Editorial

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Water is one of the essential resources to support human and other forms of life on earth. Availability of water of sufficient quality is vital to maintain public health and sustain ecological processes and services. Our many uses of water – for example, drinking, irrigation, watering stock, manufacturing, fishing and recreation – always require suitable water quality. If water quality is not maintained, both the environment and socio-economic development will be adversely impacted and will suffer. Therefore, water quality has long been an important topic in environmental engineering and water-management research and practice. This issue of *Water Management* presents four peer-reviewed papers related to managing water quality in different engineering contexts (de Paula *et al.*, 2019; Jahromi *et al.*, 2019; Morgan and Fenner, 2019; Sharpe *et al.*, 2019).

Discolouration is an indication of water quality in drinking water and is a major reason of water-quality-related customer complaints in the UK water industry. In the first paper, Sharpe *et al.* (2019) investigated this issue and conducted new experiments to examine the relationship between hydraulic conditions and discolouration risk in a drinking water distribution system using a unique laboratory-based, full-scale, temperature-controlled pipe facility. The unique laboratory facility allows the replication of the hydraulic and temperature conditions of an operational network but with rigorous control, yielding fully representative results that overcome the limitations of previous bench-scale or operational studies. This research therefore provides more reliable and useful findings and conclusions to help those responsible for the operation and management of drinking water distribution systems to develop intervention strategies to best manipulate hydraulic conditions to manage discolouration risk.

Also using an experimental approach, the second paper (Jahromi *et al.*, 2019) investigated the oxygen-transfer capacity of water jets in cross-flows by conducting a set of laboratory experiments through systematically varying the major parameters of the water jets and the receiving water. Based on the experimental results, empirical equations were evaluated and compared for predicting oxygen transfer in the channel flow systems under consideration. A new equation considering all relevant parameters was also proposed to support estimation of oxygen-transfer efficiency.

Effective re-use of waste water contributes to the development of a sustainable society. In many modern construction projects,

concrete is an essential building material. A large amount of water is demanded for concrete production and the complementary activities, such as washing concrete-mixer trucks and wetting aggregates. It is necessary to effectively treat and reuse waste water from a concrete plant to better exploit water resources. In the third paper, de Paula *et al.* (2019) analysed the quality of waste water from a concrete plant after being treated with chemical coagulants combined with *Moringa oleifera*. They found that the use of a coagulation process led to significant improvement of the quality of the waste water. The treated water can be reused for washing vehicles and producing concrete, as well as other activities in the plant that do not require the use of potable water, such as washing the pavement and concrete-mixer trucks, watering green areas and flushing toilets.

Sustainable urban drainage systems (SuDS), incorporating ‘green’ infrastructure, have been widely promoted in the recent years for managing runoff and reducing flood risk, as well as bringing in many other benefits including controlling pollution to improve water quality and enhancing biodiversity and ecosystems in urban areas. However, due to the lack of robust methods to collectively evaluate their benefits and justify their adoption, the uptake of SuDS has been slow in many cities. In the final contribution to this issue, Morgan and Fenner (2019) report a geographical information system-based method to take into account spatial distribution and local context and circumstances when evaluating and comparing different benefits of SuDS. The proposed method, implemented as a toolbox for ArcGIS 10.3, was demonstrated by three case studies in Newcastle, UK. Compared with the widely used traditional value-transfer approaches, the new method provides an added dimension to better evaluate and understand the spatial distribution of SuDS benefits, and hence help justify and encourage wider adoption and uptake of SuDS for building urban resilience.

The four contributions within this issue consider broadly different aspects in water quality management. We thank the authors for sharing their research and knowledge. I hope the readers will enjoy reading these papers and find them stimulating and informative.

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