

## President's Perspective

The last four months have seen significant innovation in the UK water sector, new opportunities for British hydrologists to share their creative ideas and loud calls for more ambitious approaches and targets.

### Innovation needs

In November, the National Audit Office praised the Environment Agency for delivering 728 new flood defence schemes since 2015, providing better protection for over 242,000 homes. It called for details of progress in reducing flood risk for non-residential buildings, agricultural land and other infrastructure. It also welcomed the capital funding plans for better protecting 336,000 properties and reducing national flood risk by up to 11% over the next six years. It did however, call for monitoring of progress to this target up to 2027, and measurable outcomes for all plans (National Audit Office 2020).

HM Treasury published the National Infrastructure Strategy on 25 November outlining how it wished to see faster delivery of critical infrastructure for water resource and flood risk management, while enhancing the natural environment and decarbonising our grey infrastructure and systems. The strategy calls for innovation in the way we develop our infrastructure, including the use of the latest digital technologies (HM Treasury 2020).

A central element of enhancing the natural environment and decarbonising our water infrastructure is making greater use of Nature based Solutions (NbS). The UK's Water Industry Forum published a guiding document on 'Natural capital principles for the water industry' (Water Industry Forum 2020), highlighting the importance

of natural capital in tackling the impacts of climate change on water resources and flood risk, reversing biodiversity loss and our move to a 'Net Zero' future.

The value of natural capital to all aspects of the UK economy, including the water sector, was further emphasised by the publication of the 'Dasgupta Review' for HM Treasury (Dasgupta 2021) and the National Infrastructure Commission 'National capital and environmental gain discussion paper' (National Infrastructure Commission, 2021). The NIC emphasised that infrastructure developments should aim to leave the environment in a measurably better condition. The Dasgupta Review was even stronger, calling for urgent and transformative change in how we think, act and measure economic success. It insists that '...humanity must ensure its demands on nature do not exceed its sustainable supply and must increase the global supply of natural assets relative to their current level...' by for example, increasing investment in NbS.



Two House of Commons committees have also recently sited the importance of natural assets. The House of Commons Environmental Audit Committee argues that nature recovery must be integral to the Government's infrastructure plans and factored in from the start (House of Commons Environmental Audit Committee 2021).

The House of Commons Environment, Food and Rural Affairs Select Committee (EFRA) called for the scaling up of Natural Flood Management (an Nbs solution specific to reducing flood peaks) stating that it needs to be 'appropriately targeted' at the 'right sites that work for that catchment'. This is something that ongoing academic research is demonstrating (e.g. Hankin *et al.* 2018; Page *et al.* 2020). The EFRA Committee report also emphasised the importance of fully compensating farmers for the introduction of NFM interventions at these target locations and of engaging farmers, and those with flood-affected homes, in the development of flood mitigation plans from the outset (EFRA 2021). The National Farmers

Union also called for the farming community to be involved in planning flood mitigation and water resources in their new report on 'Integrated water management' (NFU 2021).

### **Innovation opportunities**

Over the same period, there have been significant opportunities for UK hydrologists to contribute innovative ideas to meet these new challenges. Practitioners working for Lead Local Flood Authorities (LLFAs) in England have been encouraged to submit bids (initially Expressions of Interest) for funding to support innovative research on flood resilience in their regions. Up to £200 million is allocated to the programme (Environment Agency 2020). Paralleling this initiative, water companies in England and Wales have been encouraged to enter the Ofwat 'Innovation in water challenge' to help tackle some of the biggest issues facing their industry (Ofwat 2021). *Research organisations*, including the university and consultancy sectors, are participating in both initiatives, and have been leading in the UKRI Natural Environment Research Council (NERC) project to identify innovations needed to monitor better flood and drought processes in the UK (UKCEH 2020). BHS members have been making significant contributions to this project, led by the UK Centre for Ecology & Hydrology, beginning with the first engagement workshop on 14 January 2021. With findings from this project, NERC intends to submit a business case for significant investment in innovative monitoring for the UK hydrological research community.



## Innovation delivery

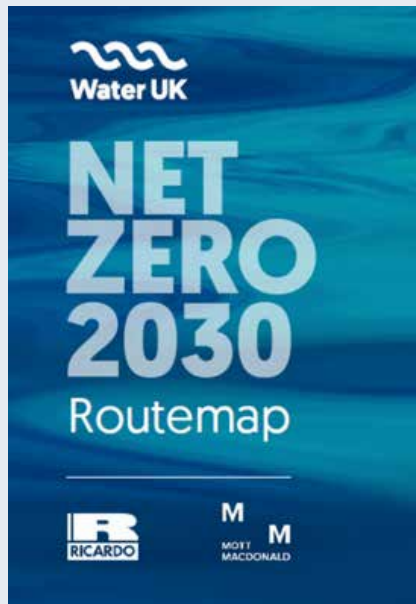
On top of these funding initiatives, the UK government and Members of Parliament have recently delivered the first iteration of a Sustainable Farming Roadmap, providing an innovative mechanism to deliver greater flood mitigation and water resources gain from the 70% of England that is farmed (Defra 2020). As more underpinning hydrological evidence finds its way into Defra's pioneering approach to the 'Environmental Land Management scheme' (ELMs), I hope that greater emphasis on targeting of NbS in the right places will come.

Of equal importance are investigations in to the causes and solutions for mitigating water quality problems in our streams and rivers to help reverse the decline of our ecology (an issue highlighted previously in Circulation 147). On 8 December, the House of Commons Environmental Audit Committee launched a new inquiry into water quality in English rivers. The focus for this inquiry is the water industry and urban diffuse pollution (House of Commons Environmental Audit Committee 2020), as the previous inquiry addressed agricultural nitrates. Highways England is also investigating water quality. On 30 December, they launched a monitoring study into the levels of micro-plastics entering natural watercourses from highways (building on a desk study: Highways England 2020a), and the degree to which NbS and sustainable urban drainage may mitigate the problem (Highways England 2020b).

