CONDITIONS of CONTRACT and DESIGN and BUILD SPECIFICATION

MECHANICAL SERVICES INSTALLATIONS

WETHERBY TOWN HALL HEATING PLANT

Prepared by:

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SECTION 3

HEATING

3.01 GENERAL

The works shall generally consist of the following elements:

- Isolation draining and removal of the existing LTHW heating and boiler system.
- Installation of new gas fired boiler.
- New pumps and controls for heating.

All works and materials throughout shall be new except where noted on the drawing.

3.02 BOILER PLANT

There shall be one wall mounted fully condensing gas fired boiler. It shall have an actual minimum heat output to the system of 80kW.

The boiler shall be piped generally in accordance with the Schematic diagram on the drawing's, however, the Contractor shall note all manufacturer's requirements in this instance and install pipework generally as the manufacturer's installation instructions.

The boiler shall feed the LTHW heating system and a primary heating coil in a domestic hot water cylinder.

The boiler shall be complete with boiler on, overheat and lockout lights, fully modulating operation, and electronic ignition.

Boiler overrun shall form part of the boiler package. The boiler shall be suitable for sealed system operation and be complete with expansion vessel.

The boiler shall be commissioned by the manufacturer or his specified agent.

Contractor to allow for all necessary framework and supports for the boiler as may be required.

3.03 BOILER FLUE

The Contractor shall note that the boiler shall include a new flue which shall be installed in the existing chimney to rise to roof level.

The Contractor shall allow for suitable access arrangements.

The Contractor shall include for a site survey prior to Works commencing or fabrication of any components. Drawings shall be provided by the Contractor for approval.

The Contractor is to allow for piping drain from flue to waste point.

3.04 EXPANSION VESSEL AND PRESSURISATION UNIT

The heating system shall be a sealed system with an expansion vessel and pressurization unit. Size to be determined by the Contractor.

The Contractor shall also supply and install as WRAS approved filling loop, which shall be connected to the local Mains Cold Water Supply. Upon completion of the Works, the filling loop shall be disconnected.

3.05 STRAINER

The Contractor shall install in the main heating circuit, a strainer, to aid removal of dirt and debris from the system, therefore protecting new controls and sensitive equipment.

The Contractor to ensure this unit has adequate isolation for routine maintenance.

3.06 AUTOMATIC AIR VENTS

The Contractor shall supply and fix where indicated and at all high points in the system automatic air eliminators.

Each eliminator shall be provided with a lockshield isolating valve and copper discharge pipe which shall be run to a convenient position outside the building.

3.07 DRAIN POINTS

When the heating pipes drop to low level to serve radiators, the Contractor shall provide and fix drain valves. Drain valves shall also be fitted to the dead side of all circuit isolating valves.

3.08 WATER TREATMENT

When the installation is complete, the system shall be thoroughly flushed out with clean water prior to receiving its final fill. The Contractor shall add a suitable concentration of chemical corrosion inhibitor via the chemical dosing pot or injection point, to bring the whole system up to the correct required level of concentration.

Dosing pot or chemical injection point to be supplied and installed under these works.

The level of chemical required shall be determined by the Contractor.

This shall be undertaken in accordance with the boiler manufacturers' requirements and those described elsewhere in this Specification.

3.09 INSULATION

All pipework not used as useful heating surface shall be insulated as the Standard Specification. All pipework in ceiling voids, roof spaces, ducts, etc., shall be insulated. If the Contractor is unsure about the extent of insulation this shall be clarified a Tender stage.

Pipework insulation finish in boiler area shall be foil faced.

Contractor to allow for insulating valves, headers etc.

3.10 FILLING AND VENTING

The Contractor shall make allowance for all necessary air venting of the whole system when filling up after completion of the installation.

3.11 PIPEWORK

All heating pipework shall be in mild steel with threaded joints, or carbon steel with pressed fit joints.

3.12 WATER BALANCING

Upon completion of the various heating works, the Contractor shall allow for comprehensive water balancing of the existing system.

3.13 BOILER SAFETY VALVES

The boiler shall have its own safety relief valve, which shall be of a type as noted in the Standard Specification. Each shall be sized in accordance with BS6644 with a lift pressure of 2.3 bar 33PSI (to be confirmed before ordering). This shall be supplied by Worcester Boilers.

