The British Dam Society 23rd Biennial Conference

Friday 11th September 2026 - Workshop Programme

No.	Workshop Title	Technical Lead(s)	Facilitator	Description
SESSION 1				
W1a	Supervising engineer development – site visit	Dominic Molyneux	David Scopes, Brindley Ford - Coal Board	Triple session aimed at those thinking about, or part way through their development towards Supervising Engineer to visit a nearby reservoir with a number of Supervising Engineers to share thoughts on not just the reservoir itself but the general role of the Supervising Engineer. To summarise at the end opinions on thoughts on recommendations one might provide in an Annual Statement and key structures and challenges in non-standard reservoirs. less than 30 minute each way coach trip Follow-on application session will be potentially relevant to participants
W2	Site based surveying	Neil Harding	EDS	This workshop is a full day to be site-based with live demonstrations of a diverse range of terrestrial, aquatic and aerial surveying techniques. The format of the workshop will include a combination of Powerpoint presentations and practical demonstrations of various techniques in an open-air environment (temporary cover will be provided for the digital presentations). The workshop is designed to give an understanding and appreciation of the capabilities and limitations of the different methods and how to identify the most appropriate for different purposes including what to consider when preparing specifications for surveys. The objectives of the proposed workshop will be to achieve the following: - 1. To identify the factors involved with the identification of silt with the potential to mobilise in a catastrophic failure, 2. To provide guidance on how to measure each factor, 3. To produce a methodology that can be applied at any reservoir to quantify the silt that could escape.
W3	On Site Emergency Exercise and Workshop	Andrew Thompson	Anthea Peters	This workshop is to be a full day site based visit for an interactive emergency planning exercise followed by a workshop debrief and discussion group Exercise – an interactive scenario that will allow (approximately 5No of 6-8 delegates) groups to simultaneously role play through various challenges during an incident to reach an inevitable conclusion and try to save the dam. The exercise will challenge the following attributes •Observations •Communication and teamwork •Problem solving and analysis •Reacting to changing conditions •Awareness of incident management roles •Understanding the importance of the on site plan •Record keeping Workshop – review the outcome, performance and conclusion of the exercise for each team. Open floor session to discuss experiences and challenges of incidents and testing of emergency plans.
W4a	An introduction to concrete dams	Quentin Shaw		This workshop is the first part of a double session discussing the fundamentals of concrete dam design and construction aimed at design engineers & reservoir panel engineers. This workshop will provide an overview of conventional concrete dams including concrete gravity, buttress and arch dam design and construction and will include the basics of concrete mix design. The workshop is aimed at dam engineers with limited experience in concrete dam design & construction with the objective of developing a greater understanding of different concrete dam types & what influences the optimal type.
W5	Risk-informed dam safety decisions	Nathan Snorteland (Johnny Lyttle, Jason needham)	Alan Brown	This workshop brings together leading practitioners from the UK and the US to explore the philosophical, regulatory, and practical differences between the US risk-informed decision-making (RIDM) framework for dam safety and the UK's Reservoirs Act statutory regime. The timing is particularly relevant: the UK is mid-way through its Reservoir Safety Reform Programme, which is seeking to transition toward a more proportionate risk- and hazard-based approach. USACE has operated a full probabilistic risk-assessment pipeline since the mid-2000s. Three themes run through the entire session and will be part of every presentation and discussion element: Theme 1: Risk-Informed Water Level Management — How quantified risk drove the real-time decision to restrict Wolf Creek's reservoir, and what that means for dam safety governance. Theme 2: The Seepage Failure Mode Continuum — Wolf Creek's six-decade sequence of escalating distress incidents as an illustrative case in recognizing, monitoring, and responding to a developing internal erosion failure mode that is incongruous with traditional standards-based approaches. Theme 3: Life-Loss Consequences and Emergency Planning — How the USACE quantifies potential fatalities and how that output drives both risk communication with the public and actionable Emergency Action Planning — with direct lessons for UK practice. Wolf Creek Dam is the workshop's case study as it provides a diverse set of incidents and responses that provide a shared reference for cross-jurisdictional comparison.[5][6] 2.Workshop Aims, Objectives & Key Topics a.Aims • Foster knowledge exchange between UK and US dam safety professionals on risk philosophy, regulatory architecture, and emergency planning. • Use Wolf Creek Dam's six-decade seepage incident sequence to highlight the US safety framework in a way that is accessible to UK practitioners. • Demonstrate how life-loss estimation drives both RIDM and public emergency planning, and open a discussion of its potential applicability under the UK's regime. • Identify transferable lessons for the UK Reservoir Safety Reform Programme. b.Learning Objectives By the end of the session, attendees should be able to: • Describe the key structural differences between the UK Reservoirs Act 1975 (deterministic, engineer-led) and the USACE RIDM framework (probabilistic, portfolio-driven). • Trace Wolf Creek Dam's failure mode progression through its six-decade incident sequence and explain how each event changed the RIDM policies in the U.S. • Explain the specific risk-informed reasoning that leads to societal trade-offs which led to the el. 680 pool restriction at Wolf Creek. • Describe what LifeSim does and how its life-loss outputs are used in US dam safety risk assessment, risk communication, and Emergency Action Planning.
