Waldron & Associates
Design, Project Management, Engineers & Architects

VOLUME A WORKS REQUIREMENTS

PROJECT PARTICULARS

Existing Oil Boiler Heating System to be replaced with Gas Boiler heating system and LPG storage tanks upgrade and associated Civil Works.

at

Mount St. Michael Secondary School, Claremorris, Co. Mayo. F12TYO9

for

THE BOARD OF MANAGEMENT

ENGINEERS IRELAND
CORPORATE AFFILIATE

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1.0 PRELIMINARY PARTICULARS

1.1 PROJECT TEAM

Employer:	Board of Management, Mount St. Michael, Secondary School, Claremorris, Co. Mayo. Telephone: 094 9371474
Engineering Consultant:	Waldron & Associates The Square, Claremorris, Co. Mayo. F12 C3H4 Telephone: 094-9372120 Email: info@waldrons.ie
Project Supervisor Design Process:	Waldron & Associates The Square, Claremorris, Co. Mayo. F12 C3H4 Telephone: 094-9372120 Email: info@waldrons.ie
Quantity Surveyors:	Modern Eco Projects, Drummin South, Crossboyne, Claremorris, Co. Mayo. Telephone: 087 0642903 Email: jwalsh@modernecoprojects.ie

1.2 PROJECT & SITE DESCRIPTION

(a) Site Layout Drawings:

The site location and site extents are indicated on the relevant drawings

26-1495-403 Proposed Site Layout Plan
26-1495-404 Gas Tanks & Compound
26-1495-405 Mechanical & Electrical Schematic

(b) Description of the Existing School

Mount St. Michael Secondary School is an all-girls voluntary secondary school, under the trusteeship of the Catholic Education an Irish Schools Trust, on the outskirts of Claremorris in County Mayo, Ireland.

(c) Description of the Propose Works

Existing Oil Boiler Heating System to be replaced with Gas Boiler heating system and LPG storage tanks upgrade and associated Civil Works.
Contractor is to coordinate with Biomass Pellet Boiler Contractor in relation to Mechanical & Electrical Works within Plantroom

(d) Site Works & Existing Services

The Contractor shall make himself aware of the presence and location of existing underground and over ground services and shall take all necessary precautions to avoid interference or damage to these services during the execution of the works. The Contractor will be deemed to make the necessary allowance in his rates for working in and around and maintaining live theses services. In regard to existing services the Contractor shall have full regard to and consideration of the dependence by the existing building on these services.

Note: Existing underground services (including but not limited to watermain, electrical and storm drainage) are located within the area of the proposed works.

The existing Plant Room & Works is in the vicinity of the existing temp heating system. The Contractor is to agree in advance with School management the scheduling of any interuptions and change over works.

M & E services works within the existing building should be scheduled to minimise disruption and agreed with School management in advance.

1.3 PROJECT & SITE DESCRIPTION

Project requirements:

- Full strip-out of the existing main plantroom.
- Removal of the failed existing oil-fired boilers and redundant associated pipework and controls.
- New LPG-fired boiler plant – 2 no. 150KW Gas fired Boilers with cascade system, 3 boiler frame & flue installation.
- Plate heat exchanger to hydraulically separate and protect the new plant from the existing heating system.
- New pumps and associated LTHW pipework.
- New valves, fittings, insulation and labelling.
- New pressurisation unit and expansion vessel.
- X-pot / magnetic / particle filtration and dosing arrangement.
- New BMS control panel and associated controls wiring.
- Gas detection, gas shut-off valve and emergency stop arrangement.
- Spare valved connections for future plantroom works.
- Extension/upgrading of the LPG storage compound.
- Increase in LPG storage capacity from the existing circa 500 kg to circa 2,000 kg, consistent with the planning drawings. Contact with Calar Gas & supply by Contractor
- All associated builders' works, testing, commissioning and certification.

General Scope of Works

1. General

The works comprise the design development, supply, installation, testing, commissioning and handover of a new LPG-fired heating installation serving Mount St. Michael Secondary School, including the replacement and upgrading of the existing main heating plantroom and the extension and upgrading of the existing LPG storage compound.

The contractor shall provide a complete, operational and fully commissioned heating installation, including all mechanical, electrical, controls, gas, builders' works and ancillary works necessary to deliver the completed system, whether specifically shown on the tender drawings or reasonably required for the proper operation of the installation.

The contractor shall inspect the existing installation prior to tender and shall satisfy themselves as to the existing conditions, dimensions, pipework arrangements, access requirements, existing heating circuits and all interfaces with retained services.

2. Existing Plantroom Strip-Out

The existing main plantroom shall be stripped out as necessary to facilitate the new installation. The works shall include isolation, disconnection, draining, dismantling and removal of redundant equipment including, where applicable:

* existing oil-fired boilers and associated burner equipment;
* redundant heating pumps;
* redundant oil pipework and fittings;
* redundant heating distribution pipework within the plantroom;
* expansion vessels and pressurisation equipment;
* controls, valves, strainers and ancillary equipment;

* redundant electrical supplies and control wiring;
* redundant flues and associated supports;
* redundant insulation;
* redundant tanks or local plant, where included within the works

Existing equipment or services designated to remain shall be protected throughout the works.
All redundant material shall be removed from site and disposed of through appropriate authorised waste channels.

3. New LPG-Fired Boiler Installation

Provide a new LPG-fired boiler installation sized to meet the required heating duty of the school.
The boiler installation shall include:

* high-efficiency LPG-fired boiler or boilers;
* burners and gas trains;
* flow and return connections;
* isolation valves;
* commissioning valves;
* non-return valves;
* strainers;
* temperature and pressure gauges;
* automatic air vents;
* drain points;
* safety devices;
* flue system;
* condensate drainage where applicable;
* controls and interlocks;
* electrical power supplies;
* BMS connections;
* all brackets, supports, bases and ancillary components.

The contractor shall verify the final boiler capacity against the calculated heating demand prior to procurement.
The system shall be arranged to permit safe isolation and maintenance of individual items of plant.

4. Hydraulic Separation and Heat Exchanger

A new plate heat exchanger shall be installed between the new boiler circuit and the existing school heating distribution system.
The purpose of the heat exchanger shall be to hydraulically separate the new boiler plant from the existing heating installation and protect new equipment from contamination associated with the existing system, including sludge, dirt and ferrous material.
The heat exchanger installation shall include:

* isolation valves;
* strainers;
* temperature gauges;
* pressure gauges;
* drain points;
* automatic air vents;
* balancing provisions;

* suitable instrumentation;
* insulation.

