding, are to be dispelled by telephoning the Engineer, prior to tendering.

The type of jointing compound for use with all pipework containing oil shall be suitable for use with fuel oil and guaranteed to remain oil tight under all conditions eg 'Hermetite', manufactured by Kenilworth Engineering Co., West Drayton. Flanged connections to storage tanks shall be made with suitable oil tight packings as manufactured by Richard Klinger Ltd. No rubber or rubberised packing will be permitted with oil lines.

Joints on gas pipework shall be made with a jointing compound conforming to BS EN 751, such as Hawk White, Gastite (Boss) or Hermetite Gas Jointing Compound. P.T.F.E. tape shall not be used on pipe sizes 20 mm, and above, except on manufacturer's assembled threads.

Pipeline Repair Only, water, heating and gas.

Where due to restricted access to an existing pipe it is impossible to cut a thread or weld, the exterior of the pipe shall be thoroughly cleaned for a distance of 100mm and a connection made using a connector incorporating a metal-to-metal mechanical axial restraint as below:

Nominal diameters DN15 to DN50: GF Primofit, obtainable from Messrs Wrekin Pipeline Supplies Ltd.

Nominal diameters DN65 and larger: Viking Johnson.

COPPER PIPES AND FITTINGS APPLICATIONS:

- Cold and Hot Water Systems Refrigerant.
- Small bore gas final connection pipework.
- Individual connections to radiators not exceeding 22mm nominal diameter.
- Condensate lines from boilers and heaters.
- Discharge pipework from pressure/temperature relief valves.

All copper pipes for above ground systems shall be solid drawn in accordance with BS EN 1057, R250 Half Hard, as manufactured by Messrs Yorkshire Tube Ltd or equal approved, and Kite marked.

Copper pipework and all associated fittings and bracketry to be chromium plated where exposed within habitable rooms, unless stated otherwise on drawings.

General fittings for use on copper pipes of light gauge shall, except where noted hereunder, be capillary integral solder ring jointed pattern employing lead free solder, dezincification resistant, of potable quality to BS EN 1254 and shall be of single manufacture throughout the installation.

End feed capillary or crimp fit fittings will not be accepted.

Compression type fittings of current B.S. shall be used on appliance servicing valves, isolating valves, preset thermostatic blenders, in ducts and accessible trenches and voids. Any fittings used on underground copper pipes shall be manipulative type to the same British Standard and shall after testing be wrapped with two layers of Denso tape or when used with polythene coated or polythene tube, shall be wrapped with two layers of Denso tape of Denso PVC self-adhesive tape, applied after testing.

Joints on copper pipes shall be made strictly in accordance with the instructions of the fitting manufacturer and with the proper tools. Capillary type fittings shall be made with the manufacturer's recommended flux and with both tube and fitting cleaned with steel wool. Heat resistant mats shall be used to prevent damage to the building fabric.

Compression joints shall be made without distortion of the tube and shall be of Yorkshire Fittings or Conex manufacture only.

Where copper pipes are specified to be brazed, this shall be carried out in accordance with the current B.S. Brazed joints to be made with brazing rods as listed in current B.S., with melting temperatures from 645°C to 800°C, type C.P.1., together with suitable fluxes, as recommended by the rod manufacturers.

Surplus solder and flux shall be cleaned off at the time the joints are made.

No screwed capillary or manipulative fittings of any type on any service shall be embedded in the thickness of walls, floors or ceilings, or in any inaccessible position, including dips into floors to cross doorways, in which case changes in direction shall be made by setting the pipes.

On all mains and branches an adequate number of connectors shall be provided for ease of erection and subsequent maintenance. Connectors for pipes of 67 mm.

diameter and over, shall be flanges to B.S. Table 'D'. Sizes 54 mm. and under they shall be unions, as specified in a later clause. No major item of equipment shall be so installed that it cannot be readily removed from the service pipes.

The whole of the hot and cold water supply installations shall be carried out in accordance with The Water Regulations, as interpreted by Severn Trent Water.

PLASTICS PIPES AND FITTINGS APPLICATIONS Soil, Waste & Ventilation

The system as a whole shall be designed and installed in full compliance with the current Building Regulations Approved Documents B - Fire Precautions, E - Passage of Sound, H - Drainage and Waste Disposal and BS EN 12056 part 2.

Anti-siphon and ventilation pipes shall be provided as necessary to prevent loss of water traps throughout the system. Where such pipes pass through roof surface in locations agreed with the architect provide suitable weathering apron and terminate 300mm above roof surface with a proprietary vent cowl.

Access shall be provided generally at branches, changes of direction and at all connections to the existing systems, eg using access tees on waste pipework and access bends and access pipes on soil pipework. Accesses shall be provided on each floor of every new soil vent pipe, regardless of whether any branches connect at that level, at a height of 1050mm to lower edge of access hole when cover is removed, above FFL.

Falls on soil waste and vent pipes shall not fall below the minimum stated in BS EN 12056-2 Gravity Drainage systems inside Buildings. Anti-siphon pipework and vent pipes must be installed in such a manner as to not create a trap.

Where plastics pipework larger than 40mm nominal diameter passes through fire compartment floors and walls, intumescent fire sleeves described in BS 476 'Fire tests on building materials and structures' shall be fitted.

Above ground waste and ventilation pipework, ie up to and including 50mm nominal diameter, shall be of muPVC to BS EN 1566 & 1329 and soil pipework of 82mm nominal diameter and above shall be of PVCu to BS EN 1329, all employing solvent welded joints, and kitemarked.

Connection of lateral branches to stacks shall be by fittings fitted with seal ring (pushfit) adaptor rings. Saddle type bosses for connecting new waste branches up to 50mm nominal diameter to existing stacks will be permitted if installed precisely to manufacturer's recommendations. Due allowance shall be made for the effects of expansion by installing joints incorporating seal ring adaptors.

Solvent welding solution for muPVC and PVCu pipework shall be of low odour type, as Terrain Pevicol or equal.

Transitions from muPVC or PVCu to other materials or systems shall be made using only proprietary transitional fittings made by the manufacturers of one of the pipe systems involved for the specific purpose.

LIQUEFIED PETROLEUM GAS SYSTEM

The whole installation shall fully comply with the requirements of BCGA Code of Practice Nr.4, Rev.3, 2005, BS1306, BS 6891, and the Gas Safety (Installation and Use) Regulations 1998.

Gas to be stored and distributed from an external secure bottle store with 100mm high concrete plinth constructed to falls below a monopitch roof and surrounded by a wire cage with outward opening lockable doors. Size of cage to allow 300mm minimum gap between it and any manifold, fittings or bottles within.

Store to be provided with wall mounted manifold with ports for 6 bottles each with flexible hose, isolation and non-return valves. Manifold to have master isolation valve, in-line filter, purge valve, emergency shut-off valve, high pressure gauge, pressure reducer, low pressure gauge, pressure relief valve on low pressure main.

The external and internal main distribution shall be in heavyweight MI pipe with screwed fittings as described above, and local distribution to points of use shall be in capillary jointed copper. End feed capillary or crimp-fit fittings will not be accepted.

LPG pipes shall be fixed not less than 25mm from any other service and not less than 50mm from electrical services.

Each zone shall be protected by a Firewatch Mk2 unit linked to a motorised shut-off valve at the entry point to that zone.

PLASTICS PIPES AND FITTINGS FOR CONDENSATE APPLICATIONS:

Condensate from air conditioning cassettes and ventilation heat exchangers

Pipework to convey condensate from air conditioning cassettes shall be of 19mm solvent welded muPVC as Terrain 500 system or 25 and 32mm OD fusion welded HDPE PE80 as by Messrs Durapipe or equal approved.

Falls on condensate pipes shall be not less than 1 : 100 and they shall be installed and supported in such a manner as to not create a trap caused by local sagging.

Where new air conditioning cassettes are installed or existing units relocated the condensate connections from them shall be routed to join the existing main condensate collection runs.

Discharge of condensate collection drains shall be through an external wall via a suitable terminal fitting or into an internal SVP via a Hepworth HepVO waterless trap.

PIPE SLEEVES AND FLOOR PLATES

All pipes passing through walls, floors, ceilings, beams, into and out of ducts, valve chambers, etc shall be provided with sleeves of the same material as the pipe. Sleeves shall be cut to size so as to project 6 mm. above normal finished floor levels, 25 mm. above floor level in toilets and 150 mm. either side in ducts, valve chambers and expansion pits, etc. Sleeves through walls shall finish flush with the finished wall surface. See also paragraph on fire precautions for plastics pipes.

All pipes passing through walls or floors shall be provided with aluminium or plastic clipon end or floor plates, except in cupboards, roof spaces, basements, where the pipes are not visible.

Where plastics pipes such as waste disposal pipework with a diameter greater than 40mm pass through fire compartment structures, intumescent pipe-wrap shall be used to manufacturer's recommendations. Where plastics pipes with a diameter greater than 75mm pass through fire compartment structures, proprietary metal cased intumescent fire sleeves, such as Terrain Firebrake or equally certified and approved, shall be used; horizontal penetrations shall have a sleeve both sides and vertical penetrations on the underside only. Approved intumescent pipe wrap may be used in unavoidable circumstances but only after consultation with SC engineers and the application approved. Where smaller plastics pipes pass through fire compartment structures, intumescent sealant shall be used.

PIPE SUPPORTS AND BRACKETS

Surface mounted pipework and horizontal pipework in voids, partitions and ducts shall be supported using pipe manufacturer's all metal pipe clips. In hollow stud partitions the clips shall be fixed to purpose made noggins spanning between studs to the correct falls.

Lateral pipework of all materials suspended from structural soffits or steelwork/framework shall be suspended on sherardised steel threaded rod to pipe manufacturer's threaded metal pipe clips. Fixing drop rods to structural concrete soffits shall employ all metal female threaded expanding anchors, and steel cleats shall be used where rods are suspended from steelwork/framework. Hanger rods shall be truly vertical at all times. Centres of support shall be at not more than the distances prescribed in BS EN 12056 part 2 for the relevant pipe material and diameter.

Where enlarged diameter steel heating pipe is used directly as an emitter, eg at skirting level, return above flow it hall be supported with cast malleable iron pedestal floor brackets, eg Crane/Bolivar type 84 on lower, type 83 on upper at regular 750mm centres, with secondary brackets from the upper pipe to the wall at 1500mm centres.

Exposed copper pipes shall be supported by cast brass hospital type brackets; elsewhere cast brass pipe-ring and backplate brackets shall be employed. Pipe clips to be chromium plated where pipework is CP. The use of plastics or pressed brass clips will not be allowed.

Pipework shall be supported so as to allow free movement for expansion and contraction and shall be supported at intervals not exceeding the following:

<u>Copper</u>		
<u>Pipework</u> Nominal	Lincorregal	la sulsta d
<u>Diameter</u>	Uncovered	Insulated
15 mm.	1.200 m.	1.200 m.
22 mm.	1.800 m.	1.500 m.
28 mm.	2.400 m.	1.800 m.
35 mm.	2.400 m.	1.800 m.

Project: Ludlow Library Heating Renewal

42 mm.	3.000 m.	2.400 m.	
54 mm.	3.000 m	3.000 m.	
76 mm.	3.600 m.	3.600 m.	

In addition to the above all vertical pipes shall be supported at not less than two points where pipes rise or fall from floor to ceiling, or vice versa.

Care shall be taken to ensure that the axis of the pipe is parallel with the axis of the bracket or clip.

All brackets and supports shall be in position and fixed before any test is carried out.

Supports in Horizontal Ducts - Where numbers of pipes are installed in internal ducts or trenches they shall be supported by hanging from angle brackets or tubes built into the sides of the duct, spanning the full width, and the pipes secured below by means of munzen rings and drop rods. The munzen rings to be malleable iron for mild steel pipes and brass for copper pipes; drop rods to be plain rod, screwed each end.

VALVES

All valves employed on water and heating shall be WRAS as below, approved and stamped accordingly. Proposals for other manufacturers meeting the same standards will be considered by SC.

Control and isolating valves shall be fitted on the system where indicated on the drawings. On the heating system isolating and control valves shall be fullway pattern, Crane / Hattersley manufacture.

Hattersley Ltd Delta Road, St.Helen's, Lancashire WA9-2ED Tel. 01744 458670

Where lockshield values are fitted they shall be provided with dust caps. All gunmetal bodied values shall be with a polished finish, unless otherwise specified.

Draw-off cocks shall be lockshield pattern with hose tail and union complete with cap, chain and operating key. Drain taps shall be fitted at all low points on systems; these are generally not shown on the drawing, but must be fitted.

Unless otherwise indicated in a particular specification or on drawings, fan convectors, radiators, pipe coils and towel rails shall be fitted each with two valves, lockshield and hand-wheel which shall be Hattersley 'Delflo' with polished finish, to current B.S.

Isolating valves up to 50 mm. Hattersley Fig. 33X, 33XLS. Isolating valves 65 mm. and above Hattersley M549PN6.

Wheel valves on all circuit flows, LSV's on all circuit returns for regulation. Non return valves up to 50 mm. Hattersley Fig 42.

Non return valves 65 mm. and above Hattersley 45E.

Double regulating valves Hattersley Fig. CV1332 on return, or as stated in Particular Specification or drawings.

Drain cocks 15 mm, Hattersley Fig. 371. Where exposed in rooms, other than stores, drain cocks may be Broen Ballofix, type 5095.

Drain cocks 20 mm. and above, Hattersley Fig. 81 HU.

Draw-off cocks shall be fitted in such positions as are necessary to drain the whole of the installations.

Where necessary, bends shall be provided to fix the draw-off cock in line with the pipework, on the installation side of each main circulation valve, which may be used as a section isolating valve.

STOPCOCKS, BALL ISOLATING VALVES, DRAIN COCKS AND CHECK VALVES

Servicing (isolating) valves shall be fitted to isolate each <u>individual</u> terminal fitting on any basin, sink, shower, bath, bidet, automatic flushing cistern and float valve serving a tank, and shall be adjacent to the fitting being supplied. Servicing valves shall be chromium plated, easy clean ball type isolating valves operated by Allen key, as Ballofix DZR manufactured by:-

Broen Valves Ltd Ballofix Division Unit 7 Cleton Street Business Park Tipton West Midlands DY4 7TR Tel. 0121 522 4515

Note that similar values of alternative manufacture must be WRAS certified and subject to approval by PSG to be acceptable.

Within kitchens, boiler houses, tank rooms and on incoming mains, stopcocks shall be Yorkshire Fig. No. YP514DZR up to 28 mm, and Fig. no. YP514GM above 28 mm.

Stopcocks shall be fitted on outflow pipes from tanks immediately adjacent to the tank.

Where two or more stopcocks are installed on vertical pipes adjacent to each other they shall each be fixed at the same centres to the floor.

Draw-off cocks shall be fitted at all low points of the installation and shall be of Ballofix type 5095 on Hot and Cold water service.

Where single or double check valves are required to avoid back siphonage, they shall comply with current water regulations and B.S. and shall be as manufactured by :



TEMPERATURE REGULATING VALVES (TRVs) ON RADIATORS

Unless otherwise stated on drawings TRVs mounted directly onto radiators shall be of the same nominal manufacture as the radiator, eg Myson valves on Myson radiators. TRVs on low surface temperature radiators shall be accessible for user adjustment without dismantling. Where remote-sensor TRVs are called-for they shall be capillary types, as by Messrs Danfoss Randall and the capillary tube shall be concealed wherever possible, for example in voids behind plasterboard or in a boxing already provided for another purpose. Exceptionally, and only with the agreement of the architect it may be concealed in a surface mounted plastics mini-cable-trunking.

TEMPERATURE REGULATING VALVES ON HEATED CEILING PANELS

Unless otherwise stated on drawings TRVs shall be capillary types, as by Messrs Danfoss Randall type AB-QM or equal approved controlled by thermostatic wall mounted controls as Danfoss type FEV-Z and the capillary tube shall be concealed wherever possible, for example in voids behind plasterboard or in a boxing already provided for another purpose. The contractor shall take care to order valves with the appropriate length of pre-fitted capillary tube, ie short (2 metres) or long (6 metres) allowing for controls at 1500mm AFFL unless otherwise noted. Exceptionally, and only with the agreement of the architect it may be concealed in a surface mounted plastics mini-cable-trunking.

All panels in any one habitable space shall be controlled by a single valve sized accordingly.

AUTO AIR VENTS

Air cocks shall be fitted to all coils and where indicated on the drawings, and automatic air eliminators shall be provided as instructed on the site for venting parts of the system otherwise without means of clearance. Each air eliminator shall incorporate or be fitted with an isolating valve and a 12 mm. discharge pipe shall be taken to discharge externally or in the boiler house clear of lagging and shall be Winns type C complete with integral isolating and non return valves.

Where indicated on drawings, however, air bottles may be used, comprising equal square tree with 200 mm min. of straight pipe either capped, with fitted air tap (where easily accessible), or 8 mm copper pipe taken to a suitable position, flush with ceiling and air tap fitted.

SPACE HEATING CIRCULATION PUMPS

Primary Circulators, Boiler Shunt and Secondary Circulators.

These shall be single or double headed (as described on drawings) self sensing, self controlling glandless types with inverter drive manufactured by:-



Sizes, duties and controls as specified on drawings and Scope of Works.

Double headed types shall have automatic alternate start, and all types shall be set for 15 minutes minimum run-on after boiler shut down or flame-out.

DOMESTIC HOT WATER CIRCULATION PUMPS

Self-sensing and adjusting programmable pump, nominal size to match diameter of DHWS return pipework.

Manufacturer and reference: as project drawings or Scope of Works

DUCTWORK

All rigid ventilation ductwork used on Shropshire Council projects, unless specifically stated otherwise on the drawings, shall be of steel.

All ductwork shall be manufactured from strip mill cold reduced steel continuously hot dipped galvanised to current B.S. Construction for ductwork shall be to the H.V.C.A. specification DW 144 for low pressure low velocity systems which covers cross joints, stiffening, hangers and supports, dampers, fire dampers, access openings, flexible ducts, joints, sealants, gaskets and connection to builders work.

Flat (low profile) ductwork where specified shall be 76mm deep steel in widths as specified on drawings with all necessary accessories, transformation pieces, branches, support cradles, etc as manufactured by:

All raw edges of ductwork shall be treated with 'Galvanite' paint. M.S. stiffeners, hangers and supports shall be painted two coats of red oxide or zinc chromate primer.

Galvanised steel shall be used for flange joints with sheradised nuts, bolts, washers and screws between all major items of plant. Elsewhere ductwork lengths shall be joined by

riveted spigot and socket joints properly waged to give a smooth external surface and lapped in the direction of airflow.

All joints shall be rendered airtight by application of mastic compounds, P.V.C. ducttape or gasket materials.

Access doors shall be provided where shown being completely removable. Doors shall be secured by wedge type fasteners on durable airtight seals and located where accessible in the completed building.

Where thermostats, airflow switches, etc, are fitted in ductwork they shall be mounted on a stiffening plate with an adjacent hand-hole access cover secured by self-tapping screws.

Sufficient test holes shall be provided with detachable covers with at least one point between each major item of plant and where control dampers are located.

Insulated foil-faced flexible duct for final connections to grilles and diffusers as Aluflex, manufactured by:



Flexible connections between fan assemblies, etc, shall be secured by 'Zest Coronation Clips'. Where flexible ductwork is specified it shall comply with current B.S. and HVCA Specification DW154 and all the necessary universal fixing clips and jointing connectors shall be included, the whole assembled in accordance with the manufacturer's recommendations.

Where flexible circular ductwork is adapted to rectangular grilles suitable size backboxes with rear or side entry spigots shall be fabricated in galvanised sheet steel.

Where circular ductwork is adapted to rectangular flat duct suitable transformation pieces shall be fabricated in galvanised sheet steel. Where circular ductwork branches off or into flat duct, suitable branch fittings shall be fabricated in galvanised sheet steel.

All dimensions and positions of plant shall be checked on site and the Mechanical Contractor shall be responsible for ensuring that ductwork conforms with the equipment installed, and also with the building details and structure.

Penetrations of ductwork through fire compartment walls shall be protected so as to comply with Building Regulations Approved Document B, Fire Safety and BS5588, 2004, as, for example by fusible link fire dampers. Note that because the fire strategy may develop after the ductwork has been designed, the drawing may not show all fire dampers finally required and the contractor shall be deemed to have made reasonable allowance for additional fusible link dampers that may ultimately be required.

During erection all open ends of ducting shall have a suitable covering tied in position to prevent entry of dust, dirt and other debris present during building operations.

Before final fixing of grilles the ducting shall be blown through by running the fans for a period of at least one hour and the interior of all ducts, as far as accessible, thoroughly cleaned by means of an industrial type vacuum cleaner.

Other grades of specialist ductwork will be referred to separately.

Air leakage testing, as HVCA Specification DW143, and commissioning as CIBSE Commissioning Code A, shall be undertaken by the Mechanical Contractor on completion of the ductwork installation.

AIR TERMINALS, DIFFUSERS and GRILLES

Unless otherwise stated on drawings, in schedule or the Scope of Works, ventilation system diffusers, extract grilles, transfer grilles and louvres shall be as manufactured by:



Transfer grilles, in non-sensitive areas mounted centrally above doorways shall be 315 x 205mm effective size narrow pattern in white (RAL 9010), type NTG, one each side.

Transfer grilles, in non-sensitive areas mounted above false ceiling height shall be 200 x 200mm effective pattern in white (RAL 9010), as Air Diffusion Type MVG-MF manufactured

Transfer grilles, mounted at low level in kitchenette doors shall be 400 x 200mm double flanged pattern for through door mounting in self-colour anodised aluminium with horizontal bars at 15mm centres and intumescent core.

