Invitation to Quote

Invitation to Quote (ITQ) on behalf of National Oceanography Centre

Subject UK SBS Replacing Hot Water Calorifiers

Sourcing reference number FM150125

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Section 1 – About UK Shared Business Services

Putting the business into shared services

UK Shared Business Services Ltd (UK SBS) brings a commercial attitude to the public sector; helping our customers improve efficiency, generate savings and modernise.

It is our vision to become the leading provider for our customers of shared business services in the UK public sector, continuously reducing cost and improving quality of business services for Government and the public sector.

Our broad range of expert services is shared by our customers. This allows our customers the freedom to focus resources on core activities; innovating and transforming their own organisations.

Core services include Procurement, Finance, Grants Admissions, Human Resources, Payroll, ISS, and Property Asset Management all underpinned by our Service Delivery and Contact Centre teams.

UK SBS is a people rather than task focused business. It's what makes us different to the traditional transactional shared services centre. What is more, being a not-for-profit organisation owned by its customers, UK SBS' goals are aligned with the public sector and delivering best value for the UK taxpayer.

UK Shared Business Services Ltd changed its name from RCUK Shared Services Centre Ltd in March 2013.

Our Customers

Growing from a foundation of supporting the Research Councils, 2012/13 saw Business Innovation and Skills (BIS) transition their procurement to UK SBS and Crown Commercial Services (CCS – previously Government Procurement Service) agree a Memorandum of Understanding with UK SBS to deliver two major procurement categories (construction and research) across Government.

UK SBS currently manages £700m expenditure for its Customers.

Our Procurement ambition

Our vision is to be recognised as a centre of excellence and deliver a broad range of procurement services across the public sector; to maintain and grow a procurement service unrivalled in public sector.

Procurement is a market-shaping function. Industry derived benchmarks indicate that UK SBS is already performing at or above "best in class" in at least three key measures (percentage savings, compliant spend, spend under management) and compare well against most other measures.

Over the next five years, it is the function's ambition to lead a cultural change in procurement in the public sector. The natural extension of category management is to bring about a fundamental change in the attitude to supplier relationship management.

Our philosophy sees the supplier as an asset to the business and the route to maximising value from supply. This is not a new concept in procurement generally, but it is not a philosophy which is widely employed in the public sector.

We are ideally positioned to "lead the charge" in the government's initiative to reform procurement in the public sector.

UK SBS Procurement's unique selling points are:

- Focus on the full procurement cycle
- Leaders in category management in common and specialised areas
- Expertise in the delivery of major commercial projects
- That we are leaders in procurement to support research
- Use of cutting edge technologies which are superior to those used generally used across the public sector.
- Use of market leading analytical tools to provide comprehensive Business Intelligence
- Active customer and supplier management

> ***'UK SBS' contribution to the Government Procurement Agenda has been impressive. Through innovation and leadership UK SBS has built an attractive portfolio of procurement services from P2P to Strategy Category Management.'***
>
> **John Collington**
>
> **Former Government Chief Procurement Officer**

Section 2 – About Our Customer

Natural Environment Research Council

NERC is the UK's main agency for funding and managing research, training and knowledge exchange in the environmental sciences.

NERC's work covers the full range of atmospheric, Earth, biological, terrestrial and aquatic science, from the deep oceans to the upper atmosphere and from the poles to the equator.

The organisation coordinates some of the world's most exciting research projects, tackling major issues such as climate change, environmental influences on human health, the genetic make-up of life on Earth, and much more.

Working internationally, NERC have bases at some of the most hostile places on the planet; running a fleet of research ships and aircraft and investing in satellite technology to monitor gradual environmental change on a global scale. NERC provide forewarning of, and solutions to, the key environmental challenges facing society.

Examples of funded research

- Showing the importance of mature tropical forests to the global climate.
- Developing a safer and cleaner way to mine gold by reducing the use of mercury.
- Studying the hole in the ozone layer - discovered by our British Antarctic Survey - and monitoring climate change.
- Playing a major role in the International Census of Marine Life that monitors our oceans.

NERC also runs six organisations of world renown:

- British Antarctic Survey, in Cambridge.
- British Geological Survey, in Nottingham.
- National Oceanography Centre, in Southampton.
- Centre for Ecology & Hydrolog, in Oxfordshire.
- National Centre for Atmospheric Science, in Leeds.
- National Centre for Earth Observation, Swindon.

www.nerc.ac.uk

Section 3 - Working with UK Shared Business Services Ltd.

In this section you will find details of your Procurement contact point and the timescales relating to this opportunity.

Section 3 – Contact details		
3.1	Customer Name and address	Simon Lee National Oceanography Centre, Southampton University of Southampton Waterfront Campus, European Way, Southampton SO14 3ZH
3.2	Buyer name	Huw Pearce
3.3	Buyer contact details	UK SBS Concept House Cardiff Road Newport South Wales NP10 8QQ Tel: 01793 867000
3.4	Estimated value of the Opportunity	£116,333 (Phase 1 = £87,500 Phase 2 = £28,833) excl VAT
3.5	Process for the submission of clarifications and Bids	**All correspondence shall be submitted within the Emptoris e-sourcing tool. Guidance Notes to support the use of Emptoris is available here.** **Please note submission of a Bid to any email address including the Buyer will result in the Bid not being considered.**

Section 3 - Timescales		
3.6	Date of Issue of Contract Advert and location of original Advert	07/01/2016 Location Contracts Finder
3.7	Expression Of Interest deadline to given access to the event on Emptoris	14/01/2016
3.8	Site Visit – suppliers to request date within range stated, via the Emptoris tendering tool.	15 & 18/01/2016
3.9	Latest date/time ITQ clarification	21/01/2016

	questions should be received through Emptoris messaging system	11.00am
3.10	Latest date/time ITQ clarification answers should be sent to all potential Bidders by the Buyer through Emptoris	22/01/2016 11.00am
3.11	Latest date/time ITQ Bid shall be submitted through Emptoris	25/01/2016 11.00am
3.12	Anticipated rejection of unsuccessful Bids date	01/02/2016 11.00am
3.13	Anticipated Award date	01/02/2016
3.14	Anticipated Contract Start date	02/02/2016
3.15	Anticipated Contract End date	31/03/2016 (phase 1), 31/03/17 (phase 2).
3.16	Bid Validity Period	60 Days

Section 4 – Specification

1.1 Description

This Project involves the replacing of the existing hot water calorifiers which serve the Laboratories in the National Oceanography Centre, Southampton.

The existing system consists of 2 No indirect calorifiers, each with an approximate storage volume of 5350 litres, which are located in the Energy Centre level 3. The indirect cylinders are supplied with low temperature hot water (lthw) fed from the boilers also located in the Energy Centre with a flow and return temperature of 82/71 deg C.

According to the O&M information, the primary input to each calorifier is approximately 162kW which provides a 2 hours regeneration time (excluding any heat loss associated with the secondary return pumpset) to maintain a storage temperature of 62 deg C (adjustable). The existing hot water system is unvented and fed with softened cold water from the adjacent break tank and booster within the plantroom. A secondary return pumpset in run and standby configuration circulates hot water to offset the heat losses from the flow and return pipework. Each calorifier is provided with a destratification pumpset to maintain an even hot water temperature across the cylinder.

The existing calorifiers and secondary return pumpset are to be stripped out replaced with a new. The new system will consist of 1No. pre-heat cylinder (CAL1/EC3) that is hydraulically connected to solar thermal panels mounted on the south westerly roof in the Energy Centre. A solar transfer pumping station will circulate a glycol mix media to recovery the heat absorbed by flat plate solar collectors to preheat the incoming cold water. The pre-heated water will then pass through 2 No. indirect calorifiers (CAL2/EC3 & CAL3/EC3), hydraulically arranged in parallel, to be heated to a storage temperature of 62 deg C (adjustable). The Client has advised the maximum consumption of laboratory hot water is just short of 1000 litres per day. In light of this, it has been agreed to reduce the storage volume to 1500 litres per calorifier to allow for a future increase in laboratory hot water consumption with 100% standby facility if one of the units is taken offline for maintenance purposes. The new indirect calorifiers are sized regenerate the full storage volume, and heat loss from the secondary return, in less than 2 hrs under in normal operation. However, the regeneration time will increase from 2 hrs to approximately 4 hrs when only one of the Calorifiers is operational and subject to the full secondary return heat loss.

