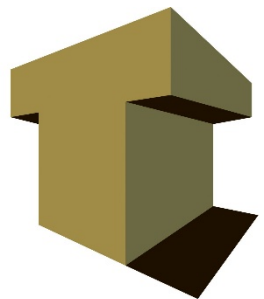


Tolent

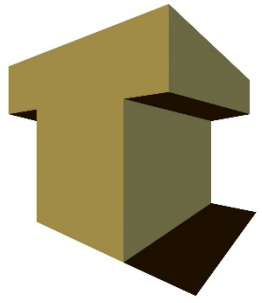
John Wood
Chairman

Seaham Garden Village



Tolent





Tolent

Thank you

Mine energy at Seaham Garden Village

Jeremy Crooks
Head of Innovation

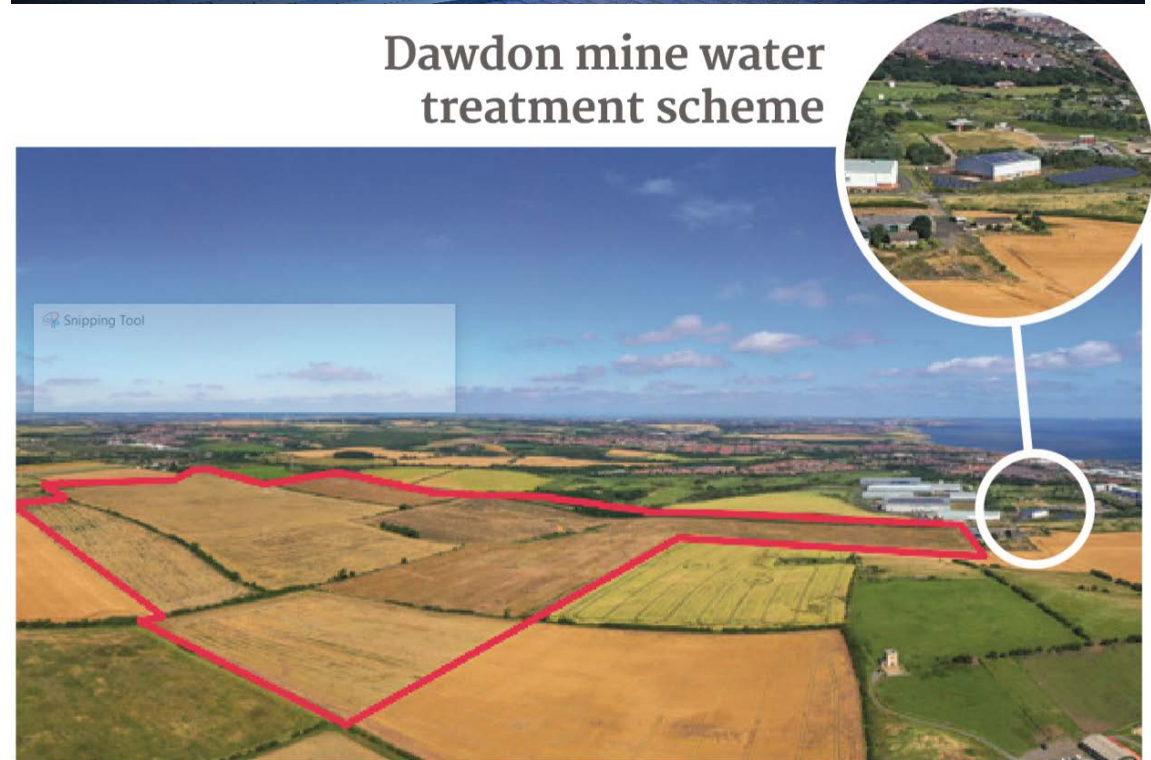
#CleanEnergyFromTheCoalfields

OFFICIAL- SENSITIVE : COMMERCIAL

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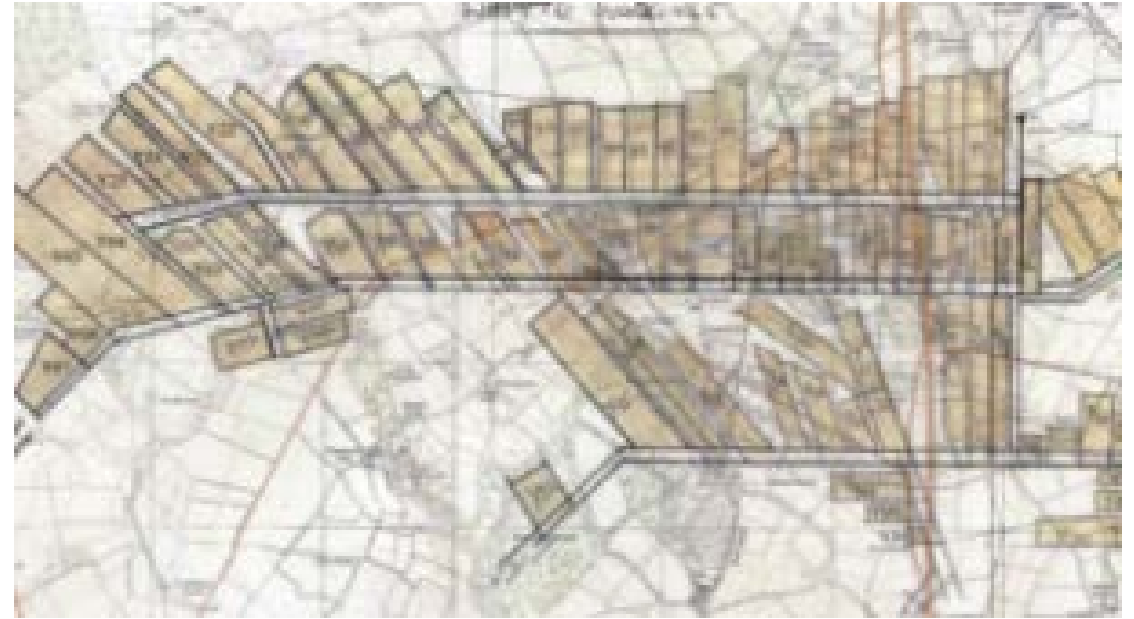


