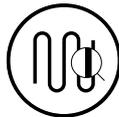


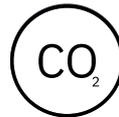
Performance Improvement of an Existing Heat Network



Reduction in Legionella risk



Estimated network losses reduction of c.70 %



c.40 % estimated CO2 emissions improvement

OVERVIEW

The development is an 80 dwelling Housing scheme in North West London, run by a local authority. All dwellings are assisted living.

Low Temperature Hot Water is generated by centralised gas boilers and supplied to dwellings via a two-pipe heat network. Cylinders supply hot water to taps and a radiator circuit connected directly to the network provided heating. Within the utility cupboard, a cold-water tank is situated directly above the hot water cylinder.

CHALLENGE

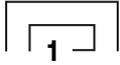
The Local Authority engaged FairHeat to carry a site investigation at the North West London development in order to investigate and determine potential heat network improvement options as part of a wider scope of improvement works of their heat network portfolio. A site audit was undertaken to carry out dwelling level tests and network & plant room inspections to determine potential measures to improve performance. A heat network model was built using site drawings, which could then be used in tandem with data and observations obtained from site in order to quantify impact of network improvement options.

Various options and a CBA were proposed, highlighting performance improvement, as well as financial and environmental impacts. Calculations were also undertaken to determine that the plant equipment and pipework were of a suitable size to deal with the varying demands/flow rates associated with the changes proposed.

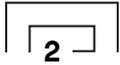
The Local Authority preferred the more intensive interventions in order to gain increased improvements and provide a better service for residents. In addition to this, the cold-water tank situated above the poorly insulated cylinder was a Legionella risk as heat loss from the cylinder in the same cupboard elevated cold water temperatures during periods of reduced demand. Therefore, it was paramount that this risk was removed.

FAIRHEAT SOLUTION

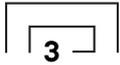
The interventions which were chosen were:



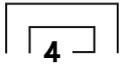
Removing hot water cylinder and cold-water storage within dwellings



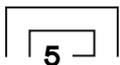
Installation of a single plate HIU (heating fed direct from the network, hot water delivered via the HIU) to drastically reduce network return temperatures and improve dwelling heating and hot water delivery



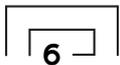
Electric showers removed and plumbed into HIU supply



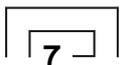
Pre-settable radiator TRVs installed to provide improved heating circuit control and reduced return temps



Install improved levels of insulation across the network to reduce heat loss and corridor overheating



Implement improved plant room BMS controls e.g. weather compensation and more stable and reduced flow temperature and pump controls



Install side stream filtration unit in plant room to improve site water quality

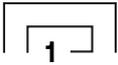


Several HIU manufacturers were investigated in order to choose one for the retrofit, based on their strong VWART results in the BESA HIU test regime. These manufacturers went through a tendering process before one was chosen. At the time this HIU had achieved the best VWART figures in the test regime in comparison to the other HIUs.

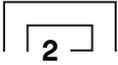
The Local Authority's contractor was managed through a pilot of the proposed dwelling interventions to determine if there would be any potential issues. In addition, the pilot was utilised to determine if the commissioning was correct and if the estimations on performance improvement and financial/environmental impact could be achieved. As the commissioning and pilot install went smoothly, there was high confidence that the benefits predicted would be delivered.

Subsequent to the pilot installation, FairHeat successfully managed the contractor to project completion, by carrying out spot commissioning checks on site and providing project and technical support to their operatives where required.

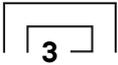
RESULTS



Reduction in Legionella risks for residents due to removal of dwelling cold-water tank.

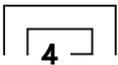


Better heating control usability for residents



System efficiency increase:

- Estimated network losses reduction of c.70 %
- Less than 100 W network losses per flat
- c.40 % estimated CO2 emissions improvement



Reduced overheating due to elevated return temps associated with cylinder charging