# GENERAL DESCRIPTION OF THE PROJECT

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## General

This section of the manual confirms the extent of the Mechanical Engineering works carried out under this contract. It also confirms any design criteria followed and provides a general description of each service installed or altered during the works and details of plant/equipment. The description should be read in conjunction with the record drawings, installed equipment details and manufacturer’s literature.

## Scope of Works

The Mechanical Services Installation provided under this contract comprises:

* **Gas Service** – in each unit rising to serve gas combi boiler in 2nd floor plant cupboard. No other gas requirements.
* **Mains Cold Water Service** – MCW extended from incoming main in each unit to serve all cold water draw-off points and the boiler.
* **Hot Water** – extended from boiler in Copper Yorkshire Xpress pipework to serve all hot water draw-off points.
* **Heating** – provided by perimeter radiators, LPHW served from gas-fired boiler. Flow and return pipework in Copper Yorkshire Xpress, generally routed in floor void rising through raised computer flooring to radiators.
* **Ventilation** – installation of dirty extract fans and ductwork to remove dirty air from kitchens and WCs
* **Drainage** – New above ground foul drainage pipework system as drawings, in standard plastic Osma type uPVC with push fit/solvent weld fittings, connected into new below ground drainage system.
* **Sanitary Ware** – installation and connection of Sanitary Ware & Brassware
* **Insulation** – Thermal Insulation and labelling of pipework – by Amstech Contractors
* **Water Treatment** – flushing, cleaning, chlorination of domestic services pipework and chemical dosing of heating system – by HM&V Utilities
* **Commissioning** – Test, commission and set to work the new systems

**General Installation Method**

Heating Pipework – Copper Yorkshire Xpress pressfit

Domestic H&C Services Pipework – Copper Yorkshire Xpress pressfit

Above Ground Drainage – Plastic Osma type

Ventilation Ductwork – Circular plastic to atmosphere via air bricks

## Modifications

**To ensure the safety and integrity of the installation is maintained it is essential to keep a record of any modifications carried out.**

**At the end of Section 3 a ‘modification table’ is provided that should be completed whenever the installation is modified by the engineer carrying out the modification.**

## Basis of Design

A performance specification was issued on behalf of the Employer by Pope Consulting Ltd. The installation was then designed by ISD Consulting Engineers. The mechanical performance specification instructed the use of the following design parameters:

|  |  |
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| **Description** | **Design Parameters** |
| Weather Compensated LPHW Heating | 80/60°C - F/R at Design Winter Outside |
| Internal (Dry Resultant) Space °C | 18°C |
| Winter Outside Design °C | -4°C |
| Hot Water Generation/Storage °C | 60°C |
| Max. Hot Water at Blended Draw-off | 41°C |
| “U” Values | As architect’s schedule |
| Infiltration Rates | As CIBSE Guide |
| Noise Levels | As CIBSE Guide  |
| Pipework Design PD/velocity | 300 Pa/m max/1.0 m/s max |

## Mains Cold Water Service

**Refer to Drawings:**

**CH035043-M201 – Hot & Cold Water Services**

Mains cold water extends as a new incoming service into each unit which enters in the ground floor service cupboard / riser.

In enters the building in blue MDPE and at point of entry it adapts to copper pipework and has been installed complete with Stop Cock, Double Check Valve, Pressure Reducing Valve and Drain Cock.

The mains cold water service extends in copper pipework to serve each draw-off and service throughout the building, with isolation provided at each draw-off.

Pipework is supported using proprietary pipe clips.

The service was installed in accordance with the water bylaws with all necessary back siphonage protection to comply fully with the Water Fittings Regulations and BS EN806.

All new pipework was pressure tested before being insulated.

Prior to handover the new pipework was flushed and disinfected by the addition of chlorine in accordance with BS6700 by a specialist water treatment contractor and samples were taken for microbiological analysis. Certificates are provided in Section 7.

## Gas Service

**Refer to Drawings:**

**CH035043-M501 – Gas Service**

The utility provide / shipper has installed an external meter for each unit. The incoming service extends underground to the meter where it is fitted with a manual isolation valve.

The gas enters the building and extends to the service cupboard where it rises to the second floor to serve the boiler.

Gas pipework is installed in copper as detailed on the drawings to serve the boiler. The boiler is provided with a lever operated gas isolation valve enabling isolation for maintenance.

**Commissioning**

At completion of the gas pipework installation the system was purged and the boiler commissioned.

Certification is provided in Section 7.