The heat exchanger shall be sized for the full design heating load, including an appropriate design margin.

5. System Filtration and Water Quality

Provide suitable water-treatment and filtration equipment to protect the new plant.
This shall include, as indicated by the mechanical design intent:

* magnetic filtration;
* particle filtration;
* strainers;
* dirt separation where required;
* chemical dosing provisions;
* system flushing and cleaning;
* water treatment and inhibitor dosing.

The schematic specifically identifies both magnetic and particle filtration within the plant arrangement. Prior to connection of the new plant, the existing heating system shall be thoroughly flushed and cleaned.
The contractor shall undertake water-quality testing before and after treatment and provide records within the handover documentation.

6. Circulation Pumps

Provide new circulation pump sets to serve the new boiler primary circuit and the existing heating distribution circuits.
Pumps shall generally be high-efficiency variable-speed pumps and shall be selected against the calculated system flow rate and resistance.
Where duty/standby arrangements are indicated or required, the pumps shall be configured for automatic changeover on failure.
Pump status, run and fault signals shall be connected to the BMS where applicable.

7. Existing Heating Circuits

Reconnect the existing school heating circuits to the new plant installation.
The contractor shall verify the number, size, duty and condition of the existing circuits prior to finalising the installation.
The mechanical schematic identifies existing circuits together with links to other plantrooms and future capacity.
Each circuit shall be provided with suitable:

* isolation;
* pumping;
* strainers;
* temperature monitoring;
* pressure monitoring;
* balancing;
* non-return protection;
* controls;
* BMS interface.

8. Future Plantroom Connections – Biomass Heating System as per schematic
Provide valved and capped flow and return connections within the new installation to facilitate future connections to additional plantrooms or heating zones.
Spare connections shall be positioned to minimise disruption when future works are undertaken.
The contractor shall clearly label all spare connections.

9. Expansion and Pressurisation
Provide new expansion and pressurisation equipment suitable for the volume and operating parameters of the new heating system.
This shall include:
* expansion vessel(s);
* pressurisation unit;
* pressure relief arrangements;
* pressure gauges;
* low-pressure protection;
* high-pressure protection;
* fill arrangements;
* drain connection.
Pressure-relief discharges shall be routed safely.

10. LPG Storage Upgrade
The existing LPG installation shall be upgraded to provide approximately 2,000 kg LPG storage capacity as required, replacing the existing approximately 500 kg storage arrangement.
The works shall include:
* Removal of the existing gas tank compound & concrete slab & placement of new Compound with Concrete slab & Fencing
* new LPG storage vessel or vessels;
* bases and foundations;
* tank supports;
* protective barriers where required;
* fencing and secure access;
* gates;
* warning signage;
* impact protection;
* gas regulators;
* pressure-reduction equipment;
* isolation valves;
* emergency isolation;
* gas pipework;
* filling connections;
* earthing/bonding;
* all safety equipment required by the LPG supplier and applicable standards.
The gas compound is shown on the site planning documentation as an extension to the existing tank compound.

Final vessel configuration, safety clearances and compound arrangement shall be agreed with the selected LPG supplier and shall comply with all statutory and industry requirements.

11. LPG Distribution Pipework

Provide new LPG distribution pipework between the storage installation and the new boiler plant.
Pipework shall include all:
* regulators;
* valves;
* emergency shut-off valves;
* pressure test points;
* sleeves;
* supports;
* identification;
* corrosion protection;
* tracer/warning systems where underground;
* protective bollards where exposed to vehicles.

Underground pipework shall be installed with appropriate bedding, cover and warning tape and shall be pressure tested before backfilling.

12. Gas Detection and Safety Interlocks

Provide gas detection within the boiler room where required.
The gas safety system shall be interfaced with:
* gas shut-off solenoid valve;
* boiler controls;
* ventilation system;
* fire alarm system where applicable;
* BMS;
* emergency stop.

Emergency gas isolation shall be provided in a clearly accessible position.

13. Flues and Ventilation

Provide complete boiler flue systems suitable for LPG operation.
Flues shall be:
* correctly sized;
* adequately supported;
* insulated where required;
* weathered at roof or wall penetrations;
* provided with suitable access for inspection and cleaning.

The contractor shall confirm that the plantroom combustion and general ventilation arrangements are adequate for the selected boilers and gas installation and shall upgrade ventilation where required.

14. Controls and BMS

Provide a complete automatic control system for the new heating plant.
The installation shall interface with the school's existing BMS.
BMS points shall include, as applicable:

* boiler run status;
* boiler fault;
* boiler enable;
* pump run;
* pump fault;
* flow temperature;
* return temperature;
* system pressure;
* heat-exchanger temperatures;
* gas alarm;
* low-pressure alarm;
* high-pressure alarm;
* plantroom temperature;
* heat-meter readings.

The mechanical schematic contains multiple designated connections "TO BMS", supporting a comprehensive controls interface.

15. Heat Metering

Provide heat metering to allow monitoring of energy transferred from the new plant to the school heating system and, where appropriate, to individual major heating circuits.

Meters shall be connected to the BMS.

16. Electrical Works

Provide all electrical services associated with the mechanical installation, including:

* distribution boards where required;
* local isolators;
* power wiring;
* control wiring;
* containment;
* pump supplies;
* boiler supplies;
* gas safety system;
* BMS wiring;
* earth bonding;
* emergency isolation;
* labelling.

Electrical works shall be tested and certified upon completion.

17. Builders' Works

Include all builders' works associated with the installation, including:

* equipment bases;
* plinths;
* wall and floor penetrations;
* trenching;
* excavation;
* backfilling;
* reinstatement;

* fire stopping;
* weather sealing;
* making good;
* painting;
* access modifications;
* compound extension works;
* fencing and gates.

All disturbed surfaces shall be reinstated to match the existing adjoining finishes.

18. Phasing and Continuity of School Operation

The works shall be programmed to minimise disruption to the operation of the school.

Particular attention shall be given to:

* maintaining heating where required;
* maintaining safe pupil/staff access;
* preventing unauthorised access to the construction area;
* scheduling shutdowns;
* noisy works;
* deliveries;
* crane operations where applicable;
* school examination periods.

Any proposed service shutdown shall be agreed with the school representative in advance.

19. Testing and Commissioning

The completed installation shall be fully tested and commissioned.

