

EMERGENCY WORKS SCHEME

**BRIDGETOWN COLLEGE, BRIDGETOWN,
CO WEXFORD**

ROLL NUMBER: 71610E

**Works Requirement document – Volume A.2.3.
Specification of Performance, Standards and
Materials**

For

**Mechanical Services Installation Works
*Heating Centre Upgrade Works***

Project Ref: 0862

Date: Sep 2026

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Project: *BRIDGETOWN COLLEGE, BRIDGETOWN, CO WEXFORD*

Specification

For The

Mechanical Services Installation Works (Heating Centre Upgrade Works)

DoES Emergency Works Scheme 2026

Employer: Waterford Wexford Education & Training Board
C/O The Board of Management
Bridgetown College
Bridgetown
Co Wexford

Services Engineer/PSDP: Geaney Engineering Consultants
Studio 22.,
Waterford Business Park,
Cork Road,
Waterford.

Main Contractor/PSCS: T.B.A.

REV	ISSUE	DATE	DOCUMENT	AUTHOR	APPROVED
	Tender Issue	18/09/26	0862 – Mechanical Specification	MP	JG

SECTION 1: PRELIMINARIES AND GENERAL CLAUSES:

01. Description Of Site:

The site is the existing Bridgetown College (WWETB co-educational post-primary school), located in Bridgetown, Co. Wexford, which is easily accessible from the road. The proposed works relate to the existing heating centre within the school, and the contractor shall contain operations to this area, in accordance with the accompanying drawings.

This Contractor shall be deemed to have made a thorough examination of the site and all features thereof, the existing premises, together with all internal and external services, adjoining premises and property or other things affecting the proposed works, to ascertain precisely the nature and extent of same and the condition under which the works will have to be executed, as no claim will be allowed on the grounds of want of knowledge in this respect.

For full details refer to the Preliminary Health and Safety Plan accompanying this specification.

02. Description Of Works:

The works covered by this specification comprises of the Mechanical Services Installation works associated with the heating centre upgrade works (replace existing oil fired boiler system). The new system will be Liquid Petroleum Gas fired, all as specified on the accompanying drawings.

The scope of the works for the heating centre upgrade includes the following:

- De-commissioning, Isolation, and removal and disposal off site (under licence) of the redundant boiler (leaking boiler), oil storage tank (20,000L mild steel oil tank), pipework, pumps etc. The contractor must visit site to determine the full extent of the works, in terms of disconnection and removal works.
- The conversion of the boiler unit installed in 2025, presently fired on gas oil to LPG, by changing of the burner system,
- Supply and installation of a new gas fired boiler, heat exchanger system, flue system, new boiler system and gas safety systems, as specified and in accordance with the accompanying drawings.
- Plant rooms pipe work, valves, actuators, pumps and controls etc with new services to suit the new boiler room layouts, as detailed.
- New packaged pressurisation unit and expansion vessel
- New boiler room control panel, controls and BMS outstation to replace existing,
- New heating distribution pipework systems to replace existing within heating centre only.
- Electrical works associated with the upgrade of the heating centre and new controls.
- Testing & commissioning of the upgraded heating and gas services, to include pipework distribution shall be allowed for, in accordance with I.S.820.

- The decommissioning, disconnection and removal off site of the leaking boiler system, flue and redundant pipework, as shown,
- New heating circulators as detailed/specified,
- New mixing valves assembly as detailed/specified,
- New boiler plinth
- High and low level vents to boiler room
- Works to masonry flue system as detailed,
- All builders work associated with the heating centre
- Full contract clean of the site on completion of the works.
- Maintenance during the 12 months defects period.
- Concrete base and enclosure for the L.P. Gas storage tanks as detailed,
- Site trenching and re-instatement to match existing – grass areas, concrete, as required.

The Mechanical Contractor shall supply all labour, materials, equipment and engineering services, and perform all works necessary to install the complete, tested, commissioned, and operational mechanical systems in accordance with the Specification and Drawings.

The contractor shall include all labour, materials, import charges and transport which maybe required for and in the construction of works detailed in the Specification and as shown on drawings, and shall provide at this own expense for all necessary power, plant, tackle, machinery, tools, apparatus, instruments, scaffolding, ladders, hoists, fencing and other equipment for the workmen and for the erection, testing, demonstration and commissioning of the complete plant in the manner described, together with the carriage thereof to the spot where they are required to be used and their subsequent removal.

The necessary builders work, associated in making and forming of opes in the structure, and reinstatement works to match the existing will be carried out by this contractor as part of the works. The L.P.G compound and the necessary site trenching and reinstatement to match existing, as detailed, shall be allowed for.

03. Site Conditions:

This Contractor is strongly advised to visit the site and ascertain the facilities of access thereto, the supply of labour and materials the district will afford and general convenience of working. He shall be taken to have made himself acquainted with the nature of the works; the site and all existing buildings and all other things insofar as they may have any connection with or effect the works.

Contractors must refer to the Construction Industry Federation standardised approach to commencing construction projects in Ireland which incorporates the COVID-19 public health requirements, and ENSURE that all measures required in order to comply with these guidelines are included for. This document is available at www.cif.ie and a copy of same is included with the tender documentation issued for the works.

All the above matters must be taken into account when tendering and no charge for any extra labour or materials will be allowed in consequence of this Contractors failure to do this.

The Contractor must notify the project Engineer immediately should site conditions alter significantly from those as stated in the tender documents.

04. Covid 19

The contractor shall allow in his tender for working on site in line with the CIFs Standard Operating Procedure (SOP) and, for any additional time and cost incurred to accommodate the implications of C19 restrictions. The contractor is to include for taking account of any and all matters in relation to COVID-19.

Ensure all directly and indirectly employed staff have undergone the CIF's COVID-19 safety induction programme and have a digital card and follow the instructions of the main contractors C-19 compliance officer.

05. Contract:

The works proposed shall be executed as a main contract between the successful tenderer and the employer. The Main Contract Form shall be the current version of the Short Public Works Contract reference PW-CF6 as published by the Department of Finance.