Dawdon mine water
treatment scheme



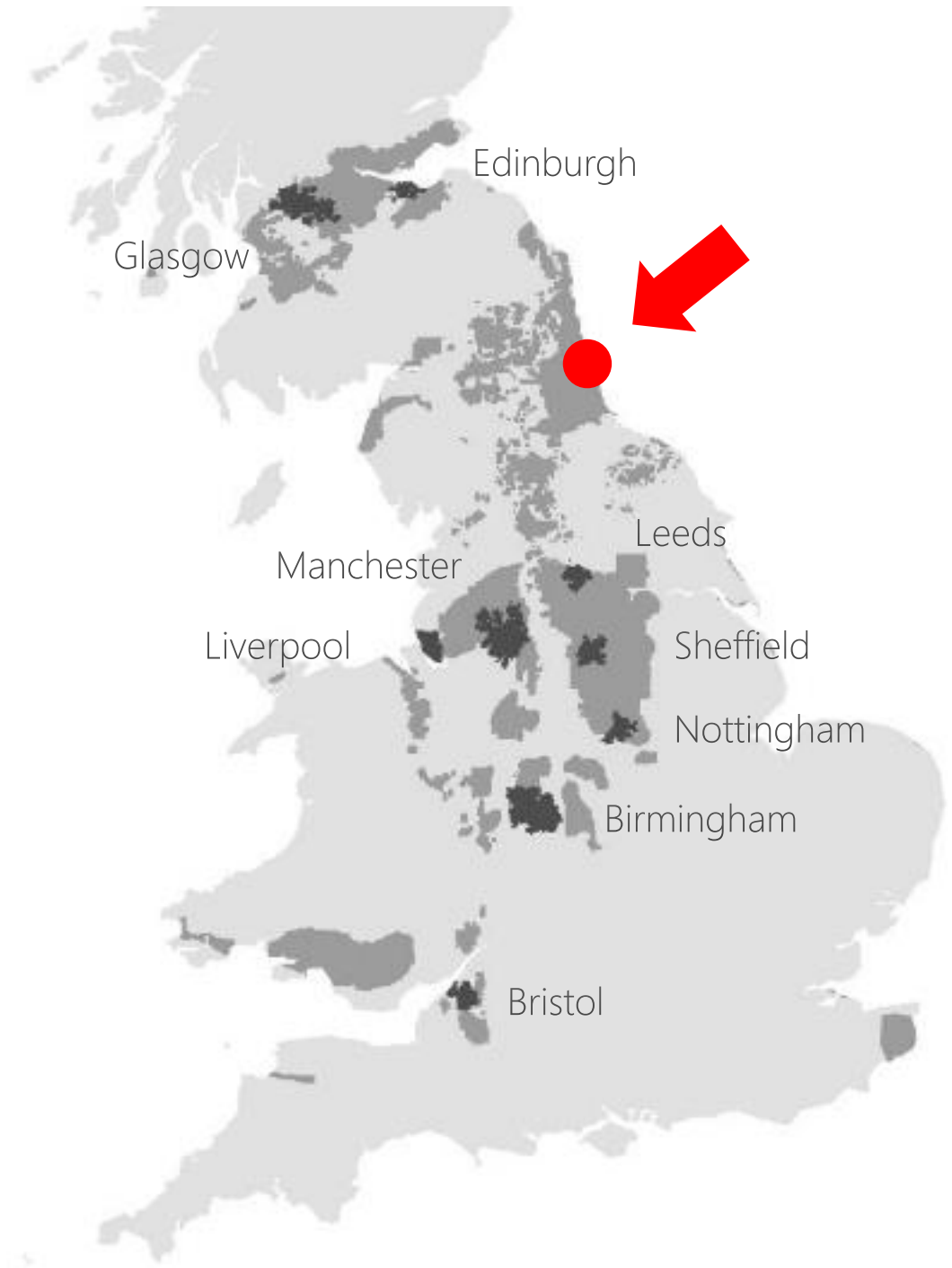
Coal Authority

- Non-departmental Government Body
- Created by 1994 Coal Act
- Own the mines and permit access
- Abandonment Plans from 1872
- Digitised records



UK coal mining

- 25% UK homes and business in coalfields
- 9:10 largest urban areas (geographical size)



Mining in Durham Coalfield

17 billion tonnes mines from
1700 to 2016

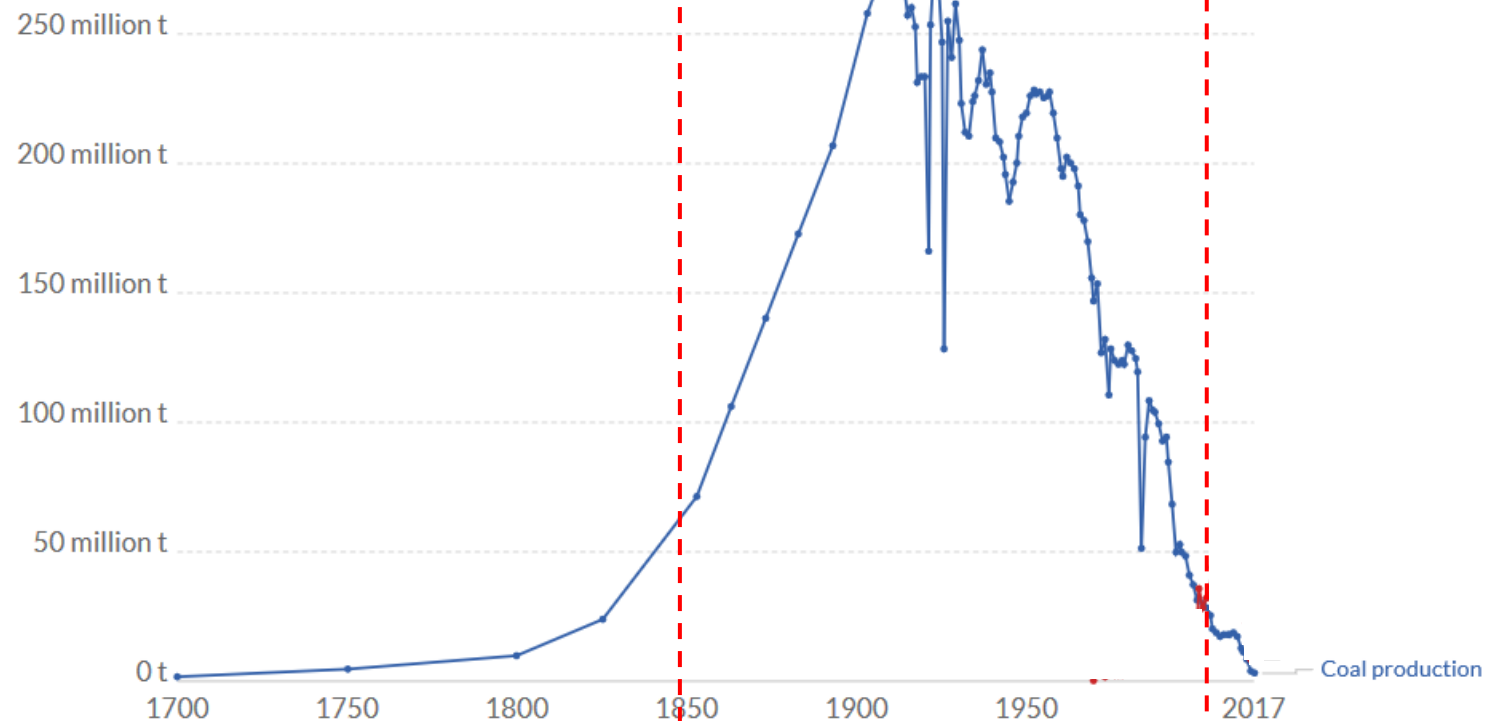
Seaham Colliery 1849 – 1986
Dawdon Colliery 1900 – 1991

Coal production and imports in the United Kingdom

Coal production and imports in the United Kingdom, measured in tonnes per year.

