



Flood and Coastal Erosion Risk Management Research Programme

Improving Probable Maximum Precipitation (PMP) and Probable Maximum Flood (PMF) estimation for reservoir safety

Project briefing FRS19222/1

In autumn 2020 the Environment Agency commissioned a new project which aims to assess the suitability of existing methods for estimating PMP and PMF, and develop new methods and guidelines to ensure that we understand the risk posed to our highest risk reservoirs from extreme flood events.



The project has 2 phases. This first phase aims to review options for alternative approaches to PMP and PMF estimation and recommended a way forward for development and implementation in phase 2. Phase 1 will take around 12 months to deliver.

Why do we need this research?

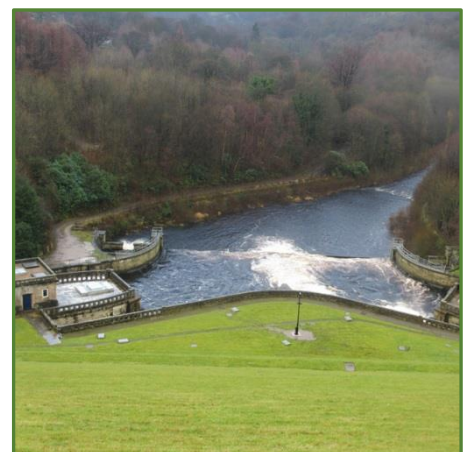
The PMF is used to check the safety of Category A dams, where a breach of the dam could endanger lives in downstream communities. Current guidance requires that Category A dam spillways are able to discharge the flow of the PMF event without endangering the safety of the dam. The PMF is calculated from a theoretical PMP.

Methods and data used to derive PMP and PMF have not been significantly updated since publication of the Flood Studies Report in 1975. However, several rainfall and catastrophic flow events have been observed exceeding existing PMP and PMF estimates.

What will this research deliver?

The first phase of the project will:

- create and populate a catalogue of extreme historical rainfall and flood events
- review alternative, updated methods for estimating PMP and PMF
- develop options for updating current methods for estimating PMP and PMF
- provide a science report and summary of the findings



How can you help?

One of the first and most important tasks for the project is to **identify historical rainfall and river flow events close-to or exceeding estimates of PMP and PMF**. Knowledge of historical events is extremely valuable and can help us test new and improved method from PMP and PMF estimation. We are using many data sources to help identify historical extreme events such as published accounts and digital libraries and databases, but if you know of any extreme rainfall or river flows events in the UK that were truly exceptional, no matter how localised, **we'd be really keen to hear from you!**

Meet the team

The Project Board is responsible for the governance and overall delivery of the project. The Project Advisory Group provide technical steer and advice and the Project Team, led by JBA Consulting are responsible for delivery of the project to the Project Board.

Project Board (Environment Agency)

EA Project Sponsor: **Craig Woolhouse**
EA Project Executive: **Tony Deakin**

EA Project Manager: **Dr Sean Longfield**
Senior Users: **Tim Hunt** and **Peter Spencer**

Project Advisory Group

Rob Bissell: Natural Resources Wales
Vikki Thompson: Scottish Environment Protection Agency
Jim Martin: Department for Infrastructure - Rivers, Northern Ireland

Ruth Bond: Department for Infrastructure - Rivers, Northern Ireland
Alan Brown: Jacobs
Dr Thomas Kjeldsen: Bath University
Dr Chrissy Mitchell: Environment Agency

Project Team (led by JBA Consulting)

Duncan Faulkner: JBA Consulting
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Alan Warren: Mott MacDonald and the British Dam Society
Prof Chris Collier: Leeds University
Dr Alan Gadian: Leeds University
Dr Thomas Kjeldsen: Bath University
Prof Hayley Fowler: Newcastle University
Dr Kelly Mahoney: National Oceanic and Atmospheric Association (NOAA, United States)
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