Submission of a tender shall be taken as acceptance of the proposed contract form.

06. Tender Acceptance

The client does not bind themselves to accept the lowest or any tender. Acceptance of any tender will be subject to compliance with the Pre-Contract Procedures including production of the Contractors current insurances, tax clearance certificate, safety statement etc.

07. Tender Drawings

The design drawings issued within the tender package must be read in conjunction with all relevant project specifications. If the contractor has any queries regarding design drawings issued prior to tendering they shall notify this office immediately. It shall be otherwise deemed that the contractor has understood and priced for all works as designed.

08. Tender Returns:

The Mechanical Contractor shall be deemed, before tendering, to have made a thorough examination of the Drawings, Specifications, Conditions of Contract, the Site and other things affecting the proposed works to ascertain precisely the nature and extent of same and the conditions under which the proposed works will have to be executed. The Tenderer must complete the tender return / pricing pages accompanying this specification document, in full, where each elemental item is to be priced for separately.

09. Payment:

The Contractor must submit Progress Statements for each Claim and Interim Certificate Amounts may be at the Engineer's Discretion.

10. Works Programme:

Works are to commence immediately upon signing of contracts with the successful contractor. All works must be complete by end December 2024. The contractor must maintain heat to the school during the works, and keep existing oil plant and storage in operation until such time as the system is changed over. These change over works are to be completed outside of school hours, to ensure heat is being maintained at all times.

The successful Contractor shall submit, on receipt of a letter of intent, a works programme detailing intended timing and order for the construction of the Mechanical Services Works and the dates by which any significant items of information will be required from the Project Engineer.

The Contractor shall assign full time to the project a competent supervisor who shall have sole responsibility for, and make all decisions regarding site operations.

The Contractor, or his authorised representative, shall attend site progress meetings which will be held at regular intervals (minimum fortnightly). The Contractor shall be responsible for informing sub- contractors and suppliers as are necessary that their attendance at progress meetings will be required.

The Client's representative must be advised, in advance or within seven days, of any works considered by the Contractor to constitute a variation to the contract. This will apply whether the works are caused by circumstances within the Contractor's control or not. Costs incurred by such variations will only be considered for payment if they comply with this procedure. Variations to the Contract shall only be carried out when clearly instructed in writing by the Client's representative.

11. Guarantees and Warranties

All manufacturers guarantees and warranties on plant, equipment, etc., shall be valid up to the end of the Defects Liability Period.

12. Defects Liability Period:

All manufacturers guarantees and warranties on plant, equipment, etc., shall be valid up to the end of the Defects Liability Period. Refer to the Conditions of Tendering in the Main Contract Document.

13. Samples / Materials And Products:

The Mechanical Contractor shall issue details of all specified equipment and plant for approval prior to placing order. All equipment and plant shall be approved on site by the

engineer prior to installation. Such approval shall not relieve the Contractor from responsibility for making good any defects which may arise as a consequence of failure or otherwise of any materials during the contract period.

The entire installation shall be constructed from new materials and equipment and all materials and workmanship shall be the best of their respective kinds in accordance with the specification.

All materials and equipment selected or proposed by the Contractor shall be provided by manufacturers who have local maintenance and servicing capacity available within the Republic of Ireland as necessary.

14. CE Marking

All electrical equipment, systems supplied and installed shall conform to the appropriate EU Directives and shall carry the applicable CE Marking.

15. Builders Work:

Builders work in the cutting of holes and re-instatement to match existing, including making good for the specified services will be carried out by this contractor, as part of the works.

These works to be priced for separately in the tender summary. The Contractor shall be responsible for the fixing of all brackets, supports, clips etc., required to carry out the mechanical services installation in accordance with the specification and drawings and agree with the Employer's Representative the method of fixing before such works commence on site.

The Liquid Petroleum Gas compound, as detailed, including site trenching reinstatement works to match exiting surfaces shall be allowed for.

16. Supervision:

The Contractor shall make available throughout the duration of the works a Project Supervisor or Site Foreman with appropriate qualifications and or experience to attend site meetings and receive instructions as are necessary for the execution of the contract, and to carry out superintendence of the works on site. The Project Supervisor /Site Foreman shall keep accurate records and details of all aspects of the works as necessary.

17. Security:

All personnel working on or attending site are required to have valid photo identification (Safepass). The Contractor shall not impede or interfere with the Security Systems and procedures in use by the Employer.

Documents shall be restricted to the use of the Contractors staff and must not be issued to third parties, other than members of the Project Team, unless authorised in writing by the Client's representatives.

18. Labour:

The Mechanical Contractor shall ensure that all employees are registered for PAYE / PRSI and that all employees have successfully completed a SafePass course. Only fully qualified and competent tradesmen, together with their necessary labourers, or helpers, shall be employed by the Contractor on the works, which shall be carried out and completed in the best substantial manner.

19. Site Establishment:

This Contractor shall include for site establishment, space will be provided to accommodate same. Temporary water, sanitary services, and power will be made available. Electricity costs used by this Contractor will have to be paid by him.

20. Protection of Existing Services:

When stripping out redundant services the Contractor shall ensure that no unnecessary damage is caused to either the equipment and/or the building fabric which is to be retained. The Mechanical Contractor shall make good, at his own expense any damage caused whatsoever to existing services to the complete satisfaction of and in accordance with the instructions of the Engineer/Statutory Authority concerned, and shall keep the Client indemnified at all times from claims in connection with the damage.

21. Electricity Supply:

The electricity supply to the school 380/220 Volts, 50 cycles, and all electrical plant and equipment must be suitable for this supply.

22. Wiring Details:

The General rules for wiring of supplies of Electrical Energy, as laid down by the Electro Technical Council of Ireland, National Rules for Electrical Installations, 5th Edition IS 10101:2020, together with the regulation laid down by the E.S.B., shall be strictly adhered to, as shall the requirements of the 18th Edition of the I.E.E. Rules and Regulations.

23. Trade Names

Any reference to Trade names shall be for the purpose of describing the Specification standard of the article or material to be used and it does not imply that the specified trade name solely must be used.