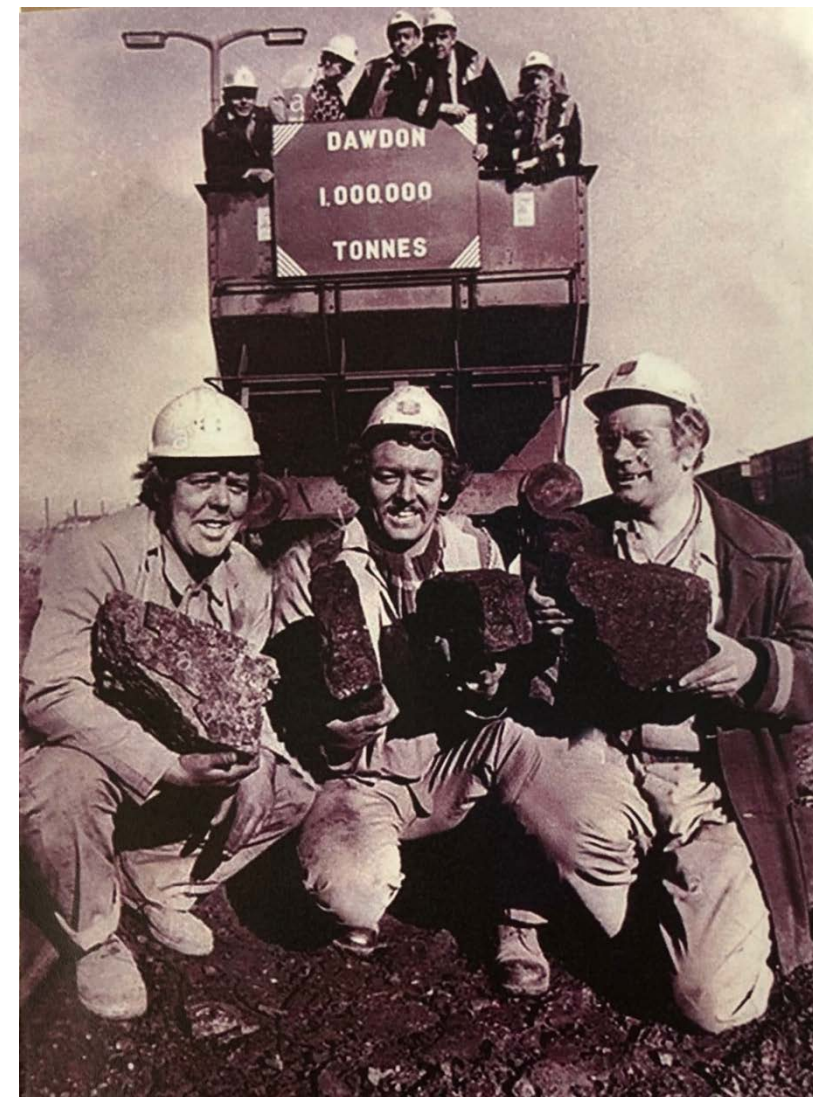
Our World
in Data

In 1923 170,000
miners in UK

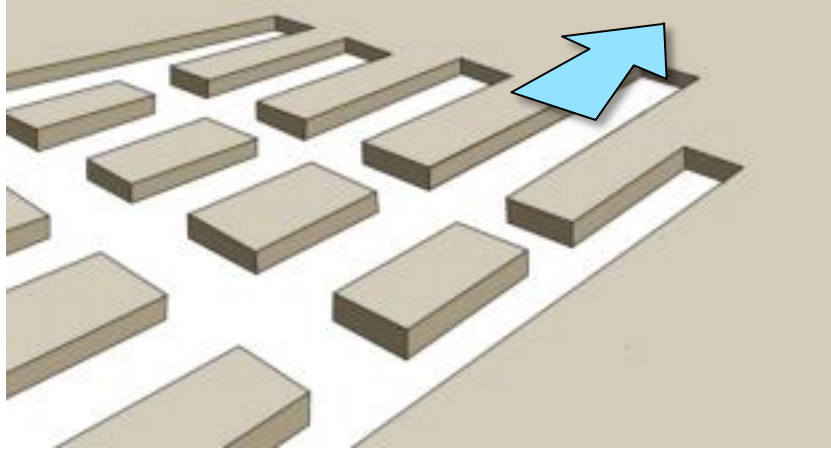


Source: UK Department for Energy and Climate Change (DECC)

