



## Flood and Coastal Erosion Risk Management Research Programme

# Grouting for reservoir dams – a guide to good practice

## Project summary SC160017

In collaboration with the Construction Industry's Research and Information Association (CIRIA), the Environment Agency has produced a good practice guide covering all aspects of grouting in dams. Grouting involves injecting self-hardening liquids into soil or rock, to reduce permeability or transmissivity, or to increase the physical strength or stiffness of a structure. It is often required to ensure the safety of the structure or to help reduce the loss of water from the reservoir. This guide provides advice that is appropriate for grouting projects at existing dams, new dams and service reservoirs in the UK.

The Environment Agency is responsible for enforcing the Reservoirs Act 1975 for England. There are around 2,000 large raised reservoirs registered in England, belonging to 770 different owners, including the Environment Agency, water companies, charities, farmers and private landowners. Grouting a reservoir dam may be required to safeguard its engineering integrity. It may also be used to prevent the loss of an important water resource and is a critical technique to ensure continued compliance with the Reservoir Safety Act.

### Who is this guide for?

The guide is aimed at reservoir owners, regulators and reservoir safety engineers, and those responsible for the inspection, monitoring investigation, maintenance and repairs of dams and service reservoirs.

The guide is not intended to be a comprehensive textbook on grouting, but to provide guidelines on good and acceptable practice to assist reservoir owners, reservoir managers, engineers, practitioners, procurement departments, environmental protection specialists and contractors in the selection and execution of appropriate procedures, plant, equipment and materials.

### What does the guide cover?

The guide provides comprehensive guidance covering grouting in UK dams including:

- investigation
- design
- grouting materials and processes
- drilling and grouting plant

- quality control and verification

Supporting case studies illustrate the issues identified. Environmental matters and contract considerations applicable to grouting at dams are also discussed. The guide covers grouting design and good practice for remedial works to existing dams, although some of the techniques described would be applicable to new dams and levees.

Alternative processes for forming cut-offs such as single phase self-hardening slurry walls and two-phase walls constructed with plastic concrete are not covered because these processes are significantly different in concept and involve different plant and methods. In addition, grouting in tailings dams to confine contaminants is not included. Some discussion, however, is included on other specialist techniques such as jet grouting and compaction grouting.

### How will this guide improve practice?

This publication aims to provide comprehensive guidance on most aspects of grouting to:

- help those with little knowledge of grouting
- support and provide extended information for those who have some knowledge of grouting

The guide also serves to remove elements of misunderstanding and to reduce over-reliance on judgement.

This summary relates to information from project CIRIA RP1039, reported in detail in the following output(s):

### Report: SC160017

**Title:** Grouting for reservoir dams - a guide to good practice:

<https://www.ciria.org/ItemDetail?iProductcode=C774&Category=BOOK>

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