

UK WORK

Design of Wildlife Pond and Resulting Planning Appeal, Curridge, West Berkshire

WRA has been involved in the design of a wildlife pond at a site in Curridge, West Berkshire since 2018 and also provided expert witness services for the planning appeal as the local authority councilors had objected to the application on the grounds of flood risk. The pond was proposed in an area of woodland at the foot of a sloping area which received surface runoff from the surrounding slopes and was often very boggy in winter, with sediment laden water occasionally running onto a nearby road. The idea of the pond was to collect this water reducing the flood risk to the road and provide a benefit to wildlife.

A detailed hydrological study was made with design flood flows estimated using the ReFH2 software and the associated pond volume and water levels from the event calculated using the ArcGIS spatial analyst grid modelling extension. The modelling included a worst-case scenario of the 100-year plus 40% event occurring at a time when the pond was already full with a blockage to the outlet. In this case, water levels would rise but still lie 1.3 m below the crest of the bunds and would drain out through the working drobox within 24 hours.

The application was approved through an appeal, where WRA provided expert witness advice.



Satellite view of the pond and contours

Little Ouse Restoration

WRA was engaged in expert witness services as part of a legal case for the restoration of the Little Ouse River in Norfolk. A landowner had undertaken a comprehensive programme of river restoration works at the instruction of the Environment Agency following illegal dredging and channel clearance.

WRA was required to review the design of the river restoration, including associated hydrodynamic modelling, to visit the site and inspect the programme

of works to ensure that these were being undertaken as requested. WRA also provided evidence for the court hearing with a statement of case and statement of common ground. Part of the work was to identify and collect coordinates of the restoration measures using a handheld GPS and plot these in GIS to verify that they matched the mapped design.

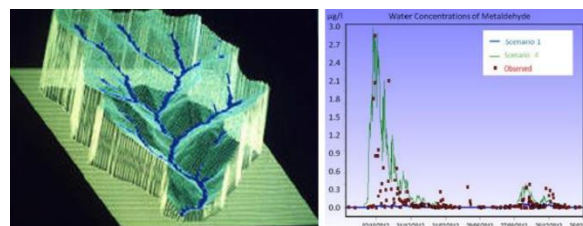


Berms Built into River Restoration Scheme

BHS National Hydrology Symposium, Held at Lancaster University 12-14 Sep 2022: Short Report by Nick Mandeville

Nick Mandeville attended the BHS meeting in Lancaster and presented three stands covering a range of WRA jobs; an advert for PGW's upcoming online Water Quality Training Course, including brief description of the course contents: project sheets involving jobs undertaken with the INCA model; and a presentation by Nick entitled: Patterns between different seasons' recession curves held on the UK National River Flow Archive, with four examples for rivers from England, Wales, Scotland and Northern Ireland.

Paul Whitehead's new online water quality modelling course is available at www.omb.co.uk [see courses]. This includes 17 online lectures, with guest lectures from the EA, Atkins global and colleagues from Sweden and Australia, plus free software and practical.



Catchment WQ models and Metaldehyde simulation on the River Thames

OVERSEAS WORK

Hydrometeorological Studies in Support of the Simandou Iron Ore Project, Guinea

Simandou in humid tropical eastern Guinea contains one of the world's largest and richest high-grade iron ore deposits. Rio Tinto Simfer is updating its Bankable Feasibility Study and Social and Environmental Impact Assessment of the project. WRA was contracted by SRK Consulting (UK) Ltd to provide a Hydrologist to their team which is tasked with providing water related and geotechnical inputs to the mine BFS and SEIA.

Working with SRK's team of hydrologists, hydrogeologists and modellers, WRA's Hydrologist has contributed to the updating of the project's hydrological and meteorological database, the specification of hydrological field equipment for procurement, the development of project hydrological and hydraulic design criteria including design rainfall and flood frequency analyses, planning streamflow accretion field surveys, review of soil erosion and sediment retention pond design studies, updating a water monitoring plan, surface water and climate baseline reports, and supporting Rio Tinto Simfer's local hydrological field team in the refurbishment of the hydrometeorological network of automatic weather stations, rain gauges and streamflow gauging stations.

WRA has also been contracted by SRK to design a concrete Flat-V flow gauging weir which will serve as a regulatory compliance point. More on that in a future bulletin.

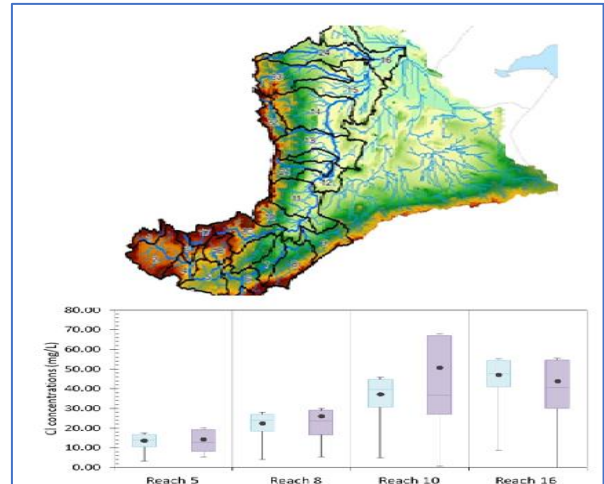


Simandou project area

Ethiopia Water Quality Pollution

Ethiopia has a growing population and a developing industrial sector based on mining and industry. At the same time the groundwaters are a large source of arsenic and salinity. The arsenic and salinity derived from natural rift valley groundwaters and springs contaminate Lake Beseka, which is a source of water for public use, irrigation and as a feed to the River

Awash. The upland streams close to the capital Addis Ababa meanwhile are sources of pollution from industrial developments such as Tanneries, factories and industrial complexes. Paul Whitehead is working with the AWASH Water Authority to model the polluted streams and assist with assessing natural and manmade pollution.



The AWASH Catchment Ethiopia and Salinity Build-up down the river system

New Partner

We are pleased to announce that Marcus Francis has become WRA Partner and we look forward to working closely with him. Marcus has extensive experience in hydrology, hydraulics, water resources management, applied research and consulting engineering covering a wide range of water resources and engineering projects in the UK and overseas. His water resources experience covers river modelling (including Hysim and



Catchmod), water resources simulation (including Aquator modelling), development of Drought Plans, water resources assessment and planning, option identification, evaluation and costing. This experience includes work for South East Water, Affinity Water,

Portsmouth Water, Severn-Trent Water and Scottish Water in the UK, in the development of their Water Resources Management Plans and water supply resilience projects. Marcus has also worked extensively around the world.

Next WRA Board Meeting

Thursday 12th January 2022, at 09.30 hrs at Chalgrove

The WRA Bulletin is a quarterly publication, and relies on contributions submitted by Partners, Associates and Consultants. The document is circulated by email, and published on the WRA web-site, aiming to keep the WRA network up-to-date with respect to current activities. Please email contributions for future issues to Paul Whitehead: paul.whitehead@watres.com

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