Editorial

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I find myself reviewing paper submissions quite a lot these days, and have to confess that several seem heavy-going and unclear as to their wider implications. The papers that comprise this issue are quite the opposite: very easy to read, absorbing and highly relevant to the urban environment in which more than half the world's population now finds itself.

In 1900 only 13% of the global population lived in urban areas (Hanlon 2007). By 1950 this proportion had risen to 30%, and by 2050 it is predicted to increase to almost 70% (United Nations 2019). This rapid trend in urbanisation brings challenges for land and environmental management, safe and affordable accommodation, social services and health care, water supply, waste and waste water management, electricity, transport and communications.

The growth of cities has often been likened to an organic process (i.e. a living city (Pearson, 2007; Price, 2018)). The increasing numbers, evolving demography and changing needs of the urban population require a four-dimensional approach to urban planning. The task of politicians, civil engineers, urban planners, and utility and welfare providers is to facilitate and manage this evolution in a sustainable, cost-effective and socially-inclusive way.

The first paper in this issue (Boateng, 2020) describes some of the historical background to global urbanisation and examines the technical, socio-economic and political-cultural factors that have contributed to suboptimal building construction that predominates in parts of the 'global south'. It describes how the increasing demand for residential and commercial accommodation in cities has, in some cases, resulted in a failure to comply with building codes, thus precipitating structural failures, and loss of life and livelihood. Natural hazards, particularly earthquakes, trigger many of these failures, but the author describes how building vulnerability tends to be highest in situations where public safety is not the primary concern of those engaged in urban development. Most future urbanisation is expected to take place in parts of Asia and Africa (United Nations, 2019), and the paper provides some important perspectives to take forward.

Effective urban planning needs to be informed by reliable and up-to-date data. This data should reflect not only the spatial

demographic, social and economic composition of urban and peri-urban areas, but also trends in these factors over time. Urban planning must also be visionary (i.e. pro-active and accommodating of likely future change). For these reasons properly executed urban planning is, effectively, always a work in progress. Soares *et al.*, (2020) describe how only 17% of municipal master plans in Portugal have been revised since the 1990s with urban boundary plans no longer effective, potentially leading to unnecessary ecological fragmentation, loss of agricultural land and environmental pollution. They present a method for objective and quantitative delimitation of urban development by combining morphological, demographic and land cover datasets for the urban area of Guardia in Portugal. The method can be used to assist in effective urban delimitation for improved infrastructure planning and management, quality of life and environmental protection. The advances that are constantly being made in the field of remote sensing offer significant sources of data for geo-spatial urban planning purposes.

A number of the examples used by Boateng (2020) involved building collapse following earthquakes. Flooding is another major source of natural hazard in many urban areas across the globe, and unplanned and uncontrolled development in flood-prone areas has been common-place. Flooding is exacerbated by the removal of temporary storage areas, channelisation effects and the creation of impermeable surfaces that accompany urbanisation. Veról and Miguez (2020) provide a fascinating analysis of flood hazard and urbanisation in the context of Mesquita, a suburb of Rio de Janeiro. The suburb experienced a population growth of almost 600% during the 60 years prior to 2010 and recurrent flooding problems affect 80% of inhabitants. The authors model the spatial distribution of flooding from a 25-year return period rainfall at two stages in the suburb's development: 1970 and 2010. They use census and mapping data to model how the flooding hazard has changed over the intervening 40 years as a result of urbanisation. The 1970 model predicts many areas at risk of flooding that have been subsequently built upon. Flow rates in some of these areas have doubled as a result. The study demonstrates the importance of integrating hydrology into urban planning from the outset and the need to set aside parts of the city as recoverable urban land use that can provide temporary storage during flood events.

Boateng (2020) quotes some interesting statistics to describe how urbanisation in the UK expanded rapidly in the 18th and 19th Centuries. As urban areas evolve to accommodate growing and changing residential, commercial and transportation needs, so too does the provision of below-ground service utilities, such as water supply, sewerage systems, electricity, gas and telecommunications. With new urban and infrastructure developments taking place almost continuously, these utilities can become overprinted, sometimes repeatedly. The economic, social and environmental costs incurred when these utilities are damaged or severed during later excavation works can be significant.

Metje *et al.*, (2020) describe how, in 2008, there was in excess of 1.5 million kilometres of buried utilities in the UK, requiring 1.37 million street works by utility companies between 2014 and 2015. Prior to any physical works, utility records are inspected and supplemented by surface observations and non-intrusive, geophysical exploration techniques. In order to test the accuracy of these investigations, the authors compare the outcomes of four independent, above-ground surveys against the findings of trial pit inspections for a study area in Southampton. Overall, there was good agreement, though horizontal accuracy was better than vertical accuracy (i.e. depth below ground level). The detection of drainage structures was found to be potentially problematic, especially close to buildings. Difficulties were also experienced in the detection of electricity cables, especially where cables were co-located. The results provide a good indication of the level of confidence that these techniques offer and provide a useful insight for future practice.

The final paper in this issue is that of Gao *et al.*, (2020). These authors address the important subject of construction waste mud reuse, using a case study from Zhejiang Province, China. The objective was to chemically-solidify a waste mud, derived from piling operations, for reuse as subgrade to a car parking lot. The deposit covered an area of 4000 m² to a depth of 3 m and comprised a saturated silty clay. Laboratory tests were carried out using a number of additives, though Portland cement (3–4%) and fly ash (1–3%) were used in the field trials. Following the mixing of the additives with the mud, field tests revealed that the material had gained sufficient strength to support the construction of an average highway and was therefore easily fit for the intended purpose as a founding layer for a parking lot. Furthermore, the technique locks contaminants within the treated mud, preventing them from migrating into the surrounding environment. Although the technique of cement (and pozzolan) stabilisation is not new in the highway sector, this case study is useful because it demonstrates how waste muds can be treated relatively quickly, safely and at low-cost in a range of settings, including urban and peri-urban areas.

This year has seen great disruption to normal life and work due to the Covid-19 pandemic. In April, delivery of printed copies of the journal was halted due to reduced Airmail and delays at Customs. Readers can be reassured that purchased 2020 printed journal issues will be posted to them before Christmas. In January, we will see another change as the journal moves to solely online-only format. PDF is now the most common format in which to read the journal, reflecting the preference of institutional libraries and the desktop convenience for readers of finding, receiving and sharing articles in PDF. We expect this trend to continue, with fewer subscribers opting to pay extra for issues to be printed and posted to them. If you are one of our readers who does like to receive a hardcopy, these will be available to purchase on a per issue and per volume basis. Prices will be announced in the New Year. Readers who require a printed copy for accessibility reasons should contact journals@ice.org.uk.

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