

# Whose Geology is it Anyway?

**Peter Styles\*** questions who owns the land under our back gardens and whether it is being managed properly, or at all



**Y**ou might think that you own the land under your back garden, but below soil level, you don't. The commercial sector, or UK PLC, own the mineral rights to the subsurface and I believe it is time for Government to develop a strategic plan for the utilisation of underground space. "If you can't grow it, you must mine it" is an old adage that is still pertinent!

I was Chair of a committee set up by DEFRA in 2006 to consider screening criteria that would apply to volunteer sites for the location of an underground geological repository for radioactive waste, to test the geological suitability for such a task: a ruling-out set of criteria.

Our terms of reference were to provide Government with advice on appropriate sub-surface scientific criteria to identify areas of the UK where it would be inappropriate to develop a geological repository.

The first priority was to protect our and future generation's water supplies. Secondly, we would avoid areas where those future generations (having forgotten our industrial history) might re-explore for resources.

Explaining these issues was complicated by the three-dimensional nature of geology. In the UK, a repository is likely to be excavated several hundred metres below Earth's surface. Hence, unsuitable geology at the surface, or at specific depths, is not necessarily a reason for exclusion.

We therefore recommended that criteria should be used to exclude areas where: all or part of the potential repository host rock would be provided by aquifers, or other permeable formations that might reasonably be exploited for water resources in the future; mineral resources are located at depths greater than 100 metres—coal, oil, gas, oil shales, and some metalliferous ores—to reduce the risk of intrusion into a geological repository by future generations seeking to extract resources (inadvertent intrusion); waste disposal or gas storage (and of course

now carbon dioxide sequestration) is committed or approved; deep karstic formations and source rocks for thermal springs are known to exist.

It is time to relook at these issues because of a sea-change in resource availability provided by prospective shale-gas resources, which, based on evaluation by the BGS, may be very extensive, especially in Northern England. In addition, earlier this year Radioactive Waste Management Ltd announced their new initiative to locate suitable areas where community acceptability and geologic suitability converge.

Our 2007 report for DEFRA was predicated on the premise that the relatively limited geographical sources of onshore UK gas and oil would not prove problematic. However, applying these criteria in 2018, we would find considerable clashes between potential repository sites and shale gas exploration areas.

There will inevitably be clashes to come in desired and planned uses of the subsurface and it is incumbent upon UK Government to develop a prioritisation plan that mitigates or avoids these.

A 'Strategy for the Utilisation of the Sub-Surface' (SUSS!?) is required and I recommend that this begins (and is completed) as expeditiously as possible!



\*Peter Styles is a Professor Emeritus at Keele University

## SOAPBOX CALLING!

Soapbox is open to contributions from all Fellows. You can always write a letter to the Editor, of course, but perhaps you feel you need more space?

If you can write it entertainingly in **500 words**, the Editor would like to hear from you. Email your piece, and a self-portrait, to [amy.whitchurch@geolsoc.org.uk](mailto:amy.whitchurch@geolsoc.org.uk). Copy can only be accepted electronically. No diagrams, tables or other illustrations please.

Pictures should be of print quality – please take photographs on the largest setting on your camera, with a plain background.

Precedence will always be given to more topical contributions. Any one contributor may not appear more often than once per volume (once every 12 months).

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PETER STYLES