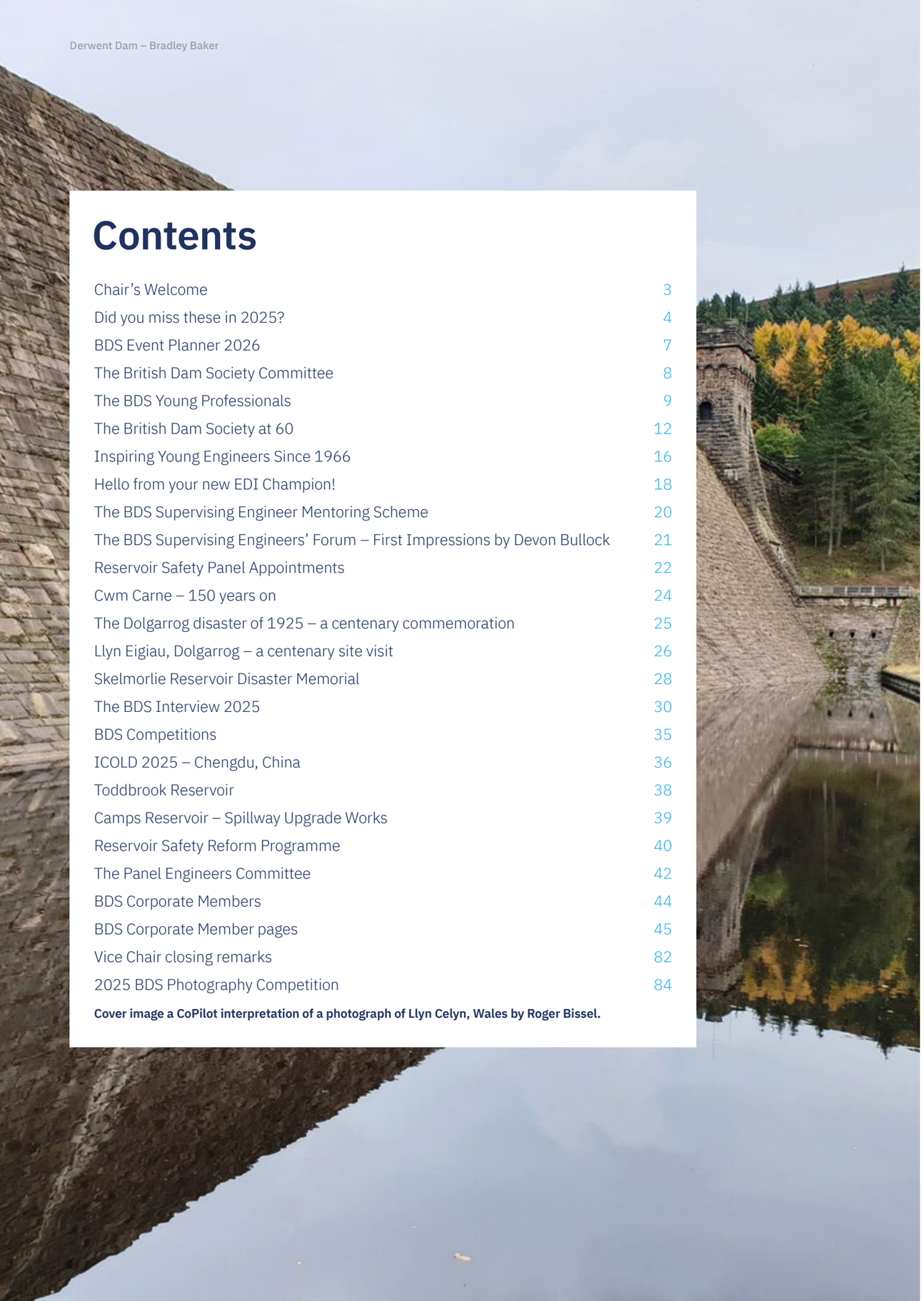
The British Dam Society

Yearbook 2025



Derwent Dam – Bradley Baker

Contents

Cover image a CoPilot interpretation of a photograph of Llyn Celyn, Wales by Roger Bissel.

Chair’s Welcome

Welcome to the fifth edition of the British Dam Society (BDS) Yearbook. Since the first edition in 2021, the publication has gone from strength to strength, and this year is no exception. It is a publication by the membership for the membership, and I would like to say a massive thank you to all of the contributors from across the industry. Without your efforts, and especially the hard work of Andrew Pepper, the Editor, this Yearbook would not be possible.

IN MAY, the BDS participated in the second European Dams and Reservoirs Day, which was an initiative created by the European Club of ICOLD (EURCOLD) to promote the awareness, understanding and role of dams in society. BDS joined fellow national committees over a period of a week, via a social media campaign, to celebrate the past, present and future of our industry. This was a great way to raise the profile of the BDS internationally and we will be looking to build on this for the 2026 event.

28th ICOLD Congress in Chengdu, China

Also in May, the 28th ICOLD Congress and 93rd Annual General Meeting was held in Chengdu, China. There were 20 UK representatives who attended. This included BDS National Committee representation and a number of Technical Committee Representatives and Co-Opted Members. We again offered bursaries for our Young Professionals and it was a pleasure to see the five YP attendees take part in everything that the event had to offer from pre-conference study tours to technical sessions, workshops, and cultural and social events. You will be able to read more about their experiences later in this Yearbook.

The annual ICOLD events are a fantastic way to share learning across the global industry and for our representatives to bring relevant knowledge back to help advance dam safety and management in the UK. Looking to the next few years, the events will be in Mexico in 2026, South Korea in 2027, and the larger three-yearly Congress in 2028 will be closer to home in Madrid, Spain. This will be the centenary of the formation of ICOLD, of which the UK was a founding member, and we expect the event in Spain to include celebration of that major milestone in our history.

In my capacity as Chair, I represented the UK at the ICOLD General Assembly (AGM) in Chengdu, where I joined other member countries to discuss and vote on a variety of topics, including newly joining National Committees, new Vice Presidents and President, and hearing the progress across all technical committees and regional clubs, including the upcoming bulletins that will be published. It is vital that BDS plays a role in these discussions and over the next few years this will become part of the BDS strategy of growth.

17th Supervising Engineers’ Forum

In September we held the 17th Supervising Engineers’ Forum at the National Conference Centre in Solihull. This year saw our highest ever attendance with 286 delegates. It was great to see the attendees contribute to the mix of technical presentations, panel discussion and Q&A. The networking is an important and welcomed element to this event. I would like to say a big thank you to John Foster and Mark Colledge, who organised such a well-run day.

BDS Young Professionals

Our Young Professionals Committee has worked hard this year to provide monthly knowledge sharing events for the membership and to run the Supervising Engineer mentoring programme where many have benefitted from guidance and advice as they develop their careers. I know that planning has already started for the next YP Forum to be held in 2026 and we look forward to an exciting event which brings together many of our younger members and early careers for a day of learning.

In this Yearbook, we have our first article by an Arkwright Scholar. For many years, the BDS has sponsored this important programme run by the Smallpeice Trust to encourage the engineers of the future. We see this as an important part of our role as a Specialist Knowledge Society to promote these schemes and develop the skills of school children. We hope you find the article insightful.

Looking back and looking to the future

This year has marked three important commemorations for the dam safety industry. The centenary of the Skelmorlie disaster was recognised in April and that of Dolgarrog in November. There was also the 150-year commemoration of the Cwmcarn disaster. It was fitting that the BDS was able to support each of these events through supporting installation and improvements to memorials, and with BDS members giving presentations to the local communities and wider engineering community on the incidents and how those shaped dam safety in the UK.

As you will all be aware, the Reservoir Safety Reform Programme is progressing with a consultation being held over late 2025 and early 2026. This will be the first major change in how we build, manage and operate our reservoirs since the Flood and Water Management Act in 2010. It could see significant changes to, or replacement of, the Reservoirs Act 1975. That Act and its 1930 predecessor have served owners, engineers and enforcement authorities well for nearly 100 years. I encourage all the membership to take the time to review the consultation, discuss with others, and provide your considered feedback to the consultation. This is our chance as an industry to inform and guide these changes to ensure that the structure behind the work that we do is suitable for the next 100 years.

My final thank you goes to all the members of the BDS committee. They work tirelessly in the background to ensure that all of our activities and knowledge sharing are a success. We hope that you enjoy reading this Yearbook. If you have any comments or suggestions for next year’s publication, then please get in touch.

Darren Shaw, BDS Chair

Did you miss these in 2025?

In 2025 the BDS held five evening meetings at ICE, One Great George Street, all of which were streamed live and recorded. If you missed a meeting or would like to hear one again all can be found on britishdams.org/meetings-and-events/listen-again/

Fish screen on a spillway crest - Jeremy Benn

13 January 2025 – Overflow and outlet screens

Jeremy Benn (JBA Consulting)

Overflow/outlet screens are often fitted to reservoirs to prevent human exposure to hazards, to catch large debris, or to prevent fish and mammals being washed downstream. The presentation summarised research on the impact of screen size on fish and mammal passage, and on debris movement, in particular the relationship between debris volume and bar spacing. It looked at some alternative screen design and management measures to reduce the impact on reservoir water level and overflow capacity.

Screens will collect debris and block temporarily, which can lead to an increase in reservoir water level. Their impact must therefore be considered in reservoir flood studies and the design of outlet structures, particularly for flood storage reservoirs that operate infrequently and rely on maintaining the design stage-discharge relationship to achieve the required flood attenuation. Three case studies were presented.

13 January 2025 – Bwlch Nant yr Arian Reservoir Improvement Works

Matt Coombs (Binnies UK)

Bwlch Nant Yr Arian, situated about 14km due east of Aberystwyth, is a Natural Resources Wales reservoir with a capacity of 40,000 m³. A Section 10 Inspection found that the reservoir had no overflow, no controllable drawdown facility and insufficient freeboard. New works to address the safety measures required for the reservoir comprised the installation of a new reinforced concrete spillway with an integrated low level drawdown facility, and rip rap placed along the upstream face. The presentation discussed the particular construction challenges faced, such as the very steep sided valley limiting construction access, the visitor centre remaining open during the works, working limitations due to red kite feeding times, adverse weather experienced, emergency planning and the impact of Covid.

3 March 2025 – Understanding the Reservoir Safety Risks of Non-Statutory Reservoirs

Abi Morgan (Arup) & Guy Hitchens (Severn Trent Water).

Severn Trent Water (STW) appointed Arup to carry out a project to appraise the reservoir safety risks posed by 71 reservoir sites with capacities identified in the range 10,000 to 25,000m³ above natural ground level. The study helped STW understand the potential increase in financial risk which could occur should these be brought into the Reservoirs Act, considering both operational requirements and capital works.

The presentation explained the methodology applied for the assessment, and the key themes discovered, including common reservoir safety risks and recommended mitigation actions, as well as an exploration of the challenges and opportunities of the process.

3 March 2025 – Leakage Remediation at a Small Heritage Reservoir

Peter Down (Mott MacDonald)

Abbeydale Industrial Hamlet, on the outskirts of Sheffield, is a former steelworking site along the River Sheaf and has become a museum open to the public. The site is designated a Scheduled Monument and the forge works are Grade I listed. Several other buildings within the site are Grade II* listed. It has a history thought to go back to 1685, with the present-day site reported to date from the early 18th century. To provide power for the machinery, a small reservoir was constructed and filled with water abstracted from the River Sheaf. The reservoir is below 25,000m³ capacity, and thus is not registered under the Reservoirs Act 1975. A history of leakage from the reservoir has led to damage to structures, and in May 2023 significant leakage into one of the Listed buildings occurred resulting in emergency action being taken. The presentation detailed the issues encountered, works previously performed, recent investigations and the development of remedial works to provide a longer-term solution.

3 March 2025 – Leakage Remediation at the Hampton Distributing Reservoir

Stan Qi (AtkinsRéalis)

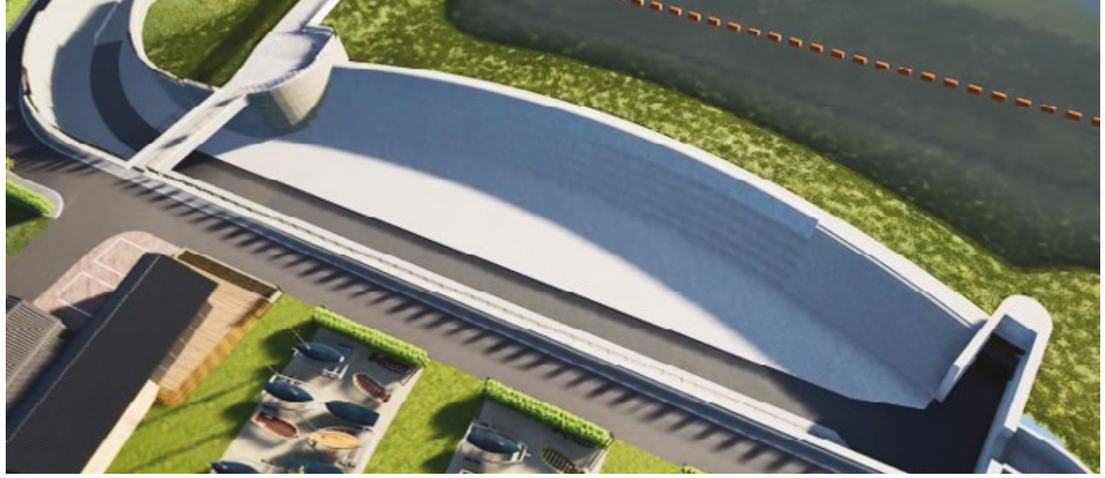
Hampton Distributing Reservoir is a non-impounding reservoir built in the 1900s and located in Hampton, southwest London. The 32,000m³ reservoir, formed by a puddle clay core embankment, has a perimeter of 800m. An increase in embankment settlement was detected, and a non-intrusive geophysical survey identified a distinct leakage path at the foundation level of the embankment. In order to mitigate the risk of internal erosion, remedial measures were proposed to arrest the leakage. Limited working space and difficult access were some of the main constraints for the remedial works, but permeation grouting using Tube-a-Manchette (TaM) was adopted as the most practical remedial solution. The presentation outlined the key aspects of the project, from the initial investigative works to construction, covering also the optioneering and design of the grouting works. Challenges and lessons learnt from the project were also highlighted.

28 April 2025 – The 2020 national seismic hazard maps for the United Kingdom

Ilaria Mosca (British Geological Society)

The 2020 seismic hazard maps for the United Kingdom update the previous national maps published in 2007 and are used to revise the UK National Annex for the second-generation Eurocode 8. The national maps for the UK now provide not only peak ground acceleration but also spectral acceleration at 0.2 s and 1.0 s for 5% damping on rock and the four return periods (i.e. 95, 475, 1100, and 2475 years). The maps confirm that seismic hazard is generally low in the UK and is slightly higher in North Wales, the England-Wales border region, and western Scotland. The presentation gave an overview of the 2020 national seismic hazard model and accompanying seismic hazard maps for the UK and explained the general use and importance of a national hazard map to provide guidelines for designing earthquake-resistant structures.

Hampton Distributing Reservoir – Stan Qi



Toddbrook Tumblebay (courtesy Arup)

28 April 2025 – The use of vibrating wire piezometers to measure pore water pressures in dams

Rafael Monroy (Klohn Crippen Berger)

A knowledge of pore water pressures in embankment dams and in mining dams is essential to monitor performance. In many instances, this knowledge forms part of a critical risk control to prevent a high consequence event, such as global instability and release of containment. Yet the field measurement of pore water pressures can be challenging, particularly if these are below atmospheric pressure. Vibrating wire piezometers are used in many instances to monitor pore water pressures in dams, both in the foundation and in the fill, yet these instruments have not been designed to measure sub-atmospheric pressures. The presentation covered the challenges of interpreting data from vibrating wire piezometers installed in an unsaturated soil.

28 April 2025 – The Effect or Pretreatment of Organics in Dispersion Tests

Lis Bowman (University of Sheffield)

Internal erosion in clayey soils is associated with dispersion as this can be a major contributing factor in piping failure of earth embankment dams. For dams constructed without filters and of poor construction, it is critical to understand the nature of dispersive soils so they can be treated or appropriate remedial measures applied. The presentation described tests carried out using the Double Hydrometer Test, a type of physical dispersion test, on a representative core sample from a Pennine-type dam in Yorkshire. The tests compared soil tested with a pretreatment using hydrogen peroxide to remove organic matter to one without pretreatment, and identified the effect of using different amounts of soil in the hydrometer tests.

7 July 2025 – Restoring Toddbrook Reservoir

David Prisk (Canal and River Trust), Martin Hewitt (Mott MacDonald), Ryan Braund (Kier), Henry Foster-Roberts (Arup)

Toddbrook Reservoir was constructed in the 1830s to feed the Peak Forest and Macclesfield canals and remains one of England's most important canal supply reservoirs. The reservoir is essential to keep these canals open and alive for the benefit of the communities who live along the canals, the many visitors who enjoy them and the ecological and environmental benefits they provide. The dam is 23.8m high and stores 1,238,200 m³ of water.

Following damage to the auxiliary spillway at Toddbrook Reservoir the Canal & River Trust has invested in significant restoration works designed by Arup and constructed by Kier. The works involve removal of the auxiliary spillway, restoring the eroded section of the embankment and construction of an enlarged spillway along with providing draw off upstream control, remote instrumentation monitoring and increased drawdown provision.

The presentations covered the complexities of the design, innovation and flood management required during the construction and the extensive mitigation works and remote monitoring to assure reservoir safety. The new spillway has been designed to carry the probable maximum flood, removing the need for the over-dam spillway. The design utilises a tumble bay feeding into a stepped chute with final energy dissipation using 6m high "turrets" to form a flume, preventing the need for a deep chamber in the final stilling basin. Construction has involved excavating more than 15,000 tonnes of soil, and installing over 500 concrete piles and 1,000 sheet piles to support the new spillway structure and resist both flotation and seismic loading. An array of instruments will remotely monitor both thermal change and the phreatic surface within the embankment, supporting reservoir safety management of the restored reservoir.

17 November 2025 – BDS Prize 2025 – The Young Professionals' Paper Competition

Amy Henderson (JBA Consulting), Devon Bullock (Binnies), Meher Rashid (AtkinsRéalis), Anida Zeqirllari (Binnies), John Campbell (Mott MacDonald)

The written papers were assessed by judges drawn from a representative range of BDS members, and the authors (above) gave presentations to BDS members at the November evening meeting. These presentations were also assessed by the judges, and the final scores determined the winning papers. The results of this competition can be found on page 35.

EVENTS

BDS Event Planner 2026

Throughout the year we host a number of evening talks, competitions, site visits and other networking activities for our members. For 2026 the main event will be the 23rd BDS conference to be held at Keele University in September.

We also offer local hubs across the country to allow members to virtually join our evening talks and meet with fellow members from your region. Finally, our Young Professionals offer networking and CPD opportunities.

Coming up in 2026

DATES FOR YOUR DIARY	
January	• Synopsis deadlines for the 2026 Conference • Nominations open for the BDS Committee – this year there are three positions available on the main BDS committee • Young Professionals – Monthly CPD Webinar
February and March	• London evening meeting (9th February) with regional Hubs available • Second Young Professionals' Forum • DEADLINE for the Committee nominations (1st March) • Young Professionals – Monthly CPD Webinar
April	• Annual General Meeting followed by the BDS international lecture (27th April) with regional Hubs available. This lecture is held every two years with a focus on dam engineering internationally. • Young Professionals – Monthly CPD Webinar
May	• DEADLINE for Conference Papers – Last day to submit your paper and be part of the BDS 2026 Conference at Keele • ICOLD in Guadalajara, Mexico (23rd May – 29th May 2026) • Young Professionals – Monthly CPD Webinar
June and July	• Site Visits to be held at various sites across the country • London evening meeting (6th July) with regional Hubs available • Judging for the Bateman Award – if you wish to get involved please contact the BDS • Young Professionals – Monthly CPD Webinar • Registration for the conference opens – book early to avoid disappointment!
August	• Young Professionals – Monthly CPD Webinar
September	• BDS 23rd Conference at Keele University (9th – 12th September 2026) • Bateman Award is also presented for the best paper published between conferences. • ICOLD – 13th ICOLD European Club (EurCOLD) Symposium in Bydgoszcz, Poland (21st – 25th September 2026)
October	• DEADLINE for BDS Photo Competition • Young Professionals – Monthly CPD Webinar
November	• London evening meeting (16th November 2026) with regional Hubs available. This evening meeting includes the results of the BDS Photo Competition. • Young Professionals – Monthly CPD Webinar
December	• DEADLINE for expressions of interest for the posts of BDS Chair and BDS Vice-Chair 2027–2029

For updated information go to britishdams.org/meetings-and-events/events-calendar/

The British Dam Society Committee

The BDS Committee comprises elected members, nominated members and honorary members.

