Empowered

Mine Water Heat For Community Energy

Alex Lockton

Alex.Lockton@empoweredprojects.co.uk

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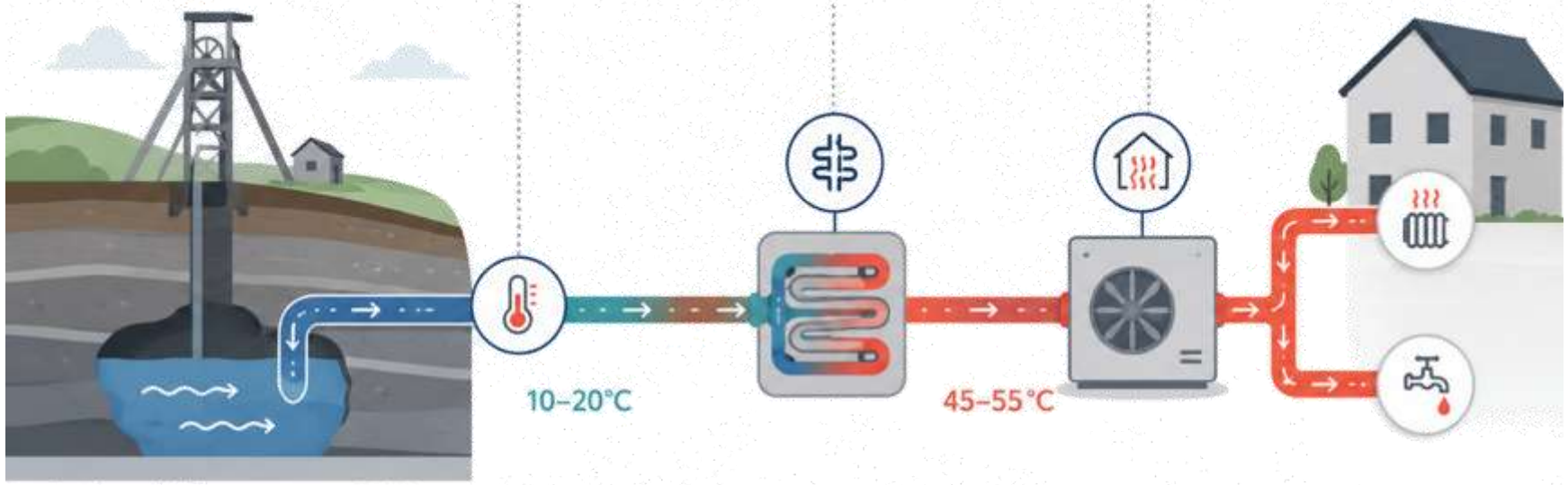
How it works?

1. Water naturally enters former mine workings after mining ceased and pumps switched off.
2. Geothermal energy heats the mine water to temperatures typically ranging from 10–20°C.
3. Heat is extracted from the mine water using a heat exchanger.
4. Heat pump raises the temperature to 45–55 °C for space heating & hot water.