A class 2 RHI (Renewable Heat Incentive) heat meter will measure and record the energy harnessed from the sun and interface with the existing Stark Energy Monitoring system. A new heat meter will measure the primary input energy to the calorifiers and interface with the existing Stark Monitoring system.

The cold water, primary heating and hot water secondary return pipework will be reconfigured to suit the new installation. It is essential that the strip-out works are carried out in a phased manner to maintain the operation of the hot water supply to the building. It envisaged that one of the existing calorifiers will be stripped whilst the other unit is maintained to provide hot water to the building. Following this, one of the new calorifier units will be set to work to allow for the final calorifier to be stripped out. The Contactor will allow for temporary connections as necessary to enable the calorifiers to be stripped out on a

phased basis. Any downtime of the hot water supply must be fully agreed by the Client prior to the works take place.

A loading circuit will pasteurise the preheat once every four days for a minimum period of 1 hour to comply with L8 Approved Code of Practice requirements.

The glycol mix will be suitable to withstand an ambient temperature of -19 deg C.

The new calorifiers are to be mounted on a concrete plant base.

We have been advised by the Client the secondary hot water flow and return valves to both calorifiers are seized so the Contractor will need to allow for a pipework freeze to replace these units and to reconfigure the pipework to suit the new installation.

The solar thermal system must be installed by a certified MCS Installer Contractor and be MCS approved under the RHI scheme.

The solar thermal hot water system to be provided by Hamworthy or Lochinvar or approved equivalent.

Contact details

Russ Walliss, Hamworthy, Area Sales Manager, M: 07789 506835, E: Russ.Walliss@hamworthy-heating.com

Terry Simmonds, Lochinvar, Area Sales Manager, M: 07966 223280, E: tsimmonds@lochinvar.ltd.uk

1.2 Scope of Works

Your quotation should detail the split of work that will be completed before the 31st of March 2016 up to the value of £87,500 excl VAT (phase 1) and then also what work would remain outstanding for completion during phase 2 to meet the full specification together with the related costs. Contractors should note that phase 1 must encompass the supply and fitting of the new calorifiers to a fully operational state heated indirectly from the NOC boilers with appropriate/specified controls in place for their efficient and controlled operation.

The Scope of Works for this Project includes the following:-

1. Strip-out and decommission the existing calorifiers, and associated mechanical and electrical plant, on a phased basis to maintain the operation of the laboratory hot water to the building.
2. Isolate, disconnect, make safe all redundant plant and equipment and remove from site.
3. Supply and install the new calorifiers, solar panels, solar pumping station, secondary return pumpset, RHI heat meter, and primary energy meter.
4. Reconfigure the primary heating, secondary hot water flow and return and cold water pipework to suit the installation.
5. Mount calorifiers on a new concrete base.
6. The plant and equipment in accordance with the requirements of this Specification, to meet all statutory requirements comply with recommendations contained in British and European Standards and L8 Approved Code of Practice.
7. Provide new power supplies to the solar pumping station, filling pump, RHI meter and controller. The solar controller shall interface with the BMS.

8. Modify existing control panels, controls, BMS and software to suit and update BMS graphics.
9. Reconfigure the existing power supplies to suit the installation.
10. Safely strip-out and dispose any asbestos present in the pipework gaskets and calorifier system.
11. Modify and extend the Stark Energy Monitoring System to monitor, measure and record water consumption to the Laboratory hot water system, primary heating and solar.
12. Validate the existing primary flow and return and flowrates to the Calorifiers.
13. Commissioning new plant and equipment, and any parts of the existing systems affected by the Works or as necessary to provide fully operational systems.
14. Provide a detailed programme of the Works.
15. Survey of the existing equipment and accommodation as necessary to carry out these Works.
16. Submit detailed information for the Works including, but not necessarily limited to, the following:
    a. Installation and working drawings, including manufacturers shop/certified details.
    b. Wiring diagrams.
    c. Builderswork drawings/requirements.
    d. Method Statements.
17. Provide record drawings and Operating and Maintenance Manuals in line with NOC requirements. These will be provided as hardcopies and electronically. The outline structure of the O&M shall be:
    a) Introduction, b) Health & Safety c) Operating Procedures d) Maintenance Procedures e) Equipment Schedules f) Manufacturers' Literature g) Commissioning Data h) Drawings.
18. Label plant, ancillaries and components to match existing building standard.

1.3 Contractor Detailing Responsibilities

The detailing responsibilities will include the items listed below. The Contractor will include such details in the form of fully dimensioned installation and builderswork drawings, wiring diagrams, manufactures certified drawings etc.

The detailing responsibilities will include, but not necessarily be limited to:
1. Builderswork requirements to be carried out by others based on manufacturer's information etc.
2. Location of drain and vent points and pipework gradients.
3. Arrangement and locations of brackets and supports.
4. Detailed electrical wiring diagrams of all equipment supplied showing all interconnections between equipment.
5. Detailed design of the solar thermal and hot water systems.
6. Detailed design of the electrical systems.
7. Capacity, location, routes and sizes of electrical conduit systems.
8. Automatic controls systems including software.
9. Control valve selections
10. Final detailed design of electrical systems.
11. Safe operating and maintenance clearances are provided.
12. Final locations of:
    a. Test points.
    b. Control sensors.
    c. Detectors.
    d. Thermostats.
    e. Gauges are to be readable and accessible from the Ground Floor.

1.4 Contractor Obligations

Undertake responsibility for all works defined in the Specification the following:

1. Undertake the responsibility for resolving final spatial co-ordination.
2. Final co-ordinating the engineering services, with each other and with the building structure and fabric.
3. Provide the following drawings
   a. Installation.
   b. Manufacturer's certified drawings, diagrams and details.
   c. Shop drawings.
   d. Installation wiring drawings.
   e. Control wiring diagrams.
4. Provide builders work details based on the installation, manufacturing and shop drawings.
5. Provide:
   a. Suitable storage facilities.
   b. Clearance on completion.
6. Supply, deliver to site, unload, store, protect and co-ordinate movement of all plant, equipment and materials required for the works.
7. Fix and install correctly all plant, equipment and materials and ensuring that all associated works are correctly executed.
8. Undertake the fire stopping of all holes associated with the works.
9. Install fire barriers where a fire rated partition is penetrated.
10. Inspect all plant, equipment and materials as delivered or where specified at the manufacturer's works.
11. Preparation of the operating and maintenance manuals, planned maintenance schedules and record drawings. Provide hard and soft copies. The latter will be in both pdf and native editable formats i.e. AutoCAD drawings Word manuals.
12. Preparation of log books in accordance with Building Regulations using CIBSE TM 31 template.
13. Undertake the testing and commissioning of the works.
14. Providing a commissioning report in accordance with Building Regulations.
15. Demonstrate the testing and commissioning has been carried out in accordance with industry standards, e.g. CIBSE Commissioning Codes, BRSIA Application Guides and manufacturer’s recommendations.
16. Provide training for the Client’s maintenance team on the physical system including fault finding, recommended PPM and spares.

1.5 Surveys

Ascertain the nature of the site and all local conditions and restrictions likely to affect the execution of the Works.

Before commencing work, carry out a survey and examination of buildings, structure and engineering services affected by the works.

Suppliers need to request a date, within the specified range detailed in the timetable, via the Emptoris messaging facility.

1.6 Site Dimensions and Levels

Install all engineering services using a laser levelling system wherever possible and co-ordinate the measurements with existing installation and building structure/fabric.

Obtain all dimensions and levels on site for the actual setting out of the works.

1.7 Maintainability

Demonstrate that all plant and equipment incorporated into the Works can be safely and easily maintained in full compliance with:

- Health and Safety legislation.
- CDM requirements.
- British Standards.

Ensure that adequate space is provided for future replacement of plant or parts and that all access panels/doors are unobstructed.

1.8 Co-Operate

Co-operate with any other Contractors or maintenance personnel that maybe working in the area of the plantroom etc. in the execution of their work. Ensure the plantroom is kept clear and access routes are not impeded.

1.9 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. Industry visits to be held as follows: 12/01/16 between 1400 to 1530 & 14/01/16 between 1000 to 1130.

