

Bunhill Heat and Power

Case study



Background

Bunhill Heat and Power is Islington Council's ground-breaking, innovative scheme retrofitting district heating in an inner-city environment. It is our first district scale heat network and serves over 850 homes and two leisure centres. The heat network and energy centre were completed in winter 2012 and provide cheaper, greener heat to Islington residents.



What and why? Key features and benefits

850 homes connected

- Three council estates and a new housing development have been connected to the 1km network.
- Council residents will benefit from a reduction in heating bills.

Two leisure centres connected

- Finsbury Leisure Centre and Ironmonger Row Baths benefitting from cheaper, greener heat.

Council owned and managed

- Islington will have more control over the cost of the fuel used to heat the connected homes helping to provide a buffer for residents against rising fuel prices.
- The income generated from selling electricity can be used to help the council to reduce heat prices and create new schemes to benefit more residents.

Carbon emissions reduction

- CO₂ savings of approximately 1,800 tonnes CO₂/year.
- This represents CO₂ savings of around 60% for the estates and leisure centres compared to their previous heating systems.

Reduced fuel poverty

- Bunhill Heat and Power works to reduce fuel poverty by providing a safeguard against rising fuel prices and providing cheaper heat to residents.

Community involvement

- This is a local project with local generation, engaging residents throughout development and installation.
- The project has worked to inform residents, highlighting energy security issues and how the council and residents can work together to reduce our energy costs and become more efficient.

Local energy

The Bunhill Heat and Power network is a ground breaking project and has seen the installation of an energy centre and heat network in an inner-city environment. Bunhill energy centre houses a 1.9MWe gas CHP engine and 115m³ thermal store, and the network comprises of one kilometre of trenching which holds two kilometres of insulated district heating pipework. The £3.8 million energy centre and heat network were funded by grants secured from the Greater London Authority and the Homes and Community Agency.

Design and build

The inner-city environment presented many challenges from tight infrastructure, lack of space, parking, noise and air-quality considerations. The council undertook up-front work where possible to reduce the project risks and minimise uncertainties during the construction phase, including the design and application for planning and underground surveys. A design and build contract was commissioned alongside a 10 year maintenance contract to provide assurance to the council and in 2012 Vital Energi successfully built the energy centre and heat network.

Operation and management

The council manages the operation of the scheme, gaining revenue from electricity and heat sales. This enables Islington to get the most out of the scheme and pass savings on to residents via reduced energy bills. This approach also creates opportunities for Islington to further expand the heat network and develop further heat network opportunities across the borough and potentially across borough boundaries.

Future proofing

The current network will grow both organically and strategically, and has been 'future-proofed' with a flexible design to enable its expansion into a larger heat network. The factory fabricated, containerised equipment was delivered and installed in one day. This reduced the construction work and local disruption on site, and provides flexibility as all the equipment can be lifted out of the energy centre and relocated elsewhere. The network has been installed with pipes sized to be larger than current needs so that they have additional capacity and can carry more heat as the network expands.

Organic growth – new build connections

Bunhill Heat and Power will help new developments meet their planning energy targets, and the council are currently working to extend the network to connect new build developments to supply them low carbon heat at competitive rates. Over 160 new build homes have already been connected to the network.

What exactly is a local heat network?



A local heat network is a series of underground pipes carrying hot water between a heat source such as the Bunhill local energy centre (where heat is generated) and the buildings connected to the network. The heat network consists of two parallel pipes, one carrying hot water to buildings on the network and the other returning the cooler water to the energy centre. The heat is transported through these pipes to the boiler houses in each building. At the building, heat is transferred from the heat network to the existing central heating system that carries the heat around the buildings.

The heat network at Bunhill is fed by the local energy centre on Central Street, which produces both heat and power from a gas-fired 1.9MWe engine. Heat networks enable a wide range of sustainable heat sources to be used to provide cheaper, greener heat. In the future Bunhill Heat may supply heat from other heat sources such as waste heat from buildings, the electricity network and even the London Underground system.

Project timescales



Feasibility

August 2009–March 2010

Concept design and planning

March 2010–March 2011

OJEU Tender

February 2011–September 2011

Contract Award

November 2011

Construction

December 2011–November 2012

Communications

A film was specially created with the local community including a local school, Moreland Primary, to introduce Bunhill Heat and Power and its role producing energy locally providing more efficient heat to the local community. To view the film, follow the link on the following website:

www.islington.gov.uk/heatnetwork



“Heating for us is really important and also important for a lot of elderly people that are on this estate.”

Local residents

“Sometimes you have to jiggle things around, it's like robbing Peter to pay Paul because of the cost, but you have to have heating, you can't sit there in the cold when you get older, it's a necessity.”

Local resident



Residents

- Regular letters sent to residents
- Consultation concerning the design for the energy centre
- Resident information sessions
- Website created on the Islington.gov.uk website
- Bunhill Heat and Power short film project
- Information boards outside the Energy Centre
- Invitation to launch event Nov 2012
- Open House London event aimed at residents, September 2013

External organisations, partners, LA, professionals

- Industry focused press release
- Launch event Nov 2012 aimed at professionals, 100+ attended
- Tours and site visits organised
- Selling DE services externally to other local authorities
- Industry focused events like Green Sky Thinking - April 2013

The future

Work has started to extend the Bunhill Heat and Power network as part of the European Union-funded Celsius Project, which aims to help cities develop replicable projects to evolve into a truly energy smart city. The project is led by Gothenburg and includes Rotterdam, Cologne and Genoa as well as Islington. The Celsius project started in the spring of 2013 and will run until 2017.

Working with the GLA, London Underground and UK Power Networks, the project will help develop an in-depth understanding of how heat networks can be integrated into the urban infrastructure and so form an integral part of the wider energy network at the district and city scale.

The proposed project extension will look to capture waste heat produced from an electrical substation and London Underground ventilation shaft on City Road and will look at the integration of heat networks with the management of the existing electricity network.

The project will expand on the council's work to tackle fuel poverty and affordable warmth issues, and to investigate how heat networks can help support the move to low carbon heat supply, greater energy security, resilience and efficiency.

Map showing existing, planned and potential heat networks in and around Islington



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