

## **Quantitative risk assessment in practice**

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SYNOPSIS. In 2004 the Interim Guide to Quantitative Risk Assessment for UK reservoirs was published. This document gives a methodology for evaluating the risk posed by the principal threats to dam safety within a common framework using a series of Excel worksheets. The probability of failure of the dam is estimated and compared with the likely loss of life to evaluate the risk posed by the dam, and whether this is tolerable.

This paper describes one of the first uses of this methodology in practice. The system has been applied to 6 reservoirs owned by British Waterways in the United Kingdom which feed the Leeds and Liverpool Canal as part of the regular 10 yearly review of reservoir safety under Section 10 of the Reservoirs Act 1975. The reservoirs are impounded by earthfill embankment dams constructed in the early 19<sup>th</sup> century and are all around 10 metres high.

The paper presents the results of the quantitative risk assessment and the criteria used to determine whether any works are required to improve dam safety. The benefits obtained from using quantitative risk assessment are evaluated from the perspective of both the dam inspecting engineer and the reservoir owner. The use of the quantitative risk assessment in reviewing the existing surveillance procedures for the reservoirs is also described.

The paper concludes with a review of the quantitative risk assessment methodology and identifies where there are opportunities for future improvement.