1.10 Meaning of the Term 'Approved Equivalent'

The Contractor will include in his tender for the manufacturers or suppliers listed in this Specification. Failure to comply with this requirement will result in the submission being considered to be a non-compliant tender. The Contractor can at his discretion offer alternative manufacturers in his tender. Such alternatives will be clearly identified in the submission and the effect on the tender sum shown as a below the line cost option. This will be included regardless of whether the cost effect is an addition, a saving, or no effect on the tender sum.

The term 'Approved Equivalent' will mean approved and considered equivalent by the Contract Administrator, and the Contractor will not include any such alternatives until confirmation in writing is obtained. Contractors may propose alternative suppliers during the clarification window with due consideration given price, quality and lead time.

2. General Matters

2.1.1 Validations

Prior to carrying out any Works the Contractor will validate the existing installation. This will consist of a verification of the primary heating flowrates and temperatures to the existing calorifiers.

The Contractor will also take water sample taking establish the water quality of the primary heating and laboratory hot water systems.

Any faults, deficiencies etc. identified by the validation will be reported to the Contract Administrator.

Similarly the Contractor will carry out a visual inspection of the area of the Works and produce a schedule of dilapidations, listing any defects, damage etc. to the installations complete with a photographic record. Contractor shall allow for a post installation report that demonstrates with photographic evidence the rectification works and new installation.

The validation report and schedule of dilapidations will be utilised at the end of the Works to determine if any defects arising from witnessing of the commissioning and inspects of the installations are to be rectified under the Contract.

The above will be submitted with sufficient time to enable any comments to be incorporated in the proposals without delaying the Works. The Contractor will indicate submissions and commenting periods in the Programme of Works. A minimum of ten days commenting periods will be allowed for submissions.

2.1.2 Testing and Commissioning

The Contractor will carry out all testing and commissioning of the Works. This will comply with:

- CIBSE Commissioning Codes.
- BSRIA Application Guides.
- HVCA Guides.
- IEE Regulations.
- Manufacturer's and Supplier's recommendations.
- NICEIC Electrical tests.

All testing and commissioning including all pre-commissioning checks will be fully documented and copies will be included in the record documentation of the Works.

Subsequent to the submission of satisfactory testing and commissioning documentation the Contractor will offer to demonstrate to the Contract Administrator.

2.1.3 Permit to Work

The Contractor will adhere to NOC's Permit to Work system. It will be the Contractor responsibility to ensure he is familiar with these requirements and provide all notice periods, documentation etc.

Please refer to "Appendix A - NOCS-COC-001_Code_of_safe_practice_for_Estates_Contractors_Southampton_V10_261015".

2.1.4 Labelling and Identification

The Contractor will provide labelling and identification of all plant, equipment, pipework, valves, switchgear, control panels, cables etc. provided as part of these Works to match NOC's building standard requirements.

3. Specification Clauses

3.1 55-40-40/160 Indirect hot water storage supply system

System outline

See section 1.1.

55-40-40/160 Indirect hot water storage supply system

- **System performance:**
- **Capacity:** Refer to plant schedule
- **Primary heat source:** 90-40-75/320 Flat plate collectors and 90-40-05/330 Gas fired boilers.
- **Primary:** Sealed.
- **Storage unit:** 90-15-35/340 Indirectly heated unvented hot water storage.
- **Pumps:**
  - **Primary hot water supply:** Existing.
  - **Secondary hot water supply:** Yes, see plant schedule
- **Pipelines:** 90-10-65/310 Copper pipelines.
- **Pipeline accessories:**
  - **Expansion devices:** Contractor's design.
  - **Gauges:** Refer to Tender drawings
  - **Accessories:** Contractor's design.
- **Valves:**
  - **Isolating valves:** 90-10-90/332 Butterfly valves and 90-10-90/342 Copper alloy gate valves.
  - **Check valves:** 90-10-90/354 Swing type check valves.
  - **Regulating valves:** 90-10-90/356 Double regulating valves.
  - **Draining devices:** 90-10-90/374 Draining taps.

- **Accessories:** 90-10-90/360 Test points.

- **Thermal insulation:**

- **Pipelines:** 90-90-40/330 Mineral wool pipe section insulation or 90-90-40/360 Phenolic foam insulation.

- **Cylinders:** Pre-insulated **in Hammer clad**

- **Vibration isolation:** Contractor's design.

- **Controls:** See Controls Specification

- **Accessories:** 90-40-75/340 Expansion vessels.

- **Plant and equipment identification:** As Existing and to NOC requirements

- **Execution:** 55-40-40/610 Removing hot and cold water systems;
55-40-40/620 Installing hot and cold water systems generally;
55-40-40/650 Hydraulic pressure testing of hot and cold water supply systems;
55-40-40/660 Flushing hot and cold water systems;
and 55-40-40/670 Disinfection of hot and cold water systems.

- **System completion:** 55-40-40/810 Commissioning of hot and cold water supply systems;
55-40-40/820 Inspection and test records;
55-40-40/830 Demonstrations;
55-40-40/850 Water quality tests;
55-40-40/860 Spares;
55-40-40/870 Operating tools;
and 55-40-40/880 Maintenance.

Products

90-10-65/310 Copper pipelines

- **General requirements:** 90-10-65/320 Copper pipeline jointing materials and 90-10-65/315 Copper pipeline fittings. For Lab hot water & cold water make-up

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

- **Standard:** To BS EN 1057.

- **Grade:** R250.

- **Finish:** Plain.

- **Options:** 90-10-65/450 Pipeline supports.

- **Execution:** 90-10-65/630 Installing copper pipelines and 90-10-65/635 Brazed joints in copper and copper alloy pipes.

90-10-65/315 Copper pipeline fittings

- **Manufacturer:** Contractor's choice.
- **Standards:**
  - **Capillary:** To BS EN 1254-1, solder ring.
  - **Flanges:** To BS EN 1092-3

90-10-65/320 Copper pipeline jointing materials

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

90-10-65/450 Pipeline supports

- **Manufacturer:** Contractor's choice.
- **Arrangement:** Manufacturer's standard.
- **Material:** To match existing.
- **Execution:** 90-10-65/695 Installing pipeline supports.

90-10-90/305 Connections for accessories

Shared by: 90-10-90/332 Butterfly valves; 90-10-90/342 Copper alloy gate valves; 90-10-90/354 Swing type check valves; 90-10-90/356 Double regulating valves; and 90-10-90/374 Draining taps.

- **Capillary:** To BS EN 1254-1.
- **Compression for copper tubes:** To BS EN 1254-2.
- **Compression for plastics pipes:** To BS EN 1254-3.
- **Flanged for cast iron:** To BS EN 1092-2.
- **Flanged for copper alloy:** To BS EN 1092-3.
- **Threaded:**
  - **Where pressure-tight joints are made on the threads:** To BS 21 or BS EN 10226-1.

- **Where pressure-tight joints are not made on the threads:** To BS EN ISO 228-1.

90-10-90/332 Butterfly valves

- **General requirements:** 90-10-90/305 Connections for accessories.
- **Manufacturer:** Crane or Oventrop
- **Standard:** To BS EN 593.
- **Arrangement:** Manufacturer's standard.
- **DN rating:** Manufacturer's standard.
- **PN rating:** Manufacturer's standard to suit expected pressures.
- **Working conditions:**
  - **Type of fluid:** Water.
  - **Maximum working pressure:** To be established on site
  - **Fluid temperature:** 60 °C
  - **Flow velocity:** To be established on site
- **Materials:**
  - **Body:** Manufacturer's standard.
  - **Shaft:** Manufacturer's standard.
  - **Disc:** Manufacturer's standard.
  - **Seat:** Manufacturer's standard.
- **Operation:**
  - **Manual:** Lever.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-10-90/342 Copper alloy gate valves

- **General requirements:** 90-10-90/305 Connections for accessories.
- **Manufacturer:** Crane or Oventrop
- **Standard:** To BS EN 12288.
- **Series:** Manufacturer's standard.

