



PROJECT SUMMARY:



CLIENT

Leeds City Council

PROJECT - £70M

**Project delivery,
metering and billing &
O&M**

THE BENEFITS:

- > One of the UK's most rapidly expanding heat networks.
- > 30km of district heating installed to date.
- > 430 green jobs created.
- > 6,467 tonnes of carbon emissions saved each year.
- > A single energy partner delivering a complete service from project delivery to long-term customer services.

PROJECT OVERVIEW

Under the streets of Leeds lie 30 kilometres of underground insulated pipes carrying one million litres of hot water to heat the city's homes, businesses, and public buildings. The heat network – named 'Leeds Providing Innovative Pro-Environment Solutions' or 'Leeds PIPES' by Year 9 pupils at the local Co-operative Academy – is not only reducing the city's carbon dioxide emissions but also lowering fuel bills for consumers and improving air quality.

The speed and scale of deployment set Leeds PIPES apart from other UK district heating schemes. While it's taken some cities decades to reach 40km of network coverage, Leeds PIPES hit the 30km mark in just six years. The network now serves more than 4,100 homes and connects 29 non-residential buildings, with significant potential for further expansion as it currently operates at 12MW of its 33MW capacity.

VITAL SOLUTION

The project's success stems from Leeds City Council's strategic vision and Vital Energi's innovative approach to network design and expansion. The initial phase focused on creating two energy centres - one at Cross Green near the Leeds Recycling and Energy Recovery Facility (RERF), which is a waste to energy plant, to convert steam into hot water, and another at Saxton Gardens, housing backup gas boilers for network resilience.

As part of a value-engineering exercise, Vital Energi identified opportunities for significant efficiency improvements by proposing an alternative network design. By positioning the main infrastructure at Saxton Gardens instead of Cross Green, the team reduced the need for satellite energy centres while maintaining network resilience. This also allowed for the optimisation of pipe sizes throughout the project.

Using prefabricated pipework modules

and assemblies enabled the Cross Green energy centre to be completed ahead of schedule. Having a large in-house design team meant that Vital Energi had the know-how and expertise to support the council and its planning department with all of the information needed to quickly update the planning applications and environmental surveys previously undertaken.

The second phase of the project involved extending Leeds PIPES along The Headrow, one of the main thoroughfares running east to west through the city centre, to connect non-residential buildings, including the Town Hall, the Art Gallery, and Civic Hall.

Further phases have seen us connect Leeds Beckett University, the Combined and Magistrates' Courts and St James's Hospital. Additional expansions have connected three high-rise blocks, totalling 393 homes.

(Right) The Cross Green Energy Centre
(Below) The network has now expanded to connect more than 4,100 homes as well as supplying heat for commercial and civic buildings.



“The trust has taken significant steps towards reducing gas consumption at the St James’s University Hospital site, by identifying buildings to be connected to the newly developed internal low-carbon heat network, which will be supplied by Combined Heat and Power (CHP) waste heat, heat pumps, and a bulk connection to the Leeds PIPES district heat network, following a Heat Sale Agreement with a fellow anchor institution Leeds City Council, supported by Vital Energi.”

CHRIS KELLY - ASSOCIATE DIRECTOR OF ESTATES AT LHIT

This impressive growth can be attributed to the strategic foundations laid during the project's initial planning stages.

Data-driven design to optimise performance

One key factor in the network's rapid expansion has been Vital Energi's data-driven approach to system design and optimisation. Drawing on over one billion real-world data points, we create highly accurate energy models that inform design, construction, and maintenance decisions. This evidence-based approach allows for maximum heat generation efficiency while minimising carbon emissions.

Securing investment for sustainable growth

Vital Energi have been instrumental in helping Leeds City Council secure funding from multiple sources, including the Green Heat Network Fund, Heat Network Investment Programme, and Public Sector Decarbonisation Scheme. Our dedicated funding team provides detailed technical information quickly, supporting successful funding applications that have enabled the network's continued expansion. This expertise proved particularly valuable during the project's introductory stages. When an initial funding application for the city centre extension failed, Vital Energi's involvement led to a successful resubmission, demonstrating the value of having experienced partners who understand both the technical requirements and funding landscapes.

Cutting fuel bills to protect vulnerable tenants

Around 1,400 of the initial 2,000 flats covered during the first phase of the

project were occupied while engineers were taking out old storage heaters and replacing them with modern radiators connected to the heat network. Those tenants can now enjoy tariffs 10-15% cheaper than those available to residents with gas boilers.

Community support goes beyond lowering heating costs

As well as helping those people connected to the network, Vital Energi has educated communities about climate change and STEM at primary and secondary schools, and university level. More broadly, we supported the community with events such as NHS health checks for local residents.

The scheme has created 430 jobs and provided 30 apprenticeships, work placements, and opportunities for doctoral students. Half of the labour was hired locally, and 60% of the budget was spent within Leeds and the surrounding area.

Helping Leeds towards its 2030 carbon neutral target

Leeds City Council has set an ambitious target to become carbon neutral by 2030, and Leeds PIPES is a key part of reaching for that goal. In 2023 alone, it cut the city's carbon footprint by the equivalent of just under 6,467 tonnes and has the potential to save the equivalent of 11,000 tonnes of carbon each year once its utilisation rises from the current 12MW towards the scheme's 33MW capacity. Current expansion plans include the South Bank extension and continuing connections to major institutions.

By combining technical knowledge with practical delivery capabilities, Vital Energi has supported every aspect of the Leeds PIPES project, from securing funding and optimising network design

to maintaining strong community relations and providing ongoing operational support. Our innovative design solutions and mastery of data analysis have allowed Leeds PIPES to expand at unprecedented speed, reaching 30 kilometres in just six years – a milestone that's taken other UK cities decades to achieve.

Stakeholder Engagement & Planning for Success

The pre-construction phase of the Leeds PIPES project laid the groundwork for the scheme's success, with extensive planning in communications, stakeholder engagement, and procurement.

Creating a Local Development Order (LDO) streamlined the planning process, by permitting specific types of district heating development whilst complying with national planning regulations. The council then merged two originally separate schemes – one for multi-storey flats, and one for the main district heating spine – into a single project. This unified approach improved efficiency, integration, and accelerated delivery. Leeds PIPES was also delivered alongside the Leeds Public Transport Improvement Programme (LPTIP) – a major highways improvement scheme – coordinating civil engineering works to minimise city-centre disruption and enabling all works to finish ahead of schedule.

The Leeds PIPES project is widely recognised as one of the most successful and respected heat network initiatives and continues to expand to this day.