24. Inspection Prior to Concealment

Where work requiring inspection or testing is subsequently to be concealed, due notice shall be given to the Project Engineer to accommodate necessary inspection and witnessing of testing where required before concealment. Failure to give due notice, of at least 48 hours, shall necessitate the Contractor uncovering the work and reinstating at their own expense.

The Engineer reserves the right to forego its inspection; however this will in no way relieve the Contractor's responsibility to comply with the specification and drawings. All work that is not installed to the required standard or does not demonstrate adequate co-ordination with the building and other services must be removed and re-installed in full compliance with the tender documentation and relevant standards at the Contractor's cost and without any associated increase in the project program

25. Tests/Commissioning On Completion:

The contractor shall test all installations on completion in accordance with standard test procedures, that is, relevant I.S. / B.S. / E.S. and Codes of Practice.

The Contractor shall notify the project engineer in writing when the services installation or parts thereof are ready for testing and commissioning, allowing sufficient time period for programming the testing, commissioning and handover of the systems. The contractor shall issue a seven day notice period to the Engineer prior to tests being carried out to allow for the Project Engineer to witness, if he so wishes.

The Contractor shall prove that all test results are in accordance with the performance based specification issued, and furnish the project Engineer with the report / certificate issued by the specialist commissioning company. All test / commissioning certificates are to be included in the project O&M manual.

26. Making Good Damage:

The Contractor shall inspect all equipment and materials on arrival on site for defects or any failure to meet the specification and shall replace any defective equipment or materials as necessary. The Contractor shall take all necessary precautions to ensure that there is no damage or defacements caused by their employees or representatives to the furniture, fittings or other equipment within the buildings or to the premises themselves or to adjoining premises, and shall make good at their own expense any damage caused to the premises or its contents during the works, to the entire satisfaction of the Employer's Representative.

27. Instruction:

This Contractor shall liaise with the Project Engineer in providing for instructing the Employer in the operation of the new heating installation on completion of the installation works. He shall provide two sets of record drawings, for the installed systems and full operating and maintenance manuals.

28. Drawings:

Copies of drawings of the building are issued with the Specification. Dimensions and other information shown on the drawings forming part of the Contract are believed to be correct, but no responsibility for same is accepted. It is the sole responsibility of the successful tenderer to produce working drawings, which are to be detailed sufficiently to allow site operatives to install the services without the necessity for site design.

This Contractor should note that, prior to finally positioning equipment, these must be agreed with the Engineer. The Contractor shall be responsible for the setting out of the work and he shall rectify any errors he may make, either in setting out the work or during its progress. The Contractor shall not deviate in the execution of the work from the Specification or Drawings herein referred to, except upon written order signed by the Employers Representative authorising such deviation.

The Mechanical Contractor shall keep on site a full set of the Construction Drawings, on which he shall record and note the actual layout of all the piped services installations as installed, including routes. The Contractor shall include for the preparation of final marked-up drawings, at practical completion stage.

Two full sets of hardcopy drawings and manuals in strict compliance with the Specifications, shall be required for this project and in addition two soft copy sets shall be provided on disk or memory stick.

Reservation of copyright will not be permitted. All technical submissions and drawings including electronic and printed material shall become the property of the client.

29. Maintenance:

The works shall be maintained by the Contractor in perfect condition for 12 months after the issue of the Engineers certificate of practical completion and any work or material exhibiting defects during that period shall be made good by the Contractor at his own expense.

30. Tax Clearance Certificate & C.I.F. Pension/Sick Pay Scheme:

It will be a condition for the award of the Contract that the firm being considered must be able to produce, within seven days of being requested to do so, a Tax Clearance Certificate from the Collector General of Taxes, Sarsfield House, Limerick and provide evidence of Membership of the Construction Industry Federation (C.I.F.) Pension/Sick Pay Scheme.

31. Insurances:

The Contractor shall comply with the requirements of Clause 10 of the “Short Public Works Contract” relating to Insurance and Compensation. He shall effect adequate insurance in his own name and also in the name of the Employer to cover all the risks or claims specified in the aforesaid “Short Public Works Contract” and shall hold the Employer indemnified against all such claims and risk in anyway arising out of the works included in the Contract.

The minimum sum for public liability insurance shall be €6,500,000.00 (six million, five hundred thousand euro) for any single claim, including employer’s liability of €13,000,000.00 (thirteen million euro) and including all risks as stated in the attached “Tender and Schedule”.

CONTRACT SAFETY AND HEALTH PROCEDURES:

B1. BASIC LEGAL REQUIREMENTS:

Contractors must comply with the Safety, Health and Welfare at Work (Construction) Regulations and any other statutory provisions and common law duties. Steps must be taken to ensure the provision of adequate and suitable plant and equipment.

Only those Contractors and Employees having appropriate training and experience should be allowed work, on the premises. The Contractor shall appoint a Project Supervisor as required by the Site Health and Safety Regulations.

B2. SAFETY COMMUNICATION:

The Contractor is required to ensure that all the Employees, Sub-Contractors and all their Employees, whilst on the Company premises are informed of the Health and Safety Rules and Procedures.

B3. PERIOD OF WORK:

The Contractor must notify the Project Co-ordinator in an appropriate way before commencing and on completion of their task. Prior application must be made for any work to be undertaken outside of normal office hours.

If work is to be phased, the method of phasing the work is to be prepared, agreed and distributed to all parties.

B4. VEHICLES:

Vehicles used by Contractors or their Employees are allowed on the Companies premises for delivery, parking or collection subject to local instructions. All drivers are requested to exercise maximum care when on Company premises and particularly when Employees or Members of the Public are entering or leaving.

Drivers of large vehicles operating in confined circumstances must ensure there is a person in attendance to assist with reversing etc.

B5. DELIVERY AND DEPOSIT OF MATERIALS AND GOODS:

No materials, goods or equipment shall be stored in Plant Rooms or placed so as to obstruct general work areas, gangways or fire exit routes.

All rubbish especially dangerous or flammable materials must be removed from the premises daily.

