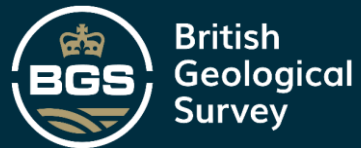




# The UK Geothermal Platform



Policy, targets	<b>Accelerating Geothermal</b>	Incentives, risk insurance, grants Finance models
Technical de-risking and cost reduction	Streamlined licensing, regulation	<b>Data availability + accessibility</b>
Demonstrators, innovation, research	Long term energy supply contracts	Social engagement
Exploration programme	Skilled workforce	Standards for scalability

## Countries with greater deployment of geothermal energy have open data platforms

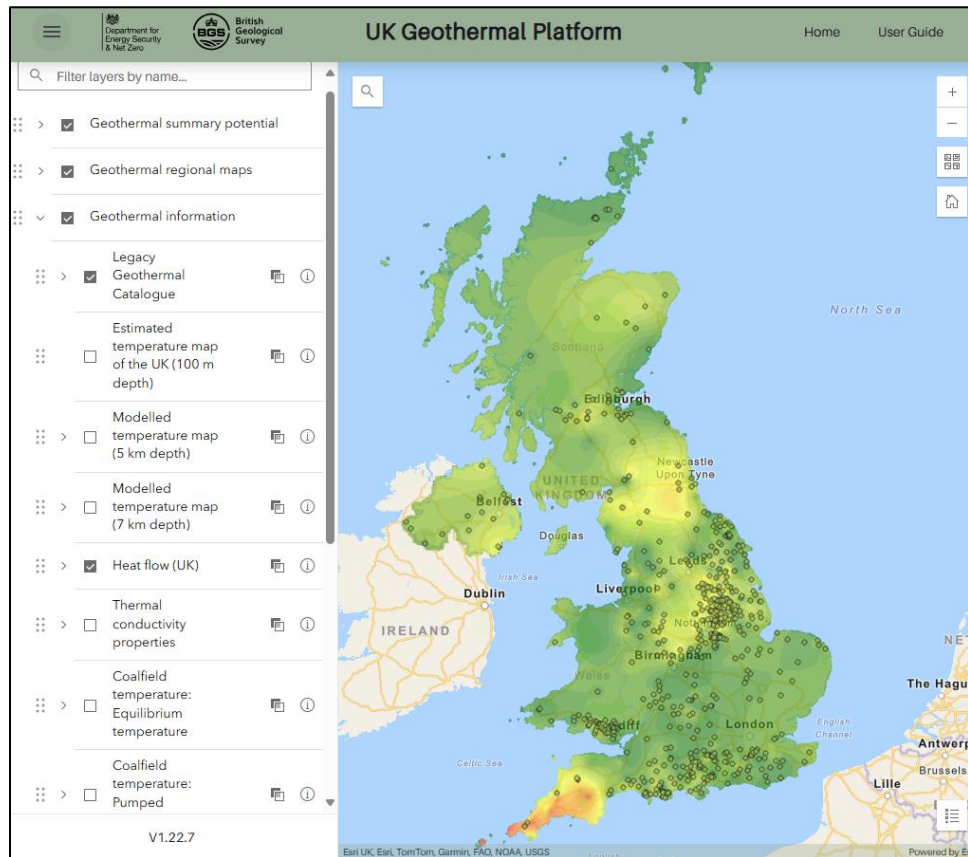
(e.g. Germany, France, Netherlands, Hungary)



**The UK Geothermal Platform  
 launched in August 2025**

# UK Geothermal Platform

- A geothermal energy information hub. Freely available
- **Website, data access page, user guide**
- 90 geoscientific datasets in a **map explorer**
- Includes data from environmental agencies, Mining Remediation Authority etc.
- Funded by UK Government Department for Energy Security and Net Zero. Delivered and maintained by the British Geological Survey
- Open Government Licence (OGL) in map explorer allows for commercial use