- **Size:** Manufacturer's standard.
- **Material:** Copper alloy.
- **Connections:** Capillary.
- **Options:** Manufacturer's standard.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-10-90/354 Swing type check valves

- **General requirements:** 90-10-90/305 Connections for accessories.
- **Manufacturer:** Crane or Oventrop
- **Standard:** To BS 5154.
- **Arrangement:** Manufacturer's standard.
- **Series:** Manufacturer's standard.
- **Material:** Copper alloy.
- **Connections:** Manufacturer's standard.
- **Operation:** Manufacturer's standard.
- **Options:** Manufacturer's standard.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-10-90/356 Double regulating valves

- **General requirements:** 90-10-90/360 Test points and 90-10-90/305 Connections for accessories.
- **Manufacturer:** Crane or Oventrop
- **Standard:** To BS 7350.
- **Arrangement:** Globe.
- **Material:** Copper alloy.
- **Connections:** Manufacturer's standard.
- **Accessories:** Manufacturer's standard.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-10-90/360 Test points

Shared by: 55-40-40/160 Indirect hot water storage supply system; and 90-10-90/356 Double regulating valves.

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

90-10-90/374 Draining taps

- **General requirements:** 90-10-90/305 Connections for accessories.
- **Manufacturer:** Contractor's choice.
- **Standard:** To BS 2879.
- **Arrangement:** 1.
- **Material:** Bronze.
- **Connections:** Threaded.
- **Execution:** 90-10-90/610 Installation of valves generally.

90-15-35/340 Indirectly heated unvented hot water storage

- **Manufacturer:** See palnt schedule
- **Standard:** To BS EN 12897.

90-40-05/330 Gas fired boilers

- **Manufacturer:** As existing

90-40-75/320 Flat plate collectors

- **Manufacturer:** Hamworthy or Lochinvar or approved equivalent
- **Standards:** To BS EN 12975-1 and BS EN 12975-2. EN 12150
- **Mounting:** Mounted on slate tiled roof
- **Type:** Trigon or approved equivalent
- **Arrangement:** 2 x array of 5 collectors or equivalent
- **Panel height:** Manufacturer's standard.
- **Panel width:** Manufacturer's standard.
- **Absorber plate:** Manufacturer's standard.
- **Transparent cover:** Manufacturer's standard.

- **Collector box:** Manufacturer's standard.
- **Output:** 30 to 35 kWpeak
- **Execution:** 90-40-75/610 Installing solar collectors generally.
- **Panel support system**: Stainless steel or anodised aluminium. The Contractor will allow to anodised the aluminium frame provided by the manufacture. The panel support will be suitable for the slated pitched roof with any openings fully weatherproofed. The Contractor will carry out a structural load assessment to ensure the roof is capable of mounting the solar panels.

90-40-75/340 Expansion vessels

- **Manufacturer:** See plant schedule
- Working pressure 10 Bar
- Resistant temperature 120 deg C

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

- **Manufacturer:** Contractor's choice to Part L requirements
- **Standard:** To BS 3958-4.
- **Finish:** Hammer clad, weatherproofed
- **Insulation thickness (minimum):** To meet Part L requirements
- **Accessories:**

○ **Insulation at loadbearing pipeline supports:** 90-90-40/485 Insulation at loadbearing pipeline supports.

○ **Insulation for valves and flanges:** 90-90-40/480 Insulation for valves and flanges.

- **Execution:** 90-90-40/625 Installing foil faced mineral wool insulation on pipelines

90-90-40/360 Phenolic foam insulation

- **Manufacturer:** Contractor's choice to Part L requirements
- **Standard:** To BS EN 13166.
- **Form:** Manufacturer's standard.
- **Thermal conductivity:** 0.018 W/m·K at 0°C.

0.018 W/m·K at 10°C.
0.023 W/m·K at 50°C.
0.025 W/m·K at 75°C.

- **Finish:** Hammer clad

- **Accessories:**

Balancing and equalisation valves, hydraulic fitting kit, safety relief valve, flexible connectors, temperature sensors, class 2 RHI approved meter, solar transfer pumping station c/w solar controller and expansion vessel.

- **Insulation at loadbearing pipeline supports:** 90-90-40/485 Insulation at loadbearing pipeline supports.

- **Insulation for valves and flanges:** 90-90-40/480 Insulation for valves and flanges.

- **Execution:** 90-90-40/640 Installing phenolic foam insulation on pipelines.

Execution

55-40-40/610 Removing hot and cold water systems

- **Scope:** See section 1.1.

55-40-40/620 Installing hot and cold water systems generally

- **Standard:** To BS 8558 and BS EN 806-4.

- **Performance:** Free from leaks and the audible effects of expansion, vibration and water hammer.

- **Fixing of equipment, components and accessories:** Fix securely, parallel or perpendicular to the structure of the building.

- **Preparation:** Immediately before installing tanks and cisterns on a floor or platform, clear the surface completely of debris and projections.

- **Corrosion resistance:** In locations where moisture is present or may occur, avoid contact between dissimilar metals by use of suitable washers, gaskets, and the like.

55-40-40/650 Hydraulic pressure testing of hot and cold water supply systems

- **Standard:** To BS 8558 and BS EN 806-4.

- **Notice (minimum):** 1 week.

- **Pressure:** 1.5 times working pressure.

- **Duration of test:** 1 h.

55-40-40/660 Flushing hot and cold water systems

- **Standard:** To BS EN 806-4.

- **Water analysis:** Analyse water samples before treatment.

- **Preliminary checks:** Thoroughly inspect pipework. Complete pressure tests before cleaning or chemical treatment.

- **Waste products:** Neutralize, and dispose of to drain. Preferably direct to manhole.

55-40-40/670 Disinfection of hot and cold water systems

- **Standard:** To BS EN 806-4.

- **Samples for analysis:** Provide after flushing.

90-10-65/610 Pipelines installation generally

- **Standard:** HVCA TR/20/1;
HVCA TR/20/4;
and HVCA TR/20/5.

- **Dissimilar metals:** Prevent electrolytic corrosion.

90-10-65/615 Installing pipeline fittings

- **Fabricated junctions and fittings:** Same material as the main pipeline.

- **Demountable joints:** Regularly spaced along pipeline runs and at items of equipment.

90-10-65/620 Installing anchors generally

- **Purpose:** To resist axial stress transmitted by flexure of horizontal and vertical pipe runs, and loading on vertical pipes.

- **Fixings:** Provide associated backing plates, nuts, washers and bolts for attachment to, or building into building structure.

- **Fixing to building structure:** Contractor's choice.

- **Building structure:** Suitable for transmitted stress.

90-10-65/625 Installing slide guides

- **Expansion and contraction:** Direct movement from pipe anchor points towards loops, bellows or flexible inserts.

- **Thrust:** Linear relative to the axis of pipe.

- **Friction:** Apply a friction reducing material between metal faces subjected to movement.

90-10-65/630 Installing copper pipelines

- **General requirements:** 90-10-65/690 Spacing of pipelines;
90-10-65/625 Installing slide guides;

90-10-65/615 Installing pipeline fittings;
90-10-65/610 Pipelines installation generally;
90-10-65/710 General inspection and testing;
and 90-10-65/620 Installing anchors generally.

- **Standard:** In accordance with CDA publications 88 Copper tube in buildings and 149 Large diameter copper tubes.

- **Jointing method:**

  - **Permanently concealed joints:** Brazed.

  - **Accessible joints:** Brazed and Capillary, up to 67 mm for pressure up to 600 kPa and 110°C.

- **Expansion loops:** Formed bends from single pipe length where practicable

- **Anchor:**

  - **Method:** Two flanges fixed to copper female adaptors.

  - **Pipe restraints:** Saddle clamps.

90-10-65/635 Brazed joints in copper and copper alloy pipes

- **Preparation, marking and sealing:** In accordance with BS EN 14324.

90-10-65/690 Spacing of pipelines

- **Minimum clearance between insulated pipelines and:**

  - **Wall finish:** 25 mm.

  - **Ceiling finish or soffit:** 100 mm.

  - **Floor:** 150 mm.

  - **Electrical services:** 150 mm.

  - **Adjacent services:** 100 mm.

  - **Uninsulated pipeline:** 75 mm.

  - **Another insulated pipeline:** 25 mm.

- **Minimum clearance between uninsulated pipelines and:**

  - **Wall finish:** 25 mm.

  - **Ceiling finish or soffit:** 100 mm.

