



# The British Dam Society

## EVENING MEETING

Monday 3<sup>rd</sup> October 2022 at 6:00pm

One Great George Street, London (Nearest tube: Westminster)

## Design, installation, operation, management and testing of siphons in dams

Update on development of CIRIA guidance (RP 1131)

John Foster MEng MICE  
Jon Troke BEng MSc MICE  
Ian Kirkpatrick BSc MICE



**For synopsis and brief presenter biography see overleaf | Admission free | Teas available from 5.30pm**

This meeting will be streamed live on the internet. For more details, including enjoying the live stream as part of a group at one of our Regional Hubs around the UK, please visit the meetings page on the BDS website: [www.britishdams.org](http://www.britishdams.org)

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

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## Synopsis

The demand for a guide of this nature for siphons in dams has been driven in part by a focus on available drawdown provision at existing reservoirs and of a general preference towards permanent facilities if practicable as opposed to a reliance on temporary arrangements such as pumps.

The focus of the guide, and this presentation, are on designing and installing retrofitted siphons at reservoirs to provide additional drawdown capacity. However, the guide does cover operation, maintenance, inspection and testing which can be applied to existing facilities.

The form and complexity of siphons are varied, including: -

- single or multiple,
- pipe materials,
- method of priming,
- discharge control,
- as well as how it is integrated with the dam (water-tight element) where not practicable to route away from the dam.

Whilst the guide is focussed on retro-fitted, permanent siphon systems to provide additional drawdown capacity, the majority of the guidance could be applied to similar arrangements, including but not exclusively: -

- Temporary siphon arrangements
- Siphons for continuous supply
- Siphons for a new dam

The presentation on the guide will outline the following stages: -

- Concept
- Technical design
- Procure, construct and commission
- Handover and training
- Testing/operation

## Presenter's Biographies

**John Foster** is Chartered Civil Engineer and All Reservoir Panel Engineer, with 20 years' experience working on river, irrigation, water supply, hydropower and reservoir safety with Mott MacDonald and Mott MacDonald Bentley. This experience has included the outline design, detailed design and site supervision of new build irrigation canals, hydraulic structures and dams internationally in Ethiopia, Pakistan and Georgia. However, his primary experience has been working on a variety of reservoir safety schemes on UK existing reservoir assets, including spillway replacement, embankment stability, valve replacements and new drawdown provision. Of particular note, John has been responsible and overseen the development of a number of siphon schemes, varying in scale, quantity, materials and priming, primarily for the water

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supply industry. John was the Lead Author of the guide for Siphons in Dams in an effort to capture and share the experience from design and construction of these personal schemes, as well as that knowledge collated from reviewing other schemes.

**Jon Troke** is a Chartered Civil Engineer and a Supervising Engineer, with 25 years' experience in water supply and hydropower. He is currently working as Principal Engineer in Stantec's High Wycombe office on a number of dams and hydropower schemes in the UK and overseas and is currently developing the design for a 37 m<sup>3</sup>/s siphon arrangement at a large dam in the south of England, which is due to start construction in early 2023. This knowledge has been integrated into the guide as co-Author, and provides an alternative perspective to hopefully provide a well-rounded guide.

**Ian Kirkpatrick** is a Chartered Civil Engineer, Supervising Engineer and Reservoir Safety Manager for Anglian Water. He has 30 years' experience working on reservoir, water and water recycling projects, 20 years of which he has been working in reservoir safety. He is responsible for the safety of 44 reservoirs under the Act owned by Anglian Water including Pitsford where he was involved in the scheme to provide siphons and is responsible for testing them annually. He chaired the project steering group meetings for the development of the CIRIA siphons guidance.