# Who is it for?



**Policy Maker**

Shaping Geothermal Policy



**Local and Regional  
Government**

Driving Geothermal Adoption



**Regulator /  
Government Body**

Overseeing Subsurface Heat



**Geothermal Developer**

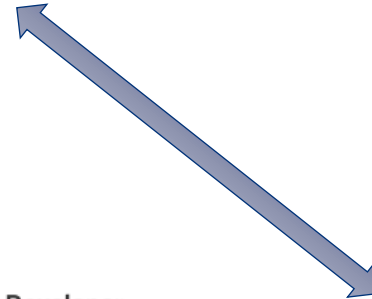
Building Geothermal Solutions



**Researcher**

Advancing Geothermal Knowledge

Geothermal potential,  
opportunity maps, **summary  
layers**

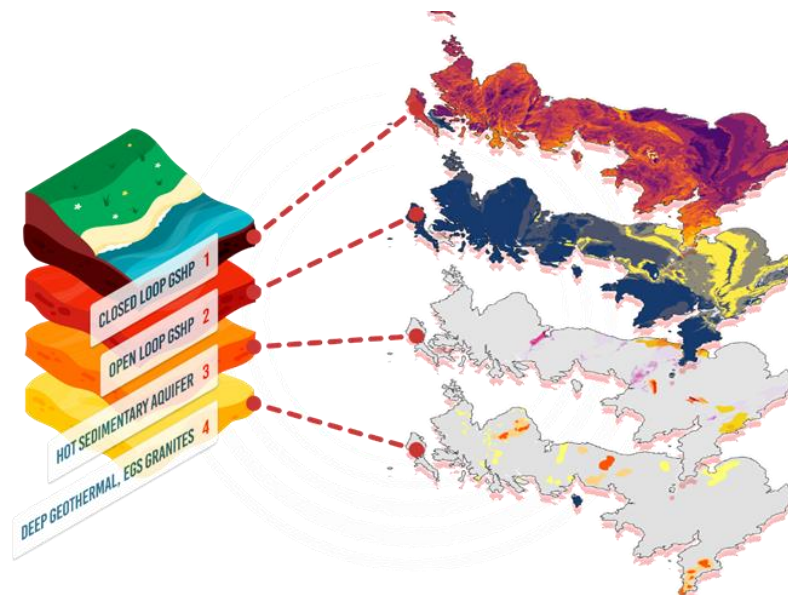
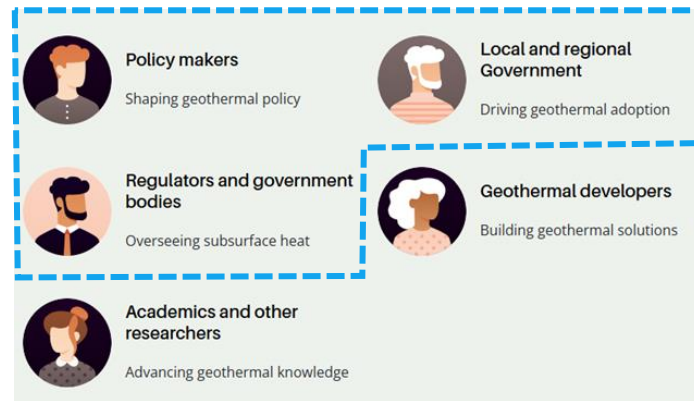


Detailed data,  
information

# Summary layers

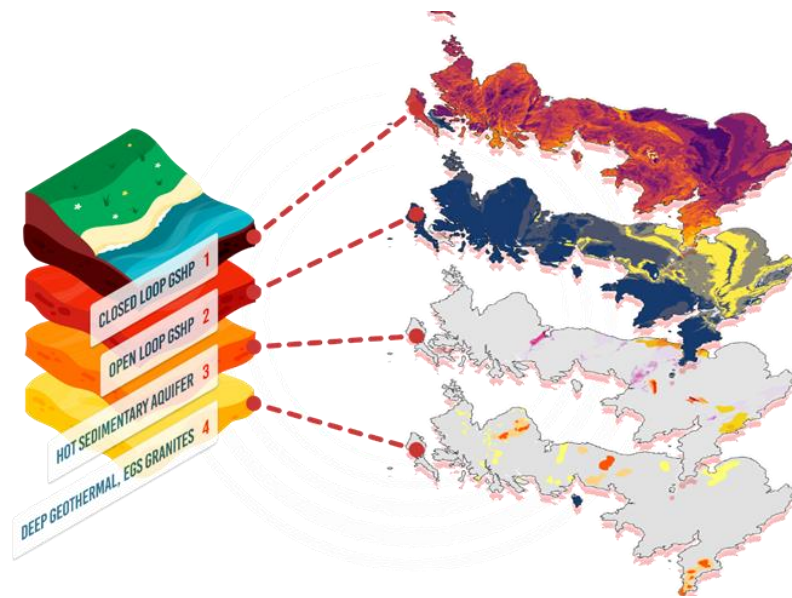
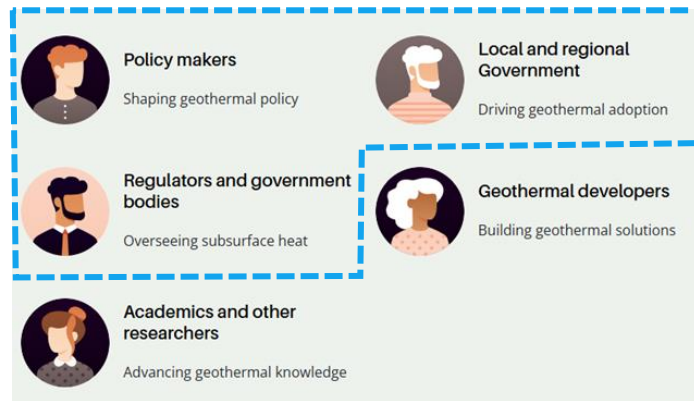
# GB Summary layers