W6	Improving surveillance at UK embankment dams, especially of locations that are difficult to access and observe	Martin Deane		Managing safety at embankment dams relies on good surveillance, to ensure that deterioration that needs an urgent response is identified as early as possible. At typical UK embankment dams, it is particularly important to identify early signs of internal erosion, as little is known about the material characteristics of many dams, and the design of older dams did not include filtered drainage. Surveillance can identify the gradual progression of damage or deterioration which could develop to become critical over time, and helps identify patterns of behaviour which can be used to inform an assessment of risk. There are a multitude of ways that a dam can be damaged and fail, and different parts of a dam require different surveillance regimes. Often, harder to reach places are examined less frequently, particularly pipes in dams and deep confined spaces, or upstream faces. Drainage flow which is accessible is sometimes recorded with great accuracy, when other flows may be ignored or only qualitatively assessed. This paper discusses how regular surveillance is relied upon in dam safety and how it relates to critical failure modes. Numerous case studies are presented relating to the monitoring of the condition of pipes buried at the dam, and the monitoring of drainage flows. It notes how partial surveillance can give a false sense of safety, and how improvements to surveillance can often improve safety in a proportionate and effective way.
Morning break				

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No.	Workshop Title	Technical Lead(s)	Facilitator	Description
SESSION 2				
W1a	Supervising engineer development – site visit	David Scopes, Brindley Ford - Coal Board		Triple session aimed at those thinking about, or part way through their development towards Supervising Engineer to visit a nearby reservoir with a number of Supervising Engineers to share thoughts on not just the reservoir itself but the general role of the Supervising Engineer. To summarise at the end opinions on thoughts on recommendations one might provide in an Annual Statement and key structures and challenges in non-standard reservoirs. less than 30 minute each way coach trip Follow-on application session will be potentially relevant to participants
W2	Site based surveying	Neil Harding	EDS	This workshop is a full day, site-based with live demonstrations of a diverse range of terrestrial, aquatic and aerial surveying techniques. The format of the workshop will include a combination of Powerpoint presentations and practical demonstrations of various techniques in an open-air environment (temporary cover will be provided for the digital presentations). The workshop is designed to give an understanding and appreciation of the capabilities and limitations of the different methods and how to identify the most appropriate for different purposes including what to consider when preparing specifications for surveys. The objectives of the proposed workshop will be to achieve the following: - 1. To identify the factors involved with the identification of silt with the potential to mobilise in a catastrophic failure, 2. To provide guidance on how to measure each factor, 3. To produce a methodology that can be applied at any reservoir to quantify the silt that could escape.
