

National Geological Screening for a deep radioactive waste repository: A UK perspective

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As a pioneer in the development and use of nuclear technology, the UK has accumulated a substantial legacy of radioactive waste since the 1940s; by the end of this century, it is forecasted that 1.1 million m³ of high level waste will need to be safely managed. The UK has not yet identified a site for the long-term disposal of high-level waste with previous attempts failing due to a number of socio-political factors including public perception, transparency and communication. On the independent advice from the Committee on Radioactive Waste Management (CoRWM), the UK's preferred option for nuclear waste is for a single deep Geological Disposal Facility (GDF).

The safe disposal of radioactive waste requires a suitable geological environment as well as the support from local communities. The new programme to implement geological disposal, launched by the UK government in 2014, is a consent based approach. This approach is intended to empower interested communities to engage with the process and to find out about the potential of the geological environment in their area to host a geological disposal facility.

To facilitate this engagement, the British Geological Survey were tasked with undertaking a national geological screening exercise across England, Wales and Northern Ireland, following consultation on the key geological attributes relevant to the safety requirements of a geological disposal facility emplaced onshore and up to 20 km offshore at depths between 200 and 1000 m from surface. The screening exercise was completed at a national scale with 5 principal themes; Rock Type, Rock Structure, Groundwater, Natural Processes and Resources.

The exercise drew upon publically available data and information using expert input and the methodology for data collation, interpretation and QA is discussed. The role of a modern geological survey in this process are illustrated through the development of the component workflows.

The results of this technical exercise, formally released by the UK Government in December 2018, are being used to inform discussions with interested communities during a consultation period. They will form part of a suite of materials that will provide information across the end-user spectrum including the public, regulators and experts through a series of technical and non-technical informative reports and supporting discussions and workshops.