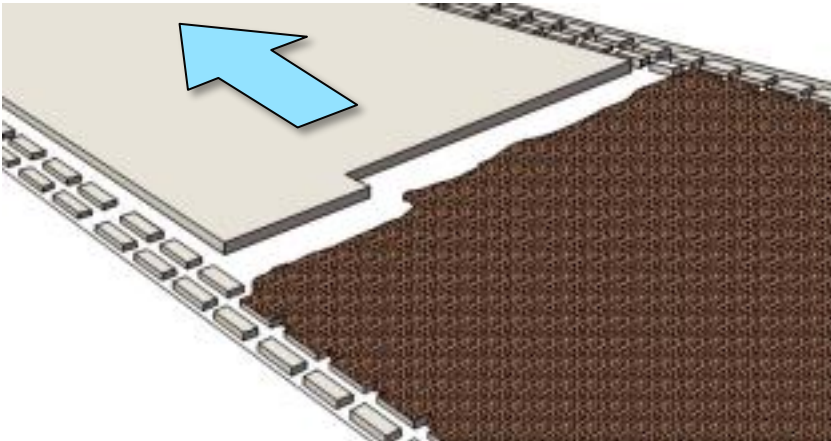
CC BY



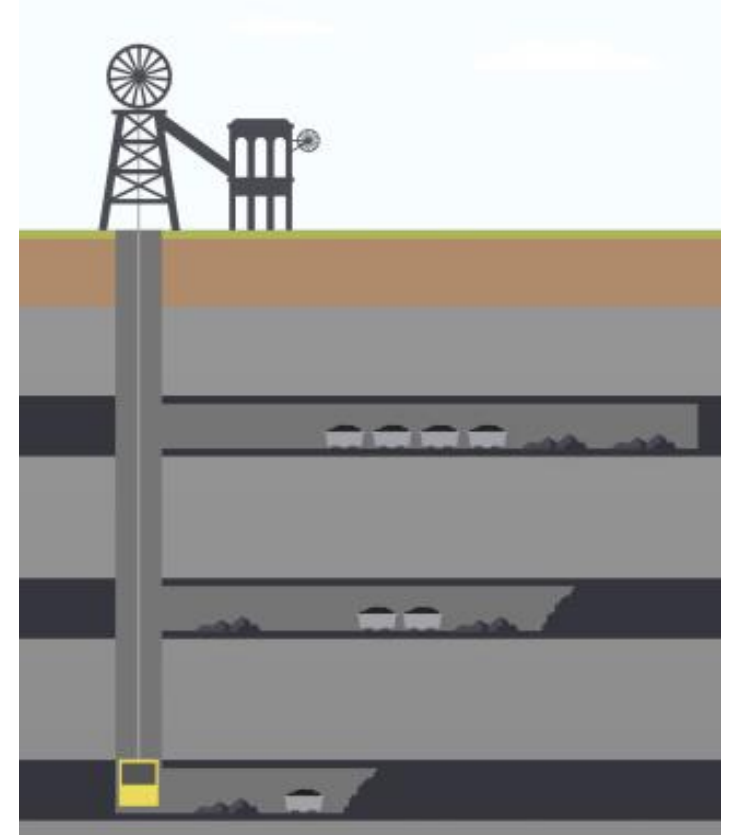
Abstraction of coal



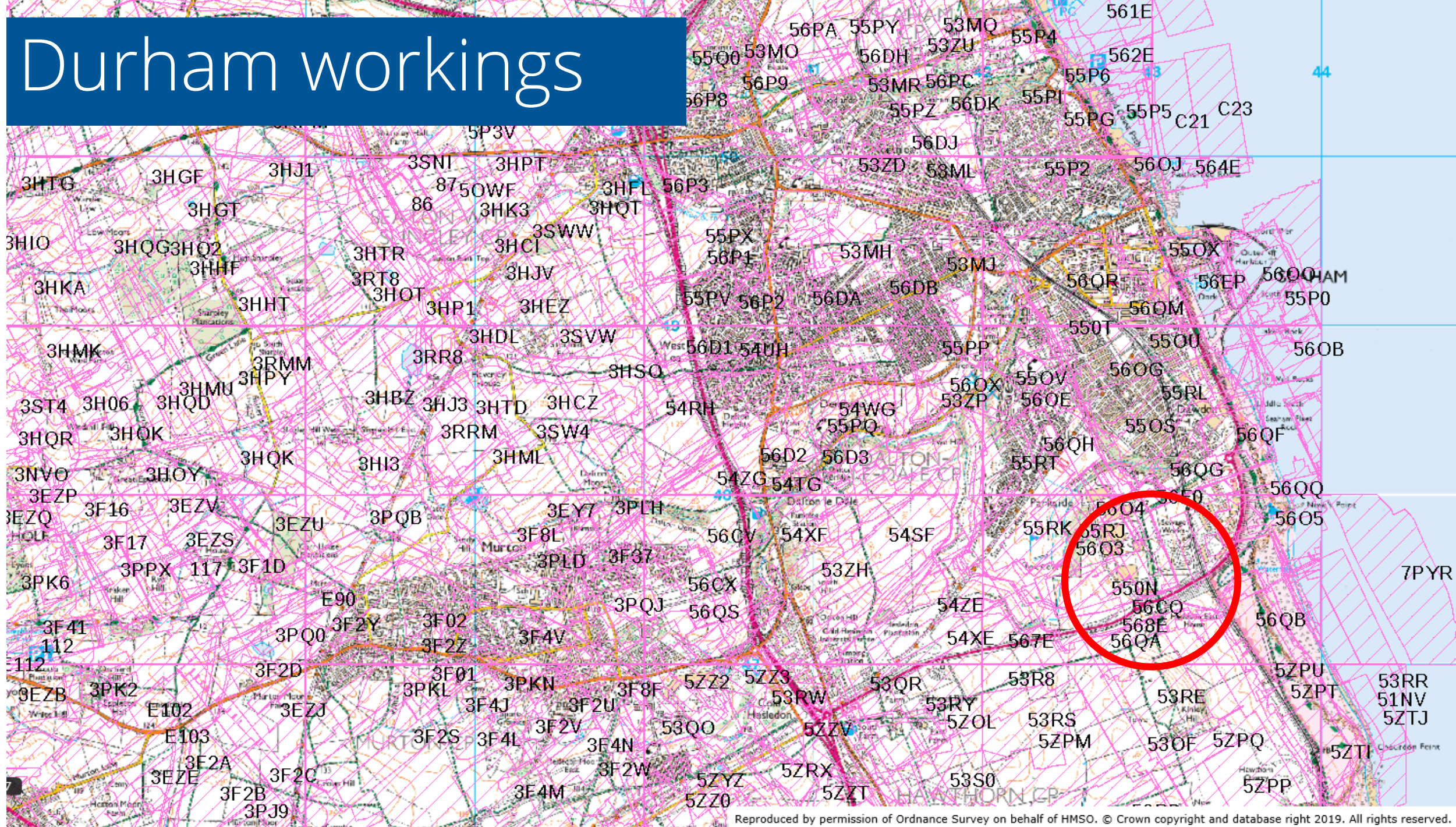