## Heating Systems

**Refer to Drawings:**

**CH035043-M101 - Heating**

**General**

Each new unit is heated by a ‘wet’ heating system served by a gas fired combination boiler located in the second floor service cupboard. The boiler serves radiators on all levels of the unit and also provides hot water to all hot water outlets.

The boiler is wall mounted with an integral expansion vessel for system pressure regulation. Control of the boiler is from a wall mounted controller which allows the user to set the operating periods and temperatures.

The manufacturer’s concentric gas flues extends to atmosphere via the roof.

**Pipework**

Pipework extends from the boiler and distributes LPHW to the various heat emitters.

Pipework is installed in copper tube with Yorkshire Xpress press fit fittings and is generally routed as indicated on the drawings to serve the heat emitters as shown.

The system also incorporates automatic air eliminators at high points and drain cocks at low points.

All new pipework was pressure tested at completion and then insulated where not required to provide useful heat to the space.

**Radiators**

The system is a ‘wet’ system designed to heat the building throughout the heating season to a comfortable temperature, with individual rooms controlled by thermostatic valves on each radiator.

Radiators in the WC areas on Ground and Second floors are low surface temperature units.

**Water Treatment**

Prior to handover, a water treatment specialist flushed the new heating pipework in accordance with BSRIA Application Guide 1/2001.1 and dosed the system with an anti-corrosion fluid added at the rate recommended by the boiler manufacturer.

The heating plant and systems were commissioned at completion with certification provided in Section 7.

## Hot Water Service

**Refer to Drawings:**

**CH035043-M201 – Hot & Cold Water Services**

**General**

Hot Water is provided at mains pressure from the combination boiler to all hot water draw-off points in the building. Thermostatic mixing valves are installed on all basins to limit the delivery temperature to 41° ±2°C to prevent scalding.

**Pipework & Circulation**

From the boiler in the plantroom pipework is routed as indicated on the drawings to serve each hot water draw-off and service throughout the building.

The new pipework is installed in copper with Yorkshire Xpress press fit fittings and is supported using proprietary pipe clips.

Final pipework connections to all hot water outlets are provided with a means of isolation in emergency or for maintenance via quarter turn full flow lever action ball valves placed in an adequately accessible location.

**Trace Heating**

To maintain the temperature of water being circulated, a self regulating trace heating tape has been attached to all hot water pipework to within 2 metres of the draw off. A trace tape controller has been fitted to monitor the return water temperature and provide enough heat to the pipework to allow the return water temperature to remain above 50°C

**Thermostatic Mixing Valves**

Thermostatic mixing valves are fitted to the hot water supplies serving all wash basins as indicated on the drawings. The TMVs blend the hot water service with cold water to limit the delivery temperature to 41° ±2°C to prevent scalding.

**Commissioning**

Prior to handover the new pipework was flushed and disinfected by the addition of chlorine in accordance with BS6700 by a specialist water treatment contractor and samples were taken for microbiological analysis. Certificates are provided in Section 7.

## Mechanical Ventilation Systems

**Refer to Drawings:**

**CH035043-M301 – Ventilation**

Generally, the building is naturally ventilated through the manual opening of doors and low-level windows. However, additional mechanical ventilation is installed as follows:

**Toilet Extract**

All sanitary accommodation is provided with mechanical extract ventilation as detailed on the drawings, operating continuously in trickle ventilation (low speed) mode and switching to boost (design speed) via the lighting circuit with run on timer.

No user interaction is required. Extract air is ducted to atmosphere via plastic ductwork extending to the nearest external wall.

**General**

Manufacturer’s Literature and Instructions for each of the mechanical ventilation units/fans is provided in Section 9C.

## Above Ground Drainage

**Refer to Drawings:**

**CH035043-M401 – Above Ground Drainage**

A complete above ground system has been installed to discharge effluent and waste from the various sanitary appliances via a gravity foul drainage system into the underground drainage system as detailed on the drawings in full compliance with the Building Regulations.

All waste pipes and fittings up to 50mm are installed using MuPVC with solvent welded joints except where seal rings were required for thermal movement. The same applies to pipework and fittings over 50mm except they are uPVC with solvent welded joints.

Generally in accordance with good practice waste pipework is fixed in straight runs with all horizontal runs laid to gradients. All discharge stacks and horizontal offsets are in uPVC, supported true to line in accordance with the manufacturer’s instructions.

Access points are provided as indicated to enable the system to be tested, inspected, serviced and maintained, including sufficient space to allow the clearance of blockages via dedicated rodding points installed generally at the base of stacks, junctions and changes of direction.

Connection of waste pipes to the soil stacks is via purpose made boss type connections.

On completion the waste drainage systems were air tested with certification provided in Section 7.

## Modification Table

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