Elected members join the committee for a three-year term at AGMs, following a call for nominations and a ballot (if required). Nominated members are chosen by the BDS Chair to fulfil a specific role for a maximum of two years. Three honorary committee members have open-ended appointments carry out key administrative tasks, namely Technical Secretary, Website Manager and Dams & Reservoirs Editor.

The Young Professionals (YPs) have their own committee, members of which are also members of the main BDS Committee. The Chair and Vice Chair of the main committee and the Chair of the YP committee serve in those roles for a two-year period.

The main committee has a number of Strategic Objective Working Groups (SOWGs), with each committee member allocated to a SOWG and given a specific role within it.

Executive Committee

Darren Shaw
BDS Chair

Rachel Davies
Past Chair

Sam Tudor
Vice Chair

Andrew Thompson
Technical Secretary

Niall Allen
YP Chair

Rachael Lavery
YP Past Chair

Membership SOWG

Stephen Lockett
Corporate Member Liaison

Anthea Peters
ICOLD Technical Committees

Merlin Davis
EDI Champion

Maddie Prendergast
YP Membership & Mentoring

Schools & Universities SOWG

Drummond Modley
University and Schools lead

Richard Williams
University and Schools liaison

Sam Leonard
University and Schools liaison

Events SOWG

Rob King
External events

Matt Coombs
Evening meetings

Stephen Cavanagh
Site Visits

John Foster
Supervising Engineers' Forum

Gerallt Richards
Competitions

Mia Clark
YP Forum & events

Communication SOWG

Sam Safavian
BDS Newsletter

Rhys Coombs
Website Manager

David Bell
Website support

Andrew Pepper
Dams & Reservoirs; Yearbook

Secretarial Support

Sarah Watson
YP Social Media

Moira Doherty
ICE Secretariat

The BDS Young Professionals

It has been an exciting year, with the success of our monthly CPD events and international webinars as well as ICOLD 2025. The YP committee will continue to work hard to provide events and opportunities for all members.

Who are we?

The Young Professionals (YP) group comprises British Dam Society members from any discipline 35 years and under of age. The group was established to promote and encourage the next generation into the industry, in order to provide a continuity of professionals who can ensure the ongoing safety of the UK's dams and reservoirs.

A new Young Professionals Committee

In 2025 a new YP Committee was formed, which will serve for two years, until spring 2027. The officers of the committee are:

Niall Allen
YP Chair

Maddie Prendergast
Mentoring Champion

Mia Clark
Events Champion

Sarah Watson
Social Media Champion

The objectives of the YP group

With the help of the main BDS committee and the wider BDS membership, the YP committee strives to engage and support the younger and new members of the industry, encouraging them to join the BDS and facilitating professional development and networking opportunities.

To help achieve this, the seven main objectives of the group have been set out, namely:

1. **Increase the BDS membership base of 35s and younger.**
2. **Increase networking opportunities for young professionals within the BDS.**
3. **Provide workshops for professional development.**
4. **Provide a mentoring scheme and professional development advice.**
5. **Assist BDS initiatives in schools, colleges, and universities.**
6. **Organise social evenings and events.**
7. **Liaise with other Young Professionals' Forums in the ICOLD community to share ideas.**

The benefits of being a BDS YP member

The outworking of these objectives is shown in the benefits that can be realised by YP members, including:

- Opportunity to attend international ICOLD conferences through the YP bursary scheme
- Opportunity to join the BDS Mentoring Scheme, to support professional development in the industry
- Access to a range of interesting CPD talks from senior experts in the industry across the year
- Access to the Dams and Reservoirs journal
- Opportunity to attend BDS YP Forums to network with fellow YPs and engage in YP-focussed sessions.

Online CPD Events

Throughout 2025 we have continued to provide our monthly CPD events and have had some excellent presentations on topics including construction case studies; hydraulic theory; dam failure modes and international practices.

We would like to thank all presenters who have volunteered to share their knowledge and experience as part of these events and are always looking for new speakers – so please contact us if you would like to take part!

Month	CPD Activity	Presenter	Company
January	Constructability issues for an Intake	Mark Gill	Mott MacDonald
February	Changing landscape of water resource planning	Caroline Reeson	Mott MacDonald
March	Flood forecasting and warning for reservoirs	Paul Wass	JBA Consulting
April	Hydraulics 101	Jeremy Benn	JBA Consulting
May	What a good Section 12 inspection and report should look like	David Scopes	Mott MacDonald
June	Dam Failure Modes	John Foster	Mott MacDonald
August	Secondment to CEATI	Johnny Lyttle	Environment Agency
September	The use of Asphalt in Hydraulic Engineering for Erosion & Scour Protection	Roger Smith	Hesselberg-Hydro
October	Scottish legislation and Scottish Water dams	Tony Judge	Scottish Water
November	Micro-Disruptions Mega Disasters	Muhammad Hamza Khalid	University of Manchester (PhD Student)
December	Qualitative Risk Assessment of Internal Erosion in Dams	Robin Wood	Statkraft

International Collaboration

In April, the BDS and ANCOLD (Australia) Young Professional groups hosted a joint webinar explaining the roles of each organisation, how dam safety is managed in the UK and Australia. There was a discussion on the work undertaken in both the UK and Australia to improve emergency preparedness for dam incidents. Following the presentation, there was an opportunity for a live Question and Answer session, which saw engagement by attendees from both the continents. We would like to thank our speakers and those from ANCOLD for their participation.

In June, there was a joint peer-to-peer mentoring session between the BDS and USSD (USA) young professionals. This was arranged through the past and present BDS YP Committees collaborating with the USSD YP Committee. This was an engaging session with introductions of dam safety in each country by the respective YP committee members, followed by breakout rooms where attendees with similar levels of experience discussed their careers and dam safety topics, allowing them to network with other YPs. We would like to thank the USSD for collaborating with the BDS in this event.

The BDS YP Group looks forward to hosting additional international webinars with the ICOLD Young Engineers Forum community in the future.

Young Professionals at ICOLD 2025

Mitchell Stevenson, of Scottish Water, attended the **ICOLD 2025** Congress and 93rd Annual Meeting in Chengdu, China, along with six other BDS Young Professionals.

The conference offered a rich programme of technical short courses, workshops, forums, committee meetings and site visits. A short course highlighted China's advancements in constructing, sustaining, and digitally monitoring over 200 rock-filled concrete dams. The course covered applications of high-performance self-compacting concrete, drones, and artificial intelligence in quality control, along with the use of self-protecting underwater concrete.

Workshops and committee sessions explored practical advances in dam safety and management. Sessions covered new risk assessment guidelines, tailored spillway surveillance, and strategies for upgrading dams to meet climate and safety challenges. Sessions also covered integrated water management for energy transition and the importance of robust data quality, advanced monitoring, and machine learning in dam surveillance. The sessions encouraged open discussion and knowledge sharing, and the YP lunch with mentors was a great opportunity to connect with experienced industry leaders and YPs from around the world.

Technical site visits were a particular highlight, such as visits to Lijiayan and Zipingpu dams, both featuring advanced construction methods and digital twin systems for real-time monitoring. The post-conference study tour included the iconic Three Gorges Dam, as well as the Gezhouba and Danjiangkou projects. These visits offered first-hand insight into the scale, complexity, and operational challenges of China's water infrastructure.

BDS YP representatives at ICOLD 2025 – Aidan Norris, Mitchell Stevenson, Niall Allen, Rowena Stevenson and Tom Dutton

The ICOLD YP Annual Forum provided a valuable opportunity to engage with the board and participate in the election of new committee members. This was followed by a memorable networking dinner on the Jinjiang River, offering a relaxed setting to connect with peers and share insights.

The welcoming spirit and enthusiasm of the delegates throughout ICOLD made the experience truly enriching, broadening both YPs' technical expertise and professional networking.

YP Forum

Following the success of the inaugural BDS YP in 2024, it is the intention to host another YP Forum in Spring 2026. Registration for the event will open in the New Year. This event will allow BDS YP members to expand their network while developing their learning of dams and reservoirs. The event will have a variety of sessions that have been chosen from the feedback received from the BDS YP members. The YP Committee is looking for BDS members to present and become involved in the sessions. Please contact youngprofessionals@britishdams.org or niall.allen@mottmac.com regarding the event.

How you can help

Please feel free to contact the YPs if you have any queries or would like to provide feedback to the YP committee. We are always open to new ideas and welcome your comments.

General Queries
youngprofessionals@britishdams.org
or niall.allen@mottmac.com

Mentoring
mentoring@britishdams.org

LinkedIn
British Dam Society

ICOLD visit to Yeucheng Lake at Mount Qingcheng - Serene Li

The British Dam Society at 60

Andrew Pepper, editor of Dams and Reservoirs and the Yearbook, has been trawling through past copies to find key events and how the British Dam Society (BDS) has changed over the 60 years since its inception.

FOR THIS NOTE I have scanned through all the copies of Dams and Reservoirs and its predecessor, *News and Views* to pick out when key changes to the society or our industry had taken place. If you would like to look at our back catalogue for yourself, all BDS members can access every one of the publications via the 'Journals' tab in the members' area of the BDS website.

I last looked back at the history of the BDS in 2016, and the August 2016 issue of Dams and Reservoirs (Volume 26, No 2) contains a number of articles concerning the origins of the BDS, notably 'British Dam Society – 50 years on' by Dr Andy Hughes, and 'What was the British Dam Society like 50 years ago?' which I researched and wrote.

Names

The history of BDS really starts with the formation in **1928** of the International Commission on Large Dams (ICOLD), a non-governmental international organisation to provide a forum for the exchange of knowledge and experience in dam engineering. The UK was a founding member of ICOLD and formed a British National Committee on Large Dams (BNCOLD) to represent the UK at ICOLD.

BNCOLD comprised representatives from organisations such as the Institution of Civil Engineers, Institution of Water Engineers, Association of Consulting Engineers, the Federation of Civil Engineering Contractors and the North of Scotland Hydro-Electric Board. There were no individual members, only committee members.

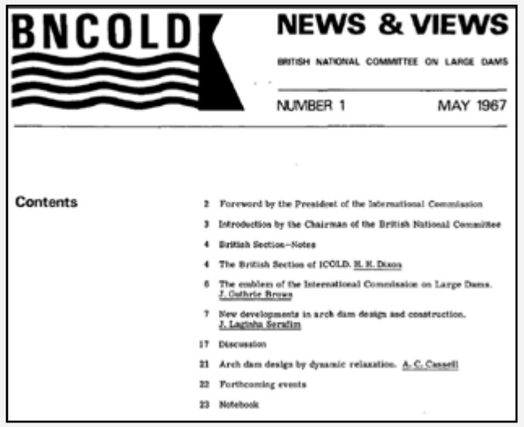
BNCOLD continued in this way until, at the end of **1965,** membership was opened to all engineers in Great Britain with an interest is dams, and the first meetings were held in **1966**.

By May **1967** BNCOLD published the first issue of *News and Views*, a bulletin for the growing organisation that was to be published twice a year. As you can see from the contents page, it included a few papers and notes about the committee and forthcoming events.

Llyn Llywelyn - Alun Rhys Davies

At the AGM of **1990** 'The British Dam Society' was adopted as the name by which the British Section of ICOLD would be known. It was felt that this was an opportune time to make some changes to the Society's publication News and Views, and so the BDS journal Dams and Reservoirs was born.

The Club for European National Committees of ICOLD (EurCOLD) was formally established on 6th September **1995** and the BDS was one of the founding members.



BNCOLD NEWS & VIEWS

BRITISH NATIONAL COMMITTEE ON LARGE DAMS

NUMBER 1 MAY 1967

Contents

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Membership and Equality, Diversity and Inclusion

In the **1960s** there were a number of consulting practices owned by partners, typically experienced dam engineers. These partners, or other senior members of the profession, generally comprised the committee of the BNCOLD. Although membership figures from years ago are not readily available, it is clear that the demographics of the committee and BDS membership as a whole have changed dramatically over the 60 years.

For instance, at the **1973** ICOLD meeting Madrid there were 74 UK delegates, 42 of whom brought their partners, and two couples even brought their daughters. In contrast, in **2025** there were 20 UK delegates at the ICOLD conference in China – and no partners

As far as I can tell Dr Wendy Daniell was elected as the first female committee member of BDS at the AGM in **2001**, although there had been one or two female members in the BDS and indeed in BNCOLD from the 1960s.

2013 saw Honorary Membership of the BDS introduced, the first recipients being Michal Kennard, Dr Andrew Charles, Iain Moffat and Dr Paul Tedd.

With the need to attract the younger generation into the industry recognised, in **2014** the BDS Young Engineers' group was formed.

The first Arkwright student was sponsored in **2016**, and you can read more about this ongoing initiative on page 16.

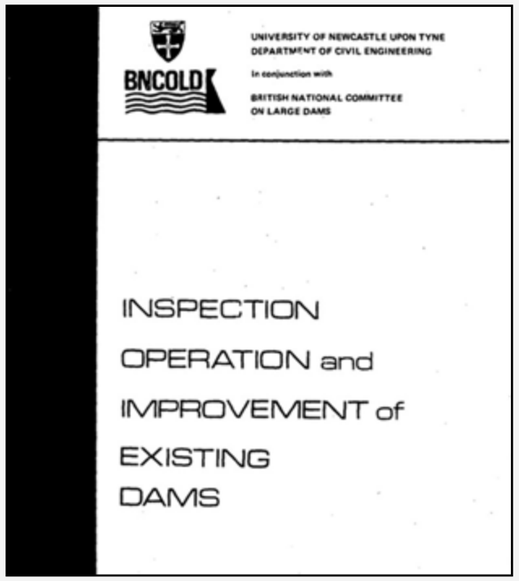
In **2018** the Young Engineers' group name was changed to Young Professionals (YPs) to be more inclusive of the non-engineers involved in the industry.

Amy Carter was appointed as the Society's first Equality, Diversity and Inclusion (EDI) Champion in **2022**, with the aim of developing a strategy to improve equality and diversity among the membership.

Conferences and other events

The BDS series of conferences started with a symposium held in **1975** at Newcastle, titled 'Inspection, Operation and Improvement of Existing Dams'. There was then a seven year gap before the start of the regular biennial conferences, when the **1982** conference was held at Keele University, with 200 delegates visiting Deep Hayes and Carsington Reservoirs. We have now come full circle, with the **2024** and **2026** conferences also being held at Keele.

In **2018** workshops were introduced into the biennial conferences and have proved very popular. Less popular was the tradition of a conference after-dinner speaker, which was a removed from the programme in that year, allowing more time for networking – and the bar!



UNIVERSITY OF NEWCASTLE UPON TYNE
DEPARTMENT OF CIVIL ENGINEERING
In conjunction with
BRITISH NATIONAL COMMITTEE ON LARGE DAMS
BNCOLD
INSPECTION
OPERATION and
IMPROVEMENT of
EXISTING
DAMS

Cover of the Proceedings of the 1975 Symposium

In August/September **1983** BNCOLD hosted the 51st Executive Meeting of ICOLD, when about 200 delegates from around the world attended. Four tours covered a large part of the UK and beyond, ranging from Pitlochry in Scotland to Dinorwic in North Wales and Colliford in the south-west, as well as one to Rotterdam! The many partners present were catered for with separate visits.

In April **1993** the first Supervising Engineers' Forum was held in Manchester, with 160 delegates attending. It has been held biennially ever since, alternating with conference years, and being held in recent years at the National Conference Centre in Solihull.

Committee

In August **1986** the post of Honorary Technical Secretary was created, with Dr Andrew Charles the first to be appointed in this role.

In **1989** the terms served by the BDS Chair and Vice-Chair were reduced from three years to two years which brought the duration of the appointments in line with the society's biennial programme.

In **2001** a BDS Strategy drafted and agreed at the AGM. Also in **2001**, following a competition, a new BDS logo, created by John Balley of Montgomery Watson, was adopted.

The BDS Strategy was reviewed and updated in May **2016** and saw five Strategic Objective Working Groups of committee members created.

Tracey Williamson became the first female Chair of the BDS at the **2017** AGM.

Communication - website, social media, journal, yearbook

2002 saw the launch of the first BDS website. This has continued to grow and adapt to changing needs with a major refresh expected in 2026.

In **2007** Thomas Telford, the commercial arm of the Institution of Civil Engineers (ICE), approached the BDS with an offer to publish Dams and Reservoirs, the intention being that it would be added to their portfolio of peer-reviewed technical journals and be marketed world-wide. This offer was accepted, an agreement signed, and the first of the new-look Dams and Reservoirs was published in **2008**. ICE Publishing, along with all the ICE's technical journals, including Dams and Reservoirs, was sold to Emerald Publishing in **2023**.

Around **2018** the BDS started to use social media to promote its activities, using LinkedIn, Twitter, Instagram and YouTube.

The Yearbook was started in **2021** to allow Dams and Reservoirs to concentrate on peer-reviewed technical papers, while the Yearbook would inform members of the wide-ranging activities of the Society and its members, and give more details of the variety of work carried out by the BDS committee.

Panel Engineers

Numbers of panel engineers were not generally recorded, although in February **1995** it was noted that there were 74 All-Reservoir Panel Engineers, 10 Non-Impounding Reservoir Panel Engineers, 29 Service Reservoirs Panel Engineers and 331 Supervising Engineers

By **2006** an article noted that there were 57 Inspecting engineers and 159 Supervising Engineers – a 50% reduction over the previous eleven years.

In late **2025** I found there were 27 All-Reservoir Panel Engineers and two Service Reservoir Panel Engineers for England, Scotland and Wales, a further reduction of 50% from **2006**. However, there was a slight increase in numbers of Supervising Engineers – up to 165 in total, of which 93 were registered on the Scottish panel and 148 registered on the panel for England and Wales.

What has *not* changed over 60 years?

Biennial conferences continue, with an eminent dam engineer invited to give the Binnie Lecture before the conference dinner.

Evening technical meetings at One Great George Street continue a long tradition of papers and presentations given at the Institution of Civil Engineers headquarters.

BDS committee representatives and members attend ICOLD annual meetings, with the Committee members representing the UK and able to vote on ICOLD business, as they have done since 1928.

The BDS continues to provide representatives on ICOLD technical committees, to report on the works of these committees in the journal, and members benefit from using the Technical Bulletins produced.

The BDS never ceases to explore new ways to share knowledge and to attract young professionals from a range of disciplines into the industry.

Nostell Lower Dam - Abi Morgan

Llyn Tegid - Rachel Dawes

BDS AND ARKWRIGHT SCHOLARSHIPS

Inspiring Young Engineers Since 1966

For nearly 60 years, The Smallpeice Trust has been the spark that ignites young people's passion for engineering and technology. What started as a vision to inspire the next generation has grown into the UK's leading STEM education charity, reaching thousands of young people every year.

THE TRUST believes that every young person deserves the chance to discover their potential in science, technology, engineering, and maths (STEM). That's why the Trust creates hands-on experiences that break down barriers, challenge perceptions, and show that engineering truly is for everyone.

From the flagship Arkwright Engineering Scholarships to innovative school programmes, the Trust is not just teaching STEM, it is building the future, one young person at a time.

Arkwright Engineering Scholarship

Arkwright Engineering Scholarships exist to identify, inspire, and nurture high-potential young people aged 16–18 as they prepare to leave school and progress into the exciting world of engineering, computing, or technical design. Since 1991, the programme has supported over 8,000 students from over 1,000 schools.

The Arkwright Engineering Scholarship Programme inspires passionate students to pursue their dreams of changing the world through a combination of mentoring, funding, and real-world exposure within industry.

Since 2016, the British Dam Society has sponsored 18 candidates, including this year's scholar, Lucy Agate.

Some examples of previous candidates' career progressions are:

William — Product Validation Engineer

Declan — Graduate site engineer

Swasthihaa — MRes + PhD Student at University of Cambridge in Engineering

Cameron — MEng Civil/Structural Engineering Student at Heriot-Watt University

Melody — Civil Engineering

The Trust's track record speaks for itself:

Over
8,000
Arkwright Engineering Scholarships awarded since 1991

Over
50,000
students reached annually

Over
1,000
schools partnered annually

100+
corporate and educational partners supporting the Trust's mission

30+
years of the prestigious Arkwright programme

Lucy Agate's Experience

I am one of the current Arkwright scholars supported by the British Dam Society. After celebrating my GCSEs in 2024, I am currently studying A-level Mathematics, Further Mathematics, Physics and Chemistry in the hope of becoming a Civil Engineer.

Alongside my studies I have completed a number of super-curriculars including taking the online "Civil Engineers: Shaping the World (Institution of Civil Engineers)" course where I enjoyed learning about case studies. I was particularly fascinated by the Thames Tideway, and the London Sewage System; opening my mind to parts of civil engineering I had previously not considered. I have also attended an interactive workshop with the University of Greenwich where we worked as a team to build the tallest structure which stood unsupported out of magnetic engineering kits; this was a great chance to work on a project as part of a team.

