Scoping study for a guide to risk assessment of reservoirs

Project Summary SC070087/S1

This report describes a scoping study that was undertaken as the first phase of a project to consider whether there was a need to update the *Interim Guide to Quantitative Risk Assessment for UK Reservoirs*, which was originally published in 2004 to provide a tool for the management of reservoir safety.

The Interim Guide was produced as a tool for the management of reservoir safety. It provided a screening level framework for decision-making by experienced dam professionals on the annual probabilities of occurrence, consequences and tolerability of the risk of reservoir failure. The Guide was in the form of a Microsoft Excel workbook with explanatory text providing users with guidance on the methodology to be used.

As part of this scoping study the team sought the views of the profession, not only in trying to find out what problems had been experienced in application of the Interim Guide but also to try to establish the needs of the profession.

In the first five chapters of the report the background, terms of reference, scope and target audience for the study are considered. Chapter 6 then looks in more detail at the challenges for modern dam risk management in the UK, while Chapter 7 considers the barriers to more integrated approaches to risk management.

Chapters 8 and 9 describe common characteristics of an integrated risk management framework and perspectives on reservoir safety risk management respectively. The latter chapter draws mainly on experience in the USA and Australia.

The final chapter summarises conclusions and recommendations from the scoping study. It is recommended that a second phase of the Quantitative Risk Assessment project needs to be implemented, and that the framework and other procedures developed should meet a wider range of reservoir owner and industry needs, as well as meshing into current UK Government flood risk assessment policy and practice.

Section 10.1 goes into more detail and recommends that the second phase of the project should implement the set of closely coordinated activities listed below:

1. A framework and methodology for UK reservoir safety risk management
2. A structured procedure for potential failure modes identification
3. Supporting science on failure modes
4. A guide for UK reservoir safety risk analysis
5. A software tool for UK reservoir safety risk analysis
6. Workshops for consultation
7. Workshops for training
8. Pilot site application.

It is suggested that these activities could take place in parallel over a period of 24 months. Figures within the chapter summarise how these activities relate to each other and could build on ongoing initiatives and link with existing national frameworks, as well as outlining a schedule for their completion.

This summary relates to information from project SC070087, reported in detail in the following output(s):

Report: SC070087/R1
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Current research projects are being carried out by the Environment Agency and Defra following a review of research priorities and direction by the Reservoir Safety Advisory Group (RSAG) of the Institution of Civil Engineers (ICE).

The British Dam Society at the Institution of Civil Engineers

The British Dam Society aspires to be a forum for professionals involved with dams to meet and exchange ideas and to be a body of people with authority and/or interest on dam-related issues. It monitors and contributes to the agenda on the provision of technical guidance and wider research on dams for the UK and also promotes best practice in all aspects of the planning, development, maintenance and operation of dams and reservoirs.

In this context it is pleased to support the Environment Agency's production of this report as part of a programme of carefully targeted research aimed at improving the understanding of dam related issues and also the safety of the UK's stock of reservoirs, however, this does not imply endorsement of any particular report recommendations.

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

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