

The variable temperature (VT) heating circuit shall be equipped with dedicated duty and stand-by-circulating pumps, which shall be of the variable speed type and the constant temperature (CT) circuit shall be equipped with dedicated duty and stand-by circulating pumps which shall also be of the variable speed type.

Twin head pumps may be used; however blanking plates shall be supplied with the pumps such that systems can be maintained operable if one pump requires maintaining.

A dedicated plant deck (as described in Clause 4.01) shall be used to house all the mechanical equipment associated with the heating installation.

Distribution pipework will be extended in concealed void spaces or boxed in to the satisfaction of the contract administrator. to serve radiators of the pressed steel flat fronted panel type located generally below windows. All radiators shall have thermostat radiator valves on the flow and lockshield valves on return connections.

Pipework within voids will be thermally insulated to BS 5422 in accordance with Part L2A requirements (Non-Domestic Building Services Compliance Guide 2010) and identified in accordance with BS 1710. Final connection pipework and visible fittings will be chromium plated and run in a neat manner.

7.05 Domestic Water Services

A main's cold water service will be extended from the intake point; terminated as previously described within Section 6 "Incoming Services".

The mains cold water supply shall be distributed to feed the offices basins, sinks, tea points. Each item of sanitary ware/equipment being fed shall be complete with local isolation.

A single external watering point will be provided, comprising a WRC approved outlet complete with hose union bib tap and internal double check valve as minimum, the back flow prevention to be compliant with local water authority requirements.

Mains cold water shall be further extended to the dedicated plant deck to feed an internal grey-water storage tank domestic hot water cylinder/s and top up feed to the heating plant.

Rain water supply pipework shall be extended from the internal grey water storage tank to feed all toilet cisterns and urinals.

Back flow prevention shall be installed throughout the installation to comply with the local water authority requirements and water regulations.

Distribution pipework will be extended in concealed void spaces. Final connection pipework and visible fittings will be chromium plated and run in a neat manner.


7.06 Rainwater Recovery Systems

A rainwater recovery system will be provided.

The high level roof drainage system shall be used for collection of rainwater for use to provide cold water to toilet cisterns and urinals within the office areas.

System capacity shall be based on 24 hours storage with full capacity make up for the calculated water usage in the offices.

The rainwater shall enter a linked network of underground drainage pipes via sealed gullies at the base of the roof down pipes. This network of drainage pipes will convey the rainwater to underground tank installations.



Prior to entering the storage tank(s) the rainwater shall pass through a pre-tank filter tank or sedimentation chamber to filter out debris while diverting the majority of the water into the below ground water storage tank(s). The remaining surplus water is distributed into the general storm water drain. The pre-filter tank or sedimentation chamber shall be complete with an overflow trap connected to the general storm water drain, maintenance access facilities, anti-backflow and anti-vermin devices.

The pre-filtered rainwater shall be conveyed to an underground storage tank(s) as detailed on the drawings. The water will enter the tank(s) through an inlet calmer to prevent disturbance of the internal float switch and any sediment that may have settled in the bottom of the tank.

The main tank(s) shall be complete with an overflow trap connected to the general storm water drain, maintenance access facilities, anti-backflow and anti-vermin devices. The tank(s) overflow facility shall allow excess rainwater to flow out of the tank and promote the removal of floating particles.

When the demand within the building requires, a submersible duty/standby – duty/assist pump arrangement complete with floating 180 micron suction filters and check valves, will deliver the harvested “grey” rain water from the underground tank(s) to the internal grey water storage tank(s) on the plant deck (as described in 4.01) via further filtration to 35 microns.

The Contractor shall provide on the dedicated plant deck, internal grey water storage tank(s), sized accordingly to feed all toilets cisterns and urinals. This tank(s) will be split-compartment and shared with the boosted cold water supply in each area.

The internal grey water storage tank(s) shall be treated internally, complete with a bolted heavy duty lid, screened vent and overflow, such that the tank shall be fully suitable for the storage of potable quality water.

The internal grey water storage tank(s) shall be supported on sectional steel support frames that will be provided by the Contractor.

The internal grey water storage tank(s) shall be sectional GRP tanks, totally externally flanged with HCFC and CFC free 25mm integral insulation (minimum U value of 0.4W/m²/°C) sandwiched between the inner and outer panel. The top shall be heavy duty to support a man’s weight. The base detail will be suitably strengthened and shall be of suitable construction for sitting on the support piers. The tanks shall be to Water Regulations and WRAS recommendations.

A sealant strip and mastic film shall be bolted together with grade 316 stainless steel bolts.

A raised ball valve housing shall be provided to give a type ‘AB’ (Fluid Category 5) air gap along with spill weir overflow arrangement

Two inlet connections will be provided to the internal grey water storage tank(s): -

- Rainwater inlet

The flow of rainwater to the tank will be controlled by the rainwater control system. Water from the underground tank will be filtered to 35 micron unit prior to being delivered into the header tank.

- Mains cold water inlet.

The internal grey water storage tank(s) shall be fitted with a delayed action ball valve to BS 1212, Part 2, side entry type, complete with arm and puncture proof float – Keraflo Type.

A solenoid operated valve shall be fitted prior to the ball valve. This valve shall open in periods when there is insufficient rainwater to meet the requirements of the Office Areas served and shall fail safe in the open position.

The overflow and warning pipes from the internal grey water storage tank(s) shall be fitted with Norscreen insect screen in accordance with the Water Regulations and discharge externally in a suitable location.

A sealed removable manhole shall be provided on the top of the tank. The panels forming the top sections of the tank(s) shall be of the heavy duty type to withstand a man's weight.

Tappings for thermometers, water level sensors and float switches shall be allowed. All drain connections and outlets are to be taken off the base of the internal grey water storage tank(s). The tank(s) shall be designed to be self draining.

Water from the internal grey water storage tank(s) will pass through the following plant prior to being delivered to the respective office area toilet cisterns and urinals and appliances: -

- UV disinfection unit
- Booster set

The UV disinfection unit will be provided on the outlet of the internal grey water storage tank(s).

The unit will be piped to the internal grey water storage tank(s) outlet by the Contractor complete with isolation valves on the inlet and outlet of the UV disinfection unit and a bypass arrangement.

A Twin pump set shall be installed locally to the internal grey water storage tank(s), sized accordingly to boost the rain water from the internal header tank to the toilets cisterns and urinals being fed by the rainwater system.

The rainwater recovery system including level sensors, float switches, pumps, valves, filters and UV disinfection shall be fully controlled using a dedicated control panel supplied and installed by the Contractor.

The control system shall monitor the contents of the respective system underground rainwater storage tank(s) and its associated internal grey water storage tank(s) by means of level sensors and/or float switches.

On demand, the duty submersible pump will be operated to deliver rainwater to the internal grey water storage tank(s) via the filters. The pumps shall be duty rotated and protected by a low level switch to prevent dry running in periods of low rainfall. In the event that there is insufficient rainwater available to meet the demand of the areas being served, a solenoid operated valve shall be opened to fill the internal grey water storage tank(s) with mains cold water. The mains water solenoid valve shall fail open in the event of a power failure.

The control system shall also provide a link to the Building Management further described within the building management section of this specification.

The rainwater harvesting shall comply with the requirements for the following BREEAM Credit:

Title	Credit Reference
Water Consumption	Wat 01