As a STEM prefect I helped run problem-solving activities during a Year 7 'Inspire' evening and more recently ran a lunchtime bridge-building challenge which was a big success with the winning paper bridge, slightly resembling a truss design, holding 13 Mars bars - which doubled as a great prize. I also run a Year 8 Design and Technology club in which the students have been making a wooden block calendar. Running this club has helped me improve my communication and organisational skills massively, having to plan and discuss with the corresponding teachers, technicians, and student helpers; all to then be delivered to the Year 8 participants.

While the club allows me to remain within Design and Technology, a subject I truly loved at GCSE, it also acts as my Skills section of the Duke of Edinburgh Gold Award. For my Physical section, and personal enjoyment, I take part in recreational archery, holding my '252 badges' (a high archery score) up to 40 yards; aspiring to soon reach my 50-yard qualification. Finally, for my Volunteering section, I have been a young leader for my local Beaver Scout group for about four years now, and this is something I wish to continue past the completion of my Duke of Edinburgh Award. The role involves attending weekly sessions, helping to run activities for the children making sure they're having fun while learning lifelong skills.

Alongside my extracurriculars I have also completed a week's work experience at Vinci Construction's Eastbourne hospital site. It was a great experience to see the wider world of construction and learn a lot about the role of contractors, different positions on site, and the day-to-day activities of a Quantity Surveyor. After my mock examinations, I completed a 3-day work experience with Rochester Bridge Trust where I discovered the many different job roles and tasks required to manage their bridges. I got to work on carbon emission calculations and discuss their decision-making process, firstly considering "fit for purpose", then emissions and finally cost.

After much hard work and many late nights studying, I have recently received my UCAS grade predictions for university, achieving an A* in Mathematics, A* in Further Mathematics, A in Physics and an A in Chemistry. In the coming few months I will be applying to universities to study Civil Engineering MEng with a year in Industry in the hope of one day becoming a chartered engineer. I am currently considering the universities of Bath, Southampton, Liverpool, and Cardiff with hopes to visit more in the near future.

Arkwright Engineering Scholarship logo

Earlstoun Loch - Rhys Coombs

UPDATE

Hello from your new EDI Champion!

ICOLD ad hoc committee inception meeting at Gothenburg, 2023.

MERLIN DAVIS
Senior Reservoir Engineer
Canal and River Trust

I'm delighted to introduce myself as the new Equity, Diversity and Inclusion (EDI) Champion for BDS, taking over from Amy Carter this summer. Amy has laid an excellent foundation for our EDI vision at BDS, and I am grateful for her commitment and leadership. I look forward to building on her work in the months ahead.

AS A MOTHER of two young children and a woman of colour, I've been actively involved in a range of diversity and inclusion initiatives throughout my career. These have included enhancing maternity pay, improving return-to-work arrangements, and supporting the parents with young children in the context of pandemic homeworking. Being part of ethnicity inclusion circles has provided me a safe space to share challenges faced by people from minority backgrounds. The group also holds regular check-ins following incidents of unrest or local protests. I have been part of in Women in Engineering activities and have promoted STEM careers in several schools. I've also supported work experience students from disadvantaged backgrounds, encouraging them to explore careers in dams and reservoirs. I hope to bring these experiences to my role as EDI Champion.

My journey with BDS began at the 2022 BDS Conference. I almost skipped it, with a one-year-old at home and an older child in school, staying away for two nights seemed impossible. However, my manager kindly agreed to cover the full conference fee and train travel from London to Nottingham for the two days, making my attendance possible. That conference was pivotal: it opened my eyes to the breadth and depth of the reservoir industry and planted the seed for my journey towards becoming a reservoir engineer.

Since then, I've attended two SE forums, two ICOLDs (thanks to the BDS YP Bursary), one YP forum, and another BDS Conference last year — that ultimately led to my appointment to the Supervising Engineers panel for England and Wales this summer.

The moral of the story is: I would have stayed in my broad world of civil engineering and never ventured into this niche field if it hadn't been for the warmth and encouragement of the reservoir community. BDS made me feel welcome, and that made all the difference.

Many of the people I've met through BDS events have similar stories — most discovered this industry by chance, not by design. Through EDI initiatives, I hope we can share these reservoir stories far and wide to attract and retain a diverse new generation of talent. After all, there's no better time to act than now, as we prepare for the forthcoming changes in legislation.

Test your knowledge – Spot the Bias!

Bias: *inclination or prejudice for or against one person or group, especially in a way considered to be unfair.*

Can you identify the type of bias at play in each situation?

1. You feel an instant connection to a new team member because they went to the same university as you.
2. A colleague is seen as capable in all areas because they excel in one.
3. A manager assumes a quiet employee lacks confidence, despite strong performance.
4. A teammate receives a high performance rating based on one recent success, despite an otherwise average year.
5. A hiring manager believes only university graduates make strong hires and overlooks other valuable strengths.

Here is a selection for you to choose from:

a. Halo Effect – Assuming someone is good at everything just because they excel in one area.
b. Confirmation Bias – Focusing only on information that supports pre-existing beliefs and ignoring other valuable qualities or evidence.
c. Attribution Bias – Making assumptions about a person's character or ability rather than focusing on evidence of performance.
d. Affinity Bias – Preferring someone because they share a background, interest, or characteristic with you
e. Recency Bias – Placing too much emphasis on recent events or achievements when evaluating someone, instead of their overall performance.

To check your answers, see the bottom of the page.

We all carry unconscious biases — they're part of being human. But by recognising and challenging them, we create spaces where everyone can thrive, contribute authentically, and feel valued. Inclusion starts with awareness, and awareness starts with each one of us.

ICOLD update

I was fortunate to attend the inception meeting of the International Commission on Large Dams (ICOLD) ad-hoc committee on Gender Diversity and Inclusion (GD&I) in 2023 in Gothenburg. The committee's overall purpose is to explore how ICOLD can become more inclusive to all genders, raise awareness and provide education on gender-related issues, and support greater participation of female professionals in the dam sector.

Following a global survey conducted last year, there is now a strong case for change: the proposal is to transform the ad-hoc committee into a permanent GD&I Forum, subject to approval at ICOLD 2026 in Guadalajara, Mexico. The draft terms of reference have been shared with BDS for review, and we have submitted our comments and suggestions.

BDS Committee meeting

Closer to home, it was a real pleasure to attend my first BDS Committee meeting. It offered a fascinating insight into the hard work that everyone puts in to ensure the smooth running of the society.

To continue monitoring our EDI progress using the DIPF framework analysis that Amy initiated, we have decided to focus on three key areas: membership, events, and outreach and engagement with schools and universities. I also met with the Strategic Objective Working Group focusing on membership and contributed to developing their action plan.

We're still working on obtaining anonymised demographic data from ICE for BDS members. If the data proves insufficient, keep an eye out for a new voluntary survey in the BDS newsletter so we can collect a more complete picture of our society.

1-d, 2-a, 3-c, 4-e, 5-b.

Allies Network

Regardless of how well you did on the test above, you are warmly invited to join our growing Allies Network. The aim is to bring passionate and committed individuals together to help us guide our BDS EDI journey.

If you have ideas that could help break down invisible barriers and make BDS more accessible to everyone, I'd love to hear from you. I also welcome any feedback from past BDS events or suggestions for upcoming conference and YP Forum to make it even more inclusive and engaging. You can reach me at merlin.davis@canalrivertrust.org.uk. (Too much to type? No worries — just scan the QR code to email me instantly!)

Before you turn the page, I'd like to leave you with this thought:

It's imperative that we embrace our differences if we are to thrive together. By establishing inclusive behaviours and patterns, we create a space where everyone can belong — without feeling the need to hide any part of their personality.

The BDS Supervising Engineer Mentoring Scheme

The British Dam Society Supervising Engineer Mentoring Scheme has been running for five years, supporting trainee supervising engineers on their journey to become panel engineers. The Mentoring Scheme for 2025–2027 has capacity for applicants of both mentors and mentees – applications have been received in October/November this year and are currently being processed.

THE SCHEME is designed for trainee supervising engineers but is open to any engineers looking to develop their skills and competencies within the dam industry. Mentoring is a key element of professional development, and this scheme aims to help address the steady decline in panel engineer numbers. The scheme is co-ordinated by our Young Professionals Committee.

Following feedback from previous mentors and mentees, over the next two years the scheme aims to strengthen the framework for mentoring, ensuring mentees feel supported and have access to their mentors for support and knowledge sharing. We aim to group mentees by region and aim to ensure a mix of employers to help widen networks and access variety of experiences and backgrounds. We aim for groups to meet virtually 4–6 times a year, with additional 1:1 sessions and opportunities for site visits.

What does the scheme offer?

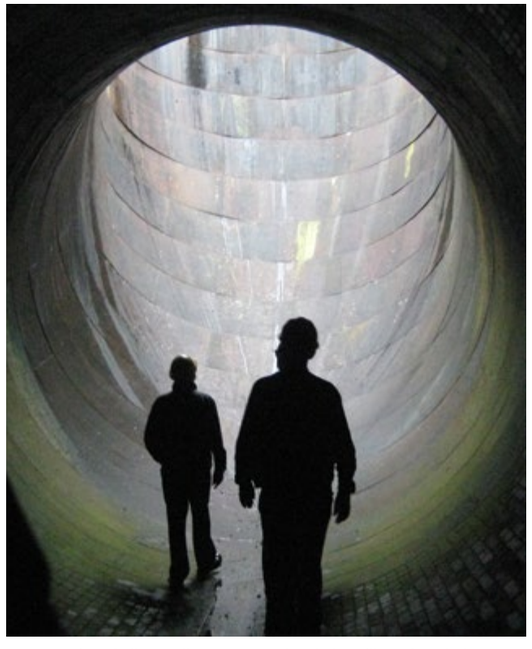
The Supervising Engineer Mentoring Scheme offers support to trainee Supervising Engineers by facilitating:

- Networking opportunities with other trainees and engineers outside of your own organisation, including All Reservoir Panel Engineers and existing Supervising Engineers
- Regular online calls with your regional hub groups to discuss relevant topics on the themes of engineering and professional development
- Opportunity for 1:1 calls with your mentor to tailor your development, support your CPD and identify specific learning objectives
- Opportunities to accompany panel engineers on statutory inspections and site visits, including those outside your day-to-day discipline
- Guidance and support during the application process and interview practice

How can you help?

The application window for the next scheme was opened in October 2025, however, we are still accepting new applications. If you are interested, please email mentoring@britishdams.org and we would be happy to assist you.

We are always looking for experienced dam engineers, particularly panel engineers, to act as mentors on our scheme. We welcome all levels of experience – if you are recently appointed, this would be a great opportunity to support others and share your experience, as well as developing your own leadership competencies. Please email mentoring@britishdams.org to discuss.



Inspection of Silent Valley Dam (NI) glory hole spillway from below (Craig Goff)

The BDS Supervising Engineers' Forum – First Impressions by Devon Bullock

On 18th September 2025, I had the opportunity to attend the British Dam Society's Supervising Engineers' Forum at the National Conference Centre, Solihull alongside 12 other colleagues from Binnies. This was my first time attending the event which I found to be an insightful and encouraging experience that deepened my understanding of the UK reservoir industry.

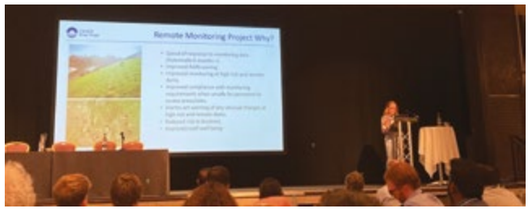
John Foster chairing the panel discussion

LEARNING ABOUT proposed legislative changes that could significantly impact the industry in the future highlighted a potential increase in workload and responsibility for reservoir engineers. I found this to be both exciting and daunting, but it reinforces the importance of staying informed as I progress in my career.

I enjoyed hearing the results of the project looking at the future supply of panel engineers as I was interviewed as a part of their research. It highlighted BDS's commitment to developing the next generation of engineers. As a trainee SE, I benefitted from the presentations as well as the resulting discussion on complex and varying topics. It was valuable to understand the complexity of balancing perspectives of Undertakers (small and large), Consultants, Panel Engineers, and Enforcement Authorities.

Most of all, I found it a valuable and worthwhile experience to network and connect with fellow engineers and gain a valuable insight into the path to hopefully one day becoming a Supervising Engineer myself. Thanks to the BDS and everyone involved for organising the event!

Darren Shaw, BDS Chair, welcoming delegates



Siobhan Butler presenting a case study

Reservoir Safety Panel Appointments

The British Dam Society congratulates the all engineers who have been appointed or reappointed to a Reservoir Safety Panel for England, Wales or Scotland since the publication of the BDS Yearbook 2024.

Appointed as an All Reservoirs Panel Engineer

Jon Troke
Technical Director, Stantec

Reappointed as All Reservoirs Panel Engineers

James Penman
Technical Director – Dams & Reservoirs, Mott MacDonald

Michael Hughes
Chief Engineer, AtkinsRéalis

Andy Courtnadge
Senior Associate Director, Jacobs

Billy Sheehy
Technical Director, AECOM

Chris Scott
Independent

Appointed as Supervising Engineers

Chris Grogan
Technical Director, JBA Consulting

Miguel Piedra

Roger Minto
Technical Manager, Fairhurst

Sandip Shinde
Principal Dams Engineer, Stantec

Tony Wood
Reservoir Supervising Engineer, Anglian Water

Ciara Gill
Associate Director of Engineering, Jacobs

Gordon Pirie
Principal Engineer (Civil), Drax

Ian Knight
Senior Associate, Jacobs

Kamila Etienne
Associate Technical Director, Arcadis

Tim Gray
FCRM Senior Advisor, Environment Agency

John Thuysbaert
Senior Engineer, Stillwater Associates

Kate Lister
Associate Civil Engineer, Mott MacDonald

Lucy Monkhouse
Senior Reservoir Engineer, Canal and River Trust

Merlin Davis
Senior Reservoir Engineer, Canal and River Trust

Michael Rintoul
Principal Engineer, Scottish Water

Reappointed as Supervising Engineers

Adam Reynolds
Reservoir Supervising Engineer, United Utilities

Alexandra Murphy
Senior Project Manager, Arcadis

David Brown
Principal Engineer (Reservoirs), Canal & River Trust

David Littlemore
Director, Stillwater Associates

Ian Scholefield
Reservoir Safety Manager, United Utilities

Newman Booth
Reservoirs Safety Manager, Yorkshire Water

Shaun Yeoh
Technical Director, Jacobs

Stephen Shakespeare
Head of Service - Dam Safety, Dŵr Cymru

Stephen Crooks
Civil Engineer, SSE Renewables

Stuart King
Senior Reservoir Safety Manager, SSE Renewables

Ben Jones
Associate Engineer, AtkinsRéalis

David Windsor
Principal Reservoir Engineer, Canal & River Trust

Drummond Modley
Reservoir Safety Manager, Wessex Water

Matthew Coombs
Dams & Reservoirs Director, Binnies

Michael Dixon
Reservoir Supervising Engineer, United Utilities

Richard Dun
Chief Engineer, AtkinsRéalis

Barry Cotter
Dam Safety Engineering Manager, Dŵr Cymru

Brett Marshall
Reservoir Safety Technical Specialist, Yorkshire Water

Christopher Branigan
Principal Engineer - Civils, Yorkshire Water

Crawford Munro
Director, Crawford Munro Consulting

Hermann Stehle
Senior Engineer/ Director, Stillwater Associates

Ian Davies
Supervising Engineer, Severn Tent Water

Ian Kirkpatrick
Reservoir Safety Manager, Anglian Water

Jack McCarey
Supervising Civil Engineer, South West Water

Joao Santa-Clara
Principal Engineer, JBA Consulting

Jon Green
Head of Reservoir Safety, Thames Water

Julian Welbank
Director, Welbank Water Consulting

Richard Grierson
Principal Engineer, Scottish Water

Steven Haywood
Reservoirs Act Coordinator, Environment Agency

Werner Delport
Reservoir Safety Manager, Thames Water

The failed dam

Cwm Carne – 150 years on

Richard Terrell, Chief Reservoir Engineer at Binnies, grew up in the village where disaster struck 150 years ago. He relates how he was involved in remembering that event earlier this year.

JULY 2025 MARKED 150 YEARS after the Cwm Carne (modern day Cwmcarn) dam disaster which resulted in the deaths of 13 people. On the night of 14 July 1875, 135mm rain fell on South Wales in 24 hours and the dam of the 90,000m³ reservoir failed. Cwm Carne dam had been poorly constructed with sandy silty clay and poorly maintained. From eye witness accounts the dam started to overtop at approximately 5pm and by 7pm a 4" (100mm) depth of water 70 yards (64m) wide was seen flowing over the dam. Later in the night the dam failed, and the contents swept down the valley damaging two cottages, the canal and destroying the flannel factory, carrying away 10 occupants – which is how the disaster got its local name as the Flannel Factory disaster.

This disaster is very close to home, so close that the victims are laid to rest in the church at the end of the street I grew up in, and as a child I saw the remains of the dam which formed part of the local park. This year the local Scout group was undertaking a project on the Cwm Carne disaster for their history badge and the Scout leader, who also happens to be my brother, approached me to help them and talk at their presentation night.

News of the presentation spread around the local area and people started asking if they could attend. So much was the interest that a ticket system was set up and the presentation moved from the Scout hut to the local church to accommodate the numbers. With support from the BDS and Binnies, on the 19th of July the 1st Pontywaun Scouts along with myself presented to 85 members of the local community, the history society and local dignities in the very same church that 150 years to the day held the funerals for those who were killed in the flannel factory disaster.

In total eight Scouts presented their findings and walked through the events of the night and how the disaster unfolded, with me giving a presentation on the current legislation and how we as an industry are safeguarding against this happening again.

After the presentation there was a small display of items relating to the disaster, including a copy of the original Times newspaper report.

The BDS is supporting a new plaque, to be placed on the memorial in the church, as the writing on the original one has worn away over time.

Local church during the presentations

Scouts giving their presentations

Contemporary accounts of the disaster are recorded in an article in Dams and Reservoirs 2(2) of June 1992, available on the BDS website (Members' area)

The Dolgarrog disaster of 1925 – a centenary commemoration

On Sunday, 2 November 2025, the community of Dolgarrog in North Wales came together to mark the moment 100 years ago when the failure of two dams destroyed several houses killing their inhabitants. The commemoration was organised and led by the Dolgarrog Community Council in collaboration with many partners and featured a range of events.

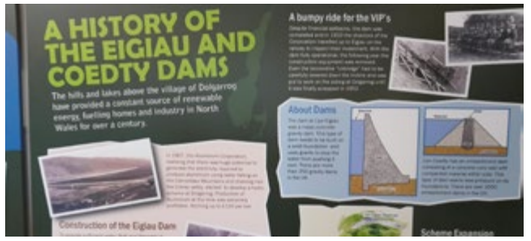
AN EXHIBITION entitled *Dolgarrog Past, Present and Future*, created by Cardiff and Bangor Universities, provided a sombre focus on the disaster, including access to the newspapers of the day and the experiences of the descendants. Audio-visual presentations were used to bring the historic artifacts, such as the church bell, to life and to reveal the characters of the victims.

The memorial walk had been refurbished for the occasion, with new paths and sculptures weaving amongst the enormous boulders brought down during the flood and under which some properties remain. The walk included several stations providing live performances and storytelling of personal accounts from that night. Nestled under the canopy of trees which form a natural chapel atmosphere, this was a very moving experience.

A lantern procession was used as a river of light to represent the village's current thriving and optimistic character, not only to remember the past but also to celebrate today and the future. This finished with a memorial service supported by poetry, music and song written especially for the occasion and delivered by residents. It was widely recognised that the build up to the commemoration itself had brought people together with the creation of a new village choir, writing and art clubs as well as new relationships.

At the end of the evening a specially commissioned musical piece was performed, adding a poignant and artistic tribute to the evening's reflections.

Past president of the ICE Richard Coackley, ICE Vice President Richard Bayfield and ICE North Wales branch chair Stella Brookes presenting the new plaque at the ceremony marking 100 years since the Dolgarrog disaster. Image credit: ICE



Information board at the Dolgarrog exhibition

Church bell at the Dolgarrog exhibition

Art installation at the memorial walk at Dolgarrog.

The Institution of Civil Engineers, represented by Richard Bayfield (Vice President, ICE) and Stella Brookes (Chair, North Wales Branch) presented a plaque bearing the names of the ten adults and six children who lost their lives and engraved with a chrysanthemum logo to remember the flowers that were used at the funerals of the victims. The British Dam Society supported the events at Dolgarrog by arranging a site visit and a technical lecture with the ICE on the dam incident.

