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Editorial

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I am delighted to contribute this editorial as the incoming Honorary Editor. That 'we live in interesting times' is hardly a novel comment, but in terms of the conceptualisation of sustainability and the associated activities that are taking place to make what we do as engineering professionals more sustainable it holds true. The subject in general has reached the consciousness of all and we are being challenged at every turn to think about, and take responsibility for, what we do. In professional terms, we are being challenged similarly, but more in terms of a reminder of our responsibilities since I am a firm believer that civil engineers have always had an implicit brief to take into consideration the good of society and the environment, as well as the client's purse. What is changing is the awareness of how far our responsibility extends, how the economic advantages of sustainable practices are becoming ever more explicit, and how we can quantify, or at least make balanced qualitative judgements, on the basis of assessment tools. Indeed, the first issue of *Engineering Sustainability* in 2008 is to be dedicated to this topic, as was the second issue of this year.¹ However, as my colleagues at Birmingham keep emphasising, checklists and assessment methods have value only in that they make explicit the issues; they do not make clear the actions that must follow. This, then, is our ultimate challenge.

One further reason for the comment on 'interesting times' is that we should be moving into an era in which the potential actions are becoming clearer to discern. The UK government, in the form of the Engineering and Physical Sciences Research Council (EPSRC), the primary government funding agency for research in the subject areas covered by this journal, has devoted considerable research funding to the broad topic of sustainable urban environments (SUE). In addition to a total of approximately £23 million committed to research under the first SUE programme, it has recently committed another £15 million to consolidate the research base and take the research forward towards implementation² and there is discussion of a possible third phase of funding. The outputs of the first set of 15 consortia are now flowing since the research is reaching maturity and I hope, and expect, that several papers deriving from the SUE programme will appear in the journal in the coming year to complement those that we have already published.

The SUE programme supports a wide variety of research, and indeed funds researchers from disciplines that would not expect to receive funding from EPSRC; perhaps more importantly, it has

also drawn researchers from very diverse backgrounds into the engineering literature, as evidenced to great effect by the award of the Halcrow Prize for the second best paper on sustainability in the *Proceedings of the Institution of Civil Engineers* in 2005 to three geographers for their work on mitigation techniques for biodiversity in urban regeneration projects.³ The first phase of funding supports a range of consortia projects under four clusters addressing different aspects of sustainable urban development

- (a) urban and built environment
- (b) waste, water and land management
- (c) transport
- (d) metrics, knowledge management and decision making.

These are topics that civil engineers readily relate to as part of our remit, but ones that we increasingly recognise as requiring the input from those whose expertise lies elsewhere. I hope to talk more on this over the next three years.

Turning to the current issue of *Engineering Sustainability*, there is once more an interesting mix of ideas presented in the five papers. The first is a briefing note describing a fascinating study of how to put together a microcosm of a sustainable development by the refurbishment of a disused oil tanker to create an 'Ark'. Although the issues that are dealt with are easy to recognise, the application to this particular situation is novel and highly thought provoking. This short article truly inspired me to think laterally. The first full paper also deals with water, but from a more conventional viewpoint rather than as the supporting medium for a floating community. The recent thinking about extending carbon footprints and energy footprints to water footprints⁴ is reflected in the paper, which examines the issues surrounding the introduction of a domestic water trading scheme. A proposal for a scheme that would lead to a reduction in water demand is presented and the challenges of its introduction are addressed. The second paper addresses the life-cycle costs of three commonly-employed structural materials: carbon steel, aluminium alloy and stainless steel. By comparing their use in two common structural applications – an office building and a bridge, both designed in accordance with current European design standards – the materials are compared on an equal basis. Here is an interesting example of the information that we need, but all too often cannot get access to, when confronted with the design choices to which I alluded earlier. This paper should be essential reading for all those in structural design.

The third paper remains in the structural engineering field, but takes a very different view. It addresses the novel concept of biomimicry in structural design and draws out the lessons that we can, and should, learn from structural materials that have evolved naturally over very many generations. It is a wholly refreshing look at the subject and, like its predecessors, makes one think in an entirely different way about our profession. Also like its immediate predecessor, it should form part of the essential reading of those involved in structural design. The final paper returns to the subject of life-cycle cost assessment, this time in assessing four types of roof construction that are common in New Zealand. The material costs are combined with considerations of embodied energy and CO₂ emissions to arrive at conclusions that are invaluable to those with an enquiring mind about what is most sustainable, and of specific benefit to housing developers and similar stakeholders in deciding on the most sustainable form of construction to adopt. This issue of *Engineering Sustainability*

therefore has something of specific interest for all and provides a very great deal of general interest. It has set a very high standard to greet my period as Honorary Editor. I will seek to maintain this standard over the coming three years.

REFERENCES

1. *Proceedings of the Institution of Civil Engineers, Engineering Sustainability*, 2007, 160, No. 2. (Special Issue—Assessment Frameworks, Indicators and Metrics: Part 1.)
2. See <http://www.epsrc.ac.uk/ResearchFunding/Programmes/EEC/Activities/SUE>.
3. DONOVAN R. G., SADLER J. P. and BRYSON J. R. Urban biodiversity and sustainable development. *Proceedings of the Institution of Civil Engineers, Engineering Sustainability*, 2005, 158, No. 2, 105–114.
4. See <http://www.waterfootprint.org>.