W3	On Site Emergency Exercise and Workshop	Andrew Thompson		This workshop is to be a full day site based visit for an interactive emergency planning exercise followed by a workshop debrief and discussion group Exercise – an interactive scenario that will allow (approximately 5No of 6-8 delegates) groups to simultaneously role play through various challenges during an incident to reach an inevitable conclusion and try to save the dam. The exercise will challenge the following attributes •Observations •Communication and teamwork •Problem solving and analysis •Reacting to changing conditions •Awareness of incident management roles •Understanding the importance of the on site plan •Record keeping Workshop – review the outcome, performance and conclusion of the exercise for each team. Open floor session to discuss experiences and challenges of incidents and testing of emergency plans.
W4b	An introduction to RCC dam design and construction	Quentin Shaw		This workshop is the second part of a double session discussing the fundamentals of concrete dams aimed at design engineers & reservoir panel engineers. This workshop will provide an overview of RCC dam design and construction and will include the basics of RCC mix design. The workshop is aimed at dam engineers with limited experience in concrete dam design & construction with the objective of developing a greater understanding of different concrete dam types & what influences the optimal type. To develop a greater understanding of the requirements of a successful RCC dam. It is assumed attendees of this workshop will have attended part 1 "An introduction to concrete dams".
W7	Reservoir Towers | Design and Rehabilitation	Jeremy Fletcher	Alasdair Handley, Alex Williams, Ethan Perry	In the UK, the average age of reservoirs now exceeds 115 years old, and it has been over 30 years since the last major water-supply reservoir was constructed. During that time, our engineering knowledge has developed significantly – through the hydraulic design of flood-storage reservoirs, major earthworks and tunnelling schemes, countless pressurised pipelines, the upscaling of drawdown facilities, and numerous large-scale spillway projects. Yet, despite being critical to reservoir safety, operational resilience, and water-resource management, the often unassuming reservoir tower has remained largely unchanged. With nine major new water-supply reservoirs now in design, and many existing reservoir towers showing their age, we face an important question: how do we resume design development after several decades, applying wider industry learning and modern operational safety requirements to these structures? This workshop will explore the unique combination of design considerations and operational challenges associated with reservoir towers; considering both the creation of new towers and the refurbishment of ageing structures. The design exercises and discussions will cover: •Anti-floatation | Appraising tower buoyancy and possible approaches to anti-floatation in future towers. •Drawdown | New design or retrofit of draw offs and scours, including approaches to redundancy, flow control, and testing across variable reservoir and environmental conditions. •Operation & Maintenance | Safe access for inspection and maintenance, effective isolation and long-term operability within confined spaces. •Water quality Influences | Understanding draw-off impacts, reservoir stratification, and the increasing need to balance operational flexibility with ecological requirements. •Failure modes | Managing deteriorating masonry, reinforced concrete, pipes and valves.
W8	Reservoir Flood Studies – Methods and Approaches for consistent calculations	Alan Warren	Miguel Piedra / Phoebe Erskine	We are proposing a workshop on reservoir flood studies, where attendees can openly discuss their queries and preferred approaches in a learned community, guided by the moderators and with key input and guidance from a panel of experts. The aims are: •Present, discuss and arrive at a common approach on special cases of reservoir flood studies and other matters related to them. •Provide a degree of consistency on calculations. •Provide ARPEs with reassurance that flood studies are conducted in a similar, accepted way by industry. •Provide a learning opportunity for all the audience. The envisaged format of the workshop would be: •A brief presentation of a handful of cases where the methods are either challenged or there is undefined guidance on decision-making. For instance: oLarge reservoirs that extend into the catchment. How are inflows defined? oReservoir whose catchment is very small (<0.5km2), what corrections to descriptors and rainfall depth are needed? oApplication of different rainfall-runoff models and rainfall DDF oSingle peak storm profile for very long storms vs multi-peak hydrographs •The above can be tailored as the preparation of the workshop progresses. •Each case would be presented one by one, with a period of debate dedicated to each case. •The expert panel would be composed by approx. 3 industry experts (yet to be agreed). •It is also envisaged that the audience will be asked in advance of the conference to bring their own queries to be discussed. The workshop is not intended to be a 'classroom' teaching exercise, but an opportunity to openly exchange ideas and methods, so everyone can learn, setting good practice for reservoir flood studies
W9	From Large to Small: Reservoir Inspections, Insights and Future Challenges	Peter Down (John Greenway, Jenny Sykes)	Peter Down	The Reservoirs Act 1975 defined a 'large raised reservoir' as being "…designed to hold, or capable of holding, 25,000 cubic metres of water…" above the lowest natural level of the surrounding ground. The Flood and Water Management Act 2010 proposed reducing the threshold to 10,000 cubic metres. In England, this has not yet been implemented and the volume threshold remains unchanged. As part of Reservoir Safety Reforms being considered, it is proposed to implement legislation that will introduce the reduced threshold. To prepare for the potential reduction in the volume threshold in England, inspections 'in the spirit of the Reservoirs Act 1975 (as amended)' were progressed by the EA for the 'small raised reservoirs' for which it is the 'Undertaker'. This workshop presents the key issues and themes relating to the inspection of 'small raised reservoirs', using example cases as a basis. It will continue with open-floor discussions on the key themes and the related experience of Panel Engineers and Undertakers in the UK of 'small raised reservoirs'.
