EXETER energy NETWORK

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Exeter Energy Network

Energy Centre – Supporting Information Document

Exeter Energy Network explainer document

Introduction to the project

The Exeter Energy Network (EEN) is a flagship low-carbon infrastructure project that will provide renewable heat to buildings across the city, supporting Exeter's Net Zero 2030 ambitions. By distributing heat through a network of underground pipes from a central energy centre, the EEN will enable large public and commercial buildings to switch away from gas boilers, dramatically reducing carbon emissions and improving air quality. The network will expand to include many more buildings and potentially existing residential properties.

Backed by over £120 million in long-term infrastructure investment (of which £42m is funding from central government's "Green Heat Network Fund"), the EEN will reduce citywide carbon emissions by at least 13,000 tonnes annually. It is expected to create over 150 jobs during construction and will establish an enduring platform for innovation, local procurement, education, and skills development.

The EEN is designed to be resilient and future-ready. Heat will initially be provided by air source heat pumps and later expanded to include water source heat pumps and low-carbon waste heat from industrial sources such as the Marsh Barton Energy-from-Waste (EfW) plant and future data centres.

Heat networks are already transforming cities like Copenhagen and Bristol to name just two, and the UK government has set a target for 20% of UK heat to be supplied by such systems by 2050. Exeter now has the opportunity to join the ranks of pioneering cities, benefitting from cleaner, more secure and cost-effective energy.

Key Benefits of the Exeter Energy Network:

- ✅ Carbon savings of at least 13,000 tonnes per year with the potential to increase significantly.
- ✅ 75% emissions reduction from day one for customers replacing gas boilers with a network connection.
- ✅ Improved air quality by reducing use of gas boilers.
- ✅ Energy resilience through secure, local, low-carbon heat sources.
- ✅ Over 150 jobs created during construction of the energy centre and pipe network.
- ✅ 4–10 apprenticeships annually, in partnership with Exeter College.
- ✅ £120m+ direct investment in long-term sustainable infrastructure.
- ✅ Boost to local economy, with 12 local/regional suppliers already engaged.
- ✅ Long-term infrastructure designed to last 50–100 years and evolve with future technologies.

✅ Opportunities for biodiversity gain and community use on the remaining Grace Road site.

The proposed Energy Centre site has been carefully selected to maximise technical, environmental, and economic viability. Located close to key customers and low-carbon heat sources, it is within the area identified for energy infrastructure in Exeter's 'made' Water Lane DPD.

The design of the site and associated landscaping will protect views and access to the Riverside Valley Park, while creating opportunities for biodiversity and amenity improvement on the remaining undeveloped land.

The EEN is a transformational initiative that will support sustainable growth, community wellbeing, and Exeter's leadership in climate action.

Why does Exeter need a heat network?

Climate change presents a significant long-term risk to society, including communities across the UK. Addressing climate change is critical to ensure the resilience and wellbeing of current and future generations.

Heating for homes, businesses, and industry accounts for 37% of the UK's greenhouse gas emissions. Currently, around 85% of our heat demand is met by burning natural gas, contributing significantly to greenhouse gas emissions and local air pollution. Decarbonising how we generate and supply heat is therefore fundamental to achieving the UK's and Exeter's net zero goals.

In addition to reducing carbon emissions, a heat network strengthens Exeter's energy security. By harnessing locally generated renewable energy and waste heat, the city can reduce its dependence on imported natural gas and volatile international energy markets. Investing in home-grown, sustainable energy solutions is essential for building a more self-sufficient and resilient Exeter.

What is a heat network and how can they help?

A heat network is a proven solution to the challenge of decarbonising heating. It supplies heat from a central source (or a number of sources) to many buildings via underground, water-filled pipes – avoiding the need for gas boilers in buildings. Heat networks are able to use a wide-range of heat sources, and these can change over time.

A connection to the EEN offers customers the lowest cost way to decarbonise heat compared to alternatives such as individual building-level ASHP.

Further information about the Exeter Energy Network Energy Centre

Where will the heat come from for the network?

Air Source Heat Pumps. The energy centre will initially use air source heat pumps to provide low carbon heat. Air Source Heat Pumps are very efficient at extracting heat from the outside

air, creating approximately three units of heat for every unit of electricity put in. The ASHPs will boost the temperature and use this to heat the water that runs in the network.

Thermal Store. Thermal Store. The energy centre will also incorporate a very large thermal store, essentially a huge tank of hot water that will reduce the "peak" demand for heat, lowering carbon emissions by using less heat from gas boilers.

Gas boilers. We will have contingency measures in place to ensure we are always able to heat the connected buildings (for example during maintenance of the heat pumps, or during periods of peak demand). Our energy centre will have gas boilers that will automatically kick in so there is no loss of heat to connected buildings. Currently, gas boilers are the most cost-effective way of providing this backup but our intention is to move away from the use of gas as early as is practically possible. The alternative is electric boilers. However, there is not currently sufficient grid capacity in Exeter to generate enough heat from e-boilers, and they are expensive to run whilst green taxes remain on electricity.

Future heat sources:

Water Source Heat Pumps. We have identified up to 20MW of latent heat that can be extracted from the Canal or River Exe. Water Source Heat Pumps (WSHPs) will take heat from the River Exe, boost it to the required temperatures and use this to heat the Exeter Energy Network.

Energy From Waste. Marsh Barton's Energy-from-Waste (EfW) facility currently processes residual waste that cannot be recycled, generating electricity for the grid. However, a large portion of the heat generated is currently unused. By capturing and redirecting this waste heat into the EEN, the project can harness a valuable, low-carbon source of energy that would otherwise go to waste.