The Community Council thanks all its sponsors and supporters in making the commemoration truly one to remember.

SITE VISIT

Llyn Eigiau, Dolgarrog – a centenary site visit

Michael Jack, of RWE Generation Ltd., was part of a group who organised the BDS site visit to Llyn Eigiau on Friday 12 September 2025 as part of the centenary remembrance of the Dolgarrog dam disaster.

LLYN EIGIAU is situated in the hills above the Welsh village of Dolgarrog in Conwy county. Eigiau dam was built between 1907 and 1911 by the Aluminium Corporation. The reservoir was formed with the sole purpose of storing water for electricity generation, enabling the production of aluminium at the smelter located in Dolgarrog.

Llyn Eigiau was originally retained by a concrete gravity dam of trapezoidal cross-section some 1200m long and 10.5m high with a storage volume of 4.5Mm³. It has been stated that the original contractor pulled out of the construction, alleging corner cutting.

The visit comprised of two separate sessions: one in the morning and one in the afternoon, to accommodate the number of attendees and the requirement to be taken by midi coach to the site.

The group comprised visitors from the BDS, ICE and the local community who were first given an overview of the Dolgarrog hydro-electric scheme by Rhodri Jones, of RWE Generation Ltd. This was then followed by a tour of the Dolgarrog powerhouse by Dave Bevan also of RWE Generation Ltd. The final part of the visit involved a short bus trip up Welsh country roads, involving challenging driving conditions comprising steep inclines and narrow roads, to the site of the dam breach.

Eigiau dam breached at 8.45pm on Monday 2 November 1925, following 660mm of rain in five days. This led to 1.4Mm³ of water being discharged in the first hour, lowering the reservoir level by 1.5m and losing 30% of the total storage in this short period of time. The blow-out scoured a 21m wide channel, 3m deep. Fortuitously, most of the villagers were attending the weekly film show in the Dolgarrog Village Hall, which sat on high ground out of the path of the flood.

Eigiau Dam before the disaster

Water from Eigiau reservoir violently surged down to Coedty reservoir, which was nearly full at the time. Coedty filled to capacity within minutes and the dam overtopped. The overtopping flow across the embankment resulted in the embankment fill on the downstream side of the dam being washed away, which led to the subsequent collapse of the core wall. This then led to 0.3Mm³ of water being released from Coedty reservoir, the combined discharge from both failed dams undoubtedly being the main reason for the loss of life. The breach at Coedty dam was 61m wide at the top and 18m wide at the bottom.

The flow of water from the dams did not cease until mid-morning the following day. Cows were seen hanging from the trees and the aluminium works were submerged under 1.5m of mud. Sightseeing trips were organised, and visitors came from across the country to see the aftermath.

The scene was described by the North Wales Weekly News, *"...no trace of any houses remained...the road was obliterated, and water still lay about in great volumes...the fields below resembled a big lake...here and there islands on which sheep had congregated looking with beseeching eyes, waiting to be rescued...where there was no water the mud lay thick."*

Relics of reinforced concrete, probably part of the core wall, may be seen in several places downstream from the dam site, and much of the aqueduct system was destroyed by the flow.

The waterfalls above Dolgarrog were picked clean of stream debris and now rest as a huge conical mound at the edge of the Conwy flood plain.

Coedty dam was re-built, but repairs at Eigiau dam were never carried out.

The cause of the failure at Eigiau dam was attributed to a seepage path which had existed for several years. Intrinsically soft boulder clay at the time of failure was aggravated by fissuring during the drying out of the clay in the preceding summer months when there was a long drought and the reservoir bed had been exposed.

The depth of the peat layer below the dam around the breach location was only 0.6m which is viewed as unsatisfactory to retain water, especially as 0.3m of this layer was soft and porous. To put this into perspective, the deepest section of the dam foundation was 4.6m below ground level around the spillway location.

Examinations of some of the broken concrete blocks of the dam identified voids of 2.5cm to 7.5cm in diameter under some of the stone displacers. An excessive number of stone displacers were used and carelessly placed in the concrete. The quality of concrete used was poor and the honeycombed sections of concrete found to contain inclusions of peat.

The results of the issues with the structure resulted in a failure of the lower part of the dam wall. The upper part remained intact and was demolished during the clean-up operations.

The disaster resulted with loss of life where 10 adults and 6 children were killed.

The inquest for those killed in the disaster concluded that,"*...the wall was not taken down to a deep enough level below the surface and that it was "at variance with the designs"...100 ft length of the wall close to the breach was never certified by the engineer and has never been paid for... The person responsible for mixing the concrete could not be traced*." The jury returned a verdict of Accidental Death.

Several recommendations were made to prevent a similar disaster, one of which included that Government inspection of dams should be made regularly, as it was of other public services.

Eigiau dam was the last of several dam failures in the UK since the 1800s that caused a loss of life. In 1865 recommendations had been made around the safety of large reservoirs, following several failures that caused loss of life, but these recommendations were not brought into effect until after the Dolgarrog Disaster. The Reservoirs (Safety Provisions) Act 1930 was a direct consequence of the Dolgarrog Disaster.

The group who visited these sites thanked Rhodri Jones, Dave Bevan, Steven Cavanagh, Stephen Shakespeare and Gwenan Davies for an interesting site visit.

Aftermath of the breaches in Dolgarrog

For background reading on the Dolgarrog disaster see:

Walsh P and Evans J (1973). T*he Dolgarrog Dam disaster of 1925 in retrospect*. Quest 25 pp 14-19. Department of Civil Engineering. City University, London.

Charles J A, Tedd P, Warren, A. and Halcrow Group Ltd (2011). *Lessons from historical dam incidents: Technical report.* Environment Agency, Bristol. Available at: **https://assets.publishing.service.gov.uk/media/603369e7e90e07660cc43890/_Lessons_from_Historical_Dam_Incidents_Technical_Report.pdf.**

Morri, S, Davies A R and Shakespeare S J (2018). *The new Dolgarrog memorial*. Dams and Reservoirs 28(3) pp.114–118. Available at **https://doi.org/10.1680/jdare.18.00036.**

Eigiau Dam Breach

Eigiau dam during construction

Skelmorlie Waterworks

Skelmorlie Reservoir Disaster Memorial

At 14:00 on Saturday 18th April 1925, the quiet Ayrshire village of Skelmorlie became the scene of a disaster when the embankment of the lower reservoir situated above the village breached, releasing millions of gallons of water and resulting in the deaths of five people.

FOLLOWING A PERIOD OF HEAVY RAINFALL, floodwater overtopped the Skelmorlie lower reservoir. A nearby quarry had begun to fill with water due to a blocked culvert and when this blockage cleared suddenly, a surge of additional water wash sent into the Skelmorlie Lower Reservoir causing the embankment to breach over a 9m length. The reservoir emptied in 15 minutes releasing millions of gallons of water down through the village, tragically killing five people, a woman and four children.

The failure was attributed to a grossly deficient overflow and inadequate freeboard along with an apparent lack of any proper supervision and maintenance. The verdict of the jury stated that 'The disaster was caused by absence of any regular skilled supervision and inspection'.

The event carries a lot of significance in the UK as, along with a subsequent reservoir disaster that occurred 6 months later at Dolgarogg, North Wales, it led to the development of the first piece of reservoir legislation (the Reservoir (Safety Provisions) Act 1930) since which there have been no dam failures in the UK causing loss of life.

The British Dam Society (BDS), being aware of the significance of the event, which at the time was approaching its 100-year anniversary, made contact with North Ayrshire Council (NAC) and Skelmorlie Community Council (SCC) to offer support in commemorating the tragedy. Initial contact was made in 2021 and in July 2022 Stephen Lockett (representing the BDS) met the then chairperson of the community council, Mrs Helen Boyle, and Secretary, Martin Kaarits, in the village to discuss potential locations for a proposed memorial. There were a number of challenges regarding ownership of the memorial, land ownership,

Stephen Lockett at the memorial plaque

Scottish Piper, Andrew Campbell, at the unveiling

maintenance responsibilities and funding and the BDS were in regular contact with NAC, SCC, local landowners and even wrote to the local MP for support. As the clock was ticking it was looking at one point that the date might be missed.

However, when Isy Agnew took over as SCC Chairperson towards the end of 2024, her sheer drive and enthusiasm, along with the support from the local community and BDS, helped to see things over the line. A plaque was installed on the wall of the local pub, just up the road from the community centre, with a memorial post and plaque and a small community garden installed at the corner of The Crescent and Halketburn at Eglinton Terrace. The memorial was funded by the BDS and installed by Ogilvie Construction. The memorial is the first of several acknowledgements to be situated within the village, with other locations including a plaque at Skelmorlie Cross and a Remembrance Rose at the Village Garden.

The memorial was unveiled at a community event on Friday 18 April 2025, marking the centenary of the tragedy. The unveiling was part of a special ceremony for residents and guests to pay their respects to those that perished. In attendance at the event were four direct descendants of the people who lost their lives in the tragedy who had travelled from Helensburgh, the Borders and as far away as Norway.

Local Scottish Piper, Andrew Campbell, began the unveiling ceremony, with a warm welcome and thanks from Chairman of Skelmorlie Community Association, Bill Spiers. Bill said: "Thank you to the British Dam Society for generously providing the funding for this historical memorial as we reflect now on the 100th anniversary of the Skelmorlie Reservoir Disaster. The location of the memorial is important as it is situated right in the middle of where the torrential flow occurred. At Castle Road, up on the hill, no one was injured or killed, however looking down from the memorial plaque to Halketburn, this is where the devastation unfolded. Thank you to everyone involved as a lot of effort has gone into this memorial. We are especially grateful to North Ayrshire Council's Streetscene officers, Heritage and Culture team and the North Coast Locality team who have been instrumental in helping us to adopt the land and erect the plaques. We are also proud to include a QR code on the plaques that visitors can scan and learn more about the disaster via North Ayrshire's Heritage and Culture website, so we can make sure to keep the memories of the victims alive".

Following Bill's speech, Stephen Lockett, representing the BDS, was given the honour of unveiling the monument with the backdrop of a Cherry Blossom Tree in full bloom. As the memorial was unveiled, five white doves were released to commemorate the five people who tragically lost their lives.

The unveiling was followed by a presentation from local historian Nicola Dunsmore who maintains the https://www.skelmorlievillas.co.uk/local-places-of-interest/skelmorlie-reservoir-disaster/ website, which contains a transcript and recording of an account of how the disaster unfolded. This was followed by a presentation by Stephen Lockett of Mott MacDonald on the history of UK reservoir legislation and the relevant significance of the Skelmorlie disaster. Nicola then led a guided walk along the route of the breach which provided a historical perspective on the disaster as well as the village itself.

Skelmorlie CC members and direct descendants of victims at the memorial

Niece to victim Winnie Menhennet, Wilma Menhennet shared her family's recollections of the fateful event and said: "I would like to share a heartfelt thank you to everyone who came to see the first memorial unveiled and listen to the historical accounts of this devastating moment in history. The village memorials will provide a place that our family can return, to reflect and remember and I am pleased that the village of Skelmorlie has come together to memorialise everyone affected by the tragedy. It means so much to me."

Lamaload dam, Peak District National Park

The BDS Interview 2025

Andrew Thompson, the BDS Honorary Technical Secretary, continues his series of interviews.

This year's BDS interview is with Rachael Lavery from the Environment Agency. Since 2018 Rachael has been progressing through the engineering graduate scheme at the Environment Agency. I first met Rachael in 2023 when she was appointed Chair for the BDS Young Professionals Committee and during the last few years, not only has she focused on her own career progression, but through her role as YP Chair she has also helped to provide development opportunities to other YPs.

I wanted to catch her view of her early career.

Hi Rachael. So, before all this started, before you did your degree, did you have any inkling of what you wanted to do?

No, no, I can absolutely say I didn't. After school it was very clear that I was going to do what I enjoyed studying. I thought I'd go with that and see where I end up.
I studied geology for my undergraduate degree at Leeds, which mainly focused on the oil and gas industry, and then did engineering geology for my Masters at Newcastle. But dams and reservoirs weren't specifically mentioned anywhere!

I continued through university and then joined the graduate engineering scheme at the Environment Agency, which I've been on since 2018. The job is quite varied in itself and you're allowed to tailor it a little bit to what you want to do. I'm essentially going through different placements to become chartered. I'm on a design placement at the moment to get design experience and I've done a site secondment previously as well. It's a good way to see the industry from the client side, then the contractor and the consultant sides as well.

It was during my early placement that somebody suggested I look at the BDS, at what they do and the learning I could take from that. Also, when I was shadowing for the flood incident role I had, I supported the incident response for the Toddbrook incident in 2019. This gave me experience of what happens during a reservoir incident.

After that I kind of fell into the dams industry.

How did you first get involved with the BDS?

It was the Nottingham conference in 2022, that was the first one I went to.

So that was good. It was a little bit difficult as I didn't really know that many people admittedly, but it was a good learning and networking experience. It really helped me see what other people in the industry are doing. Sometimes you don't realise what others do in the industry and because I was new to it, I found it really interesting. I remember there being a workshop about how important geology was, which was excellent and definitely reaffirmed I had chosen the right area to go into and gave me a broader understanding of what the industry is about.

There were people presenting their work, there were workshops and discussions on structures that I hadn't come across yet in my career. Thankfully I had colleagues there who kindly explained things to me, because as I say, I was new to dams and reservoirs at the time. It did open my eyes more to the industry.

At conferences it's good to see what's going on in the industry, see beyond your own organisation, beyond your own specialisation, essentially see what others have to think about, what are the structures they're looking at, what work they're doing too. Also, I got to get an idea as to what the YP committee do and get involved with the YP social evenings there as well.

You sound like an advert for next year's conference! It's good. So, what happened next?

Well, in terms of the YP committee I saw that the call came out in 2023 talking about taking on a YP committee role, and I did think it might be a direct way to network with all these different people as well as get a bit more involved. Of course, it was good development for me because, as I say, I was working towards chartership and it would improve my confidence and communication. So, I applied for it.

I originally went for the Events Champion, but ticked the Chair box anyway, thinking, 'no one's going to choose me'... and I got chosen.

It was a good experience. I really enjoyed my time as the YP Chair even if I did take a little bit of time to get used to it. I kind of jumped in at the deep end with that one, but it was really good, I made lots of connections who I still see and speak to at events and also have those varied connections to ask questions about the industry if I ever need to.

I also had to take the responsibility for the YP activities as well, keep the CPD events going, arranging for joint international talks with other YP groups (both the Australian and Canadian groups). It was a big thing for me. I was able to attend ICOLD in India and build even more connections! I've really enjoyed meeting more people within the industry and promote the YPs. I know how opportunities can really vary depending on where you work, to share my learning curve and hear what people from other organisations go through in terms of training.

One of the biggest challenges was the YP forum. The first one was kind of a trial and error thing to see how it worked. I've never organised an event like that before and it was good to work with the rest of the committee and get positive feedback on the event.

And have you been able to continue working with reservoirs in your role?

Yes, the Environment Agency has been very supportive in with my development, and because of the graduate placements I've worked on both the operational side and the regulatory side as well.

I've been able to experience both sides of flood incidents, for example, and understand what I have to consider on the operational side, speak with our engineers and learn from them. Then on the regulatory side, understand what else they also have to consider. It's been going well.

So, that's kind of a unique position really.

On the operational side I've also been able to gain experience, not necessarily in terms of project work, but through flood incidents. As I had an incident role; being able to consider a 'flood event' and think about what happens if such a scenario happens, how can you react with certain assets effectively, etc.

I've also had site visits with our engineers, some of our reservoir supervising engineers, to see what they're having to look at during the inspections, what they've got to be aware of and making sure that assets are in the condition they should be to provide that protection needed.

It's mainly flood storage basins where my experience has been coming from in that respect, as I've not got access to the huge concrete structures that other organisations may have. That said I've been able to go out on external site visits, such as when I visited Welsh Water's sites – where I took these photos of Claerwen and Llyn Cefni dams.

When I joined the regulatory side, I supported colleagues with the Reservoir Safety Reform work and I was able to learn about what the others were doing in the background. My placement also interlinked with working on the development of the Reservoir Incidents Knowledge Base as well. Looking at how incident data is reported and collected, speaking to the rest of the team, that kind of thing.

I've been able to attend a reservoir emergency exercise with them as well.

Llyn Cefni dam, Anglesey

Rachael at ICOLD 2024, New Delhi

A lot of people in the industry are going to be involved in testing emergency flood plans over the next few years. What was your experience during a test event?

I can't say too much as it was an external exercise, but it was fairly recent.

The exercise I attended was at a larger dam and was attended by a number of parties and emergency services. My role was as an observer but I was able to see what the engineering side was, what they were having to consider and how they communicated across the different parties.

It was good to just observe. There were engineers working together, with some coming into the room where the other parties were and providing updates, non-technical people would be wanting specific information and forecasts.

There's a balance to be had because everyone's got a different objective.

I can see where the non-technical people are coming from because they come from a logistics side and certain information will help them. But engineers genuinely can't predict when certain things will happen during an incident or not without putting themselves at risk.

So, it was very interesting in that respect to observe and see how it was being run and just to learn from it.

What was your main learning takeaway from the event?

I'd say communication. You could be an expert in your field, but if you can't communicate that to somebody else who's in a different field then you're in a bit of a bother during an incident.

So what would be your future ambitions Rachael?

Getting chartered first, through the ICE. I'm able to do that with my degree background so that's my first aim. Then looking towards becoming a supervising engineer. Apparently, I don't like to make life easy for myself!

This sounds like another plug, but I've been asking for help and been supported by the BDS mentoring scheme on the SE training. Especially for external site visits and experience. As I said, some other companies will have structures that I won't find in my day-to-day job.

I'd still like to continue my involvement with the BDS committee because that's also helping me keep up to date with the industry and just keeping up the learning.

I've also just had a paper published (titled "Review of historical reservoir incident data in England") which is a review of reservoir incident data between from 2004 – 2024.

What kind of advice do you think you could pass on to future YPs starting their careers in this industry?

Well, if they're not able to get onto the YP committee (let's be honest, some people genuinely don't have time for it) just get involved however you can.

I'm lucky I can travel to the Warrington hub very easily. But if they're able to travel to a hub, if they're able to go to any of the in-person events, it'll really help them to build up that network a bit more.

There are the competitions too. If you've got an interesting piece of work or project that you're able to write a technical paper on and even present on, then you're getting your name out there as well

It's another very good BDS plug. So finally...every time I've done one of these interviews, I've always asked people to tell me what was the first and last dam they've visited?

First one...Oh, this would have been ages ago, but it was definitely an Environment Agency one. It could be, Didsbury Flood Storage Reservoir, which was presented on during the SE forum (by Peter Down and John Greenway). But that was long before the event occurred which they described.

The last one I went on was with you, Andrew! It was your S12 examination at Lamaload Impounding Reservoir in Macclesfield.

Oh so what was the SupE like?

Yeah... he was all right I guess...

I really hope she wasn't being sarcastic!

Thank you again Rachael for you contribution

Claerwen Dam, Elan Valley, Wales

Gaur Dam – Martin Deane

BDS Competitions

BDS Prize

On the 17th November 2025 the British Dam Society held an evening meeting for the BDS Prize. This competition is open to BDS members 35 years of age or under, with a paper of 2,500 words and a presentation on a topic of dam engineering relating to the author's experience in reservoir research, design, construction, operation, maintenance, or supervision.

Six papers were received for the competition, and the judging panel of Mike Hughes, Jonathan Hinks, Jon Holland, Rachael Lavery, Andrew Pepper and Rachel Davies had the task of scoring the papers on their technical content and composition in order to form a short list for the presentation evening.

Presentations were given by:

Devon Bullock – Binnies
Developing a Workbook to Apply Tier 2 RARS to Environment Agency Flood Detention Reservoirs

John Campbell – Mott MacDonald
Managing reservoir testing outflows from siphon drawdown enhancement schemes

Amy Henderson – JBA
Enhancing Dam Safety Through (RARS):
A Framework for Modern Reservoir Risk Management

Anida Zeqirllari – Binnies
Retrofitting Overflow Weirs to Safely Pass Extreme Floods at UK Reservoirs

Meher Rashid – AtkinsRéalis
Adapting the Tier 2 Reservoir Risk Assessment Approach for a Service Reservoir

Following the presentations, the judges awarded the first prize to John Campbell from Mott MacDonald on his paper and presentation.

Meher Rashid from AtkinsRéalis was second with Devon Bullock from Binnies in third place.

Dr Darren Shaw (BDS Chair) presenting the BDS Prize to John Campbell.

BDS Prize 2025 finalists, from left: Dr Darren Shaw (BDS Chair), John Campbell, Amy Henderson, Anida Zeqirllari, Devon Bullock and Meher Rashid.