  - **Floor:** 150 mm.

- **Electrical services:** 150 mm.
- **Adjacent services:** 150 mm.
- **Another uninsulated pipeline:** 25 mm.

90-10-65/695 Installing pipeline supports

- **Position:**
- **In plant rooms:** Contractor's choice.
- **Distribution corridors and risers:** Contractor's choice to match existing
- **Surface mountings:** Split ring, spacer nipple and backplate.

90-10-90/610 Installation of valves generally

Shared by: 90-10-90/332 Butterfly valves; 90-10-90/342 Copper alloy gate valves; 90-10-90/354 Swing type check valves; 90-10-90/356 Double regulating valves; and 90-10-90/374 Draining taps.

- **Installation:** In accordance with BS 6683.
- **Position:** Submit proposals.
- **Isolation and regulation valves:** Provide at equipment and on sub-circuits.
- **Access:** Locate valves so they can be readily operated and maintained. Locate next to equipment which is to be isolated.
- **Connection to pipework:** Fit with joints that suit the pipe material.

90-40-75/610 Installing solar collectors generally

- **Orientation:** South westerly facing and unshaded.
- **Pitch:** 24°
- **Roof mounted collectors:** Do not impede rainwater drainage suitable for tiled roof

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

Shared by: 90-90-40/625 Installing foil faced mineral wool insulation on pipelines; and 90-90-40/640 Installing phenolic foam insulation on pipelines.

- **Standard:** In accordance with BS 5970.
- **Timing:** Insulate after installed system has been fully tested and joints proved sound.
- **Insulation:** Do not enclose adjacent units together.

- **Clearance:** Maintain between pipes.

- **Finish:** Neatly finish joints, corners, edges and overlaps.

90-90-40/625 Installing foil faced mineral wool insulation on pipelines

- **General requirements:** 90-90-40/610 Installing insulation and protection products generally.

- **Joints:** Close butt; seal with 50 mm wide class 0 tape on both longitudinal and circumferential joints.

- **At fittings:** Mitre. Secure with tape.

- **Vapour seal:** Tape exposed insulation membrane. Seal vapour barrier at pipe support with class 0 tape.

90-90-40/640 Installing phenolic foam insulation on pipelines

- **General requirements:** 90-90-40/610 Installing insulation and protection products generally.

- **Joints:** Close butt, seal with 50 mm wide class 0 tape on both longitudinal and circumferential joints.

- **At fittings:** Mitre. Secure with tape.

- **Vapour seal:** Tape exposed insulation membrane. Seal vapour barrier at pipe support with class 0 tape.

System completion

55-40-40/810 Commissioning of hot and cold water supply systems

- **Pre-commissioning:** In accordance with BSRIA BG 2/2010 and CIBSE Commissioning Code W.

- **Commissioning:** In accordance with BS EN 806-4, BSRIA BG 2/2010 and CIBSE Commissioning Code W.

- **Notice (minimum):**

- **Equipment:** Check and adjust operation of equipment, controls and safety devices.

- **Outlets:** Check operation of outlets for satisfactory rate of flow and temperature.

55-40-40/820 Inspection and test records

- **Reports:**

  - **Construction phase:** System design is commissionable;
Post-installation;

System cleanliness;
and System commissionable.

- **Records for water systems:** In accordance with BSRIA BG 2/2010.
- **Record sheets:**
  - **Submission:** On completion.
  - **Number of copies:** Three.

55-40-40/830 Demonstrations

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

55-40-40/850 Water quality tests

- **Standard:** To BS EN 806-4.
- **Samples:**
  - **Sample points:** Hot water storage cylinder.
  - **Samples for analysis:** Submit samples for bacteriological analysis.
- **Water temperature:** Record at each sampling point at the time of taking the sample.
- **Test results:**
  - **Record:** Details of all analyses.
  - **Submit:** On completion.
  - **Number of copies:** Two.

55-40-40/860 Spares

- **Pipeline ancillaries:**
  - **Keys:** Submit proposals.
  - **Pumps:** HWS Secondary pumpset

55-40-40/870 Operating tools

- **Tools:** Supply tools for operation, maintenance and cleaning purposes.
- **Keys:** Supply keys for valves and vents.

55-40-40/880 Maintenance

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

3.2 60-45-40/110 Primary Heating

System outline

See section 1.1.

•Pipelines:

Type: Heavy grade steel to BS EN 10255

Connection: Threaded up to 50mm, all other joints and all joints 65 mm and over will be welded. Screwed joints to BS EN10266.

Insulation: To BS 5422 protected in Hammer clad.

Valves:

Isolating valves:

Manufacture: Crane or approved equivalent

Type: Globe/Ball/Butterfly

Pressure Rating: PN 25 or PN 16

Check valves:

Manufacture: Crane or approved equivalent

Pressure Rating: PN 25

Regulating valves:

Manufacture: Crane or approved equivalent

Pressure Rating: PN 25

Pressure Independent Control Valves

Manufacture: Seimens or approved equivalent

Selection: By Controls Specialist

Pipeline strainers

Manufacturer: Crane or approved equivalent

Pattern: Y pattern.

Pressure Rating: PN 25

EXECUTION

PIPELINES INSTALLATION GENERALLY

Installation: In accordance with the latest edition of HVCA TR/20.
Appearance: Install exposed pipe runs parallel with other pipe or service runs and building structure, taking account of gradients for draining or venting. Set vertical pipes plumb, or follow building line.

Gradients: Install with gradients to allow drainage and air release.
Air venting: Provide vents at high points.
Draining: Provide drains at low points.

Pipeline expansion and contraction: Arrange supports and fixings to accommodate pipeline movement caused by the thermal changes. Allow for movement at branch connections.

Pipeline support: Arrange supports and accessories for equipment, appliances and ancillary fitments in pipelines, so that no undue strain is imposed upon pipes.

620 Installing water based heating systems

- **Standard:** To BS EN 1264-4. or BS EN 14336.

650 Hydraulic pressure testing of low temperature hot water heating systems

- **Testing:** In accordance with BS EN 14336, Appendix B.
- **Notice (minimum):** 5 working days.
- **Pressure:** 1.5 times working pressure.
- **Duration of test:** 1 h.
- **System completion**

810 Commissioning water heating systems

- **Pre-commissioning:** In accordance with BSRIA 2/89.3 and Commissioning Code: Water distribution systems.

- **Commissioning:** In accordance with BSRIA AG 2/89.3 and Commissioning Code: Water distribution systems.

  - **Variable flow systems:** In accordance with CIBSE KS09 Commissioning variable flow pipework systems.

- **Notice (minimum):** One week.

840 Performance testing

- **General:** Demonstrate the performance of the installations.

3.3 Metering

3.3.1.1 Primary Heating

A new heat meter will be fitted to the primary heating to measure and record the energy consumed by the Calorifers.

The meter will communicate with the Stark Energy Monitoring Network located in level 5 of the Energy Centre.

The heat meter will be manufactured by Kamstrup pulse module type 6020C.

Pulse ratio 1 pulse: 1 kWh.

The Contractor will complete Data Capture Sheet in line with NOC's requirements.

The historical data storage to be in line with NOC's requirements.

3.3.1.2 Solar Thermal

A new Class 2 RHI approved energy, complete with data logger, to measure and record the solar energy used to preheat the hot water. A class 2 RHI (Renewable Heat Incentive) heat meter shall be supplied to measure and record the solar energy harnessed by the collector array. This meter shall have a Modbus serial interface for full integration to the Stark Energy Management system located in level 5 of the Energy Centre.

The Contractor will complete Data Capture Sheet in line with NOC's requirements.

The historical data storage to be in line with NOC's requirements.

3.4 Electrical Proposed Works

3.4.1 Project works generally

Provide power and local isolation to the solar transfer station, local controller, filling pump and RHI meter fed from existing LV distribution within the Energy Centre.

Containment as existing / to NOC's standards. Supplementary equipotential bonding to comply with BS 7671: 2015.

Outlets will be fitted with a traffolyte label indicated a circuit reference of the distribution board supplying each outlet.

The installation will conform to all relevant standards, legislation and guidance including the following:

IET Wiring Regulations Seventeenth Edition; Requirements for Electrical Installations BS 7671: 2015

3.4.2 Lightning Protection System

A complete lightning protection system shall be installed, tested and commissioned in accordance with BSEN 62305-3:2011 for the roof-mounted solar thermal collectors.