3.14 HEATING PUMP

The Contractor shall supply, install, test and commission a new twin head pump which shall feed the system as shown on the drawings.

The pump shall have variable speed operation being invertor driven.

The duty shall be as designed by the Contractor. Existing pump information provided on the drawings.

3.14 ZONE CONTROLS

The contractor shall supply install test and Commission a series of zone control valves which shall allow for the time and temperature control for three main zones within the town hall building.

The zones shall be the ground floor hall, the ground floor offices and toilets and the first floor main hall.

The controls shall allow each zone to have time schedules inserted for heating operation on the facility to set temperature in each zone as well as an electronic sensor in each zone to feedback information and open/shut the valve accordingly.

The contractor shall allow an element of pipe work tracing to ensure each zone is controlled separately.

An overall frost thermostat shall be installed to provide building and system frost protection.

SECTION 4

COLD WATER SERVICES

4.01 GENERAL

The Works shall consist of the extension of the mains cold water as shown on the drawings to feed the new unvented cylinder and the pressurization unit.

A 15mm mains cold water supply shall be extended in the boiler area to feed the boiler.

Any quick filling loops shall be removed upon completion of the works.

4.02 PIPEWORK AND FITTINGS

Pipe work for cold water services within the building shall be in light gauge copper tube to BS 2871 Part 1 Table X. Fittings shall be BS854 and be integral lead-free solder ring type.

4.03 ISOLATING VALVES

Isolating valves shall be fitted to water services pipework as indicated on the drawings and in the Standard Specification. Where possible, valves shall be accessible controlling individual sanitary fittings.

4.04 INSULATION

All water service pipework in floor ducts, ceiling spaces, roof voids, cupboards, pipe boxes, undercroft, etc., shall be insulated to prevent heat gain. This shall include all valves and system components.

All pipe work in boiler area to be foil face covered.

4.05 FLUSHING AND CLEANING OF SYSTEM

After completion of the installation, it shall be chemically cleaned and chlorinated as noted elsewhere in this Specification.

SECTION 5

GAS INSTALLATION

5.01 GENERAL

The works shall consist of the alteration of the gas to the existing boiler and water heater and for modifications to feed the new boiler.

All services shall be fully labeled and vented throughout their route.

5.02 MANUAL GAS ISOLATION VALVES

Manual gas isolation valves shall be installed in the positions indicated on the drawings to provide manual isolation of the gas supply as required.

The valves are to be located for ease of operation.

5.03 INDIVIDUAL VALVES AND CONNS TO EQUIPMENT

The gas supply to each item of plant/equipment shall have an isolating gas cock on the entry to the unit.

5.04 TESTING

Testing shall be as detailed elsewhere in this Specification and this shall only be undertaken by a GAS SAFE Engineer in the presence of the Consulting Engineer or his representative.

5.05 GAS MAINS

The Contractor shall allow for the supply and installation of the whole of the gas mains as shown on the drawings, including venting of same.

The gas pipe will be marked in the correct manner before enclosure in voids as well as full inspection by the Consulting Engineer.

The exact route, including dimensions will be marked on "as fitted" drawing before back filling of any external trenches.

Pipework materials shall be as the standard specification.

5.06 LABELS

All gas pipework shall be clearly labeled where visible and all gas pipework shall be painted ocre.

5.07 ELECTRONIC FAIL SAFE VALVE

The Contractor shall supply and install an automatic gas shut off solenoid valve, as part of the works.

The electronic safety valve shall be connected to a thermal link installed over the boiler and shall have a facility to be linked to the fire alarm in future.

SECTION 6

WATER TREATMENT

6.01 GENERAL

The completed systems shall be thoroughly cleaned in accordance with the standard specification.

6.02 CHLORINATION

This shall be carried out on the hot water services and cold water services in accordance with the Health & Safety Commissions Approved Code of Practice (L8), and BSRIA Guidelines.

Only an approved Contractor shall undertake the works.

Test results shall be inserted into the Operating and Maintenance Manuals.

6.03 HEATING SYSTEM

These shall be cleaned and treated with chemicals in accordance with the boiler manufacturer's requirements.