Respiration air grilles, mounted at low and high level in plantroom doors shall be 300 x 250mm 45* fixed angle blades with 25mm flanges for through door mounting in self-colour anodised aluminium with horizontal bars at 50mm centres and insect screen..

High performance acoustic transfer grilles, if required, shall be as "Quiet Vent", manufactured by: Messrs IAC,



FANS FOR DUCTWORK

In-line air extract fans for circular ductwork shall be as specified on drawings or Scope of Works and manufactured by Systemair Ltd, Aston, Birmingham B7-5EJ Tel. 0121 322 0850 or equal approved.

Each complete with speed controller and timeswitch, plus PIR control for 100mm toilet extract applications or other control as specified on drawings, and switched fused spur unit supplied by mechanical installer for installation by electrical installer.

VENTILATION DUCTED HEAT EXCHANGERS

Heat exchangers for ducted ventilation systems shall be balanced supply-extract models as specified on drawings or project Scope of Works designed for ceiling void installation.

Summer bypass is a preferred option.

Unless otherwise stated on drawings the multi-speed models shall be controlled by the manufacturer's wall switch selecting between normal and boost. The normal setting is preset at the main unit to a low setting to provide background ventilation, ie speed 2 or 3 on a 6 speed unit or 1 or 2 on a 4 speed unit, while purge is full speed.

Care shall be taken when installing to allow for subsequent access for filter changes.

EXTRACT FANS

Window mounted extract fans with shutters to be as specified on drawings or in Scope of Works, complete with controller, including humidistat control with manual override for kitchenette extract applications and PIR control for 100mm toilet extract applications, and switched fused spur unit supplied by mechanical installer for installation by electrical installer.

Toilet and WC extract fans: 100mm nom.dia axial pattern in white with automatic shutters and with activation by room lighting circuit and built-in adjustable overrun timer preset on installation to 6 minutes. In suspended ceilings they shall be centred on tiles with 100mm duct.

Extract grilles in WCs to have minimum core size of 200mm square: see Section 18.

Discharge shall be by 100mm dia flexible duct to common metal extract duct or through roof via weathering slate with 150mm high dressed upstand to mushroom roof terminal as scheduled.

THROUGH-WALL HEAT RECOVERY VENTILATORS

Heat exchangers for through wall applications shall be as manufactured by:

Ventaxia Ltd and itemised in drawings and Scope of Works.

Model range: HR25, HR30W, HR100, HR200, HR300 and HR500 as detailed with wall mounted manual speed controllers. The contractor shall allow in his price for any extra make-up accessories for thick walls or for framing around units in thinner than normal external walls.

HEATING AND COOLING CASSETTES : SPLIT AND VRF SYSTEMS

Systems shall be as the project specific system type and manufacturer and shown on drawings and project specification. Installers must be certified by the manufacturer of the system selected to provide a 5 or 7 year manufacturer's parts and labour warranty as appropriate.

Where an existing system of discrete heating and cooling cassette units is to be modified or extended, all new components shall be of the same manufacture as the originals so as to be wholly compatible with the original system, and using the same refrigerant as the original system.

Where new small heating-cooling cassette systems, up to 3 emitters, are installed they shall be of split or multi-split pattern and provided with infra-red remote control handsets, as detailed on the drawings and in the Scope of Works.

Where more than one cassette is installed in the same room or activity space they shall all be controllable by the same handset.

Outdoor units shall be located as shown on drawings, viz roof mounted, wall mounted or ground mounted on an in-situ cast concrete base.

External condenser units, if free standing, shall stand on an in-situ concrete base, 150 mm overall thickness and 300 mm larger in both direction than the plan of the condenser, with the top 50mm above the surrounding ground level and contained within a purpose made galvanised wire protective cage with an opening and lockable front panel for maintenance. There shall be a minimum of 100 mm clear on all sides, and top between the cage and the condenser casing.

If roof or wall mounted then resilient mountings shall be used to minimise sound conduction –"drumming".

Procedures for handling refrigerants during system draining, filling and commissioning shall be carried out in a responsible way in accordance with BS EN 378-4: 2008 Refrigeration and Heat Pumps: Safety and Environmental Requirements.

SUPPORT OF DUCTWORK AND DUCTED HEAT-EXCHANGER CASSETTES

The ductwork shall be supported in such a manner to avoid distortion, sagging or twisting, and in compliance with BS EN 12236-2002, HVCA Document DW144 for metal duct and DW154 for plastics ductwork.

Ductwork support shall be similar to the method adopted for the mechanical services pipework, ie. suspended from structural soffits or steelwork/framework on sheradised steel threaded rod to cradles. Hanger rods may be suspended from Unistrut lengths attached to structural soffits by all metal expanding anchors, and steel cleats attached to steelwork shall be used where rods are suspended from structural steelwork/framework. Hanger rods shall be truly vertical at all times and wire will not be accepted as a means of support or bracing. Centres of support shall be at not more than the distances prescribed in DW 144 / 154.

Diffusers and grilles set in suspended ceilings shall be independently supported from the structural soffit or other structural members above in the manner described in the preceding clause, and no load shall be transmitted to the ceiling grid. Significant lengths of flexible duct too long to be self supporting from their ends shall be provided with support from hangers or trays to ensure no load is applied from them to the ceiling structure. The Mechanical Contractor shall submit details of brackets to the Engineer for approval. Anti-vibration pads shall be installed between the ductwork and brackets throughout the system. TEST POINTS Air flow test points shall be provided in the air ducting at all branches and regulating dampers, adjacent to each plant item and control item, in all fan inlet and discharge ductwork connections, and elsewhere as indicated on the design drawing(s).

INSULATION OF MECHANICAL SERVICES

This section shall be read in conjunction with the Specification and drawings prepared for the Contract. The following clauses may not apply to all the services of the Contract, therefore only relevant parts should be considered where applicable. The supply, delivery and installation of thermal insulation work shall be to the requirements of the Contract documents and to the satisfaction of the Engineer or his representative.

The relevant requirements contained within the Health and Safety at Work Act, Building Regulations, Asbestos Regulations and Fire Precautions Act and current IEE Regulations shall be complied with by the Mechanical Contractor and Insulation Sub-Contractor.

This specification covers the thermal insulation of pipes, ductwork and equipment generally in the temperature range 2°C to 250°C. The insulation shall be of a noncombustible nature and shall comply with all relevant current British Standards including BS5422 and BS3958-5.

Insulation shall be continuous through the bracket, where this is possible.

Note that extract ductwork shall be uninsulated.

On completion of the hydraulic tests, to the satisfaction of the Engineer, all pipework in ducts, trenches, roof spaces, false ceilings, wall chases, etc, including the cold water services, and all pipework not required as heating surfaces shall be thermally insulated in accordance with the following specification.

All pipework and ductwork insulation shall have a thermal conductivity of 0.045 W/mK (or lower) at a mean temperature of 20 deg. centigrade.

Phenolic Foam will NOT be accepted on any service.

Unless otherwise specified, all insulation in tube form shall be 'ROCKLAP' 800 H & V pipe sections, with factory applied foil, as manufactured by:--



An alternative manufacturer, supplying insulation to the required standards, may be considered for approval, prior to ordering materials.

Insulation thicknesses shall be:-

Heating and hot water services up to 20 mm/22 mm- 30 mm thick.

Heating and hot water services 25 mm/28 mm upwards - 40 mm thick. Cold water services, all sizes - 40 mm thick.

Where two or more pipes run horizontally or vertically in close proximity the covering shall not be bonded, but there shall be a clear space between the pipes.

All pipework within false ceilings, voids, chases, roof spaces and floor ducts, including heating, hot water services, cold water services, feed and vent shall be insulated with 'Rocklap' as above. Seams shall be lapped with integral self-adhesive foil lap.

Care should be taken that insulation does not foul or impede access to any drain, control valve, float switch gear or thermostats, pressure switches etc, fitted to tank or adjacent pipework.

All terminations of insulation to be fitted with aluminium cap ending.

Unless an alternative is specified all insulated pipework in positions exposed to the weather shall be covered with 2 no. layers of roofing felt, secured by galvanised wire ties, sealed with hot bitumastic, bonded with 25 mm. galvanised wire mesh and painted overall with one coat of bitumastic paint. Similar weatherproofing shall be applied in expansion loop chambers and to external underground pipework.

For chilled and cold water services attention to be paid to taping to maintain the vapour barrier, particularly at termination points where exposed insulation membrane to be over taped and returned to piping surface. Furthermore, where insulation on cold and chilled water services abuts pipe support inserts the insulation should be taped to all inserts to continue the vapour barrier.

Where specified, ductwork within false ceilings, voids, chases and roof spaces shall be insulated with Rockwool 'Ductwrap', 40 mm thick. All seams and joints to be close butted and lapped.

All services within plant rooms, inclusive of feed and vent pipes, shall be insulated with 'Rocklap' covering as previously described and further covered with Isogenopak sheeting, 350 microns thick.

The Isogenopak shall be complete with pre-made bends, tees, and caps, rivets, etc, and shall be installed strictly in accordance with the manufacturer's specification, with all seams taped, all as available from:-



PAINTING
Cast iron valves, exposed flanges, unions, pipework and support systems shall be painted two coats of heat resistant black paint.

PIPEWORK IDENTIFICATION BANDS

Where insulation is enclosed in cladding, it is to be left thoroughly clean and in natural finish; under no circumstances should the cladding be painted; PVC identification colour bands only to be provided at 2 m. intervals and applicable to colour chart code. PVC flow direction arrows at 3 m. intervals to be fitted

All pipework, whatever the finish, which is not immediately identifiable, must have identity colour bands fitted in accordance with colour code indicated on chart.

The Isogenopak cladding must be securely fixed in a neat and approved manner so that bolts may be easily withdrawn from flanged joints. Care must be taken that all glands, valves, unions, flange joints, thermostats and other pipe immersion accessories, etc, are not fouled in any way and that easy access if maintained at all times to facilitate maintenance or repairs without recourse to dismantling or disturbing in any way the finished insulation.

PIPEWORK IDENTIFICATION CHART

FOR ENGINEERING SERVICES

Pipe Contents	<u>Base</u> <u>Colour</u>	Colour Code Indication
Drinking Water	Green	Blue
Domestic cold water service	Green	White/Blue/White
Domestic hot water service	Green	White/Crimson/White
LTHW Heating	Green	Blue/Crimson/Blue
Chilled Water	Green	White/Green/White
Condensate	Green	Crimson/Green/Crimson
Boiler Feed	Green	Crimson/White/Crimson
Natural Fuel Gas	Ochre	Yellow
Liquefied Petroleum Gas	Ochre	Ochre

All pipework above duct level, and within the building, which is not insulated, will be finished by the General Contractor to match decorations.

VALVE LABELS & CHART

The Mechanical Contractor shall, on completion of the works, provide and attach to each main control and regulating valve cock or plug cock throughout each service system, a traffolyte disc 40 mm. diameter clearly engraved with an identifying valve number.

The Mechanical Contractor shall prepare and install a "Valve Schedule" of all the above numbered valves indicating the location, service and duty of each valve. The schedule shall be mounted and fitted in a suitable glazed frame, to be hung in a prominent position in the plantroom / boiler house.

CHLORINATION OF THE HOT & COLD WATER SERVICES

After completion of the water services installation the system shall be thoroughly flushed out, and the storage tanks inspected for cleanliness. Chlorination in accordance with BS6700 shall then commence.

The time of re-sampling each outlet and the free chlorine level shall be noted on the test results sheet.

Having tested an outlet, the tap shall be left running to purge the system prior to re-filling and flushing to remove the excess chlorine.

On successful completion of tests, the mains shall be well flushed with clean water and left filled.

See particular specification and drawings for details of tanks and numbers of hot, mains and tank cold water draw-off points.

COMMISSIONING & TESTING

The mechanical engineering services shall be commissioned and tested to provide the environmental standards as set out in the Commissioning Code Series A, B, C, M, R and W as published by the Chartered Institute of Building Services Engineers, (CIBSE).

Commissioning shall include:

The final checking of the installation for errors or deficiencies and their subsequent correction.

Setting to work - the process of setting a static system into operation.

Regulation - adjusting the flow rates/system to within specified tolerances. Before regulation of an air distribution system can commence the building shall be complete of all finishing trades and that windows and doors are open or shut

consistent with their normal state.

Calibration - the adjustment of the various elements of a system to ensure that the installation as a whole is regulated, balanced and controlled within specified tolerances.

Safety Functions Testing:

All 'fail safe' operating functions shall be demonstrated during the commissioning phase. The settings and operation of all normal control devices shall be checked individually in relation to their respective safety devices. The operation of all limit/safety devices shall be proved, by temporarily overriding the operating of the normal control, so that the critical condition is reached. All malfunctions should be thoroughly investigated and reported. The functioning of all fail safe and automatic change-over systems should be proved. It is necessary to check that control wiring does not remain live when apparently isolated and that dangerous back-feeds do not occur. When it is impossible to prevent backfeeds, suitable warning labels must be fitted in a permanent position.

For the purpose of commissioning and in order that all adjustments and calibration is properly carried out the Authority shall allow the Mechanical Contractor the reasonable use of the installation or parts thereof. After commissioning of the installation (or parts thereof) has been carried out, the Mechanical Contractor shall submit a report for checking and approval, including copies or results of tests and/or installation trials on each component plant or equipment item. Arrangements will then be made for the Engineer to visit the site together with representatives of the Authority in order that the Mechanical Contractor may demonstrate satisfactory operation of the installations.

Where portions of the work are commissioned and tested separately, the Mechanical Contractor shall, upon final completion, demonstrate that all the several portions are capable of proper simultaneous operation in accordance with the requirements of the Contract. In cases where the overall construction programme is such that the Mechanical Contractor will need to return to the portions of the building taken over and occupied by the Authority, for the purposes of later testings, balancings, adjustment, etc, the Mechanical Contractor shall take all necessary precautions against causing damage when working in such areas.

Fuel, electricity and water reasonably required by the Mechanical Contractor in connection with the commissioning, adjusting and testing, will be provided by the General Contractor, unless stipulated otherwise in Particular Specification.

Should the tests fail to demonstrate that the plant and equipment is properly installed and/or functioning, the Mechanical Contractor shall forthwith carry out, at his own expense, such remedial measures and/or re-commissioning and adjustments as may be required.

The Mechanical Contractor shall then again report to the Engineer, for further demonstrations to be witnessed. The Engineer's decision as to what constitutes a satisfactory performance demonstration shall be final.

All installations, plants and equipment shall be tested to satisfy the requirements of the current Factories and Gas Acts, the Health and Safety at Work Act and the requirements of all other interested authorities, and all safety devices as required by such Acts or Authorities shall be provided by the Mechanical Contractor.

TESTS ON SITE

Site testing of all systems and components shall be carried out, witnessed and approved after installation by the Engineer.

All hydraulic tests on the pipework installations shall be carried out by the Mechanical Contractor in sections as the work proceeds to suit the general construction programme. All mains isolation and other temporary works that may be necessary to facilitate such tests shall be carried out by the Mechanical Contractor at no extra cost. Notice shall be given to the Engineer 48 hours prior to any portion of the installation being tested. Duplicate certified copies of the results obtained shall then be submitted to the Engineer.

Certificates of all tests made on site shall be forwarded to the Engineer for his approval, and such approval must be obtained before any paint or non-conducting composition is applied to the tested work.

All test certificates shall be signed by the Mechanical Contractor and by the Engineer or his representative who witnesses the test. All test certificates shall have the following particulars thereon:-

Apparatus or section under test. Maker's number if any. Nature, duration and conditions of tests. Result of test.

All test certificates are to be included in the project maintenance manuals as detailed in Clause 26.

TESTING PIPED SERVICES

Upon completion of each section of the work and by arrangement with the Engineer and/or Engineering Clerk of Works, the Mechanical Contractor shall subject the section to a water pressure test and demonstrate to the satisfaction of the Engineer and/or Engineering Clerk of Works that the section is sound and watertight.

The tests shall be applied by filling the section to be tested with water and raising its pressure to the figure specified below, the whole of the testing gear required including all plugs, caps, tees and drain fittings, shall be supplied by the Mechanical Contractor.

The section shall then be left and all joints must remain tight for a period of at least two hours.

Care should be taken to isolate, prior to tests, these items of equipment requiring lower test pressure.

The Mechanical Contractor shall be held responsible for any damage by frost prior to the issue of a Certificate of Acceptance for any relevant section.

All L.P.H.W., H.W.S. and cold water services shall be tested hydraulically to a pressure equal to twice the working pressure maintained for a period of at least two hours.

All cold water direct mains shall be tested hydraulically to a pressure of 6.9 Bar or such as shall be required by the local water authority, maintained for a period of at least two hours.

TESTING VESSELS

All pressure vessels shall be tested to the requirements of the relevant insuring bodies and certificates of compliance furnished to the Architect. All calorifiers, closed vessels, heat exchangers, heating and cooling coils shall be tested to a pressure equal to not less than twice the maximum working pressure. Calorifiers are to be tested to current B.S.

HOT WATER TESTS

The heating and hot water services shall, after hydraulic test and prior to insulation, be subjected to a heat test under operating conditions in the presence of the Engineer or Engineering Clerk of Works.

The period of these tests shall be two hours, during which time all cylinders, pipework, plant and pumps shall be subjected to test under actual operating conditions.

After the initial heat test, the systems shall be allowed to cool and the heat test repeated a second time.

No leaks should appear and the service shall be examined to ensure that correct expansion and contraction takes place.

Domestic hot water temperature with hot water cylinder fully heated shall be verified as achieving 50°C minimum at every unblended terminal fitting, or blending valve inlet, within 60 seconds from cold.

TESTING VENTILATION & AIR CONDITIONING

Tests on the ventilation and air conditioning systems shall be carried out to design requirements. Ductwork shall be thoroughly tested for air tightness as laid down in HVCA Specification DW143.

Upon completion, ventilation systems shall be tested and balanced and the correct air volumes and temperatures obtained. Tests shall be carried out for ascertaining air velocity and distribution by means of pilot tubes at Test Points and at grilles by means of anemometers or velometers. Full records of such tests shall be recorded on approved forms.

Commissioning shall be in accordance with CIBSE commissioning Code 'A'.

TESTING AUTOMATIC CONTROLS AND INSTRUMENTS

All automatic control apparatus and systems shall be tested to demonstrate that they are capable of meeting the demands specified and shall be adjusted to suit the characteristics of the building and their particular system.

All valves, switches, controls and the like shall be regulated and capable of proper adjustments to conform with the design conditions.

All instruments shall be correctly calibrated and read accurately. Where an instrument remains connected to the system, the normal operating position of the needle or indicator shall be clearly marked.

In addition, the Mechanical Contractor shall allow for the thermostatic control manufacturers to make two further visits to the site, once two months after the installations have been working, and again just before expiration of the maintenance period, to inspect and make any necessary adjustments to the controls.

OPERATING THE INSTALLATION

During the Commissioning and Testing period the Mechanical Contractor shall be responsible for the proper lubrication and routine maintenance of all moving machinery.

The services of sufficient skilled mechanics shall be provided to stand by, operate and maintain the various installations for the entire period of instructing the Authority's staff, as required in the conditions of contract. This operating period shall follow the completion, commissioning approval and all essential rectifications on the installations.

During this period any final adjustments and other rectifications essential to the satisfactory operating of the system shall be completed.

TRAINING OF OPERATOR

The Mechanical Contractor shall at a time to be agreed and prior to handover instruct the employer's staff in the use and correct operation of the installation and shall satisfy himself that such staff are competent to take over the installation on completion. During such periods of instruction the Mechanical Contractor shall be responsible for the correct operation and maintenance of the installation.

OPERATING AND MAINTENANCE MANUALS AND RECORD DRAWINGS

At the time of the handover of the installation, the Mechanical Contractor shall provide two sets of fully detailed 'as installed' record drawings of the whole of the works, together with full working, operating and maintenance manuals.

The drawings are to comprise:-

General Arrangement Drawings of all installations to an appropriate scale.

Detailed Drawings of Plant Rooms, Scale 1:20.

Line Diagrams of Control Systems (not to scale).

The record drawings are to be specially prepared and <u>must not be modified working</u> <u>drawings</u>. The preparation of the drawings is to proceed during the installation of the works as each section is completed.

The working, operating and maintenance manuals are to describe the layout and function of the systems, with schedules of components comprising each and every item of equipment, including manufacturer's name, reference and serial number and operating and maintenance instructions based on the manufacturer's standard instructions amplified where necessary. Also to be included are manufacturer's commissioning certificates for all items of plant, including controls systems

The above is to be encased in suitable A4 size loose-leaf multi-ring binders.

These instructions shall be recorded clearly on a suitable permanent notice in a visible position in the mezzanine plant area.

The Mechanical Contractor is to include for the preparation and supply of 2 (two) copies of the above manuals which will be subject to approval by the Supervising Engineer.

The manuals shall be provided by the Mechanical Contractor at, or before, the handover of the building. One copy of the manuals shall be supplied directly to the Supervising Engineer for his retention, and the other copy supplied directly to the Main Contractor for his inclusion in the official Health and Safety File for the project.

DEFECTS LIABILITY PERIOD

The Mechanical Contractor shall be held responsible for and shall maintain and uphold in good and substantial condition, fair wear and tear excepted, all and every part of the works for a period of twelve months from the date of completion of the contract as certified by the Head of Property Services.

Note that, as stated in Clause 22, the Mechanical Contractor shall include in his costings, for an additional visit to site by the boiler/water heater manufacturer to service the plant.

DRYING OUT OF BUILDINGS

Any usage of the plant for drying out and protection of the building, prior to the completion of the contract, will only be at the discretion of the Engineer and will be a private agreement between the General Contractor and the Mechanical Contractor. The General Contractor will be fully responsible for provision of fuel and attendance upon the plant and will indemnify the Authority against any breakdowns during such usage.

