HEAT NETWORK EFFICIENCY SCHEME

Case Study: Council House, Coventry City Council

Optimisation Study

Summary	
Network name	Council House
Network owner / operator	Coventry City Council
Location	Coventry CV1 5RR
Number of residential / commercial customers	2
Heat source	District heating – Energy from Waste (EfW)
Total funding awarded	£8,310
Optimisation Study delivered by	Hydronic System Optimisation Ltd (Hysopt)
Top three recommendations for improvement	• Recommissioning the radiator circuits via correct hydraulic balancing will allow for a decrease in the return temperatures • Replace (old) constant-speed pumps with variable-speed pumps have better efficiency and are less likely to overflow • Putting Insulation jackets to existing heat pipe to avoid heat loss.

HEAT NETWORK
EFFICIENCY SCHEME

Overview of heat network

Coventry City Council's (CCC) Council House is connected to the Coventry District Energy Network, which sources its heat from the Energy from Waste facility. The communal heating and hot water system serves multiple customers within the building.

Details of why the project was needed

Despite recent updates in the existing building heating arrangements, including a smart Thermostatic Radiator Valve (TRV) control system, the efficiency of heat distribution within the building remains a concern. Also, the cost of heat from the district heat network has significantly increased, making it vital for CCC to optimise the use of this expensive resource. As the communal heating system uses a multi-tenant system, it is essential to ensure that heat is distributed efficiently to minimise financial burdens on the customers. Additionally, the historic and Grade II listed nature of the Council House imposes challenges when making physical alterations, necessitating a precise understanding of where improvements can be made without impacting the building's heritage aspects.

The low efficiency of the district network has highlighted the need for an optimisation study to help identify ways to reduce operational costs and improve heat distribution efficiency.

Recommendations proposed by the Optimisation Study

Hydronic System Optimisation Ltd (Hysopt) was appointed to conduct an optimisation study using a Hydraulic Digital Twin model. The key recommendations include:

- **Recommissioning Radiator Circuits:** Correct hydraulic balancing of radiator circuits can decrease return temperatures, thereby improving system efficiency.
- **Replacing Constant-Speed Pumps:** Installing variable-speed pumps will enhance energy efficiency and reduce the likelihood of overflow.
- **Control System Adjustments:** Optimising the control system to better align with the new smart TRV system will ensure efficient operation without introducing new inefficiencies.
- **Improved insulation:** Installing insulation on unlagged sections of pipework will avoid heat loss to enable savings and improve overall efficiency.

Projected benefits realised from actioning proposed measures

The improved efficiency of the Council House heat network would contribute to reducing the overall district network's inefficiencies, potentially allowing more buildings to connect to the network. Additionally, by enhancing the system's efficiency, the project will lower its operational costs, directly benefiting CCC and other building tenants.

HEAT NETWORK EFFICIENCY SCHEME

Efficiencies gained from consultancy advice

The Hysopt optimisation study offers a detailed understanding of the current inefficiencies within the system, allowing CCC to identify the most effective interventions. This digital twin modelling and simulation approach minimises the risk of unnecessary changes, particularly important given the building's historic nature. The study's findings could be applied to other heritage assets managed by CCC, potentially extending the benefits across the council's portfolio.

Benefits to network customers

The primary benefits for network customers include reduced heating costs, more reliable heating and hot water delivery, and minimised financial burden due to optimised heat usage. The Council, as the main customer, will see reduced public sector operational costs, aiding in more cost-effective public service delivery. Other tenants, including the privately operated heritage events space and co-working office (St Mary's Guildhall, and The Wheelhouse), will similarly benefit from lower energy costs.

Next steps

The findings from the optimisation study will be shared with the Facilities Management team within the Council. Any identified improvements will be communicated to the building's tenants, along with the expected financial benefits. CCC is expected to submit a Capital funding application in the upcoming HNES Rounds to secure grant funding.

Quote from heat network owner

"This study was vital for us to review our heating systems, improve their efficiency and ultimately cut down on heating costs.

"Using this model on the Council House, which is one of our more difficult buildings to make alterations to due to its age and Grade II listed status, helped us identify areas for improvement and now with further grant funding we can make sure we make those changes.

"The work is expected to be finished later this year."

- **Councillor Jim O'Boyle, Cabinet Member for Jobs, Regeneration and Climate Change**