Stoop and room



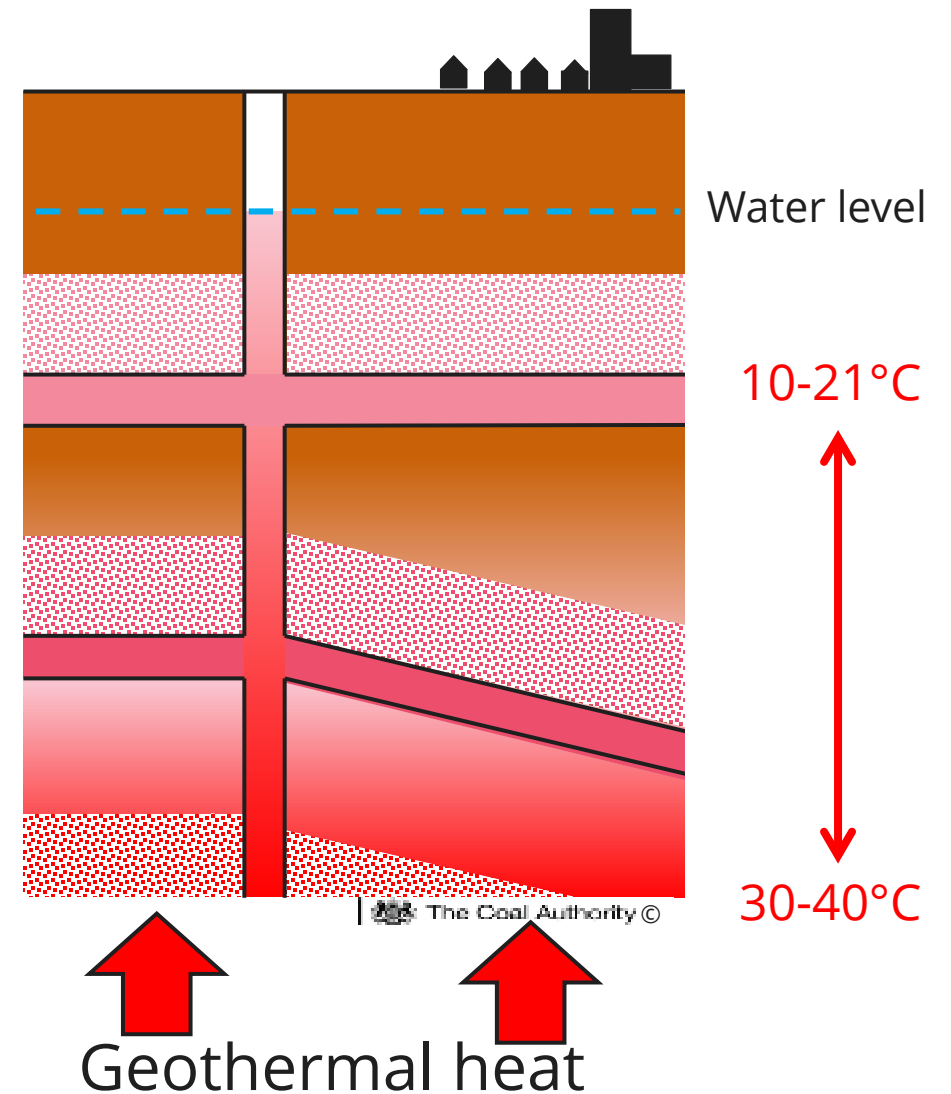
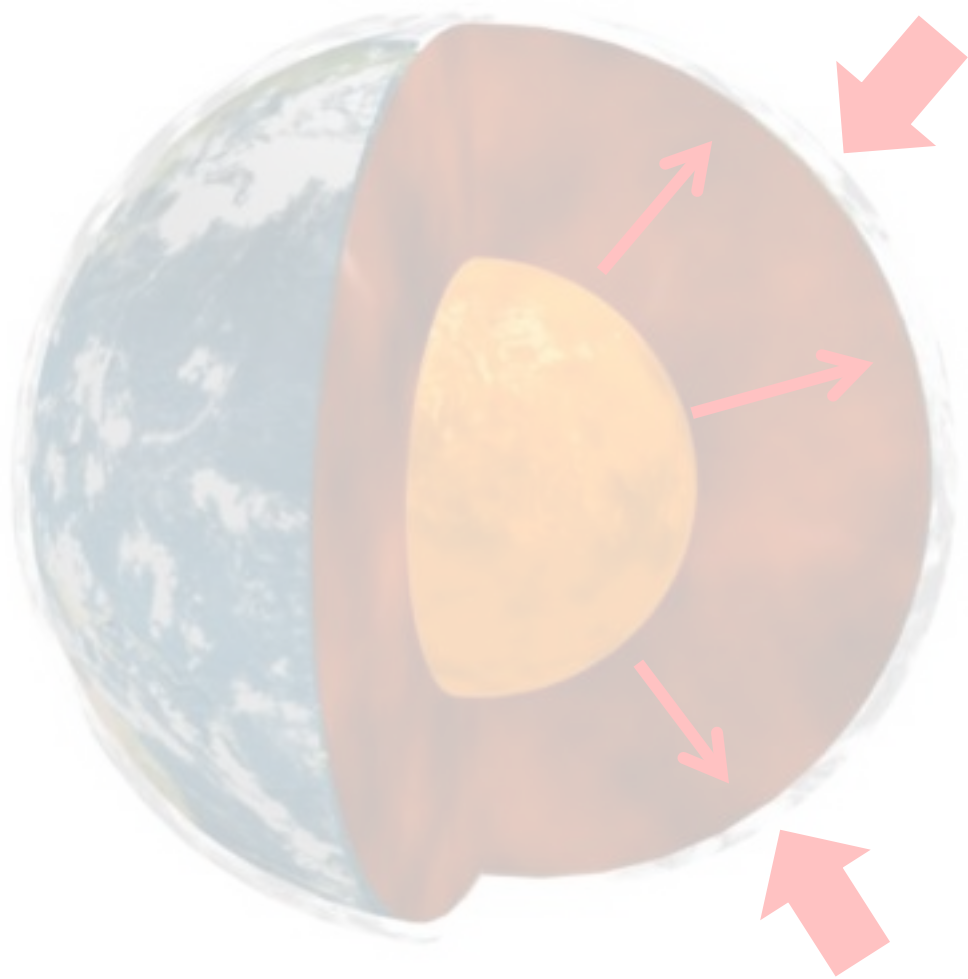
Longwall
mining



