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## Editorial

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**Biographical notes:** Miklas Scholz, can ding, BEng (equiv), PgC, MSc, PhD, CEnv, CSci, CEng, MICE, FHEA, FIEMA, FCIWEM is a Senior Lecturer in Civil and Environmental Engineering at The University of Edinburgh, where he leads the Urban Water Research Group at the Institute for Infrastructure and Environment. His research interests are in wetland systems, sustainable drainage, biofiltration, water quality, and urban and landscape planning and design. He has won several national and international awards, gets invited to present workshops on wetland systems at conferences, has published more than 50 relevant peer-reviewed journal papers since 2001, and is the author of the book *Wetland Systems to Control Urban Runoff*. He is also an editorial board member of eight international journals including *Wetlands*.

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The book *Wetland Systems to Control Urban Runoff* (Elsevier, Amsterdam, 2006, ISBN 0-444-52734-6) has created a lot of international attention highlighting the multi-functional use of wetland systems. Readers have urged me to include more urban case studies of international importance and to widen the scope towards wetland systems to control rural runoff. The urgent need for a more comprehensive assessment of wetland systems has subsequently been identified and addressed by the *International Journal of Water*.

This special issue on *Wetland Systems to Control Runoff* aims therefore to integrate natural and constructed wetlands and sustainable drainage techniques into traditional water and wastewater systems used to treat surface runoff and associated diffuse pollution in both the urban and rural context. The objectives are

- to present a comprehensive collection of timely, novel and innovative research case studies in the area of wetland systems applied for the treatment of runoff
- to demonstrate to practitioners how natural and constructed wetland systems can be integrated into traditional wastewater systems, which are predominantly applied for the treatment of surface runoff and the control of diffuse pollution
- to assess the design, operation, management and water treatment performance of sustainable urban drainage systems, including constructed wetlands.

The relevant fundamental principles of water quality management and water and wastewater treatment are covered. However, the main focus is on assessing sustainable

treatment technologies and current case studies related to constructed wetlands and sustainable drainage systems applied for runoff treatment and diffuse pollution control.

Original research and review papers were invited. This special issue covers a wide range of topics including the following:

- Water quality and diffuse pollution control
- Urban water including urban runoff treatment
- Rural water including agricultural runoff treatment
- Constructed and natural wetlands and their corresponding hydrology, chemistry, (micro)biology and ecosystem composition
- Infiltration wetland systems and groundwater protection
- Modelling of constructed wetland and sustainable drainage system performances.

This special issue contains an excellent mix of high quality and timely papers. For example, the contributions originating from research teams led by Jiri Marsalek and Rory Harrington are of great international interest.

Marsalek and his team provide a Canadian perspective on urban runoff treatment. During the past 20 years, Constructed Stormwater Wetlands (CSWW) have attained broad acceptance in Canada as effective measures for stormwater management. In typical applications, CSWW are used mainly for improving stormwater quality by providing sufficient treatment volumes in shallow permanent pools. However, this leads to high land requirements, which are one of the constraints on CSWW use. Even though CSWW perform less effectively in cold weather, through proper design they can be kept operational through the winter months. Most CSWW also attract wildlife. This paper confirms UK findings published in *Wetland Systems to Control Urban Runoff*, and demonstrates the wide international applicability of wetland systems in the urban context.

Harrington's Irish Integrated Constructed Wetlands (ICW) applied for the treatment of rural runoff are a joined-up approach to environmental and nature conservation management. By explicitly combining the objectives of cleansing and managing water flow from farmyards with those of fitting the wetland infrastructure into the landscape and enhancing the biological diversity of the site, significant synergies, robustness and sustainability can be achieved. After five years of ICW intercepting approximately 75% of farmyard pollution, a significant improvement in the receiving surface waters of the catchment was observed. This paper is a landmark in showing practitioners how to treat farmyard runoff, to combat diffuse pollution and to achieve good water quality in river catchments.

Academics, professionals, practitioners and students in the water and environmental engineering, science and management areas, as well as the wastewater industry should be interested in the detailed design, operation, management, process control and water quality monitoring and applied modelling issues presented in this special issue.

I would like to thank the editorial team of the *International Journal of Water* and reviewers for their hard work. Moreover, the entire journal team would also like to thank all lead authors and co-authors for their valuable contributions. I am looking forward to receiving feedback concerning this special issue from the international community.