

Reservoir Management, Risk and Safety Considerations

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SYNOPSIS. Risk assessment techniques are being increasingly applied to portfolios of reservoirs in the UK and overseas. While hydrological and mechanical/electrical risk can be reliably evaluated using modern techniques, geological and geotechnical risks are more difficult to quantify. The calculation of seismic risk might appear fairly straightforward, but it poses a number of challenges because a severe earthquake may discover weaknesses in the dam or reservoir rim that were not identified before the event. At larger dams with gated spillways, the probability of mechanical/electrical malfunction can be significant. A simple methodology for the quantification of each major class of risk is described with the aim of calculating a probability of failure for each dam. This can then be multiplied by a figure representing the financial consequences of failure in order to yield an annualised figure of the magnitude of the risk, which can then be used in ranking the portfolio.