You are able to listen again to these presentations via the BDS website and the authors have been invited to submit their papers for publication in a future volume of Dams and Reservoirs.

Annual Photography Competition

The BDS Photography competition is an annual competition which is open to all members of the BDS, ICE, engineering students and staff of corporate members. This year we received 83 entries which featured reservoirs from all over the UK and from overseas. The competition was judged by Sam Leonard, Merlin Davis, Stephen Lockett, Sam Tudor and John Foster.

The entries were judged as follows:

1st Ian Knight
Trawsfynydd Reservoir – Maentwrog New Dam view from the scour outlet

2nd Barry Dooley
Balderhead Reservoir, Barnard Castle

3rd Jeremy Fletcher
Cefn Mably Service Reservoir - Cardiff

The winning photographs are featured on the back page of this Yearbook. Thanks to all who have entered the competition. Your photographs may feature on the British Dam Society Website, on the cover of the BDS journal, Dams and Reservoirs, and in future BDS Yearbooks.

Upcoming events

In September 2026 the Bateman award for the best paper published in the Dams and Reservoirs journal and the Conference proceedings will be presented at The British Dam Society's 23rd Biennial Conference at Keele University.

The annual BDS photography competition will again open in July 2026 – so remember to take some photographs while visiting reservoirs over the next few months.

ICOLD 2025 – Chengdu, China

Serene Li, Senior Civil Engineer, Mott MacDonald

ATTENDING ICOLD for the first time this year was an absolutely unforgettable experience. The insightful discussions during the technical committee workshops, meetings, symposium, and Congress sessions were wonderfully complemented by the cultural events and technical excursions. I joined the one-day visit to the Dujiangyan Irrigation Project on 20th May.

Our journey began with about an hour's bus ride to Mount Qingcheng, renowned for its secluded beauty and tranquil natural scenery. It is also one of the birthplaces of Taoism, home to many Taoist temples. We took a scenic walk up to the Yuecheng Lake at the elevation of 870m (the summit reaches 1260m) before going to lunch. After that we were taken down to the Dujiangyan irrigation project at the foot of the mountain where a guide accompanied us through the journey, giving an interesting introduction of the project's cultural and technical background.

Historical Context

Constructed over 2,000 years ago during the Qin Dynasty (3rd century BC), this irrigation project remains fully operational today, continuing to benefit millions of people by controlling floods, irrigating farmland, and supporting regional development. It is a UNESCO World Heritage Site as well as a symbol of ecological wisdom and civil engineering excellence.

During the Qin era, the Min River, an upper tributary of the Yangtze, was both a blessing and a curse for the people of the Chengdu Plain. While it provided water for agriculture, it also caused frequent and devastating floods due to its fast flow and heavy sediment load. At the time, the prevailing method of flood control involved building dams, which often failed or disrupted the river's natural processes.

Li Bing, a visionary governor and hydraulic engineer was appointed to manage the river. He proposed a radical new approach to guide and divide the river's flow. His design aimed to reduce flood risk while using the river's energy to sustain irrigation.

Dujiangyan irrigation system – Shutterstock

Flying Sand Weir and Bottleneck Gate viewing from upstream

Design and Engineering Principles

The system uses a combination of diversion, sediment control, and flow regulation. The system consists of three main components along the direction of flow:

Yuzui (Fish Mouth Dike)

This dike splits the Min River into two channels: the inner river (deep and narrow) and the outer river (wide but shallow). The inner river carries about 60% of the water during dry seasons used for irrigation, while the outer river carries excess water and sediment during floods. The fish-mouth shape helps guide the flow naturally, reducing erosion and sediment buildup.

Feishayan (Flying Sand Weir)

This structure allows excess water and sediment from the inner river to spill into the outer river. It maintains a balance between irrigation and flood control. During high flow periods, sediment-heavy water is diverted away, preventing clogging of the irrigation channels.

Baopingkou (Bottleneck Gate)

This narrow section regulates the irrigation flow into the Chengdu Plain. Its constricted shape ensures a steady and manageable flow, creating the whirlpool flow that carries away the excess water over Flying-sand Weir.

These, together with the various minor levees, weirs and spillways, form a self-regulating system that adapts to seasonal changes and sediment levels without the need for active mechanical intervention. It is a brilliant example of how deep understanding of hydrology, topography, and the environment can produce lasting harmony between engineering and nature.

Footbridge from foot of Mount Qingcheng to Dujiangyan project

Bottleneck Gate

Resilience and Sustainability

What impressed me the most is how the system created with ancient wisdom has been benefiting the downstream ecology and community of millions for thousands of years.

This is the oldest dam-less irrigation works in the world and it has transformed the Chengdu Plain into one of China's most productive agricultural regions. The region has since become known as the "Land of abundance".

In today's context of climate change and environmental challenges, the Dujiangyan system offers valuable lessons. It emphasized working with nature, with its low-impact design, resilience, durability and long-term sustainability.

Finally, I'd like to express my appreciation to the ICOLD 2025 organising committee for this visit. Despite the scorching 35 °C heat, everything was thoughtfully arranged, from air-conditioned transport to rest stops and even staff carrying water for everyone. It was a day to remember, and an inspiring reminder of the enduring bond between civil engineering, culture, and the natural world.

SITE VISIT

Toddbrook Reservoir

Hana Williams, an Intern at Binnies Civil Engineering, was on the BDS technical site visit to Toddbrook Reservoir in Whaley Bridge on 26th March 2025.

THIS VISIT FOCUSED on the ongoing works to construct a new spillway following the incident in 2019, when heavy rainfall caused overflow and damage. Since 2019, significant engineering efforts have been made, and the visit offered an opportunity to observe the construction process and learn about the challenges and solutions implemented by the Canal and River Trust, Arup and Kier.

The morning session began with a series of presentations. The first provided an overview of Toddbrook Reservoir from David Prisk, the Reservoir Asset Manager at the Canal & River Trust, outlining its history and role in supplying water to the Peak Forest Canal. He also briefly covered the impact of the 2019 incident. The second presentation, delivered by engineers from Arup, focused on the detailed design of the works, including the design of the spillway and turrets. They highlighted their efforts to ensure that the engineering solution complements the surrounding parkland environment. A new terraced seating area will be constructed at the water's edge, along with a pedestrian bridge to improve access.

After a site induction from Neil Wilcock at Kier, it was time to put on our PPE and walk around the site. The first stop was at the new turrets, where the engineers explained their role in managing water flow and improving the overall safety of the dam. The group then evaluated the damage from the 2019 incident, focusing on the areas where the spillway had been damaged by the overflow. The engineers provided insights into the emergency measures taken and how the solution would address these issues. Next, the group visited the spillway area, observing the construction efforts to reinforce and improve the structure.

Finally, we walked up to the crest of the dam, which offered a clear view of the reservoir and allowed everyone to appreciate the scale of the project and the complexities involved in restoring and futureproofing the reservoir. This point in the day was a great opportunity for everyone to ask questions to those involved in the design and construction.

A big thank you to everyone who attended the visit and especially to our hosts for sharing their expertise and insights during the visit.

In front of one of the energy-dissipating turrets.

Construction of the spillway crest

The visiting group at the toe of the new spillway

SITE VISIT

Camps Reservoir – Spillway Upgrade Works

On the 4th September 2025, on behalf of the client, **Scottish Water** and the Principal Contractor, **George Leslie Ltd, Mott MacDonald (Designer)** hosted a BDS Technical Site Visit to the spillway upgrade works at Camps Reservoir, situated approximately 5km north-east of the village of Crawford, in South Lanarkshire. **Mairi Shaw** of Mott MacDonald describes the visit.

Completed downstream end of spillway chute

CAMPS RESERVOIR, owned by Scottish Water, was formed in the late 1920s by the construction of a 30m high earth embankment across the watercourse known as Camps Water in the headwaters of the River Clyde. The reservoir was built to provide storage for public water supply to Lanarkshire and continues to be used for that purpose.

Following a Section 47 Inspection by an All-Reservoirs Panel Engineer, recommendations were made to assess the adequacy of the stone-pitched spillway channel to contain and safely pass, without critical damage, the outflow for a PMF event. This channel drops steeply down the right-hand abutment, abutting the embankment, and studies and investigations concluded that the existing chute needed to be replaced by an in situ reinforced concrete lining.

Seventeen attendees made the journey to the site, with a varied representation from different design consultancies, water utility companies, suppliers and university students; one person even came from Kent!! Prior to a site walkover, the attendees listened to a technical presentation, given by Mairi Shaw who is providing construction design support, and the QCE for the works, Martin Hewitt. Kevin Murray, Scottish Water's Supervising Panel Engineer described the water level forecasting and management process that has successfully kept the reservoir below TWL-1.5m for the past five years. George Leslie demonstrated the level 4 BIM model for the works, which included the staged construction of the spillway and the stone access ramp that has been built parallel to the spillway, up the face of the embankment.

Access to the reservoir site has been challenging, requiring the negotiated use of a wind farm access route following the imposition of a weight limit on the only public road to site where it crosses the West Coast rail line. The temporary and enabling access works commenced in April 2024 and the permanent works in April 2025. Following the installation of the spillway rock anchors, the first concrete pour was completed in July 2025. Weather conditions permitting, the spillway works are due to be completed by the end of 2025.

The attendees observed the works from within the newly lined section of the spillway channel, as well as from the crest bridge, which provides a birds-eye view of both the spillway and the access ramp retaining walls. The construction joint details, underdrainage system, concrete placing and finishing on the steep slope were among key features which were discussed during the presentation. The attendees had a feel for the varied weather conditions at the site with wind speeds picking up on the embankment crest. Thankfully conditions remained dry for the duration of the visit, and following a cup of tea and the Scottish delicacy of a Tunnock's teacake or caramel wafer biscuit, the visitors set off on their journeys home.

View of the spillway chute under reconstruction

Reservoir Safety Reform Programme

The Reservoir Safety Reform Programme (RSRP) is being developed and delivered in response to the recommendations set out in the Independent Reservoir Safety Review Report.

The UK and Welsh Governments launched the Reservoir Safety Reform Programme to modernise and strengthen reservoir regulation across England and Wales. This was based on recommendations from the Independent Reservoir Safety Review Report following the Toddbrook reservoir incident in 2019.

The programme is being delivered in phases over several years by the Environment Agency, the Department for Environment, Food and Rural Affairs (Defra), the Welsh Government and Natural Resources Wales (NRW). It aims to introduce a more proportionate and flexible regime of reservoir safety, using updated guidance and new legislation when parliamentary time allows.

The need for reform

Reservoir safety ensures the physical structure of a reservoir, its dams and embankments, are safe. Although dams and reservoirs have an excellent safety record, incidents like Toddbrook, rising water demand and climate change highlight the need to reassess reservoir safety regulations, especially with around 2.6 million people in England and Wales at risk from potential dam failures and life-threatening floods.

The vision for change

The vision of the RSRP is to create a safety regime for dams in England and Wales which protects communities by making all involved ready for, and resilient to, climate change – today, tomorrow and for future generations.

This will be done by:

- Strengthening the roles and responsibilities for reservoir owners, operators, engineers and the regulator.
- Improving the safety practice and culture, through a programme of continuous development of skills, capacity and training across the reservoir community.
- Modernising legislation and safety management practice to ensure a robust and proportionate safety regime that is fit for the future.
- Engaging with stakeholders to help shape RSRP approach and deliver reforms.

Modernising the legal framework

The RSRP has been considering the options for modernising the legal framework. Options include:

- New primary legislation to replace the Reservoirs Act 1975,
- Retaining the Act and amending it, or
- Using existing powers to bring reservoir safety within the environmental permitting regime.

The proposed approach is bringing reservoir safety regulation under the environmental permitting regulations (EPR) but this has not been decided.

Environmental Permitting Regulations

The Environmental Permitting regime provides a modern regulatory framework for safety regimes for other sectors and industries which could be applied to reservoir safety. It has a hierarchy of permitting that includes exemptions, standard permits and bespoke permits, which could be applied to reservoirs to deliver a more proportionate approach.

Using environmental permitting will mean the reforms can be introduced through regulations rather than needing a new bill in Parliament, and so the changes could be made to a more predictable timescale.

Environmental permitting would not change the reforms that need to be made following the Independent Reservoir Safety Review Report.

How you can get involved

Over the coming months, there will be opportunities to share your views through stakeholder meetings, and the first public consultation coming soon. This first consultation will set out the suite of proposed policy reforms on reservoir safety regulation in England and Wales.

The consultation paper will be available on the public-facing webpages for England and Wales, in both English and Welsh. While the launch date is still to be confirmed, the consultation will remain open for at least 8 weeks. A series of engagement events will be held to raise awareness and encourage discussion throughout the consultation period. The RSRP hopes that you will all get involved.

The Proposed Reforms

The proposed reforms aim to reduce risks to life, property and the environment, while ensuring regulation remains proportionate and effective. They also seek to address wider sector challenges such as climate change, increasing water demand and the shortage of specialist engineers.

There is no proposal to change the overall structure of reservoir safety management. Owners, engineers and regulators would continue to be the key stakeholders:

- Reservoir owners would remain responsible for reservoir safety.
- The regulator would continue to regulate owners, not engineers.
- Engineers would continue to support owners through advice, recommendations and safety measures.

That said, the proposed reforms are significant, and all stakeholders would see direct impacts, although any changes would not take effect immediately.

Key proposals of the first public consultation include:

- New hazard classification system: Based on research contained in Defra reports FD2739 and FD2742, with safety and proportionality as key drivers.
- Updated safety management practices: Tailored to hazard class, with more rigorous requirements for higher-risk reservoirs. Proposals aim to be proportionate to reservoir hazard level – higher classes (1 and 2) would require more detailed and/or frequent safety practices than lower classes (3 and 4).
- Clearer roles and responsibilities for reservoir owners: Owners remain responsible, supported by engineers. Incident and near-miss reporting will be expected.
- Changes to engineer panels: Aimed at improving career progression and attracting new talent to the profession.
- Enhanced regulatory powers: Including civil sanctions to deter non-compliance and unsafe practices.

Ramsden Reservoir, Yorkshire

Clywedog Reservoir, Wales

Wimbleball Reservoir, Exmoor

Further work and next consultation

The programme will be delivered over several years through new guidance and legislation.

Further work will follow the first consultation to develop the proposals in more detail, as well as develop the systems, guidance and training etc. needed for implementation.

A second consultation would be held to explain and seek views on moving reservoir safety regulation into Environmental Permitting.

Please note: Should the reforms proceed, they will not take effect immediately or all at once. The current reservoir safety regulatory system will continue to apply for some time to come.

Any reforms will not come into effect until both consultations are complete, new legislation has passed through Parliament (and been brought into force), and regulators confirm the new framework.

For more information

The Reservoir Safety Reform Programme's dedicated website holds more information with latest updates on the programme and will have the consultation link once live – keep an eye out and stay informed.

The Panel Engineers Committee

The Institution of Civil Engineers formed the Panel Engineer's Committee (PEC) to provide a focus to the voice of engineers appointed to the various panels formed under the Reservoirs Act.

The purpose of the PEC is twofold:

- To provide proactive advice on how best to protect the public from the risk of flooding due to dam failure
- To provide feedback, comment and advice on the implementation in England [and Wales] of the recommendations of the Independent Reservoir Safety Review Report published in March 2021 (the Balmforth Report).

The current members of the PEC are:

Chris Scott (Chair) – Independent

Alan Brown — Jacobs

Siobhan Butler — Canal and River Trust

Paul Farnell — Severn Trent Water

John Foster — Mott MacDonald

Mark Hayward — Stillwater Associates

Tony Judge — Scottish Water

The activities of the PEC have been predominantly focused on interacting with the Reservoir Safety Reform Programme. That programme is split into six workstreams:

1. Hazard Classification
2. Future supply of engineers
3. Reservoir Safety Management Plans
4. MIOS/Risk Management
5. Environment Agency: Duties & Powers
6. Legislation

Workstream 1 – Hazard Classification

Defra instituted a research project to investigate possible hazard classifications; the safety management practices that may be associated with any new classification system and an initial cost benefit assessment of the research proposals.

The project set up a High-Level Engagement Group (HLEG) to provide input and be consulted as the project proceeded. The HLEG included stakeholders potentially impacted by the outcome. The PEC was invited to participate and three members of the PEC served on the HLEG.

In addition, the PEC supported the organisation of and participated in two workshops undertaken as part of the research project: one on risk assessment process and a second on design review.

Upon completion of the research project, a presentation on the outcomes was made on 14th February 2025 to which the PEC were invited.

Based on the findings presented at that session, the PEC wrote to Defra expressing concerns about several points around proportionality and the inclusion of small-raised reservoirs. Defra made a holding response indicating the findings were research proposals and not policy. The research reports were published in summer 2025.

Workstream 2 – Future supply of engineers

This workstream is looking to address the recommendations in the Mair report into the future supply of panel engineers. The Mair report made the following recommendations:

1. Unlock capacity in the existing panel engineer community.
2. Grow ARPE numbers in the short to medium term.
3. Reform the Panel structure to align it to any new risk/hazard classification for UK reservoirs and create a stepping stone between the Supervising Engineers Panel and All Reservoirs Panel.
4. Deliver a step change in the learning and development support available to panel engineers.
5. Improve the commercial environment in which panel engineer services are delivered.

There are several subsidiary recommendations to each of these main headings. The Mair report is clear that the recommendations need to be taken as a set rather than individually. The ICE is working with Defra to deliver the recommendations of the Mair report.

To date activity has focused on recommendations (1) and (3). On item (1), in 2024 the PEC organised a survey of panel engineers to assess the appetite amongst existing Supervising Engineers to become members of the inspecting panels. The results of this survey were shared with Defra.

Regarding item (3), in the first half of 2025, the PEC engaged with a team involving Defra and the EA considering possible changes to the structure of panels. There were several workshops and papers were prepared. The PEC was actively engaged and both made and commented on proposals. Eventually the Defra/EA team determined the proposals with which they were comfortable and shared them with the chair of the Reservoirs Committee. The ICE responded raising some concerns.

Initial activity has begun on recommendation (5). The task has two initial sub-activities: accessibility of services for small owners and insurance industry engagement.

To look at the accessibility of services for small owners, the team has circulated a questionnaire to panel engineers, a workshop is planned with the representatives of small owners and meetings are planned with commercial leaders in organisations that employ panel engineers to understand the commercial issues associated with small owners. The PEC has had some informal engagement with this activity.

The PEC has had no engagement regarding the insurance industry engagement.

Workstream 3 – Reservoir Safety Management Plans

Following the paper and workshop session at the 2024 BDS Conference, Mott MacDonald was appointed to work with the Defra team on the development of the Reservoir Safety Management Plan framework. The team ran workshops with major owners, smaller owners and panel engineers. Members of the PEC participated in those workshops. The team gave the PEC an update at the April PEC meeting.

Workstream 4 – MIOS/Risk Management

In 2023 the PEC organised a consultation survey on proposals around updated guidance for Inspecting Engineers. The results were shared with the Environment Agency.

This workstream includes the checklist review of Annual Statements and inspection reports being undertaken by the Environment Agency. The PEC has not had any engagement with this activity to date. There has been no further engagement with this workstream.

Workstream 5 – Environment Agency: Duties & Powers

There have been no discussions with the PEC on activities around this workstream.

Workstream 6 – Legislation

Defra/Welsh Government have indicated that their current preferred approach is bringing reservoir safety regulation under the environmental permitting regulations to avoid the need for new primary legislation. The wider implications of this are not clear, neither are the more specific implications for panel engineers. For example, under such a regulatory regime which body appoints panel engineers?

The PEC will be seeking to understand these proposals and their implications.

Pen-y-Cae Reservoir, Wales – Chloe Fisher

BDS Corporate Members

The Benefits of BDS Membership

THE BRITISH DAM SOCIETY is the key UK organisation for exchange of information and networking regarding all engineering and safety matters concerning dams and reservoirs and is part of the International Commission on Large Dams (ICOLD), giving members access to a wide range of contacts and guidance.

The BDS membership includes many senior staff and managers in top consultancies, dam owner organisations, government agencies and major contractors, who are involved in dams and reservoirs both in the UK and overseas. While the BDS has many hundreds of individual members, it also has scores of corporate members, who support the society's activities in many ways, and in return can inform the general BDS membership of their capabilities and project examples.

The BDS is involved in national and international technical committees and steering groups, influencing guidance and research projects, the progress and results of which are publicised by the BDS to all members. The BDS informs and supports their members on national and international issues and best practice in planning, development, maintenance and operation of dams and reservoirs.

The BDS organises several events each year which provide an opportunity for the exchange of experience and information while meeting other professionals, clients, competitors and suppliers. These events, described elsewhere in this Yearbook, provide valuable opportunities for the continuing professional development (CPD) to our individual members and to the staff of our corporate members.

