Editorial

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This issue of *Water Management* comprises four papers that reflect the broad scope and international standing of this journal. There are three papers from China and Canada relating to river engineering; these are complimented by a paper from Australia on the treatment of domestic waste effluent.

The first paper (Du *et al.*, 2016) focusses on the prediction of flow and sediment movement through bifurcated river branches. This paper highlights the challenges of scale faced by engineers working in this field; the river considered is almost 2 km wide and has an average flow rate of 26 960 m³/s, but the average grain size of the deposited bed is just 0.2 mm. Based on field measurements and an impressive large-scale physical model, the authors propose a modelling approach based on the extremity law of energy dissipation. Although this approach may appear a little academic to some readers, the author does use it to evaluate key engineering measures such as dredging and the inclusion of submerged dykes.

The second paper in this issue stays on the topic of river engineering (Pournazeri *et al.*, 2016) – the much studied topic of bridge failure due to pier scour. The paper uses a multi-layer modelling technique to predict the three-dimensional velocity around a pier. The model suggests vortices drive the movement of sediments from the upstream nose of the pier and deposit them downstream. The model offers a good balance between accuracy and computational costs.

The third paper continues the river engineering theme but is focussed on human stability during flood events (Xia *et al.*, 2016). This is a hugely important topic for responsible authorities who are concerned about the movement of the public during flood events. Work in this area has previously used human subjects in flumes and produced results arguably specific to the individuals concerned. In contrast to this, the work presented here by Xia *et al.* has focussed on the use of scaled models of humans to repeatedly consider their stability at a range of ground slopes and flow conditions. Although this work is arguably conservative as the models did not alter posture in response to the flow, the work is important as it accounts for the role of ground slope. Additionally, it is noteworthy that the results compare well to field measurements.

The final paper moves the issue to dry land. Chowdhury *et al.* (2016) present a study that considered whether permeable

paving can be used to treat greywater for re-use. The re-use of greywater has received significant attention in recent years as water resilience in arid and semi-arid regions moves up the political agenda. A key challenge is developing cost effective ways to filter and store greywater for use. In their paper, Chowdhury *et al.* evaluate the potential for permeable paving to provide this benefit. The work focusses on the use of a small section of permeable paving to treat and store domestic greywater (excluding kitchen wastewater). The results showed the greywater could not be treated to a level that would make it suitable for irrigation use. Solids could be removed, but sodium ion levels remained high and bacteria levels were largely unchanged. Despite the limitations of this experiment, it is clear that permeable paving alone can't be considered as a way to treat greywater for reuse.

I hope you enjoy reading these papers and contrasting methodologies. These range from the 'traditional' physical modelling used by Du *et al.*, Chowdhury *et al.*, and Xia *et al.* to the numerical modelling presented by Pournazeri *et al.*

REFERENCES

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