

ASSESSMENT OF THE POTENTIAL FOR AQUIFER STORAGE AND RECOVERY IN ENGLAND AND WALES

Aquifer Storage Recovery (ASR) offers the potential to store large volumes of water underground in an environmentally acceptable, sustainable manner. It has been widely developed over recent years in the USA, although has yet to become widely accepted in England and Wales, due to the associated uncertainties. However, interest is growing, and several water companies have initiated desk studies and field investigations to assess the potential for ASR at particular sites.

This report has aimed to give an overview of ASR, including the drawbacks and advantages of the technique.

The regional appendices give brief summaries of the hydrogeological and geological characteristics the major aquifers, and indicate the aquifers and areas that have greatest potential for ASR.

A further appendix gives advice as to how the Environment Agency will regulate the development and implementation of ASR schemes using current legislation and practice.

Numerous issues have been highlighted which might affect the potential of aquifers for ASR- including:

- poor recovery efficiency resulting from diffusion between native saline pore water and injected freshwater in fractures in the Chalk;
- presence of highly soluble halite or anhydrite in the Permo-Triassic sandstones, leading to low recovery efficiencies;
- lack of knowledge of confined aquifers, their hydraulic properties and their reduction with depth of burial;
- hydrogeological and hydrogeochemical impacts of injecting water;

England and Wales possess a wide variety of hydrogeological environments that are potentially suitable for the development of ASR schemes. Through investigation and experience, the perceived limitations of the technology will diminish, and this valuable technique could become an integrated component of water resource management strategies.

This R&D technical summary relates to information from Project W6-003 in the following output:

R&D Technical Report W163 - The Potential for Aquifer Storage and Recovery in England and Wales

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