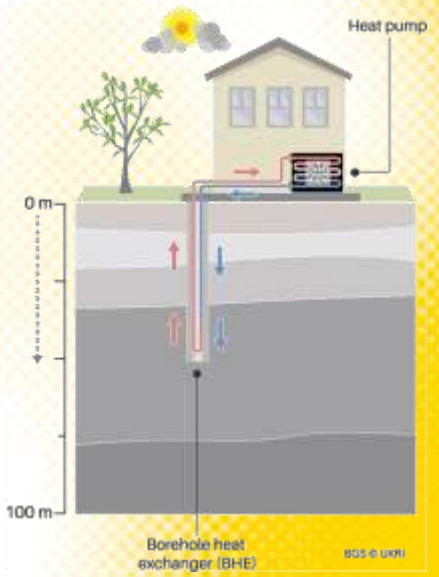


MINE WATER SOURCE → NATURAL HEATING → HEAT EXTRACTION → HEATING & HOT WATER

Types of Mine Heating Systems

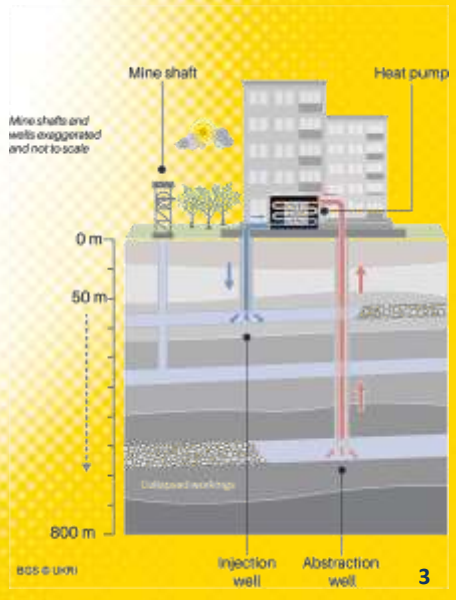
Closed-loop

1. A sealed heat exchanger is submerged in a mine water borehole.
2. Heat transfer fluid absorbs mine water geothermal heat.
3. A Heat Pump then extracts the geothermal heat and returns the chilled fluid back to the submerged heat exchanger.



Open-loop

1. Mine water is pumped to the surface via a borehole.
2. Heat exchanger transfers mine water heat to an isolated Heat Pump circuit.
3. The cooled mine water is then reinjected back into the mine workings.



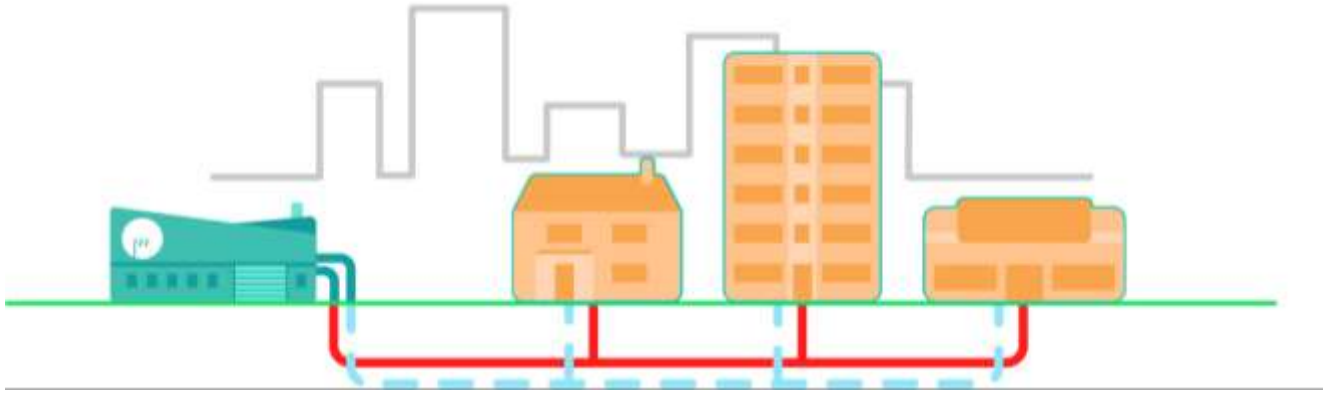
Why choose Mine Water Heat?

- **Constant Temperature** – 12-14°C year-round, regardless of weather.
- **Reclaims Mining Heritage** – giving abandoned mines a sustainable future.
- **Scalable & Local Heating** – can serve a single building or an entire town.
- **Reduced Energy Costs** – stable costs not tied to volatile gas prices, with minimal transmission losses.
- **Low Carbon Emissions** – mine water heat significantly cuts greenhouse gas emissions.

District Heating Networks

District Heating supplies heat from a central source to consumers; from a small cluster of buildings to an entire city.

- **Utilising Waste Heat** – from industrial operations to mine water heat.
- **Reduced Consumer Bills** – bill savings
- **Catalyst for local growth** – drives regeneration and attracts new business.
- **Cost-effective low-carbon heat distribution**



What makes a good site?