Operation of the plant prior to completion of the contract will not affect the date of commencement of the Mechanical Contractor's maintenance period which is defined above.

FILTERS.

The Mechanical Contractor shall provide for any equipment or systems provided as part of this contract:-

one complete set of spare filters for use as working spares.

KEYS AND TOOLS

The Mechanical Contractor shall provide two keys to fit every installed size of lockshield pattern valve, stopcock, tamper-proof sensor, thermostatic radiator valve, and key operated air cock installed as part of this contract.

Similarly he shall provide two appropriate Allen keys for any ball pattern isolating valves fitted.

PSG

PART C - ELECTRICAL GENERIC SPECIFICATION

To be read in conjunction with other contract documents and drawings to provide detailed explanations of requirements for the materials and workmanship to be employed on Shropshire Council Projects.

Specification notes on drawings and in the Scope of the Works take precedence where they differ from the standard clauses herein.

Not all clauses may be relevant to this project.

In the following where the manufacturer is prefixed by "as by" the make/model is illustrative, in all other cases it is mandatory

GENERAL

The specification must be understood generally to cover everything required to make, supply and erect an installation of the highest class and it must be clearly understood that should there be any details not included in the specification but which are necessary to make a thoroughly satisfactory installation according to the general intent and meaning of the specification, then same shall be provided and installed by the contractor without extra charge.

The new electrical installation shall be carried out and tested in accordance with the latest edition of B.S.7671, Requirement for Electrical Installation, hereafter referred to as the 'Wiring Regulations', to the satisfaction of the council's surveyor/engineer.

Electrical Installation shall not be commenced in any building until such time as the building, or respective building parts, have been made weather proof and water tight in a permanent manner.

MAINTENANCE OF SERVICES

The Contractor shall allow for the provisions, erection, connection and subsequent removal of any cables or fittings necessary or required to maintain existing services at the site, in the event of disconnection being made necessary, due to or by means of the works. In areas where stripping out, remodelling or removal of equipment is called for, the Contractor shall ensure that all existing points and equipment served from that area are maintained in permanent safe working condition. All points that are affected by such modifications shall, where necessary, be rewired and the Contractor shall allow for this contingency, including for temporary connections where necessary until the permanent installation is carried out. All such rewiring shall be carried out in materials and manner specified for the new work in that area. In connection with the installation of new switchgear, and alteration to existing supplies and services, the Contractor must allow for any working out of normal hours which may become necessary.

STRIPPING OUT, MAKING SAFE AND REDUNDANT MATERIALS

The contractor shall disconnect, take down and place on one side, all items of equipment including lighting fittings, switch accessories, heating and distribution equipment, cable, etc., from all areas shown to be stripped out or remodelled, in whole or in part. In all such areas all wiring shall be disconnected and insofar as it is practical, be removed. Where it is not practical to remove the wiring, it shall be cut back and left in situ and identified in relation to its feed point, and what it originally supplied. All such wiring shall be disconnected from any source of supply and shall be "dead" throughout its entire length. All surface conduit and accessories shall be removed with all redundant cabling.

All equipment, apparatus, fittings and accessories so removed shall become the property of the council's engineer/surveyor and shall be carefully set on one side, suitably protected from all weathers and potential damage, and allowance made for all items to be returned to the Shirehall, Shrewsbury, on the receipt of instructions from the council's engineer/surveyor. <u>No item whatsoever shall be removed from site until such instruction has been given</u>. All materials for which no further use is envisaged shall be removed from site, and disposed of, all at the Contractor's expense.

The Contractor shall be responsible for ensuring correct phasing of all supplies in all areas due to be re-wired, remodelled and/or affected alterations and where temporary connections may be necessary to maintain systems, and for fixing permanent labels indicating the presence of medium voltage where deemed necessary by the councils engineer/surveyor.

DRAWING AND POSITIONS OF POINTS

All particulars given on the drawing are intended to be as accurate as possible, but the Contractor shall be responsible for the verification thereof and for taking off and calculating all and any other requirements which he may require.

Everything is to be done which is usual and necessary for the proper execution of the works comprehending what may be reasonably implied from the drawings and specification although same may not be specifically mentioned or detailed.

The drawings accompanying this specification are intended to show only as diagrams, the general arrangement of various items of works specified and installed in this contract and do not necessarily show the exact bends and routes of cables, etc. but the Contractor shall include for any and every appliance and fitting necessary for the proper execution of the works.

It should be noted that symbols representing the installation equipment (i.e. sockets, switches, etc) are, for practical drawing purposes, not to scale. The Contractor shall, therefore, obtain confirmation of all installation equipment prior to commencement of any work. It shall be the Contractor's responsibility to inspect the General Building Contractor's detail and working drawings to enable him to finally position all equipment in the correct juxta relationship with the building elements of furniture, walls, windows, worktops, etc., and all other items of equipment supplied and/or installed by others.

All, or any part, of the installation carried out without prior agreement on site with the council's engineer/surveyor, and the main Contractor, shall be liable to rejection and the whole shall be re-executed all at the Contractor's expense.

The Contractor shall, inform the councils surveyor/engineer of any changes required to the drawings to provide detailed working drawings for the use of his own work people if required. If the surveyor/engineer deems it then the construction drawings will be amended and reissued as required by the council's surveyor/engineer.

SWITCH AND DISTRIBUTION EQUIPMENT

Sizes of sub-main cables, switches, isolators, circuit breakers and distribution boards shall be as set out in the Schedules, on the drawings and in the relevant clauses of this Specification.

All equipment will normally be wall mounted at heights to be agreed on site.

Cable rising or dropping to ceiling or floor cavities shall be contained in trunking which in all cases shall enter the voids to a depth of at least 50mm.

Where cubicle type panel switchboards are positioned they shall be securely fixed to the floor by means of rawlbolts and where deemed necessary shall be tied back to the wall in an approved manner.

The arrangement of wiring to all ways, earth and neutral bars of distribution boards etc shall be such that all connections for all circuits are in the correct sequence. The correct size of circuit breaker or fuses corresponding to the size of sub-circuit conductors and/or apparatus to be controlled shall be fitted to each way.

If installed three spare HRC fuse cartridges of every size and type used on the installation shall be supplied by the Contractor at the completion of the works.

Where on a distribution board spare ways are indicated on the Schedules, these spare ways shall be blanked off with the manufacturer's purpose-made blanking-off plate, and the distribution chart left blank for that circuit.

The Contractor shall include for all gland, termination and spreader boxes, necessary for the proper installation of the cables, to be supplied and fitted to all equipment. All such termination equipment shall be manufactured by the specified switchgear manufacturer.

Where it is impractical to run conductors direct to switches, etc - within panels or distribution boards, then copper "tails" connected to the cable cores electrically and mechanically in an adaptable box in an approved manner, may be substituted at the discretion of the council's surveyor/engineer. Prior approval to this method shall be obtained before carrying out such work and the Contractor shall include for all costs associated with such alternative.

All single pole switches shall be connected in the phase conductor only.

FIXING OF CONDUIT AND ACCESSORY BOXES

The Contractor shall pay particular attention to the method of fixing switch, socket, conduit and accessory boxes so that when completed they are in the exact position relative to the finished wall surface and are perfectly square in all directions. Boxes shall be fixed by at least two screws such that the heads do not protrude into the box. In cavity partition walls, all boxes shall be screwed to timber battens within the cavity.

Where accessories are "grouped" they shall be arranged in a neat and symmetrical layout. Where sockets, switches, thermostats, controls, bells, indicators or other accessory are shown to be mounted adjacent, they shall be installed in such a manner as to be vertically in-line.

All equipment supplied under the Contract, and by others, specified to be surface mounted shall be fixed in totally plain boxes, i.e. not equipped and knock-outs or any other form of entry position. All boxes shall be drilled on site to provide the necessary numbers of conduits/cable entries required.

All boxes irrespective of being steel of plastic, surface fixed, flush fixed or in dado trunking, shall be of a minimum depth of 35mm.

ALIGNMENT OF ACCESSORIES AND FIXING HEIGHTS

The Contractor shall pay very particular attention to the method of fixing switch boxes and socket outlet boxes so that they shall, when completed, be level and in an exact position to permit the cover plate to be fixed accurately.

When the wiring is concealed the Contractor shall take full responsibility for the alignment of all such boxes and shall ascertain a definite datum line, from which all measurements can be taken, and also the thickness of walls, depths of finished plaster and final finish of all wall surfaces.

The following heights above floor level **shall be assumed unless specified differently elsewhere**, all positions to be agreed on site.

- (a) Light switches, control switches, push buttons 1m. to the centre of the box.
- (b) Wall mounted socket outlets 0.85m to centre of box.
- (c) Cooker Control switches 1.2m to the centre of the box.
- (d) Fire Alarm System control panels 1.8m to the top of the panel.
- (e) Fire Alarm System manual call points 1.4m to the centre of the box.
- (f) Clocks, Fire Alarm System bells and other sounders 2.2m to centre.
- (g) Wall fixed lighting points 1.9m to the centre of the back plate.
- (h) Distribution Boards 2.1m. to the top of the boards.

(i) Any accessories fitted above worktops, fitted desking, benching etc. should be fitted 75mm above the top of the furniture and align with other accessories along the bottom edge

The Contractor shall obtain confirmation from the design engineer of these dimensions and positions before installation.

CABLE INSTALLATION CONDITIONS

a) General

All cabling runs both internal and external shall be approved by the council's engineer/surveyor on site before the installation commences.

Joints or connector boxes will not normally be permitted in any cable run, and cables shall be installed in one continuous length between accessories, equipment, plant or buildings, unless agreement is obtained from the council's engineer/surveyor.

Joints will only be permitted in runs of mains cables due to the limitation of maximum possible manufactured lengths. In the event of this situation arising, the Contractor shall notify the Supervising Officer in writing prior to any installation commencing in order that the location and type of any through joints may be approved. The Contractor shall allow for the councils engineer/surveyor requiring the joint elsewhere than at the end of the longest length of cable available, in order that such joints may be, at all times, accessible for inspection.

All cables shall be installed in such a manner as to prevent damage to the sheathing and/or armouring, or any displacement of the conductors. Any cable length so damaged shall be removed from site and replaced by a completely new length.

All main and sub-main cables, where run vertical on the outside of the buildings, shall be protected by rolled, galvanised steel channel to a height of 2100 mm. above the finished ground level.

Where cables pass through walls, floors, etc. they shall be protected within a length of galvanised steel tube, the end of which shall be sealed. The tube shall be of a diameter at least 25 mm greater than the overall diameter of the cable.

In all instances, where cables enter buildings or ducts, they shall be drawn into 150 mm. diameter glazed earthenware self-aligning pipes, or PVC ducts. These pipes/ducts shall run from an agreed position inside the buildings to a point at least 900 mm. clear of the building line and its foundations, and at a depth of not less than 200 mm. The ends of the pipes shall be sealed. In the buildings the pipes shall rise to floor level with a slow bend.

Where mains cables are installed within ducts, or along the surface of walls, they shall be supported by approved cleats of a size to suit the overall diameter of the cables. The cleats shall be securely and adequately fixed to the walls and shall be spaced in accordance with the requirements of the Regulations and the cable manufacturer's recommendations.

Where the cables are buried directly in the ground, they shall be at a depth of not less than 750 mm. laid on a bed of 75 mm of sand and covered with a further 75 mm. of sand. The cables shall be adequately protected by means of coloured heavy gauge polyethylene detectable tape. The Contractor shall supply and lay the tape 200 mm. below finished ground level. The tape shall be yellow in colour with the legend 'ELECTRIC CABLE BELOW'.

Where cables or cable ducts are installed in a common service trench with other services, a minimum distance of 250mm shall be maintained between the cable and any other service.

Where cables pass under roads, they shall be at a depth of not less than 900mm and drawn into separate 100 mm earthenware pipes or PVC ducts with a 75 mm covering of concrete.

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Where cables are run on cable tray they shall be arranged such that all single core cables comprising a circuit shall be adjacent or "tiered" on one another, and all the larger sizes of cables are run, where practical, together. All the cables shall be laid wherever practical in such a manner that where they leave the trays, they do not cross or interweave with the cables remaining on the tray. The larger sizes of cables shall, as far as possible, be run on the outside of the trays, and where these cables have to cross runs of the smaller ones, they shall cross beneath the other cables to prevent damage to the smaller ones.

All armoured cables shall be terminated in accordance with the manufacturer's recommendations. Armouring may be used as earth continuity conductors, and at each termination the cable sheath and armouring and joint box shall be effectively bonded to the associated equipment.

All cables shall be kept at least 150 mm clear of any pipes carrying hot water.

b) Armoured and Sheathed Copper Cables.

These shall be 600/1000 volt grade, and of the type detailed in the particular specification, and shall be installed as the manufacturer's recommendations.

Every cable shall be manufactured to the appropriate British Standard.

Cables shall be terminated in approved CW terminating and sealing glands complete with a shroud to cover the gland. These glands shall, in all circumstances, be securely clamped to the control panel, item of switchgear etc., by the appropriate size of brass locknuts and washers. Each gland shall be fitted with a watertight sealing attachment to provide a watertight seal on the inner sheath.

All glands shall be made-off in strict accordance with the manufacturer's instructions for Fixing.

c) Aluminium Armoured PVC Insulated Cables with Aluminium Conductors

These shall be 600/1000 volt grade and shall comprise shaped conductors of equal sectional area composed of solid drawn aluminium, insulated with polyvinyl chloride compound. The cores shall be laid up and covered with clear PVC tape and armoured with a layer of hard drawn aluminium strip, and the whole covered with an extruded polyvinyl chloride sheath.

The cables shall be terminated in approved gland fitted with a tapered cone, which firmly clamps the armour strip securely to the apparatus, and earth ring.

Conductors of up to 100 amp capacity may be fitted with the purpose made swage terminals made off in accordance with the manufacturer's instructions. All other conductors shall be fitted with the correct size of crimped lug and terminated as described in (c),

Connections or contact areas between aluminium and other metals shall be coated to prevent electrolytic action taking place.

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(d) Mineral Insulated Copper Sheathed Cables

These shall be single or multi-core as required, and shall be installed only with the tools recommended by, and in accordance with, the instructions and recommendations of the manufacturer.

Only tradesmen skilled in the use of MICS cables shall be used on the installation, and at the council's engineer/surveyor's request, the tradesmen shall demonstrate their skill, on site, by "making-off" a trial seal or seals to their satisfaction.

All joints shall be made at main switches, distribution boards, switches, lighting point boxes, socket outlets and fixed apparatus only. No joints shall be made in cables at any other points.

All cable ends shall be sealed using the purpose made item manufactured and supplied by the cable manufacturer, of the correct size and type, for that particular cable.

Where seals are used without a gland, the seal shall be that supplied by the manufacturer, with a permanently fixed copper earth tail, which shall be connected to an earth terminal inside the accessory of apparatus.

All tails shall be marked with self-adhesive identification sleeves.

The universal ring type gland shall normally be used and on no occasion shall any other termination be used for mains and sub-main cables.

Where the entry to the equipment is already tapped, the gland shall be screwed direct into the equipment utilising, where necessary, brass reducing sockets.

Where entry to equipment is a clearance hole, the gland shall be fixed with solid brass locknuts.

Internally all cables shall, wherever possible, be concealed behind the plaster finish of walls, in partition cavities, ceiling spaces, cast in situ concrete roofs, etc. and where provided floor, vertical and ceiling ducts.

All runs shall be straight and parallel with the sides of the building and all rises and drops shall be vertical.

Only on fairfaced brickwork and on the underside of roofs having no ceiling cavity shall the cables be run on the surface.

Cables shall be fixed in various locations, as follows:

(i) On the surface of unplastered walls and ceilings and in damp situations - heavy gauge fixing spacing saddles.

- (ii) On finished surfaces heavy gauge copper saddles or 'P' clips.
- (iii) Concealed cables standard copper clip and saddles.

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(iv) Ceiling voids - on catenaries or cable tray.

Cables shall be fixed at spacings not exceeding the following:-

In floor screeds and in situ concrete - 1500 mm.

In other concealed positions - 900 mm.

On surface work - 250 mm.

Where cables are laid in screed, they shall be tested whilst the finish is still "green".

(e) PVC Insulated Cables Drawn Into Heavy Gauge Conduit

The wiring shall be carried out on the looping-in principle. All joints shall be made at main switches, distribution boards, ceiling boxes, socket outlet boxes and fixed apparatus only. The wiring shall be run in the conduits so as not to exceed the capacities as set out in the relevant tables of the Wiring Regulations.

Conduits

Only heavy gauge welded mild steel conduit shall be used throughout the works and shall be screwed, enamelled or galvanised as required, made in full conformity with the current B.S. and of a size not less than 20 mm.

The inside surfaces and ends of the erected conduit and all fittings shall be smooth and free from burs or other defects.

Provision shall be made for counteracting condensation as directed by the council's engineer/surveyor.

All conduit fittings and accessories including screwed couplers, ordinary clips, saddles, pipe hooks, screwed reducers, stopping plugs, locknuts and male and female bushes shall be manufactured in accordance with the current relevant B.S.

All screwed couplers, screwed reducers and locknuts shall be made of malleable iron and all stopping plugs, male and female bushes made of brass. Round locknuts only shall be used on surface work.

Conduits, when fixed direct to the steelwork, shall be fixed to the rods of open web horizontal beams, tees or angle, by tie rod saddles.

Conduits fixed on the surface of walls or ceilings shall be fixed by saddles fixed not more than 900 mm apart.

Where bends and sets occur the conduit is to be securely fixed at a distance of 230 mm. either side of such diversion.

Conduits down angle iron stanchions and other similar places shall be fixed by spacer bar saddles clipped to special fabricated mild steel clips of 25 mm x 2 mm. strips not more than 900 mm apart. Stanchions must not be drilled unless the special permission of the council's engineer/surveyor is first obtained.

Conduits in all other concealed positions shall be fixed by corrugated mild steel saddles.

All conduits, conduits fittings and equipment shall be erected prior to any cables being drawn in.

Where two or more lines of conduit run parallel with each other, the distance between them shall not be less than 12 mm and where conduits cross, a space of 25 mm shall be left at the crossing. All conduits must be run vertically; diagonal runs will not be permitted on walls or in accessible ceiling voids.

Conduits shall be fixed to adaptor boxes, fuseboards, switches, etc by means of smooth bore male brass bushes and couplers.

Circular Inspection Boxes

Small standard circular malleable iron conduit boxes shall be provided and fixed at all junctions and the necessary angles and bends of conduit.

Solid or inspection elbows, bends or tees must not be used.

Corners shall be turned by easy sets or bends made cold without altering the section or opening the seams of the conduit. No bend shall have an inside radius of less than three times the external diameter of the conduit. All bends must be machine made.

No more than two right angle bends, or equivalent sets, must be made in conduit runs between inspection boxes and on straight runs; inspection boxes must be inserted after each second conduit length.

Ceiling Boxes

Circular boxes, or the equivalent B.S. looping boxes, shall be provided and securely fixed for all ceiling points in non accessible ceilings and in all situations where a conduit installation is specified. Where boxes finish behind surface level, the necessary extension rings shall be fitted.

General

All external conduit and exposed conduit and fittings in kitchens, laundries, boiler houses, fuel stores and other damp situations shall be galvanised and equivalent to the details specified above. Where it is required to run conduit in wall cavities, floor ducts, etc., only galvanised conduit shall be used.

In all situations, box lids must be fitted with rubber gaskets.

All spare ways in junction boxes, etc shall be fitted with brass stopping plugs.

Female brass bushes shall be screwed on to all free ends of conduit.

All conduit shall terminate in switchgear, distribution boards, trunking, conduit boxes, appliances or accessory boxes, so that the fixed wiring is completely enclosed in earthed metal. The termination shall be made in either a standard "long spout" or by means of a screwed coupler and hexagon headed brass bush.

All tool burrs shall be removed and any damage to the enamelling of Black enamelled conduit shall be repainted when erected.

(f) PVC Insulated, PVC Sheathed Cables

The cables shall be purpose specified and manufactured in accordance with the current relevant B.S.

All wiring shall be carried out on the looping-in principle and shall be arranged that joints in the cables are made only at switches, light points and sockets, etc.

All cables shall be run directly off reels and not taken from loose coils. No bends in a cable shall have an inside radius of less than four times the width of the cable.

Fixing

Cables to be fixed on timber shall, where run parallel with joists, etc., be fixed to the side of such timber by means of approved clips; and where run at right angles to such joists shall be fixed, by the above method, to supporting wooden battens.

In accessible ceiling voids, the cables shall either be supported from catenary wires or if indicated elsewhere on cable trays/trunking installations.

Protection

Where cables pass through walls, floors, ceilings, etc., or may be subject to damage or abuse, they shall be protected throughout their exposed length, by means of steel conduit. All cables on the surface shall be protected by a conduit to a height of 2100 mm above finished floor level. Conduits acting as pathways through floors, walls, etc. shall be of sufficient length to project at least 30 mm either side of the building material.

Where cables are sunk in floor screeds, they shall be protected by steel conduit, the free ends of which shall be fitted with brass bushes and the ends of metal accessory boxes, or other metal items, shall terminate direct into the box or item and shall be fitted with a suitable brass bush.

Where cables are sunk in plastered walls, they shall be protected throughout their buried length using oval PVC tube or round PVC/galvanised steel conduits as determined by the installation conditions and cable capacity and shall be run in chases, the depth of which shall be sufficient to give at least 12 mm. of cover over the conduit

Where cables are dropped vertically in studded or cavity type wall constructions, they shall be protected along the whole of their vertical length using oval PVC tube, or round PVC/galvanised steel conduit as determined by the installation conditions and cable capacity required.

All cables shall be prevented by spacing, insulation or other means from coming into contact with water and gas pipes, telephone and communication system cables and shall preferably be installed below hot water pipes.