- Pre-feasibility, screening level information
- Information suitable for non-specialists – **makes geothermal energy visible**
- Delivered as 1km sided hex-cells
- Output fields specified to be useful for **heat policy, heat networks, national zoning model**



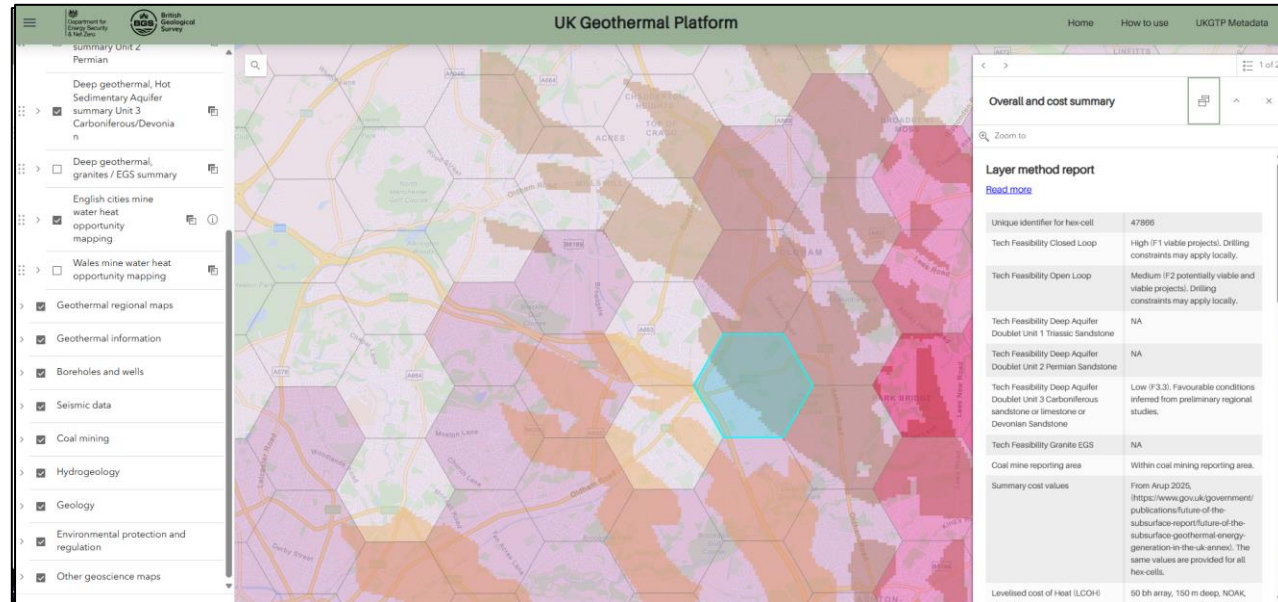
# GB Summary layers

- Overview layer includes Arup/DESNZ (2025) cost data
- Closed loop GSHP array
- Open loop GSHP array
- Deep geothermal - hot sedimentary aquifer (hydrothermal) for direct use, multi-depth > 1.5 km
- Deep geothermal, petrothermal/engineered geothermal systems (EGS), granites (qualitative)



# My school needs a heat decarbonisation plan – can I use geothermal energy here?

1. Go to the overview summary layer and get a feel for the options at your site
2. Investigate the different geothermal technology summary layers
3. Engage with a specialist to explore more detailed options



# Overview summary layer

UK Geothermal Platform
Home   How to use   UKGTP Metadata

Filter layers by name...