Testing shall include, as applicable:

* gas soundness testing;
* heating pipework pressure testing;
* flushing;
* chemical cleaning;
* water treatment;
* pump commissioning;
* boiler combustion commissioning;
* safety controls;
* gas detection;
* gas shut-off;
* BMS operation;
* heat metering;
* operating temperatures;
* flow rates;
* hydraulic balancing.

Commissioning shall demonstrate that all heating circuits achieve the required performance.

20. Statutory Certification

The contractor shall provide all necessary certification for the completed works, including:

* gas installation certification;

* boiler commissioning certificates;
* electrical certification;
* controls commissioning;
* pressure testing;
* water-treatment certification;
* flue commissioning;
* equipment manufacturer's commissioning documentation.

21. As-Built Information and O&M Manuals
At completion, provide a complete Operating and Maintenance Manual containing:
* as-built drawings;
* plant schematics;
* gas pipework drawings;
* controls schematics;
* BMS points list;
* equipment schedules;
* manufacturers' literature;
* commissioning results;
* gas certificates;
* electrical certificates;
* pressure-test certificates;
* water-treatment results;
* warranties;
* recommended maintenance schedules;
* emergency shutdown procedures.

All plant, valves, pipework and controls shall be clearly and permanently labelled.

22. Contractor Design Responsibility
The contractor shall undertake all necessary detailed design required to convert the tender/design-intent information into a complete construction installation.
This requirement is particularly important because the mechanical schematic expressly states that the drawings are intended to facilitate understanding and pricing and are **subject to the contractor's detailed design following the design intent in the performance specification**.
The detailed contractor design shall include equipment selection, pipe sizing, pump sizing, boiler sizing, heat-exchanger sizing, pressure-loss calculations, expansion calculations, LPG installation design, controls design, electrical loads, flue design and plant layout.

23. Relevant Drawings & Information:-
The Scope of Works should be read in conjunction with, at minimum:

26-1495-403 Proposed Site Layout Plan
26-1495-404 Gas Tanks & Compound
26-1495-405 Mechanical & Electrical Schematic
Calor Gas Bulk Tank Safety Information
Gas Networks Guildlines

2.0 MANAGEMENT OF THE WORKS

2.1 Insurances

The Contractor will on appointment, or in advance where required, provide documentary evidence of all insurances required by the Conditions of Contract.

2.2 Insurance Claims

Where any event occurs which may give rise to any claim or proceeding in respect of loss or damage to the Works or injury of damage to persons or property arising out of the Works, the Contractor will give immediate notice in writing to the Employer, the Design Team and the Insurers. Indemnify the Employer against any loss whicj may be caused by failure to give such notice.

2.3 Ownership

Materials arising from the alteration and demolition works are to become the property of the Contractor except where otherwise stated. Waste materials to be removed from site as works proceed.

2.4 Programme

At tender submission stage the Contractor shall provide a programme for the Works to make allowance for all planning and mobilisation by the Contractor, Sub-Contractor's work, connections and testing of services. The programme of works shall take account of the operation of the existing school. Works within the existing school buildings shall be programmed in conjunction with school management and optimised to take account of periods outside of school term times. Works within the existing school shall be undertaken on a phased basis, on agreement with school management, to establish construction works to particular areas allowing the continued operation of the school.

2.5 Site Meetings

The Employer & Design Team will hold site meetings, Weekly / fortnightly or as otherwise agreed, to review progress and other matters. The Contractor shall ensure the availability of suitable accommodation and shall attend all such meetings. The Architect as Project Lead will chair the meetings and take and distribute minutes.

2.6 Progress Report

The Contractor shall submit to the Project Lead a progress report, not later than 2 days before each site meeting. The report shall include as a minimum the following:

- Progress statement with reference to the programme
- Details of matters materially affecting the works
- Sub-Contractors and Suppliers progress reports
- Any requirements for further information or details
- Details of Health and Safety and / or related matters

- Details of temperature conditions and any adverse weather.
- On site labour numbers and plant schedule

2.7 Notice of Completion

The Contractor shall give the Project Lead at least two weeks notice of the anticipated dates of Practical Completion of the whole or parts of the Works.

2.8 Commissioning, Handover & Snagging

The Contractor shall include a specific time period in the construction programme for the commissioning of the works including all building services and energy systems. This period shall precede the issuance of the Certificate of Substantial Completion for the Works. The defects liability period will commence upon the substantial completion date of the project. The date for completion will be as stated in the contract documents.

In order to avoid the project being offered prematurely, the Contractor shall firstly snag the works and send one set of the snagging list, together with ceiling closing-up certificates for every room, signed & dated by the contractor / M&E subcontractors to the Project Lead for their information. The Contractor shall confirm to the Project Lead in writing that all contractors snags have been satisfactorily completed. This process should be completed not less than two weeks prior to the programmed or anticipated dates for completion, allowing the Design Team time to snag the works.

The Contractor shall ensure the following is undertaken prior to the date for completion and shall ensure that written confirmation of these activities is provided to the Project Lead & Assigned Certifier prior to the Date for Completion:

- The contractor to fulfil all required duties under the current Building Control Regulations .
- The role and duties of the Contractor are detailed in the Code of Practice for Inspecting and Certifying Buildings and Works by the Department of Environment, Community & Local Government, refer to documentation in additional information.
- All painted surfaces: minor faults to be touched up, carefully matching colour and brushing out edges. Badly marked areas to be repainted back to suitable breaks or junctions.
- All moving parts: to be adjusted, eased and lubricated on all doors, windows, drawers, ironmongery, controls and other moving parts as necessary to ensure easy and efficient operation.
- All services must be complete, operational and, where metered, the Contractor shall ensure that a final reading shall be taken by the relevant statutory undertaker at the date for completion and the Contractor shall be responsible for the payment of all charges up to this time.
- All signs, nameplates and numbers shall be fixed in place.
- All drainage completed and connected to the sewer.
- Any roads, footpaths and sewers to be adopted, shall be completed to the local authority's adoption requirements and the completion requirements shall not be deemed to have

taken place until either the local authority adopt the Works or indicate that they will be adopted at the end of the Defects Liability Period.