This shall provisionally and minimum be:

Flush: Fernox 1C - 20
Treat: Fernox CH - 3

These to be checked by Contractor before being applied for suitability.

This section of the works shall be undertaken by a chemical treatment specialist. (ie. Fernox or equal).

Process to be discussed prior to works commencing.

SECTION 7

CONTROLS INSTALLATION AND ELECTRICAL WORKS

7.01 GENERAL

The Contractor shall note that there will not be a requirement to install a separate control panel or BMS installation as part of these works.

The Contractor shall note that he will be required to provide power supplies for all the equipment under his installation.

A new distribution board shall be installed in the boiler room for the services, which shall be supplied from the main DB in the hall.

The Contractor shall note that all power wiring and controls components shall be installed and wired and tested under this package of works.

The boiler shall include a fully programmable time clock which shall allow for 6 on/off periods each day and shall allow for preprogramming of holidays.

The boiler shall also include for controls to serve the hot water cylinder, which shall have a separate time schedule, with demand dictated by an integral cylinder thermostat. Control valves shall be installed in the pipework to the heating and hot water systems which shall ensure hot water in given priority when demand for both is required.

A secondary hot water circulating pump shall be installed linked to a separate time clock.

The works shall include for a frost thermostat and for a remote room sensor for the control of the heating installed and wired under these works.

SECTION 8

HOT WATER SERVICES

8.01 GENERAL

These Works shall consist of the supply, installation testing and commissioning of a central unvented, indirect hot water storage cylinder feeding hot water outlets as shown on the drawings.

Pipe work shall be reconfigured as shown on the drawings due to the relocation of the water heater position.

8.02 PIPEWORK AND FITTINGS

Pipework for hot water services within the building shall be in light gauge copper tube to BS 2871 Part 1 Table X. Fittings shall be BS854 and be integral lead-free solder ring type.

8.03 ISOLATING VALVES

Isolating valves shall be fitted to water services pipework as indicated on the drawings and in the Standard Specification.

8.04 INSULATION

All water service pipework in floor ducts, ceiling spaces, roof voids, cupboards, pipe boxes, undercroft, etc., shall be insulated to prevent heat loss.

8.05 FLUSHING AND CLEANING OF SYSTEM

After completion of the installation, it shall be chemically cleaned and chlorinated as noted elsewhere in this Specification.

8.06 HWS CYLINDER

The Contractor shall supply, install, test and commission an unvented, indirect hot water storage cylinder, generally in the position as shown on the drawing.

The hot water cylinder shall be unvented, complete with mains water compliant unvented kit, integral expansion capacity, temperature gauge, thermostat, safety valve, a 16kW indirect capacity heating coil and a 3kW integral electric back up immersion heater complete with integral immersion heater thermostat.

8.07 HWS CIRCULATING PUMP

The Contractor shall supply, install, test and commission a secondary hot water circulating pump, complete with isolating valves to allow for ease of maintenance.

SECTION 9

SUNDRY ITEMS

9.01 WORKING DRAWINGS

The Contractor is to allow for providing fully co-ordinated working drawings, based on the Tender drawings and reflecting the works to be installed.

These are to be produced by all his Sub-Contractors and before work commences.

These drawings shall be produced in CAD format, and on paper.

9.02 AS INSTALLED DRAWINGS

The Contractor shall allow for production of “as installed” drawings which shall reflect the exact installation as installed.

Where services are hidden or installed underground, these shall be identified on fully dimensional drawings.

These drawings shall be produced in CAD format and PDF and handed over on a DVD and Flash Drive.

9.03 MAINTENANCE MANUALS

The Contractor is to provide job specific operating and maintenance manuals for all aspects of the works under his control.

These shall be forwarded for approval/comments in accordance with general specification prior to handover.

9.04 CO-ORDINATION MEETINGS

The Contractor shall allow for a number of co-ordination meetings to be held at appropriate times throughout the works.

The Contractor shall make due allowances in his Tender for attendance at meetings.

These shall be fully minuted by the Consultant Engineer and shall be utilised to agree coordination issues and construction details between parties and for agreement of detailed programme issues.

9.05 BUILDERS WORK

The Contractor shall allow for the cutting and making good of all builders work holes required to install the new pipe work. Where required this shall include local decoration around the holes to match existing surface treatment and covering.