- Geothermal summary potential
- Overall and cost summary
- Closed loop GSHP summary
- Open loop GSHP summary
- Deep geothermal, Hot Sedimentary Aquifer summary Unit 1 Triassic
- Deep geothermal, Hot Sedimentary Aquifer summary Unit 2 Permian
- Deep geothermal, Hot Sedimentary Aquifer summary Unit 3 Carboniferous/Devonian
- Deep geothermal,

### Overall and cost summary

Zoom to

Tech Feasibility Closed Loop	High (F1 viable projects). Drilling constraints may apply locally.
Tech Feasibility Open Loop	Medium (F2 potentially viable and viable projects). Drilling constraints may apply locally.
Tech Feasibility Deep Aquifer Doublet Unit 1 Triassic Sandstone	NA
Tech Feasibility Deep Aquifer Doublet Unit 2 Permian Sandstone	NA
Tech Feasibility Deep Aquifer Doublet Unit 3 Carboniferous sandstone or limestone or Devonian Sandstone	Low (F3.3). Favourable conditions inferred from preliminary regional studies.
Tech Feasibility Granite EGS	NA
Coal mine reporting area	Within coal mining reporting area.

V1.24.0
Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS
Powered by Esri

# Overview summary layer

UK Geothermal Platform

Home How to use UKGTP Metadata

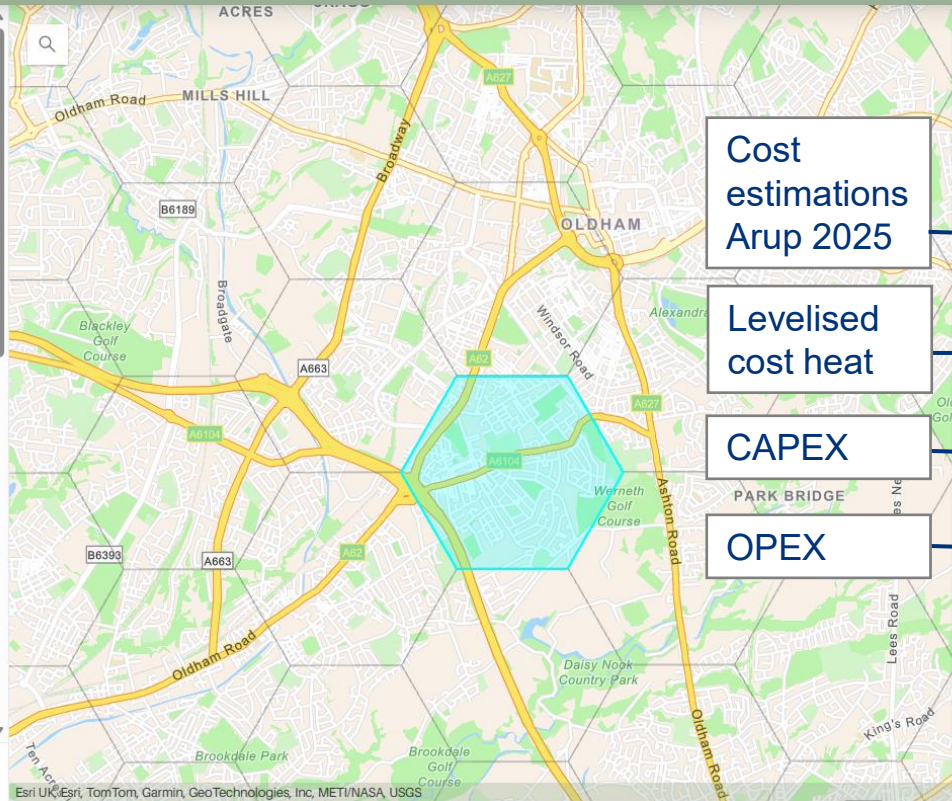
Filter layers by name...

- Geothermal summary potential
  - Overall and cost summary
  - Closed loop GSHP summary
  - Open loop GSHP summary
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 1 Triassic
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 2 Permian
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 3 Carboniferous/Devonian
  - Deep geothermal,

V1.24.0

Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA USGS

Powered by Esri



Overall and cost summary

Zoom to

Summary cost values	From Arup 2025, ( <a href="https://www.gov.uk/government/publications/uk-geothermal-energy-review-and-cost-estimations">https://www.gov.uk/government/publications/uk-geothermal-energy-review-and-cost-estimations</a> )
Levelised cost of Heat (LCOH) closed loop	50 bh array, 150 m deep, NOAK, DHN85, med cost of Arup 2025: 44 £/MWh (low 32; high 52).
CAPEX costs closed loop	50 bh array, 150 m deep, NOAK, DHN85, med cost of Arup 2025: 2378 £/kW (low 1520; high 3155).
OPEX costs closed loop	50 bh array, 150 m deep, NOAK, DHN85, med cost of Arup 2025: fixed OPEX is 2550 £/MW (low 2040; high 3060), var OPEX is 2.15 £/MWh (low 1.55; high 2.4).
Levelised cost of Heat (LCOH) open loop	1 doublet, NOAK, DHN85, med cost of Arup 2025: 31 £/MWh (low 18; high 47).
CAPEX costs open loop	1 doublet, NOAK, DHN85

# Closed loop GSHP summary layer

UK Geothermal Platform

Home How to use UKGTP Metadata

Filter layers by name...

