Editorial: linear infrastructure and slopes

This edition of *Géotechnique* presents the latest in the series of 'symposia in print' published in the journal and addresses the theme of linear infrastructure and slopes. Before discussing the articles, I would like to express my thanks to everyone that contributed to the work of getting this edition to press – authors, reviewers, members of the editorial board and ICE Publishing. The reviewers deserve a special mention and thanks, as it was a major struggle to ensure that sufficient, good-quality reviews were obtained to allow the publication process to proceed.

The topic of 'linear infrastructure and slopes' was chosen because in recent years, and now as a consequence of the Covid-19 pandemic, there has been a significant increase in the number of linear infrastructure projects being planned and under construction in the UK and internationally. It also recognised that there are significant resources involved in the ongoing maintenance of linear infrastructure and ensuring ageing assets remain serviceable and safe. The nine articles that make up this edition were distilled down from an initial 48 abstracts whose topics ranged across embankments, climate interactions in slopes, tunnels and pipes, pavements and bridge foundations.

Standing *et al.* (2021), Stirling *et al.* (2021) and Boldrin *et al.* (2021) each offer new insights into the way in which linear infrastructure earthworks interact with and react to the surrounding environment. This has been and continues to be a major preoccupation in the management of linear infrastructure, as these interactions directly impact on the serviceability and safety of the earthworks. It is also nice to have a legacy paper (Standing *et al.*, 2021) that includes the late Prof. Peter Vaughan as co-author and whose contribution to our understanding of embankment–environmental interactions cannot be understated.

In the second set of papers, different aspects of the development of linear infrastructure across marginal ground are addressed. Safdar *et al.* (2021) examine the feasibility of bio-inspired stabilisation of the ground; de Gast *et al.* (2021a) explore the measurement of soil index parameters and quantification of their variability by statistic methods; Doherty & Bransby (2021) propose a methodology for applying data-mining techniques in geotechnical design and demonstrate this through the estimation of embankment settlements based on a case study; and de Gast *et al.* (2021b) apply reliability analysis techniques to a case study where a controlled failure of an historic dyke was undertaken. Each of these articles brings new perspectives to the problems that they address and the possibility of applying innovative methods to improve our design procedures.

The final two articles address two quite different aspects of linear infrastructure involving tunnels. When constructing new linear infrastructure, especially in crowded urban areas, the impact of the works on adjacent structures and infrastructure can be a key constraint. Alhaddad *et al.*

(2021) present a case study from the construction of the Elizabeth line in London where the impact of tunnelling operations on existing nearby tunnels was monitored using a new high-resolution measuring system. The seismic vulnerability of tunnels and how this can be quantified through 'fragility curves' is examined by de Silva *et al.* (2021), whose work provides an interesting approach in enabling risk management of linear infrastructure.

The articles that follow represent an interesting range of topics in the subject area of linear infrastructure and it is hoped that readers will find them interesting and provocative.

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