Lunch				

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SESSION 3				
W1a	Supervising engineer development – site visit	David Scopes, Brindley Ford - Coal Board		Triple session aimed at those thinking about, or part way through their development towards Supervising Engineer to visit a nearby reservoir with a number of Supervising Engineers to share thoughts on not just the reservoir itself but the general role of the Supervising Engineer. To summarise at the end opinions on thoughts on recommendations one might provide in an Annual Statement and key structures and challenges in non-standard reservoirs. less than 30 minute each way coach trip Follow-on application session will be potentially relevant to participants
W2	Site based surveying	Neil Harding	EDS	This workshop is a full day, site-based with live demonstrations of a diverse range of terrestrial, aquatic and aerial surveying techniques. The format of the workshop will include a combination of Powerpoint presentations and practical demonstrations of various techniques in an open-air environment (temporary cover will be provided for the digital presentations). The workshop is designed to give an understanding and appreciation of the capabilities and limitations of the different methods and how to identify the most appropriate for different purposes including what to consider when preparing specifications for surveys. The objectives of the proposed workshop will be to achieve the following: - 1. To identify the factors involved with the identification of silt with the potential to mobilise in a catastrophic failure, 2. To provide guidance on how to measure each factor, 3. To produce a methodology that can be applied at any reservoir to quantify the silt that could escape.
W3	On Site Emergency Exercise and Workshop	Andrew Thompson		This workshop is to be a full day site based visit for an interactive emergency planning exercise followed by a workshop debrief and discussion group Exercise – an interactive scenario that will allow (approximately 5No of 6-8 delegates) groups to simultaneously role play through various challenges during an incident to reach an inevitable conclusion and try to save the dam. The exercise will challenge the following attributes •Observations •Communication and teamwork •Problem solving and analysis •Reacting to changing conditions •Awareness of incident management roles •Understanding the importance of the on site plan •Record keeping Workshop – review the outcome, performance and conclusion of the exercise for each team. Open floor session to discuss experiences and challenges of incidents and testing of emergency plans.