- Geothermal summary potential
  - Overall and cost summary
  - Closed loop GSHP summary
  - Open loop GSHP summary
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 1 Triassic
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 2 Permian
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 3 Carboniferous/Devonian
  - Deep geothermal,

V1.24.0

Technology details

Estimated heat extractable from 50 boreholes (kW)

Heat supplied (after heat pump)

Closed loop GSHP summary

Zoom to

Geothermal technology	GSHP Closed loop.
Technology description	Estimated technical potential value for 150 m deep closed loop borehole. A spacing of 6-10 m between boreholes is common. Assumed 2000 operating hours, full load. Heat pump COP = 4.
Heat extractable from 1 borehole (kW)	Estimated c. 5.8 kW from a single borehole.
Heat extractable from 50 boreholes (kW)	Estimated c. 290 kW from 50 boreholes.
Total annual heat energy extractable from 50 boreholes (kWh)	Estimated c. 580000 kWh of energy extracted annually from 50 boreholes, assuming 2000 hours operation.
Heat supplied from heat pump with 1 borehole (kW)	Estimated c. 7.7 kW supplied from an installation with a single borehole.

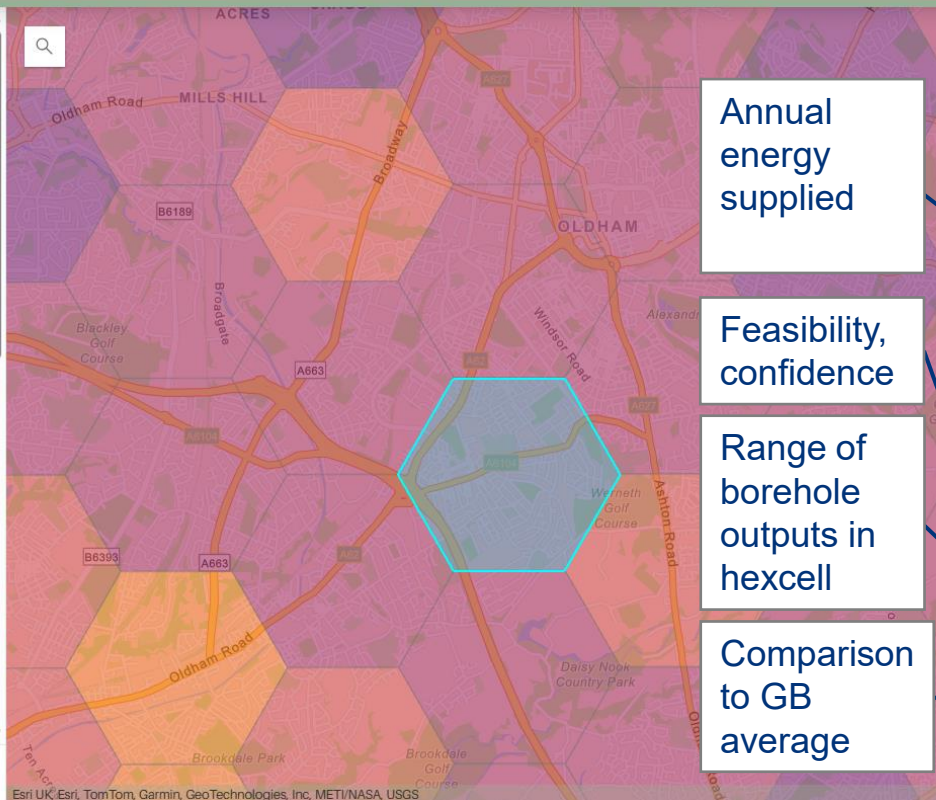
Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS

Powered by Esri

# Closed loop GSHP summary layer

Filter layers by name...