B6. CONTRACTORS WORK AREA:

The Contractor must keep locked, the doors to flat roofs with unprotected edges, plant rooms and electrical apparatus, unless in attendance. Where possible, the Contractor's work should be clearly defined and physically separated from all parts of the premises. The area may be marked by a temporary partition or tape backed up with warning signs.

The segregated area will become the responsibility of the Contractor. Visitors to Contractor's work must be accompanied by Contractors representative. Under no circumstances should portable or temporary methods of heating be introduced to the Contractors Area, without prior written authorisation.

B7. RAISED SURFACES, HOLES AND PROJECTIONS:

Raised surfaces, holes, trailing leads or surface and projecting equipment must not be left at any time without taking the necessary safety precautions. All opening must be securely fenced or covered over and marked with warning notices. Loose materials of whatever kind must not be left about or allowed to obstruct the roadway, gangways or working area.

B8. FIRE EQUIPMENT:

The removal or obstruction of Fire Extinguishing Equipment from its original location is prohibited. A Contractor is responsible for providing and maintaining any specialised fire extinguishers and equipment for the work in progress.

B9. EVACUATION OF BUILDING:

The contractor must read Fire Instructions displayed on the premises and comply in the event of an emergency evacuation. He/she is not to eliminate or diminish exists during alterations.

B10. EXISTING SERVICES:

It is the Contractors responsibility to ascertain the existence and whereabouts of electrical cables, drains, air, gas, and water mains. The Contractor must familiarise himself/herself and how to operate the main and/or local isolation points for services before starting work and in anticipation of an emergency.

B11. PLANT, TOOLS, AND EQUIPMENT:

All plant, tools and equipment brought onto the Company's premises should be of safe design and in a safe condition. Particular attention must be given to checking the electrical and mechanical integrity of any hired equipment. Earth leakage circuit breakers should be fitted on all 220 volt cables. Equipment operating at 110 volts is preferable.

B12. SAFEGUARDING OF MACHINERY:

All machines such as circular saw tables and pipe threaders must be guarded in accordance with statutory requirements.

B13. SAFETY STATEMENT:

Contractors are required to have safety statements available for inspection by the Clients H.S. and W. offices. They are also required to prepare method statements when undertaking tasks requiring special skills or technology.

B14. PORTABLE ACCESS EQUIPMENT:

Where ladders, step-ladders and trestles are necessary, they must be used in a safe manner for work to be done. Ladders should be securely tied at the top or held by a person at the bottom unless they incorporate suitable safety devices. The equipment should be of suitable construction and free from defect. Equipment and materials must be carefully moved and not thrown or dropped from a height.

B15. WARNING OF DANGER:

Care must be taken, at all times to protect the Client's employees and members of the public from danger and to protect property and work in progress from damage.

Any circumstances which give rise to such danger or damage must be reported immediately.

B16. PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING:

All Contractors employees must be issued with, and make full use of, all such protective equipment or clothing, as required by statute or any regulations made thereunder. They must also meet any locally agreed requirements for protecting the employee, e.g., for the use of safety helmets and protective footwear.

B17. ACCIDENTS:

In addition to the statutory obligations for Contractors to report dangerous occurrences and accidents to the appropriate authority, all accidents must be reported to the safety co-ordinator of the Clients.

B18. HOT WORK:

In the event of the Contractor carrying out any of the following works he must carry the appropriate insurance and also comply with all the procedures and safety precautions set out in this insurances:

- ☐ All activities involving flame.
- ☐ Hot air or arch welding and cutting equipment.
- ☐ Braising and soldering equipment and blow lamps.
- ☐ Bitumen boilers and other equipment producing heat or having naked flame

B19. SAFETY, HEALTH, WELFARE & ENVIRONMENTAL ISSUES

This Contractor shall comply fully with all statutory safety, health and welfare regulations regarding work people, including those employed by Sub-Contractors employed on the site and particularly the Safety, Health and Welfare at Work (Construction) Regulations and provide all relevant details to the Main Contractor to carry out the function of Safety Planning Supervisor for the construction phase of the works.

This Contractor shall comply in all respects with the Factories and Safety in Industry Acts and any other Acts and with any Statutory Instruments or Regulations issued thereunder.

This Contractor is required to provide a safety method statement clearly indicating the proposed sequence of his works and the precautions he will be taking at each stage in the works to protect his employees, and those of the main contractor, other sub-contractors, visitors and the Employers personnel and any plant and equipment, etc. Full details of any chemicals or substances proposed to be used in the project construction process should also be detailed fully and the Employer's prior written approval received for its use.

This Contractor shall include for complying with the Safety, Health and Welfare at Work Acts and Regulations current at the date of tender.

The Main Contractor shall be appointed by the Client under a collateral agreement to the main contract as Project Supervisor for the Construction Stage in respect of the project pursuant to the Safety, Health and Welfare at Work (Construction) Regulations 2013 to 2021. This Contractor shall include all costs for the provision of the necessary services and details to the Main Contractor to perform his duties as Project Supervisor for the Construction Stage pursuant to Regulations 6 and 7 of the Regulations.

This Contractor shall include for providing all necessary information as requested by the Project Supervisor for the Construction Stage to enable the preparation and completion of the Safety File including record drawings, specifications, maintenance and operating manuals and commissioning certificates. The record drawings and Maintenance Manuals shall be as required under previous clauses of this document.

SECTION 2: PARTICULAR SPECIFICATION:

ELEMENT 51: HEATING CENTRE

51.1 Extent Of Works In This Section:

The proposed works within the heating centre comprise of the following:

- De-commissioning, Isolation, and removal and disposal off site (under licence) of the redundant boiler (1no leaking boiler), oil storage tank (20,000L cylinder mild steel tank), pipework, pumps etc. The contractor must visit site to determine the full extent of the works, in terms of disconnection and removal works.
- The sectional boiler unit installed in 2025 will be retained but converted to LPG gas firing as detailed. NOTE – works to existing masonry flue system,
- Supply and installation of the high efficiency gas (L.P.G) fired boiler unit and flue system as detailed and as specified.
- Pressurised systems and installation of auto fill pressurisation unit and expansion vessels.
- New low loss header arrangement, boiler house pipe work, electronic variable speed pumps, valves and mixing valves actuators
- Installation of two stage frost protection controls with external frost stat and immersion sensor in the return pipework.
- New MCC control panel to provide new power supplies, two stage frost protection zone controls weather compensation and remote 'Boost' zone control panel.

