



#### PROJECT SUMMARY:



#### CLIENT

Southwark Council

#### PROJECT

Water Source Heat Pumps, Boreholes

#### TIMESCALE:

2020 - 2022

#### CONTRACT VALUE:

£6.95 million

## AN INTRODUCTION

Southwark Council is striving to achieve net zero carbon emissions by 2030 and as part of its plan it is decarbonising the existing gas powered heat networks across three large council estates. The heat pump projects will see 2,175 residents at Consort, Newington and Wyndham benefit from a resilient, reliable heat

energy supply, along with improved local air quality and reduced carbon emissions. The project involves 5 water source heat pumps being retrofitted into the existing gas fuelled network, utilising water from the aquifers sat below the ground through constructed boreholes.

## OUR SOLUTION

Bespoke heat pumps were designed to fit into the three existing congested energy centres. To do this we captured the measurements by laser scanning every plant room. The hi-tech software then turns the scan into a complete and photorealistic 3D image. This allowed us to design the equipment and its placement within the energy centre with extreme accuracy and speed.

We integrated the heat pumps into legacy high temperature district heating network systems. Heat is

taken from locally drilled 120m deep boreholes, from aquifers where the water is naturally warmer, and then run through the open loop supplied heat pumps to further increase temperature, before it is fed into a heat network and pumped out to residents. This is an extremely efficient and reliable way of producing heat. As the ground water is circulated through the heat pumps, the use of evaporators and condensers ensures heat is produced at the required temperature, which is then fed into the existing

#### THE BENEFITS:

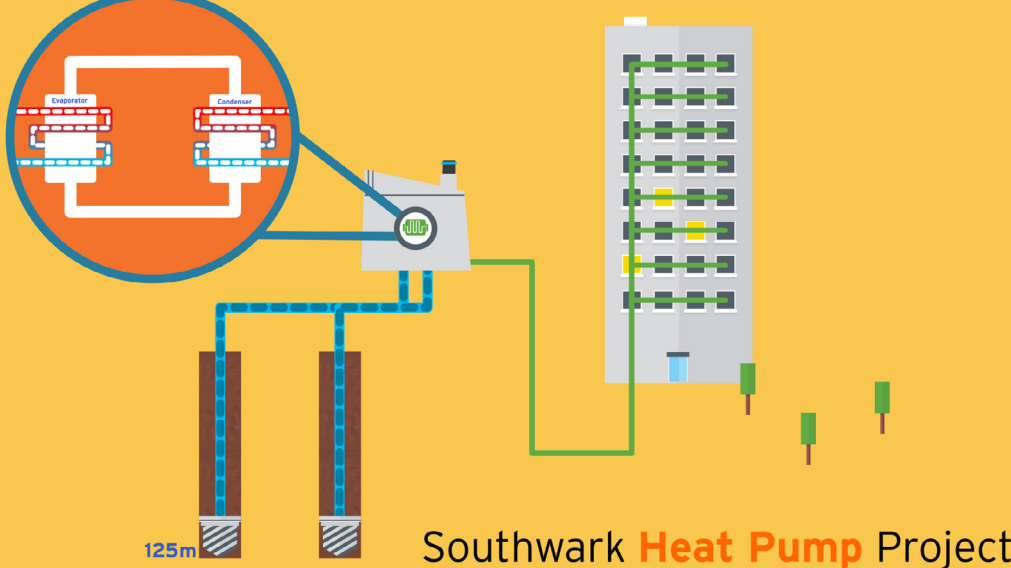
Improving air quality in the local areas

Reducing carbon emissions by 3,362 tonnes per annum

Utilising water within the aquifers via boreholes

Reliable heat and hot water supply for 2,175 residents

▶ Below: Bulb planting day with local residents at the Newington estate. Right: an illustrated overview of how the network operates.



## Southwark Heat Pump Project

“ We’re delighted to be introducing this innovative new technology to help improve local air quality and provide reliable, cost effective heating for the people living on our estates. Working with Vital Energi and with finance from the Mayor’s Fund, this decarbonised heating system takes us another step towards carbon neutrality and promises benefits for many local families.”

CLLR KIERON WILLIMAMS, CABINET MEMBER  
HOUSING MANAGEMENT & MODERNISATION

heat networks. By also making pipework modifications in each of the central plant rooms, the heat pumps were installed and connected into the existing heat network distribution pipework, alongside the existing boilers, which will no longer become the lead source.

### Overcoming challenges

One of the main challenges of the project was working on densely populated estates. We used clear and regular communications to keep residents informed about the work, and ensured they would not be disrupted with loss of heat or hot water when planning shutdowns for connections to the existing heat network.

Throughout the project a dedicated Resident Liaison Officer was on hand to answer any queries from residents. We also held weekly zoom calls and issued monthly newsletters to each property to keep residents up to date with progress, and to ensure they understood how they would benefit from the project.

We also had to coordinate with a large number of other parties in order to bring such a complex project together, from residents and local highway authorities, to the Environment Agency, drilling specialists, UK Power Networks, and more.

Precise and extensive enabling surveys were carried out by cross reference geothermal surveys, existing utility drawings, and unexploded ordnance surveys prior to carrying out the borehole drilling down to a depth of 120m to ensure that the drill location would be free from obstructions.

We also successfully completed complex excavations for the laying of 400m of buried pipework through occupied public estates littered with live services, ensuring that we kept areas open for foot traffic and emergency services if required. Taking delivery of the 9000kg heat pump units was challenging, so we were in regular communication with local highway authorities to ensure road closure and temporary traffic regulation orders were in place.

### Social Value

Although impacted from Covid-19 restrictions during the project, we delivered socio-economic benefits when possible, including engagement activities such as food bank donations and bulb planting with residents to improve the local environment.

### THE CONCLUSION:

The WSHP technology has become the primary heat source for the heat networks supplying low carbon heat to 2,175 homes with no additional costs passed on to the residents. When fully operational, the project will save 3,362 tonnes of carbon per annum. The heat pumps will also make a positive contribution to local air quality by replacing heat from the existing gas boilers, which emit harmful NOx and particulate matter.