The lightning protection level (LPL) shall be determined by the specialist contractor by risk assessment.

The system shall comprise of air termination networks, coper down conductors, anti-vandal down conductor guard, testing joints, earth termination pits and test points. The solar thermal collectors and support structure shall be bonded to the existing lightning protection system.

Main protective bonding conductors shall be connected to the lightning protection system from the main earth terminal in accordance with BS EN 62305 – 3:2011: Protection against lightning.

4. Controls

General

The controls installation and modifications to support the Laboratory Calorifers will be supplied, configured and commissioned by Matrix Control Solutions Ltd. Contact Details below:-

Gary Foreman, Matrix Control Solutions Ltd
River View Building
2 Meadows Business Park
Station Approach, Blackwater
Camberley, GU17 9AB

Email: Gary.Foreman@matrixsee.co.uk

Mobile: 07971 026717

Or equal and approved.

The BEMS Specialist is to tender for the works as itemised in the particular section of this specification, which generally comprises:

- The complete design, supply, configuration, documentation and commissioning of the BEMS including all hardware, software and supply of all connected sensors and actuators.
- Modification and commissioning of the Motor Control Panels.
- Controls wiring including the provision of conduit and trunking.
- Power Wiring between the motor control panels and pumps motors etc.
- Update BMS Graphics to suit the new installation

The system will comply in all respects with this equipment specification and with the particular controls specification that follows this section.

All BMS works to be in line with NOC standards.

– Points Schedule

The BMS tenderer will provide a points schedule showing each proposed connected point to the system. The points will be arranged as schedules showing the points allocated on a plant-by-plant basis, the controller specification(s) selected, I/O capacity supplied and the spare I/O available for future use. Any points schedule supplied with this specification will be considered as supporting information only. The BMS specialist will be responsible for ensuring the correct allocation of points required for meeting the performance specification.

Field Devices

A schedule of field devices will be submitted with the tender cross-referenced to the points schedule showing the total number and specification of the device to be supplied, and will show the manufacturer, model, range, accuracy, flow characteristics, working, operating and static pressure ranges, all as applicable to the transducer or actuator. The BMS specialist will be responsible for the correct output and positioning for sensors. Where sensor positions are indicated on drawings, he will advise any corrections to the engineer at an early stage of the project.

Installation

The BMS will be installed complying with all:

- National and local statuary regulations,

- Health & Safety at Work Acts,
- IEE Regulations (17th Ed 2015.),
- Equipment manufacturer's instructions.
- Regulations and conditions of BT, and utilities companies.

All extra-low voltage BMS I/O cables will be run in screened twisted pair cables to the Siemen's standard specification. They will be affixed to tray, drawn into conduit or trunking and protected as agreed with the engineer to suit the various environmental, social and mechanical locations. No joints will be allowed in cables, where these are unavoidable, the cables will be joined using an approved housing, securely fixed and having cable securing clamps. Any such connecting boxes will be shown on the record drawings. No trays, conduits or cables are to be affixed horizontally at floor or pedestal level. Where cables are connected to sensors measuring extreme heat, the necessary thermal breaks, local connecting cables are to be supplied. No BMS data cable will be installed in the same conduit as any power cable nor affixed within 25mm if surface/tray mounted. Where cables are run in trunking or with others clipped to tray of a similar type they will be identified either by colour or labels every 2m.

Special care will be taken to ensure that the manufacturer's recommendations with respect to earthing data cables and outstations are obeyed.

Each BMS field device will be identified (internally on space temperature and humidity sensors) with a common code used on points and wiring schedules, parts lists, control strategy, MCP and installation diagrams/drawings.

All BMS cables will be suitably identified with sleeves at the terminations. These will be recorded on the installation diagrams and wiring schedules.

Sensors, actuators, switches and all field devices will be mounted according to the manufacturer's instructions. All will be installed with clearance to allow for servicing, and the conduit connected by methods to allow easy replacement.

Where outstations switch circuits having potentially different mains voltage supply feeds, extra low voltage relay circuits will be employed. A notice will be fixed inside the outstation detailing how all mains feeds into it can be isolated. Consideration will be given to employing an extra low voltage control circuit for motor starter and contactor coils and will be mandatory where MCP with separate cubicles for motor starters are employed.

The containment will match NOC's existing standards.

In each riser cupboard and plant room through which network cables pass and not having an outstation a loop of cable will be made to allow future system expansion.

Each outstation will be provided with a schedule identifying the points connected to the I/O terminals inside the panel door.

Wiring within the outstations will be completed in a neat and professional manner with lacing/cable ties. No wired connector will be in tension by wires cut too short, earthing braids/wires will be neatly terminated. Prior to commissioning each outstation enclosure will be cleaned of all cable waste.

Commissioning

The BMS specialist will be responsible for the full commissioning of his system and any other controls equipment supplied by him.

All safety interlocks, overrides and fail-safe conditions are to be operational prior to starting the plant. Demonstrate as agreed with the engineer prior to starting plant in BMS auto mode.

Fault conditions for all critical alarms, safety devices and control interlocks will be simulated and proved effective as soon as practical once BMS control mode is selected.

Sensors will be checked to ascertain accuracy within limits, pressure switches checked for switch points and hysteresis. Humidity sensors will be checked for accuracy using a wet/dry bulb thermometer.

All the necessary test equipment and materials used in commissioning will be supplied by the BMS specialist. All test equipment will have valid test certificates.

Trend graphs will be provided to demonstrate the stable control of the plant. Simulated inputs will be employed to check stability over the design environmental range.

The BMS specialist will allow one additional full day by his commissioning engineer to revisit the system at a later date (after hand-over). He will check and adjust operational parameters, and re-tune any control as maybe required by change in the control system load conditions or bedding-in of the plant.

Commissioning documentation and schedules will be submitted for approval during the design phase showing each plant, point, interlock and control algorithms, and the stages of checks and commissioning required. Each cleared item to have date and engineer reference. Completed copies will be available to the engineer prior to acceptance testing. A complete set of the commissioning documentation is to form part of the system documentation.

Once any item of plant is commissioned and left running to the dictates of the BMS, documentation showing the overrides, control and software configuration will be available on site at all times. All system documentation will be in accordance with Trend standard templates.

Acceptance Demonstrations

The BMS specialist will give seven days' notice to the engineer of his intention to provide the acceptance demonstrations once the commissioning is complete. The operation of all safety interlocks will be tested and ten per cent of all points will be selected by the engineer and demonstrated for operation/accuracy. Should more than 1% fail performance test, a further ten per cent may be

selected. If above 1% fail he may at his discretion demand 100% demonstration. The BMS specialist will supply sufficient man-power/test equipment, consumable items and portable telephones to conduct the demonstration efficiently. Testing will also incorporate an audit of the wiring and hardware installation, demonstration of safety interlocks, start of system from power-down and review of time schedules and alarm levels, grouping and selected control parameters.

Documentation

Two copies of all final MEP and BMS operating and maintenance manuals will be supplied within two weeks of hand-over in A4 binders. Preliminary copies will be available to the client during this time. All system documentation will be in accordance with Trend standard templates.

Operating Manuals will comprise instructions on equipment safety checks, start-up and closedown procedures, daily operation and full descriptions of operating features. These will match and comply fully with the software supplied, provide examples of operation with supporting flow/strategy diagrams. Diagrams will show the full diagrammatical (network structures, outstations and peripherals) and physical layout of the system and components.

Maintenance Manuals will comprise full descriptive and maintenance details on each and every item of equipment supplied. Suppliers and spare parts references, contacts, telephone numbers, and addresses will be supplied where relevant. Wiring schedules will show the connection of each item of equipment to the field equipment. Data sheets and maintenance instructions will be provided for each item of equipment. Diagrams showing the configuration of all control and monitoring schemes, identifying the modules used, their interconnections and setting parameters, copy printouts showing the individual outstation module configurations and sequences.

Record drawings of the installation will be supplied on marked up architectural velographs, which will be free-issued to the BMS specialist.

All drawings relating to the BMS will be supplied A3/A4 sizes bound into A4 ring binders. These will include system, outstation and user terminal configuration diagrams, listings and flow charts.