W10	Clay dam construction – sharing experience from Empingham Dam – Rutland Water	Rodney Bridle		BGA/BDS presentations include advice about potentially weak Clay foundations – but large volume dam-building with clay fills will not be mentioned – the workshop will share what we learnt at Empingham with the 'new' dam engineers Using the Empingham film (about 30 mins total) – with pauses, about 60-75 minutes in all, pausing for RB comments, advice, discussion on: 1 Site suitability - selection 2 Site and ground investigations – extensive – becoming more detailed – in-situ tests for strength 3 Overburden removal – complications of scale – often an issue – affects programme. Foundation prep – standards required – (not) finding shear planes 4 Noisy earthmoving – showing haul – stoppage for fill balance – need for frequent assessments of suitability – Construction Engineer's staff on site 5 Shear planes exposed at last – engineering geologists – warn engineers of challenges, hazards – 6 Sand drains – very efficient – but dry – wetting afterwards 7 Borrow pits – fill balance – steep slopes – rapid failure – no casualties – no hold ups – but fortunate – understanding of rapid steep slope failures 8 Fill progressing – how we did 'layers – compaction' etc by scraper loads – test quick undrained – sampling trailer (heavy – kentledge) 9 More on filling – plant list – contract programme – loading sand drains – limiting height – frequent on-site decisions on suitability pf fills, foundation preparation etc – so important that Construction Engineer and Engineers in same team – design and build doesn't work where engineering decisions needed frequently on-site – design liaison with contractor works well – teamwork, mutual respect 10 Push loading – productivity – clean plant now (?) 11 Berms complete – use of on-site materials - design of embankment foundation to resist imposed load – berms probably reduce imposed shear stresses, fill slopes must be stable, high shear stresses imposed below berm slopes and at toe 12 Rip-rap – included fines – dense packing – damage forecast by CIRIA – not realised 13 Dennis Howell Minister for Water Resources and Sport – dream of many – but huge economic growth around reservoir – and water supplies over very wide area 14 Landscaping – nature reserve – old manor house carefully surrounded by flood banks – final landscaping followed construction, made use of spoil, didn't constrain embankment design – nursery growing saplings during construction etc – power of landscapers to overcome fears, distress of neighbours about construction and post-project devastation and impacts. Tim Appleton made nature reserve a model for all
W11	Tier 3 level assessment, the Piping Toolbox 2024 (Introduction)	Martin Hewitt	Jack Shaw Siobhan Butler	Detailed assessments of the risk of internal erosion are being increasingly recommended by Inspecting Engineers. Often referred to as a Tier 3 level assessment, the Piping Toolbox 2024 (Methods for Estimating the Probability of Failure by Internal Erosion and Piping, The University of South Wales, 20204) is being used by a number of UK reservoir owners to assess the probability of failure due to internal erosion and piping. The workshop would provide an over view of the method, illustrated by case studies and the key insights that were gained. A key issue is whether the guidance requires modifying, particularly for older UK dams. This single workshop session is for those who wish to know what the Toolbox is about, with a second workshop session (W12) aimed at those who have used the Toolbox, which would include a discussion on those aspects of the Toolbox that should be reviewed and modified for UK dams.
W12	Classification and the Safety Management System: Emerging Proposals	Alan Warren	Matthew Jenkins / Jan Kiernan Tanya Batehup / Georgia Shaw	The Reservoir Safety Reform Programme is exploring proposals to update the current hazard classification process as part of a wider move towards a more proportionate, risk based regulatory framework. This workshop will provide an overview of the emerging direction of travel, with particular focus on what may change and how engineers are likely to be involved under any revised approach. The session will draw on ongoing development work related to Safety Management Practices, giving insight into the specific aspects under active development, highlighting how these may update the current process and where professional engineering judgement is expected to remain central. The session will clearly set out what can be shared at this point, what remains undecided, and which areas are expected to be shaped through future consultation and engagement. Discussion will focus on how engineers, undertakers and regulators may interact within a revised management system, how this compares with current practice, and what this could mean in practical terms for the sector. The workshop aims to support understanding, manage expectations and provide early visibility of emerging proposals.
Afternoon break				

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No.	Workshop Title	Technical Lead(s)	Facilitator	Description
SESSION 4				
W1b	Supervising engineer development – application process	David Scopes		Opportunity for prosepctive SEs to discuss SE application and interview process.
W2	Site based surveying	Neil Harding	EDS	This workshop is a full day, site-based with live demonstrations of a diverse range of terrestrial, aquatic and aerial surveying techniques. The format of the workshop will include a combination of Powerpoint presentations and practical demonstrations of various techniques in an open-air environment (temporary cover will be provided for the digital presentations). The workshop is designed to give an understanding and appreciation of the capabilities and limitations of the different methods and how to identify the most appropriate for different purposes including what to consider when preparing specifications for surveys. The objectives of the proposed workshop will be to achieve the following: - 1. To identify the factors involved with the identification of silt with the potential to mobilise in a catastrophic failure, 2. To provide guidance on how to measure each factor, 3. To produce a methodology that can be applied at any reservoir to quantify the silt that could escape.