Site Requirements

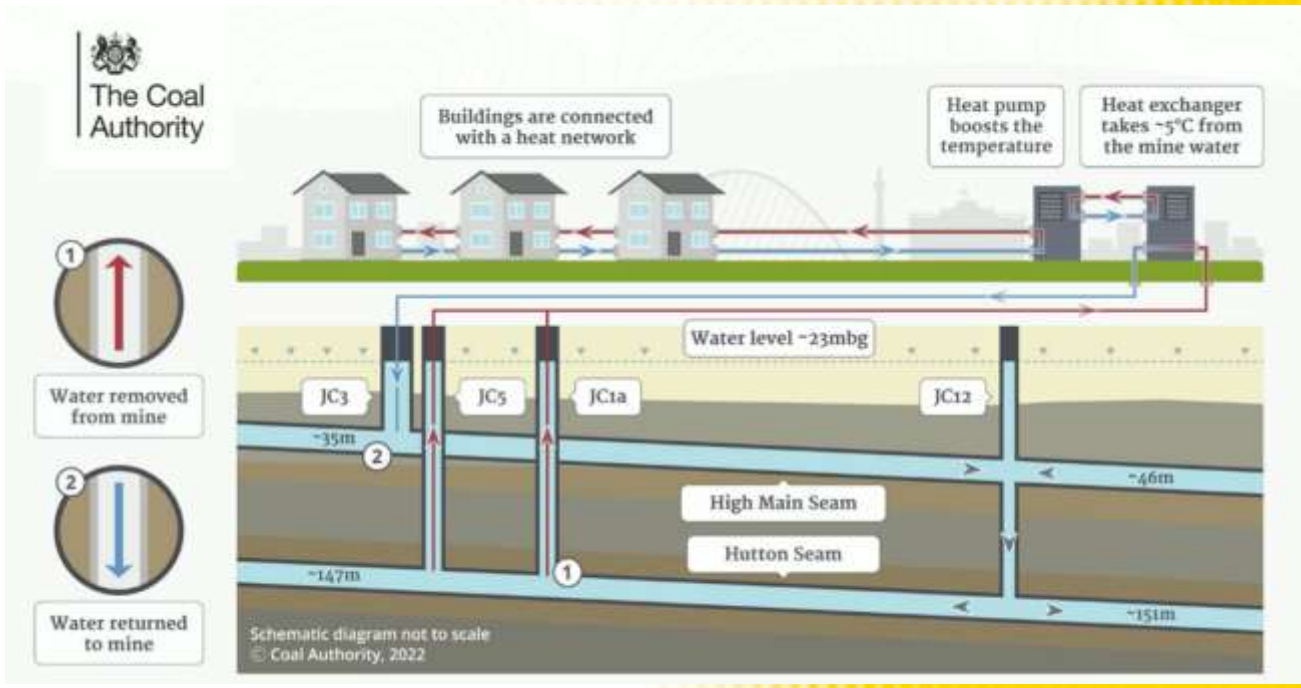
- Heat demand & anchor loads
- Suitable grid & utility connections
- Space for energy centre and network infrastructure
- Near a mine

Case Study - Gateshead District Heat Network

UK's first large-scale deployment of mine water geothermal energy for district heating.

Gateshead extracts heat from flooded, abandoned coal mines to provide low-carbon heat to the local community

- Supplies heat to 350 homes, public & commercial buildings.
- 6.1MW Peak Output (equivalent to 5000 homes at peak demand)
- CO_2 savings of 1,800 tonnes/year



Why it may be interesting for Community Energy

Heat source for a community owned district heating scheme and/or microgrid

Can be linked to multiple residential and commercial properties

Can be linked to above ground power generation to power the network

Potential for additional revenue opportunities to add to revenue stack

Potential for additional funding from Heat Network funding as well as GCEF

Should be universally Politically popular and particularly welcome in historic mining communities

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