Metal Clad Accessories and Earth Continuity

Where no earth terminal is provided in any accessory by the manufacturer, the box shall be drilled and tapped to receive a 2BA brass screw. The earth continuity conductors shall be fixed by this screw, with washers placed above and below the cable loop.

All earth wires within accessories of fittings shall be insulated with green/yellow PVC sleeving.

(g) FP200 Cable

When stripping the cable care shall be exercised to avoid damaging the silicon rubber insulation.

Before splaying out the cores for termination the Contractor shall fit the correct size of plastic ferrule slid over the cores and fitted to the end of the sheath. Conducts shall NOT be as 'set' as they leave the ferrule but shall be run straight and gently set so that pressure is not exerted on the cores as they leave the cable termination.

All cables shall be run direct from the reel which shall be mounted on a spindle device to prevent the cable from kinking. Cables shall only be dressed by hand and ALL bends shall be radiused such that the bend is not less than 6 times the cable.

Cables shall be fixed using PVC coated single hole fixing P clips and such fixings shall be provided every 300 mm for horizontal runs and 400 mm for vertical runs. Where multiple runs of cables occur they shall be fixed in total by means of white coated perforated metal strip forming a common fixing band. The strip shall be securely fixed at each end and spacings shall not exceed those given for single cables.

Where the cables are concealed within the building fabric, e.g. wall chases, floor screeds, etc., they shall be protected throughout their buried length by steel conduit. Where deemed necessary, surface runs shall be protected against mechanical damage by means of steel conduit or rolled steel channel.

No attempt shall be made to separately earth the PVC/Aluminium sheath of the cable. Full earthing facilities will automatically exist with the proper connection and termination of the bare copper earth core within the cable.

Terminations

Entry into all accessory boxes and other equipment shall be by means of nylon compression gland and shrouded entry adaptors for circular boxes. In damp or external situations an appropriate gland with seals shall be used to prevent ingress of moisture. Care shall be taken to ensure that sheath and ferrule does not enter accessory boxes, but stops immediately at the end of the gland. This will ensure unnecessary bending and cramping of cable will be avoided.

TRUNKING

Trunking shall be installed as detailed in the specification and on the drawings and shall be in accordance with the capacity as laid down in the Wiring Regulations and to the manufacturer's recommendations.

The trunking shall be complete with all accessories, fittings, earthing straps, insulated pin racks, cable retaining clips, etc. and removable front cover lid arranged in convenient sections.

All trunking accessories shall be of the radius type. All open ends shall be fitted with purpose made blanking-off plates.

All trunking shall be securely fixed. In damp situations the trunking shall be spaced from the wall by means of short tube collars.

Where trunking runs across tie bars, beams, etc., long sleeve couplings shall be used. Where passing through ceilings and walls, it shall be fitted with a suitable fire barrier and protected from water and mechanical damage by an outer steel sleeve.

All conduits shall be connected to trunking by means of couplings and male bushes.

All joints and accessories shall be bonded together by means of purpose made copper strips. (Steel trunking only).

The Contractor shall not alter the section, area or form of the trunking in any manner other than to cut to the length required. Bends, sets, changes of direction, coupling to differing sizes or equipment shall be carried out solely by the use of the purpose made trunking accessories obtained from the trunking manufacturer.

CABLE TRAYS

The Contractor shall supply and install cable tray at all positions indicated on the drawings and in this specification, and to provide support for sub-main and other cables in voids and at places where other forms of non-combustible supports cannot be utilised, and wherever deemed necessary by the Councils engineer/surveyor. He shall allow for the fabrication, supply and installation of all and any, supports, brackets, joining pieces and special fabrications that may be necessary to hold the cable tray to its proper routes and positions, and for all necessary fixings. All cable trays shall be of sufficient width to accommodate all cables necessary to be run thereon whilst maintaining adequate separation of cables to prevent electronic interference, and bends and changes of direction shall be so formed that the recommended bending radii of cables is not exceeded by the cable tray, and the cables are at all times supported by the tray.

The supports and fixings for the tray shall not exceed the maximum spacing recommended by the manufacturer; consistent with the weight of cabling that the tray is to carry, and at all times a margin of 25% shall be maintained below the maximum carrying capacity.

At changes of direction and where various runs of cable tray merge, the Contractor shall only use the purpose made adaptor accessories provided by the manufacturer. At all such changes of direction, intersections etc. additional support and/or fixing shall be provided.

Wherever cable tray may run vertically "on edge" the tray shall be spaced from the wall surface by the use of tube collars for a minimum distance of 40 mm.

All lengths of metallic cable tray shall be securely bonded together with copper strip links and nuts, bolts and washers. The earth bond from the tray shall be run back to the nearest distribution position and shall be connected to the earth bar at the distribution equipment.

All cables run on trays shall be installed to provide electrical separation if required by the installation and fixed to the tray to prevent them being moved by the use of a suitable metallic cable tie or metallic fixing

NON-METALLIC CONDUIT AND TRUNKING

1. Non-Metallic Conduits

Standards

All non-metallic conduits shall be high impact PVC complying with the current relevant B.S. The minimum size to be used is 20 mm external diameter.

(a) Light gauge conduit may be used for protected pre-cast and in situ concrete work where builder's traffic is minimal, or protected surface wiring.

(b) Heavy gauge conduit should be used where a danger of physical maltreatment exists.

Joints

Conduits will be jointed and terminated utilising the appropriate rigid PVC components.

Bends

Bends and sets in conduit will be made in accordance with the manufacturer's instructions. The radius of the bend shall not be less than 2.5 times the outside diameter of the conduit, or such greater radius which will facilitate easy drawing-in of cables.

Temperatures

PVC conduits may not be used in situations where ambient temperatures are likely to exceed 70°C (158°F), or where the normal working temperature of conduits and fittings will exceed 60°C (140°F). Conduits should not be installed adjacent to steam or hot water pipes.

Expansion

Adequate allowance shall be made for longitudinal expansion and contraction of the conduits under normal working temperature variations as follows:-

(a) Expansion couplers should be used on straight runs exceeding 6.0m.with a loose or flexible type joint at the long spout end of the coupler.

(b) Saddles as supplied by the manufacturers shall include a sliding support tolerance for longitudinal expansion.

Support

Conduits should be saddled at not more than 900 mm. intervals. Where working temperatures tend to be high this should be reduced to 600 mm.

2. Conduit Boxes and Fittings

Standards

All conduit boxes shall be circular pattern of rigid PVC with push fit or screwed spouts. Boxes not supporting a fitting or accessory shall be fitted with a PVC lid.

Support

Circular boxes shall be provided at all outlet points, unless otherwise specified and lighting fittings, ceilings switches and other accessories will be screwed to the two internal lugs of the boxes. Care must always be taken when considering the use of totally enclosed fittings with PVC circular boxes where the temperature within the box is likely to rise above 60°C (140°F).

Looping-In

Looping-in boxes of circular PVC pattern may be used in such work, as dictated by the structure of the building. Conduit entry shall be made by means of PVC socket adaptors and PVC bushes.

3. Non-Metallic Trunking

Standards

All non-metallic trunking shall be high impact pvc complying with BS 4678 Part 4, and of either the mini or maxi trunking variety.

Joints and Bends

Trunking runs shall use only manufacturer's pre-formed joint pieces, bend's, T's, stop ends all accessory boxes are to be fitted with the correct accessory connection adaptors. On no account shall on-site cut, mitred or fashioned joints be made.

Temperatures

PVC trunking may not be used in situations where ambient temperatures are likely to exceed 50°C (122°F) or where the normal working temperature of the trunking and fittings will exceed 50°C (122°F). PVC trunking should not be installed adjacent to steam, hot water pipes or in boiler houses.

Expansion

Adequate allowance shall be made for longitudinal expansion and contraction of the trunking under normal working temperature variations. Expansion should be allowed for on all straight runs exceeding 6.0 m with a loose or flexible type joint.

Support

Trunking should be screw fixed of not more than 500 mm intervals or as recommended by the trunking manufacturer. This spacing to be adjusted to suit larger sizes of trunking as required. Similarly where working temperatures tend to be high, this should be reduced to 300 mm.

4. Adaptable Boxes and Switchgear

Adaptable Boxes

These shall be of moulded or fabricated PVC of square or oblong shape complete with PVC lids. No adaptable box smaller than 75 mm. x 50 mm. shall be employed. Boxes shall be of adequate depth in relation to the size of the conduit entering them.

Terminations

Conduit shall be terminated at adaptable boxes, fuseboard switches, socket or other equipment not possessing push-in or threaded spout, by means of the appropriate size adaptors. All cemented joints to be made to a depth of the conduit being used.

5. Earth Continuity

Earth continuity shall be provided by a separate insulated conductor contained within the conduit and rated in accordance with circuit loadings and appropriate regulations.

An earthing terminal shall be provided at every switch and outlet position for connection of earth continuity conductors as required.

FLEXIBLE CONDUITS

Unless specifically detailed otherwise, all flexible conduits used throughout the installation shall be high temperature polypropylene. In boiler houses it should be of the metal spiral wound type.

The conduit shall be terminated only by the use of the manufacturer's purpose made glands.

A separate earth continuity conductor shall be installed through all flexible conduits and be terminated generally as detailed previously.

CATENARY WIRES

All catenary wires shall comprise galvanised standard wire with a total cross sectional area not less than 6 mm. Each catenary shall be stretched tight between beams, or anchor eye bolts, and terminated with line vices. At each end, the catenaries shall be wound twice around its fixing and the end bound back along the catenary for a minimum distance of 30 mm.

Catenaries shall be run to support all cables in roof voids and shall run parallel to and at right angles to walls. Diagonal runs will not be permitted.

REQUIREMENTS FOR CABLES

All cables and flexible cords shall be of the type, grade and capacity as specified and shall comply fully with the current relevant British Standards.

Connections between flexible cords and other cables shall be made by means of connectors fixed in a B.S. conduit box, or via flex outlet, or fused spurs.

Cable Termination Marking

Control cables shall be identified with PVC cable markers carrying the control panel terminal reference numbers, at both ends of the cable.

SEGREGATION OF SERVICES

Services shall be segregated in accordance with the Wiring Regulations.

All communication system wiring, signal cable wiring, speaker cable wiring and telecoms/IT wiring shall be kept clear and separate from all other forms of wiring, and shall be spaced at a minimum distance of 200 mm from any adjacent wiring.

All conduits and trunking used for telecommunication and data communication systems shall be entirely separate to all others and separately earthed.

THREE PHASE SERVICES

The Contractor shall ensure that all machines and equipment are connected to the correct phase arrangement to ensure the correct rotation of all equipment.

The correct rotation of the equipment and phasing out to existing supplies is to be tested and shown to be correct in the presence of the Head of Building Services Officer's Electrical Inspector of Works.

Under no circumstances shall single PVC/PVC insulated, twin and earth PVC/PVC insulated or multi-core tough rubber or PVC cables be used.

EQUIPMENT ISOLATION & CONTROL SWITCHING

All items of electrical equipment supplied under this Contract, and by others, shall have ready means of isolation provided for it, immediately adjacent to the equipment. Isolators so provided are to have screw or glue fixed rigid Identification labels fitted to clearly identify their function. Self adhesive labelling will not be deemed acceptable to satisfy this requirement.

Any switches providing "control" functions, excluding lighting switches and isolators which are covered elsewhere, are to be labelled and have the switching functions clearly defined. The method of lettering is to be as Section 24, Labels & Charts, Accessories.

EARTHING

The whole of the Electrical Installation, and all other associated equipment, shall be bonded in accordance with the Wiring Regulations, and all necessary Earth connections provided.

On new installations and existing installations where called for, a proprietary and appropriately sized earth bar shall be provided adjacent to the incoming supply cut-out for termination of main earthing conductors and main bonding conductors. It shall be complete with a disconnectable link to enable testing of the external earthing system. Main earthing and bonding conductors from the same shall be individually identified using cable tie fixed engraved Traffolyte labels.

Main Bonding connections to steel pipe work for Gas and Heating Flow & Return shall use lugs or shell clamps welded to the pipe work by the Mechanical Contractor at the positions denoted by the Electrical Contractor.

Equipotential / Cross bonding connections to pipe work for Gas, Heating Flow & Return, Cold water and Hot water shall use earth cabling run in one complete length, stripped back as necessary to allow for connections, and shall, on steel pipe work, use welded lugs or shell clamps as described above.

Bonding on to 22mm or 15mm copper pipework or localised equipotential bonding shall use "Ezybond" pipe earthing clamps as manufactured by Eaton MEM Ltd. The clamps to be selected to suit the cable/pipe size combination as required and be complete with the necessary "DO NOT REMOVE" labelling. Where bonding to a series of adjacent pipes, one continuous piece of cable shall be used.

The installation shall be installed to comply with the Earthing arrangements as specified in the relevant sections of BS 6701: 2010 - Code of Practice for the Installation of apparatus intended for the connection to certain telecommunication systems.

LIGHTING INSTALLATION

At every lighting point shall be supplied and fixed, the necessary lighting fittings complete with all necessary glassware, galleries, suspensions, lampholders, control gear, etc., as detailed on the drawings and in the schedules, and shall be complete with the number and size of lamps specified, to the applicable voltage.

Unless indicated otherwise on the contract drawings every recessed lighting fitting and surface mounted lighting fitting including those in continuous end-to-end formation, the sub-circuit wiring shall either terminate adjacent to each fitting in a suitable LSC, (Luminaire Supporting Coupler), ceiling assembly equipped with a heat resisting flexible cable for final connections. Or use a Klik or Flex 7 marshalling box with the proprietary flexible cables to the fittings being supported by the installed catenary or tray system If the ceiling is inaccessible this will be removed post contract

To allow cables to enter fluorescent fittings mounted from 'T' bars of the ceilings, an additional 20 mm. hole shall be punched in the back of the fitting and fitted with PVC edge sheathing or a rubber grommet clear of the 'T' bar.

Where surface mounted luminaires do not follow a length of 'T' and it is not possible to use purpose made suspension clips, the fittings shall be screwed to "noggings" placed behind the ceiling.

Where a steel conduit installation is provided, then the conduit boxes shall be sufficient to support the lighting fittings in themselves.

Unless specified otherwise elsewhere in this specification, in accessible ceiling areas, all modular recessed lighting fittings shall be suspended by either at least four conduit or threaded rod suspensions or 2 Y Gripple hangers sized to the weight of the fitting, and ordinary fluorescent fittings by two conduit or threaded rod suspensions OR 2 inline Gripple hangers. No fabricated hangers will be permitted Safety chains may also be required and should be provided where necessary.

Where fluorescent lamps are indicated to be used, they shall be T8, T5 Tri-phosphor Polylux 3500 white, unless stated otherwise.

Switches

All switches shall be multi-gang where grouped and unless specified otherwise, wall switches shall be 1000 mm above finished floor level, 150 mm in from any door frame and 350mm in from any corner to which they are adjacent.

Every switch must be located in relation to fixed furniture and equipment, and sited with the prior approval of the council's engineer/surveyor.

All switch boxes shall be fitted with a fixed earth terminal to which the earth continuity conductor shall be terminated.

All single pole switches shall be connected in the phase conductor only.

CONNECTIONS TO HOT POINTS

Connections to lighting points shall be as indicated above and as may be further detailed in the particular specification.

At all other connections to hot points (circulating pumps, fan convectors, cooking equipment, etc) shall be effected via heat resistant cables, either within, or without, appropriate flexible conduits and as may be further detailed in the Particular Specification.

INSPECTION, TESTING, PROVING, DEMONSTRATION AND PUTTING TO WORK

All work, systems, circuits, apparatus and appliances installed under this Contract, both by the Contractor and other nominated Sub-Contractors or specialist suppliers, shall be tested, proved and put to work as required hereunder before the Contract works shall be deemed to be complete.

The Contractor shall give fourteen working days clear notice of all procedures and intended actions called for to comply with these conditions and requirements and should obtain from the General Contractor similar period of notice with respect to attendance on all other items and systems.

The contractor shall be solely responsible for all expenses associated with the provision of labour, materials and equipment both initially and for any subsequent repeats of all or any part of the procedures called for.

All defects, errors and omissions revealed by these procedures shall be made good and all tests repeated until the installations are proved satisfactory.

Demonstration, putting to work and instructions shall be carried out in the presence of the council's engineer/surveyor and the Client's representative responsible for the particular section of the work. It should be noted that some demonstration and instruction may be required to be given after completion of the works and that such instruction may be required to be given on separate days and due allowance shall be made for this.

The Contractor shall provide all materials, labour, apparatus and instruments for all sections of this work, free of charge on site. The Contractor may be required to demonstrate the accuracy and reliability of any apparatus and instruments used and shall provide current certificates of calibration for all such equipment.

Testing facilities shall be provided at any time during the progress of the works and allowance shall be made to allow any sections or parts of the installation to be tested and re-tested for compliance with the following requirements.

All tests shall be recorded on purpose designed forms provided by the Contractor and approved by the council's engineer/surveyor, which shall then be type-entered and submitted.

The Contractor shall be responsible for obtaining and ensuring the attendance of, specialist Company Engineers to test, provide, put to work and demonstrate all specialist items supplied and/or installed under this Contract. Re-testing and proving shall be carried out as necessary.

All materials, plant and equipment supplied by manufacturers shall be deemed to have been tested for compliance with all Regulations and Standards by the manufacturer. The council's engineer/surveyor shall, if he so desires, be present at any or all tests so made. The Contractor shall supply, if requested, copies of manufacturers' test certificates for all or any items. Any defects or imperfections which may become evident after installation shall be the responsibility of the supplying Contractor to correct at his own expense.

Specific Requirements

a) <u>General</u>

The Contractor shall attend all meetings and procedures called for, providing full labour and test equipment facilities as may be necessary.

He shall be prepared to verify the state of all electrical supplies, installation and equipment throughout the installation up to the points of connections for specialist suppliers' and installers' equipment.

b) Fixed Installation

The following tests shall be carried out in accordance with the current Edition of the Wiring Regulations and the current on-site guide together with any further tests required by the same.

- 1.1 Visual
- 1.2 Continuity of final ring circuit conductors
- 1.3 Continuity of protective conductors and equipotential bonding
- 1.4 Earth electrode resistance
- 1.5 Insulation of site built assemblies
- 1.6 Electrical separation of circuits
- 1.7 Protection against direct contact by on-site erected

barriers/enclosures

1.8 Insulation of non-conducting floors and walls

- 1.9 Polarity
- 1.10 Earth fault loop impedance
- 1.11 Insulation Resistance
- 1.12 Functional testing of RCD's RCBO's and switchgear
- 1.13 Determination of PSSC and PEFC

c) Ancillary Systems

All specialist installations supplied, installed and connected under this Contract (e.g. fire alarm, security systems, communication systems, space and water heating equipment, ventilation plant, emergency/safety lighting, etc) shall be tested and proved by the suppliers'/manufacturers' representative to show full working correctness, and suitability, to the relevant British Standard where applicable, prior to handing over to the Client, with full test certificates completed and submitted as called for in those British Standards.

d) Associated Systems

The Contractor shall be in attendance at the testing, proving, putting to work and demonstration of all associated systems (lifts, heating, air handling and treatment, pumping, catering, computing) to which he has provided supplies, connection or attendance during their installation.

e) Instruction and Health and Safety File

The Contractor shall include for providing full, detailed instruction and demonstration to the Client's representative of the complete electrical installation installed under this Contract, including all correct operating and maintenance instructions.

He shall be responsible for similar instructions to be provided by specialist suppliers'/installers' representatives of all systems and equipment supplied under this contract.

The Contractor shall compile and supply a Manual for inclusion in the Project Health and Safety File which shall include the following:-

i) Servicing schedules and manuals covering full details of all equipment supplied to site (whether supplied by the Contractor or not). The Contractor to liaise with all other Contractors and suppliers in provision of these.

ii) Special instructions of the operation, calibration, setting up and maintenance of all parts of the installation.

iii) Complete set of As Fitted Drawings.

iv) Summary of the tests and inspections, including copies of all test/record data.

v) Any other relevant documentation which may be considered necessary, or require to be provided by the council's engineer/surveyor.

Documentation - General Power and Lighting

Upon completion of the works the Contractor shall complete Forms of Completion and Inspection, to verify installation tests. These forms are to be fully completed prior to inclusion in the Health and Safety Manual.

Documentation - Emergency Lighting

Upon completion the Contractor shall submit Installation and Commissioning Certificates for Emergency Lighting Installations. The Contractor shall be responsible for both system installation and verification. These forms to be fully completed prior to inclusion in the Health and Safety Manual.

Documentation - Fire Alarm

Upon completion the Contractor shall submit Installation and Commissioning Certificates for Fire Alarms. The Contractor shall be responsible for the system installation and commissioning. These forms to be fully completed prior to inclusion in the Health and Safety Manual.

COMMISSIONING

The Contractor shall attend all commissioning meetings and procedures both for the electrical engineering services and for specialist systems that may be supplied and installed by others under the General Contract, e.g. lifts, security and communication systems, heating and ventilating installations. Full labour and test equipment shall be provided such that the condition and state of all electrical supplies and equipment throughout the installation, and up to the point of termination on specialist suppliers and installers sections, may be proved. The Contractor shall be responsible for obtaining the attendance of the manufacturer's representative and/or engineer to commission and put into operation all items of specialist equipment supplied and/or installed under this Contract. The Contractor shall include fully for all such attendance as part of the provision of the electrical engineering services.

E.M.C. REGULATIONS

The electrical installation and all equipment supplied and fitted under this Contract shall comply with the current Electromagnetic Compatibility (EMC) Regulations.

Cables and connectors shall be installed in accordance with the requirements of EMC Directive 204/108/EEC.

