CASE STUDY

SSE'S HEAT NETWORK EXPANDS AT **ROYAL WOOLWICH ARSENAL**

Following the initial long-term ESCo contract signed in 2008, SSE has designed, built and operates the heat network at Woolwich Arsenal on the site of the old barracks, in South East London.

The site, developed by Berkeley Homes, required a phased expansion of the energy centre to meet the ever-growing energy demands of the expanding site – with heat demand expected to more than quadruple.

SSE lead the design process to consider how best to use the existing energy centre to service the growing needs of the site, making maximum use of the vertical height available in the energy centre, and took on the Principal Contractor role overseeing the complete package of works. All whilst maintaining reliable services to the customers already connected to the network.

OUR INITIAL **INVOLVEMENT**

SSE took the role of principal designer and principal contractor for this project and signed the initial long term ESCo contract for the site in 2008.

As part of that phase of the development, the Energy Centre equipment was sized to provide heat and private wire electricity to 450 residential and commercial customers from a gas CHP and gas boilers. SSE took the role of Principal Designer and Principal Contractor for the works within the energy centre together with installation of heating pipes and the private wire electricity network.

The private wire network installed at the time of development provided a cost effective installation solution during the early phase of the development. Now fully integrated into the local distribution network and compliant with all current regulatory requirements, offering residents regulatory protection and guaranteed service standards.

Later, in line with the site's phase two expansion, comprising another 300 residential properties, SSE installed a further gas boiler to ensure peak demands could continue to be met.

OUR HEAT NETWORKS

We specialise in the design, construction, maintenance and operation of the complete heat infrastructure for residential and commercial developments.

This includes taking on full "ESCo" responsibility for the management of the infrastructure from the Energy Centre to the customer meter and heat interface unit within the customer's premises.

We can also offer significant capital investment into schemes based on a long term asset ownership or lease model.

Our service includes full responsibility for customer service provision including; meter reading, 24/7 fault response, billing and account management including debt recovery and home moves, all provided through our UK based customer teams.

Ever expanding needs of Woolwich

The demand for the energy centre has grown five-fold since planning was granted to expand the site up to 3,800 residential units

In 2013, planning was granted to expand the site to up to 3,800 residential units; a five-fold increase in properties to be served by the energy centre. This necessitated a significant increase in plant capacity whilst working within the same energy centre building footprint. Working with our selected design consultant, SSE lead the design process to make maximum use of the vertical height available in the energy centre. Two new mezzanine floors were designed, necessitating significant structural works to the energy centre. 12 MW of boiler capacity was designed to be installed on the first of these new floors together with a new 1.1MWe CHP (the first of two) at ground level. The existing 70m3 thermal store was suitable for the expansion works and could therefore stay in situ.

As well as ensuring the design was optimised from a performance point of view, SSE was able to ensure efficient plant sizing based on known and forecast energy demands from the site. SSE takes plant capacity risk and we were able to ensure that no surplus plant "headroom" was installed, thus reducing capital costs for our client as well as lowering ongoing operating costs and therefore customer tariffs.

SSE also ensured full operability and plant replacement strategies were developed and incorporated into the design. The result is an energy centre which is designed to be safe and efficient to maintain. A practical example is new, vertically extended louvres which were installed in the energy centre shell to enable simple plant replacement when large pieces of equipment reach the end of their working lives.

Putting plans into practice

Construction of the works commenced in 2015 and SSE, working with our subcontractor, oversaw the complete package of works

Construction of the works commenced in 2015. SSE took the Principal Contractor role and, working with our subcontractor, we oversaw the complete package of works (including civil structural and M&E) as well as new utility connections to the energy centre building. One of the crucial elements of the works was the changeover of heat supplies from the energy centre to a new temporary energy centre and back again on completion of works.

The handover process was controlled and phased and SSE kept complete responsibility for supply continuity for our customers throughout.

SSE managed communications with residents and wider stakeholders throughout the process; these relationships and an ongoing dialogue are a key component of our communications strategy across our heat networks portfolio.

In parallel to the development, SSE negotiated a 10 year extension to the existing (2008) ESCo contract taking the full term to 35 years. This was a vote of confidence in SSE's track record for first class customer service and system operation as well as our ability to manage complex works and the future changes in policy and regulation which will affect the network in years to come. Key components of the new contract were a new lower heat tariff across the site as a result of the new economies of scale together with new mechanisms to deal with future plant install to accommodate future capacity and carbon saving requirements.