The cabling scheduled shall be as detailed on the accompanying drawings. The controls system shall have an app facility to control remotely.

All pipework fittings, valves and gas safety emergency system shall be allowed for, as detailed. The entire testing of pipework distribution system, in accordance with IS 820 shall be allowed for.

The contractor will supply, install, test and commission the gas system to meet the gas requirements, as detailed. A new emergency shut off valve line size shall be installed as indicated on the accompanying drawings. The emergency shut off valve shall be linked to the fire alarm and activate upon fire alarm activation.

51.2 Boiler and Burner Unit

The Contractor shall supply, install and connect up the new floor mounted L.P.G. fired boiler, as shown and as specified on the accompanying drawings.

The boiler shall incorporate burner, combustion for gas valve, ignition, ionisation, electrode, and burner control with safety controls shall be complete with flue kit.

The boiler shall be of the make and manufacture schedule which is bound in at the back of this specification.

Minimum performance requirements, materials, manufacture, mountings and fittings, automatic controls, inspection, hydraulic testing and marking, and electrical wiring shall comply with the requirements of BS 779.

The following mountings / fittings shall be supplied and fitted to the boiler:

- ◆ Modulating shunt pump.
- ◆ Microprocessor controls.
- ◆ Cascade manager for modulation of boilers

The boiler unit shall incorporate the safety kit complete with pump, hydraulic separator, strainer and pressure/temperature gauges, as detailed. Boiler casings shall be fabricated from mild steel sheet, with either enamel or galvanised finish. The casing shall be designed to facilitate easy access to component parts either by hinged or totally removable panels. Panels shall be stiffened and have fully returned edges. Adjoining panels shall be butted together; sheet metal lapped joints are not acceptable.

Irrespective of heating system mode of control, the boilers shall be fitted with high limit manual reset immersion thermostat suitably located and arranged to isolate the fuel burning equipment under high temperature conditions. Boiler/burner assemblies shall be suitable for operation with 230V, 50Hz electrical supply, and shall be fitted with an integral isolator.

The combustion chamber and combustion gas flue way shall be readily accessible for cleaning purposes either from the front or rear of the boiler.

(a) Pressure Gauges

Pressure gauges shall be Bourdon tube pressure gauges to DIN 16064 Class 1. All pressure gauges shall have 100mm dial and have an operating range of 0 to 5 bar. It shall have a brass connection with copper alloy tubing, complete with brass pointer and aluminium face, painted white with black digits. The pressure gauge housing and bayonet ring shall be stainless steel and the dial shall be instrument glass. Pressure gauges shall be by Manotherm or equivalent.

(b) Temperature Gauges

Temperature gauges shall be Bimetallic measuring systems. All temperature gauges shall have a 100mm dial and an operating range of 0 to 150°C. It shall have a brass connection, complete with pointer and a face painted white with black digits. The unit shall be stainless steel with the dial in instrument glass. Temperature gauges shall be by Manotherm or equivalent.

The Contractor shall include for two tappings 19mm in the boiler flow pipe for the thermometers and altitude gauges. They shall also include a 20 mm MF elbow fitted to the boiler for the safety valve. The contractor will also allow 25 mm draw off cocks with hose connection for draining down if required.

(c) Existing Boiler Unit

In 2025 a new boiler of De-Dietrich design and manufacture was installed, fired on gas (oil).

As part of the works, this existing boiler unit shall be converted to LPG gas firing with a fully modulating LPG burner of Riello or equivalent manufacture. A new boiler front plate shall be allowed for.

51.3 Boiler Flue:

This includes the supply and installation of the twin walled insulated flue from the respective boiler unit of the make and manufacture, as scheduled, and as detailed on the accompanying drawings. The flue shall be suitable for L.P.G gas firing. The boiler flue shall connect and extend shall extend to a s/s kopex flue within the existing masonry stack, as shown on the accompanying drawings.

All necessary supports/brackets to the masonry structure shall be allowed for. A suitable cowl shall be supplied and fitted to the flue.

This contractor shall note the requirement for filling the annular space between the kopex liner and the masonry stack with Vermiculate at the top, suitably capped/sealed.

51.4 Gas Solenoid Valves:

The contractor shall install gas solenoid valves manufactured in accordance to Class A EN 161 and DIN 3391-3394 standards, suitable for connection to a gas detection panel as indicated on the drawings. The Gas detection installation shall be provided and installed by the mechanical contractor and wired by the electrical contractor.

51.5 Gas Distribution System (Internally to Buildings)

Gas pipework internally, shall be to B.S. 1387, mild steel medium gauge, welded throughout (A.P.I 1104) to current I.S. 820 standards for gas installations. Fittings shall be specifically manufactured for welding and shall have a wall thickness not less than the pipe to which they are welded.

Gas pipework shall be painted 2 coats of 'yellow ochre' paint in accordance with BS 1710:1971.

Reducing welds shall not be allowed. Concentric reducers must be used. All fittings shall conform to the same specification as the pipework materials and standards. Valves on the gas line shall be carbon steel, with stainless steel ball and stem, with PTFE seals. Valves shall be anti-static, fire safe.

The gas detection solenoid systems fitted to the gas feed serving the new boilers system shall be of the material specification the applicable standards and the performance required as scheduled, which is bound in at the back of this specification shall be allowed for.

The valve been positioned external to the building, as shown on the accompanying drawings.

The gas detection equipment associated with this system to include the solenoid valve (new) (line size), control panel, sensors etc. – all as detailed and as specified on the accompanying drawings.

Wiring to solenoid valves, sensors, etc., will be by the electrical contractor. This contractor to assist.