9.10 BUILDING PROTECTION

The Contractor shall allow for appropriate protection of the existing building fabric and internal surfaces whilst the works are undertaken. This shall include for

appropriate floor and wall coverings. Any damage shall be made good at the Contractors expense.

9.11 STRIPPING OUT

The Contractor shall allow for the safe isolation, draining and disconnection of the existing heating and gas systems generally as shown on the drawings.

The Contractor shall allow for the safe disposal of all removed materials.

The Contractor shall make due allowance in his tender for scrap value of waste metal materials.

9.12 CDM AND PRINCIPLE CONTRACTOR

The Contractor will be required to undertake the role of Principle Contractor under CDM Regulations and as such will be required to produce ‘Risk Assessments’ and Method Statements. Include for on site co-ordination and for production of on-site Health and Safety documentation including the Health and Safety file upon completion.

APPENDIX 1

LIST OF PROPOSED SUB CONTRACTORS

In the event of my/our offer being accepted I/we propose subject to your agreement with Clause 1.11.1 of the Sub Contract terms and conditions to sublet only the works detailed below:

Work or Trade	Name & Address of Sub Contractor

Sub Contractor to complete Appendix 1 listing names of all other proposed Sub Contractors.

APPENDIX 2

SCHEDULE OF DELIVERIES

Materials	Manufacturers	Catalogue/ Ref No.	Delivery Period

Signature of Tenderer: .....

Date: .....

APPENDIX 3

SCHEDULE OF DAYWORK RATES (FIXED)

We undertake to execute any work specifically authorised to be charged at Daywork Rates at net cost plus the following percentages:

1.	Labour	plus	%
2.	Fares & Allowances	plus	%
3.	Materials	plus	%
4.	Sub Contracts	plus	%

Note:-

a. On costs, include establishment charges and all insurances, and holidays with pay contribution.

b. Labour to be wages of work people (i.e. chargehand, fitters and mates, but not weekly or monthly paid foremen, supervisors, draughtsmen, storemen and clerks) based on Trade Union rates including overtime payments in respect of travelling based on time or distance.

c. Allowances to be outworking (town or country) lodging, and out of pocket expenses.

d. Materials to be at net cost (delivered to site, and after deducting all discount).

The Contractor shall enter below the net basic labour rates upon which the tender is b based and shall add rates of any other work people which it is proposed to bring onto the site.

Foreman ..... £ Per Hour

Mechanical Fitter..... £ Per Hour

Apprentice ..... £ Per Hour

Mate ..... £ Per Hour

Signed: .....

Firm: .....

Address: .....

.....

Date: .....

APPENDIX 4

SUMMARY OF TENDER DRAWINGS

Drawing Number	Title
2025/MECH1	EXISTING HEATING AND HOT WATER
2025/MECH 2	PROPOSED HEATING AND HOT WATER

APPENDIX 5

FIXED PRICE TENDER FOR THE

MECHANICAL SERVICES

We undertake to execute complete the Mechanical Services at the above, in accordance with the Specification and Drawings for the total sum of:-

£.....

(in words)
.....

.....

This figure shall remain open until .....

All as schedules on the Make Up of Tender (Appendix 6)

We undertake to execute the work specified in accordance with the programme to be agreed to commence work immediately on receiving an instruction and in principle to complete the works within the overall time shown in the preliminary programme.

Signature:.....

For and on behalf of: .....

Address: .....

.....

.....

Date: .....

Project Name: .....

Location: .....

APPENDIX 6

TENDER SUMMARY MECHANICAL SERVICES

Item	Description	£
1.	Preliminaries	.....
2.	Heating Services and Associated Works	.....
3.	Cold Water Services	.....
4.	Gas Installation	.....
5.	Automatic Controls	.....
6.	Electrical to Mechanical Wiring	…….
7.	Hot Water Services	.....
8.	Thermal Insulation	……..
9.	Sterilisation and Water Treatment	.....
10.	Builders Work	……..
11.	Testing and Commissioning	.....
12.	As-Installed Drawings	.....
13.	Operating and Maintenance Manuals	……..
14.	Heating Zone Controls	……..

Total .....