- All roads and footpaths shall be completed, including the final surfacing wherever possible and practicable. All fencing, walls, lighting and external works shall also be completed. All turfing and landscaping shall also be completed as far as the season will permit and where and only with the contracting authority's agreement the final turfing or planting cannot be completed, the topsoil shall be spread, ready for completion.
- A complete Safety File in accordance with the regulations shall be issued at substantial completion with a draft Safety File being offered to the PSDP at least three weeks before substantial completion for comment.
- Evidence that all elements relating to fire safety have been installed correctly and are functioning properly e.g. fire extinguishers, alarms /detectors, FR roller shutters, magnetic door releases, magnetic locks at final exits, green & red break glass units, smoke vents, fans, air admittance motors on windows & doors, exit signage, emergency power packs etc. This must be confirmed in writing by the contractor.
- Evidence that a full itemised schedule has been produced for all M&E installations / plant / equipment etc. that requires testing, commissioning and demonstration to the client prior to handover and substantial completion. These are to be listed on a single document and signed and dated by the contractor, services consultant and client representative as a record that all took place and their operation is clearly understood.
- Test certs to be supplied for all individual fire rated glazed screens and doors / ironmongery on fire doors, cross-referenced to door schedules.
- Original warranties to be provided by main contractor for each piece of M&E equipment. List to be compiled by Services Engineers. All components of envelope of building, stating clearly the life of the warranty in each case are to be included in Safety / O&M File.
- Certificates for, and details of, various types of fire sealing provided by contractor for fire-stopping throughout. These are to be clearly cross-referenced to the FSC drawings & report identifying the types of materials used in the various locations.
- Written confirmation to be provided that all service opes (wall to floor, wall to wall junctions etc) have been correctly fire sealed in line with the requirements of the FSC Cert.
- 'Key handover certificates' to be put in place for the following:
  doors, furniture, electrical cabinets etc, note boards / cabinets, windows, access panels (in ceilings and walls/floors etc), lifts and manholes etc. This must be done for anything requiring a key or fob / swipe card etc.
- Gas Detection system
- Evidence that air-tightness testing been carried out and that required levels achieved. 2 weeks notice to be given to the Project Lead to facilitate attendance at the Air Tightness Test.
- Evidence that draw ropes been left in all empty and/or spare ducts and photographed and/or recorded as such.

2.9 Measurements

The Contractor shall give reasonable notice to the Design Team through the Project Lead before covering up works which require measurement by the Design Team.

2.10 Historical Finds

The Employer & Project Lead shall be immediately advised of any discoveries of historical importance. Any object of antiquarian, geological or other interest discovered during the progress of the works shall be handed over to the Project Lead.

3.0 THE SITE

3.1 Site Boundaries

The development site within the existing site boundaries & Temp Site Fencing as required to be agreed as per Site Layout drg 26-1495-403.

3.2 Ground Conditions

Contractor to excavate to formation level & inform Engineer for inspection prior to backfill

3.3 Access

Access to areas within the school site outside the Contractor's hoarding only with the the prior authority of the Employer.

The use of the existing car park, pedestrian accesses and school entrances must be kept operational throughout the course of the Contract unless agreed in advance with the Employer. All works should be programmed to minimise disruption to traffic management within the operational school site.

It is recommended that the Contrator visit the site before tendering and familiarise themselves with the nature of the site, access thereto and all local conditions and restrictions likely to affect the execution of the works. Site visits may be arranged in advance by making contact with the School reception.

3.4 Restrictions on Access

Access to the Works site will be carpark and agreed with employer prior to commencement

Access around the existing school buildings to dig service trenches and to extend services will only be carried out with the prior approval of the Employer.

3.5 Adjoining Structures

The existing school buildings will remain operational during the course of the Works, with the exception of holiday periods.

3.6 Facilities & Services of the Employer to be Operated and Managed by the Contractor

The water, foul and storm water drainage networks which service the existing school must be maintained and remain operational throughout the course of the Works. All electrical, IT, telecoms and communication systems which serve the school must be maintained and remain operational throughout the course of the contract period.

3.7 Site Rules and Regulations

Any damage caused by traffic to and from the site during course of the construction period shall be made good by the Contractor at his own expense on completion of the project.

All existing roads, paving, grassed and landscaped areas both inside and outside the site boundaries must be left in the same condition as they were prior to the commencement of the works.

All deliveries to the site shall be via the agreed access point to the site and at times to the agreement of the Employer.

All parking on site is to be strictly controlled and the Contractor must ensure that all vehicles belonging to the Contrator, his staff and sub-contractors are parked within agreed approved areas.

3.8 Site Enclosures

Full site hoarding and safety barriers to be provided to enclose all works areas and provide safe separation from the operation of the existing school.
Ensure integrity of hoarding from unauthorized access, in particular from access by children.
Contractor is also to provide temporary hoarding around all work areas outside the contractor's site boundary include works associated with new drainage installation and works to the existing carpark.
Include for the removal of hoarding and safety barriers on completion. Provide for secure site entry gates. Providing proper signage to indicate flow of traffic.
Allow for removal and re-siting of hoarding on completion of various stages of the works as required.
The works areas (including builders compound) encompassing the new works is to be hoarded off from the remainder of the site.
The hoarding to consist of good quality exterior grade plywood sheeting or equivalent, not less than 18mm thick and 2.4m high from existing road level and agreed surround ground level fixed securely to timber carcassing or as specified in the Preliminary Health and Safety Plan.
All plywood hoarding or equivalent is to be painted in two coats gloss paint (one colour).
Should the contractor wish to incorporate additional coloured banding, signage or such like he shall do so at his own expense and only with the Project Lead's permission.

4.0 STATUTORY APPROVALS

4.1 Planning Permission

Planning permission has been granted by the Planing Authority for the Works, a copy has been included in the additional information. The Contractor should familiarise himself with the conditions contained therein which he is required to comply with in full.

4.2 Fire Safety Certificate

Existing FSC. The Contractor should familiarise himself with the conditions contained therein which he is required to comply with in full.

4.3 Disability Acccess Certificate

Existing DAC. The Contractor should familiarise himself with the conditions contained therein which he is required to comply with in full.

4.4 Building Regulations & Licences

The Contractor shall carry out the Works in accordance with the requirements of the current Building Regulations.

The Contrator is to make provision for any and all other statutory requirements, notices, licences and consents required to carry out the works such as but not limited to:

- Road opening licences
- Waste management licence
- Work permits
- Tree felling licences.

The Contractor is to fulfil his duties under the current Building Control Regulations and S.I. 9 of 2014. Information in relation to these duties are detailed in the Code of Practice for Certifying Building & Works which has been included in the additional information. All the obligations detailed in this document are deemed to form part of the works requirements / building contract and are to be allowed for by the Contractor.

