

Pitts Cleave Industrial Estate

Tavistock, Devon; GSHP data.



Introduction

Opened in March 2007 the Tavy Business Centre at Pitts Cleave is heated by a state of the art 25kW pellet boiler, supported by Ground Source Heat Pumps from borehole systems. The Centre is made up of 11 offices and four workshops as well as communal facilities including a reception, conference room and kitchen. It is owned and managed by West Devon Borough Council and was funded by the Council, the South West RDA and the European Regional Development Fund.

Project development

- The vision was for a range of industrial units to provide space for new and expanding businesses. The units achieve high current standards for environmental performance in line with the development brief.
- The design required high levels of natural ventilation and light with minimal draw on the service providers for power, water and waste. This is through the provision of a high performing building, with high levels of natural lighting and ventilation and renewable energy solutions including a biomass boiler for the business centre.
- The professional team were tasked with delivering buildings that achieved high quality environmental standards. The buildings have been designed using a restrictive palette of materials to compliment their location within the Dartmoor National Park. These include a steel portal frame, with rendered panel walls, cedar panelling and green powder coated windows with slate sills.
- The team took a holistic and whole life approach to the building, the site and its sustainability credentials. This would include meeting a performance rating of "very good" using the BREEAM standards.

Rationale of installation

Reasons for choosing ground source heat pumps at the time included

- Established technology for delivering low cost heat;
- Require minimal maintenance;
- Low operating costs;
- Numerous installers and suppliers in the SW
- To collect actual performance data for future projects, bearing in mind minimal manufacturers' data available.

Costs and benefits

The project was delivered directly by the SWRDA using funding from the funding partners.

Project costings

- Project cost = £3.4M
- Construction cost = £3.1M
- Business centre only cost = £890k (which equates to £2,094 / m²)
- Industrial units only cost = £2.2M (which equates to £1,100 / m²)

The development displaces approximately 8,000 litres of oil/year.

There was no grant specifically for the boiler.

Design of the scheme was jointly commissioned with the RDA which was developing other units on the same estate. This gave the opportunity of installing different technologies in close proximity.

Milestone dates

- Commenced on site: June 2005
- Practical completion: May 2006
- Official opening: March 2007

Technical details

Installer

Geothermal International Ltd with Controls Company Ltd as specialist suppliers/installers.

Boreholes

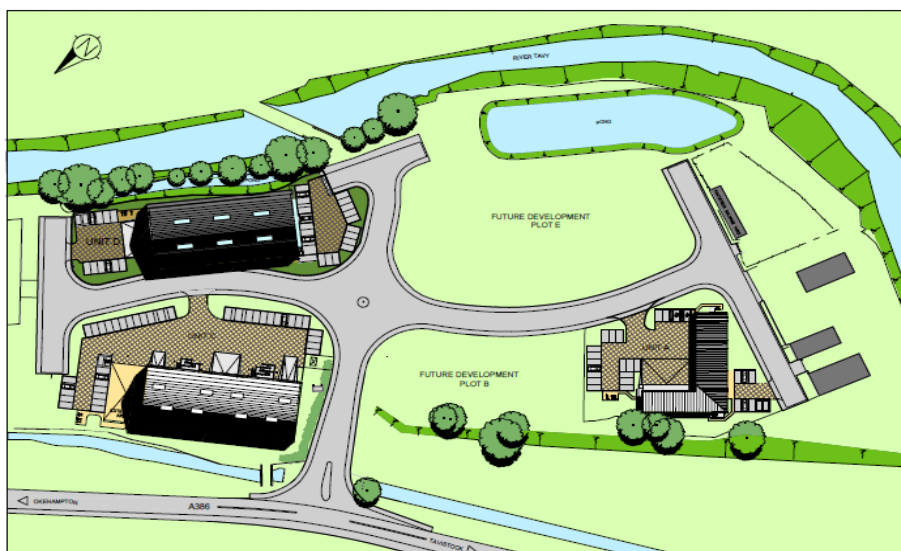
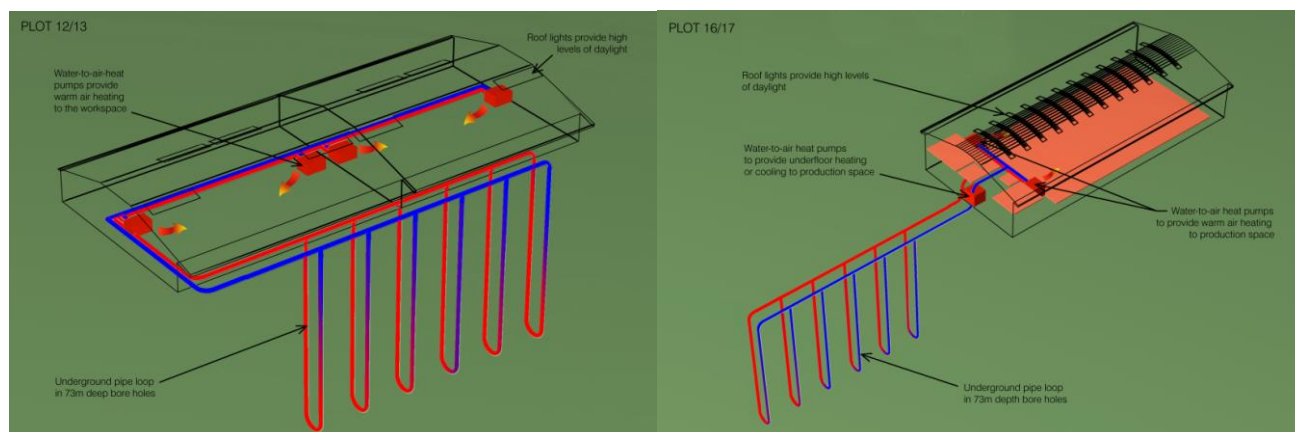
12 x 73 m depth bores serving Units C and D, providing water at 14 °C fed to separate water and air heat exchangers.

Performance

60kWth supplying under floor heating and air conditioning to the 2 units. E.g. the largest Unit receives 8kWth for its office and 32kWth for its workshop from the GSHP system.

Energy options

The site is off grid for gas and LPG was not permitted by the Environment Agency. GSHP was considered the most efficient way of using electricity in a heating system.



Wider benefits

The pellet boiler and ground source heat pump provide a low carbon heating solution for the business centre. The buildings are achieving a reduction in carbon dioxide emissions of between 20 to 30% compared to a legislatively compliant building.

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