



26-125 Cavan County Museum, Ballyjamesduff

Outline Specification for Boiler Replacement

12-10-26 Rev 2

1.0 General

- Works shall comply with current Irish and European Standards, Building Regulations, CIBSE Guides, IS 10101 (National Rules for Electrical Installations), IS 820 (Non-Domestic Gas Installations), IS EN 12828 (Heating Systems in Buildings), relevant LPG installation requirements, and manufacturers' instructions.
- All plant, materials and workmanship shall be new, fit for purpose and in accordance with good engineering practice.
- The contractor shall verify all dimensions, existing services, access requirements and connection points on site prior to commencement.
- The works shall be coordinated with the Museum's operations and phased as required to minimise disruption.
- Provide all builders' work, supports, brackets, sleeves, fire stopping, making good and weather sealing associated with the mechanical and electrical services, unless specifically noted otherwise.
- Provide as-built drawings, O&M manuals, commissioning records, test certificates, warranties and training at project handover.
- An Asbestos survey has been carried out by the client and it will be included in the tender documents.

Mandatory Site Visit

- A mandatory site visit shall be undertaken by all tendering contractors prior to submission of their tender. Contractors shall satisfy themselves as to the existing site conditions, plantroom access, existing services, proposed LPG tank and gas-main route, working restrictions and the full extent of the works required.
- Contractors shall contact Gemma O'Keefe on 086 2007919 OR Barry Flanagan 086 2010205 to arrange the mandatory site visit.
- Submission of a tender shall be deemed confirmation that the contractor has attended the site and has made adequate allowance for all reasonably foreseeable site conditions associated with the works.
- The contractor's attention is drawn to the fact that Cavan County Museum is a Protected Structure. All works shall be undertaken with due care and consideration for the historic character and fabric of the building. The contractor shall ensure that existing architectural features, finishes and structural elements are adequately protected throughout the works.
- Any proposed alterations, penetrations, fixings or modifications to the existing building fabric, including those associated with new flues, pipework and services, shall be agreed in advance with the Client and Design Team. Works shall be carried out in a manner that minimises disturbance to the historic fabric, with all affected areas carefully reinstated to match the existing finishes and in accordance with any applicable conservation requirements or statutory approvals.



Existing Services / Excavation

- The contractor's attention is drawn to the presence of overhead electrical power lines and underground services/cables in the vicinity of the proposed works. The contractor shall take all necessary precautions and comply with the requirements of the relevant utility providers and current health and safety legislation when undertaking the works.
- Prior to any excavation or trenching, the contractor shall obtain available service records and scan/survey the proposed excavation area using suitable cable and service detection equipment. Existing services shall be positively identified and marked prior to commencement of excavation. Trial holes shall be undertaken where necessary to confirm service locations and depths.
- The contractor shall be responsible for protecting all existing services affected by the works and for immediately reporting any unidentified services encountered during excavation.

Boiler Downtime

- The contractor shall confirm within their tender the anticipated duration of the heating-system shutdown and the period for which the existing boiler will be unavailable during the changeover works.
- The works shall be planned and coordinated with the Client to minimise heating downtime. The proposed shutdown/changeover programme shall be agreed with the Client in advance of commencement.

2.0 Mechanical Services

2.1 Existing Installation / Strip-Out

- Existing oil-fired boiler installation in the basement boiler room shall be decommissioned, isolated, drained down and removed from site.
- The existing oil storage tank and all associated oil supply, fill, vent and distribution pipework made redundant by the works shall be decommissioned and removed from site. The oil tank shall be emptied and cleaned/decommissioned by a suitably competent contractor prior to removal. Any residual oil shall be removed from site and disposed of through an appropriately authorised waste facility/contractor.
- Include for the removal from site and disposal of the existing approximately 40 ft green storage container located externally. The contractor shall include for all lifting, transport, permits, traffic management and other measures necessary for its safe removal.
- All redundant equipment, materials and waste arising from the strip-out works shall become the responsibility of the contractor and shall be removed from site and disposed of appropriately. Existing LPHW distribution pipework serving the building shall be retained and reconnected to the new boiler plant as indicated on the proposed works drawing.
- Protect all retained services and building fabric during the works.