The Builder shall cooperate and coordinate with the Assigned Certifier and shall confirm and /or provide the following:

- Accept from the Building Owner the assignment to build and Supervise the building or works and sign the statutory forms identified in the Commencement Notice.
- Confirm that they have familiarised themselves with the drawings, specifications and documents lodged with the Commencement Notice.
- Agree the execution, Inspection milestones, sequence and programme of works with the Project Lead & Assigned Certifier in advance of commencement of works.
- Ensure Competent Person(s) are assigned to oversee the general construction works and/or specialist works. The specialist works & associated Ancillary Certifiers which the Contractor

is responsible for are identified on a preliminary basis in the Inspection Notification Framework issued at tender.

- Confirm that they will co-operate at all times with the Project Lead, design team, the Assigned Certifier and other Ancillary Certifiers.
- Ensure that the workmanship complies with the requirements of the Building Regulations.
- Ensure that materials which they select and for which they are responsible comply with the requirements of the Building Regulations.
- Confirm that documentation is to be provided at interim certificate stage if requested by the Assigned Certifier or the Project Lead.
- Provide a signed statutory form - Certificate of Compliance on Completion at completion.
- Promptly provide to the Assigned Certifier, all documents requested by the Assigned Certifier to enable the Assigned Certifier to collate particulars for the purposes of handover and certification, and/or for further submissions to the Building Control Authority.
- Ensure the co-ordination and provision of all test certificates and confirmations to the Assigned Certifier, to the satisfaction of the Assigned Certifier.
- Co-ordinate the work of all specialist sub-contractors and designers to ensure the co-ordination and provision of all test certificates and confirmations to the designated inspectors, or Ancillary Certifiers, who are required to provide Ancillary Completion Certificates, as identified by the Assigned Certifier at any stage during the project.
- Maintain records as detailed below;
- Comply with the detailed requirements of the Preliminary Inspection Plan and Inspection Notification Framework as issued at tender and as updated as works proceed.
- Provide/furnish Ancillary Completion Certificates to the Assigned Certifier via the Project Lead for specialist works with design.
- Co-operate with the Assigned Certifier, in the lodgement of supplementary documentation to the Building Control Authority during the course of the works.
- Incomplete design work or specialist design that is not available for submission at commencement stage can be submitted to the Building Control Authority at a later stage.
- Between 3-5 weeks in advance of a nominated completion date, provide all completed or prospective documentation and confirmations for which the Contractor is responsible for, to the Assigned Certifier.

Main Contractor & Specialist Sub-Contractor Supervision

- The Contractor shall ensure that there are at all times on the site sufficiently suitably qualified, experienced and competent staff to supervise all work carried out under the contract.
- Supervision of the works shall always be the responsibility of the Builder and where relevant, the specialist Sub-Contractor (s).
- Supervisors shall be provided both on and off the site that shall instruct the Sub-Contractor's tradesmen.

- Undertake all work with skill and care in order to produce work fit for its intended purpose and of good quality under the direct supervision.
- Sub-Contract pre-installation meetings shall be organised by the Contractor with the Project Lead, Assigned Certifier, Specialist Sub-Contractor, and Manufacturer's representatives, The Builder shall keep records of all such meetings.
- The Sub-Contractor shall notify the Contractor the names of his appointed supervisors. No work shall be carried out unless one of the appointed supervisors is present.
- All work shall be carried out in accordance with the terms and requirements of the works requirements and approved submissions and samples.
- The Architect and / or Assigned Certifier shall, if required, make random or periodic visits to suppliers' premises to ensure that standards of manufacture and quality control are to their satisfaction.

Ancillary Certification

Ancillary Certificates are required from the following categories of Contractor's Personnel. The list reflects the works elements known at the time of tender but does not limit the Contractor's duties to provide all certificates relevant to the completion of the works.

Category of Contractor's Personnel:
Pre cast Concrete Product Suppliers/Installers
Ready Mix Concrete Suppliers/Installers
Reinforced Concrete Suppliers/Installers
Manhole Suppliers/Installers
Engineered Fill Suppliers/Installers
Bitmac Suppliers/Installers
Road & Foot Path Surfacing Sub Contractor
Electrical Sub Contractor
Plumbing Sub Contractor
IT Sub Contractor
Groundworks Sub Contractor
Painting Sub Contractor
Certified Fire Sealant Installer Sub Contractor for fire seal certification
Roofing subcontractor
Window/Door/Glazing Sub Contractor
Internal Door/Screen/Glazing/Fire Shutter Sub Contractor
Ironmongery Supplier
Fire Alarm System Sub Contractor
Flooring Sub Contractor
Ceiling System Sub Contractor

Preliminary Inspection Plan

The Preliminary Inspection Plan is a statutory document prepared by the Assigned Certifier that has to be submitted to the Building Control Authority by the Employer with the Commencement Notice a minimum of 2 weeks and a maximum of 4 weeks in advance of the commencement of the works. At project completion the Inspection Plan as implemented is submitted to the Building Control Authority.

It is the responsibility of the Builder to employ competent persons to supervise the works. The inspection plan shall not in any way diminish the duty of the Builder to properly supervise, and any defective works, whether identified during or after the contract period, remain the sole responsibility of the Builder. The Builder shall include with his tender submission a Method Statement and his own Preliminary Inspection Plan indicating his own inspection and supervision regime.

Inspections

The inspection requirements detailed in this document do not in any way replace or reduce the Contractor's duty to supervise the works.
The Contractor shall facilitate inspections, programmed or randon, by the Assigned Certifier or Ancillary Certifiers.
The Contractor is to provide in a timely manner all certificates and tests for materials, products and assemblies.
Due consideration shall be given by the Contractor for inspection notices. No claims for extension of time or financial claims shall be considered for delays arising out of inspection or re-inspection requirements.

The Contractor shall ensure advance notifications are issued with respect to works to be inspected that are identified in the Inspection Schedule. The minimum advance notice required for inspection of items of works is three working days.
Where re-inspections are required the minimum notice required for re-inspection of items of works not complete or requiring remedial works is to be three working days.

The Builder shall diligently ensure that any areas of non compliance are rectified and that such works are kept available for inspection again, or until a record of rectification is furnished, as may by required by the Assigned Certifier**.**

The Contractor shall ensure all tests and certificates for materials, components and assemblies listed in the Inspection Notification Framework are undertaken in a timely way. Any test failure shall immediately be made known to the Ancillary Certifier & Project Lead, the materials/works in question shall be replaced/rectified and retested undertaken prior to proceeding with subsequent work.

It is the responsibility of the Contractor to co-ordinate and supervise the works and no claim for delay or cost shall arise from the requirement to re-inspect.