The Government has joined forces with the water sector to form a 'Storm Overflows Taskforce' with the long-term goal of eliminating the ecological harm arising from storm overflows. Working with this

Taskforce, our water companies have already committed to significantly increasing the number of monitoring devices at storm overflows by 2023, as a first step to tackling the issue (Defra 2021).

Engagement with this Taskforce is only one aspect our water companies' plans for innovative delivery announced over the last four months. In November, Water UK launched perhaps the world's first sector-wide plan to deliver net zero carbon emissions from the water sector by 2030 - the 'Net Zero 2030 Routemap' (Water UK 2020). Ricardo and Mott MacDonald had undertaken the pioneering research for Water UK that aims to deliver net zero emissions through greater use of solar and wind energy sources, restoration of peatlands and grasslands, biomethane capture from sewage and other actions. Of equal importance has been the embracing of NbS by water companies, with Severn Trent Water,



South West Water and Anglian Water announcing detailed proposals for investments in a 'green recovery' in their areas.

Water companies and agencies have also delivered on planned improvements to the provision of our water supplies in recent months, with the opening of the new Mayflower water treatment works in Plymouth, completion of the first phase of the £1 billion Haweswater aqueduct renewal, and tendering for innovative satellite monitoring of leakage from supply pipes in Northern Ireland.

A new organisation, Water Resources West formed last October bringing together United Utilities, Severn Trent, South Staffs Water, Dŵr Cymru Welsh Water and the Environment Agency. Their objective is to provide strategic oversight and co-ordination of water resources matters across the river catchments of the West of England and the cross-border river systems with Wales. Their first initiative, launched at the end of last year, is an innovative digital platform for collaboration (Water Resources West 2020).

### **Forthcoming Society activities in water innovation**

In response to these encouraging innovations and the calls for urgent and transformative change, BHS have been developing a range of activities to both inform you and engage you in this 'blue-green revolution'. Those supporting the membership are acutely aware that many of us are missing the all-important professional and social interactions that come with in-person meetings. While online meetings have given us some new and valuable opportunities for engagement, we do wish to see a return to some in-person meetings as soon as

permitted and without the financial risks and disruption of last minute cancellations for our members.

Financial commitments to in-person activities this summer do however remain difficult given the current uncertainties over our emergence from the pandemic and the economic situation. As a direct consequence, the BHS National Symposium at Lancaster University and the Lake District, planned for this summer, is moving to 6-8 September 2022 ('BHS2022'). This gives us the ability to retain 3-days of in-person activities with you.



We will also be offering some parallel opportunities for online engagement over the 3 days of the BHS2022 symposium.

While we may not be able to meet in-person this summer, we do wish to offer an opportunity for members to share their latest findings and ideas on the fast-developing landscape of hydrological innovation. This will take the form of an online-only BHS One-day National Symposium on Tuesday 7 September. There will be five talks on key aspects of innovation in the UK water sector covering the broad interests of our membership. These will include: dealing with

climate change projections in water resources, fundamental research on hydrological processes, the vital role of hydrologists in the assessment of emerging contaminants and effectiveness of NbS in peatlands, and how effective delivery of catchment solutions requires interactions between the public, farmers and practitioners. Critically, the event includes an opportunity for you to share a poster (or posters) on your ongoing work and have other members ask you questions. The meeting will also include a discussion on future research needs in UK hydrology, and the 2021 Annual General Meeting. This **BHS One-day National Symposium on 7 Sep 2021** will be open only to BHS members (at no cost) to give you greater opportunities to interact with presenters and other members. We encourage non-members to join the Society to participate. We will share full details of the event with you over the next weeks and months.

Our early career members, including those in full-time education or recently beginning work in the water sector are the Society's future. The organising committee for the next Peter Wolf Symposium for our early career members similarly believe in the importance of meetings involving in-person interactions. Accordingly, the next 2-day in-person Peter Wolf Symposium moves to 22-23 March 2022 retaining the venue of the University of Strathclyde. The organising committee have also kindly agreed to host a Peter Wolf Virtual Event on 8 Sep 2021, the day after the One-day National Symposium, and will share details of both of their events with you over the next few months.

I am indebted to our Honorary Secretary Lucy Barker and other

members of Committee such as Michael Pollock who is now leading on our social media activities, for developing and delivering such a rewarding online BHS webinar programme over the last few months, with great membership engagement. Lucy is working on another exciting programme for 2021 that begins with Wouter Buytaert (1pm 24 Feb) telling us about his international research that benefits from an army of local volunteers, who also gain from direct engagement with experienced hydrologists. We then hear from Rob Lamb, Hannah Cloke, Sean Longfield and Nick Reynard (1pm 24 Mar) on innovations in flood hydrology captured by the emerging UK Flood Hydrology Roadmap. This will be followed by Will Rust of Atkins (1pm 28 Apr), who will remind us that the UK's excellent long-term hydrological records exhibit a range of inter-annual cycles and trends that we need to capture in our assessment of water resources and flooding. I am looking forwards to hearing these new insights; I hope that you are too.

**Nick Chappell**  
**BHS President**  
February 2021

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More BHS webinars and virtual events are being organised for 2021, including one from the Future Hydrology Working Group and one on the topic of machine learning in hydrology - watch out for more information, and as always remember to catch up on any webinars you've missed on the BHS YouTube channel ([https://www.youtube.com/channel/UCQ3xpxdbW\\_AhS4Ht6bLbbDQ](https://www.youtube.com/channel/UCQ3xpxdbW_AhS4Ht6bLbbDQ)).



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