Potential for future projects

As the requirement for lower carbon solutions increases, SSE is now working on methods to further decarbonise heat supplies through the integration of lower carbon heat technology

Downstream of the energy centre, all heat network installation (including work inside the residential blocks) is managed by Berkeley Homes and its supply chain. This enables Berkeley to maintain complete control of cost, programme and safety for its development works. SSE provides full specifications for these works together with our on site, project, technical and commissioning expertise to help Berkeley's project team ensure efficient construction and handover of assets to SSE so that we can carry out our operational ESCo responsibilities.

SMART DISTRIBUTED ENERGY **INFRASTRUCTURE SOLUTIONS**

Designed to meet local energy needs and drive Net Zero.

SSE Energy Solutions is part of SSE plc, a UK based FTSE 100 company with 75 years' experience operating in the fast-changing energy industry.

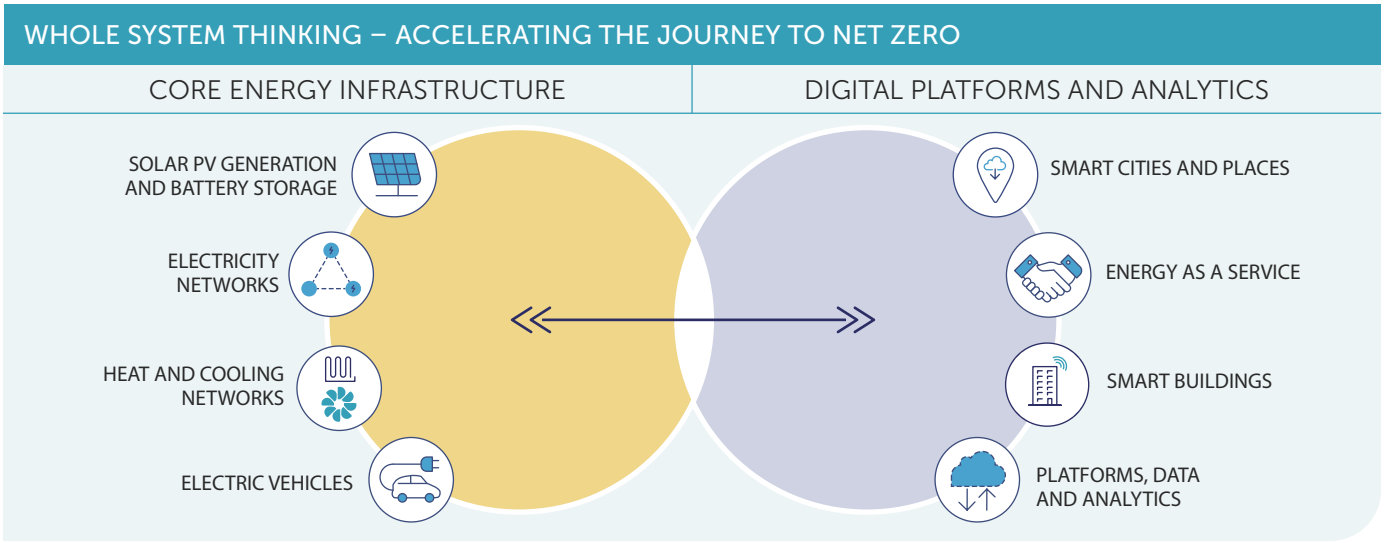
SSE Energy Solutions plays a major part in the emerging consumer-led energy system, and provides key services to enable users to benefit from new ways to optimise and manage their low carbon energy use.

Our Distributed Energy business teams adopt a whole system approach by investing in, building and connecting your localised, flexible energy assets to accelerate your path to net zero and create a more resilient energy system for the long-term.

Right now, your decision to pick SSE Energy Solutions, part of an established renewable energy company investing in all our futures, will be the right choice for you and for our environment.

Our energy solutions include:

- Electric vehicle infrastructure for public transportation and vehicle fleets
- Local electricity infrastructure including building, owning and adopting private HV networks
- Heating and cooling networks for residential, commercial and industrial consumers
- Local energy generation, including funded offsite/ onsite solar PV
- Energy storage solutions, including battery storage
- Optimising building energy consumption and use
- In-house digital twin engineering team for modelling optimised energy flows
- Data platform services to support smart buildings, places and cities
- SSE Enhance, our aggregation and trading platform for small energy assets
- A growing suite of green energy supply solutions, including corporate power purchase agreements.



Get in touch with our team to find out how we can help you

distributedenergy@sse.com || 0345 070 2019 || sseenergysolutions.co.uk

sse Energy Solutions

DE-CS-004-0121