51.6 Gas Leak Detection

The Mechanical Contractor shall install Gas Leak Detection at the boiler(s), as described elsewhere and indicated on drawings:

On completion, the contractor shall produce a commissioning certificate for the systems by the specialist suppliers.

Gas detection shall cover the new boilers. The contractors shall ensure that at least two new detectors are provided in close proximity to the boilers. Allow for a slam shut valve, strobe lights, and full commissioning of the system. The control panels shall provide a volt free alarm output for monitoring by the fire alarm system but shall not actuate full fire activation on the panel; it shall only provide a pre-alarm signal.

The gas detection system shall be a 'Monicon' 2 Channel unit or equal and approved. It shall be a 0-100% LEL gas detection system complete with A1, A2 and fault relays (250VAC, 3 Amp); microprocessor controller; menu assisted and fully user programmable for alarm set points; relay options and calibration mode; advanced digital readout; alarm inhibit in calibration mode; extensive fault detection firmware and battery back-up. On completion the contractor shall produce a commissioning certificate for the systems by the specialist suppliers. He shall also install the inter wiring between the gas leak detection system and the fire alarm panel plus warning lights on the remote indicator panel.

51.7 Test Points

The Contractor shall include for providing test points for flue gas analysis and temperature reading to both boiler flues. The flue gas analysis points shall consist of 6 mm diameter brass test cocks connected to a sampling tube and finished flush with the inside of the flue.

The thermometer test points shall consist of 19 m MS Class B, pipe inserted one end in flue and finished flush with the inner surface of the flue, the other end fitted with socket and plug cap. The Engineers approval of the actual test points selected shall be obtained before proceeding with this installation.

51.8 Pipework And Pipework Fittings

All heating pipework in the boiler-house shall be carried out in medium gauge (Class B) mild steel with welded joints.

At dismantling joints on pipework or where pipework is connected to an appliance, all joints shall be flanged. Flanged joints shall be by wrought iron or annealed steel flanges machined full face screwed or welded to the pipe.

Joints between flanges shall be made with approved copper-nickel rings and jointing compound. Bolts shall not be allowed to protrude from the nuts by more than 6 mm and shall be ordered to the correct length.

51.9 Pipe Supports:

Pipework generally in the boiler-house shall be supported by means of hanger brackets with screwed socket pipe clips suspended from a mild steel channel suitably secured to the underside of the boiler-house ceiling.

Purpose made brackets for mounting headers etc., vertically on the wall shall also be provided, but the engineers approval as to the arrangement should be obtained before erection.

51.10 Control Isolating And Check Valves

Control valves shall be provided and fitted to the locations indicated and shall be gate valves of the non rising stem type with gunmetal body and screwed or flanged ends, with wedge type gate and hand wheel of diecast enamelled metal indicating direction of opening. The gland chamber should be packed with a suitable lubricant.

Valves shall be Hattersley Fig. 33 or similar to approval. Non return valves shall be fitted on the discharge side of all heating circulating pumps.

51.11 Provision For Drainage

The Contractor shall include for 19 mm bore gunmetal drain cocks with hose connection at all low points in the system.

51.12 Circulating Pumps

The Contractor shall supply and install in line glandless type circulating pumps with flanged connections fitted with single or 3 phase motors, to the make and manufacture as scheduled on the accompanying drawings. The circulating pumps duties shall be as scheduled. Suitable starters with phase protection adjustable overload and no-volt releases for the above pumps are included in the control panel.

12 mm test tappings and cocks shall be provided in the suction and delivery sides of the pumps to allow for differential head readings to be taken for test purposes if required. Each tapping shall be blanked off by means of a screwed plug.

51.13 Thermostatic Controls – New Systems

The boiler control packages, shall incorporate a boiler cascade manager which will provide modulation ranging from 5% to 100% of the maximum boiler output. Periodical rotation of the boiler firing sequence will also be incorporated.

The boilers will feature weather compensating which automatically adjusts the flow water temperature in direct relationship to the outside air temperature to ensure that the system will operate at maximum efficiency.

In the event where outside temperatures drop below 3°C a hardwired frost stat shall enable all boiler-house pumps only. In the event of the LTHW return temperature dropping to 4°C a hardwired immersion frost stat shall enable the boilers.

51.14 Boiler-house Control Panel

This includes the supply, installation, testing and commissioning of the new MCC system as detailed,

51.15 Boiler House Controls & Thermostatic Controls for Existing LPHW Circuits

Two stage frost protection shall also be provided as follows:

- (a) A frost stat type (in weatherproof housing) shall be mounted externally in a metal weatherproof enclosure and shall be so arranged that the external stat will start up the circulating pumps independently of the time switch if the external air temperature were to drop below 5°C (positioned on North Aspect of boiler house)
- (b) An immersion type frost thermostat type shall be set into the boiler return pipework and shall be so arranged that the stat will start up to the boiler/burner units if the return water temperature were to drop below 4°C.

Temperature controls which shall monitor the signals from the temperature detectors and regulate the outgoing temperature to the heating installation.

51.16 Expansion Systems

Include for the supply, installation, connection, testing and commissioning of the new expansion systems as detailed on the accompanying drawings. The anti-gravity loop systems, as shown shall be provided, complete with the specified safety valves (pad lock type) and A.A.V. (valved). The automatic filler unit Armstrong SPU 502 (Dual Unit) or equivalent shall also be supplied, installed, tested, and commissioned.

51.17 Insulation

The insulation will be specified for all connections, bends, tees and valves. Proprietary jackets with Velcro fixings will be specified for all valves over 25 mm. Additional taping every 2 m will be specified for the insulation within the heating centre plant room.

Internal Pipe Diameter Insulation Thickness:

- Up to 32mm **32mm**
- Over 32mm and up to 50mm **40mm**
- Over 50mm **50mm**

51.18 Commissioning

The contractor shall include for instructing the personnel responsible for the operation of the system in the correct operation and maintenance of the entire system.

During this period he shall go over with them the commissioning and service manuals and shall ensure that they understand fully and are properly instructed in planned maintenance of all aspects of the plant.

