

CASE HISTORY

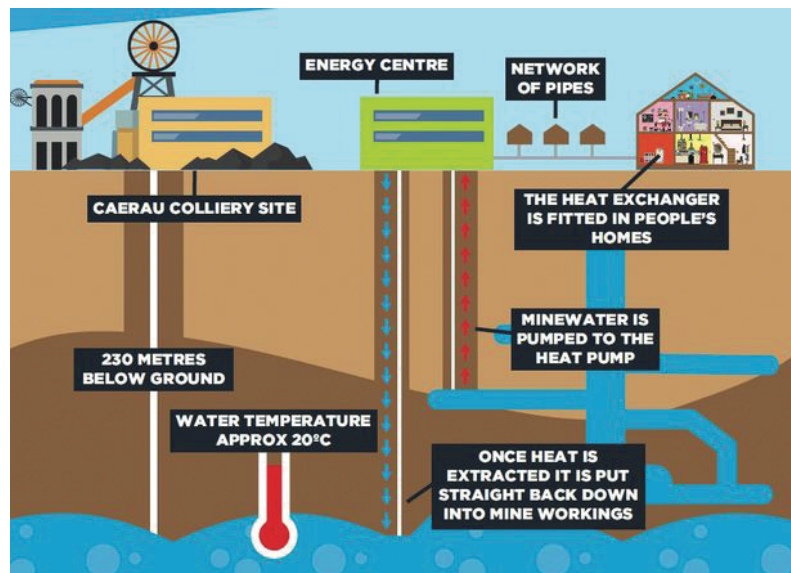
Application: **Groundwater Investigation**

Technology: **Temperature Conductivity**

Location: **Caerau, South Wales**

The British Geological Survey (BGS) hired Robertson Geo Engineers to provide data on the groundwaters of a disused mine in the town of Caerau which will be converted into a geothermal energy centre. The data contributes to research by the BGS which aims to locate and categorise similar mines based on their geothermal energy potential, creating a heat map of the UK's geothermal resources.

Such work has attracted a £6.5 million investment by the UK government for repurposing Caerau mines into a source of geothermal energy using heat pump technology to further heat the warm mine waters. These waters would be passed through heat exchangers to provide heating to the homes of Caerau, creating the largest mine water heating network in the UK. Projects like this have the potential to not only revolutionise green energy in the UK, but also to minimise pollution from mine waters and protect the invaluable ecosystems of these rural communities.



Plan of the proposed heating scheme (Image courtesy of Bridgend county borough council).

A large array of probes saw applications on this job. Data attained by the Temperature-Conductivity probe was particularly useful as it provided a continuous log of fluid data down the entire 230m depth of the borehole.

Temperature data advised the BGS on the geothermal potential of groundwater at depths where mine workings were located. Conductivity data can be used to determine the level of solutes in the water which may be deposited in the networks pipes once extraction starts, increasing the maintenance costs.

The data collected is therefore crucial to determine the economic viability of this project and contributes to a greater understanding of the UK'S green energy resources.

Right: Temperature Conductivity data extracted from the borehole at Caerau Colliery. The left half represents fluid conditions close to the surface, whilst the right represents deeper fluids. It shows how even a modest warming of around 8°C is enough to allow extraction of geothermal energy.

