



# UK Geothermal Power United Downs

11<sup>th</sup> March 2026



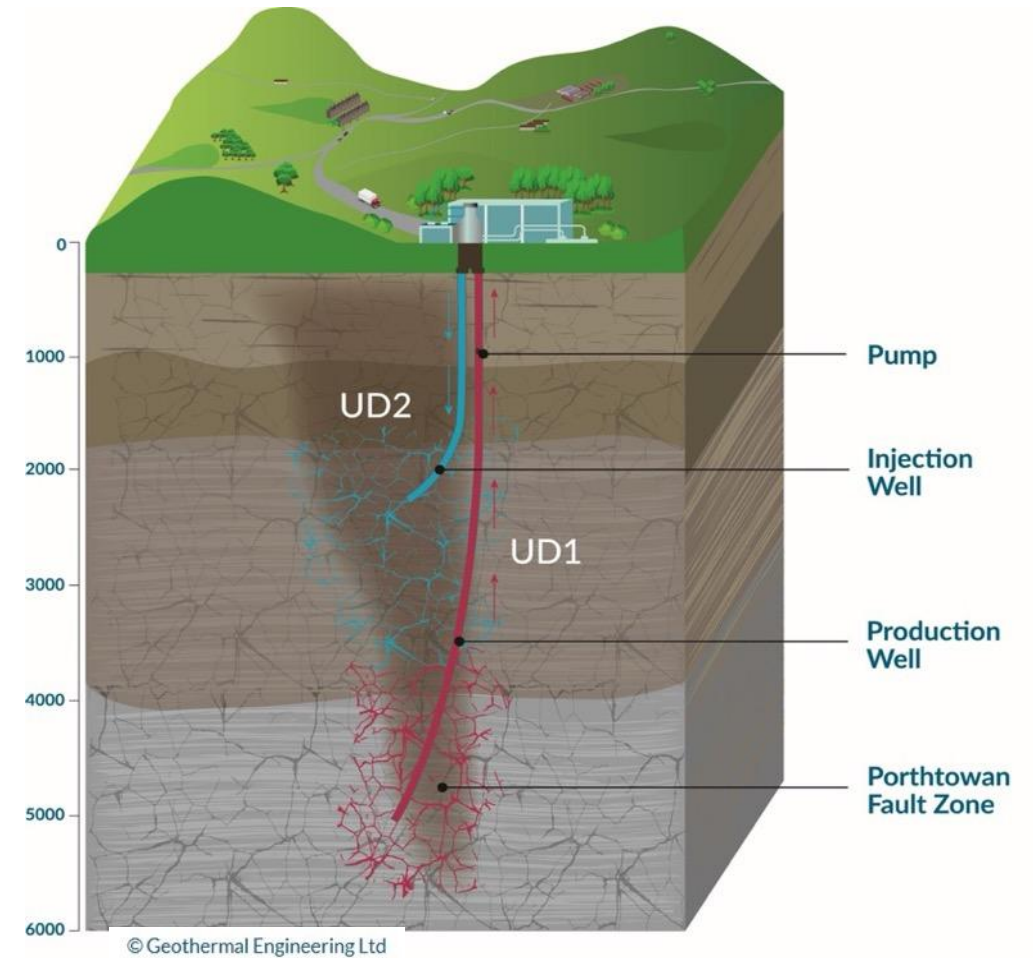


## Project Aims:

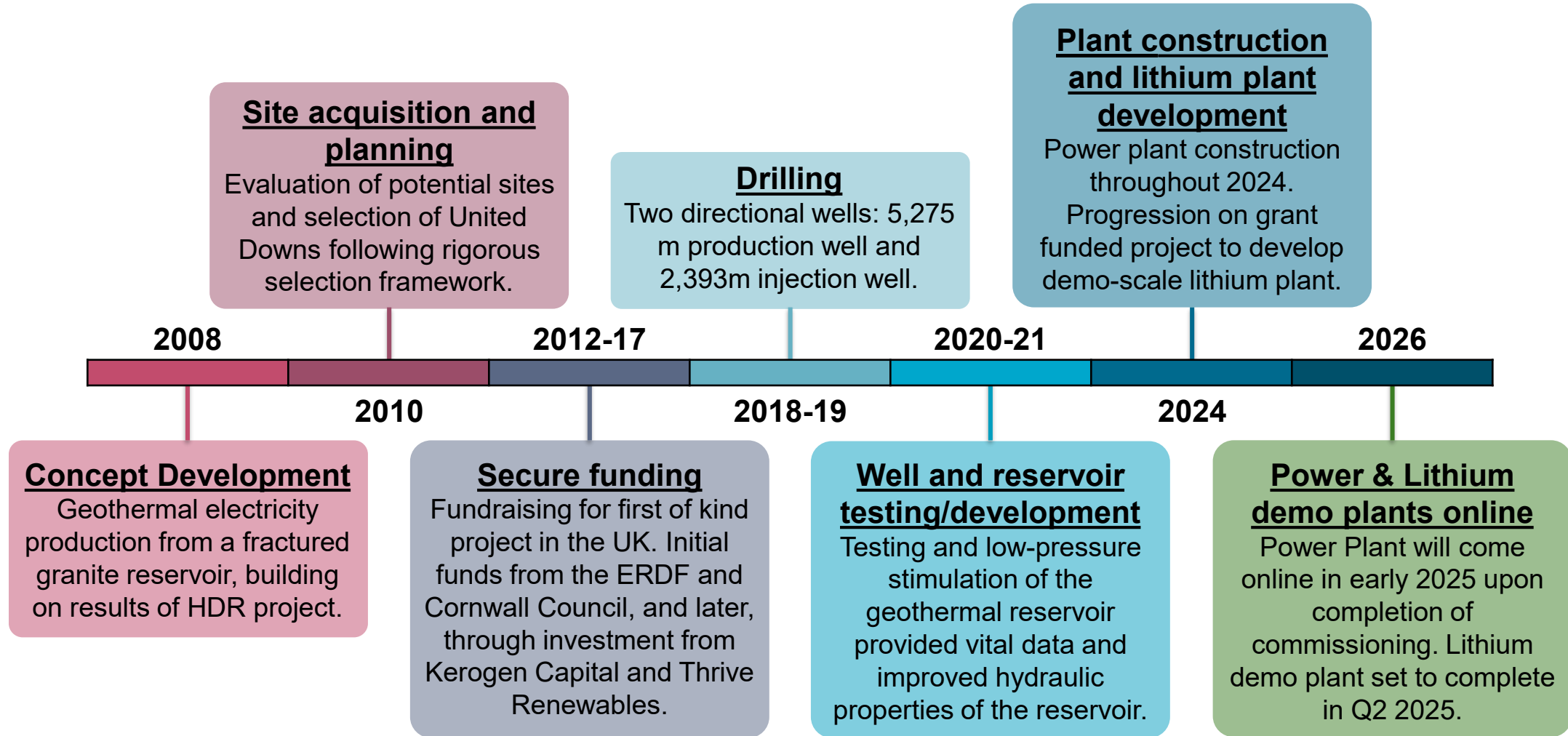
- To demonstrate geothermal power generation in the UK, utilising the extensive resource available underneath Cornwall.
- Proof of concept for further sites across Cornwall/ other deep granites in the UK
- Demonstration of mineral production at scale

# Project Concept

- Capitalise on high temperature gradient of granite
- Target inherent permeability in pre-existing fault zones within Cornubian Granite Batholith
- Intercept near vertical fault zones at a 'right angle' to maximise surface area in the fault
- Deep production well coupled to shallow injection well orientated to align with background stress orientation and fault
- Capitalise on background stress regime to aid flow
- Production well circa 5,275m TVD
- Temperature close to 190C



# Project Development



# United Downs Power Plant



- First UK planning permission for a deep geothermal electricity project.
- Binary cycle ORC power plant. Supplied by Exergy SRL
- ESP supplied by Baker Hughes, designed for high T reservoirs (up to 225 °C). Unfortunately stopped working in 2025 during commissioning and has since been replaced with an SLB unit
- First geothermal Contracts-for-Difference for geothermal power (currently 3 sites).
- 3 MWe gross capacity – **now exporting to national grid**