- Geothermal summary potential
  - Overall and cost summary
  - Closed loop GSHP summary
  - Open loop GSHP summary
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 1 Triassic
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 2 Permian
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 3 Carboniferous/Devonian
  - Deep geothermal,



Closed loop GSHP summary

Zoom to

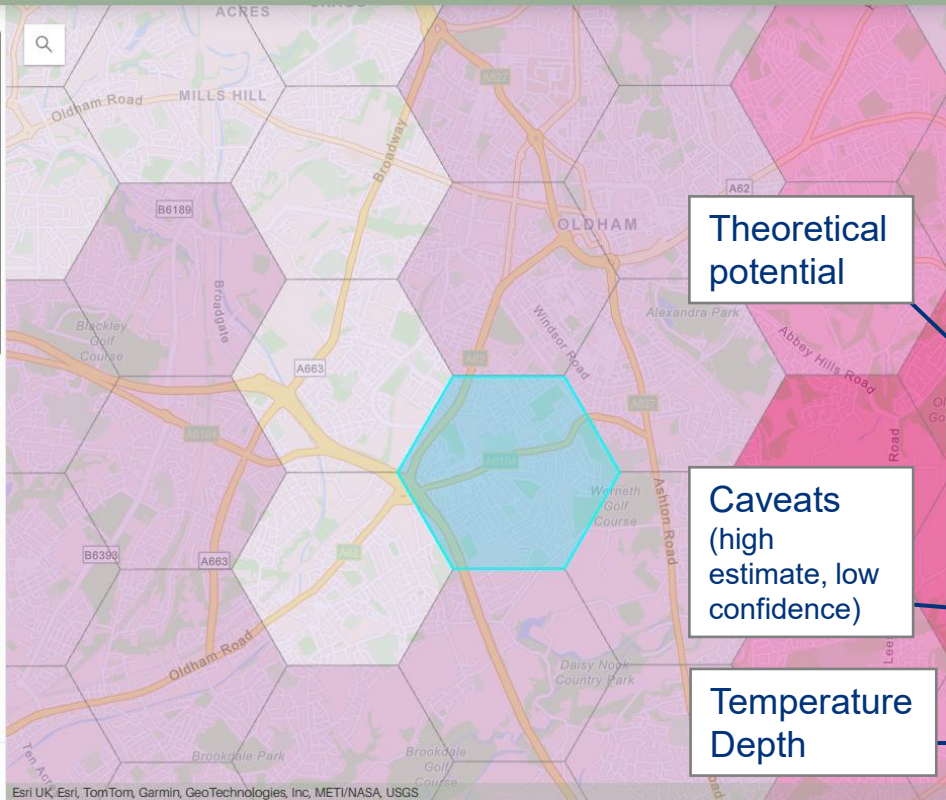
Total annual heat energy supplied from heat pump with 50 boreholes (kWh)	Estimated c. 773300 kWh of energy supplied annually from an installation with 50 boreholes, assuming 2000 hours operation.
Ground (input) temperature (°C)	Estimated c. 12.7 °C subsurface temperature at 75 m depth.
Technical feasibility descriptive (UNFC in brackets).	High (F1 viable projects). Drilling constraints may apply locally.
Confidence (UNFC in brackets).	Moderate (G2).
Min, Max, Average description of the hex-cell heat output values	Single borehole output in this hexcell ranges from 5.5 - 8.7 kW. Area weighted average is 5.8 kW.
Relative heat extractable	Single borehole output estimation of 5.8 kW, is less than/equal to the GB average (GB average is 6.4

# Deep geothermal Unit 3 Carboniferous Limestone



Filter layers by name...

- Geothermal summary potential
  - Overall and cost summary
  - Closed loop GSHP summary
  - Open loop GSHP summary
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 1 Triassic
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 2 Permian
  - Deep geothermal, Hot Sedimentary Aquifer summary Unit 3 Carboniferous/Devonian
  - Deep geothermal,



2 of 2

### Deep geothermal, Hot Sedimentary Aquifer summary Unit 3 Carboniferous/Devonian

Zoom to

Unit 3 Carboniferous sandstone or limestone or Devonian sandstone: heat extractable from 1 well doublet (kW)	Theoretical potential estimated c. 33588 kW from a single well doublet.
Unit 3 Carboniferous sandstone or limestone or Devonian sandstone: total annual heat energy extractable from 1 well doublet (kWh)	Theoretical potential estimated c. 201528000 kWh of energy from a single well doublet, assuming 6000 hours annual operation. High values due to thickness of aquifer not likely to be technically recoverable.
Unit 3 Carboniferous sandstone or limestone or Devonian sandstone: ground temperature (degC)	Estimated temperature c. 47 °C at top aquifer depth, where top aquifer depth is approximately -1176 m relative to Ordnance Datum.

Theoretical potential

Caveats (high estimate, low confidence)

Temperature Depth

# Mine water heat

UK Geothermal Platform
Home   How to use   UKGTP Metadata

- Deep geothermal, granites / EGS summary
- English cities mine water heat opportunity mapping
- Wales mine water heat opportunity mapping
- Geothermal regional maps
- Geothermal information
- Boreholes and wells
- Seismic data
- Coal mining
- Waste Heat From Treatment
- Mine Water Treatment

### English cities mine water heat opportunity mapping

Zoom to

City name	Manc_Opportunity
Opportunity	Good

data.gov.uk | Data publisher

Publishers Coal Authority Mine Water Heat...

