

HEATING & HOT WATER SYSTEM UPGRADE SPECIFICATION

Carramor Community Dwelling, Ennis Co. Clare

Replacement of Existing Heating Installation

1. Scope of Works

The Contractor shall provide all labour, materials, plant, equipment and specialist services necessary to completely replace the existing oil-fired heating installation serving the community dwelling.

The existing distribution pipework serving the building may be retained where found to be in good condition and suitable for continued use. All new plant shall be connected to the existing system and extended to serve the proposed extension.

The new boiler is to be located externally with new heating controls, manifolds, stats etc. located internally within the existing plant area.

The works shall include all builders work, electrical work, testing, commissioning and certification necessary to provide a complete operational heating and domestic hot water installation.

2. Existing Plant to be Removed

Disconnect and remove:

- Existing Firebird oil boiler.
- Existing boiler flue.
- Existing burner.
- Existing hot water cylinder.
- Existing expansion vessel.
- Existing circulating pumps.
- Existing heating controls.
- Existing programmers.
- Existing pipework within the boiler cupboard no longer required.
- Existing redundant valves.
- Existing redundant wiring.

- Existing control panel components associated with the heating installation where no longer required.

Dispose of all equipment off site.

Pipework serving existing heating circuits may remain where suitable.

Existing heating shall remain operational for as much of the construction period as practicable.

3. New Boiler

Provide and install one:

Grant Vortex Pro External Condensing Oil Boiler

Nominal Output:

120–155 kW

Complete with:

- Factory weatherproof cabinet.
- Stainless steel condensing heat exchanger.
- Riello burner.
- Integral frost protection.
- Condensate trap.
- Balanced flue.
- Boiler controls.
- Boiler thermostat.
- High limit thermostat.
- Boiler isolation valves.

The boiler shall be mounted externally on a reinforced concrete plinth.

4. Boiler Base

Construct reinforced concrete plinth complete with:

- C32/40 concrete.
- A393 reinforcement.

- 200 mm minimum thickness.
- Ducts for services.
- Finished minimum 150 mm above surrounding ground.

5. External Pipework

Provide new pre-insulated underground heating mains between the external boiler and the existing plantroom.

Provide:

- Flow pipe.
- Return pipe.
- Condensate pipe.
- Electrical duct.
- Controls duct.

Pipework shall comprise factory insulated district heating pipe suitable for buried installation.

6. Plantroom Alterations

Existing heating circuits shall terminate on a new prefabricated manifold.

Existing heating distribution pipework shall remain where practical.

Provide all new plant connections.

Install new pipework neatly with adequate access for maintenance.

Support all pipework on proprietary brackets.

Provide identification labels to all services.

7. Domestic Hot Water Cylinder

Remove the existing hot water cylinder.

Provide one new:

500 litre stainless steel twin-coil indirect hot water cylinder

Complete with:

- Factory applied insulation.

- Secondary return connection.
- Dual high-output heating coils.
- 3 kW immersion heater.
- Cylinder thermostat.
- Temperature and pressure relief valve.
- Expansion vessel.
- Drain valve.
- Air vent.
- Thermometers.
- Isolation valves.

Allow one coil for connection to the oil boiler.

The second coil shall remain capped for future renewable energy integration.

8. Circulating Pumps

Remove all existing heating pumps.

Provide new high efficiency electronically commutated circulation pumps.

Acceptable manufacturers:

- Grundfos Magna3
- Wilo Stratos Maxo

Provide separate pumps for:

- Primary boiler circuit.
- Heating circuit.
- Domestic hot water primary circuit.
- Secondary hot water return where required.

Each pump shall include:

- Isolation valves.
- Non-return valve.
- Flexible connectors.

- Drain valve.
- Local electrical isolator.

9. Low Loss Header

Provide one prefabricated low loss header complete with:

- Air separator.
- Dirt separation chamber.
- Drain valve.
- Thermometer pockets.
- Insulation jacket.

Hydraulically separate the boiler from the heating system.

10. Pressurisation Equipment

Provide:

- New expansion vessel.
- Filling loop.
- Pressure reducing valve.
- Pressure gauge.
- Pressure relief valve.
- Automatic air separator.

Expansion vessel shall be sized for the complete installation.

11. Heating Controls

The existing heating controls shall be completely removed and replaced with a **modern fully programmable Building Energy Management style control system.**

Provide:

- Weather compensated boiler controller.
- Touch screen heating controller.

- Boiler sequencing control.
- Outside air temperature sensor.
- Flow temperature sensor.
- Return temperature sensor.
- Cylinder temperature sensors.
- Frost protection.
- Pump overrun.
- Anti-cycle protection.
- Summer shutdown.
- Optimum start.
- Optimum stop.
- Holiday mode.
- Automatic daylight saving adjustment.
- Fault alarms.
- Run hour monitoring.
- Boiler lockout indication.
- Pump exercise function.

Control panel to be mounted within the existing plantroom.

12. Heating Zones

Retain the existing heating zones where possible.

Provide new motorised valves to all heating zones.

Provide new programmable digital room thermostats throughout the building.

Provide separate controls for:

- Each Bedroom.
- Living accommodation.
- Dining area.
- Proposed extension.

- Domestic hot water.

13. New Heating to Extension

Provide new insulated flow and return pipework from the existing heating system to serve the proposed extension.

Provide new radiators sized in accordance with the final heat loss calculations.

Provide thermostatic radiator valves to all new radiators.

Balance all new heating circuits.

14. Existing Pipework

Retain existing heating distribution pipework where suitable.

Power flush the complete heating installation.

Replace defective valves identified during commissioning.

All exposed pipework within the plantroom shall be reconfigured to provide a neat, logical installation.

15. Water Treatment

Power flush the complete heating installation.

Clean using approved chemical cleaner.

Refill system.

Dose with corrosion inhibitor.

Provide:

- Magnetic dirt separator.
- Air separator.

16. Oil Installation

Provide:

- New oil filter.
- Fire valve.
- Isolation valve.

- Flexible oil hose.
- Tiger Loop de-aerator.
- New oil line where necessary.

17. Electrical Works

Provide:

- New boiler electrical supply.
- New heating control panel.
- Pump wiring.
- Sensor wiring.
- Motorised valve wiring.
- Boiler interlocks.
- Frost protection wiring.
- Emergency isolation switch.
- Control relays.

Modify the existing electrical panel as required.

18. Pipework Insulation

Insulate all new pipework.

Provide removable insulation jackets to all valves, strainers and pumps.

External insulation shall be weatherproof.

19. Commissioning

Commission the complete heating installation.

Carry out:

- Hydraulic balancing.
- Combustion analysis.
- Boiler efficiency testing.

- Pump commissioning.
- Control optimisation.
- Domestic hot water commissioning.

20. Handover

Provide:

- OFTEC commissioning certificate.
- Electrical completion certificate.
- Commissioning sheets.
- Balancing certificates.
- Manufacturer warranties.
- O&M manuals.
- As-installed schematics.
- Client training.