W3	On Site Emergency Exercise and Workshop	Andrew Thompson		At the previous conference the BDS included a site visit to a number of UU reservoirs located near Macclesfield. Our proposal is to return to the same reservoir sites and facilitate an interactive emergency planning exercise followed by a workshop debrief and discussion group Exercise – initial proposal is to set up an interactive scenario that will allow (approximately 5No of 6-8 delegates) groups to simultaneously role play through various challenges during an incident to reach an inevitable conclusion and try to save the dam. The exercise will challenge the following attributes •Observations •Communication and teamwork •Problem solving and analysis •Reacting to changing conditions •Awareness of incident management roles •Understanding the importance of the on site plan •Record keeping Workshop – review the outcome, performance and conclusion of the exercise for each team. Open floor session to discuss experiences and challenges of incidents and testing of emergency plans.
W13	Changing Legislation; Practical implications, processes, and policies for the retrospective registration of 10,000m3 – 25,000m3 reservoirs.	Chris Scott	Matthew Coombs	This workshop will involve breakout groups of 5 or 6 to whom will be given a portfolio of unregistered reservoirs (a few basic details for say 10-15 reservoirs of all shapes sizes uses and conditions) and they will be asked how they would deal with the whole process of registration through to a successful S10 with very few MIOS (likely to be the second S10 from registration maybe 6 or 7 years down the road). They will need to look at: •Whether each reservoir falls within the Act. •What they might need to do in terms of investigations to determine that. •Priority of risk i.e. managing the portfolio + what are you doing with those not in the Act •Co-owned ? what are the implications •Emergency Measures •When they might need to register them and how. •What inspection might they require S10 / S8 also S26 •Options post registration; discontinuance, abandonment, retain. •Potential budget requirement and funding issues •Problems they foresee – register all at one, multiple MIOS to meet with concurrent deadlines – resources & funding issues. Plus can you meet compliance dates. •Likely programme for completion of objective and potential Capital and Opex costs.
W14	The Reservoir Safety Research Strategy 2026: Overview and discussion on improving delivery and visibility of outputs	Abi Morgan (Jeremy Benn & Maddie Prendergast supporting)	Anthea Peters	Aims and objectives – to give an overview on the updated Reservoir Safety Research Strategy and engage about research ideas, process and use of outputs. Key topics – Overview of the recently updated Reservoir Safety Research Strategy, including key strategic themes and delivery of the strategy. Discussion / engagement with workshop attendees around three themes: 1)How ideas for new research aligned with the new strategy can be generated or submitted 2)How can we make the process of research more efficient (all research tends to have a global practice / literature research and a consultation / workshops) 3)How are research outputs weighted by users? Should there be a process for reviewing / ratifying research outputs, who could be involved in that process?
W15	RARS slope instability likelihood: FoS to APF conversion	Neil Miller	Alan Brown, Siobhan Butler	The workshop will take a structured but open approach, built around three stages with the Idea of producing a paper of what is discussed: 1.Background Review: Outline the existing RARS Tier 2 methodology for translating FoS into APF, based directly on the guidance. This serves as a factual context-setting overview rather than a critique, ensuring all participants start from a common understanding. 2, Case histories of slope stability failures (slips) Summarise known slope instabilities, and how close they were to release of the reservoir. Ask for other case histories, to better understand failure mode/ occurrence 3. Comparison of Approaches: Compare the results produced by the RARS Tier 2 method against the other reference materials cited within the RARS guidance itself. This will draw on a set of anonymised case study sites prepared/supplied in advance by contributors, covering a range of dam types, ages and FoS values, to illustrate how different methods produce different APF outcomes for the same asset. Attendees will also be invited to submit their own anonymised site data ahead of the workshop, which will be compiled and presented alongside the prepared examples, giving the group a broader, industry-wide picture. Might possibly find trends that can be discussed later. 4. Structured Open Discussion: Following the presentations, the workshop will open for facilitated discussion. The aim is to hear from attendees about their current practice: what approaches they use(d), what adjustments or judgements they apply. Possible direction forward.