



#### PROJECT SUMMARY:



#### CLIENT

Berkeley Group

#### PROJECT

CHP, District Heating

#### TIMESCALE:

2006–  
present

#### CONTRACT VALUE:

£5 million

#### THE BENEFITS:

- > Site-wide District Heating using CHP system providing a low-carbon supply
- > Heat Metres ensure occupants only pay for the heat they use
- > Purpose-built energy centre designed to blend in with existing, surrounding listed buildings
- > Solution that meets stringent planning obligations
- > Future proofed design for the whole development
- > Reducing impact on the environment
- > An energy scheme which evolved alongside the development

## OVERVIEW

Vital Energi is delighted our involvement with the Royal Arsenal Riverside Development in London is set to enter its second decade. The project has seen us develop a partnership we are particularly proud of on a project which continues to be one of the largest regeneration developments in London. Situated on the south bank of the Thames in Woolwich, the Royal Arsenal was established in 1671 and taken control of by the London Development Agency in 2000 who had ambitions to create a new mixed use urban quarter on the site.

The development, which is a key project under the London Plan, is being delivered by Berkeley Homes and is transforming the formerly derelict 76 acre site into a vibrant community which incorporates both the refurbishment of Grade I and II listed historic buildings and the creation of bold new modern architecture. When completed it will eventually include 3,700 new homes, shops, restaurants and cafés, offices, a hotel, community healthcare, nursery, leisure and a cinema.

## THE CHALLENGE

Vital Energi have won a number of contracts to provide a wide range of mechanical and electrical services ranging from temporary and permanent energy centres to partner with the Energy Services Company (ESCo) SSE on a number of infrastructure and district heating projects

As one of the pioneers of energy solutions which evolve as the development progresses, Vital Energi were ideally suited to meet the challenge of ensuring that every phase had the most efficient solution to meet demand.

## THE SOLUTION

Vital Energi was initially commissioned to design, supply and install an efficient energy solution to serve 461 apartments in The Armouries, a nursery, Primary Care Trust, shops and restaurants. We completed an energy centre,

designed and built to blend in with the existing surrounding buildings, which housed one 150kWe CHP engine, two 2MW gas boilers and one 70,000 litre thermal store.

▶ Vital Energi designed, built and installed the Royal Arsenal Energy centre which houses a 150kWe CHP engine, two 2MW gas boilers and one 70,000 litre thermal store



“Berkeley Homes has been working with Vital Energi at the Royal Arsenal Riverside for the past five years. During this time they have become an integral part of the delivery team providing a comprehensive service for the design, supply, installation and maintenance of the Energy Centre and District Heating network serving the site.”

DAVID BANNON, TECHNICAL DIRECTOR, BERKELEY HOMES

We also installed above and below ground heat distribution networks which connects to Vital 'Aqua Varm' Heat Interface Units (HIUs) in each home, providing instantaneous heat and hot water and integral heat meters to monitor consumption. In 2011, we connected a further 290 homes, known as The Warehouse, as well as a number of commercial buildings, including a leisure centre. At the same time, we installed a 2.5MW boiler, associated pipework, and made modifications to the building management system controls to accommodate additional heat and hot water demand. Throughout the project, Vital Energi has paid special consideration to the requirements of the local environment and the residents of adjacent buildings including ensuring noise was kept to a minimum during the installation work. The CHP plant was carefully selected to meet stringent air pollution control regulations and atmospheric dispersion modelling was carried out to see how emissions disperse in the atmosphere to ensure the installation complies with the Clean Air Act. In 2012, Vital Energi was commissioned by Berkeley Homes to carry out a feasibility study into extending the scope of the district heating network and energy centre to accommodate the entire future capacity of the site. The initial calculations concluded that the thermal output of the Energy

Centre needed to be increased to accommodate a 15 MW peak load requirement for the development, resulting in the CHP capacity increasing to 2.4MWe in order to meet the planning requirements of contributing a minimum of 65% of the sites annual heat demand. The study also investigated the best use of the limited available space in the energy centre for additional plant. The footprint, as it stands, was deemed insufficient. Working with Berkeley Homes, we developed a conceptual scheme involving the addition of two extra floors within the existing energy centre. The layout of plant was devised to enable a phased installation to suit the construction timetable and minimise initial expenditure whilst maintaining adequate access for maintenance. Due to the proximity of the existing 22m high flue at the energy centre to the new cross rail station, accurate air dispersion calculations were required to reduce the Nitrogen Oxide (NOx) output of the system in order to meet the stringent planning requirements. Most recently in 2015, Vital won the £1.9 million contract to deliver the Mechanical Infrastructure Package for blocks C and D. Block C comprises 144 dwellings over 20 floors, while block D is made up of 75 dwellings over 10 floors and the contract will see us supply, install, test and commission a variety of mechanical and electrical works.

#### THE CONCLUSION:

Vital Energi's involvement in this project stretches back 10 years, which has allowed a continuity of vision and we have been working on the development for a decade and are seeing the practical benefits of the future proofing measures incorporated into the design stage.

REDUCED CO2  
EMISSIONS BY  
**76%**

We have maintained a close relationship with the ESCo provider, SSE, and the developer, Berkeley Homes, providing input into the planning of energy provision to meet the needs of the development as it is constructed.