Data Centre. Data centres generate substantial amounts of low-grade waste heat, which is often expelled into the atmosphere. Exeter Energy Ltd will work proactively with public and private sector partners to explore opportunities to facilitate the development of a data centre elsewhere in the city, specifically designed to supply waste heat to the network.

Why has Grace Road Field been chosen for our Energy Centre?

An assessment of multiple potential energy centre sites across the city has been carried out. The proposed location has been found to be the most suitable for a number of reasons. The most important of these is the proximity of the site to a number of potential sources of low-carbon energy as described above.

This site is uniquely positioned to access those sources of heat whilst also being close enough to key customers across the city to make the scheme economically viable to install.

Other reasons for choosing the site include: The site is on land that is being designated for a potential energy centre by Exeter City Council in the Water Lane SPD the site allows a practical route to connect the Energy Centre to the city via a network of underground hot water pipes; and, it is close to proposed housing developments west of the River Exe which will all require low-carbon heating systems to meet building regulations.

The full list of alternative sites that has been considered is provided in the Sequential Test document that is supplied as part of the Energy Centre planning application.

Is the site part of the Riverside Valley Park?

Grace Road Fields is in the valley park but not in the area which is managed by the wildlife trust. The area managed by the trust is further away from the urban part of Exeter and is open to the public. The project is committed to working with the wildlife trust to ensure access to the park is not affected during the construction and operation of the energy centre.

How will the energy centre affect the Riverside Valley Park?

Views into the site from the Riverside Valley Park will be obscured by the line of mature trees which stand along the canal towpath, and there will be further tree planting as part of the development.

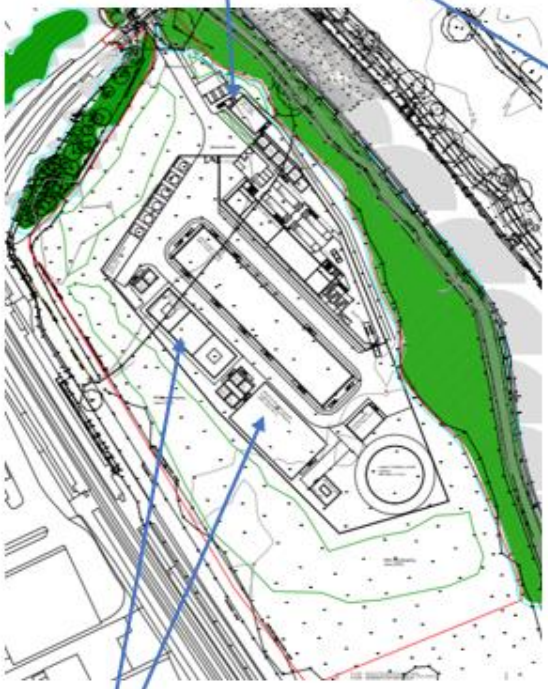
The Energy Centre will occupy approximately ¼ of the Grace Road site. Our planning application originally contained a data centre and required a larger area within the Grace Road Field site. Following further consultation we have removed the data centre, and have reworked the Energy Centre site to reduce the land take, leaving the rest of the field available for enhanced nature and public amenity space. We will explore opportunities to work with the Council to deliver a fantastic space for nature and amenity on the remainder of the site, to realise significantly greater biodiversity improvements and social value.

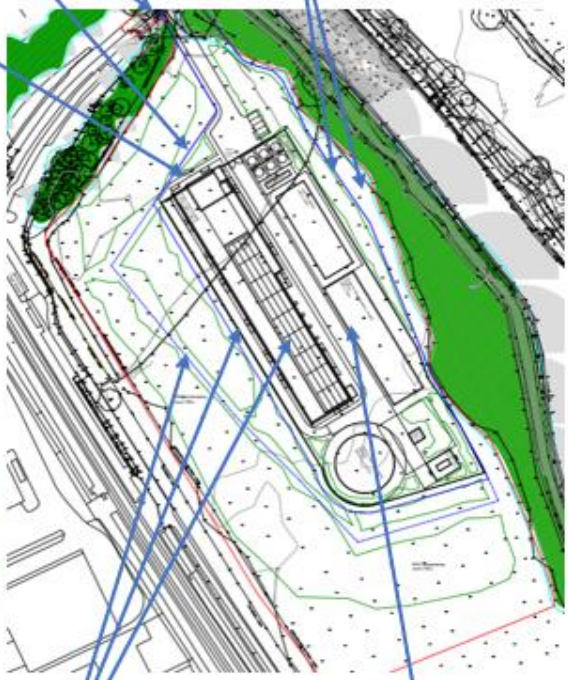
How have we amended our plans for the Energy Centre?

Gatehouse building removed and integrated with main building. Façade becomes main entrance

Landscaped area increased, entrance meadow habitat and hard surface reduced. Raised table to facilitate access.

Data centre removed. Site inset from tree boundary. Allows more scope for landscaping along the canal edge reinforcing CSW characteristics and screening from tow path. Screening to building behind by boilers





Air source pump and external buildings removed. Air source integrated onto roof of the building.

Building aligned with railway to respond to setting. All associated buildings removed. More space for landscaping to include meadow and wetland habitat. Air source heat pumps on roof.

Building arrangement rationalized. Placed behind the energy building and between the trees. Space made for possible water source pump at a later date.

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Get in Touch

If you're interested in finding out more about the project please get in touch. We'd love to hear from you.

You can also find more information on our **website:** exeter.energy
Email us at: exeter@1energy.uk