Durham workings

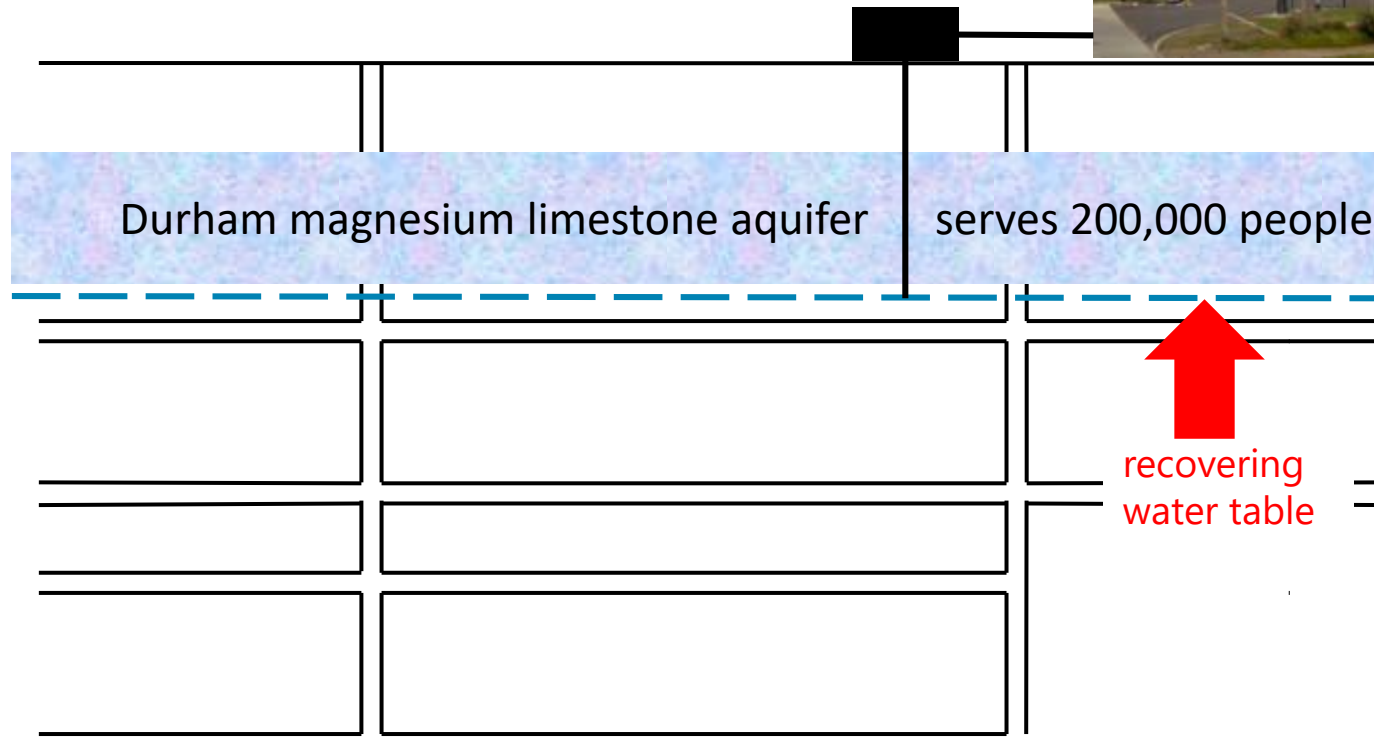


Geothermal energy in mines



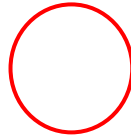
Dawdon Mine Water Treatment Scheme

Dawdon Mine Water Treatment Scheme



Connected to 125km² of mine workings

Mine Water Treatment Schemes



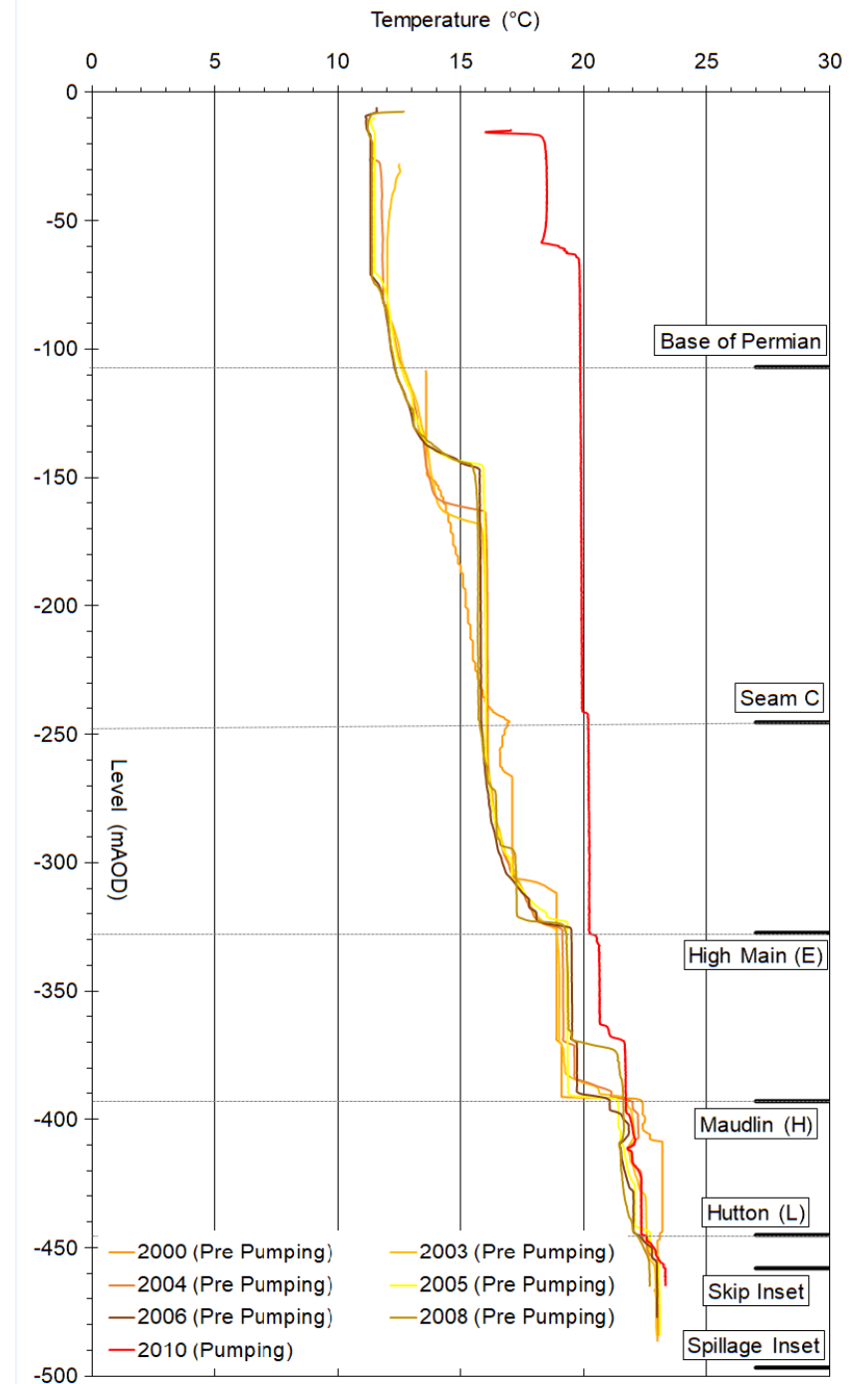
Dawdon Geothermal heat

Temperature 18 - 20°C

Pumping 100 to 150l/sec

4 - 6mw heat available – escaping to atmosphere now

Mine water
temperatures in
mine shaft



Temperature longevity

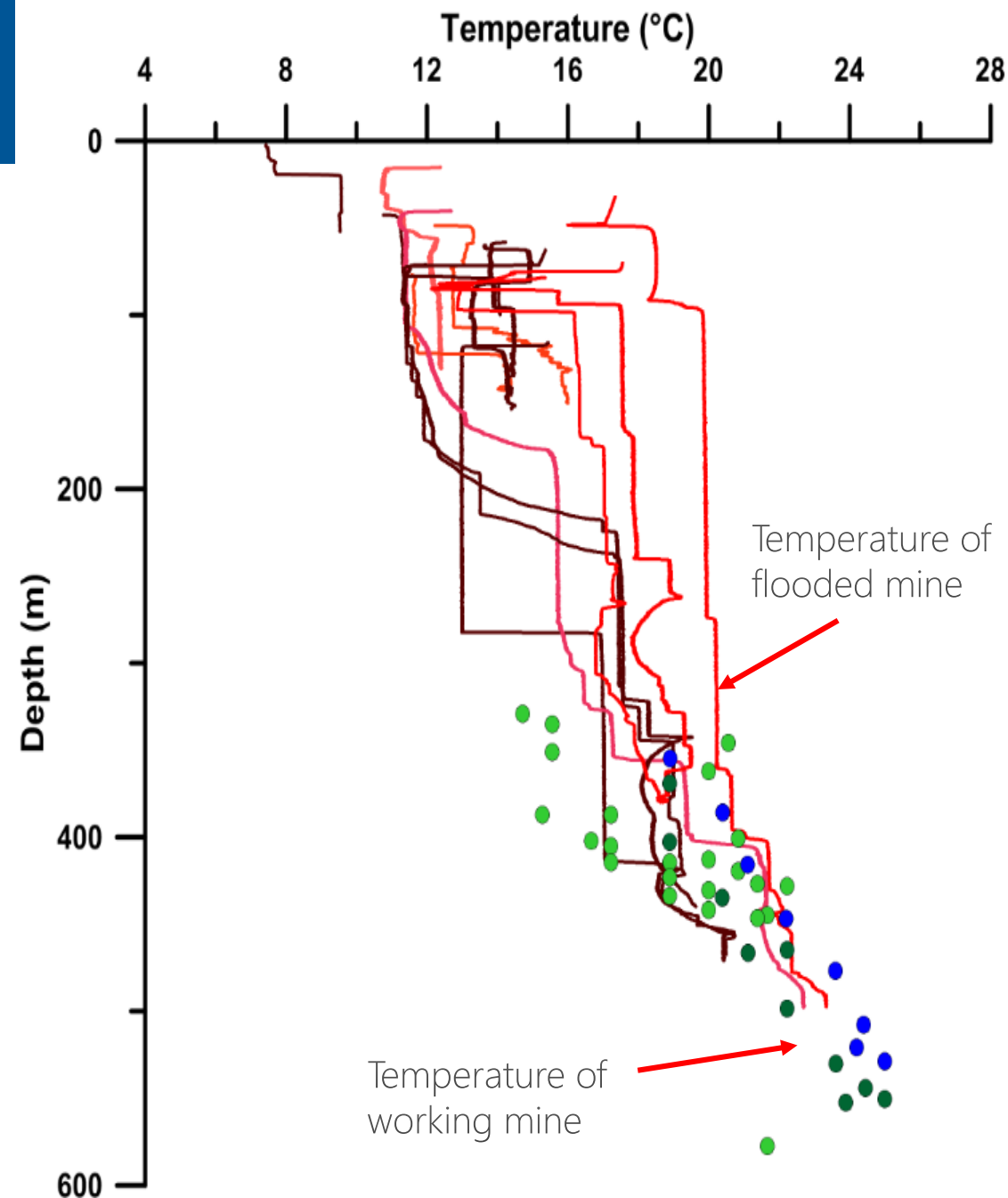
Theresa Shaft	05/10/2018	20.00
Theresa Shaft	12/10/2018	19.00
Hds Discharge Weir	16/10/2018	19.00
Theresa Shaft	16/10/2018	20.00
Hds Discharge Weir	24/10/2018	19.00
Theresa Shaft	24/10/2018	18.00
Hds Discharge Weir	01/11/2018	18.00
Theresa Shaft	01/11/2018	20.00
Hds Discharge Weir	08/11/2018	19.00
Theresa Shaft	08/11/2018	20.00
Hds Discharge Weir	15/11/2018	20.00
Theresa Shaft	15/11/2018	20.00
Hds Discharge Weir	22/11/2018	20.00
Theresa Shaft	22/11/2018	19.00
Hds Discharge Weir	28/11/2018	20.00
Theresa Shaft	28/11/2018	20.00
Hds Discharge Weir	29/11/2018	20.00
Hds Discharge Weir	04/12/2018	20.00
Theresa Shaft	04/12/2018	20.00
Hds Discharge Weir	13/12/2018	20.00
Theresa Shaft	13/12/2018	20.00
Hds Discharge Weir	21/12/2018	20.00
Theresa Shaft	21/12/2018	20.00
Hds Discharge Weir	28/12/2018	20.00



The Coal
Authority



British
Geological Survey
Expert | Impartial | Innovative



Dawdon Mine Water Treatment Scheme



Seaham Garden Village

Dawdon MWTS



Heat pumps and mine water

- Iron stays in solution until contact with air
- Dawdon high iron - 70 mg/l iron
- Dawdon hypersaline water - 58,000 $\mu\text{S}/\text{cm}$
- To stop furring take heat from raw mine water
- Dawdon heat pump operating since 2008 no furring
- Heerlen, Netherlands, transport mine water 8KM with no furring