**Mine Water Heat Opportunity Mapping for 10 Cities in England**

Followers: **0**

Publisher: Coal Authority

Datasets: **29**

Licence: UK Open Government Licence (OGL)

**Mine Water Heat Opportunity Mapping for 10 Cities in England**

This is a collection of Opportunity Maps for mine water heat, produced for the Department of Energy Security and Net Zero, and their contractor AECOM, covering the following 10 cities: Birmingham, Bristol, Coventry, Leeds, Manchester, Newcastle, Nottingham, Sheffield, Stoke-on-Trent, Sunderland. Also included is a report outlining the methodology criteria for the opportunity map assessment. The dataset has been developed using Coal Authority data, consisting of Underground Workings data, and Environmental Data, and a bespoke assessment methodology. It consists of 15m x 15m square grid cells, containing attribution of Good, Possible, Challenging on the basis of the opportunity method criteria and expert input.

In November 2024, the Coal Authority changed its name to the Mining Remediation Authority to better reflect its mission and continued commitment to environmental sustainability, safety, and community support.

**Data and Resources**

10 Cities Opportunity Maps

Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/NASA, USGS | The Mining Remediation Authority is the trading name of the Coal Authority © The Mining Remediation Authority 2025. All rights reserved

# Datasets, models, reports

# Maps, models made accessible

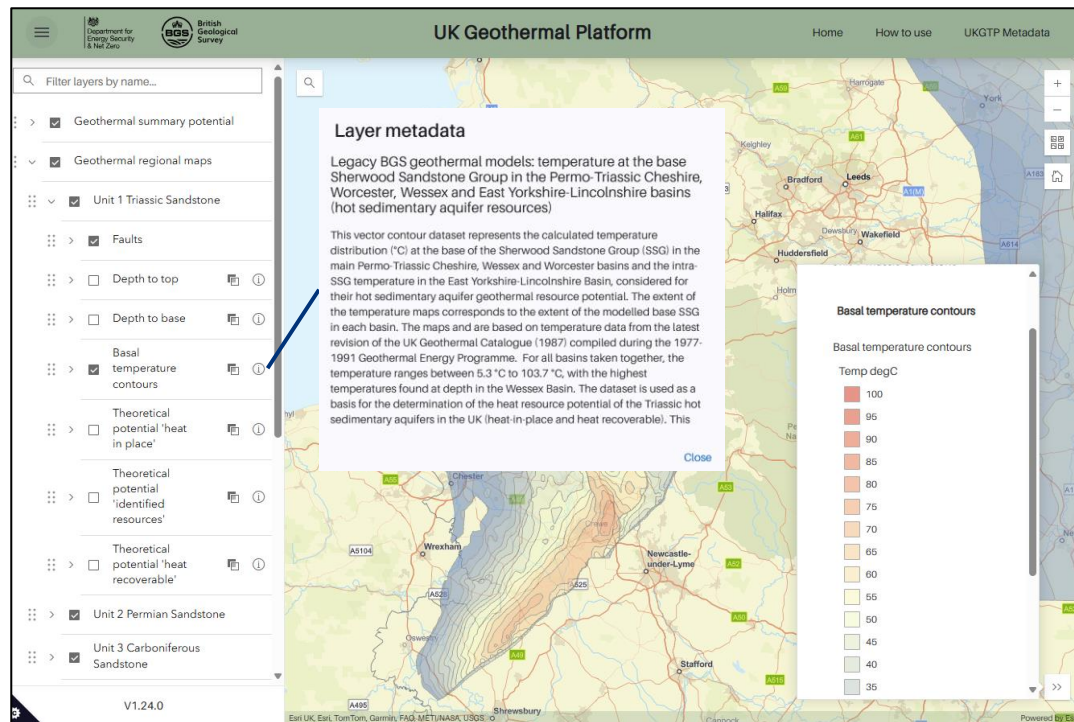
90 layers from a range of data sources

BGS geothermal maps, models digitally accessible e.g.