LABELS AND CHARTS

All distribution boards, switchgear, control equipment, control switches, etc., shall be fully labelled for identification.

At the main distribution or intake position a distribution diagram shall be fixed showing connections installed complete with switch and fuse ratings and sizes and types of cables to each area served.

Labelling shall correspond with the schematic diagram, details given on the relevant drawings, in this Specification and/or as instructed on site.

All switching and distribution equipment shall be provided with white/black/white laminated "Traffolyte" labels engraved to show black lettering on white background, adequately describing the function of the unit and indicating the origin of the supply, the size of the feeding cable and protective device at the origin. For items connected to one or more phases of the supply, the label shall indicate the phase or phases to which the items is connected.

All D.P. & N and T.P. & N. distribution boards and multi-phase bus-bar chambers shall in addition be labelled "DANGER - 400 VOLTS" (or line to line voltage applicable) in RED lettering on white ground.

Precise details of circuits controlled by each MCB/RCBO or fuseway shall be provided on a typed circuit chart, covered and screw fixed to the wall immediately adjacent to the equipment.

In addition the chart supplied by the distribution board manufacturer will be completed in indelible ink.

Accessories

(a) All lighting switches that are fixed out of sight of the luminaires they control shall be engraved with lettering, filled in with black enamel indicating the position of, or otherwise, describing the luminaires.

(b) All equipment having cover plates of the "grid switch" pattern and indicated to be engraved, shall be engraved as described with black lettering.

(c) All other equipment indicated "to be engraved" shall have their cover plates engraved

as described with black lettering, or shall be provided with laminated white/black/white "Traffolyte" labels, engraved as described with black lettering on white background.

Labels shall be fixed to equipment by gluing or at least two brass screws; the equipment being drilled and tapped as required. Self-adhesive labelling will not be deemed acceptable to satisfy this requirement.

Layout approval for all labels shall be obtained before ordering.

The Contractor shall provide and fit in the switchroom one laminated copy of the Treatment for electric shock information sheet.

SPARE FUSES: SPARE GLASSES, ETC.

The Contractor shall be responsible for fitting the correct size BS1362 fuse to each piece of equipment supplied under this contract, by himself, or others.9

At "hand-over" date the Contractor shall pass to the Supervising Officer spare HRC fuse cartridges in accordance with Clause 5.

Where new Fire Alarm systems are fitted as part of the contract the following shall be provided: six spare fire alarm call point glasses, test keys as necessary for the call points and two spare automatic fire detectors of each type used on the contract.

Where emergency lighting test switches are installed 2 off test keys are to be provided The Contractor shall similarly provide any test keys required or special access tools for any other installed equipment, etc provided as a consequence of the contract.

TELECOMMUNICATION & DATA COMMUNICATIONS.

The Contractor shall ensure that the installation is provided to comply with the following standards whether provided directly, by himself, or on his behalf by others.

BS 6701:2010 Code of Practice for the Installation of apparatus intended for the connection to certain telecommunication systems.

BS EN 50174 – 2 2009: Information Technology – Cabling Installation - Part 2: Installation planning and practices inside buildings.

BS EN 50174 – 3 2013: Information Technology – Cabling Installation - Part 3: Installation planning and practices outside buildings.

PART D - PRICING SCHEDULE

The tenderer is required to complete the range of deliverables for each tender submission, by providing itemised schedule of costs, tender qualifications and additional works.

- 1. Preliminaries
- 2. Mechanical & Public Health Particulars

Above Ground Drainage

Domestic Services

Heating Enabling Works

Temporary Boiler/Heating

Heating Services

Option 1 ASHPs External

Option 2 – ASHPs in Garage

Ventilation Services

BEMS Installation

3. Electrical Particulars

Electrical Services

Option 1 ASHPs External

Option 2 – ASHPs in Garage

- 4. Builders Works
- 5. Inspection, Testing and Commissioning Installations
- 6. Provision of record and O&M information
- 7. Project Provisional Sums: **£60k ASHP acoustic compound**
- 8. Tender Qualifications & Additional Works

Total: £

PSG

END OF SPECIFICATION





LUDLOW LIBRARY, SHROPSHIRE

MECHANICAL UPGRADES AND ASSOCIATED WORKS 2021

PROJECT SPECIFIC PRELIMINARIES

JCT INTERMEDIATE BUILDING CONTRACT WITH CONTRACTOR'S DESIGN 2016


A10 PROJECT PARTICULARS

110

- THE PROJECT: Name: Ludlow Library Nature: Mechanical Upgrades and Associated Electrical Works Location: Ludlow Library, 7/9/Parkway, Corve St, Ludlow SY8 2PG Timescale for completion of the construction work: Total 14 weeks commencing 15th November 2021 (refer to clauses A13 & A20 for details).
- 120 EMPLOYERS: Shropshire Council, Shirehall, Abbey Foregate, Shrewsbury, Shropshire, SY2 6ND. The Employer will be represented by John Craven (Electrical Design Engineer), Shropshire Council, PSG, Shirehall, Abbey Foregate, Shrewsbury, Shropshire, SY2 6ND. Tel: 01743 281093.
- 127 PRINCIPAL CONTRACTOR: (as defined in the Construction (Design and Management) Regulations 2015): The Contractor will be appointed as the Principal Contractor under the CDM Regulations.

QUANTITY SURVEYOR: Shropshire Council, Shirehall, Abbey Foregate, Shrewsbury, Shropshire, SY2 6ND. The Employer will be represented by Amy Clowes (Quantity Surveyor), Shropshire Council, PSG, Shirehall, Abbey Foregate, Shrewsbury, Shropshire, SY2 6ND.

- 141 CONTRACT ADMINISTRATOR (hereinafter referred to as 'CA'): John Craven, Shropshire Council, PSG, Shirehall, Abbey Foregate, Shrewsbury, Shropshire SY2 6ND.
- 142 PRINCIPAL DESIGNER (as defined in the Construction (Design and Management) Regulations 2015): Shropshire Council, PSG, Shirehall, Abbey Foregate, Shrewsbury, Shropshire, SY2 6ND.

A11 TENDER AND CONTRACT DOCUMENTS (EMPLOYERS REQUIREMENTS)

110 TENDER DRAWINGS & DOCUMENTS: The tender drawings/documents are listed in the Schedule of Tender Documents.

The contractor should also carry out their own required checks to ascertain and confirm the type and positions of existing main services and drainage on the site, existing levels and any other information that he may require to enable him to undertake the construction of the building.

160 PRE-CONSTRUCTION INFORMATION PACK prepared under the Construction (Design and Management) Regulations 2015 accompanies the tender documents. The successful tenderer will be appointed as the Principal Contractor as defined under the Regulations. The Contractor shall be deemed to have allowed in his tender for all costs in connection with complying with the Regulations.



170 TENDER QUERIES: All queries regarding the tender documents shall be made via the delta vault. E-mails, telephone calls, etc. shall not be made to individuals. Only enquiries posted in the Delta Vault prior to noon on 21st October 2021 will be considered and responded to.

A12 THE SITE/EXISTING BUILDINGS

110 THE SITE: The site and site boundaries are located on each drawing within the tender documents. All the Contractor's Activities are to be contained within the site boundary.

The Contractor shall ensure that all public rights of way, together with the site access driveway, highways and adjoining footpaths are kept clean, safe and in an orderly condition at all times. The Contractor shall allow for cleaning of all access and engress routes and paved areas affected by the works from time to time as necessary. Any damage caused by Construction traffic must be immediately made good at the Contractor's own expense.

The Contractor must carry out the works without undue inconvenience and nuisance and without danger to occupants and users of existing adjacent buildings, roads, footpaths, parking areas and other amenities.

On a daily basis the Contractor is to check the building to ensure nothing has moved, through the vibration of the works that will cause something internally to drop. i.e. ceiling tiles, light diffusers, etc.

On a daily basis prior to works commencing the Contractor's Site Forman is to communicate directly with Luke Blakeway and Ludlow Library Staff, to inform them on what their planned work for that day.

120 EXISTING BUILDINGS ON/ADJACENT TO THE SITE: Existing buildings on/adjacent to the site are surrounding residential and commercial properties. The Contractor shall always allow safe and unrestricted access for staff, general public, occupants and users of this building.

The production of dust and debris is to be kept to a minimum as far as is practicably possible to spread to adjoining properties. Where skips are used, they must be sited in locations agrees by the CA and covered.



The Contractor and those directly responsible to him shall not trespass on existing adjoining properties but shall confine themselves strictly to the locality of their working area.

- 125 WORKING AREA: The Contractor's working area confined to within the work area. Works may be required to areas outside the defined working areas. Permission must be obtained before any work is commenced outside of the defined working area. This approval shall in no way be construed as an instruction to work overtime.
- 130 WORKING HOURS: A restriction is imposed by the Employer that working hours will be from 8.00am to 5.00pm Monday to Friday. The Contractor should also allow within their price separately for out of hours working should this be required. The Contractor is advised that extended working hours will be subject to agreement with the Employer, this must be done in writing. No work is permitted on Sundays or bank holidays.
- 140 EXISTING MAINS/SERVICES: The extent of known services within the curtilage of the site is unknown. It will be deemed that the Contractor will have inspected the existing over and underground mains/services shown on the drawings before submitting his tender.

Before commencing site operations, the Contractor shall notify the various service authorities that work will be proceeding in proximity to their installations and enquire the exact positions of all such installations that may be under or over the site.

Prior to commencing work the Contractor shall survey the area with suitable equipment to detect gas, water and electric services and installations of various voltages. These checks should continue as excavation and demolition/alteration work proceeds.

The Contractor shall protect, uphold and maintain all pipes, ducts, sewers, service mains, overhead cables and the like until completion of the works.

The Contractor shall without delay make good any damage due to any cause within his, his agents or sub-contractors' control at his own expense and pay any costs and charges in connection therewith.

Any permanent supports, permanent diversions or other works executed on written instructions will be paid for under the terms of the Contract. The Contractor shall not interfere with the operations of existing services such as gas, water, electricity, telephones, buried cables or sewers, drains, field drains and road side ditches without the permission of the Contract Administrator and in the case of service authorities and private owners without their permission.

Any damage to mains or services shall be reported immediately to the CA.



175 ASBESTOS SURVEY: No Asbestos Survey has been undertaken due to the age of the building. If any ACM's found in this report will be affected by the works these will need to be removed prior to the works being carried out.

Any further unexpected suspicious materials encountered on site shall be notified to the CA immediately.

- 150 ACCESS TO THE SITE: shall be via the main Library entrance. There is an overflow tarmac area which Contractors can use to park their vehicles. The Contractor will be required to provide and maintain safe access into the site and traffic management system for control of vehicle movement on the site.
- 220 PARKING: Parking of the Contractor's and Sub-Contractor's vehicles will be restricted to the pay and display car park adjacent the library. No parking will be allowed on the side streets surrounding the site. The access road into the site must remain clear at all times. The Contractor must ensure parking of his vehicles on roads surrounding the site does not cause an obstruction or nuisance.
- 230 DELIVERIES: The Contractor is required to take all necessary precautions when arranging deliveries and ingress/egress from the site. It is essential that access is maintained to the surrounding residential and commercial properties. The Library will remain in use during the period of the works. This includes vehicle access for the emergency services, deliveries and maintenance.
- 240 USE OF THE SITE: The Contractor shall not use the site for any purpose other than that of carrying out the Works.

The area of the site available for use by the contractor is restricted to that shown on the enclosed tender drawings. The Contractor shall obtain the CA's agreement to his proposals for the siting of all materials, sheds, offices, toilets and any other structures in connection with the works, which shall be contained within this area and shall arrange these and his activities to cause the least nuisance to the staff and occupants of the building and the adjacent properties.

The Contractor will not be allowed to deposit or store materials or park plant outside the area of the site. The Contractor shall not alter his proposals without the permission of the Contract Administrator. The CA will not entertain any claims due to the effect of the Contractor's proposals or any subsequent alteration to his proposals. Do not display or permit advertisements to be displayed on site without the consent of the CA.

250 SURROUNDING LAND/BUILDING USES: The contractor is to take into consideration the surrounding residential and commercial properties. The Library will be partially operational throughout the contract. During all times care must be taken to ensure the safety and uninterrupted working of the staff and general public.



The Contractor is to take account of the close proximity of the adjoining buildings, footpaths and boundaries that are to remain in operation throughout the course of this project. Street parking and dirty roads should be avoided.

- 260 RISKS TO HEALTH AND SAFETY: The Contractor shall visit the site and ascertain for himself any information he may require to ensure the safety of all persons and the works. The nature and condition of the site/building cannot be fully and certainly ascertained before it is opened up.
- 280 SITE VISIT: Before tendering, ascertain the nature of the site, access thereto and all local conditions and restrictions likely to affect the execution of the Works, since no claim by the Contractor will be admitted on the grounds of deficiency of knowledge in such matters.

Access to the site for the purpose of tendering shall be made by prior appointment with Paul Elliot (Shropshire Council) – telephone 01743 250510.

A13 DESCRIPTION OF THE WORK

- 120 THE WORKS: The Works comprise of the following:
 - Remove current boilers.
 - New Air Source Heat Pump and associated electrical works.
 - Installation of a Hybrid boiler system.
 - Rectify underfloor heating system.
 - Replace the BMS Controls.
 - Allow for temporary boilers for the duration of the works.

Please refer to drawings and Specifications for further details.

140 SEQUENCE OF WORKING: Is to be agreed with the CA prior to commencing work on site.

A20 THE CONTRACT

Form, Type and Conditions of Contract

The form of contract shall be the JCT Intermediate Building Contract with contractor's design 2016 (ICD2016). **The contract is to be executed as a deed.**

The Contractor is referred to the several Clauses in the Conditions and they are to allow here under any sums they may consider necessary to cover their fulfilment, except where otherwise specifically stated.

Completion of Contract Particulars

Schedule of Clause Headings



- 1. Definitions and Interpretation
- 2. Carrying out the Works
- 3. Control of the Works
- 4. Payment
- 5. Variations
- 6. Injury, Damage and Insurance
- 7. Assignment and Collateral Warranties
- 8. Termination
- 9. Settlement of Disputes

RECITALS 1-12

1st Recital

The nature and location of works: Refer to Section A10.

2nd Recital

The Contractor's Design Portion will be the design of the BMS System.

3rd Recital

The drawings are numbered/listed in Schedule of Tender Documents.

4th Recital

The Contractor will provide a priced Contract Specification, of which documents will state his requirements for the design and construction of the Contractor's Designed Portion.

5th Recital

The Contractor has priced under Pricing Option B.

Reference to the activity schedule is to be deleted.

6th Recital

In response to the Employer's Requirements the Contractor has supplied to the Employer documents showing and describing the Contractor's proposals for the design and construction of the Contractor's Designed Portion.

11th Recital

The works will not be split into sections.

12th Recital

The contract will be supplemented by a Framework Agreement comprising a Dynamic Purchasing Agreement dated (1st October 2019) between the Employer and the Contractor.

ARTICLES 1-9

Article 2: Contract Sum - TBC

The Employer shall pay the Contractor at the times and in the manner specified in the Conditions.

Article 3: Architect/ Contract Administrator: See Section A10.

Article 4: Quantity Surveyor: See Section A10



Article 5: Principal Designer: See Section A10.

The Principle Designer for the purpose of the CDM Regulations is the Contract Administrator.

Article 6: Principal Contractor: See section A10.

The Principle Contractor for the purpose of the CDM Regulations is the Contractor.

Article 7: Adjudication

If any dispute or differences arises under the Contract, either Party may refer it to adjudication in accordance with clause 9-2.

The Employer is not a residential occupier under the Housing Grant, Construction and Regeneration Act 1999.

Article 8: Arbitration

To be deleted.

Article 9: Legal Proceedings

Subject to Article 7 and (where it applies) Article 8.

Contract Particulars

Part 1: General

Fourth Recital

Employers Requirements are listed in the Schedule of Tender Documents.

Sixth Recital

Contractor's Proposals to be confirmed.

Sixth Recital

Contractor's Design Portion to be confirmed.

Eighth Recital & clause 4.6

Employer at the base date is a Contractor for the purpose of the CIS.

Tenth Recital

The project is not notifiable under the CDM Regulations.

Eleventh Recital

Omit

Twelfth Recital

The contract will be supplemented by a Framework Agreement comprising a Dynamic Purchasing Agreement dated (1st October 2019) between the Employer and the Contractor.

Thirteenth Recital and Schedule 5



Supplemental Provisions 1 - Collaborative working: Does not apply

Supplemental Provisions 2 - Health and Safety: Does apply

Supplemental Provisions 3 - Cost savings and value improvements: Does not apply

Supplemental Provisions 4 - Sustainable development and environmental considerations: Does not apply

Supplemental Provisions 5 - Performance Indicators and monitoring: Does not apply

Supplemental Provisions 6 - Notification and negotiation of disputes: Does not apply

Article 8 Arbitration

Article 8 and clause 9.3 to 9.8 (Arbitration) apply

- **1.1**Base Date15th October 2021
- 1.1 BIM Protocol Not Applicable
- **1.1 Date for completion of the works** 25th February 2022
- **1.7** Addresses for the services of notice by the Parties

Employer: The Shirehall, Abbey Foregate, Shrewsbury SY2 6ND Contractor: TBC

- **2.4 Date of Possession of the Site** 15th November 2021
- 2.5 Deferment of Possession of the Site applies

The Maximum period of deferment is 6 weeks.

- **2.23.2 Liquidated damages**at the rate of £600.00 per week or part week
- **2.30** Rectification Period12 months from date of Practical
Completion of the works.
- 2.34.3 Contractor's Designed Portion; limit of Contractor's liability for loss of use etc.

£2,000,000.00

4.3 and 4.9 Fluctuations Provisions		No Fluctuations Provision applies		
4.7 Adv	anced Payment	An advance payment does not apply		
4.7	Advance Payment Bond	An advance payment bond is not required		



4.8.1	Interin	n payment – due date	The and or t	first due date is: 15 th December 2021 thereafter the same day in each month he nearest Business Day in that month.		
4.9.1	Interin	n payments – percentages of value				
		What percentage of the total value is to be certified before practical completion		95%		
		What percentage of the total amount is to be certified on and after Practical Completion	d	97.5%		
4.10.4 Listed Items Omit						
4.10.5 Listed Items Omit						
6.4.1 C	Contract	tor's Public Liability Insurance		£5,000,000.00		
6.5.1 Insurance Liability of Employer				£5,000,000.00		
6.7 and Schedule 1 Works Insurance - Insurance Option C applies						
	Percer	tage to cover Professional Fees		15%		
	Where insurance Option C applies, paragraph C.1 applies					
6.10 and Schedule 1 Terrorism Cover Unless otherwise stated, Pool Re Cover is required						
6.15 Joint Fire Code The Joint Fire Code applies The Joint Fire Code applies, but the insurer under Option C has specified that the Works						

are not a 'Large Project'.

6.18 Joint Fire Code – amendments and revisions

The cost shall be borne by the Contractor unless otherwise stated.

6.19 Contractor's Design Portion – Professional Indemnity Insurance

The amount of indemnity required relates to claims or series of claims arising out of one event And is **£5,000,000.00**.

Cover for pollution and contamination claims is not required.



Expiry of required period of CDP Professional Indemnity insurance is 12 years.

7.2.1 Performance bond or guarantee from the bank or other approved surety is required

The required form of the bond or guarantee is set out in

The ABI form of Bond is attached in the schedule of tender documents

Percentage of the Contract Sum for the initial value: 10%

Period of validity: the date of Practical Completion of the Works

Percentage reduction in the initial value on date of Practical Completion of the works: 50%

7.2.2 Guarantee from the Contractor's parent company if applicable

7.3 Collateral Warranties	JCT SCWa E2016
8.9.2 Period of suspension	2 Months
8.11.1.1 to 8.11.1.5 Period of Suspension	2 Months

9.2.1 Name of Adjudicator

President or Vice – President of the Royal Institution of Chartered Surveyors

9.4.1 Arbitration

President or Vice – President of the Royal Institution of Chartered Surveyors

The Contract is required to comply with the Modern Slavery Act 2015.

A30 TENDERING/SUBLETTING/SUPPLY

MAIN CONTRACT TENDERING

- 120 TENDERING PROCEDURE: The tendering procedure shall be in accordance with the Councils Financial Regulations and Standing Orders. Tenders must be returned by the stated time – any tenders arriving after that time shall not be considered. Tenders shall be returned via the electronic 'Delta vault' the time of their delivery shall be automatically recorded. Once opened tenders will be dealt with in accordance with the 'JCT 2017 Practice Note' - Alternative 2
- 160 EXCLUSIONS: If the Contractor cannot tender for any part(s) of the work as defined in the tender documents he must inform the CA as soon as possible, defining the relevant part(s) and stating the reason(s) for his inability to tender.



- 170 ACCEPTANCE OF TENDER: The Employer and his representatives:
 - Offer no guarantee that the lowest or any tender will be recommended for acceptance or accepted.
 - Will not be responsible for any costs incurred by the Tenderer in the preparation of any tender.
- 190 PERIOD OF VALIDITY: Tenders must remain open for consideration (unless previously withdrawn) for not less than **90 days** from the date fixed for the submission or lodgement of tenders. Information on the date for possession/commencement is given in section A20.