Howden Dam – Paul Farnell

Additional Benefits to Corporate Members

In addition to the benefits of individual membership, outlined above, Corporate Membership includes the following:

- Corporate members names and addresses listed in each issue of the BDS peer-reviewed journal, Dams and Reservoirs.
- Three named representatives, each of whom has all the privileges of individual members, including the Dams and Reservoirs journal and the Yearbook.
- Each corporate member may take a full page in the Society's Yearbook, to publicise a project, outline the company's capabilities and provide contact details.
- The company's logo and link to their website can be published on the BDS website.
- If the corporate member provides a PowerPoint slide to advertise the company, this will be shown before each of the society's evening talks.
- The corporate member's three named representatives will have voting rights at the society's AGM or Special Meetings and at all elections for new committee members.

How to become a Corporate Member

If you wish to discuss any matter relating to Corporate Membership, whether you are an existing Corporate Member or are considering becoming one, please contact our Corporate Membership Manager, Stephen Lockett at stephen.lockett@mottmac.com

To apply for Corporate Membership, please download the form via the link below, which may be found on the BDS website:

BDS Corporate Membership Application Form and return completed forms to the BDS Secretary at bds@ice.org.uk

"Accelerating a planet positive future through leading-edge climate adaptation and water management solutions"

ARCADIS

Arcadis is the world's leading company delivering intelligence-driven sustainable design, engineering, and consultancy solutions for natural and built assets. Dams and Reservoirs are at the heart of our Climate Adaptation business, and our team of dam engineers, supervising engineers, project planners, cost consultants, water management, ecology, environmental, heritage, planning and sustainability experts, are all driven by our passion for improving quality of life.

Arcadis Climate Adaptation

www.arcadis.com

Knypersley Reservoir

Services we offer

Arcadis partners with leading UK Reservoir Undertakers to deliver future-ready, sustainable solutions that safeguard vital water assets. From early-stage investigations and strategic optioneering to detailed design, ECC site supervision, construction support and cost assurance reviews – our integrated approach ensures resilience at every step of the infrastructure lifecycle.

"Preserving legacy through sustainable design — reimagining resilience by reusing the past to secure the future."

Technical expertise

Arcadis provide multidisciplinary design in the Dams and Reservoir space. Our team of Specialists provides expertise in:

- Civil and Structural design
- Scour and erosion protection
- Computational Fluid Dynamics (CFD)
- TUFLOW fluvial and surface water flood modelling
- Drainage and drawdown improvements
- Spillway designs
- Discontinuance study and design
- Geotechnical assessments utilising our in-house ground investigation contracting entity

Harthill Reservoir

"Robust engineering at its core — delivering resilient spillway solutions through precision design and collaborative execution."

Environmental and Stakeholder Management

Arcadis provides forward-thinking support in environmental design, surveys, and mitigation planning – from habitat assessments and ECOW services to specialist bat management. Our expert team ensures seamless planning and consent management, helping clients navigate complex regulatory landscapes while delivering sustainable outcomes.

Innovation

At Arcadis, efficient design and proactive project support are core to our delivery ethos. Leveraging cutting-edge digital tools, we foster seamless collaboration across all stages of project execution – supporting BIM workflows and transparent stakeholder dialogue. Our BIM Level 2–compliant outputs, including Civil 3D, Revit, and Navisworks models, ensure precision and interoperability.

Slaithwaite Spillway Upgrade

At Slaithwaite Reservoir, we successfully deployed Autodesk Construction Cloud (ACC) to streamline communication between client, designer, and contractor – driving clarity, accountability, and shared success.

"Digitally engineered for resilience — empowering client decisions through real-time visualization and BIM-integrated design."

Proactive asset management

Our experienced team offers support in proactive asset management, investment decisions and cost assurance. We offer:

- Production and testing of Emergency Onsite Plans
- Concept design and business cases to inform investment decisions
- Risk Assessment for Reservoir Safety (RARS - Tier 1 and 2)

Meet the team

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The Arcadis infinity Loop shows the continuous interaction of asset knowledge and human insights that will lead to enhancements in how we plan, create, operate and redefine natural and built assets.

Toddbrook Reservoir Restoration

Engineering a more sustainable world

Following the 2019 incident, Toddbrook Reservoir is undergoing major works, including the replacement of the auxiliary spillway, to enhance dam safety and long-term resilience. Arup, appointed as lead designer by the Canal & River Trust, is delivering a full suite of design services including civil and structural engineering, hydraulic modelling, seismic assessment, ground engineering, and environmental consulting.

The project involves decommissioning the original auxiliary spillway and constructing a new 200m-long reinforced concrete spillway on the dam's eastern shoulder. The scheme also includes strengthening of the dam crest and embankment, installation of modern monitoring systems, and landscaping to restore the surrounding environment.

Arup led the Environmental Impact Assessment, designed a new sailing club development and public park, and supported stakeholder engagement and public consultation. This holistic approach aims to ensure that Toddbrook Reservoir will safely pass extreme weather events, while preserving surrounding ecology and keeping it at the heart of the local community.

About Arup

Arup was formed in 1946 and is a global firm of consulting engineers, planners and scientists with a specialist water consultancy providing excellence in water and environmental engineering. Arup has expertise in investigation, feasibility, design, and construction supervision of new dams, as well as the design of remedial and improvement works to existing dams. We have delivered projects for central and local government, international funding agencies, water utility companies, banks, and design and build contractors. We have also worked for research organisations including CIRIA and DETR to produce guides on many aspects of dams and reservoirs design and maintenance.

Find us on social media:

LinkedIn: linkedin.com/company/arup/

X: @Arup

Instagram: @arupgroup Facebook: @ArupGroup

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AtkinsRéalis

Sustainable Reservoir Engineering: Securing Tomorrow's Water and Energy Security

From leading new reservoir development to safeguarding key hydropower capacity, AtkinsRéalis is at the forefront of shaping the UK's water and energy landscape. Our dams & reservoirs work spans transformative infrastructure like Broad Oak Reservoir for South East Water – set to secure long-term water supply for East Kent – and upgrades to strategic assets such as the Galloway Hydro Scheme for Drax River Hydro Ltd. Whether designing from the ground up or enhancing existing systems, we're helping clients meet tomorrow's challenges with resilient, sustainable solutions.

Broad Oak Reservoir – Building for the Future

Broad Oak Reservoir, located north of Canterbury, is a landmark water infrastructure project for the south-east of England. Designed to hold 5,126 million litres of water and supply 22 million litres of treated water daily, it will secure East Kent's future drinking water, reduce groundwater reliance and protect rare chalk stream habitats. The scheme also enhances biodiversity and delivers lasting community benefits including walking trails, birdwatching areas, and educational spaces.

Broad Oak Reservoir Visualisation (South East Water Ltd)

AtkinsRéalis is delivering an integrated engineering environmental and planning service to support the planning application, with sustainability and stakeholder engagement at its core. Key engineering and environmental elements include:

- Three earthfill dams up to 17m high and 1.2 km in total length, including a 270m culvert for intake and outlet pipework.
- 3.5km river realignment maintaining ecological connectivity via a 12m wide active channel, dam crossing and 300m fish and eel passage.
- Abstraction and treatment works to ensure a reliable high-quality water supply, and a 10km pipeline network for efficient regional distribution.
- Integrated landscape design, blending infrastructure with nature to support biodiversity and public access.

Earlstoun dam on Galloway Hydro Scheme (Drax River Hydro Ltd)

Drax Galloway Reservoirs – Enhancing Safety and Sustainability

The Galloway Hydro Scheme, owned and operated by Drax River Hydro Ltd, is one of the UK's most iconic and historic hydro-electric systems. Built in the 1930's, it includes six power stations, seven reservoirs, nine dams, a large barrage, two canals and a network of tunnels, aqueducts, and pipelines. With a combined capacity of 126 MW, the scheme generates enough renewable energy to power over 400,000 homes.

AtkinsRéalis is playing a key role supporting the safe, sustainable operation of these nationally significant assets through:

- Statutory inspections to assess dam safety and ensure regulatory compliance.
- Engineering support for MIOS works (Measures in the Interests of Safety).
- Technical input to maintenance and upgrade programmes, including "high-impact" refurbishment to improve dam safety.
- Detailed investigation and assessment of dam condition and stability, informing long-term planning for safety and resilience.

By enabling the continued safe and resilient operation of this strategic hydro scheme, AtkinsRéalis is helping secure Scotland's renewable energy future — supporting net-zero ambitions and contributing to the long-term sustainability of UK energy infrastructure.

Contact us to find out more about AtkinsRéalis and our capabilities:
+44 (0)7834 507403 | mike.hughes@atkinsrealis.com | www.atkinsrealis.com

Enhancing lives, communities and the environment

binnies
an RSK Group Company

Llyn Fuches Las Reservoir

Binnies UK Ltd was commissioned by Natural Resources Wales (NRW) to undertake the design of improvement works for a historical mining reservoir known as Llyn Fuches Las, located within the SSSI and SAC Gwydir Forest Park in Snowdonia National Park.

There are multiple historic mine workings and structures in the upper catchment which necessitated unique solutions that removed the need to mobilise heavy plant. The site had further space constraints due to land ownership and therefore efficient usage of the available land was a priority for the selected solution.

© Natural Resources Wales (NRW)

The improvement works enabled Llyn Fuches Las Reservoir to pass flows safely and satisfy Measures in the Interest of Safety. The design works centred on raising the existing 180m of embankments via sheet piles, a solution selected for the innate reduction in required earthworks, provision of an engineered cut-off to the foundation below the embankment, and minimised disturbance to historic mining spoil.

Further provision of a 5m wide concrete primary weir and spillway and a 14m wide concrete auxiliary weir with turf reinforced mattress (TRM) spillway now enable the reservoir to pass flows safely. By providing an auxiliary spillway, there was a reduction to the required embankment raising, which equated to a reduction in imported material of 18%. The dimensions of the weirs and spillways were informed by the constrained land ownership downstream of the embankment, resulting in a compact solution. Stone lining of the primary spillway provides a visual tie with the surrounding woodland.

© Natural Resources Wales (NRW)

Further upgrades were provided by construction of a footpath and facilitation for future Hydrometry and Telemetry (H&T) system installation via buried ducts and a housing cabinet, modernising the reservoir and ensuring its continued safe operation.

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Follow us on

valvemetrix®

Blackhall Engineering launched our new IOT service Valvemetrix at the BDS event in September 2024.

We are pleased to state that since its launch we have received numerous enquiries from different water companies all wanting to understand more about the behaviours of their assets, especially valves that are coming to the end of their asset life or in difficult to reach spaces such as shafts and tunnels which are classed as confined spaces.

For example, Valvemetrix was installed on a Submerged Discharge Valve to help diagnose what became a larger problem :-

Scope – To work out why an SDV DN450 Submerged Discharge Valve was experiencing excessive vibration during operation after it had been recently refurbished by others.

Action – Prior to the removal of the valve to inspect internal gearing, spindle etc. a number of Valvemetrix sensors were retrofitted to measure the limits of the vibration over the full operation of the valve.

At its peak, the SDV showed a vibration reading of .74 m/s^2. Based our experience, we would expect a valve of this size to show a reading of around 0.30 to 0.40 m/s^2.

Blackhall safely removed the SDV and carried out an inspection.

The Inlet bend showed significant sign of wear, and the internal spindle was slightly bowed.

After investigating the data and site findings the valve was showing signs of high velocity damage. Meaning more volume was being discharged through the valve than what it was design for.

Outcome - After performing a restoration (RenoV8) on the SDV we were happy to inform the client that we had reduced the vibration from .74m/s^2 to .38m/s^2 but also was able to inform them that we found that site was drawing down 1800 L/s when the valve was only designed for 1000 L/s.

Recommended next steps – To future proof site, Install a PRV type valve or purchase a larger valve if the upper limit of volume is required.

If you have an asset that you would like our help in diagnosing which could be coming to the end of its asset life, then please contact Dean Wheatley at Dean.Wheatley@Blackhal.co.uk

DUGLAS ALLIANCE CREATING VALUES THROUGH GLOBAL PROJECTS

DUGLAS ALLIANCE LTD. specializes in the development and execution of projects in the field of industrial construction and construction of hydropower facilities. Main services offered by the company:

- ✓ project management,
- ✓ engineering services,
- ✓ industrial construction,
- ✓ trading.

SENDJE HPP PROJECT (under construction)

Country: Equatorial Guinea (30 km south of the capital of the continental region of the city of Bata and 20 km east of the town of Mbini on the Wele River)

Client: Government of Equatorial Guinea

General Contractor: Duglas Alliance Ltd.

Particularities: Upon completion of the construction, the Sendje HPP will be the largest among all the generating facilities of Equatorial Guinea with the highest dam in the country (63.0 m)

Main characteristics of the project:

Installed capacity - 200 MW.

4 hydro units with a unit capacity of 50 MW.

Power output voltage - 220 kV.

Average annual production is 1 402 million kWh.

Estimated head - 67.5 m.

Reservoir:

- Surface area of the reservoir - 21.57 km^2.
- Normal water level of the reservoir - 88.0 m.
- Useful volume of the reservoir - 60.2 million m^3

tel.: + 44 203 608 18 46 **e-mail: office@duglasalliance.com** **www.duglasalliance.com**

Dŵr Cymru Welsh Water provides safe and reliable drinking water to over 1.4 million homes and businesses, making us the sixth largest water company in England and Wales. As required under the Reservoirs Act 1975, we are the undertaker for 137 reservoirs with a volume >10,000m^3.

Llyn Celyn is the largest reservoir in Wales, capable of storing ~81,000,000m^3 of water and supplies most of the water for the Dee Regulation Scheme, supplemented by Llyn Brenig and Llyn Tegid in Bala. Water is released into the River Dee and abstracted over 50 miles downstream near Chester to supply 2.5 million people in NE Wales and NW England with drinking water.

Following the statutory inspection Welsh Water were given Measures in the Interest of Safety to ensure that sufficient flood capacity is provided, and modifications carried out to ensure that the spillway is able to safely pass the design and safety check flood.

Delivering the project was particularly challenging as Welsh Water had to maintain releases for water supply, flood mitigation and the environment at all times.

It is one of the largest auxiliary spillways in the UK and is approximately 270m long, 33m wide, 4m high and used approximately 11,000m^3 of concrete.

In flood events of a magnitude greater than 1 in 10,000 years, the tipping gates will allow flood water to enter the spillway channel and divert it downstream of the dam. To limit the visual impact of the structure and to maintain access across the dam crest the bottom 150m of the channel has been culverted through the dam located in the national park.

Temporary control rules had to be agreed with Natural Resources Wales (NRW) and the major abstractors (United Utilities, Hafren Dyfrdwy, Severn Trent Water, Welsh Water and Canal and Rivers Trust) to balance the water resource demand and flood risk.

Additional flood mitigation was also provided by the new drawdown valves in the existing spillway and on-site emergency pumping facilities.

This is the most expensive and ambitious scheme the Dam Safety team have delivered to date and has been delivered over three years by our alliance partners Mott MacDonald Bentley (MMB).

Dŵr Cymru Welsh Water

Stephen Shakespeare
Head of Dam Safety
Stephen.Shakespeare@dwrcymru.com

Edwards Diving Services successfully completed works to rehabilitate a spillway channel and to provide an underwater isolation for scour valve replacement as part of a MITIOS scheme at a Reservoir in South Wales.

The project took place in the County Borough of Caerphilly, with EDS appointed as the Principal Contractor to self-deliver all aspects of the work which included:

- An underwater Remote Operated Vehicle (ROV) inspection followed by a tactile diving survey of the scour valve inlet, trash screen and headwall
- Design and fabrication and installation of a temporary scour valve double isolation comprising steel back plate and high pressure bung
- Design and installation of an overpumping system to suit drawdown requirements, during the period of temporary scour valve isolation and replacement
- De-vegetation and re-pointing works to the spillway masonry side channel walls and grouting works to the spillway invert
- Removal of the existing scour valve
- Installation of a new scour valve, including design and installation of a steelwork support structure

General view of the reservoir

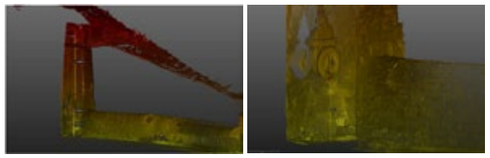
The site is an area of high public amenity, requiring careful management of pedestrians and working closely with stakeholders including the local angling club and park authority to ensure public safety during construction.

Temporary overpumping arrangements with large capacity pumps suspended from gantries on modular pontoon system with accessways for inspection and maintenance during the construction.

Site access was challenging. Due to a weight-limited footbridge the works were only accessible via a narrow public footway, the long way around the reservoir and in one direction from the car park access point and restricted plant and materials access. We used our quad bike and trailer to transport materials to/from the worksite, overcoming this issue.

Spillway de-vegetation and masonry repair works in progress

To assist with the design and planning for the scour valve replacement, we laser-scanned the discharge tunnel (a confined space). Improvement works were made to enable access via the soffit so that the new valve could be operated externally from the tunnel in future (eliminating confined space entries).



Laser scan of discharge tunnel and scour valve to inform design

Works within the tunnel entailed heavy lifting and cutting works, requiring high-risk confined space operations to be carefully managed and the provision of our in-house rescue team.

Original scour valve being removed and replaced with new, working in high-risk confined space conditions

Works were completed on time and within the statutory timescales for certification of the MITIOS requirements under the Act.

For information about other projects we are working on, take a look at our website and follow us on LinkedIn.

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Geotechnical Observations
Trusted Monitoring Solutions

Geotechnical Observations Limited (GeO) is a leading provider of geotechnical and structural instrumentation and monitoring services.

We have extensive experience in monitoring ground water levels and pore water pressures (both positive and negative), ground movements (for slopes, embankments, cuttings, and deep excavations) and structural movements (including buildings, tunnels, piled and diaphragm walls, bridges and piers).

Our mission is to provide the right monitoring solution and to install it to the highest standard to allow our clients to make informed decisions and deliver safe, efficient and economic projects that cause minimal disturbance to the environment around them.

“We do our job right even when nobody is looking”

Our services include advice on what instrument is best for each specific application, procuring the right instruments, installing the instruments properly, reading the instruments correctly (manually and automatically), reporting the results and helping the client to understand the measurements.

We are supporting Future Water MJJV on the Havant Thicket Reservoir project in Hampshire. The Havant Thicket reservoir will span 160 hectares with an anticipated capacity of 8.7 billion litres and will be the UK’s first new storage reservoir brought into service in over 30 years.

www.geo-observations.com - +44 (0)1932 352040 - info@geo-observations.com

DAMS & RESERVOIR VALVE AND PENSTOCK SPECIALISTS

Glenfield Invicta
Delivering Project Solutions

Our aim is to provide customers with a single-source solution covering the critical stages of the complete project, from design, consultancy through to installation and commissioning, and to trust us to deliver them safely, on time and to the highest standards.

Glenfield Invicta successfully installed four DN1100 Series 4 Reservoir Specification Gate Valves at the Llyn Celyn reservoir. The project involved the use of custom-engineered spool pipes, hydraulic actuation, and a remotely located hydraulic power unit, operated from an SR4 security kiosk approximately 100 metres away from the gate valves.

Two 24” gate valves, manufactured around 1900, were subjected to a detailed condition assessment. Based on the recommendations of the condition assessment report, Scottish Water decided to refurbish the two valves such that they could be returned to service. This significantly cut down on the carbon emissions involved with production of a new valve.

Glenfield Invicta commissioned to survey the submerged penstock and develop a viable solution for its safe removal and replacement. A deep-water survey was conducted to map the existing penstock, frame, and operating components. That data was then used to create a detailed 3D model, allowing engineers and divers to plan and visualise each step of the operation. The replacement unit was installed using a backplate system while existing operating gear and refurbished spindles were retained.

GREG MORRIS
BUSINESS DEVELOPMENT MANAGER
DAMS, RESERVOIRS & HYDROPOWER

M: 07810 377246 E: greg.morris@glenfieldinvicta.co.uk

Scan to read other case studies featuring the project solutions we’ve helped customers with.

Member of the AVK Group

HESSELBERG
EROSION PROTECTION

Advanced Erosion Protection

Specialists in engineered hydraulic solutions for coasts, rivers, and reservoirs.

A UK leader in flood protection and coastal defence, offering services that encompass feasibility studies, design, installation, maintenance and monitoring of asphaltic structures, erosion protection, underwater scour protection and waterproofing.

Since 1986 we’ve been addressing challenges in **dams, reservoirs, waterways, rivers, ports and coastal environments as well as terrestrial landfill sites**, across the UK, specialising in **lower carbon, high integrity** erosion protection solutions.

A Smarter Alternative to Concrete

Protecting what matters:
Defences for dams, rivers, coasts, and ports.

Built for resilience:
Flexible systems that perform under extreme hydraulic conditions.