# United Downs power plant



# Geothermal Lithium Extraction

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Fluid testing highlighted that United Downs deep geothermal waters are well suited to direct lithium extraction (DLE):

- High lithium concentration (> 350 ppm)
- Relatively 'clean' fluid

Three years of development to select methodologies and appropriate partners

**100 tonnes per annum unit producing lithium carbonate now on line.** Expansion to full capacity planned to switch on in 2028.

# 100 tpa DLE unit as built



# Additionality - Research



Piloting underground storage of heat in geothermal reservoirs.



Integrating geothermal heating and cooling networks in Europe.



Horizon 2020 project. Total project budget £15m. Geothermal reservoir modelling.



Multi Site Deep Geothermal Demonstration  
Horizon 2020 project. Total project budget £8m.  
Stimulation techniques for geothermal development.



Developing the extraction of critical raw materials from geothermal brines.



**GEO<sup>3</sup>**  
POWERING  
CLEAN GROWTH

Direct Lithium Extraction trial.  
£4m project. £3m from Getting Building Fund



**Geothermal Power Generated from UK Granites (GWatt)**

Power Generation from UK granites  
EPSRC (UK). Total project budget £1.7m



# Next steps

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Expand lithium production at United Downs

Drill and develop two further sites in Cornwall that already have planning permission and CfDs

Achieve permitting at further sites in Cornwall

Expand into other areas of granite in the UK (Scotland?)

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