PRICING/SUBMISSION OF DOCUMENTS

- 300 The following documents must be returned by the tendering (each in a separate subfile with the name of the tenderers on each document, numbered and placed within Delta system to enable to Employer to access separately each document):
 - (a) The Form of Tender duly completed and signed (pdf format)
 - (b) One copy of a fully completed and priced Schedule of Works (pdf format)
 - (c) Basic site set up plan including offices, storage/sheds/containers, waste containers and access routes around the site marked on a site layout drawing. (pdf format)
 - (d) Draft programme of work in bar chart format (pdf format)
 - (e) The Contractors General Cost Items (see clauses A40-A44); duly completed and signed (pdf format)

FAILURE TO PROVIDE THE ABOVE INFORMATION SHALL INVALIDATE THE CONTRACTORS TENDER

- 310 SPECIFICATION WITHOUT QUANTITES: Where and to the extent that quantities are not included in the specification, tenders must include for all work shown or described in the tender documents as a whole or clearly apparent as being necessary for the complete and proper execution of the Works.
- 320 PRICING OF SPECIFICATION & DRAWINGS: Alterations and qualifications to the specification and drawings must not be made without the written consent of the CA. Tenders containing unauthorised alterations or qualifications may be rejected. Costs relating to items in the specification which are not priced will be deemed to have been included elsewhere in the tender.
- 330 SUBSTITUTE PRODUCTS: <u>At the time of Tendering, substitute products will not be</u> <u>accepted. Tenderers shall price the items as per the drawings and specifications. It will</u> <u>be assumed that all Tenderers final costs include ALL items included within the</u> <u>tendering specification and drawings. No allowance will be made for Contractors not</u> <u>pricing the document correctly – If it is found that the Contractor has tendered using a</u> <u>substitute product / materials / fixing than those specified within the tender</u> <u>documents the Contractor's tender will be void.</u>



Post Tender substitute products will not be accepted without written approval from the CA. The Contractor will be required to provide the specified product / materials / fixing as the Employers Specifications and Drawings.

Post Tender should the Contractor wish to offer a substitute product / materials / fixing to those specified; details must be submitted to the CA giving reason for each proposed substitution. These will be subject to Value Engineering at a meeting between the Design Team, the Contractor and relevant Sub-contractors / suppliers. Substitution shall be actioned by the CA will be subject to verification requirements of clause A31/200.

340 ERRORS IN THE PRICED CONTRACT SUM ANALYSIS will be dealt with in accordance with the 'JCT 2017 Practice Note' - Alternative 2.

If when preparing his tender the Contractor shall find any discrepancy in or divergence between the drawings and/or Specification, he shall immediately contact the CA for instructions.

Where the contractor fails to request such instructions and instead interprets the discrepancy for himself, the contractor will have no claim against the Employer as a result of any subsequent decision by the CA.

- 345 PRICING OF DAYWORKS: If the overheads and profit amounts / percentages are not filled in they will be deemed to be zero.
- 350 VARIATIONS OVERHEAD AND PROFIT: If the overheads and profits percentages are not filled in they will be deemed to be zero.
- 360 QUALITY CONTROL RESOURCES: A statement must be submitted with the Contractor's programme, describing the organisation and resources which the Contractor proposes and undertakes to provide to control the quality of the Works, including the work of subcontractors. The statement must include the number and type of staff responsible for quality control, with details of their qualifications and duties.

SUB-LETTING/SUPPLY

631 'LISTED' DOMESTIC SUBCONTRACTORS: General: Contract Documents provide that certain work must be carried out by a person of the Contractor's choice selected from a list of not less than three persons given therein.

- The selected person: Will become a subcontractor as provided for in the Contract Condition for Subletting.
- Additions to lists:
- The Employer or Employer's representative may, but only with the consent of the Contractor which shall not be unreasonably withheld, add additional person(s) to the list at any time prior to the execution of a binding subcontract agreement.
- The Contractor may, but only with consent, which will not be unreasonably withheld, add additional persons to the list and must, if requested, submit (in an approved form) evidence of the suitability of such additional person(s). Wherever



possible, submissions for addition of person(s) must be made, and consent obtained, before return of the tender. When any submission for addition of person(s) is made with the tender the consequences, if any, to the tender price compared to the use of the listed persons are to be made clear or the tender will be treated as qualified.

- Shortage of names: If at any time prior to execution of a binding subcontract agreement less than three persons named in the list (including any persons added as provided above) are able and willing to carry out the relevant work, give notice without delay. The Employer will then forthwith add the names of other persons as provided above so that the list comprises not less than three such persons, or confirm that no names will be added. If the Employer fails to do either within one week of the Contractor's notification the Contractor, who may subcontract in accordance with the Contract, must carry out the work.
- Agreement: Before the start of work to which the list relates enter into a binding subcontract agreement and confirm that this has been done, giving the name of the selected subcontractor.
- 650 SUPPLIERS: Shall be appointed and orders for materials / product / etc. placed well in advance of their required delivery date. Any problems with delivery times, availability of items or any other circumstances which may affect the programme or require a substitution of the supplier or item shall be reported to the CA immediately. The Contractor shall report upon the current position of his supply orders at the Pre-start Meeting and successive Site Meetings.

A31 PROVISION, CONTENT AND USE OF DOCUMENTS

- 110 DEFINITIONS: The meaning of terms, derived terms and synonyms used in the preliminaries/general conditions is as defined below or in the appropriate British Standard or British Standard glossary.
- 115 SINGLE/PLURAL: Words imparting the singular only also include the plural and vice versa when the context requires.
- 120 CA means the person nominated in the Contract as Contract Administrator or his authorised representative(s).
- 130 IN WRITING: Notify, inform, instruct, agree, confirm, obtain information, obtain / issue approval or obtain / issue instructions do so in writing.
- 131 DRAWINGS: Drawings shall be construed as 'in writing' when issued by the CA or when used in support of or in lieu of written documents by anyone under the contract.
- 132 PRODUCTS means materials (including naturally occurring materials) and goods (including components, equipment and accessories) intended for permanent incorporation in the Works.



- 133 CROSS-REFERENCES TO THE SPECIFICATION: Where a numerical cross-reference to a specification section or clause is given on drawings or in any other document the Contractor must verify its accuracy by checking the remainder of the annotation or item description against the terminology used in the referred to section or clause.
 - Where a numerical cross-reference is not given the relevant section(s) and clause(s) of the specification will apply, cross-reference thereto being by means of related terminology.
 - Where a cross-reference for a particular type of work, feature, material or product is given, relevant clause(s) elsewhere in the referred to specification section dealing with general matters, ancillary products and workmanship also apply.
- The Contractor must, before proceeding, obtain clarification or instructions in relation to any discrepancy or ambiguity which he may discover.
- 134 PROGRAMMES: issued showing a variance in progress shall be deemed to be 'notification in writing' of the possibility of delay or acceleration only if the change / revision / alteration and its affect is highlighted by colour and notation such that it stands out and is obvious to persons perusing the programme and the CA's attention is drawn to it. These changes and their consequences shall also be raised and discussed at the next Site Meeting.
- 140 APPROVAL (and words derived thereof) means the approval in writing of the CA unless specified otherwise.
- 210 BRITISH STANDARD PRODUCTS: Where any product is specified to comply with a British Standard for which there is no equivalent European Standard it may be substituted by a product complying with a grade or category within a national standard of another Member State of the European Community or an international standard recognised in the UK specifying equivalent requirements and assurances in respect of material, safety, reliability, function, compatibility with adjacent construction, availability of compatible accessories, and, where relevant, appearance. In advance of ordering notify the CA of all such substitutions and submit for verification documentary evidence confirming that the products comply with the specified requirements. Any submitted foreign language documents must be accompanied by certified translations into English.
- 211 EQUIVALENT PRODUCTS: Where the specification permits substitution of a product of different manufacture to that specified and such substitution is desired it shall be discussed with the CA and Value Engineered. Before ordering the product submit for verification documentary evidence that the alternative product is equivalent in respect of material, safety, reliability, function, compatibility with adjacent construction, availability of compatible accessories, and, where relevant, appearance. Submit certified English translations of any foreign language documents. Revise all Design and Site Health and Safety Plans accordingly prior to ordering.
- Any proposal for use of an alternative product must also include proposals for substitution of compatible accessory products and variation of details as necessary, with evidence of equivalent durability, function and appearance of the construction as a whole. If such substitution is sanctioned, and before ordering products, provide revised drawings, specifications and manufacturer's guarantees to the CA.



- 220 REFERENCES TO BSI DOCUMENTS: Are to be the versions and amendments listed in the BSI Standards Catalogue 1989 and in subsequent issues of BSI Update-Standard up to the base date of the contract.
- 221 MANUFACTURER AND REFERENCE: Where used in this combination:
 - 'Manufacturer' means the firm under whose name the particular product is marketed.
 - 'Reference' means the proprietary brand name and/or reference by which the particular product is identified.
- 270 SIZES: Unless otherwise stated:
 - Products are specified by their co-ordinating sizes.
 - Cross-section dimensions of timber shown on drawings are generally nominal sizes before any required planning, routing or finishing.
 - Cross-section dimensions of timber where finished dimensions are shown they shall be labelled 'finished size'.
 - Cross-section dimensions of proprietary and pre-finished timber (e.g. door-sets) and of manufactured boards are finished sizes.
- 280 FIX ONLY means all labours in unloading, handling, storing, protecting and fixing in position, materials used to fix the item (e.g. screws, glue), all plant and all tools, but does not include the cost of supplying the item itself.
- 290 SUPPLY AND FIX: Unless stated otherwise all items given in the specification and/or on the drawings are to be supplied and fixed complete.

TERMS USED IN REFURBISHMENT/ALTERATION

- 311 REMOVE means disconnect, dismantle as necessary and remove the stated element, work or component and all associated accessories, fastenings, supports, linings and bedding materials, and dispose of unwanted materials. It does not include removing associated pipe work, wiring, ductwork or other services.
- 321 KEEP/SET ASIDE FOR REUSE means:
 - During removal prevent damage to the stated components or materials, and clean off bedding and jointing materials.
 - Stack neatly, adequately protect and store until required by the Employer or for use in the Works as instructed.
- 331 REPLACE means:
 - Remove the stated existing components, features and finishes.
 - Provide and fit in lieu new components, features or finishes which, unless specified otherwise, must match those which have been removed.
 - Make good as necessary.
- 341 REPAIR means carry out local remedial work to components, features and finishes as found in the existing building. Re-secure or re-fix as necessary and leave in a sound and neat condition. It does not include:
 - Replacement of components or parts of components.



- Redecoration.

- 351 MAKE GOOD means carry out local remedial work to components, features and finishes which have been disturbed by other, previous work under this Contract and leave in a sound and neat condition. It does not include:
 - Replacement of components or parts of components.
 - Redecoration

The meaning of the term shall not be limited by this definition where used in connection with the defects liability provisions of the Contract.

- 361 EASE means make minor adjustments to moving parts of the stated component to achieve good fit in both open and closed positions and ensure free movement in relation to fixed surrounds. Make good as necessary.
- 371 TO MATCH EXISTING means use products, materials and methods to match closely all visual characteristics and features of the existing work, with joints between existing and new work as inconspicuous as possible, all to approval of CA.

DOCUMENTS PROVIDED ON BEHALF OF EMPLOYER

- 410 ADDITIONAL COPIES OF DRAWINGS: Two paper copies (not counting any certified copy of the Contract Drawings) and one electronic copy of drawings will be issued to the Contractor free of charge. Additional copies will be issued on request but will be charged to the Contractor.
- 440 DIMENSIONS: The accuracy of dimensions scaled from the drawings is not guaranteed. Obtain from the CA any dimensions required but not given in on the drawings nor calculable from the drawings.

DOCUMENTS PROVIDED BY CONTRACTOR / SUB-CONTRACTORS / SUPPLIERS

AS BUILT DRAWINGS AND INFORMATION : The following must be provided to the CA not less than two weeks before the date for Completion as follows:

The following must be provided at Practical Completion / Handover:

As-Built M&E Drawings Building Regulation Certificate Chlorination Certificate Completed PPM Form All manufacturers guarantees and certificates

720 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.



730 SHARING OF FILES: File sharing will be done Electronically by both Employer and Contractor and all subcontractors using SharePoint, no alternative system will be suggested.

A32 MANAGEMENT OF THE WORKS

GENERALLY

- 105 SITE MANAGEMENT: The Contractor shall operate/manage the site from offices, facilities and stores within the compound forming part of these Works. The Contractor shall not operate/manage this project from any other adjacent or local project offices /compound.
- 110 SUPERVISION: The Contractor shall be responsible for co-ordination, supervision and administration of the Works, including all subcontracts. Arrange and monitor a programme with each subcontractor, supplier, local authority and statutory undertaker, and obtain and supply information as necessary for co-ordination of the work.
- 112 LIAISE: The Contractor shall place orders with and liaise with Statutory Undertakers, the Local Authority, etc where they are supplying services, drainage, etc. for the Works. The Contractor shall liaise with the Local Authority, adjacent Contractors / Developers. The Contractor shall introduce their company and notify the surrounding properties in writing of the impending commencement of the project, contact names and telephone numbers and a brief description of the project. A warning of the dangers of building sites and trespass should also be included
- 115 CLERK OF WORKS: The Contractor's Administrator reserves the right to be represented on site by a Clerk of Works who will monitor progress, quality of workmanship, conformity of materials to specification and the organisation of the Works on a daily basis. He will discuss any items of concern with the Contractors representative on site and report to the Contracts Administrator. He will also be on hand for the initial investigation of any problems arising on site prior to reporting to the Contracts Administrator.
- 120 INSURANCE: Before starting work on site submit documentary evidence and/or policies and receipts for the insurance required by the Conditions of Contract.
- 130 INSURANCE CLAIMS: If any event occurs which may give rise to any 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, forthwith give notice in writing to the Employer, the CA and the Insurers. Indemnify the Employer against any loss which may be caused by failure to give such notice.
- 140 CLIMATIC CONDITIONS: Keep an accurate record of:
 - o Daily maximum and minimum air temperatures (including overnight).
 - Daily rainfall during the working day noting am or pm.
 - Wind speeds during the working day noting am or pm
 - Delays due to adverse weather, including description of the weather, type(s) of work affected and how, and number of hours lost.



150 OWNERSHIP: Materials arising from the demolition works are to become the property of the Contractor except where otherwise stated. Remove from site as work proceeds.

BUILDING REGULATIONS

160 The project does not require Building Control Approval.

PROGRAMME/PROGRESS

211 PROGRAMME:

As soon as possible and before starting work on site the Contractor shall prepare in an approved form a time and progress schedule for the execution of the Works showing time allocated for each element of work, the placing of orders, delivery of materials, arrival, etc. which must show the critical path to achieve the required contract completion date and allowance for all:

- Dates of Possession, Completion and Hand over;
- Planning and Mobilisation by the Contractor.
- Sub-contractor's work
- Orders to Suppliers and their delivery dates

- The agreed dates for the issue of information by the Architect and other Employer consultants.

- Running in, adjustment, commissioning and testing of all engineering services and installations, including testing kitchen equipment.

- Work resulting from instructions issued in regard to the expenditure of provisional and Prime Cost sums (see section A54)

- Work by or on behalf of the Employer and concurrent with the Contract (see section A50)

the nature and scope of which, the relationship with preceding and following work and any relevant limitations are suitably defined in the Contract Documents.

- Requirements of Sub-Contractors and Suppliers, Local Authorities, Statutory Undertakers and any persons employed by the Employer.

Where and to the extent that the programme implications for work which is not so defined are impossible to assess the Contractor should exclude it from his programme and confirm this when submitting the programme.

Submit 2 copies to CA and retain one copy in the Contractor's site office to record progress on site.

215 The Programme will be a 'living document' and shall be modified / re-drafted on a weekly basis as orders are placed and work progresses on site. In addition the programme shall be modified / redrafted to demonstrate the effects of proposed changes prior to the decision to make such changes as part of the Value Engineering process. The programme shall also be modified / redrafted if any potential disruptions or other circumstances arise which may affect the progress of the Works or when requested by the Contract Administrator. Potential variations are to be entered into the programme to establish whether any delays or time savings would be caused.



- 230 SUBMISSION of programmes will not relieve the Contractor of his responsibility to apply in writing for information, instructions, drawings, etc. in accordance with the Conditions of Contract.
- 240 COMMENCEMENT OF WORK: Inform the CA at least 5 working days before the proposed date for commencement of work on site.

Prior to commencing the contractor should prepare and submit to the CA a photographic record of the internal and external condition of the units.

- 250 MONITORING: Record progress on a copy of the programme kept on site. If any circumstances arise that may affect the progress of the Works put forward proposals or take other action as appropriate to minimise any delay and to recover any lost time.
- 251 MONITORING KPI'S
 - Key Performance Indicators:
 - Details: Not applicable.
 - Record progress against each of the KPI's. If performance against KPI's falls short of target, submit proposals for remediation.
- 260 SITE MEETINGS: The CA will hold regular site meetings with the Contractor to review progress and other matters arising from the administration of the Contract. The CA will be required to arrange and chair such meetings, and record, produce and circulate minutes.

Site meetings will be normally held on a monthly basis, commencing not more than 1 month after the date of possession. The date of the next meeting will be set at the end of each meeting to allow the meetings to be timed to suit the developing construction programme.

Ensure the availability and suitability of accommodation at the time of such meetings. Attend all meetings and inform subcontractors and suppliers when their presence is required. Additional meetings between Sub-contractors, the Contractor and the Design Team shall be held regularly at intervals varying between fortnightly and monthly as progress on site demands and the minutes presented at the next Site Meeting.

- 270 CONTRACTOR'S SITE MEETINGS: Hold meetings with appropriate subcontractors and suppliers shortly before main site meetings to facilitate accurate reporting of progress.
- 290 NOTICE OF COMPLETION: Give CA at least **two** weeks notice of the anticipated date of practical completion of the Works to enable his or her representatives attendance to see that the testing and commissioning procedures are adequately undertaken and comply with the relevant Specifications / Regulations.

295 PARTIAL POSSESSION BY EMPLOYER Partial Possession: Ensure all necessary access, services and other associated facilities are also complete.



297 EXTENSIONS OF TIME

Notice: When a notice of the cause of any delay or likely delay in the progress of the works is given under the contract, written notice must also be given of all other causes which apply concurrently.

Details: As soon as possible submit:

- Relevant particulars of the expected effects, if appropriate, related to the concurrent causes.

- An estimate of the extent, if any, of the expected delay in the completion of the Works beyond the date for completion.

- All other relevant information required.

- 300 ADVERSE WEATHER: Use all reasonable and suitable building aids and methods to prevent or minimise delays during adverse weather conditions i.e. take all necessary steps to protect individual work areas.
- 305 DELAYS: The Contractor shall strive to minimise delays irrespective of cause and shall meet and work with the Employer and Contract Administrator to identify ways of overcoming delays to the construction programme. These may involve reprogramming work, altering construction methods, substituting materials, additional working hours, etc. and the effect on the programme shall be tested by observing their effect upon the critical path of the programme. Once agreement has been reached the changes shall be incorporated into the programme and any necessary Contract Administrator Instructions issued immediately.

CONTROL OF COST – CONTRACT ADMINISTRATOR INSTRUCTIONS

- 410 QUOTATION: Generally any additional or reduced work to be carried out as a consequence of an Employers Instruction shall be priced by the Contactor and submitted to the CA for acceptance before work commences.
- 415 PROPOSED INSTRUCTIONS Estimates: If a proposed instruction requests an estimate of cost, submit without delay and in any case within seven days.

Include:

- A detailed breakdown of the cost, including any allowance for direct loss and expense.
- Details of any additional resources required.
- Details of any adjustments to be made to the programme for the Works.

- Any 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.

420 EXISTING WORK: The extent and location of renewal of existing work must be agreed, at least on a provisional basis, with the CA before the work is started. Remove existing work in ways which will reasonably minimise the amount of removal and renewal.



- 440 MEASUREMENTS: Give reasonable notice to the Quantity Surveyor before covering up work that the Quantity Surveyor requires to be measured. All groundwork's levels and dimensions shall be recorded for incorporation into the Health and Safety File. Keep accurate measurements and records of all variations and for any items for which the Contractor wishes to claim monies or an extension of time. Copies of all measurements of work as carried out are to be accurate and a copy provided to the Quantity Surveyor.
- 445 REQUIREMENTS / INSTRUCTIONS FROM BUILDING CONTROL OFFICERS: Notify the CA immediately. If these incorporate items which will be of necessity covered up in a short time e.g. depth of foundation trenches, notify the QS and take measurements of the additional work.
- 450 DAYWORK VOUCHERS: Give reasonable notice to the Quantity Surveyor of the commencement of any work for which daywork vouchers are to be submitted. Before being delivered each voucher must be:
 - o Referenced to the instruction under which the work is authorised, and
 - Signed by the person in charge as evidence that the workmen's names, the time spent by each, the plant and materials shown are correct.
- 462 INTERIM PAYMENTS: The Contractor when applying for interim certificates is to supply the CA with a completely detailed statement of the amounts due under the Contract together with all necessary supporting invoices, measurements, priced Daywork vouchers and other information. Any supporting information requested by the Quantity Surveyor after the Contractors request for payment should be supplied within 2 days or it will not be included with in the Interim Payment. Whether the supporting information is provided or not the QS is not bound to accept any or all of it as conclusive. The Contractor is to provide the CA with a Cash Flow Forecast for the project expenditure.
- 480 LABOUR AND PLANT RETURNS: Weekly return (labour and plant). The Contractor shall, at the beginning of each week provide the CA with a daily distribution return each day for the previous week, showing the number and description of tradesmen and labourers employed on the works, including those employed by named Sub-Contractors, and the number, type and capacity of all plant currently employed on the works. If possible these records should be signed by the Clerk of Works.
- 490 PREPARATION OF THE FINAL ACCOUNT: The Contractor shall provide the Quantity Surveyor with any receipted invoices, wage sheets and other documents that he may require and give the Quantity Surveyor all necessary assistance both on his own behalf and on behalf of all sub-contractors and suppliers. The aforesaid documents shall be retained and produced, if requested by the District Auditor until the expiry of the appropriate period under the Statute of Limitations.
- 500 PROJECT MANAGEMENT AND INSTRUCTIONS Prince 2 Project methodology: Will not apply.

