



Design, operation and adaptation of reservoirs for flood storage

Project Summary SC120001

This report provides a comprehensive guide on the development and use of flood storage reservoirs, drawing on good practice in UK and international reservoir planning, design, operation and maintenance.

Provision of flood storage in a reservoir constructed on or near a watercourse can help to reduce flood risk, particularly as part of a catchment-wide flood risk management strategy.

The guidance is aimed at a wide range of stakeholders including planners, developers, reservoir owners, asset managers, designers, contractors, regulatory engineers/advisers, environmentalists, academic institutions and the public.

Where use is made of flood storage reservoirs, application of the guidance will help to achieve long-term improvement in flood risk management and so help protect human life, property, critical infrastructure and the environment.

About the guidance

The guidance describes contemporary best practice and experience of the design, operation and maintenance of flood storage reservoirs.

Existing reservoirs formed originally to secure reliable water supply or to provide some other function can be adapted to provide a flood storage function. The report covers practical considerations when modifying the use of existing reservoirs for flood storage, but does not consider policy aspects.

Case studies and images are used to illustrate best practice and to share practical knowledge from past and existing schemes – their successes, failures and challenges. Where available, the report references more detailed guidance – drawing on international practices and UK strategy documents, codes, standards and engineering guides.

The report is presented in 6 sections, together with a supporting appendix of more detailed technical information. Text is arranged to guide readers to the

sections most relevant to their interests. The contents include:

- **Planning and preliminary design** – describes the typical steps required to develop preliminary design proposals and presents planning and environmental legal considerations
- **Detailed design** – considers design standards, new dams and the modification of existing flood storage dams, landscape and environmental design
- **Operation and maintenance** – describes the requirements for typical structures and devices used in flood storage reservoirs and presents guidance on improving operational reliability and effective monitoring
- **Adaptation of existing reservoirs for flood storage** – gives examples of dual-use reservoir operation, explains the benefits and challenges of adaptation to flood storage and considers the use of obsolete water supply reservoirs for flood risk management

The guidance also contains advice on health and safety management from design to operation and maintenance.

How can I obtain a copy of the guidance?

An electronic copy of the guide is freely available from the GOV.UK:

www.gov.uk/government/publications/design-operation-and-adaptation-of-reservoirs-for-flood-storage

This summary relates to information from project SC120001, reported in detail in the following output(s):

Report: SC120001

Title: Design, Operation and Adaptation of Reservoirs for Flood Storage

November 2016

Project manager: Bren Hodkinson, on behalf of the Environment Agency Evidence Directorate Group.

Theme champion (Asset Management): Jackie Banks,
FCRM Directorate

Research Contractor: Thomas Rosenberg, Alan Warren
and Collette Patterson, Mott MacDonald

Research Collaborators:

The guidance has been authored by experts from Mott MacDonald Group and Black and Veatch Ltd. The authors were assisted by an international team of experts from water companies, local authorities, the Environment Agency, engineering consultancies and the academic community.

This project was commissioned by the joint Flood and Coastal Erosion Risk Management Research and Development Programme. The joint FCERM R&D programme comprises Defra, Environment Agency, Natural Resources Wales and the Welsh Government. The programme conducts, manages and promotes flood and coastal erosion risk management research and development.

Email: fcerm.evidence@environment-agency.gov.uk

E: enquiries@environment-agency.gov.uk

© Environment Agency 2016.