Completion

Tenderers shall note that Practical Completion for this contract is contingent upon the successful registration of the works on the Building Control Management System.

Tenderers shall note that this project shall not require a Prior Notification of Completion to be submitted to the Building Control Authority in advance of completion.

The Builder shall provide **4/6 weeks** in advance of the nominated completion date all completed and/or *'prospective'* documentation and confirmations for Registration. The Assigned Certifier and the Builder shall co-sign the Completion Certificate.

The Assigned Certifier shall then lodge/upload the documentation onto the Building Control Authority system.

The Contractor shall issue to the Assigned Certifier a copy of all inspection records retained by the Contractor during the course of the Works.

5.0 PRE APPOINTMENT INFORMATION

5.1 Method Statement & Works Programme

Prior to the award of a contract the Contractor shall submit the following to the Lead Architect for his approval:

- Method statement and detailed network diagram showing the proposed phasing and logic linking the various construction activities and allow for any necessary revisions following discussions with the Employer and the Design Team.

- Overall works programme and detailed works programme based on the network diagram and allow for any necessary alterations based on comments by the Employer and the Design Team. These programmes shall be updated by the Contractor regularly and accurately, particularly as reasonably requested by the Design Team.

- Provide detailed resource statement (on a similar time based to programmes) for the key trades and sub-contractors based on foregoing developed programmes.

- Update tender method statements in light of development of the network analysis and programmes and allow for any proposed alterations to information supplied pre-contract.

- Schedules of approvals, information/drawings required all in accordance with the Programme. Include for agreeing times to allow for submissions and approval before the related work commences.

The Contractor's management proposals for the project shall be agreed with the Employer prior to the placing of the Contract and the agreed arrangements shall be recorded in Minutes of Understanding which shall form part of the Contract Documentation.

5.2 Contract PW-CF6 v1.15 25-11-2025

The Articles of Agreement and Conditions of Contract shall be the Contract for Public Works Contract for BUILDING WORKS designed by the Employer issued by the Office of Government Procurement

In accordance with the Conditions of Contract the information required for Schedule Part 1 is as per the following:

Refer to Schedule Part 1 (located in Tender and Schedule document).

The Contractor will be required to complete the works within the time stipulated in accordance with the Conditions of Contract. The Contractor shall notify the Employer's Representative in writing the date in which the Contractor considers Practical Completion has been achieved and a day shall be agreed and certified in writing by the Employer's Representative.

5.3 Damages

Liquidated and Ascertained damages under the Conditions of Contract will be as set out in "Schedule Part 1" of the contract.

5.4 Tax Clearance Certificate

It will be a condition for the award of this Contract that the Contractor is able to produce promptly a Tax Clearance Certificate (unless he has a Sub-contractor's C2 Certificate).

5.5 Trade Union Membership, Pension Fund

All workers employed by the Contractor and his Sub-contractors shall be members of a recognised Trade Union.

The contractor shall be a fully paid up member of the CIF Pension / Sick Pay Scheme and all payments made in respect of employees mustbe available for inspection at all times.

5.6 Certificate of Standard

Products/materials shall either be certified as complying with the latest relevant Irish Standard Specifications and shall bear the Irish Standard mark or shall be certified to a national standard of another member state of the European Union which provides an equivalent guarantee of safety and suitability - certification to be by the National Standard Authority of Ireland.

5.7 Workmanship

Workmanship shall comply with the latest Irish, British Codes of Practice or European Standards for the work involved.

5.8 Site Safety

The Contractor must comply in all respects with the Health and Safety at Work (Construction) Regulations 2013, a copy of which is available on the website of the Health and Safety Authority.

5.9 Bond

The Contractor shall enter into a Bond with a surety acceptable to the Employer, should the Employer so require, guaranteeing the performance of the Contract. The Bond shall be for an amount equal to 25% of the Contract Sum. The maximum amount covered by the Bond shall be reduced by 50% upon the issue of the Certificate of Substantial Completion. The risk shall remain on cover from the date of issue of such Certificate for a further period of 450 days.

The Tenderer invited to provide a Bond shall legally secure the Bond as required and by the date stated in the Conditions of Contract.

The cost of providing a Bond shall be identified separately in the Summary of the tender. If the Bond is required the amount of the Employer's liability for its cost shall be limited to whatever amount has been included in the tender.

5.10 Time for Completion

Subject to and in accordance with the Conditions of Contract, the Contractor will be required to complete the (overall) Works within 3 months starting on the Contract Date (Date of letter of Acceptance), and allow for the delivery/occupation of the development.

6.0 SPECIALIST CONTRACTORS

6.1 Specialist Installers

Specialist installers approved by the manufacturer must be used on the following operations:

- Mechanical & Electrical Contractors
- Gas works Installers
- Gas Tank Installers / calor gas or similar
- Roofing Contractor
- Fire Stopping and Fire Sealing

7.0 HEALTH & SAFETY

7.1 General Requirements

The Preliminary Health & Safety Plan has been prepared by the appointed Project Supervisor Design Process (PSDP), in accordance with the requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2006 for the purpose of providing information to the Project Supervisor Construction Stage. The document specifies:

- a general description of the project and of the time within which it is intended that the project will be completed,
- appropriate information on any other work activities taking place on the site,
- where appropriate, work related to the project which will involve particular risks to the safety, health and welfare of persons at workincluding but not limited to those referred to in Schedule 1,
- the basis upon which the time for completion of the works was established, taking into account Regulation 11(1)(a) of the aforementioned,

- the conclusions drawn by designers and the project supervisor for the design process as regards the taking account of the general principles of prevention and any relevant safety and health plan of safety file, and
- the location of electricity, water and sewage connections, where appropriate, to facilitate adequate welfare facilities.