A33 QUALITY STANDARDS/CONTROL

MATERIALS AND WORK GENERALLY



- 110 GOOD PRACTICE: Where and to the extent that materials and products are not fully detailed or specified they are to be:
 - Of a standard appropriate to the Works and suitable for the functions stated in or reasonably to be inferred from the project documents, and
 - In accordance with good building practice including the relevant provision of current British Standard documents.

Workmanship shall be of good quality and shall be carried out or overseen by qualified, time served tradesmen experienced in that particular type of work.

- 120 GENERAL QUALITY OF PRODUCTS:
 - Products to be new unless otherwise specified.
 - For products specified to a British or European Standard obtain certificates of compliance from manufacturers when requested by CA.
 - Where a choice of manufacturer or source of supply is allowed for any particular product, the whole quantity required to complete the work must be of the same type, manufacture and/or source unless otherwise approved. Produce written evidence of sources of supply when requested by CA.
 - Ensure that the whole quantity of each product required to complete the work is of consistent kind, size, quality and overall appearance.
 - Where consistency of appearance is desirable ensure consistency of supply from the same source. Unless otherwise approved do not use different colour batches where they can be seen together.
 - If products are prone to deterioration or have a limited shelf life, order in suitable quantities to a programme and use in appropriate sequence. Do not use if there are any signs of deterioration, setting or other unsatisfactory conditions.

130 PROPRIETARY PRODUCTS:

- Handle, store, prepare and use or fix each product in accordance with its manufacturer's current printed or written recommendations/instructions. Inform CA if this conflicts with any other specified requirement. Submit copies of the recommendations/instructions to CA when requested.
- Obtain confirmation from manufacturers that the products specified and recommendations on their use have not been changed since that time. Where such change has occurred, inform CA and do not place orders for or use the affected products without further instructions.
- Where British Board of Agreement certified products are used, comply with the limitations, recommendations and requirements of the relevant valid certificates.
- 140 CHECKING COMPLIANCE OF PRODUCTS:
 - Check all delivery tickets, labels, identification marks and, where appropriate, the products themselves to ensure that all products comply with the project documents. Where different types of any product are specified, check to ensure that the correct type is being used in each location. In particular, check that:
 - The sources, types, qualities, finishes and colours are correct, and match any approved samples.
 - All accessories and fixings which should be supplied with the goods have been supplied.



- Sizes and dimensions are correct. Where tolerances of components are critical; measure a sufficient quantity to ensure compliance.
- The delivered quantities are correct, to ensure that shortages do not cause delays in the work.
- The products are clean, undamaged and otherwise in good condition.
- o Products which have a limited shelf life are not out of date.

150 PROTECTION OF PRODUCTS:

- Prevent over-stressing, distortion and any other type of physical damage.
- Keep clean and free from contamination. Prevent staining, chipping, scratching or other disfigurement, particularly of products exposed to view in the finished work.
- Keep dry and in a suitably low humidity atmosphere to prevent premature setting, moisture movement and similar defects. Where appropriate store off the ground and allow free air movement around and between stored products.
- Prevent excessively high or low temperatures and rapid changes of temperature in the products.
- Protect adequately from rain, damp, frost, sun and other elements as appropriate. Ensure that products are at a suitable temperature and moisture content at time of use.
- Ensure that sheds and covers are of ample size, in good weatherproof condition and well secured.
- Keep different types and grades of products separately and adequately identified.
- So far as possible keep products in their original wrappings, packaging or containers, until immediately before they are used.
- Wherever possible retain protective wrappings after fixing and until shortly before Practical Completion.
- Ensure that protective measures are fully compatible with and not prejudicial to the products/materials.
- 160 SUITABILITY OF RELATED WORK AND CONDITIONS: Ensure that all trades are provided with necessary details of related types of work. Before starting each new type or section of work, ensure that:
 - Previous, related work is appropriately complete, in accordance with the project documents, to a suitable standard and in a suitable condition to receive the new work.
 - All necessary preparatory work has been carried out, including provision for services, openings, supports, fixings, damp proofing, priming and sealing.
 - The environmental conditions are suitable, particularly that the building is suitably weather-tight when internal components, services and finishes are installed.
- 170 GENERAL QUALITY OF WORKMANSHIP: Operatives must be appropriately skilled and experienced for the type and quality of work.

Take all necessary precautions to prevent damage to the work from frost, rain and other hazards. Inspect components and products carefully before fixing or using and reject any which are defective.



Fix or lay securely, accurately and in alignment. Provide suitable tight packing at screwed and bolted fixing points to take up tolerances and prevent distortion. Do not over-tighten fixings. Adjust location and fixing of components and products so that joints which are to be finished with mortar or sealant or otherwise left open to view are even and regular.

Ensure that all moving parts operate properly and freely. Do not cut, grind or plane prefinished components and products to remedy binding or poor fit without approval. Problems with manufactured materials and components should be referred to the manufacturer in the first instance and their representative invited to inspect the problem.

180 BS 8000: BASIC WORKMANSHIP: Where BS 8000 gives recommendations on particular working methods or other matters which are properly within the province and responsibility of the Contractor, compliance therewith will be deemed to be a matter of general industry good practice and not a specific requirement of the CA under the Contract.

If there is any conflict or discrepancy between the recommendations of BS 8000 on the one hand and the project documents on the other, the latter will prevail.

- 190 WATER FOR THE WORKS: Clean and uncontaminated. If other than mains supply is proposed provide evidence of suitability. Test to BS 3148 if instructed.
- 191 ZERO DEFECTS: The Employer requires the contractor to aim for zero defects at Practical Completion of the works.

SAMPLES/APPROVALS

- 210 APPROVAL OF PRODUCTS: Where approval of a product is specified the Contractor shall submit samples or other evidence of suitability. Do not confirm orders or use the product until approval of the sample has been obtained. Retain approved sample in good, clean condition on site. Ensure that the product used in the Works matches the approved sample.
- 220 SAMPLES OF FINISHED WORK: Where samples of finished work are specified obtain approval of the stated characteristic(s) before proceeding with the Works. Retain approved sample in good, clean condition on site. Ensure that the relevant characteristic(s) of the Works match the approved characteristic(s) of the sample. Remove samples which are not part of the finished Works when no longer required.
 - Sample panels (size 6 bricks wide x 13 courses high) shall be required for each type of facing brickwork.
 - Sample panels (size approx. 1m x 1m) shall be required for each example of external wall finish (render/zinc/timber cladding finish)
 - Samples shall be required for paint finishes, ironmongery, electrical fittings, door finishes/veneers, floor finishes, ceiling tiles etc these may be in the form of swatches.



- 230 APPROVALS: Where and to the extent that products or work are specified to be approved or the CA instructs or requires that they are to be approved, the same must be supplied and executed to comply with all other requirements and in respect of the stated or implied characteristics either:
 - To the express approval of the CA or
 - To match a sample expressly approved by the CA as a standard for the purpose.
- 240 APPROVALS: Inspection or any other action by the CA must not be taken as approval of products or work unless the CA so confirms in writing in express terms referring to:
 - Date of inspection
 - Part of the work inspected
 - Respects or characteristics which are approved
 - Extent and purpose of the approval

ACCURACY/SETTING OUT GENERALLY

- 310 ACCURACY OF INSTRUMENTS: Use instruments and methods described in BS 5606, Appendix A.
- 321 SETTING OUT: Set up accurate temporary bench marks, protect them against corruption and maintain them until the end of the contract period. Check the levels and dimensions of the site against those shown on the drawings, and record the results on a copy of the drawings, Notify CA in writing of any discrepancies and obtain instructions before proceeding.
- 322 SETTING OUT: Inform CA when overall setting out is complete and before commencing construction.
- 340 APPEARANCE AND FIT: Arrange the setting out, erection, juxtaposition of components and application of finishes (working within the practical limits of the design and the specification) to ensure that there is satisfactory fit at junctions, that there are no visually unacceptable changes in plane, line or level and that the finished work has a true and regular appearance.

Wherever satisfactory accuracy, fit and/or appearance of the work are likely to be critical or difficult to achieve, obtain approval of proposals or of the appearance of the relevant aspects of the partially finished work as early as possible.

Without prejudice to the above and unless specified otherwise, tolerances will (where applicable) be not greater than those given in BS 5606, Tables 1 and 2.

- 370 LEVELS OF STRUCTURAL FLOORS: Maximum tolerances for designed levels to be as follows:
 - Floors that are to be self-finished and floors to receive sheet or tile finishes directly bedded in adhesive: +/-3 mm.
 - Floors to receive dry board/panel construction with little or no tolerance on thickness: +/- 3 mm.
 - Floors to receive fully bonded screeds/toppings/beds: +/-10 mm.
 - Floors to receive un-bonded or floating screeds/beds: +/-10 mm.



380 RECORD DRAWINGS: Record details of all grid lines, setting-out stations, bench marks and profiles on the site setting-out drawing. Retain on site throughout the contract and hand to CA on completion.

SERVICES GENERALLY

- 410 SERVICES REGULATIONS: Any work carried out to or which affects new or existing services must be in accordance with the Bye Laws or Regulations of the relevant Statutory Authority.
- 420 SERVICE RUNS: Make adequate provision for services, including unobstructed routes and fixings. Wherever possible ducts, chases and holes are to be formed during construction rather than cut.
- 440 MECHANICAL AND ELECTRICAL SERVICES must have final tests and commissioning carried out so that they are in full working order at practical completion (refer to the Mechanical and Electrical specifications for details)
- 445 TEMPORARY SERVICES FOR THE WORKS: The Contractor shall arrange for all necessary temporary services and arrange to have them operational for the commencement of work on site and for them to remain until no longer required when they shall be removed.

SUPERVISION/INSPECTION/DEFECTIVE WORK

- 510 SUPERVISION: General: In addition to the constant management and supervision of the works provided by the Contractor's person in charge, all significant types of work must be under the close control of competent trade supervisors to ensure maintenance of satisfactory quality and progress.
- 5.12 REPLACEMENT: Give maximum possible notice before changing person in charge or site agent.
- 515 CO-ORDINATION OF ENGINEERING SERVICES: The site organisation staff must include one or more persons with appropriate knowledge and experience of mechanical and electrical engineering services to ensure co-ordination and compatibility between engineering services, one with another and each in relation to the Works generally. Submit to the CA, when requested, CVs or other documentary evidence of the qualifications of the staff concerned.
- 520 PERSON-IN-CHARGE: Provide written details of the qualifications and experience of the proposed person in charge. Give maximum possible notice to CA before changing the person-in-charge and provide CA with the details of the replacement person's qualifications and experience.
- 540 OVERTIME WORKING: Should the CA specifically order in writing for overtime to be worked then the Contractor will be entitled to recover the net additional cost of such overtime. Claims for such overtime must be presented to the CA in the week following the week for which a claim is made and the Contractor must supply the Quantity



Surveyor with any material he requests to allow him to check the claim. Whenever overtime is to be worked, give CA not less than 48 hours notice, specifying times, types and locations of work to be done. Concealed work executed during overtime for which notice has not been given may be required to be opened up for inspection and reinstated at the Contractor's expense.

- 550 DEFECTS IN EXISTING CONSTRUCTION to be reported to CA without delay. Obtain instructions before proceeding with work that may:
 - o Cover up or otherwise hinder access to the defective construction, or
 - o Be rendered abortive by the carrying out of remedial work.
- 555 ACCESS FOR INSPECTION: Give CA not less than 48 hours notice before removing scaffolding or other facilities for access.
- 558 COMMISSIONING AND PERFORMANCE TESTING OF BUILDINGS GENERALLY:

To ensure that installations and all working components of the new building are operating satisfactorily the building must be fully commissioned and tests carried out as part of the contract prior to Practical Completion of the works. Performance testing by the Employer's representative will continue during the Defects Liability Period. The Contract will not be considered complete until commissioning and performance testing has been satisfactory carried out.

The Contractor should, during the tendering period obtain from any Sub-contractors the time they require for commissioning and performance testing and allow within his Master Programme for commissioning and performance testing and for all costs for commissioning and performance testing.

559 COMMISSIONING MEETING: A commissioning meeting will be arranged to enable inspections and checks to be made to ensure that where applicable the installations, equipment and the working components of the building are operating satisfactorily before practical completion.

The following to be present at the commissioning meeting:

- o Project Team Leader
- Project Service Engineers
- Contractor's representative
- o Sub-Contractor's representative

Any defect revealed must be dealt with immediately to ensure that remedial work is completed before the proposed handover date. At the commissioning meeting a record will be presented of those elements which met the requirements of commissioning and performance testing and those which do not satisfy the requirements.

- 560 TIMING OF TESTS AND INSPECTIONS: Agree dates and times of tests and inspections with CA several days in advance, to enable the CA and other affected parties to be present. On the previous working day to each such test or inspection confirm that the work or sample in question will be ready or, if not ready, agree a new date and time.
- 565 TEST CERTIFICATES: Submit a copy of each certificate to the CA as soon as practicable and keep copies of all certificates on site.



570 PROPOSALS FOR RECTIFICATION OF DEFECTIVE WORK/PRODUCTS: As soon as possible after any part(s) of the work or any products are known to be not in accordance with the Contract, or appear that they may not be in accordance, submit proposals to CA for opening up, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution.

Such proposals may be unacceptable to the CA and he may issue contrary instructions.

- 580 MEASURES TO ESTABLISH ACCEPTABILITY: 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:
 - o will be at the expense of the Contractor, and
 - will not be considered as grounds for extension of time.
- 590 QUALITY CONTROL: Establish and maintain procedures to ensure that the Works, including the work of all subcontractors, comply with specified requirements. Maintain full records, keep copies on site for inspection by the CA, and submit copies of particular parts of the records on request. The records must include:
 - o Identification of the element, item, batch or lot including location in the Works.
 - The nature and dates of inspections by the Contractor or CA, tests and approvals.
 - The nature and extent of any non-conforming work found.
 - Details of any corrective action.

WORK AT/OR AFTER COMPLETION

- 610 GENERALLY:
 - Make good all damage consequent upon the work.
 - Remove all temporary markings, coverings and protective wrappings unless otherwise instructed.
 - Clean the Works thoroughly inside and out, including all accessible ducts and voids, remove all splashes, deposits, efflorescence, rubbish and surplus materials consequent upon the execution of the work.
 - Cleaning materials and methods to be as recommended by manufacturers of products being cleaned, and to be such that there is no damage or disfigurement to other materials or construction.
 - Obtain COSHH dated data sheets for all materials used for cleaning and ensure they are used only as recommended by their manufacturers.
 - Touch up minor faults in newly painted/repainted work, carefully matching colour, and brushing out edges. Repaint badly marked areas back to suitable breaks or junctions.
 - Adjust, ease and lubricate moving parts of new work as necessary to ensure easy and efficient operation, including doors, windows, drawers, ironmongery, appliances, valves and controls.
- 615 TRAINING: At Completion, at a time or times mutually agreed, the Contractor shall arrange for the CA and End-user staff to be trained in the safe use, cleaning and routine maintenance of the equipment, M&E installations, fittings and furnishings, floor, wall and



ceiling finishes, etc. Sub-contractors shall be on hand to demonstrate the various processes.

- 640 SECURITY AT COMPLETION: Leave the Works secure with all accesses locked. Account for and adequately label all keys and hand over to Employer with itemised schedule, retaining duplicate schedule signed by Employer as a receipt.
- 650 MAKING GOOD DEFECTS: Make arrangements with the CA and give reasonable notice of the precise dates for access to the various parts of the Works for purposes of making good defects. Inform CA when remedial works to the various parts of the Works are complete
- 740 HIGHWAY/ SEWER ADOPTION
 Work to be adopted under the Highways Act, Section 38, or the Roads (Scotland) Act,
 Section 16 to 18, or the Water Industry Act, Section 104: Description: Not applicable.

Work for adoption must be:

- Completed by the Contractor to the satisfaction of the Highway/ Sewer Authorities before the certificate stating the Works are complete is issued.

- Subject to a Defects Liability/ Rectification Period of 12 months (see Appendix to the Contract/ Contract Particulars).

- Maintained during the Defects Liability/ Rectification Period, including making good of damage due to reasonable wear and tear occurring during the Period and cleaning at the end of the Period, all to the satisfaction of the Highway/ Sewer Authorities.

A34 SECURITY/SAFETY/PROTECTION

GENERALLY

- **120 THE CONSTRUCTION PHASE HEALTH & SAFETY PLAN,** developed from the information provided (see section A30) must be submitted to the CA not less than 5 working days prior to the proposed date for commencement of construction work. Do not start construction work until the Employer has confirmed in writing that in his view the Construction Phase Health and Safety Plan includes the procedures and arrangements required by CDM Regulations 23(1) (a), 23(2) and 22(1) (c). The Contractor shall be deemed to have allowed in his tender for all work and procedures required by the CDM Regulations.
- 125 WORK PEOPLE/HEALTH AND SAFETY: Comply with the following:
 - The whole of the Clauses (including Codes of Welfare Conditions) given in the current Working Rule Agreement for Building Trade Operatives in the district in which the works are situated and as approved by the National Joint Council for the building industry.
 - The Health and Safety at Work Act 1974
 - o The Construction (Design and Management) Regulations 2015



- The Temporary or Mobile Construction Sites Directive
- The Control of substances Hazardous to Health Regulations 1988-provide COSHH Assessments
- o Manual Handling Operations Regulations 1992
- The Provision & Use of Work Equipment Regulations 1992
- Personal Protective Equipment At work Regulations 1992
- The Control of Noise At Work Regulations 2005
- The Safety Signs Regulations 1994
- The Management of Health and safety at Work Regulations 1999 and with the current requirements of any other Act, Regulations or Order in Council relevant to the works
- 128 HARD HATS: the site shall be a hard hat site.
- 130 SECURITY: Adequately safeguard the site, the works, products, materials, including those set aside for re-use, plant, and any existing buildings affected by the Works from damage and theft. <u>Take all reasonable precautions to prevent unauthorised access to the site, the</u> works and adjoining property.
- 140 PLANT, MACHINERY, ETC: all plant, machinery, tools, gas cylinders, equipment, etc. shall be locked away within storage containers, storage racks or suitably disabled from being activated by vandals or other parties outside the Contractors working hours each day. Water hoses, ropes, cables, etc should be coiled up and stored when not in use.
- 150 CLEAN AND TIDY SITE: the Contractor shall keep the Works and surrounding area in a clean and tidy condition. He shall each working day regularly inspect the Works and ensure that all materials are properly stacked/stored in the work area, that all waste is removed from underfoot as work proceeds, that dust is kept to a minimum, that work areas are properly and adequately cleaned between trades / operations. All fastenings, off-cuts, etc are to be picked up from the surfaces of the Works to be re-cycled on site where possible or otherwise removed from site for sustainable disposal.
- 160 STABILITY: Accept responsibility for the stability and structural integrity of the works during the Contract, and support as necessary. Prevent overloading: details of design loads may be obtained from CA.
- 165 IDENTIFICATION CARDS: All the Contractors site personnel, sub-contractors, etc. shall each be provided with an identity card by the Contractor of a type approved by the Employer. These cards are to be carried at all times when on site, and are to be shown to upon request. The Contractor shall appoint a representative on site (e.g. the Site Agent) who shall be responsible for recording the names of people issued with the cards and the date when returned. The Employer shall not be responsible for any claims for delay or disruption caused by personnel being refused entry to the site when unable to produce an identity card upon request.
- 169 DISCLOSURE AND BARRING SERVICE (formerly Criminal Records Bureau) CHECKS: Shropshire Council are committed to protecting children, young people and vulnerable



adults. As building works will take place at this property, any workers engaged to fulfil the terms of this contract must undergo a Disclosure and Barring Service (formerly Criminal Records Bureau Disclosure) check. Our requirement is that where possible this check is carried out prior to commencing work on the contract. In the event of workers commencing work prior to a satisfactory check being confirmed the Contract must inform the CA and ensure arrangements are in place that guarantee workers do not have unsupervised direct contact with children/vulnerable adults. These arrangements must be confirmed by the Contractor in writing to the CA stating which employees do not have DBS/CRB clearance, and how they will be managed and supervised during the works.

Should disclosure checks reveal an undeclared conviction or conviction that renders the person unsuitable to work with children/vulnerable adults you must inform the CA immediately and remove the person from site.

The Contractor shall include within him tender all costs of complying with the requirements of the above clause.

- 170 EMPLOYER'S REPRESENTATIVES SITE VISITS: Inform the CA in advance of all safety provisions and procedures (including those relating to materials which may be deleterious) which will require the compliance of the Employer or his representatives when visiting the site. Provide protective clothing and/or equipment for the Employer and his representatives as appropriate. If their visit is inconvenient or potentially dangerous the Contractor shall deny access. All visits by the Employer's representatives must have a Contractor's representative to guide them around the Works.
- 172 EMPLOYERS HEALTH & SAFETY MANAGER SITE INSPECTION: shall be given access to the Works and shall be accompanied by the Contractor to carry out a site inspection during normal working hours. Any problems, concerns or comments arising from the inspection shall be discussed with the Contractors Site Agent/Foreman on site at the time and solutions sort. A copy of any written report will be made available to the Contractor and if necessary a meeting between the Employers Health & Safety Manager and Directors/Managers of the Contractor shall be held to discuss the report and resolve any problems/concerns.
- 175 EMERGENCY CONTACT: Before commencing site operations, the Contractor will produce in consultation with the CA, etc., a list of emergency contact names, telephones and fax numbers to be circulated to all contractual parties.

PROTECT AGAINST THE FOLLOWING

- 221 NOISE:
 - Comply generally with BS 5228.
 - Noise levels from the works, vehicles and plant are to be kept below 80dB (A) when measured from source.
 - Fit all compressors, percussion tools and vehicles with effective silencers of a type recommended by manufacturers of the compressors, tools or vehicles.
 - Do not use pneumatic drills and other noisy appliances outside specified working hours without consent of the CA.