2.2 New Boiler Plant

- Provide and install 2 No. high-efficiency wall-mounted gas-fired condensing boilers, each nominally 100 kW output, indicated on the drawing as Ideal Evomax units or approved equivalent.
- Boilers shall be installed on a proprietary rigid frame/support system within the existing basement boiler room, complete with all manufacturer-required clearances and service access.
- Provide boilers complete with modulating burners, integral safety controls and all proprietary accessories required for a complete operating installation.
- Provide proprietary/pre-formed boiler pipework/header arrangement complete with hydraulic separator and pump kit, as indicated on the drawing.
- Boilers shall be arranged for cascade operation, with automatic lead/lag sequencing and duty rotation to maximise seasonal efficiency and provide staged heat input.
- The new boilers shall be provided with a minimum 5-year manufacturer's parts and labour warranty from the date of practical completion/commissioning. The contractor shall complete all manufacturer registration requirements necessary to activate the warranty and shall provide confirmation of registration and full warranty documentation within the O&M manuals.
- The contractor shall include for all manufacturer-required commissioning and servicing requirements necessary to maintain the validity of the warranty and shall clearly identify these requirements within the O&M documentation.

2.3 Heating System Pipework

- Provide new 80 mm mild-steel LPHW flow and return pipework from the existing LPHW pipework connection point to the new boiler installation at high level, generally as indicated on the drawing.
- Provide all valves, drain points, air vents, thermometers, pressure gauges, strainers, non-return valves, unions/flanges and commissioning/balancing provisions necessary for a complete installation.
- All new LPHW pipework shall be supported independently from the building structure using suitable proprietary supports.
- Insulate new LPHW pipework with 40 mm foil-faced Rockwool thermal insulation, with joints fully sealed and suitable protective finishes provided where exposed to damage.
- Flush and chemically clean the retained heating system and new pipework prior to final commissioning. Dose the completed system with a suitable corrosion inhibitor in accordance with the boiler manufacturer's water-quality requirements.

2.4 Flues and Condensate

- Provide 2 No. proprietary boiler flue systems, indicated as 150 mm diameter, from the boilers to external discharge.
- Flues shall pass through the external wall and the existing lean-to roof structure as indicated, complete with all supports, weathering collars/flashings, terminals and fire stopping.
- Flue terminal locations and clearances shall comply with the boiler manufacturer's requirements and applicable gas installation standards.
- Provide trapped condensate drainage from each condensing boiler to a suitable existing drain connection. Provide condensate neutralisation where required by the boiler manufacturer or drainage arrangement.



2.5 LPG Installation

- Provide a new 1 tonne LPG storage tank at the location indicated on the drawing.
- Provide a suitably sized reinforced concrete base for the LPG tank together with 2 No. lockable gates and protective fencing/enclosure, all in accordance with the LPG supplier's and applicable safety requirements.
- Provide new 63 mm PE gas main from the LPG tank compound to the building. Buried gas pipework shall be installed at a minimum depth of 600 mm below finished ground level and laid in a trench with minimum 200 mm x 200 mm sand surround, as indicated.
- Provide marker tape, tracer wire where required, sleeves at building entries/crossings, warning signage and all other accessories required for the buried gas installation.
- At the building, provide an external gas riser complete with second-stage regulation and changeover arrangement, transitioning to steel gas pipework before entering the building through the external wall.
- Flogas shall be the preferred LPG supplier for the installation. The contractor shall coordinate the proposed LPG storage tank, tank compound, regulators, gas-main requirements and associated installation details with Flogas.
- Final LPG tank location, separation distances, compound requirements, tank base, protective measures, regulator arrangement and gas supply requirements shall be coordinated with and subject to confirmation by the LPG supplier prior to installation.
- Provide internal steel gas distribution pipework from the building entry point to the new boilers, sized to maintain the required operating pressure at maximum simultaneous boiler demand.
- Provide accessible isolation valves at the tank, building entry and boiler connections, together with all test points, regulators and safety devices required for a complete LPG installation.
- Gas installation shall be installed, tested, purged, commissioned and certified by appropriately registered/competent personnel in accordance with current Irish requirements.