- Heat flow
- Thermal properties
- Geothermal catalogue
- Depth
- Temperature
- Theoretical potential

Plus environmental, groundwater, coal mine, borehole, seismic etc. data layers

Example of a legacy temperature map



# Map explorer

[Home](#)   [How to use](#)   [UKGTP Metadata](#)

## UK Geothermal Platform

- Geothermal summary potential
- Geothermal regional maps
- Geothermal information
  - Legacy Geothermal Catalogue
  - Estimated temperature map of the UK (100 m depth)
  - Modelled temperature map (5 km depth)
  - Modelled temperature map (7 km depth)
  - Heat flow (UK)
  - Thermal conductivity properties
  - Coalfield temperature: Equilibrium temperature
  - Coalfield



< > 1 of 51

### Thermal conductivity properties

Minimum thermal conductivity ( $\text{Wm}^{-1}\text{K}^{-1}$ )	1.3
Maximum thermal conductivity ( $\text{Wm}^{-1}\text{K}^{-1}$ )	1.3
Average thermal conductivity ( $\text{Wm}^{-1}\text{K}^{-1}$ )	1.3
Minimum thermal diffusivity ( $\text{m}^2\text{s}^{-1}$ )	0.0509
Maximum thermal diffusivity ( $\text{m}^2\text{s}^{-1}$ )	0.0509
Average thermal diffusivity ( $\text{m}^2\text{s}^{-1}$ )	0.0509
Minimum specific heat ( $\text{J.kg}^{-1}\text{K}^{-1}$ )	0.92
Maximum specific heat ( $\text{J.kg}^{-1}\text{K}^{-1}$ )	0.92
Average specific heat ( $\text{J.kg}^{-1}\text{K}^{-1}$ )	0.92
Minimum density ( $\text{kg.m}^{-3}$ )	2.4
Maximum density ( $\text{kg.m}^{-3}$ )	2.4
Geology description 1	Dominant superficial cover is: Alluvial

V1.23.1
Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS
Powered by Esri

# Data access web page


Over 60 legacy  
geothermal  
reports  
available online


## Data access


To complement the [map explorer](#) we have additional types of geothermal data and information. You can search and download data, access key reports and regulatory guidance, and explore relevant screening tools and time-series data from selected geothermal monitoring sites.




## Quick links

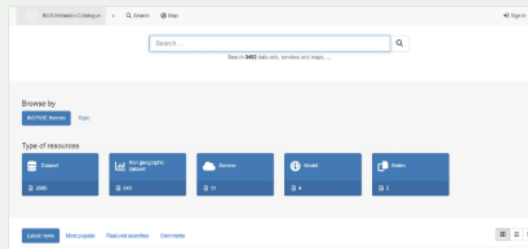
 [Data search and downloads](#)

 [Reports](#)

 [Other summary and screening tools](#)

 [Time-series data](#)

## Data search and downloads



Discover, browse, query and download datasets within our data catalogue.

[Data search and downloads](#)

# Summary

UK Geothermal Platform is a step forward in geothermal data availability and accessibility for UK

## Data and information for specialists

### Summary layers allow:

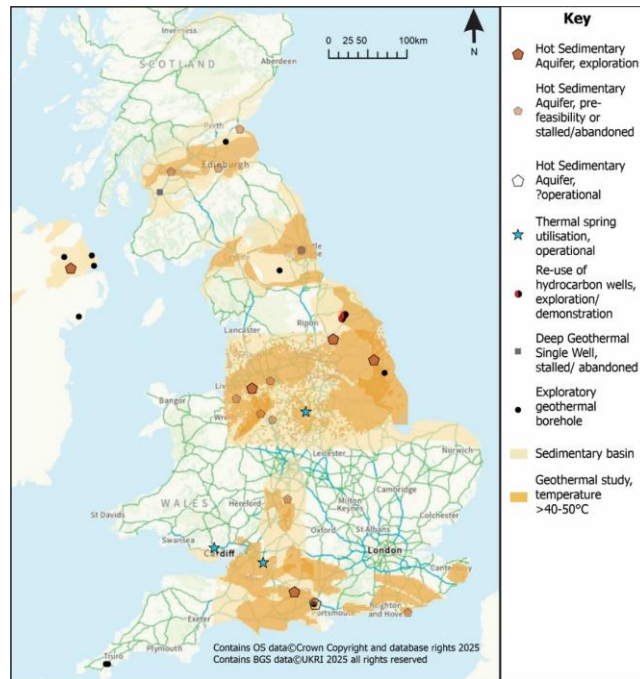
- Non-specialists to consider geothermal
- Government policy makers have the numbers to include in national zoning model, regional-national planning

### Aiming for version 2 (subject to funding)

- Incorporate user feedback
- Additional layers and technologies



- Data sharing, data deposits, improve information



*BGS work in progress: projects in exploration, construction, operation, formerly operational. Deep geothermal: hydrothermal shown here.*

# Thank you

Alison Monaghan [als@bgs.ac.uk](mailto:als@bgs.ac.uk)



<https://ukgeothermalplatform.org/>

Summary layer method report