- o Do not use or permit employees to use radios or other audio equipment.
- 230 POLLUTION: Take all reasonable precautions to prevent pollution of the site, the Works and the general environment including streams and waterways. If pollution occurs, inform the appropriate Authorities and the CA without delay and provide them with all relevant information.
- 240 NUISANCE: Take all necessary precautions to prevent any nuisance caused to the operation of the building and adjacent properties from smoke, dust, rubbish, noise, storage of materials, parking or movement of vehicles and plant, delivery of materials and other causes.
- 260 FIRE: Take all necessary precautions to prevent personal injury, death, and damage to the Works or other property from fire. Comply with the Joint Code of Practice 'Fire Prevention on Construction Sites' published by the Building Employers Confederation, the Loss Prevention Council and the National Contractors' Group. Smoking will not be permitted on the site except in an area designated by the Contractor within his own compound. The area must be carefully controlled and inspected to guard against the risk of fire.
- 265 BURNING ON SITE: Of materials, packaging or waste arising from the Works will not be permitted.
- 266 TRESPASS: Provide for taking reasonable precautions to prevent workmen, including those employed by Sub-Contractors, from trespassing on adjoining owner's property or any part of the premises which are not affected by the works. The Contractor shall be held liable in the event of such trespass and shall make good at his own expense any damage and replace anything that may be stolen or lost.
- 270 WATER: Prevent damage from storm and surface water (and allow for keeping the site and excavations free of water).
- 275 PROTECTING FROM THE WEATHER: Maintain, where practicable, continuity of working and productivity during inclement weather, by covering and protecting the works and adjacent affected property to minimise any loss or delay.
- 276 BAD WEATHER WORKING: The Contractor will be permitted to continue working during cold and bad weather provided that the recommendations contained in the following publications by HMSO are adopted to prevent or minimise any delays, and to the extent to which he has done so will be taken into account when assessing any extension of time which may be given under clause 2.3 of the Conditions of Contract for exceptionally adverse weather conditions:-

D of E Building in Bad Weather (Circular 65/67)

D of E Winter Building Booklet and Advisory Leaflets:-

No. 7 Concreting in Cold Weather

No. 8 Bricklaying in Cold Weather

No.40 Weather and the Builder



- No. 59 Electricity on Building Sites
- No. 60 Ready Mixed Concrete
- 280 MOISTURE: Prevent the work from becoming wet or damp where this may cause damage. Dry out the Works thoroughly. Control the drying out and humidity of the Works and the application of heat to prevent:
 - Blistering and failure of adhesion.
 - Damage due to trapped moisture.
 - Excessive movement.
- 285 DAMAGE TO MATERIALS ON SITE: Ensure that all materials for inclusion in the Works are properly stored to prevent damage from the weather or physical damage. Prevent attack or infestation by wildlife. Maintain the correct moisture content for the materials consistent with their use. Prevent theft of the materials. Inspect all material storage daily.
- 290 WASTE:
 - Remove daily, rubbish, debris, surplus material and spoil, and keep the site and Works clean and tidy.
 - Remove all rubbish, dirt and residues from voids and cavities in the construction before closing in.
 - Ensure that non-hazardous material is disposed of at a tip approved by a Waste Regulation Authority.
 - Remove all surplus hazardous materials and their containers regularly for disposal off site in a safe and competent manner, as approved by a Waste Regulation Authority and in accordance with relevant regulations.
 - Retain waste transfer documentation on site.

Should it be shown to the satisfaction of the CA that any rubbish, surplus material and the like have been deposited elsewhere other than at an approved tipping area, the Contractor will be held responsible for clearing away such deposits at his own cost and ensuring they are legally disposed.

300 ELECTROMAGNETIC INTERFERENCE: Take all necessary precautions to avoid excessive electromagnetic disturbance of apparatus outside the site.

PROTECT THE FOLLOWING:

- 405 SANITARY FITTINGS: The Contractor shall not allow his own or Sub-contractor's workpeople to use any of the fittings in the buildings e.g. sinks, lavatory basins, W.C'S and urinals. Damaged items shall be replaced at the Contractors expense.
- 410 WORK IN ALL SECTIONS: Adequately protect all types of work and all parts of the Works, including work carried out by others, throughout the Contract. Wherever work is of an especially vulnerable nature or is exposed to abnormal risks provide special protection to ensure that damage does not occur.
- 420 EXISTING SERVICES: Before starting work check positions of existing mains/services. Where positions are not shown on drawings obtain relevant details from service authorities or other owners.



- o Observe service authority's recommendations for work adjacent to existing services.
- o Adequately protect, and prevent damage to all services. Do not interfere with their operation without consent of the service authorities or owners.
- o If any damage to services results from the execution of the Works, notify CA and appropriate service authority without delay. Make arrangements for the work to be made good without delay to the satisfaction of the service authority or owner as appropriate. Any measures taken by the CA to deal with an emergency will not affect the extent of the Contractor's liability.
- o Replace any marker tapes or protective covers disturbed during site operations to the service authority's recommendations.
- 430 ROADS, CAR PARKS & FOOTPATHS: Adequately maintain roads and footpaths within and adjacent to the site and keep clear of all mud and debris. Prevent mud and debris being swept or carried into adjacent buildings. Any damage to roads and footpaths caused by site traffic or otherwise consequent upon the Works must be made good to the satisfaction of the Local Authority or other owner. Bear any costs arising.
- 440 TREES/HEDGES/SHRUBS/LAWNS: Adequately protect and preserve, except those which are to be removed. Replace to approval or treat as instructed any species or areas damaged or removed without approval.
- 450 EXISTING FEATURES: Prevent damage to existing buildings, fences, gates, walls, roads, paved and grassed areas and other site features which are to remain in position during the execution of the Works. Any damage caused shall be made good in accordance with the CA's instructions at the expense of the Contractor.
- 460 EXISTING WORK: Prevent damage to existing property undergoing alteration or extension and make good to match existing any defects so caused. Remove existing work the minimum necessary and with care to reduce the amount of making good to a minimum.
- 465 BUILDING INTERIORS: Protect building interiors exposed to weather during the course of alteration work with temporary enclosures of sufficient size to permit execution of the work and which will remain weather-tight in severe weather
- 481 ADJOINING PROPERTY: Prevent trespass of workpeople. Take all reasonable precautions to prevent damage to adjoining property. Obtain permission as necessary from the owners if required to erect scaffolding on or otherwise use adjoining property, and pay all charges. Remove and make good on completion or when directed. Bear the cost of repairing any damage arising from execution of the Works.

490 EXISTING STRUCTURES:

- Support existing structure as necessary during cutting of new openings or replacement of structural parts.
- Do not remove supports until new work is strong enough to support the existing structure.
- o Prevent overstressing of completed work when removing supports.



A35 SPECIFIC LIMITATIONS ON METHOD/SEQUENCE/TIMING

- 110 SCOPE: The limitations described in this section are supplementary to limitations described or implicit in information given in other sections or on the drawings.
- 140 ACCESS TO THE SITE: See section A12.
- 150 USE OF THE SITE: See section A12.
- 155 SCAFFOLDING: Ensure that standing scaffolding is erected early enough and/or dismantled late enough to suit the programmes of all subcontractors. The contractor is to obtain all licences/permits and bear all costs in connection with erecting, maintaining and removal of scaffolding in public footpaths/roads
- 165 As the Employer is also the Local Authority the Contractor must not expect the Employer to intervene in any matters between the Contractor, his Agents or Sub-Contractors etc and the Local Authority in its roles as Planning Authority, Building Regulation Authority and any other Statutory or Agency roles carried out by them.
- 170 RESTRICTIONS TO WORKING SPACE AND HOURS: Generally the Contractor may work between the hours of 08.00 and 17.00 weekdays only. He must obtain the approval of the CA in writing (which shall not be unreasonably withheld) before working outside these hours. This approval shall in no way be construed as an instruction to work overtime. Refer also to clause A13 120. All works that is likely to create excessive noise should be restricted to between the hours of 09.00 and 16.00.

A36 FACILITIES/TEMPORARY WORK/SERVICES

GENERALLY

- 110 LOCATIONS: Inform CA of the intended siting of all material storage, temporary buildings, temporary works and services.
- 120 MAINTAIN, alter, adapt and move temporary works and services as necessary. Remove when no longer required and make good.

ACCOMMODATION

- 205 RATES ON TEMPORARY BUILDINGS: The Contractor shall allow for the payment of rates on temporary buildings, together with any costs in connection therewith.
- 260 SANITARY ACCOMMODATION: Provide and maintain in a clean condition sanitary accommodation for the Employer's representatives (both Male and Female), either separate or shared with the Contractor's supervisory staff. Provide soap, towels / hand drier, hot and cold water, waste bins, etc.



- 280 WELFARE FACILITIES: Provide and maintain additional welfare facilities that may be required to ensure conformance with Schedule 2 of the Construction (Design and Management) Regulations 2015.
- 310 ROADS: Permanent roads, hard-standings and footpaths on the site may be used, subject to clause A34/430. The contractor is to arrange and bear all costs in connection with the temporary closure of any public footpaths and roads to enable the construction of the works.
- 315 TEMPORARY ROADS AND HARDSTANDINGS: Allow for forming all hard-standings and temporary roads necessary for the construction work. Maintain, adapt and remove them as necessary and reinstate the ground on completion to the approval of the C.A.
- 320 TEMPORARY FENCE(S), HOARDING(S) & SCREEN(S): Provide and maintain all necessary temporary fencing, fans, planked footways, guard rails, gantries and the like for the proper execution of the work, for the protection of the public and the occupants of the premises and for meeting the requirements of any local or other authority and alter, shift and adapt from time to time as necessary.
- 410 TEMPORARY LIGHTING: During finishing work and inspection provide temporary lighting, the intensity and direction of which closely resembles that provided by the permanent installation.
- 420 LIGHTING AND POWER: Provide as soon as practicable after the Date of Possession a separately metered, temporary on site power supply, for use by the Contractor and Subcontractors, and pay all charges. Meter readings to be taken and recorded in the presence of the CA. The Employer will not be held responsible for the effects of any failure or restriction in supply.
- 430 WATER: Arrange a temporary water supply for use by the Contractor and Subcontractors for the duration of the Works and pay all charges.
- 460 DRYING OUT: The Contractor is to allow for drying out and controlling the humidity of the building by artificial means, if required, to facilitate the progress and completion of all builder's work and in preparation for the laying of floor coverings, the fixing of joinery, suspended ceilings and other specialists work. Provide all necessary temporary equipment fuel and/or power and the requisite attendance, including any required at night, weekends and public holidays. As an alternative, or in addition to temporary equipment referred to above the new permanent heating installation may be used for drying out the Works and controlling temperature and humidity levels, but:
 - The CA must be notified in writing that the installation is being used for this purpose.
 - The Employer does not undertake that it will be available.
 - The Contractor must take responsibility for operation, maintenance and remedial work, and arrange supervision by and indemnification of the appropriate Subcontractors, and pay all costs arising.
Ludlow Library – Mechanical Upgrades and Associated Electrical Works



- 470 BENEFICIAL USE OF INSTALLED SYSTEMS: Unless specific permission is given by the Employer and installer, the permanent supply, disposal, mechanical, electrical, communications, transport and access systems may not be used for any purpose other than running in, testing and commissioning. Where permission is given for any other use of a system before practical completion of the works it must be subject to a separate written agreement between the parties and in accordance with the recommended procedures given in NJCC Guidance Note 10.
- 500 METER READINGS: Where charges for service supplies need to be apportioned ensure that meter readings are taken by relevant authority at possession and/or completion as appropriate. Ensure that copies of readings are supplied to interested parties.
- 510 THERMOMETERS: Provide on site and maintain in accurate condition:
 - A maximum and minimum thermometer for measuring atmospheric shade temperature, in an approved location.
 - A thermometer for measuring concrete and ground temperature.
- 520 SURVEYING EQUIPMENT: Provide on site and maintain in accurate condition for setting out and checking / confirming finished levels.

A37 OPERATION/MAINTENANCE OF THE FINISHED BUILDING

100 THE HEALTH & SAFETY FILE

110 THE BUILDING AND CLEANING MANUAL: (incorporating the Health and Safety File and subtitled accordingly) is to be a comprehensive information source and guide for the Employer and end users providing a complete understanding of the building and its systems and enabling it to be operated and maintained efficiently and safely.

The CA will provide the contractor with details of the documentary requirements for inclusion in the Building and Cleaning Manual. The contractor shall provide one electronic copy and one hard copies of the Building and Cleaning manual.

- 210 PROVISIONAL INFORMATION ON SERVICES: Provide the CA with relevant drawings and preliminary performance data at the commencement of commissioning to enable the Employer's staff to familiarize them with the installation.
- 220 TRAINING OF EMPLOYER'S STAFF: Before Practical Completion explain and demonstrate to the Employer's maintenance staff the purpose, function and operation of the installations including all items and procedures listed in the Building Manual. Include for not less than two operating days for this purpose.



A40 CONTRACTOR'S GENERAL COST ITEMS: MANAGEMENT AND STAFF

110 MANAGEMENT AND STAFF: Provide for all on and off site management costs

		Setting up & Removal Costs	Time Related Costs
115	SITE AGENT / FOREMAN		
120	SITE ENGINEER		
130	QUANTITY SURVEYOR		
140	HEAD OFFICE		
150	SITE LABOUR		
160	SITE WASTE MANAGEMENT (see A31/740)		
165	HEALTH & SAFETY OFFICER		
170	ADDITIONAL STAFF REQUIRED BY CONTRACTOR Insert below further cost items as may be required by the Contractor.		
	To Collection	£	£



A41 CONTRACTOR'S GENERAL COST ITEMS: SITE ACCOMMODATION

For details of site accommodation required or made/not made available by the Employer see section A36.

110 SITE ACCOMMODATION: Provide and maintain all necessary site accommodation for the Contractor's use, including all lighting, heating and water as necessary. Provide for costs for giving notices and paying fees to local authorities and public undertakings. Pay all rates, taxes or other charges on temporary buildings-position on site as directed by the C.A. and clear away on completion and make good all disturbances and damage to the site.

		Setting up &	Time Related
		Removal Costs	Costs
115	SITE OFFICES		
130	STORAGE CONTAINERS		
140	CANTEEN / MESSROOM		
150	TOILETS, WASHING FACILITIES		
200	ADDITIONAL ACCOMMODATION ITEMS: Insert below further cost items as may be required by the Contractor.		
	To Collection	£	-
			F



A42 CONTRACTOR'S GENERAL COST ITEMS: SERVICES AND FACILITIES

For details of services and facilities required or made/not made available by the Employer see section A36.

		Setting up &	Time Related
		Removal Costs	Costs
110	POWER		
120	LIGHTING		
130	FUELS (excluding fuels for testing and commissioning)		
140	WATER		
150	TELEPHONE AND ADMINISTRATION		
160	SAFETY, HEALTH AND WELFARE (see A34)		
170	STORAGE OF MATERIALS (see A33/150)		
180	RUBBISH DISPOSAL (see A34/290)		
190	CLEANING (see A33/610)		
220	SECURITY (see A34/130)		
230	MAINTAIN PUBLIC AND PRIVATE ROADS (see A34/430)		
240	DRYING OUT (see A34/280 & A34 /461)		
250	PROTECTION OF WORK IN ALL SECTIONS (see A34/410)		
260	SMALL PLANT AND TOOLS		
300	ADDITIONAL SERVICES & FACILITIES ITEMS: Insert below further cost items as may be required by the Contractor.		
	To Collection	£	 - £



A43 CONTRACTOR'S GENERAL COST ITEMS: MECHANICAL PLANT

		Setting up & Removal Costs	Time Related Costs
110	CRANES		
120	HOISTS		
125	PILING PLANT (if required)		
130	PERSONNEL TRANSPORT		
140	TRANSPORT		
145	TRANSPORTING MATERIALS ON SITE		
150	EARTHMOVING PLANT		
160	CONCRETE PLANT		
180	PAVING AND SURFACING PLANT		
190	SECURITY HOARDING TO BOUNDARY OF SITE AND TO COMPOUND		
250	ADDITIONAL MECHANICAL PLANT ITEMS: Insert below further cost items as may be required by the Contractor.		
	To Collection	 £	 - £



A44 CONTRACTOR'S GENERAL COST ITEMS: TEMPORARY WORKS

For details of temporary works required or made/not made available by the Employer see section A36.

		Setting up & Removal Costs	Time Related Costs
110	TEMPORARY ROADS		
120	TEMPORARY WALKWAYS		
130	ACCESS SCAFFOLDING		
140	SUPPORT SCAFFOLDING AND PROPPING		
150	HOARDINGS, FANS, FENCING, ETC.		
160	HARDSTANDING		
170	TRAFFIC REGULATIONS		
250	ADDITIONAL TEMPORARY WORKS ITEMS: Insert below further cost items as may be required by the Contractor.		
	To Collection	£	 - £

Ludlow Library – Mechanical Upgrades and Associated Electrical Works



A50 WORK/PRODUCTS BY/ON BEHALF OF THE EMPLOYER

- 510 PRODUCTS provided by or on behalf of the Employer:
 - Details of such products are given in the relevant work sections, for fixing by the Contractor.
 - Take delivery, check against receipts and take into appropriate storage.
 - Use for no other purpose than the Works.
 - Keep safe any surplus to requirements and obtain instructions in relation thereto.

A53 WORK BY STATUTORY AUTHORITIES

Not applicable

A54 UNDEFINED PROVISIONAL SUMS - to be carried out / spent only as directed in writing by the Contract Administrator.

Provisional Sums include within the Form of Fixed Price to be expended in part or whole as directed by the CA. Any Provisional Sums & contingencies that are not used are to be deducted from the contractor's final account.

- 1000 CONTINGENCIES: Include the Provisional Sum of £20,000.00 (Twenty thousand pounds) to be expended in part or whole as directed by the CA. Any contingency that is not used is to be deducted from the contractor's final account.
- 1010 ACOUSTIC COMPOUND ENCLOSURE TO ASHP: Include the Provisional Sum of £50,000.00 (Fifty thousand pounds) to be expended in part of whole as directed by the CA.





Shropshire Council Shirehall Abbey Foregate Shrewsbury Shropshire SY2 6ND

14th December 2021

Dear Bidder

RMNB 031 - LUDLOW LIBRARY – PUBLIC SECTION DECARBONISATION SCHEME, HEATING AND BEMS UPGRADE SHROPSHIRE COUNCIL

SUBJECT TO CONTRACT

This is an Award Decision Notice pursuant to The Public Contracts Regulations 2015 (the "Regulations").

We are pleased to inform you that, following the evaluation process, Shropshire Council proposes to accept your offer in relation to the above Contract.



We can confirm that your tender received the following scores and ranking:-

★★★★ excellent



General Enquiries: 0845 678 9000 www.shropshire.gov.uk

Printed on recycled paper



For your further information, we would confirm that your quality submission was scored against the published scoring scheme and the stated award criteria and received the marks set out.

We will be in touch with you again at the end of the standstill period.

Yours faithfully

GB-Shrewsbury: RMNB 031 – Ludlow Library – Public Section Decarbonisation Scheme, Heating and BEMS Upgrade

Competitive Contract Award Notice

Associated Parent Notice CompetitiveContractNotice - GB-Shrewsbury: RMNB 031 – Ludlow Library – Public Section Decarbonisation Scheme, Heating and BEMS Upgrade 1. Title: GB-Shrewsbury: RMNB 031 – Ludlow Library – Public Section Decarbonisation Scheme, Heating and BEMS Upgrade 2. Awarding Authority: Shropshire Council Shirehall, Abbey Foregate, Shrewsbury, SY2 6ND, United Kingdom

Contact: Procurement Manager, Attn: Procurement Team 3. Contract Type: Works Sub Type: Execution

4. Description: Electrical installation work of heating and other electrical building-equipment. This is a contract award notice for the works associated with the heating renewal project mainly kept to the existing plantrooms, providing a modern, carbon neutral system, while rectifying the existing heating issues they are currently experiencing on site.

The Contractor needs to keep the heating systems in operation throughout the duration of the project to ensure the buildings contents remain in good condition.

We are currently proposing two locations for the ASHPs and costings are required for both options.

We are looking for a MEP Contractor who has a track record with this type of work and can deliver the project on time, to a budget, as per the design while permitting operation of an existing Library. In addition, a MEP Contractor who can act as Principal Contractor, while sub-contracting the building work elements out to a suitable Contractor.

CDM will require careful consideration throughout the works, with potential use of a crane, hot works and maintaining Library access.

The project will need to be completed by 11/03/2022 without delay, as this is a Government grant funded scheme.

5. CPV Codes:

45315000 - Electrical installation work of heating and other electrical building-equipment.

6. NUTS Codes : UKG22 - Shropshire CC

7. Main Site or Location of Works, Main Place of Delivery or Main Place of Performance: Shropshire CC,

- 8. Reference Attributed by the Awarding Authority: RMNB 031
- 9. Awarded to:

Is Awardee likely to subcontract?: No Awarded to SME?: Yes

10. Date of Contract Award: 16/12/2021

11. Number of Tenders Received: 2

12. Other Information:

Other Information: The contracting authority considers that this contract may be suitable for economic operators that are small or medium enterprises (SMEs). However, any selection of tenderers will be

based solely on the criteria set out for the procurement. To view this notice, please click here: https://www.delta-esourcing.com/delta/viewNotice.html?noticeId=656414715

Suitable for VCO: Yes Procedure Type:OPEN Period of Work Start date: 04/01/2022 Period of Work End date: 11/03/2022

Terms and Conditions Help Contact Security Privacy Policy

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