A signed statement from the employer stating that such instructions have been given will be required.

51.19 Tests (New L.P.H.W Systems in Heating Centre ONLY)

After completion of the pipework installation and the satisfactory inspection the pipework systems shall be pressure tested with air at a pressure of 7 bar (100 p.s.i.) where pressure must be maintained for a period of at least 24 hours.

Any drop in pressure will be deemed to indicate failure of the section of sections which must then be repaired at the contractors expense and re-tested until such a time as a satisfactory test has been undertaken. Any items or equipment not designed to withstand the above pressure shall be disconnected during the test.

The contractor will be required to produce all test equipment, including portable air compressors, gauges, etc., or any other items or equipment necessary to carry out safely and satisfactorily the tests specified above.

51.20 Painting

All exposed metalwork shall be thoroughly wire brushed and painted with two coats of approved rust inhibiting paint.

51.21 Disconnection and Removal of Obsolete Services;

This includes for the disconnection and removal, off site, of obsolete services, by this contractor, to include the following;

- 1no Oil Boiler and the 2no oil burners
- Oil storage tank
- Oil pipework
- Boiler flue
- Pumps
- Pipework valves etc
- Obsolete insulation

51.22 Flushing Out Of Systems:

The Contractor shall include for flushing out/filling of the entire heating pipework and radiator systems, using a suitable water treatment (as manufactured by Fernox Irish Agents: Hevac Ltd.). The Contractor shall confirm with the engineer what treatment/agent he intends to use.

51.23 Chemical Dosing System

This includes for the chemical dosing of the entire heating system installations (2no systems). A suitable protection treatment against scale and corrosion must be added to the heating system during commissioning activities.

The selected inhibitor should be applicable for the proposed systems, with the correct concentration achieved. Evidence must be provided that the system is fully protected with the use of such an inhibitor, either by test results, or at least on a company letter headed document, signed by the manager.

ELEMENT 54: GAS SERVICES

54.1 Extent Of Works In This Section:

This section covers the complete works required to connect to boilers in the heating centre, as shown and as detailed. The scope of works includes:

- Gas Pipework distribution systems, as shown and as detailed on the accompanying drawings.
- Gas detection and safety equipment in the boiler room including gas sensor, CO monitor, and slam shut valves.
- Supply to new L.P.G. burner to the existing boiler, to be retained, and associated controls, as specified
- Test and commission the L.P. gas systems.

54.2 Pipework

The external section of L.P. Gas pipework shall be P.E. suitable for L.P.G.

The Mechanical Contractor shall carry out the works in accordance with IS265 & IS 820.

Gas pipework internally, shall be to B.S. 1387, mild steel medium gauge, welded throughout to I.S. 820:2010 standards for L.P.G installations. Fittings shall be specifically manufactured for welding and shall have a wall thickness not less than the pipe to which they are welded.

Gas pipework shall be painted 2 coats of 'yellow ochre' paint in accordance with BS 1710:1971.

Reducing welds shall not be allowed. Concentric reducers must be used.

All fittings shall conform to the same specification as the pipework materials and standards. Valves on the gas line shall be carbon steel, with stainless steel ball and stem, with PTFE seals. Valves shall be Worcester Series AF 44 anti static, fire safe.

The gas detection solenoid system fitted to the gas service to the respective heating centre shall be of the make and manufacture as scheduled. The valve been positioned externally to the boiler-rooms, as shown on the accompanying drawings. The gas detection equipment associated with each system to include the solenoid valve (line size), control panel, 2 No. sensors, positioned at low level in the boiler house in agreed locations, shall be supplied by this Contractor for wiring by the Electrical Contractor.

54.3 Pipe Supports (within heating centres)

Pipe supports shall generally be the school board type built-in or screwed on according to location.

54.4 Valves

Valve bodies shall be of the globe type and shall be of steel or forged brass construction. Valves manufactured from cast modular iron complying with B.S.2789 may also be used. Valves shall be fire safe / anti-static.

54.5 Testing (L.P. pipework systems)

After completion of the pipework installation and satisfactory inspection the pipework systems shall be pressure tested with air at a pressure of 1.7 bar (25 p.s.i.) which pressure must be maintained for a period of at least 24 hours.

Any drop in pressure will be deemed to indicate failure of the section or sections which must then be repaired at the contractors expense and re-tested until such a time as a satisfactory test has been undertaken. Any items or equipment not designed to withstand the above pressure shall be disconnected during the test.

A Declaration of Conformance Certificate shall be provided by the Contractor in accordance with I.S. 820:2010, which shall record the results of all tests. This shall be available to the gas suppliers when commissioning the installation. The contractor will be required to produce all test equipment, including portable air compressors, gauges, etc., or any other items or equipment necessary to carry out safely and satisfactorily the tests specified above.

54.6 Commissioning:

After satisfactorily completion of the tests the gas valves shall be opened up and pressure regulated adjusted to give a line pressure of 30mbar. The system shall then be checked for gas flow under normal operating conditions and checked for main and sub-distribution pipe pressures.

54.7 Painting

All exposed pipework shall be carefully cleaned and left in readiness for the painting contractors.

The Contractor shall provide for advising the painting contractors of the identity of the various circuits for the application of the correct colour codes to the various services in accordance with B.S.1710 : 1971 and the Engineers instructions.

ELECTRICAL WORKS;

01 Scope of Works

This element of works includes for the supply, delivery to site, off-loading, erection, connection, testing and commissioning of all materials necessary for the electrical works associated with the mechanical services (heating centre) upgrade works.

The electrical works include for the provision of all labour supervision, tools and equipment necessary for the efficient completion of the electrical works in the manner specified and to the complete satisfaction of the Engineer by a suitably qualified and experienced registered electrical sub-contractor (domestic to his contractor). The scope of works for the domestic electrical sub-contract includes the complete electrical fit out as specified and per the accompanying drawings.

