# Guide to risk assessment for reservoir safety management

## Project Summary SC090001/S

Reservoir safety management is a process of managing the risk of an uncontrolled release of the contents of a reservoir. A consortium of experts led by HR Wallingford worked with the Environment Agency to produce this comprehensive guide to risk assessment for reservoir safety management. The risk assessment is based on a three tier approach; Tier 1 is qualitative while Tiers 2 and 3 are quantitative. The guide is an update to the *Interim Guide to Quantitative Risk Assessment for UK Reservoirs* which was published in 2004 by the Institution for Civil Engineers (ICE) to provide a tool for the management of reservoir safety.

This new guide is intended to provide practical advice and guidance on the use and application of risk analysis, assessment and management for UK reservoirs. The qualitative assessment method used in Tier 1 could be applied by anyone familiar with the concepts of risk assessment. However, the main users of the quantitative approaches applied in Tiers 2 and 3 are intended to be reservoir owners/undertakers, consulting engineers, inspecting engineers and supervising engineers.

The risk assessment methods are applicable whether the owner/undertaker has a single dam or a portfolio of dams, and can be applied to most types and sizes of reservoirs, including service reservoirs. Proper adoption of the risk management concepts will provide a transparent management framework, and will help to demonstrate compliance with reservoir safety legislation and duty of care. However, use of the methods described in the guide is not a statutory requirement.

Volume 1 begins with a description of reservoir safety management in the UK, the reservoir risk management cycle and benefits for the reservoir owner/undertaker, inspecting engineer, supervising engineer and enforcement agency of including risk assessment in the reservoir safety management framework. The next chapter explains the following key concepts:

- What is a reservoir system?
- What is risk?
- What is probability?
- What is a risk assessment?
- What is risk evaluation?
- What is uncertainty?

The final chapter of Volume 1 presents the framework for tiered risk assessment that forms the core of the guide. It explains:

- the principles underpinning the tiered system
- how to apply the framework
- the tiered system
- how to prepare for the risk assessment
- the differences between the three tiers
- how to select an initial tier of assessment

Volume 2 details the methods used and the supporting evidence on which the risk assessment approach is based. It has two parts. Part 1 provides a step-by-step guide to each tier of risk assessment and Part 2 provides essential background information to the methods in Part 1. Volume 2 also includes details of other sources of information, a comprehensive list of references, and a glossary.

The guide gives the Environment Agency and others involved in ensuring the safety of reservoirs a proven and robust framework, supported by science, with which to assess the risks associated with any reservoir.

This summary relates to information from project SC090001, reported in detail in the following output(s):

**Report:** SC090001/R1
**Title:** Guide to risk assessment for reservoir safety management. Volume 1: Guide

**Report:** SC090001/R2
**Title:** Guide to risk assessment for reservoir safety management. Volume 2: Methodology and supporting information

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