



## Flood and Coastal Erosion Risk Management Research Programme

# Pipework, valves and associated equipment in dams

## Project summary FRS18072

This guide sets out practical advice and guidelines on how best to ensure the safety of reservoirs. An update of CIRIA R170 (1997), it draws on a further 20 years' experience of good practices and incidents, learning from challenges that have been overcome.

### Background

The building of reservoirs grew in the late 19<sup>th</sup> century following the industrial revolution, and has continued up to the 1980s. The average age of reservoirs in the UK is now around 125 years old. This also applies to the valves and pipework that are critical to the safe operation of the dam. If this equipment fails to operate properly, this can have severe operational or safety consequences.

### Method

The research aimed to define good practice, gathering experience and data relating to how hydraulic control equipment operates effectively and safely. This included:

- selecting gates and valves and other related hydraulic control structures
- maintaining them in good condition
- considering reliable operation of them when depending on factors such as access to site, control structures and staff training
- evaluating likely residual life via surveys
- identifying problems and trends in their performance
- developing criteria to assess when formal Safety Integrity Level (SIL) assessment may be appropriate
- how to assess and improve operational reliability

The guide was prepared following consultations with the project funders, project steering group (including undertakers or reservoir managers and consultants), valves and gates manufacturers and suppliers and specialist organisations.

### Target audience

The guidance is aimed at those responsible for dams such as undertakers or reservoir managers, dam operators, inspecting engineers, supervising engineers, design engineers, contractors, specialist contractors, as

well as pipes, valves and gates manufacturers and suppliers.

The guide is concerned with existing dams and is not intended as a design guide for new assets, although much of the information is relevant. It is intended to be used across all of the UK's dams, giving consistent guidance.

Read the [full report](#) published by CIRIA.

This summary relates to information from project C789, reported in detail in the following output(s):

**Report:** FRS18072

**Title:** Pipework, valves and associated equipment in dams

**September 2020**

**Project manager:** Chrissy Mitchell, FCRM

**Theme manager:** Chrissy Mitchell, Asset Management

**Research collaborators:** CIRIA, Environment Agency, Dŵr Cymru, Thames Water, Severn Water, Yorkshire Water, Northern Ireland Water, Scottish Water and Anglian Water.

**Research contractor:** ARUP (via CIRIA)

This project was part funded by the Environment Agency's FCRM Directorate, as part of the joint Flood and Coastal Erosion Risk Management Research and Development Programme.

Website: <https://www.gov.uk/government/organisations/flood-and-coastal-erosion-risk-management-research-and-development-programme>

Email: [fcerm.evidence@environment-agency.gov.uk](mailto:fcerm.evidence@environment-agency.gov.uk)

Enquiries: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

© Environment Agency