Back-up copies of all system configuration files and master software disks will be supplied in an appropriate lockable storage facility. All system and data files will be current as at the hand-over date, disks to be suitably identified and directories and files cross-referenced in the maintenance manuals. The storage unit and key will be handed to the client's engineer at hand-over.

Site/User Training

The BMS specialist will supply the following training for the clients engineering staff.

On-site; while the clients engineer will attend the acceptance demonstrations, the BMS specialist will instruct him in the specific application of the system, the structure and the control strategies adopted to meet the specification.

Verification

Warranty, Support Period & Maintenance Contract

The warranty period for the new equipment will be twelve months immediately following handover of the installation.

The tenderer will provide a quotation along with his bid for an ongoing support contract to commence immediately upon expiry of the post contract support period described above.

The support contract will comprise (as a minimum) the facilities indicated above and will also encompass other such on or off site support activities as are deemed appropriate.

Upon condition that a support contract is accepted immediately after the post contract support period lapses and that support incorporates 'on site' works then the tenderer will extend the equipment warranty period (for Trend manufactured controllers and communications devices) to twenty-four months from the handover date. Labour costs associated with remedial works during this extended warranty period will be chargeable at an agreed day work rate.

Particular Specification

Stripout Works

Stripout the existing control and power wiring to the Laboratory Calorifiers including the destratification pumpsets, controls valves and sensors.

Description of Operations

Secondary Circuit Temperature Control

During occupancy mode an immersion temperature sensor will modulates primary heating valve to achieve a secondary circuit storage temperature of 62°C in Calorifier CAL2/EC3. Should secondary flow thermostat detect a temperature above 70°C, then the control valve will closes and an alarm is raised at the BMS operator PC.

During occupancy mode an immersion temperature sensor will modulates primary heating control valve to achieve a secondary circuit storage temperature of 62°C Calorifier CAL3/EC3. Should secondary flow thermostat TS12/EC3 detect a temperature above 70°C, then the control valve CV2/EC3 closes and an alarm is raised at the BMS operator PC.

Each high limit stat will have a push button reset on MCC9.3 panel.

Secondary Return Pumpset

During occupancy mode the secondary return pumpset to be initiated. Should the pumpset fail an alarm to be raised at the BMS head end PC.

Preheat Cylinder

Should cylinder thermostat detect a temperature above 70°C, an alarm is raised at the BMS operator PC.

De-Stratification Pump Control

The de-stratification pumps are enabled outside to ensure an even temperature across the calorifers.

Should either pumpset on Calorifier CAL2 or 3/EC3 not run as required to be an alarm is raised at the BMS operator PC.

Loading Pumpset

Once every have four days the preheat calorifier is to be pasteurised to a storage temperature of 62 deg C for a minimum period of 1 hr to meet L8 legionella requirements. The pasteurisation cycle is to be time schedule to take place late in the evening when the building is not in use. A control valve on the loading circuit will be activated to enable the hot water from Calorifiers CAL2 & 3/EC3 circulate through the preheat calorifier.

Should the loading pumpset not run as required to be an alarm is raised at the BMS operator PC.

Solar Transfer Station.

The solar transfer station will operate under the dictates of its own integral intelligent controller. The controller software and set up shall be optimised to give the best energy efficiency combined with a resilient supply of heat to the domestic hot water pre-heat calorifier.

The controller shall be integrated with the BMS via a serial data connection using open protocol communications such as Modbus or BACnet. The solar transfer station supplier will supply all data tables, connection details, software, hardware, licences, permissions, etc., technical support and assistance required by the BMS supplier to fully integrate the solar controller into the BMS.

As a minimum the BMS shall be able to read:

- the supply and return temperatures
- calorifier high temperature alarm
- solar transfer common fault

If the serial connection is not available the BMS supplier shall supply and install separate temperature sensors and connect to a volt free contact in the solar controller for the common alarm.

Section 5 – Evaluation model

The evaluation model below shall be used for this ITQ, which will be determined to two decimal places.

Where a question is 'for information only' it will not be scored.

The evaluation team may comprise staff from UK SBS, the Customer and any specific external stakeholders UK SBS deem required. After evaluation the scores will be finalised by performing a calculation to identify (at question level) the mean average of all evaluators (Example – a question is scored by three evaluators and judged as scoring 5, 5 and 6. These scores will be added together and divided by the number of evaluators to produce the final score of 5.33 (5+5+6 =16÷3 = 5.33)

Pass / fail criteria

Questionnaire	Q No.	Question subject
Commercial	FOI1.1	Freedom of Information Exemptions
Commercial	AW1.1	Form of Bid
Commercial	AW1.3	Certificate of Bona Fide Bid
Commercial	AW3.1	Validation check
Commercial	AW4.1	Contract Terms
Price	AW5.5	E Invoicing
Price	AW5.6	Implementation of E-Invoicing
Quality	AW6.1	Compliance to the Specification
Quality	AW6.2	Provide a maximum of 3 examples of similar projects completed in the past five years
Quality	AW6.3	Provide details of key personnel and proposed sub-contractors

Scoring criteria

Evaluation Justification Statement

In consideration of this particular requirement UK SBS has decided to evaluate Potential Providers by adopting the weightings/scoring mechanism detailed within this ITQ. UK SBS considers these weightings to be in line with existing best practice for a requirement of this type.

Questionnaire	Q No.	Question subject	Maximum Marks
Price	AW5.2	Price	47.5%
Price	AW5.7	Prompt payment	2.5%
Quality	AW6.4	Provide a programme specifying how you will meet our target dates.	12.5%
Quality	AW6.5	Provide details of the methodology that you propose to be employed in delivering this project which will include keeping our laboratories supplied with hot water throughout the works.	25%
Quality	AW6.6	Identify what you believe to be the top 5 risks and how you plan to mitigate against these risks.	12.5%

Evaluation of criteria

Non-Price elements

Each question will be judged on a score from 0 to 100, which shall be subjected to a multiplier to reflect the percentage of the evaluation criteria allocated to that question.

Where an evaluation criterion is worth 20% then the 0-100 score achieved will be multiplied by 20.

Example if a Bidder scores 60 from the available 100 points this will equate to 12% by using the following calculation: Score/Total Points available multiplied by 20 (60/100 x 20 = 12)

Where an evaluation criterion is worth 10% then the 0-100 score achieved will be multiplied by 10.

Example if a Bidder scores 60 from the available 100 points this will equate to 6% by using the following calculation: Score/Total Points available multiplied by 10 (60/100 x 10 = 6)

The same logic will be applied to groups of questions which equate to a single evaluation criterion.

The 0-100 score shall be based on (unless otherwise stated within the question):

0	The Question is not answered or the response is completely unacceptable.
10	Extremely poor response – they have completely missed the point of the question.
20	Very poor response and not wholly acceptable. Requires major revision to the response to make it acceptable. Only partially answers the requirement, with major deficiencies and little relevant detail proposed.
40	Poor response only partially satisfying the selection question requirements with deficiencies apparent. Some useful evidence provided but response falls well short of expectations. Low probability of being a capable supplier.
60	Response is acceptable but remains basic and could have been expanded upon. Response is sufficient but does not inspire.
80	Good response which describes their capabilities in detail which provides high levels of assurance consistent with a quality provider. The response includes a full description of techniques and measurements currently employed.
100	Response is exceptional and clearly demonstrates they are capable of meeting the requirement. No significant weaknesses noted. The response is compelling in its description of techniques and measurements currently employed, providing full assurance consistent with a quality provider.

All questions will be scored based on the above mechanism. Please be aware that the final score returned may be different as there may be multiple evaluators and their individual scores will be averaged (mean) to determine your final score.

Example

Evaluator 1 scored your bid as 60

Evaluator 2 scored your bid as 60

Evaluator 3 scored your bid as 40

Evaluator 4 scored your bid as 40

Your final score will (60+60+40+40) ÷ 4 = 50

Price elements will be judged on the following criteria.

The lowest price for a response which meets the pass criteria shall score 100.
All other bids shall be scored on a pro rata basis in relation to the lowest price. The score is then subject to a multiplier to reflect the percentage value of the price criterion.