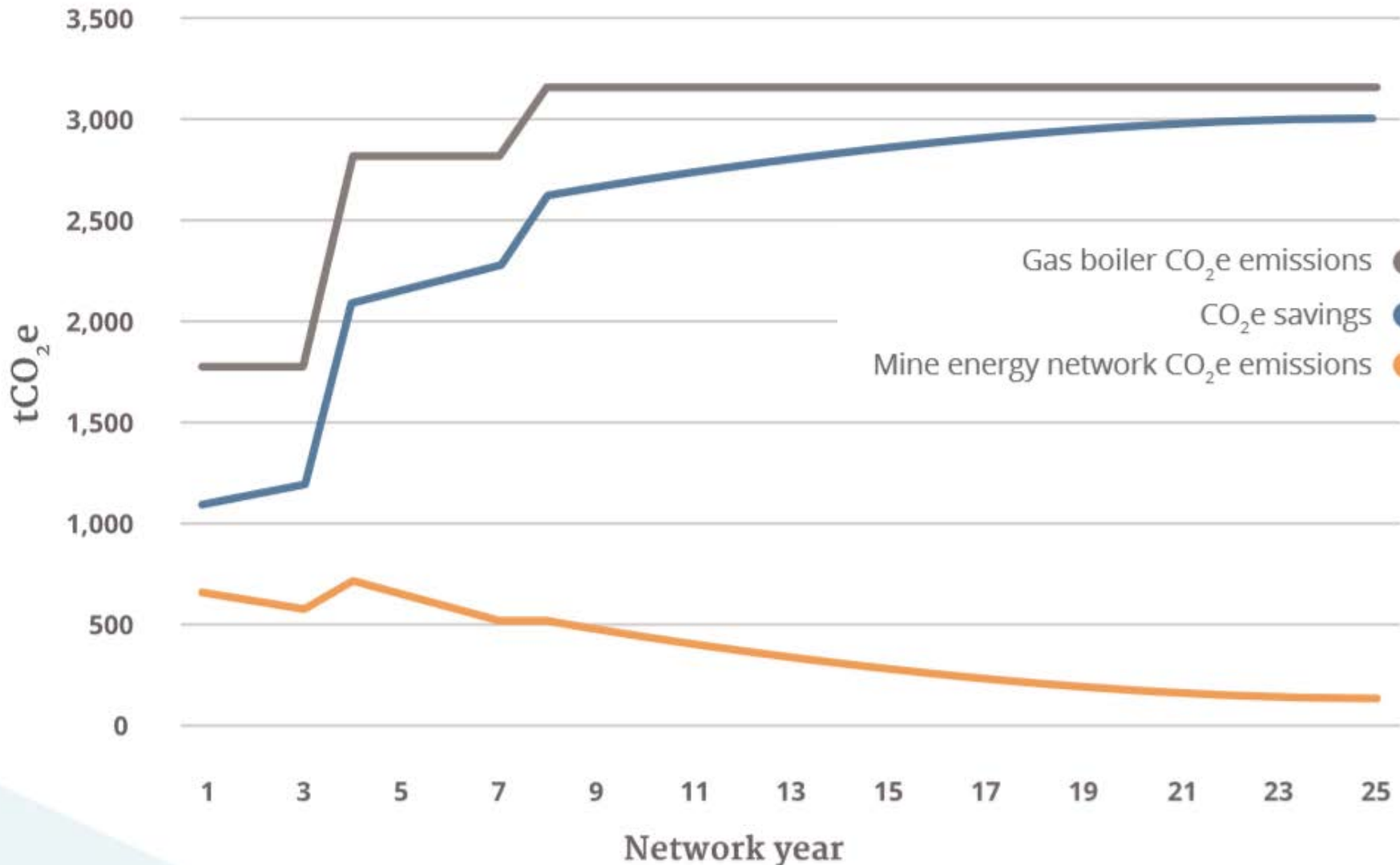


Heat pump at Dawdon Mine Water Treatments Scheme



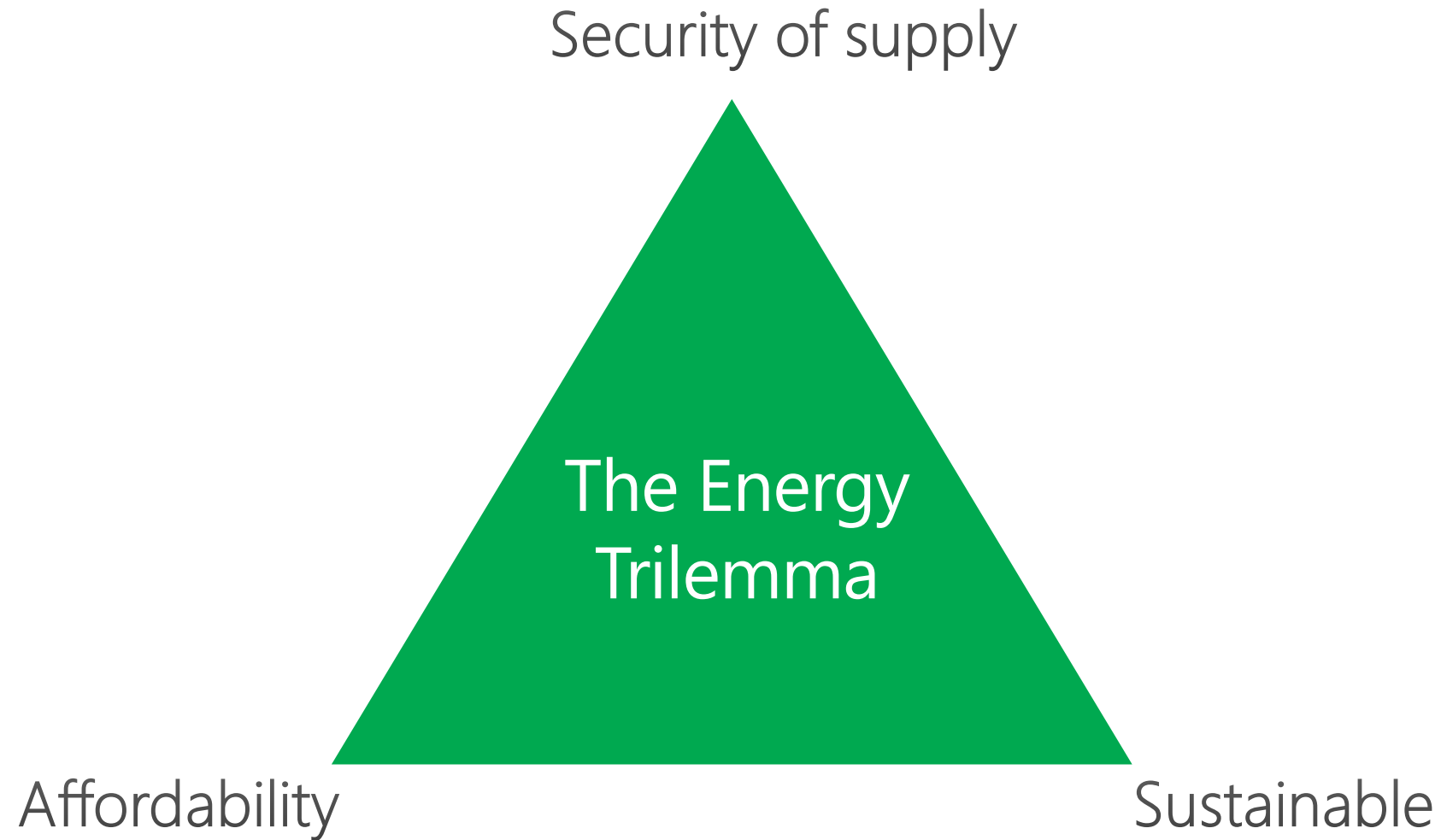
Sustainability

Seaham Garden Village mine energy district heating scheme carbon intensity comparison against gas



- Low temperature network
- Stable pricing future proof
- Stable temperature
- COP4
- Clean air - 32% air pollutants from gas heating