Lowering impact:
Asphalt protection with up to 75% less carbon than concrete.

Proven in Practice

We’ve over 40 dam projects completed requiring no maintenance requirements after 34 years and counting.

Baddinsgill Dam, Scotland
OSA revetment in excellent condition after 21 years in a hostile, elevated location.

Megget Reservoir, Scotlad
Supplies some 64,000 Ml to Edinburgh and Lothians area. 27,000 m2 upgraded with pattern grouting on a 2.5 metre grid. On site production of 10,500 tonnes of mastic. Zero-maintenance required in 28 years of service.

SPOTLIGHT ON CANVEY ISLAND

Canvey Island, Essex
One of the most flood-exposed communities in the UK, with most of the island lying below sea level. A 3-km stretch of the island’s revetment was renewed under a £75m scheme to protect 6,000 homes and businesses.

Ready to speak with our engineers?

Get in touch

erosionprotection.co.uk | info@erosionprotection.co.uk | +44 (0) 203 488 7723

JBA Consulting is an employee-owned independent water and environmental engineering consultancy with 18 offices in the UK and international offices in Ireland, Romania, Singapore, India, Australia, Cambodia and the USA.

We specialise in all aspects of dam and reservoir safety including design, inspection, hydrological / hydraulic analysis, and emergency planning.

Our growing dams and reservoirs team is currently providing services for water company, local authority and private clients in Australia, St. Helena. Romania, Kazakhstan, Ireland and the UK. A selection of recent projects is provided below:

St. Helena

We undertook a safety review of all the reservoirs on the island of St. Helena for the islands government and investigated seepage issues at one of the reservoirs.

Island of St. Helena

Derkmore Reservoir

Working under a design and build contract we provided design services for a new concrete dam and associated structures. The reservoir will provide drinking water to the surrounding community.

Derkmore Dam, Donegal

Reservoir Flow Forecasting

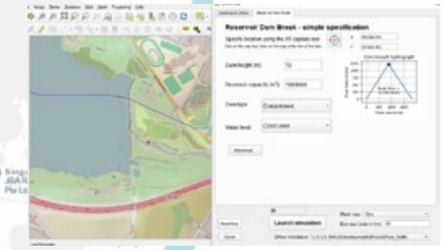
JBA operates a flood forecasting service for reservoirs and rivers. We couple calibrated models to high resolution weather forecasts.

Upcoming events are predicted, and users alerted by email and SMS. Clients including the Canal and River Trust and J N Bentley use the forecasts to support weather-critical works on dams.

Remote sensing

JBA's JSat™ platform provides automated monitoring of change in reservoir catchments and on dam embankments. It is helping Affinity Water monitor land use changes in its protected water resource zones.

Our Qflow™ software allows pseudo real time / on the fly prediction of breach consequence for use in emergency response and planning.



Training Courses

JBA is a leading provider of on-line and in-person specialist training in dams and reservoirs. Our scheduled programme includes:

- Training for new Supervising Engineers
- Geotechnics for Reservoir Engineering
- Hydrology & Hydraulics for Reservoirs
- Reservoir Emergency Planning
- Reservoir Surveillance

We can also offer bespoke training to meet particular requirements.

JBA Consulting, No.1 Broughton Park, Old Lane North, Skipton, BD23 UK
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Bentley
MMB MOTT MACDONALD BENTLEY

Protecting Wales' largest reservoir: dam safety and lasting resilience at Llyn Celyn

The multi award-winning project forms part of a five-year strategic investment to improve the safety, resilience and operational reliability of Wales' largest reservoir by volume - Llyn Celyn. Mott MacDonald Bentley (MMB) was appointed as design and build delivery partner under Dŵr Cymru Welsh Water's reservoir safety programme. The scheme represents the largest dam safety project in Wales to date and won the prestigious 'Water Project of the Year' at the British Construction and Infrastructure Awards in 2025.

Constructed in the 1960s to regulate flows in the River Dee, it impounds approximately 81Mm³ and plays a key role in downstream water resource management. Following an inspection under Section 10 of the Reservoirs Act 1975, a number of Measures in the Interests of Safety (MITIOS) were identified, including: to be able to pass the Probable Maximum Flood (PMF) safely; to ensure all valves are operable; and to increase the emergency drawdown capacity.

The new 33m-wide, 4m-high auxiliary spillway has been designed to convey flood events up to the PMF. A UK-first installation of 6m inclined reinforced concrete tipping gates reduced the spillway and weir length by approximately 70%, improving hydraulic performance and delivering major carbon and cost savings. The gates operate without manual intervention, supporting successful and reliable long-term operation.

The spillway comprises a culvert beneath the access road and a downstream conveyance channel, with more than half of the structure cleverly culverted to blend with the landscape.

MMB commissioned physical modelling to minimise the required extents of the channel for the design discharge. In-house 2D hydraulic modelling was utilised to confirm that the overland flow from the spillway outlet to the river would not impact the dam, existing properties or sensitive environmental receptors.

Major pipe and valve works included:

- Installing complex temporary upstream isolations designed by MMB's framework diving contractor using inflatable bungs and steel plates assembled at depths of 30m.
- Replacing the butterfly valve with a 0.9m gate valve, installed using a bespoke lifting gantry and trolley system to transport the valve 300m up the tunnel.
- Replacing 2Nr 1.3m diameter fixed cone valves.
- 4Nr new 1.1m diameter gate valves into the existing drop-shaft spillway to augment emergency drawdown capacity.

Due to the high-risk nature of the works and the reservoir's criticality, pipework and valve operations were managed under Welsh Water's Gold Command protocol and completed without significant impact to water resource operations or artificial drawdown.

The site at Llyn Celyn has a significant and sensitive Welsh history, therefore it was particularly important that this project left a positive impact on the community and a legacy to be proud of.

JN Bentley is a civil engineering, building and MEICA contractor specialising in the safe and efficient delivery of sustainable solutions.

Flexible in our approach, we offer design and build or build-only services and support clients at all stages of project delivery, from concept to completion – whilst remaining agile and tailoring our approach to provide the support you need.

As part of the Mott MacDonald Group and delivering many projects, like that at Llyn Celyn, through our fully-integrated design and build company Mott MacDonald Bentley (MMB), we have seamless access to the pooled technical capabilities and resources of a global consultant, with a local presence – enabling us to bring the latest expertise and innovation to solve your challenges.

We work across England and Wales and have dedicated reservoir safety delivery teams based regionally throughout our operational areas. With more than 100 projects completed to date, our teams are experienced in delivering spillways, embankment stabilisation and raising, wave walls, scour pipework, valve repairs and replacement, tunnel refurbishment and in-filling, de-silting, reservoir discontinuance, siphon installation, drawdown improvements, grouting and much more.

Our clients include many of the national water companies and other key reservoir owners.

Learn more:

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mottmacbentley.co.uk

Klohn Crippen Berger

Klohn Crippen Berger (KCB) is an engineering, geoscience, and environmental consulting firm with offices in the UK, Canada, Australia, Peru, Brazil, Ecuador, Ireland, and the USA. We are involved in some of the largest, most complex engineering and geoscience projects around the world.

AITIK COPPER MINE

KCB helped to revolutionize the design of modern tailings storage facilities 50 years ago, and our engineering approach continues to be the hallmark of international practice. KCB has been growing in Europe over the last 6 years and now has offices in the UK and Ireland, and more recently expanded into Sweden. KCB was appointed as the Designer of Record for the Aitik Mine Tailings Management Facility (TMF) in 2022 and oversees the design and construction of the TMF. KCB's services as Designer of Record include planning and supervision of site investigations, site characterisation, numerical analysis including advanced constitutive modelling, design and tender package preparation for dam raising, construction monitoring, instrumentation and performance monitoring, and deposition analysis.

The Aitik Copper Mine is one of Europe's largest open pit mines, located within the Arctic Circle close to the town of Gällivare in Sweden. The mine produces over 40 Mt of tailings per year and these are managed within the Tailings Management Facility, which already holds over 1000 Mt of tailings. The facility consists of 10 existing and planned dams with a variety of construction types. The site is also influenced by extreme cold winter weather and a short summer construction season.

Particular achievements as the designer of record include the design and supervision for a new 30 Mt rockfill buttress to maintain stability of the facility in case of tailings liquefaction, a site investigation and characterisation including over analysis of over 150 Cone Penetration Tests and advanced triaxial testing (carried out by KCB's laboratory), and the completion of a design for a new permit to operate the mine for an additional 10 years.

CONTACT

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Learn more about KCB and our team

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MINOVA

WWW.MINOVAGLOBAL.COM

With over 140 years of experience, we are a global leader in geotechnical structures and solutions for the mining, infrastructure, and tunnelling sectors.

For geotechnicians, mining and civil engineers looking for safety-critical ground support solutions, Minova are the global team of dynamic problem solvers that are ALWAYS AHEAD.

CASE STUDY

SEVERN ESTUARY P4 SLOPE STABILISATION

With Minova's backing, QTS Group led the combined delivery of Phases 4 and 5 of the Severn Estuary Resilience Programme - securing 32km of cliff face between Lydney and Little Haglow.

Challenge

The Newport to Gloucester railway line is particularly vulnerable to landslides due to its exposed location along the Severn Estuary. It had suffered at least 15 such incidents since 2018, including three in January 2023 alone. The cliff faces are formed from a weathered sandstone-based rock which erodes quickly.

Solution

QTS installed 32,000m² of netting anchored by more than 7,500 soil nails, stabilising the vulnerable slopes.

Result

A three-week line closure (27 July–17 August) enabled safe, efficient delivery. The outcome:

Safety Boost: Reduced risk of landslips and rockfall.

Faster Journeys: The temporary speed restrictions, which were significantly slowing trains, have been removed.

Lower Costs: Fewer disruptions and the removal of temporary speed restrictions have reduced the financial impact on taxpayers.

Greater Reliability: Improved resilience for passenger and freight links across South Wales, the West Country, and the Midlands.

CONTACT OUR TEAM

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Unit 5c, Ashroyd Business Park, Barnsley, South Yorkshire, S74 9SB

Commercial Diving Services

'Delivering Unrivalled Service'

We are a HSE registered diving contractor with the ability to dive under almost any circumstance. Our dive teams have acquired the experience to perform everything from inspections and NDT, to thermic lance cutting, welding, debris removal and structural repairs whilst maintaining an excellent safety record.

About Us

We are specialists in commercial diving, confined space entry and remotely operated vehicle surveys. Our services have been developed to address the broad range of challenges faced by our clients within the UK water industry. Our team of professionals and access to bespoke built equipment make us a one stop shop for our client base.

We are able to work under almost all site conditions. Our approach to underwater engineering means we are equipped with cutting-edge equipment that ensures we can fulfil your requirements in the most arduous of circumstances. Sewage treatment works, power stations, tunnels and reservoirs. We've got it covered.

Diving Safety

As a commercial dive company, we uphold the highest safety standards, safety is at the core of everything we do. We are proud to be ISO 45001 certified, ensuring strict safety compliance with the HSE and other organisations. At the outset of each project, safety drills are non-negotiable. Its crucial that every member of the MMP team as well as our clients, feel completely assured. In the rare event of an emergency, we're fully prepared to handle any situation.

Your safety is our priority – Dive with confidence.

MMP Marine & Inspection Ltd
Unit 5 Bassett Business Units
North Weald, Epping, Essex CM166AA
☎ 01992618055 ✉ info@mmpmarine.co.uk 🖳 www.mmpmarineinspection.co.uk

ISO 45001 ISO 9001

MOTT MACDONALD

Project
RARS Risk Reduction Investigation Project

Client
Canal & River Trust

Duration
April 2023 – ongoing

CANAL & RIVER TRUST

RISK ASSESSMENT FOR RESERVOIR SAFETY – TIER 2 AND TIER 3

Conducting Risk Assessment for Reservoir Safety (RARS) Tier 2 and 3 assessments for implementation of proportionate risk reduction measures at a portfolio level.

Tier 2
Mott MacDonald scoped, supervised and undertook interpretation of ground investigation works to verify the existing composition and arrangement of 19 historic reservoirs. Targeted investigations were undertaken using scaffold platforms and slope-climbing rigs to access embankment crests, shoulders and toes. The findings informed a review of whether the anticipated hazards were credible and their likelihood of occurring to develop revised risk scores and Annual Probability of Failure (APF).

Reviews were conducted jointly with the Canal & River Trust (CRT) to determine further targeted actions and investment required to achieve As Low As Reasonably Practicable (ALARP) compliance. These reviews included examination of workbooks and further detailed studies, such as slope stability analysis.

Tier 3
A further quantitative risk assessment was carried out at eight reservoirs, a number of which had been identified as being at higher risk of internal erosion during Tier 2. The assessment was structured around an event tree that documented the stages necessary for failure to occur: threat, initiation, continuation, progression, detection/intervention and breach. The 2024 Seepage Piping Toolbox, which is new to UK practice, was also applied to undertake internal erosion risk assessments. These assessments were informed by other detailed studies, including flood routing using 1D/2D hydraulic modelling, erodibility and overtopping analysis and GIS-based consequence mapping.

Project outcome and benefits
The project has delivered significant benefits to CRT by providing robust, data-driven insights into reservoir safety risks. It has enabled the prioritisation of remediation works, strengthened regulatory compliance and introduced advanced risk assessment methodologies into UK reservoir management practice. These improvements delivered as a result of the analysis by Mott MacDonald support proportionate risk reduction across the entire portfolio.

Find out more about our dams and reservoir engineering services.

Natural Cement

Gladhouse Spillway

Project – Gladhouse Reservoir Spillway Repairs
Product – NATCEM® 35
Main Contractor – George Leslie
Client – Scottish Water

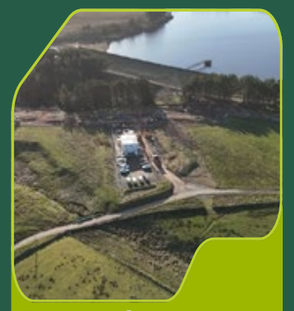
Overview

NATCEM® 35 was successfully used to rebuild delaminated stonework at Gladhouse Reservoir's spillway, a key part of the ongoing maintenance programme.

Goals and Objectives

Apply Proven, Sustainable materials

NATCEM® 35 repair mortar was chosen for its proven performance in reservoir environments, offering strength, and durability in historic masonry. Its fast-setting properties enables progress at pace without impacting quality, while its environmental formulation supported the sustainability goals of the project. By using NATCEM®, that can perform in wet and challenging conditions, George Leslie ensured that the repairs will stand - protecting both the asset and the surrounding environment.



Prepare for Long-term Performance

While the initial focus was on rebuilding the damaged stonework, the project team also planned for the long-term resilience of the structure. The works will be completed with grouting, ensuring voids and fine cracks are sealed to provide an additional layer of protection against water ingress and erosion. This combined approach – targeted rebuilding followed by comprehensive consolidation – delivers a robust repair strategy that not only resolves existing issues but also mitigates future risks to the spillway.

Strengthen Structural Integrity

Gladhouse Reservoir's spillway had suffered from delamination, leaving sections of stonework weakened and at risk of further deterioration. Careful inspection identified the areas most in need of intervention, with rebuilding required to restore stability and prevent escalation of damage. Using NATCEM® 35, George Leslie was able to reconstruct the affected masonry effectively, ensuring that the spillway retained both its function and historic character. The material's rapid strength gain meant repairs could be completed efficiently, reducing disruption and enabling the structure to return to service quickly.

Natural Cement

01226 381133

enquiries@naturalcement.co.uk

10-11 Fountain Parade, Mapplewell
Barnsley, South Yorkshire
S75 6FW

Gwaith diogelwch yng nghronfa ddŵr Llyn Llywelyn
Safety works at Llyn Llywelyn reservoir

Cyfoeth Naturiol Cymru
Natural Resources Wales

Fel yr awdurdod gorfodi yng Nghymru ar gyfer Deddf Cronfeydd Dŵr 1975, rydym yn rheoleiddio tua 400 o gronfeydd dŵr mawr gyda chapasiti o 10,000 metr ciwbig neu fwy.

Ein nod yw sicrhau bod perchnogion a gweithredwyr cronfeydd dŵr yn dilyn y gyfraith a, thrwy hynny, roi tawelwch meddwl i'r cyhoedd. Rydym hefyd yn rheoli ystod amrywiol o gronfeydd dŵr sy'n darparu buddion o ran rheoli perygl llifogydd a chadwraeth. Rydym bob amser yn hyrwyddo defnyddio adnoddau naturiol yn gynaliadwy er mwyn helpu i wneud Cymru'n lle gwell i fyw.

Ac os ydych chi'n chwilio am le braf i fynd am dro - wel, gallwn ni helpu gyda hynny hefyd! Rydym yn rheoli nifer o gronfeydd dŵr sy'n agored i'r cyhoedd - er mwyn i bawb allu mwynhau'r golygfeydd hardd.

Cysylltwch â ni:

0300 065 3000
cronfeydddŵr@cyfoethnaturiol.cymru
cyfoethnaturiol.cymru/diogelwchcronfeydddŵr

Byd natur a phobl yn ffynnu gyda'n gilydd

As the enforcement authority for the Reservoirs Act 1975 in Wales, we regulate around 400 large raised reservoirs with a capacity of 10,000 cubic metres or more.

We aim to ensure reservoir owners and operators follow the law and give the public peace of mind. We also manage a diverse range of reservoirs that provide flood risk management and conservation benefits. We always promote the sustainable use of natural resources to help make Wales a better place to live.

And if you're looking for a nice spot to go for a walk, we've got you covered! We manage several reservoirs that are open to the public, so you can enjoy the beautiful scenery as well.

Get in touch:

0300 065 3000
reservoirs@naturalresources.wales
naturalresources.wales/reservoirsafety

Nature and people thriving together

Havant Thicket Reservoir

Havant Thicket Reservoir, located in Hampshire, marks a historic milestone as the first major new reservoir to be built in the UK in over 30 years. First and foremost an environmentally-led project, the new reservoir is designed to protect two globally-rare chalk streams by providing a new, sustainable source of water.

Why we need a new reservoir

Portsmouth Water's neighbour, Southern Water, has committed to take significantly less water from these two rivers, leaving the company facing a shortfall of 200 million litres of water per day, during droughts. Portsmouth Water is a community-orientated company and is able to help its neighbour to address this challenge. As a result, it's building the new Havant Thicket Reservoir. Under current, approved plans, it will store surplus water from local springs and enable a transfer of up to 21 million litres of water a day to Southern Water during a drought.

Construction

Once completed, the reservoir will hold up to 8.7 billion litres of water and reach a depth of 22.1 metres at its deepest point. Construction will primarily take place during warmer, drier months, with key infrastructure including the main embankment, a wetlands embankment to separate northern shore wetlands from the main body of water, inlet and outlet pipelines and a new visitor centre. The engineering expertise involved spans a wide range of disciplines, including project management, geotechnical and structural engineering, reinforced concrete design, hydraulic engineering, mechanical and electrical systems, instrumentation and automation, quantity surveying, and programming.

Delivering an environmental net gain

A standout feature of the project is its commitment to deliver an environmental net gain for the local area. Portsmouth Water is planting and improving more than 200 hectares of woodland and wood pasture, including an 80-hectare project to rewild agricultural land. The company has also gone above and beyond its environmental commitments, working with the community and volunteers to translocate more than 450 trees, saplings and plants from within the reservoir site. Community engagement has been central to the project's development. A 2020 public consultation revealed strong local support, with 80% of respondents in favour. A stakeholder forum comprising over 70 members, including councillors, community representatives, and environmental groups, meets quarterly to guide the project, with smaller groups considering specific topics such as access, recreation, and environmental impact.

A new green leisure hub

Once complete the reservoir site will create a new, healthy and green place for people to visit, with footpaths for walking, as well as routes for cycling and horse riding, facilities for bird watching, picnic and play areas. There will be a visitor centre with a café and space for community and education activities. The new Havant Thicket Reservoir will achieve environmental protection, engineering excellence, as well as becoming a new, green hub for the local community to enjoy.

Website: Havant Thicket Reservoir project Email: havantthicket@portsmouthwater.co.uk

HAFREN DYFRDWY severn dee

WONDERFUL ON TAP

SEVERN TRENT

Severn Trent is a FTSE100 water company serving more than 8 million customers across a region stretching from mid-Wales to Rutland, the Bristol Channel and Humber.

We manage a captivating collection of 80 statutory reservoirs in England and Wales, regulated by the EA and NRW, respectively.

Our goal is to "*be recognised as the best in the country at reservoir safety*".

To deliver this aspiration, we have a team of five empanelled and two trainee Supervising Engineers, four Reservoir Technicians and five specialist Reservoir Surveyors. We oversee all statutory aspects of reservoir ownership, together with advising and assisting colleagues in the capital and operational elements of our business.