7.2 The Project Supervisor Construction Stage (PSCS)

The PSCS will be responsible for managing and co-ordinating the construction phase safety and health issues on site. However, it is noted that the presence of a PSCS does not relieve other ontractors/employers of their obligation with their statutory safety and health obligations. The main contractor shall include for the following items in relation to their role as PSCS:

7.3 Duties of Project Supervisor - Construction Stage

The PSCS shall comply with the provisions of the Safety, Health and Welfare at Work Act 2005 and the Safety, Health and Welfare at Work (Construction) Regulations 2013 (in particular Regulations 16-23) including the obligation to:

- Co-ordinate the implementation of the construction regulations by contractors; Organise the co-operation between contractors and the provision of information; Co-ordinate the reporting of accidents to the Authority;
- If Construction Work is planned to last longer than 30 working days or the volume of work is scheduled to exceed 500 person-days, the PSCS, before the work begins, shall give notice to the Health & Safety Authority in approved form (i.e. AF2), sent either – by registered post or as may be directed from time to time by the Authority.
- Provide information to the site safety representative;
- Co-ordinate the checking of safe working procedures; Co-ordinate the measures to restrict entry to the site;
- Co-ordinate the provision and maintenance of welfare facilities;
- Co-ordinate arrangements to ensure the craft, general construction workers, and security workers have a Safety Awareness card , e.g. Safe Pass and a Construction Skills card where required;
- Co-ordinate the appointment of a site safety representative where there are more than 20 persons on site;
- Appoint a safety advisor where there are more than 100 on site; Provide all necessary safety file information to the PSDP;
- Monitor the compliance of contractors and others and take corrective action where necessary Notify the authority and the client of non-compliance with any written directions issued;
- If necessary, issue directions to designers and contractors.

7.4 Project Supervisor Construction Stage Resources

The contractor shall make available, at the time of tender, detailed information relating to their competency and on resources to be allocated to discharge his duties as Project Supervisor Construction Stage. This information should include:

- Details of project specific safety management structure for the site based element of this project.

- Details of previous relevant experience as Project Supervisor Construction Stage for projects of similar size, restricted environment, construction methods etc.
- Demonstrate that all proposed site based staff have undertaken health and safety training, in particular with regard to key site hazards and that they have access Health & Safety advice either internally or via a consultant.
- Details of the proposed project team, including the Safety Advisor/Officer, with Curriculum Vitae's and anticipated reporting structure.
- An outline of the company's plant and equipment resources and testing policy.
- Demonstrate processes for fulfilling relevant duties under the Safety, Health and Welfare at Work (Construction) Regulations, 2013 including preparing the Project Specific Construction Stage Safety & Health Plan, including its intended structure and broad timescales for its development in addition to monitoring and enforcing compliance among sub-contractors.
- Full safety records for the last 3 years. These details should include all notifiable accidents/incidents and convictions in any jurisdiction. In addition, please include the number of man hours worked.
- A statement of the average annual resource levels over the past 3 years.
- A statement indicating present/future workload within the project life in order to demonstrate the capacity to undertake and properly resource this project.
- Details of the Company's quality system.

Upon appointment of the PSCS, the Construction Stage Safety & Health Plan shall be developed and submitted to the Project Supervisor Design Process for comment not less than 15 working days before commencement on site.

8.0 REPORTS

The Contractor shall provide the following documentation and reports:

8.1 Construction Programme

Construction Programme to be in critical path format. It shall include dates for issuing and signing off shop drawings, ordering and delivery of materials, start on site and progress and various elements both main contractual and subcontract.

8.2 Programme Review

Programme & progress reports shall Provided as required in the contract documents. Progress is to be reported in terms of target, percentage and actual percentage achieved on each of the elements of the building programme and shall be graphically illustrated on a bar chart.

8.3 Request for Information Sheets (RFI)

Request for information sheets to be issued as required by the contractor seven days prior to when the information is required.

8.4 Shop Drawings

Shop drawings shall be provided in respect of the following specialist works:

- Structural steel.
- Roof cladding & gutter detail.

- Pre-cast concrete elements.
- External window screens and doors.
- Steel safety handrails.
- Built-in Furniture
- Sewage Pump control systems

8.5 Certification

The contractor shall provide certificate of performance COP certification in respect of the all specialist works.

All concrete products or aggregate or products containing aggregate to be certified Pyrite Free.

The following is a non-exhaustive list of the primary elements of work where formal signing off procedures should be recorded in the Quality Plan:

- Drainage – Trench excavation; pipe laying, line and level; testing etc.
- Foundations – Setting out; formations; cleaning out; blinding; ground water etc.
- In-Situ Concrete – Setting out; formwork; scabbling; testing etc.
- Reinforcement – Size; spacing; cover; laps etc.
- Precast Concrete – Propping; temporary stability; bearing; tie reinforcement etc.
- Structural Steel – Setting out; temporary stability; connections torqued; grouting etc.
- Masonry – Setting out; bonding; mortar; movement joints; wall ties etc.
- Timber – Setting out; grading; notches; bearing; bracing etc.
- Roads/Paths/Ramps – Setting out; formations; sub base; pavement etc.
- Radon membrane and associated products installation.
- Wall insulation & wall head cavity closer.

9.0 FACILITIES, TEMPORARY WORK & SERVICES

9.1 Locations

Inform Project Lead of the intended siting of all spoil heaps, temporary works and services.

9.2 Temporary Works

Maintain, alter, adapt and move temporary works and services as necessary. Remove when no longer required and make good. Works to existing school building to fully protect the condition of existing finishes ie. Walls, ceilings and floors etc. Suitable protection measures such as the protection of floors with Corriboard Protection Sheeting should be utilized as and when required.

9.3 Accommodation / Land not included in the site

Use of land within the site hoarding for the duration of the Contract without charge may be assumed by the Contractor, provided that:

- It is used solely for the purposes of carrying out the Works.
- The use to which it is put must not involve undue risk of damage.
- Any temporary adaptations must be approved by or on behalf of the Employer before being carried out.

- Available services: To be agreed with Employer.
- It must be vacated on completion of the Works or determination of the Contract.
- When vacated, its condition must be at least equivalent to its condition at the start of the Contract.

9.4 Existing Accommodation

The existing building may not be used as temporary accommodation.

9.5 Temporary Screens

Use dust proof screen internally to prevent migration of dust to occupied areas of site internally and externally. Use plywood hoardings to protect boundary site/works at ground level.

9.6 Name Board

Obtain approval for and provide a suitable temporary name board displaying:

9.7 Lighting

During finishing work and inspection provide temporary lighting, the intensity and direction of which closely resembles that provided by the permanent installation.

9.8 Lighting & Power

Electricity supply from the Employer's mains may be used for the Works as follows:

- Supply will be metered by the employer and charged to the Contractor.
- The metering system proposed by Contractor to be approved in writing by the Employer.
- Representative in consultation with the Building Services Engineer.
- The metering system proposed being approved in writing by the Employer's Representative in consultation with the Building Services Engineer.
- The Employer will not be held responsible for the effects of any failure or restriction in supply.
- Point of supply: Existing power points within site.

