Editorial

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Welcome to the May 2017 issue of *Civil Engineering*, the general journal of the *Proceedings of the Institution of Civil Engineers*.

This issue is very much in line with Institution of Civil Engineers president Tim Broyd's recent call to civil engineers to adopt modern technology. We have briefings on ultra-fast transport, remote sensing algorithms, augmented-reality inspections and safety management software as well as a review of the proceedings of last year's International Conference on Smart Infrastructure and Construction.

Meanwhile, the four papers in this issue cover both high- and low-technology solutions used by civil engineers in the UK, Hong Kong and Pakistan. The first paper, by Moore *et al.* (2017), describes a strategic integrated programme of coastal and cliff stabilisation measures at Lyme Regis in Dorset, UK. The town lies on the Jurassic Coast, a Unesco natural world heritage site, and the work was phased in order of urgency from 1993 to 2015.

Coastal erosion and landslides at the eastern part of the town contribute to spectacular local scenery and abundance of fossils, yet this had to be balanced with requirements to protect people, property and infrastructure. The solution was to prevent expansion of the destructive landslides inland by constructing a barrier of stabilised ground to protect the town in the long term rather than stabilising all areas of existing landslides.

The second paper, by Au *et al.* (2017), moves to Hong Kong, a place where landslides and slope stability are also an ongoing challenge. This paper reports on the procurement of the 1.4 km long immersed-tube harbour crossing of the Shatin–Central mass transit railway. Due for completion in 2021, the project is being procured through a design-and-build contract following collaborative early contractor involvement.

Optimising design and performance specifications during tender stage ensured the submitted tenders were constructable, using the most cost-effective design but minimising construction and operating risks in what is a highly congested urban environment. The successful contractor has now built eleven 23 000 t immersed-tube tunnel units in a former quarry site, and these are now being floated out and sunk into position.

The third paper, by Thusyanthan *et al.* (2017), covers potential applications of handheld thermal imaging cameras in civil engineering, with leak detection in an aqueduct embankment provided as an example.

The authors note that technology has improved to the extent that temperature data can be shown for each image

pixel, although they found that the best time for taking thermal images of infrastructure is about an hour after sunset in the shadow-free twilight period. The results accurately identified cracks in the base of the aqueduct channel lining, enabling repairs to be carried out prior to a full-scale leak occurring.

The final paper, by Rafi *et al.* (2017), covers initiatives to improve building resilience in Gajjar, Pakistan. The town was severely damaged by a major earthquake in 2013 – which killed hundreds of people and reduced mud houses to rubble – so was selected as a pilot study for redevelopment.

The town is in a remote and sparsely populated part of Pakistan with limited access to gas, electricity and machinery. The design of a simple yet seismically resistant earth building reinforced with bamboo was therefore developed and tested. Brochures and training were then provided to local people in these more resilient construction methods, resulting in some 6000 new houses being built in just 18 months. It is a great example of civil engineers being sensitive to the needs and limited resources of a local community to produce a sustainable solution of long-term value.

I hope you find this issue an interesting, relevant and enjoyable read. I also trust it will spur you and your colleagues on to prepare and submit a paper on your own project or research in the near future.

References

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