Exercise Ursus

- **Over 80 professionals comprising members of Warwickshire's Local Resilience Forum and engineers from Severn Trent attended Exercise Ursus at Draycote Water, Coventry, in July.**
- **The scenario of worsening internal erosion on Farborough Dam unfolded during the day. Additional resources mobilised by Selwood Pumps and Warwickshire Fire Service enhanced potential drain down capacity.**
- **The 21 strong LRF led by a Police Inspector tackled potential downstream consequences which included possible localised flooding from siphon discharges and potential erosion to strategic infrastructure.**
- **Feedback was positive with working relationships between organisations strengthened. Face to face interaction allowed each organisation to enhance their learning and improve their procedures.**

Before

After

- **Pen y Gwely Reservoir, Powys, was discontinued in 2025.**
It was no longer required for raw water supply purposes.
- **The site now features environmental enhancements with a new spillway to safely pass flood flows.**

Contact: Ian Hope BSc MA CEng FICE ian.hope@severntrent.co.uk 07774 336430

Camps Reservoir spillway upgrade

Cost	Designer	Contractor
£19M	Mott MacDonald	George Leslie Limited

Camps Reservoir impounds Camps Water to the east of Crawford in the Southern Uplands. Completed in 1930, water is retained by a 29.3m high earth embankment dam with a central puddle clay core and overflows by a side weir into a masonry spillway chute. This Category A reservoir is used for water supply to the greater Lanarkshire area and has a storage capacity of 9.000 million m^3.

In 2015 a MIOS item resulting from a statutory inspection under the Reservoirs (Scotland) Act 2011 raised concerns over the ability of the masonry spillway chute to safely pass the design flood, without tolerable damage to the chute and embankment. Ground investigations here and a CFD model validated these concerns, with SW instructing MML to design a reinforced concrete liner to cover the walls and invert over most of the chute in 2020. A physical model built by CRM was then used to select a preferred design.

To protect the existing spillway chute until repaired the qualified engineer stipulated that the reservoir should be held down -1.5m below TWL. To that end a new actuated duty scour valve supplied by Blackhall was installed that operated from a Kiosk situated at the dam toe to improve the resilience of the scour system and greatly reduce valve opening times. Managing the level control strategy and operation of the scour valves, with respect to all stakeholders downstream of the reservoir is being completed by Scottish Water and Motts using ROMS procedures on a standby rota.

The temporary works design used a large rock ramp on the embankment to allow the spillway to be serviced by a Marchetti Sherpa crane cable of climbing steep slopes. Rock, materials and plant were taken to site on a windfarm access route from the M74 to avoid Crawford village and a narrow bridge over the west coast mainline there. Further work was required to avoid a weak bridge containing the supply main close to site, with a new permanent crossing and access road system constructed.

Start on site was attained in April 2024, with the first concrete pour completed in July 2025. The works are due to be completed in the next few months.

SW Business

Dams and Hydropower

At Stantec, we create sustainable and reliable water and power solutions that improve quality of life in communities around the world. We have over 160 years of hydropower and dams experience, delivering over 5,000 dams and reservoirs projects including storage schemes for water supply, flood alleviation, river regulation and more. In the UK, Stantec provides reservoir inspection and Qualified Civil Engineering services under the Reservoirs Act.

Drawdown Improvements Scheme

Bewl Water Reservoir, owned and operated by Southern Water Services, is the largest inland body of water in Southeast England. Situated within an Area of Outstanding Natural Beauty, the reservoir was constructed between 1973 and 1976 to support municipal water supply to Kent and East Sussex, holding enough water to provide an average day's usage to almost 200 million people. It also offers amenity value for a wide range of water sports, outdoor pursuits and wildlife.

Reservoir Characteristics:

- Type: Earth embankment
- Dimensions: 28 m high, 930 m long
- Storage Capacity: 31 million m³
- Surface Area: 3 km²

Following an inspection by the appointed Inspecting Engineer, a recommendation was made to provide an emergency drawdown facility capable of lowering the reservoir by 5 metres from Full Supply Level (FSL) within a 5-day period to protect communities living downstream, in the event of a problem being reported at the dam.

Stantec was appointed to lead the design from Optioneering, Outline Design through to Detailed Design Phase as well as providing technical support during construction. The Stantec team developed a solution comprising three siphon pipes (1700 mm diameter), each capable of a maximum design flow rate of 12.5 m³/s. In addition, the existing outlet facilities were upgraded to enhance overall drawdown capacity.

The complex multi-disciplinary design solution was developed with careful consideration of environmental and landscape constraints. The design minimised the physical footprint, preserved the sensitive natural setting, and ensured protection of ecological enhancements within the downstream river course during routine siphon operational tests.

The Bewl Drawdown Scheme is one of the largest dam safety projects currently under construction in the UK. Once complete, it will align the reservoir with modern industry standards, preserving its value and enjoyment for generations to come.

Find out more about our work, services, and opportunities to join the team at stantec.com/uk

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Stillwater Associates

Specialist reservoir safety and engineering consultancy
Founded 2008 – proudly employee-owned since November 2024

Stillwater Associates has a well-established reputation for delivering a reliable, high-quality service to our clients.

We provide technical expertise to all types of reservoir owners from private estates to water utilities and international companies. Our services cover all aspects of reservoir safety from project planning and management to technical advice, reservoir supervision and inspections, engineering design and on-site supervision of project delivery. Our team of dedicated professionals bring a wealth of experience and expertise gained from their collective decades spent working in the reservoir engineering sector, both in the UK and abroad. We are committed to applying this industry knowledge to the benefit of our clients through innovative, practical and cost-effective solutions.


Shearwater Reservoir


Chard Reservoir

Chard Reservoir

This year saw the completion of a major reservoir safety upgrade project at Chard Reservoir. We worked closely with Somerset Council to deliver the detailed design of the scheme, which included embankment crest raising through the construction of a precast concrete crest wall, remodelling of the overflow stilling basin and protection of the embankment downstream face. During the construction phase, we provided technical engineering support throughout and worked closely with the Principal Contractor, Kier plc, and Somerset Council's appointed Project Manager, WSP. In addition, we also fulfilled the role of Principal Designer and Qualified Civil Engineer (QCE) throughout the design and construction phases. The successful delivery of these works in July 2025 has significantly reduced the risk of failure of this Category A reservoir.

Shearwater Reservoir

In mid-2024, Stillwater were appointed by the Longleat Estate to prepare the detailed design of reservoir safety works at Shearwater Lake. These works included raising the crest of the dam, constructing a new auxiliary overflow over the embankment crest and the sealing of two abandoned low-level culverts passing through the embankment. The full tender pack was delivered towards the end of 2024 and works on site commenced in early March 2025. In addition to providing technical engineering support during the construction phase to Longleat's appointed Project Manager, Haycock Environmental Consultants, we fulfilled the role of Principal Designer throughout the project. A particularly challenging aspect of these works was the laying of bitumen-impregnated geomats on the downstream face of the auxiliary overflow, which required careful coordination and risk management. The successful delivery of these works in early August 2025 has significantly reduced the risk of failure of this Category A reservoir.

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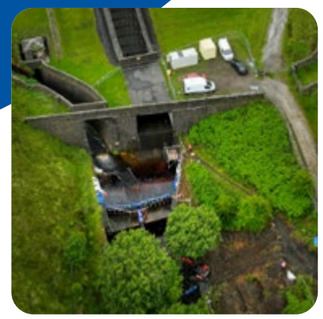
Stonbury: **Supporting reservoir resilience and sustainability**



Stonbury continues to deliver specialist services across the UK's reservoir network including both underground and impounding assets.

This includes structural repairs to underground assets and new build structures, spillway refurbishment, structural repairs to wave walls, dam infrastructure upgrades and survey works to assets - all designed to enhance asset longevity and environmental resilience.

Underground assets

Stonbury core skillset is asset life extension. They are the largest user of Regulation 31 products in the UK for clean water applications and hold civils and repair contracts to manage this asset base with most UK Water companies, ensuring these key assets perform optimally at all times.

Spillway asset rebuild

In 2024, in partnership with a client, Stonbury restored the structural integrity of a spillway at an impounding reservoir by replacing degraded gabion baskets with a reinforced concrete wall. Sustainable practices were integrated throughout the project, including the reuse of site-won materials - such as displaced gabion stone - and a conscious effort to minimise the build. These measures were especially valuable as access was a challenge throughout. The completed works have significantly improved the spillway's durability and erosion resistance, ensuring long-term safety and environmental protection.

Spillway repairs

During AMP7 Stonbury undertook a number of large spillway refurbishments for various UK water company clients - securing the spillways from future erosion and settlement. Works varied site by site but included surveys, definition of scope and delivery of suitable repair methods - chosen specifically to suit each spillway design.

Valve tower refurbishment

Working within a challenging environment inside a valve tower stack and tunnel, the application of leak sealing and watertight coatings were required to pipework. Despite persistent water ingress and condensation, the team successfully completed all coatings, supported by heating systems and data logging to ensure optimal conditions.

Waterborne biosecurity

In support of national biosecurity efforts, Stonbury has and continues to install public washdown stations across a number of northern reservoir sites. These facilities help prevent the spread of invasive non-native species (INNS) by enabling visitors to clean equipment, footwear, and bicycles. Strategically located and fully equipped, the stations are part of a wider campaign to protect biodiversity and support sustainable recreational use.

These projects exemplify Stonbury's vital role in safeguarding the UK's reservoir infrastructure, environmental sustainability and public safety through specialist, high-quality engineering solutions.

Stonbury specialise in sustainable water asset management solutions, delivering exceptional value in potable water, wastewater and the environment. From river restoration to asset lifespan extension, Stonbury's through-life programmes help future-proof water infrastructure and natural resources, contributing to a prosperous future for all.

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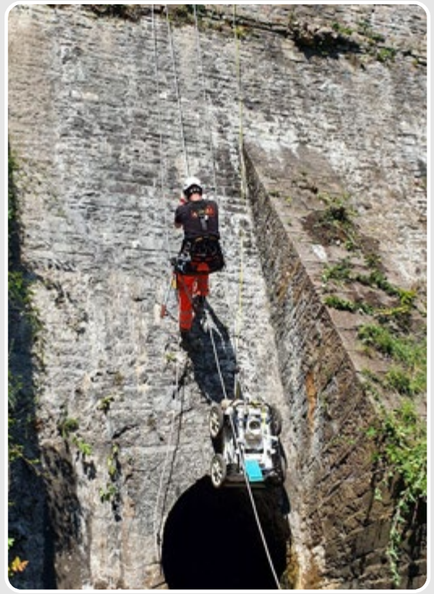
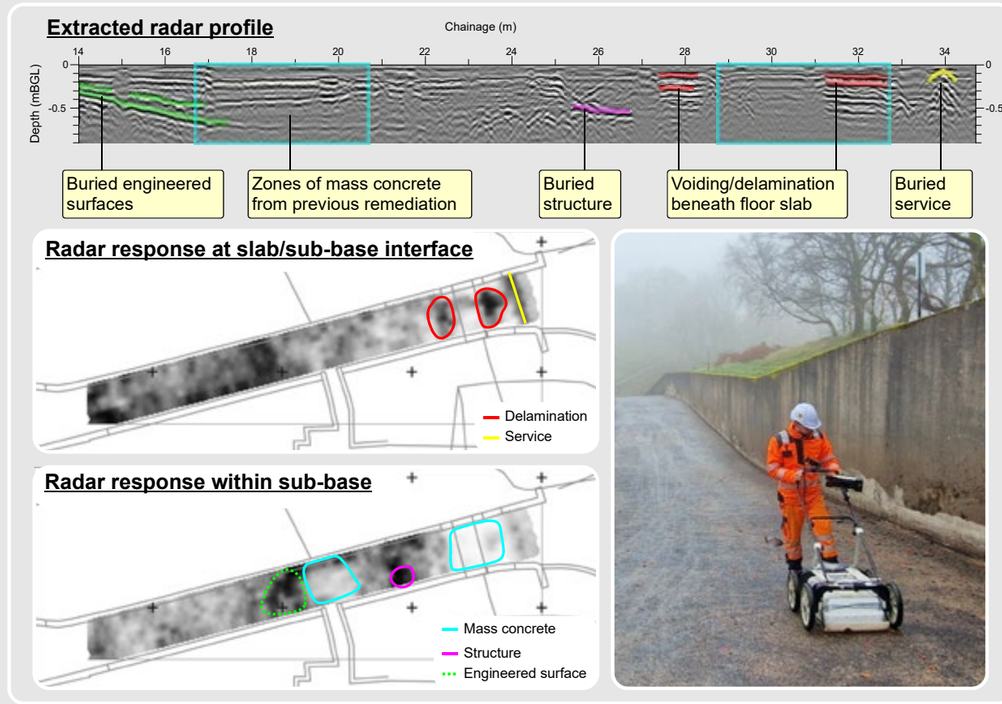


Company Profile
TerraDat specialises in non-invasive geophysical investigations of dams and spillways, identifying subsurface defects invisible to surface inspection. With three decades of experience, we provide engineers with crucial data to optimise intrusive investigation and remediation design. Our approach typically combines multiple geophysical techniques for comprehensive subsurface characterisation.

High-Resolution Spillway Condition Assessment
TerraDat was commissioned to assess the condition of a Victorian spillway where previous remediation works had replaced sections of the original masonry with concrete slabs. Multi-frequency Ground Penetrating Radar surveys were acquired along 0.5m spaced profiles across the spillway floors and walls. The results characterised the structural integrity, identified the absence of reinforcement in remediated areas, delineated zones of sub-slab delamination, and revealed previously unrecorded remediation works. The GPR results were integrated with the wider embankment geophysical investigation, enabling the targeting of intrusive works and prioritised maintenance interventions.



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TERRA DAT
down to earth geophysics

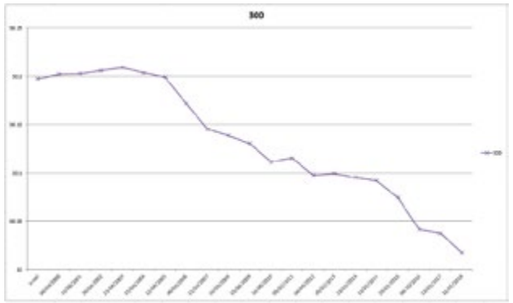
Every day, we serve 15 million customers across London and the Thames Valley, operating 59 statutory reservoirs, and 450 smaller service reservoirs and flood storage reservoirs.

Werner Delport – Reservoir Safety Manager
Email: Werner.Delport@thameswater.co.uk

Stoke Newington East Reservoir – Seasonal Ratcheting

Stoke Newington East reservoir is a non-impounding storage reservoir with a homogeneous embankment tied into the underlying London Clay. It was constructed in 1833 and takes water from the New River (a 400 year old aqueduct) and transfers it to Coppermills WTW for treatment and onward supply to North London.

From annual crest surveying, an increase in the long-term embankment settlement trend was noted by the Supervising Engineer in 2012. There were no signs of leakage or embankment movement. The Supervising Engineer consulted an ARPE who then requested that surveying and monitoring be increased to gather data on the effects of seasonal changes to the embankment.



By 2018 enough evidence had been gathered to suggest that more intrusive investigations were required, and an ARPE (Matthew Hill) was formally appointed into a QCE role to advise. A Willowstick seepage investigation was undertaken which identified a possible leakage path at foundation level, and Stantec carried out a ground investigation which concluded that the embankment was suffering from seasonal ratcheting. A potential slip plane was also identified within the embankment. The risk therefore was that increased settlement from the seasonal ratcheting and a slip occurring concurrently could lead to embankment overtopping.

Thames Water then brought forward the Section 10 inspection, which was carried out by Mr Hill, so that a MIOS recommendation could be made, which was, "*Physical works shall be taken to reduce the rate of settlement and movement of the embankment that have been attributed to "seasonal ratcheting" effects. The solution should also improve stability of the embankment and any leakage paths that may exist.*"

The original plan required the embankment to have a weighted filter installed, however the reservoir site is in a conservation area, and has the only oak trees in the whole of Harringay, so removing all the trees in order to work on the embankment wasn't an option.

It was decided that as an alternative a 500m long piled cut-off wall would be installed into the embankment. The piles become the waterproof element and fix the seepage, thereby reducing the risk of an uncontrolled release of water despite continued embankment slip/settlement.

To further reduce the likelihood of a slip embankment, drains were installed which weave their way between the trees to discharge into a new toe drain.

Work on site started in January 2025, using an adjacent school for access and site offices. The crest was lowered to create a working platform for Giken piling, which was undertaken at the same time as the drainage work. Construction was completed by September 2025, and a repeat Willowstick followed which confirmed the leakage paths had been sealed.

United Utilities 2025

Project Works

Torside Retaining Wall

Torside Reservoir construction was completed in 1865 by John Frederick La Trobe Bateman. Following ground investigation works undertaken in the last three years, it was identified that a weak foundation material is present beneath the dam and was identified as a driver for the dam's increasing settlement.

Once a solution had been agreed with the QCE, work commenced on site, installing a piled retaining wall across the toe of the embankment, with anchors extending into the bedrock material.

Anglezarke Remedial Works

There have been historic issues of leakage observed at this dam since 1997. Various grouting schemes have seen partial success and in the last five years there has been further investigation into the potential seepage pathways.

As a move away from targeted Tube-à-Manchette grouting, a solution was agreed with the QCE comprising two rows of interlocking piles, backfilled with grout to create a continuous curtain of low permeability. This grout curtain runs along the length of the dam, intersecting the clay core and extending beneath the expected depth of the seepage pathways to cut them off.

SupE Training

New Graduates join the team

Over the last 10 years United Utilities has invested time and SupE training opportunities for prospective engineers from within our Catchment, Ground Engineering and Reservoir Safety Teams which has seen the Reservoir Safety Team grow to 7 No full time and 5 No part time SupEs. The recent additions to the team are Michael Calder as a full time SupE and Jess Rigby as a Reservoir Safety graduate.

New Spillway Works

Chew and Ridgegate Reservoirs

Work has commenced on Chew Reservoir, and planned works are programmed at Ridgegate Reservoir, following ITIOS direction to improve the spillways to allow the Probable Maximum Flood (PMF) to be safely discharged down the spillways.

2026 CPD and BDS Site Visits

Where possible United Utilities is supportive in offering opportunities to prospective SupEs of external employers (for example S12 and S10 attendance) and working with the BDS mentoring scheme. Please contact ian.scholefield@uuplc.co.uk for more information

Vice Chair closing remarks

THE COMMITTEE hopes that you have found this year's Yearbook informative, as 2025 has been a busy year with many successful events provided by and attended by the membership in the pursuit of knowledge sharing. And 2026 is already shaping up to be a great year with events already filling the calendar.

There has been significant work in building closer working relationships with other Specialist Knowledge Societies within the ICE to share events, and you will see, advertised on the website events page, talks by the British Geotechnical Association (BGA). Additionally, the Young Professionals' lunch and learn sessions that have been a great success are now open to all BDS members to attend. This is a great way for aspiring Supervising Engineers to gain insights or to keep your CPD up to date.

The Annual General Meeting will be held on the 27th April 2026 where there will be three committee roles to be elected and I encourage anyone with an interest in supporting the BDS to put yourself forward. Following the AGM will be the International Lecture and we are pleased to announce that Michel Lino, the previous ICOLD President, will be the guest speaker for what will undoubtedly be a very engaging presentation.

The 94th Annual Meeting of ICOLD will be held in Guadalajara, Mexico between the 22nd and 29th May 2026 with the theme 'Water, Energy, and Society: The Evolving Role of Dams in a Changing World'. We have had a great attendance by UK representatives over the last number of years and continue to contribute to the Technical Committees, Workshops and with the presentation of papers. These high levels of engagement with ICOLD help to raise the profile of the UK dams and reservoirs industry internationally. To encourage Young Professionals to attend ICOLD events the BDS will again be running a bursary for five Young Professionals, which will assist with the cost of the conference and their travel.

For 2026 the BDS's 23rd Biennial Conference will return to Keele University from the 9th to 12th September and the organisation of this is underway. The venue may be unchanged from 2024, but we are looking forward to providing another conference filled with interesting papers, collaborative workshops and fascinating site visits. The call for papers is now live, and we hope to see the same excellent uptake as in 2024, as it is the membership that makes our events a success.

As 2025 comes to an end we would like to thank all of our members for the ongoing support and engagement. We look forward to seeing you at next year's events as we look to make 2026 another year to remember.

Sam Tudor
BDS Vice Chair

↓ Vyrnwy Dam – Ian Mach

→ Scar House Dam – Newman Booth

2025 BDS Photography Competition

Ian Knight
Trawsfynydd Reservoir - Maentwrog New Dam view from the scour outlet

1st

Barry Dooley
Balderhead Reservoir, Barnard Castle

2nd

Jeremy Fletcher
Cefn Mably Service Reservoir, Cardiff

3rd

The British Dam Society