Mine energy resilience



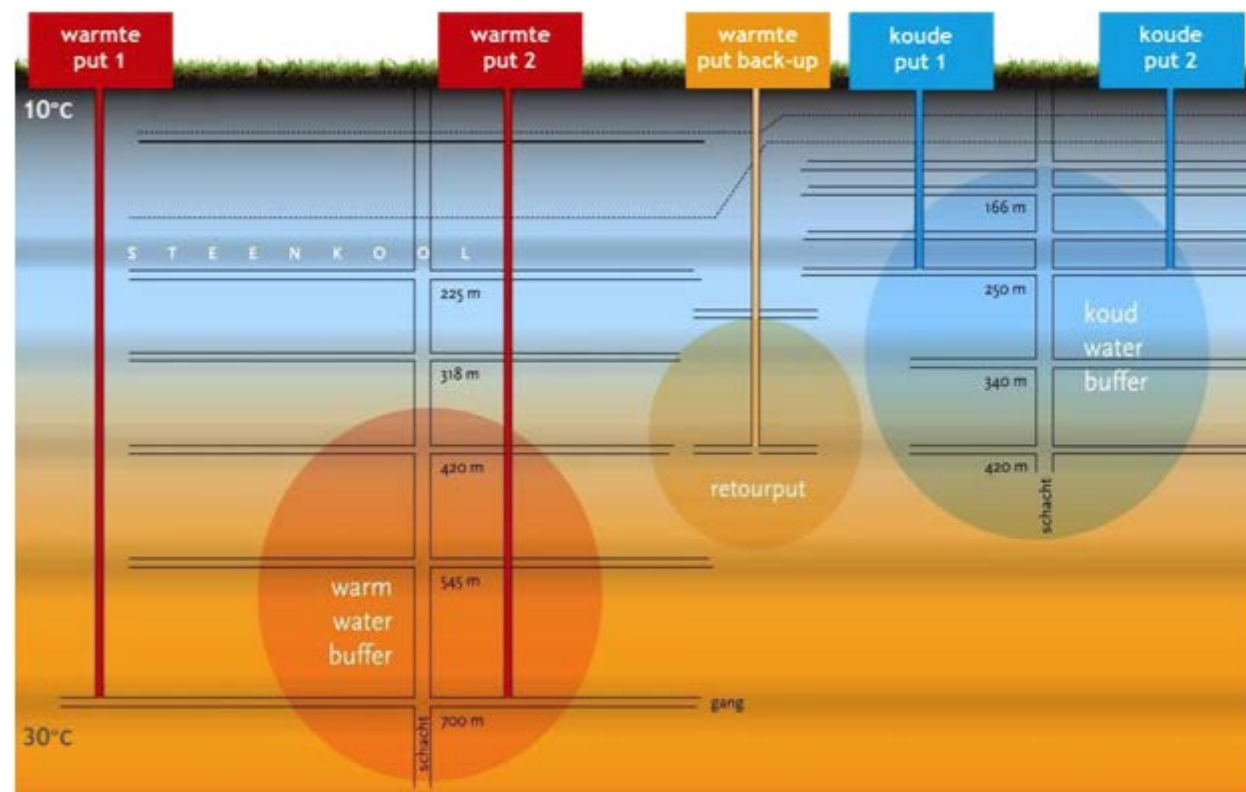
Renewables

Dawdon treatment scheme
roof and ground solar PV annual generation
1,600,000 kWh/annum



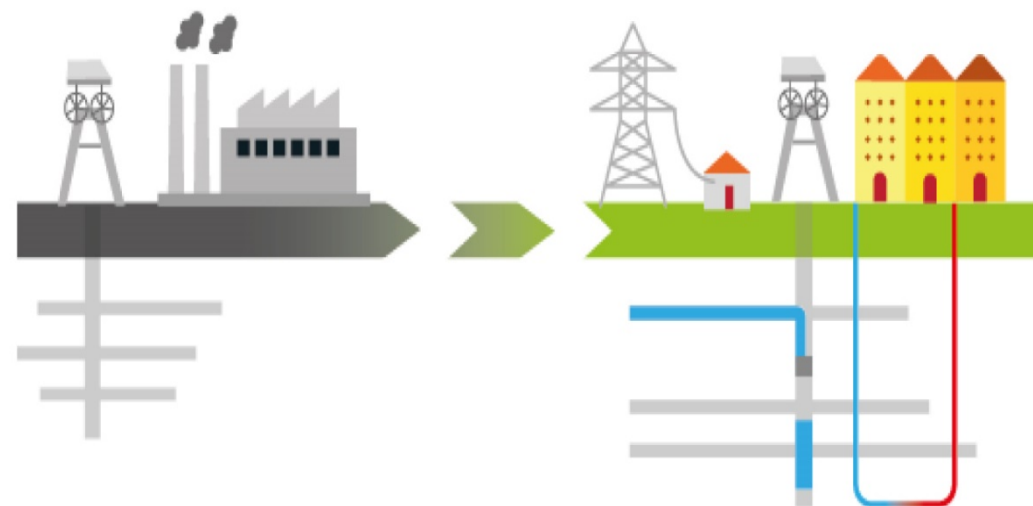
International examples

Figuur 27 - Schematische weergave van de ondergrondse situatie van Mijnwater



Opmerking: De retourput is in het nieuwe Mijnwater-concept buiten gebruik (het heeft nu alleen back-upfunctie).

Heerlen, Netherlands



Scheme of Energy Transition of Hunosa Company

Mieres (Barredo) Spain 2.2MW

Horticulture, agritech and aquaculture

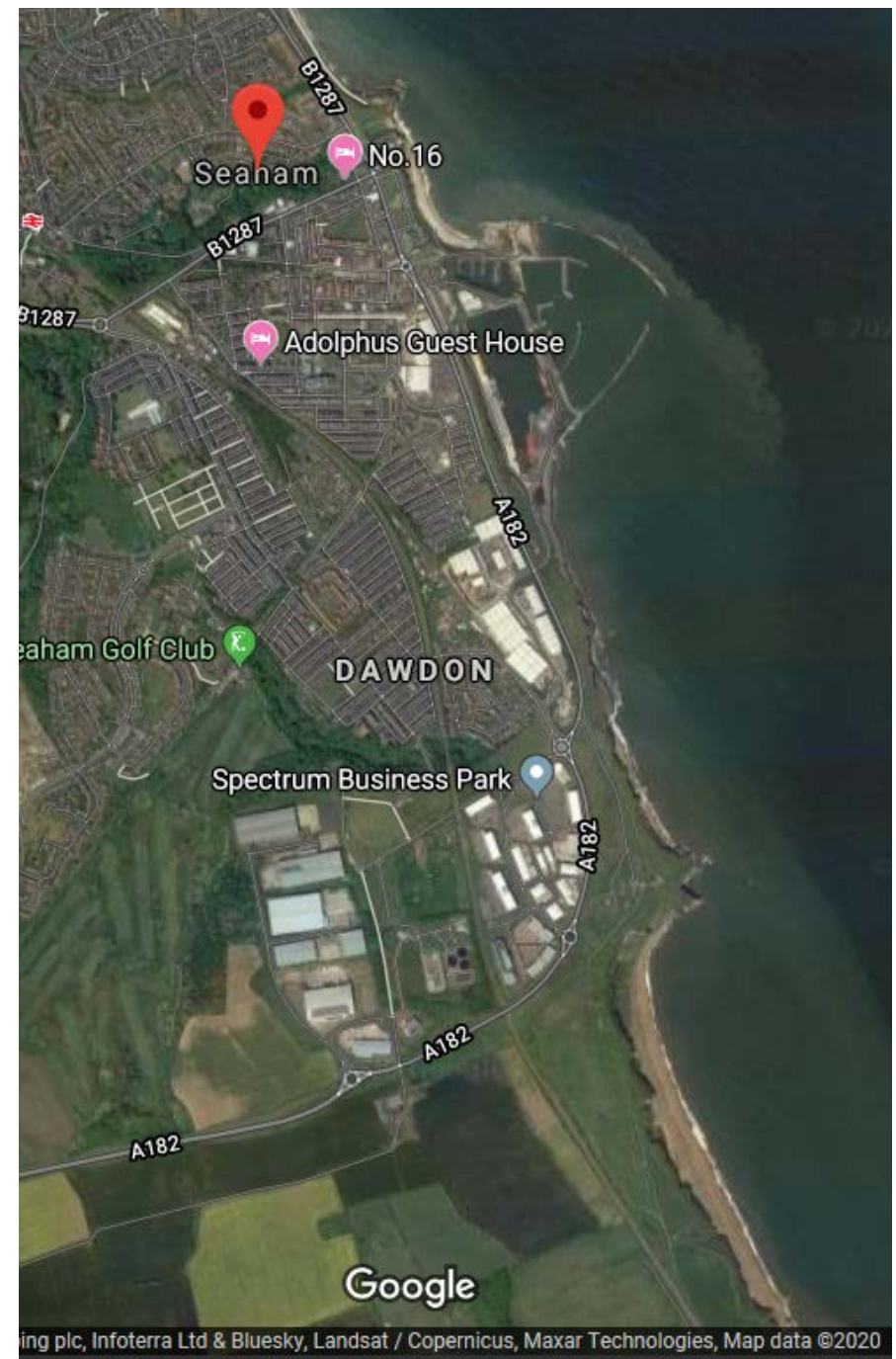


Community benefits

- Fuel poverty
- Employment
- Local finances
- Wellbeing
- Pride from Coalfield heritage



A sustainable future from the coal legacy



Find out more

Brochure link and contact details on your agenda



Seaham Garden Village mine energy district heating scheme

Creating a better future for people and the environment in mining areas

#CleanEnergyFromTheCoalfields



Thank You

#CleanEnergyFromTheCoalfields