

Comberton Low Carbon Heat Network FAQ

PROJECT OVERVIEW

Q. What does the project consist of?

A. The project will install three Ground Source Heat Pumps. These are a form of renewable, low carbon heating system. The Heat Pumps draw energy from “ground loops” in 200m deep vertical boreholes and upgrade the temperature of this energy to a level that can be used to heat buildings and provide hot water. The boreholes will be drilled in the college car park. Heat from the Heat Pumps will be distributed to buildings around the college via a network of hot water pipes.

Q. What is the cost of the project and who is paying for it?

A. The total cost of the project is £3 million. The college has secured a £1.9m grant from central Government towards this cost. The balance of investment is coming from Cambridgeshire County Council who will recover their costs via an operating lease with the college.

Q. What are the benefits for the college?

A. The project will take the college off oil heating. This will reduce its carbon emissions and replace end of life oil boilers with the new heating system. The project will also save the school money relative to replacing and operating oil boilers.

Q. Who is delivering the work?

A. The project is being delivered by the County Council’s engineering partner Bouygues Energies & Services (pronounced “Bweeg”) and their subcontractors. Bouygues Energies & Services is an industry leader in energy efficiency, renewable energy and industrial transformation. It has an extensive track record of delivering energy efficiency and renewable energy projects in schools and other sites across Cambridgeshire.

Q. When will construction start and how long will it last?

A. Construction starts/started in late October 2021. The whole project will complete by September 2022. Grant funded works will complete by the end of March 2022.

TECHNICAL

Q. What type of heat pumps will be used?

A. Three Carrier 235 kW_{thermal} ground source heat pumps have been chosen to match the site's heat demand.

Q. What temperature heat will be provided to the radiators?

A. The heat pumps will provide heat at 65°C in order to meet the needs of the existing radiators. Fan Convactor Units will be replaced with low temperature Fan Convactor Units as part of the project.

Q. Why ground source rather than air source heat pumps?

A. At the scale of this project, and with the grant available from Government, ground source represents the most efficient and economically attractive option.

SAFETY

Q. Is there a risk of fire or explosion from the heat pumps?

A. No. Heat pumps don't feature combustion or combustible fuels so are lower fire or explosion risk than boilers.

IMPACT ON RESIDENTS

Q. Will there be a noise impact?

A. There won't be a noise impact in operation. The heat pumps are quieter than a conventional boiler. There will be some noise during construction. The construction plans will minimise the period for which noise is produced. Construction work will be restricted to normal weekday working hours and Saturday mornings. At the nearest buildings, borehole drilling rig noise will be approximately as loud as a vacuum cleaner.

Q. Will there be any visual impact?

A. No. The boreholes do not have any above ground structure, simply an inspection cover at ground level. The heat pumps themselves will be inside an existing underground plant room. The network pipes distributing hot water around the site will be a mix of buried pipes and pipes attached to buildings.

ECOLOGICAL & ENVIRONMENTAL

Q. Will there be adverse ecological impacts of the projects?

A. No. The driver for the projects is environmental benefit. We recognise that carbon savings are not the only environmental issue. The boreholes will be drilled in existing tarmacked car park. Clearance around trees has been allowed to protect them from damage to root structures. We have also conducted ecological assessments to confirm no risk to ecology, due to their proximity to fields and trees.

Q. Is there a risk of contaminants being released into the ground?

A. No. The heat pumps are closed loop systems so don't release liquid into the ground. They will also feature monitoring and detection systems to identify any minimise any leaks and the fluid in the ground loops is environmentally benign.

Q. Aren't the heat pumps powered by electricity? Won't the electricity consumption increase carbon emissions?

A. The heat pumps do use electricity to pump energy from a low temperature in the ground to a high temperature for the schools' heating systems. However, the heat pumps will supply around 3 units of heat for each unit of electricity they consume, so are much more efficient and less carbon intensive than either conventional electric heating or fossil fuel heating.

Heat pumps are recognised by Government and environmental groups as one of the main technologies for decarbonising heating.

Q. What are the carbon emissions savings?

A. The low carbon heat network will save 233 tonnes of CO₂ emissions in the first year of operation. This is a 66% reduction in the carbon emissions from the college's heating. Over time, as the electricity used to drive the heat pumps is decarbonised, even more the carbon savings will increase to 313 tonnes, an 89% reduction.

MISCELLANEOUS

Q. Can local residents be supplied with heating from the site?

A. Unfortunately not. The costs of connecting from the sites to residents make this unfeasible. Cambridgeshire County Council is building a low carbon heat network in Swaffham Prior to supply domestic customers and, if this is successful, we may look to reproduce this elsewhere in the county where there is a demand.

Q. How will the Council ensure that the project isn't a cost to local council tax payers?

A. The project is designed so that the operating lease revenues fully cover the cost of the project. This includes the cost of repaying the Council's borrowing used to finance the projects.

Q. Will similar projects be rolled out to other schools once this project is delivered?

A. The Council is continuing to work with schools on a range of energy efficiency and carbon saving projects and is keen to see this project, and other low carbon heating measures, reproduced elsewhere.