



PRESS RELEASE



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BGS maps help understand relationship between groundwater and fracking.

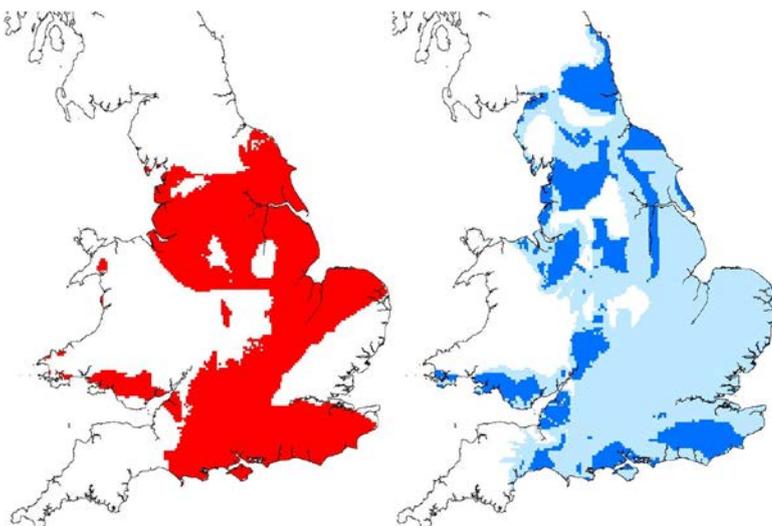
The British Geological Survey (BGS) in partnership with The Environment Agency (EA) have today, for the first time, published a series of maps which show the depth to each shale gas and oil source rock below principal groundwater aquifers in England and Wales. Understanding the distance between the two is important when assessing the environmental risks of shale gas and oil exploitation.

Groundwater from aquifers provides 30% of drinking water in the UK and up to 70% of the drinking water in South East England making it one of the most important natural resources in the UK - a resource that needs effective long-term protection.

The maps provide a new way to visualise geological data. They will help technical and public understanding of the distance between principal aquifers and the shales/clays of interest for shale gas and oil exploitation, an important factor when considering the potential contamination risks from hydraulic fracturing and oil/gas well operation. The Environment Agency also requires detailed geological assessments if hydraulic fracturing for oil or gas is proposed, and requires operators to hold groundwater permits unless there is no significant risk to groundwater. Developments will not be allowed to go ahead if they are too close to drinking water sources, and the Environment Agency will not permit the use of chemical additives in hydraulic fracturing fluid that are hazardous to groundwater.

Dr Rob Ward, Director of Groundwater Science, British Geological Survey said: "For the first time the public will be able to visualise our nationally important Principal Aquifers in relation to potential shale gas and oil source rocks. This information will help to better understand the risks to groundwater from shale gas and oil."

Dr Alwyn Hart, Head of the air, land and water research team at the Environment Agency said: "We have strong regulatory controls in place to protect groundwater, and will not permit activity that threatens groundwater and drinking water supplies. These maps will help public understanding of the separation between groundwater and potential shale gas sites."



Left: Full extent of potential shale gas/oil source rocks in England and Wales.

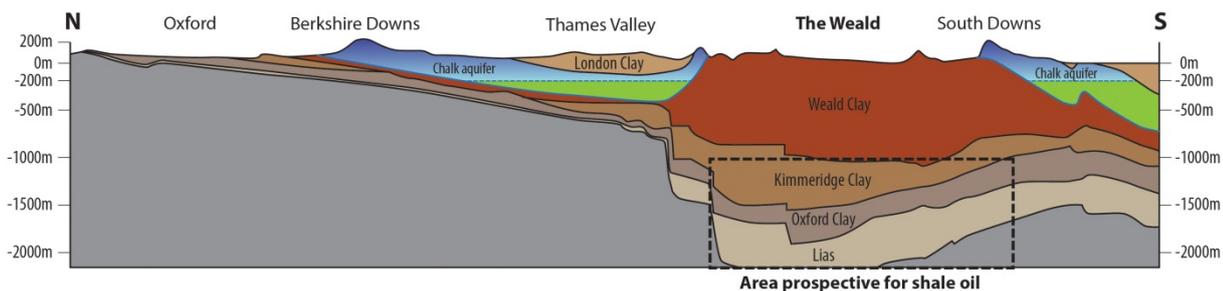
Right: Full extent of Principal Aquifers in England and Wales (blue), extent of aquifers shallower than 400 m (pale blue).

The maps show that:

- The Principal Aquifers (main drinking water aquifers) are present across a large part (81%) of England and Wales.
- Shales and clays which have potential for shale gas/oil are present over more than half (51%) of England and Wales.
- Almost half (47%) of the area where Principal Aquifers are present is underlain by one or more of these shales or clays.
- The Bowland Shale, an important potential target for shale gas development, is generally (92%) at least 800 m below the Principal Aquifers actively used as a source of drinking water. There are six Principal Aquifers above the Bowland Shale. These are: the Chalk, Lower Greensand, Corallian Limestone, Oolite, Magnesian Limestone and Triassic sandstones.
- The Chalk aquifer of the South Downs is above part of the area in The Weald Basin identified as prospective for shale oil. In this area the uppermost shale oil source rock (Kimmeridge Clay) is at least 650 m below the Chalk. See figure below.

The maps will also have other uses, for example in relation to the development of other unconventional hydrocarbons and carbon capture and storage.

The maps and data are freely available from the BGS website: www.bgs.ac.uk/aquifers-shales.



Cross-section across southern England (including The Weald) showing the three potential shale oil source rocks and the Chalk aquifer (solid blue indicates the part exploited for drinking water)

National Methane Baseline Survey

At the same time as the publication of the aquifer – shale maps, BGS are also publishing new data on methane in UK groundwater: the National Methane Baseline Survey. BGS supported by the EA and Defra has been undertaking a survey of methane concentrations in UK aquifers to provide a baseline against which any future changes can be measured. This has become particularly important with increasing interest in [shale gas and other unconventional hydrocarbons](#) in the UK. Data summaries and maps of the new baseline data are now freely available from the BGS website:

www.bgs.ac.uk/research/groundwater/shaleGas/methaneBaseline/home.html.

Ends



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Notes for Editors

The following are available for interview:

- Dr Rob Ward, British Geological Survey
- Dr John Bloomfield, British Geological Survey
- Dr Tony Grayling, Environment Agency

For additional information go to: www.bgs.ac.uk

Photographs are available from our ftp server: <ftp://ftp.bgs.ac.uk/pubload/bgspress>

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The British Geological Survey

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The Natural Environment Research Council

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