

## **Use of expert opinion elicitation to quantify the internal erosion process in dams**

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**SYNOPSIS.** Expert Opinion Elicitation is a generic term for a number of similar techniques that have been developed to provide quantitative estimates of parameters which cannot readily be quantified through direct measurement or other sampling techniques. The initial motivation for their development was the 1986 Challenger Shuttle disaster in the space industry, and subsequent applications have spread into many other areas: the techniques have been widely used in the nuclear industry, for instance. One particular procedure consists of obtaining responses to a set of quantitative questions from a number of experts, including the range of uncertainty in each response, and then combining these through a weighting procedure to obtain a pooled best estimate of the parameters of interest.

This paper describes an application of that procedure as part of a research contract to improve methods of early detection of progressive internal erosion in UK embankment dams. For some of the parameters, information is also available from a questionnaire circulated to British dam professionals, and the paper compares the outcomes produced by the two approaches. The paper concludes with comments on the future role that expert opinion elicitation could play in providing a better understanding of dam safety issues, in particular in the determination of relevant uncertainties.