The works shall include the following:

- Trace, isolate, and disconnect the existing electrical equipment to allow safe strip out and removal of the redundant heating system / plant equipment – existing containment to be retained, where possible,
- New boiler control panel and associated new controls
- Installation of the gas safety systems control panel and associated controls
- Mechanical Equipment power and control wiring
- Earthing & bonding
- Cable containment systems as required.
- Testing Commissioning and Certification of the upgraded electrical installations

The mechanical contractor shall employ the services of a registered electrical contractor to complete all specialist electrical works. The electrical contractor shall be subject to Engineer's prior written approval.

02 Description Of Operations

Modifications to Control Panel:

Boilers will be enabled via a user defined time schedule or if there is a frost condition as determined by the immersion frost thermostat in the return header. The boiler can be overridden via the keypad or graphic P.C. interface.

If the pressurisation unit reads a high or low pressure condition then the boiler is disabled. The flow and return temperatures are monitored by the flow/return header temperature sensors.

Pumps:

The primary heating pump is enabled according to the user defined time schedule or if there is a frost condition as determined by the outside frost thermostat on the north facing wall.

The pumps will operate after the boiler is disabled in order to dissipate the heated water around the circuit to prevent a boiler lockout due to high temperature.

The pump can be overridden via the keypad or graphic P.C. interface

BUILDERS WORKS;

01 Scope of Works

The contractor shall be responsible for all elements of Builders Works as required to complete the mechanical upgrade works as described. The following sections describe the main elements. This contractor to allow for all ancillary elements of Builders Works whether described herein or not as required to complete the heating centres upgrade and reinstatement works as intended.

The works shall include the following:

- Base for expansion vessels,
- Works to structure to accommodate the air vents,
- Site trenching and re-instating works to match existing, as detailed on accompanying drawings,
- The LPG base and p+w enclosure to around the L.P.G. storage tank as detailed, shall be allowed for.

The contractor should include for inspection of the site at tendering stage, so accurate assessment of builders work can be obtained. No claims whatsoever will be entertained by the engineer due to the lack of knowledge of site conditions or existing installations.

Space Heating Boilers Materials Specification, Standards and Performance

Boilers shall be suitable for the combustion of L.P. Gas. The burner unit fitted shall be of the pre-mix type and be fully modulating with a turn down of at least 15:1.

Boiler shall be CE marked in compliance with the Gas Appliance Directive and comply with all relevant EN standards.

The heat exchanger shall be manufactured from 316 quality stainless steel. Mild steel or Aluminium heat exchangers shall not be acceptable.

The boiler controls shall provide automatic ignition and flame safety by means of flame ionization. The controls shall also provide capacity control by modulating the air and gas supply to the burner. Weather compensation shall form part of the integrated boiler control system.

There shall be electrical outputs to allow monitoring of the operating status of the boiler and for control of external heating and DHW pumps. The boiler shall have an output for remote fault indication.

The boiler shall be complete with:

- Circulating pump
- Exhaust Flue gas connection as shown
- Condensate trap
- Castors for movement of the boiler during installation and service operations

The boiler shall be fitted with the following connections:

- Gas Supply - 50mm BSP Gas
- CH Water Flow - Dn80 Flange
- CH water Return – DN80 Flange
- Condensate Drain - DN 25

Schedule of Heating Circulating Pumps

Heating circulation pumps shall compose of electronically controlled high efficiency pump units – energy efficiency class ‘A’. Typically circulating pump shall be complete with integrated electronic variable speed control to operate at constant/variable differential pressure. (-10°C + 110°C).

Each circulation pump shall include:

- Single button manual operating control for pump on/off control
- Optionally selectable control mode.
- Automatic setback operation (self learning with FUZZI technology)
- Setpoint and speed settings.

Graphical pump display, face readable, with adjustable display position to suit horizontal or vertical module positioning to display:

- Operating status
- Control mode
- Differential pressure or speed/setpoint
- Fault and warning signals

Synchronous electric motor to EMC technology with permanent magnet rotor, special sensorless control electronics and single phase frequency converter. Operating at highest efficiency levels and with high starting torque including automating de-jamming function. Integrated full motor overload protection, fault light, volt free collective fault signal, automatic setback to minimum speed (self learning), IR –interface for wireless communication with the IR monitor service and operating unit. Plug in facility for the IF module stratus (IF Module Stratos with interfaces to BMS building management systems).

Electrophoretically coated cast iron body, fibre reinforced PP impeller, stainless steel shaft running in carbon sleeve bearings. Sized DN 32 to DN 50 combination flanges PN 6/10.

Minimum/maximum fluid temperature range:

10°C to +110°C (with following restrictions of the ambient temperatures:

Ambient temperature +40°C >> Medientemp max + 80°C ambient temperature, +25°C >>, medientemp max +110°C)

Pump housing: EN-GJL 250

Impeller: Fiber-reinforced PPS

Shaft: x 46 CR 13

Bearing: Metal impregnated carbon Fluid: water, pure 100%

Rate of flow: see separate schedule

Total head: see separate schedule

Operating temperature: (tolerable -10°C to + 110°C) : 20°C

Working/rated pressure: see separate schedule

Mains power: 3 phase 380/230v 50 HZ

Degree of protection: IP 44.

Schedule of Emergency Gas Shut Off

The equipment provided for the above emergency isolation system shall provide automatic isolation of the systems complete.

The automatic shut off valve line size on the gas supplies to the heating centre, , as shown and as specified, shall be allowed for.

This system shall be completed in all respects to include testing, commissioning on completion. These specified details for the said equipment shall include:

Supply voltage 220 volt ac 50 hz, control outputs (gas valve), 2 24 volts ac 5 amp.

Control inputs, pressure sensor 34 volt dc active open.

Fire alarm interface activate open.

Sensor/sniffer inputs, 24 volt dc active open.

Pressure switches shall operate 24 volt dc active open.

Schedule of Gas Valves

Item Description:	Size:	Comment:
Emergency Shut Off valves –heating centre	125 mm dia	This valve positioned externally to the heating centre in a weatherproof enclosure; system complete with control panel, sensors and e-stop as shown

Control panels associated with main solenoid system to have volt free contracts for interfacing with fire alarm system.