Didsbury Library - New LPHW Distribution and Radiator upgrade

"Proposed HTG M5601 FIRST /GROUND FLOOR HEATING",

Description of Proposed LPHW Heating System – Didsbury Library

The proposed Low Pressure Hot Water (LPHW) heating system for the ground floor of **Didsbury Library** has been designed to deliver reliable, efficient, and zone-responsive space heating throughout the facility. The system supports both heritage-sensitive aesthetics and modern performance expectations by incorporating a blend of **new cast iron and contemporary panel radiators**.

System Overview:

Heating Medium: LPHW (Low Pressure Hot Water).

Flow/Return Temperatures: The system is designed to operate at 70°C flow and 50°C return, ensuring high energy efficiency and compatibility with low-carbon heat sources if required in future upgrades.

Pipework Distribution:

Primary flow and return pipework are distributed beneath the ground floor slab from the plant room and then rises at designated points to serve radiators.

Pipe Sizes: Primarily 15mm and 20mm F&R pipes serving individual radiators, with larger 25mm and 50mm branches from the plant room.

Final Front Zone and First Floor (FF) Dump Zone

An additional zone located at the front of the building and extending to the first floor is included specifically to act as a thermal dump zone.

This zone is designed to assist with thermal regulation, especially during part-load conditions, allowing excess flow temperature water (50°C) to be effectively cooled to the target 30°C return temperature before re-entering the system.

Radiators in this area contribute not only to occupant comfort but also ensure return temperature targets are consistently achieved, enhancing boiler or heat pump efficiency and supporting system longevity.

Radiator Strategy:

AP Mitchell Group
19 High Street, Neston, CH64 9TZ
T.: 0151 339 1222
E.: info@apmitchell.com
W.: www.apmitchell.com

A total of 34 new radiators (RAD 0-00 to RAD 0-34) are distributed throughout the building, sized to match the specific heat loss requirements of each zone.

Radiators are zoned to accommodate varying space functions such as:

Main Library

Annex Library

Toddler Library

Offices and WCs

FF Gallery

Controls:

Each radiator branch is equipped with a Danfoss PIC TRV (Pressure Independent Control Valve) to ensure balanced flow and precise temperature control.

Each zone is individually controlled by a Danfoss NovoCon S actuator, installed on the Pressure Independent Control Valves (PICVs). These valves allow specific control of the return temperature ensuring the ASHP has 30 degrees return for COP efficiency.

Clade Mater controller

The Clade master controller will be provided with an enable for the building usage times. The Controller will be enabled 30 minutes prior to building load requirements to charge the buffers 1-5. The Clade master controller is independent control system and not part of the BMS.

AP Mitchell Group
19 High Street, Neston, CH64 9TZ
T.: 0151 339 1222
E.: info@apmitchell.com
W.: www.apmitchell.com