9.9 Water for the Works

Water supply from the Employer's mains may be used for the Works as follows:

- Supply will be metered by the employer and charged to the Contractor.
- The metering system proposed by Contractor to be approved in writing by the Employer.
- Representative in consultation with the Building Services Engineer.
- The metering system proposed being approved in writing by the Employer's Representative in consultation with the Building Services Engineer.
- The Employer will not be held responsible for the effects of any failure or restriction in supply.
- Point of supply: Existing system with in site.

9.10 Telephone

Provide as soon as practicable a means of direct telephone communication with the Contractor's person-in-charge.

10.0 OPERATION & MAINTENANCE OF THE FINISHED WORKS

The Project Supervisor (Construction Stage) must include for co-operating with the Project Supervisor Design Process in the preparation and hand-over to the Client of the Safety File on Substantial Completion.

10.1 Building Manual

Purpose: The Building Manual (incorporating the Health and Safety File) is to be a comprehensive information source and guide for the Employer and end users providing a complete understanding of the building and its systems to enable efficient and safe operation and maintenance.

Compilation:

•Prepare all information for Contractor designed or performance specified work including as-built drawings.

•Obtain or prepare all other information to be included in the Manual.

Content:

PART 1: GENERAL: Content as clause 10.3
PART 2: BUILDING FABRIC: Content as clause 10.4
PART 3: BUILDING SERVICES: Content as clause 10.4
Presentation of Manual: As clause 10.5.

Reviewing the Manual:

Review process: Submit a complete draft. Amend in the light of any comments and resubmit. Do not proceed with production of the final copies until authorized.

Latest date for submission: 2 weeks before the date for submission of final copies.

Final copies of the Manual:

Number of copies: 3
Latest date for submission: 1 week before the date for completion stated in the contract.

As-built drawings:

Number of copies: 3
Medium: Digital/CD

10.2 Health & Safety File

Purpose: Include adequate information about the structure or materials used which might affect the health or safety of anyone carrying out construction or cleaning work or of anyone who may be affected by such work.

Contractor designed and performance specified work:
Obtain or prepare the following and submit to the Planning Supervisor:

- Details of key structural principles, including safe working floor and roof loads.

- Details of construction methods and materials, including COSHH dated data sheets, which may present residual hazards with respect to cleaning, maintenance, repair, renovation or demolition.
- General maintenance instructions including access provision and information about equipment provided for cleaning and maintaining the building fabric.
- As-built drawings.

Contractor Other information: Obtain or prepare the following and submit to the Planning Supervisor:

- The nature, location and markings of utilities and services, including emergency and fire fighting.
- Instructions for operation, maintenance, dismantling and removal of equipment and systems.
- Details of hazards associated with the materials used in the construction.
- Access requirements/restrictions.

Contractor Copies of the File:

Number of copies: 3

Latest date for submission: 1 week before the date for completion stated in the contract.

10.3 Content of the Building Manual Part 1: General

The property:

- A description of the buildings.
- Details of ownership.

The parties: Names, addresses (including e-mail) and telephone numbers of the following:

- Consultants and designers including name and number of individual to be contacted in case of emergency.
- Authorities and statutory undertakers plus copies of consents and approvals.
- Contractors, subcontractors, suppliers and manufacturers.
- Maintenance contractors.
- Operational requirements and constraints of a general nature: Include details not relevant to other parts of the Building Manual.
- The fire safety strategy for the buildings and site: Include drawings showing fire appliance routes, emergency escape routes, fire resisting doors, location of emergency and fire fighting systems, services shut-off valves, switches, etc.

10.4 Content of the Building Manual Part 2: Building Fabric

- Design criteria: Floor and roof loadings, loading restrictions, insulation values, fire ratings and other performance requirements.
- Construction of the works:
  - A detailed description of methods and materials used.
  - As-built drawings recording details of construction, together with an index.
  - Information about repair, renovation or demolition.

- Maintenance of the building fabric: Instructions for general maintenance detailing work to be done, acceptable tolerances and frequency of operation.
- Product details: Copies of manufacturers' current literature including COSHH dated data sheets and recommendations for cleaning, repair and maintenance.
- Environmental and trafficking conditions: Details of those that may result in damage/disfigurement.
- Fixtures and fittings: Schedules including manufacturer and product reference.
- Guarantees, warranties and maintenance agreements: Obtain from suppliers, subcontractors and manufacturers.
- Test certificates and reports required in the specification.

10.7 Content of the Building Manual Part 3: Building Services

- Description of the systems:
- Ensure that the Employer's staff fully understand the scope and facilities provided.
- List maximum loads, services capacity and restrictions.
- Include limitations of any user performance.

- Operation:
  - A description of the mode of operation of all systems.
  - Starting up, operating and shutting down instructions for all equipment and systems.
  - Control sequences for all systems.
  - Procedures for seasonal changeovers.
  - Procedures for fault finding.
- Diagrammatic drawings: For each system, indicating principal items of plant, equipment, valves, etc.
- Record drawings: Photo-reduced and with an index. Size: A3
- Identification of services: A legend for colour-coded services.
- Schedules (system by system) of plant, equipment, valves, etc: Include locations, duties, performance figures and unique numbers cross-referenced to the record drawings, diagrammatic drawings and schedules.
- Product details:
- Name, address and telephone number of the manufacturer of every item of plant and equipment together with catalogue list numbers.
- Manufacturers' technical literature for plant and equipment. Include detailed drawings, electrical circuit details and operating and maintenance instructions.
- Instructions for dismantling and removing equipment and systems.
- Test certificates (including but not limited to electrical circuit tests, corrosion tests, type tests, works tests, start and commissioning tests): For the plant, equipment, valves, etc., used in the installations.
- Guarantees, warranties and maintenance agreements: Obtain from subcontractors and manufacturers.
- Equipment settings: Schedules of fixed and variable equipment settings established during commissioning.

- Preventive maintenance: Recommendations for frequency and procedures to be adopted to ensure the most efficient operation of the systems.
- Lubrication: Schedules for lubricated items.
- Consumables: A list of normal consumable items.
- Spares: A list of recommended spares to be kept in stock by the Employer, being those items subject to wear or deterioration and which may involve the Employer in extended deliveries when replacements are required at some future date.
- Emergencies: Procedures, including telephone numbers for emergency services.

10.8 Presentation of the Building Manual

Format: A4 size, plastics covered, loose leaf, four-ring binders with hard covers, each indexed, divided and appropriately cover titled.

Selected drawings needed to illustrate or locate items mentioned in the Manual: Where larger than A4, to be folded and accommodated in the binders so that they may be unfolded without being detached from the rings.

As-built drawings: The main sets may form annexes to the Manual.