For example - Bid 1 £100,000 scores 100.
Bid 2 £120,000 differential of £20,000 or 20% remove 20% from price scores 80
Bid 3 £150,000 differential £50,000 remove 50% from price scores 50.
Bid 4 £175,000 differential £75,000 remove 75% from price scores 25.
Bid 5 £200,000 differential £100,000 remove 100% from price scores 0.
Bid 6 £300,000 differential £200,000 remove 100% from price scores 0.

Where the scoring criterion is worth 50% then the 0-100 score achieved will be multiplied by 50.

In the example if a supplier scores 80 from the available 100 points this will equate to 40% by using the following calculation: Score/Total Points multiplied by 50 (80/100 x 50 = 40)

The lowest score possible is 0 even if the price submitted is more than 100% greater than

the lowest price.

Section 6 – Evaluation questionnaire

Bidders should note that the evaluation questionnaire is located within the **e-sourcing questionnaire.**

Guidance on completion of the questionnaire is available at http://www.uksbs.co.uk/services/procure/Pages/supplier.aspx

PLEASE NOTE THE QUESTIONS ARE NOT NUMBERED SEQUENTIALLY

Section 7 – General Information

What makes a good bid – some simple do's ☺

DO:

7.1 Do comply with Procurement document instructions. Failure to do so may lead to disqualification.

7.2 Do provide the Bid on time, and in the required format. Remember that the date/time given for a response is the last date that it can be accepted; we are legally bound to disqualify late submissions.

7.3 Do ensure you have read all the training materials to utilise e-sourcing tool prior to responding to this Bid. If you send your Bid by email or post it will be rejected.

7.4 Do use Microsoft Word, PowerPoint Excel 97-03 or compatible formats, or PDF unless agreed in writing by the Buyer. If you use another file format without our written permission we may reject your Bid.

7.5 Do ensure you utilise the Emptoris messaging system to raise any clarifications to our ITQ. You should note that typically we will release the answer to the question to all bidders and where we suspect the question contains confidential information we may modify the content of the question to protect the anonymity of the Bidder or their proposed solution

7.6 Do answer the question, it is not enough simply to cross-reference to a 'policy', web page or another part of your Bid, the evaluation team have limited time to assess bids and if they can't find the answer, they can't score it.

7.7 Do consider who your customer is and what they want – a generic answer does not necessarily meet every customer's needs.

7.8 Do reference your documents correctly, specifically where supporting documentation is requested e.g. referencing the question/s they apply to.

7.9 Do provide clear and concise contact details; telephone numbers, e-mails and fax details.

7.10 Do complete all questions in the questionnaire or we may reject your Bid.

7.11 Do check and recheck your Bid before dispatch.

What makes a good bid – some simple do not's ☹

DO NOT

7.12 Do not cut and paste from a previous document and forget to change the previous details such as the previous buyer's name.

7.13 Do not attach 'glossy' brochures that have not been requested, they will not be read unless we have asked for them. Only send what has been requested and only send supplementary information if we have offered the opportunity so to do.

7.14 Do not share the Procurement documents, they are confidential and should not be shared with anyone without the Buyers written permission.

7.15 Do not seek to influence the procurement process by requesting meetings or contacting UK SBS or the Customer to discuss your Bid. If your Bid requires clarification the Buyer will contact you.

7.16 Do not contact any UK SBS staff or Customer staff without the Buyers written permission or we may reject your Bid.

7.17 Do not collude to fix or adjust the price or withdraw your Bid with another Party as we will reject your Bid.

7.18 Do not offer UK SBS or Customer staff any inducement or we will reject your Bid.

7.19 Do not seek changes to the Bid after responses have been submitted and the deadline for Bids to be submitted has passed.

7.20 Do not cross reference answers to external websites or other parts of your Bid, the cross references and website links will not be considered.

7.21 Do not exceed word counts, the additional words will not be considered.

7.22 Do not make your Bid conditional on acceptance of your own Terms of Contract, as your Bid will be rejected.

Some additional guidance notes

7.23 All enquiries with respect to access to the e-sourcing tool and problems with functionality within the tool may be submitted to Crown Commercial Service (previously Government Procurement Service), Telephone 0345 010 3503.

7.24 Bidders will be specifically advised where attachments are permissible to support a question response within the e-sourcing tool. Where they are not permissible any attachments submitted will not be considered.

7.25 Question numbering is not sequential and all questions which require submission are included in the Section 6 Evaluation Questionnaire.

7.26 Any Contract offered may not guarantee any volume of work or any exclusivity of supply.

7.27 We do not guarantee to award any Contract as a result of this procurement

7.28 All documents issued or received in relation to this procurement shall be the property of UK SBS.

7.29 We can amend any part of the procurement documents at any time prior to the latest date / time Bids shall be submitted through Emptoris.

7.30 If you are a Consortium you must provide details of the Consortiums structure.

7.31 Bidders will be expected to comply with the Freedom of Information Act 2000 or your Bid will be rejected.

7.32 Bidders should note the Government's transparency agenda requires your Bid and any Contract entered into to be published on a designated, publicly searchable web site. By submitting a response to this ITQ Bidders are agreeing that their Bid and Contract may be made public

7.33 Your bid will be valid for 60 days or your Bid will be rejected.

7.34 Bidders may only amend the Contract terms if you can demonstrate there is a legal or statutory reason why you cannot accept them. If you request changes to the Contract and UK SBS fail to accept your legal or statutory reason is reasonably justified we may reject your Bid.

7.35 We will let you know the outcome of your Bid evaluation and where requested will provide a written debrief of the relative strengths and weaknesses of your Bid.

7.36 If you fail mandatory pass / fail criteria we will reject your Bid.

7.37 Bidders are required to use IE8, IE9, Chrome or Firefox in order to access the functionality of the Emptoris e-sourcing tool.

7.38 Bidders should note that if they are successful with their proposal UK SBS reserves the right to ask additional compliancy checks prior to the award of any Contract. In the event of a Bidder failing to meet one of the compliancy checks UK SBS may decline to proceed with the award of the Contract to the successful Bidder.

7.39 All timescales are set using a 24 hour clock and are based on British Summer Time or Greenwich Mean Time, depending on which applies at the point when Date and Time Bids shall be submitted through Emptoris.

7.40 All Central Government Departments and their Executive Agencies and Non Departmental Public Bodies are subject to control and reporting within Government. In particular, they report to the Cabinet Office and HM Treasury for all expenditure. Further, the Cabinet Office has a cross-Government role delivering overall Government policy on public procurement - including ensuring value for money and related aspects of good procurement practice.

For these purposes, UK SBS may disclose within Government any of the Bidders documentation/information (including any that the Bidder considers to be confidential and/or commercially sensitive such as specific bid information) submitted by the Bidder to UK SBS during this Procurement. The information will not be disclosed outside Government. Bidders taking part in this ITQ consent to these terms as part of the competition process.

7.41 From 2nd April 2014 the Government is introducing its new Government Security Classifications (GSC) classification scheme to replace the current Government Protective Marking System (GPMS). A key aspect of this is the reduction in the number of security classifications used. All Bidders are encouraged to make themselves aware of the changes and identify any potential impacts in their Bid, as the protective marking and applicable protection of any material passed to, or generated by, you during the procurement process or pursuant to any Contract awarded to you as a result of this tender process will be subject to the new GSC from 2nd April 2014. The link below to the Gov.uk website provides information on the new GSC:

https://www.gov.uk/government/publications/government-security-classifications

UK SBS reserves the right to amend any security related term or condition of the draft contract accompanying this ITQ to reflect any changes introduced by the GSC. In particular where this ITQ is accompanied by any instructions on safeguarding classified information (e.g. a Security Aspects Letter) as a result of any changes stemming from the new GSC, whether in respect of the applicable protective marking scheme, specific protective markings given, the aspects to which any protective marking applies or otherwise. This may relate to the instructions on safeguarding classified information (e.g. a Security Aspects Letter) as they apply to the procurement as they apply to the procurement process and/or any contracts awarded to you as a result of the procurement process.

USEFUL INFORMATION LINKS

- Emptoris Training Guide
- Emptoris e-sourcing tool
- Contracts Finder
- Tenders Electronic Daily
- Equalities Act introduction
- Bribery Act introduction
- Freedom of information Act