



The British Dam Society

EVENING MEETING

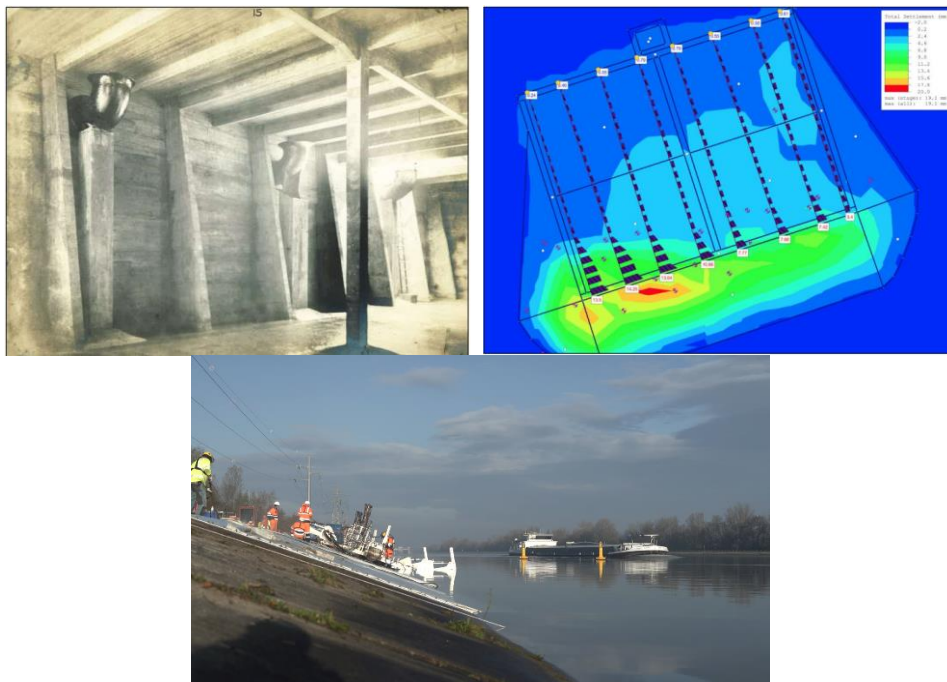
Monday 9th February 2026 at 6:00pm

The last in the series of Poster Presentation Papers from the 2024 Conference at Keele University

Managing risk at Victoria Service Reservoir - Alan Warren

Springwell Service Reservoir, managing and effectively mitigating ground risks in design and construction - M Edmondson

Recent underwater geomembranes solutions for dams and canals - Gabriella Vaschetti



For a brief synopsis and list of presenters see overleaf

This meeting will be streamed live on the internet only. For more details, please visit the events page on the BDS website: www.britishdams.org

For more information please contact the ICE on 020 7665 2147 or email: bds@ice.org.uk

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PAPERS SYNOPSIS

Managing risk at Victoria Service Reservoir

Victoria Reservoir is a reinforced concrete service reservoir located in the heart of Bristol. Constructed in 1914, it is one of the oldest reservoirs of its type in the UK. It was constructed on the site of an earlier open service reservoir. During the second world war, the reservoir was damaged and repaired on account of bombs being dropped on it during the Bristol Blitz. In more recent decades, a series of investigations and repairs have been carried out to assess and maintain its structural condition and operational performance.

This Presentation will describe and discuss the various challenges faced by the operator in managing the safety and operational risks associated with a very old reinforced concrete service reservoir.

Springwell Service Reservoir, managing and effectively mitigating ground risks in design and construction.

Northumbrian Water Group appointed Mott MacDonald Bentley to design and construct a 43 ML service reservoir at Springwell, Gateshead, to improve network capacity and resilience. The semi precast concrete structure (100 m × 75 m × 9 m) is largely founded on competent, incompressible sandstone, but its southern third extends over significantly more compressible weathered rock, introducing a risk of early and long-term differential settlement that could compromise structural integrity and safety.

A comprehensive ground investigation and modern 3D digital tools (Leapfrog Works and Settle3) were used to develop a representative ground model and predict settlement behaviour. Initial analyses exceeded tolerable limits, necessitating mitigation. A simple, cost effective and sustainable solution was adopted: an 8 m high monitored surcharge bund constructed from site won materials to pre consolidate the compressible strata.

The presentation describes the design process: iterative 3D settlement analyses in close collaboration with structural engineers; design, implementation and monitoring of surcharging; and back analysis of field data to refine ground stiffness parameters for final structural design. Monitoring throughout phased reservoir construction shows close agreement with early predictions, validating the integrated digital modelling and proactive ground improvement strategy for managing settlement risk on critical water infrastructure.



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Recent underwater geomembranes solutions for dams and canals

After a brief overview of the available technologies, the presentation will focus on two underwater projects, one in still water and one in flowing water: Studena buttress dam in Bulgaria, where different anchorage systems were used for the geomembrane due to the complex geometry of the dam, and Kembs part of the Grand Canal d'Alsace, where a geomembrane mattress system, the Sibelonmat®, was installed under flowing water on a trial section, to be followed in 2026 by a 500 m long stretch, always under flowing water conditions.

Presenter's Biographies.

Alan Warren | Alan is an All Reservoir Panel Engineer and Dams and Reservoir Director at Mott MacDonald. He is chartered civil engineer with nearly 40 years' experience in the water industry. Alan is a past-Chair of BDS.

Dr Mark Edmondson | Mark is a Technical Principal for Geotechnics in Mott MacDonald Bentley, a fully integrated design and build contractor within the Mott MacDonald Group. He is a chartered engineer with over 25 years' industry experience in ground engineering with much of his career within the UK water sector. Mark also holds the role of regional practice lead for geotechnics instilling and enhancing technical excellence in the field of ground engineering across MMB.

Gabriella Vaschetti | is Scientific and Marketing Director of the Carpi Group. She is a chartered civil engineer with 20 years' experience split between teaching and working for private consultants and for a Main Contractor specialised in dams' construction, and with more than 30 years' experience in waterproofing geomembrane systems for hydraulic structures. She was the secretary of the ICOLD (International Commission on Large Dams) European Working Group that wrote ICOLD Bulletin 135 on Geomembrane Sealing Systems for Dams.



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REGIONAL HUBS

BRISTOL | WARRINGTON | LEEDS | GLASGOW

The Regional Hubs allow the live stream of BDS evening meetings in London to be enjoyed as part of a group elsewhere in the UK.

Refreshments are provided from 17:30 in conjunction with watching the live streaming of the evening meeting - anyone is welcome to attend!

We would be grateful if you could register your intention to attend with the relevant Regional Hub host - details below.

BRISTOL HUB | David Scopes | david.scopes@mottmac.com | 01179069500
Mott MacDonald, 100 Victoria Street, Bristol, BS1 6HZ

WARRINGTON HUB | Nathan Freeman | nathan.freeman@uuplc.co.uk |
United Utilities, Lingley Mere, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey,
Warrington, WA5 3LP

LEEDS HUB | Victoria Walker | victoria.walker@mottmac.com | 01135 249250
Mott Macdonald, 26 Whitehall Road, Leeds, LS12 1BE

GLASGOW HUB | Chukwuemeka Agbo | Michael.agbo@mottmac.com | 01412223770
Mott Macdonald, 319 St Vincent St, Glasgow, G2 5LD

For general queries regarding the Regional Hubs please contact:
Stephen Cavanagh | cavanaghsp@binnies.com | 01244 304 125