

# Underground Engineering

A good understanding of underground engineering is essential for safe GDF construction and operation and informing the environmental safety case.

- Construction of disposal areas, tunnels and shafts will affect the surrounding host rock hydromechanical properties, due to the engineered damage zone and the circulation of fluids used to enable drilling/boring.
- The materials used in construction will affect the mechanical, hydraulic and geochemical properties of both the GDF host rock and barrier materials post-closure.

A GDF will be operational for more than 100 years:

- Construction materials and operational technologies will evolve
- Technology adoption requires a dynamic approach.
- Unprecedented durability requirements.



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The subsurface engineering discipline area is new. **It does not currently fund any topics and last year's workshop was cancelled.**

Future challenges include:

- What technologies and materials will be required to create a GDF in clay rocks and how are these are likely to affect the long-term environmental safety case?
- What are the implications of inter-bedded salts for GDF construction if salt dissolution and slip along bedding planes must be minimised?
- How can we adapt construction materials to meet the net zero carbon targets for 2050?
- How do we adapt & develop smart monitoring systems and repair strategies for underground infrastructure?