2.6 Gas Safety and Ventilation

- Provide a gas detection system within the boiler room complete with gas sensors, control panel and automatic slam-shut valve on the incoming gas supply.
- Provide a clearly labelled emergency gas shut-off pushbutton at a suitable accessible location adjacent to the boiler-room access, interconnected with the gas safety system.
- Interlock the gas detection/safety system with the boiler controls so that detection of a gas alarm condition isolates the gas supply and disables boiler operation.
- Provide local audible and visual alarm indication.
- Verify the existing boiler-room ventilation against the requirements of the proposed LPG-fired boiler installation. Provide any additional permanent high- and low-level ventilation required to achieve compliance.

3.0 Electrical Services

3.1 General

- All electrical works shall comply with IS 10101:2020 and current amendments, together with manufacturers' requirements.
- Provide all power, control wiring, containment, local isolators, earthing and bonding required for the new boiler installation, pumps, controls and gas safety system.



- Reuse of existing electrical supplies shall only be permitted where verified as suitably rated, compliant and in satisfactory condition.

3.2 Boiler Plant Power and Controls

- Provide dedicated electrical supplies and local lockable isolators for each boiler and all associated pumps and control equipment.
- Provide cascade boiler controls to enable automatic sequencing, lead/lag rotation, temperature control, frost protection and optimum operation of the two-boiler installation.
- Interface the boiler controls with the existing building heating controls/time scheduling where applicable, subject to verification on site.
- Provide all necessary sensors, relays and interlocks for safe operation of the boiler plant.
- Provide an internet/app-based heating control system, such as Hive, EMBER or approved equivalent, suitable for operation of the proposed boiler installation.
- The system shall enable authorised users to remotely view and adjust heating operation, programme operating schedules and provide timed heating boost/override functions via a smartphone/tablet application.
- Provide a local digital user interface/display at an agreed accessible location within the building to permit normal operation, adjustment of heating schedules and manual boost/override without requiring use of the mobile application.
- The app-based controls shall interface with the boiler cascade controls without overriding or compromising the boilers' integral sequencing, modulation, frost protection or safety functions.
- Include all control modules, receivers, relays, gateways, power supplies and associated wiring necessary to provide a complete operational system.
- The contractor shall commission the system, configure the initial heating programme in consultation with the Client and provide instruction to nominated Museum personnel on both the local and remote operation of the controls.

3.3 Gas Safety Electrical Interface

- Provide power and control wiring for the gas detection panel, detectors, slam-shut valve, emergency shut-off and audible/visual alarms.
- Gas safety interlocks shall be fail-safe and shall require manual reset following a gas alarm or emergency shut-down event, unless otherwise required by the selected gas safety system manufacturer.

4.0 Testing, Commissioning & Handover

- Pressure-test all new LPHW and gas pipework prior to insulation/concealment and provide test certification.
- Commission the boilers, pumps, hydraulic separator, controls and gas safety system by suitably qualified specialists and, where required, the equipment manufacturer or authorised agent.
- Carry out combustion analysis and record boiler operating parameters at low and high fire.
- Balance the heating system and confirm design flow through the boiler primary circuit and retained heating distribution system.
- Confirm satisfactory operation of boiler sequencing, safety interlocks, gas detection, emergency shut-off and automatic gas isolation.
- Provide water-quality test results confirming compliance with the boiler manufacturer's requirements.
- Provide training to the Client's maintenance personnel on normal operation, controls, isolation procedures and emergency shutdown.



- Provide handover documentation including as-built drawings, O&M manuals, commissioning sheets, electrical and gas test certificates, equipment data sheets and warranty documentation.

5.0 Notes / Items to be Confirmed Prior to Construction

- Final boiler model, exact duties, pressure drops and pump selections shall be confirmed against the calculated building heat load and existing system operating conditions.
- Final LPG tank arrangement, separation distances, compound construction, regulator arrangement and gas pipe sizing shall be agreed with the selected LPG supplier and coordinated with the site layout.
- Existing heating system static pressure, expansion provision, pressurisation arrangement and water condition shall be surveyed and confirmed before final plant selection.
- Final flue route, terminal positions and weathering details shall be coordinated with the existing lean-to roof structure and boiler manufacturer's requirements.