Engineering Geology for Tomorrow's Cities

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CULSHAW, M. G., REEVES, H. J., JEFFERSON, I. & SPINK, T. W. (eds) 2009. *Engineering Geology for Tomorrow's Cities.* Geological Society, London, Engineering Geology Special Publications, **22**.

SCHOUENBORG, B., TANG, L. & ÅKESSON, U. 2009. Resources for the city: sustainable use of bedrock resources for concrete production with examples from Sweden. *In*: CULSHAW, M. G., REEVES, H. J., JEFFERSON, I. & SPINK, T. W. (eds) 2009. *Engineering Geology for Tomorrow's Cities.* Geological Society, London, Engineering Geology Special Publications, **22**, 257–263.

GEOLOGICAL SOCIETY ENGINEERING GEOLOGY SPECIAL PUBLICATION NO. 22

Engineering Geology for Tomorrow's Cities

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2009
Published by
The Geological Society
London

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Published by The Geological Society from:
The Geological Society Publishing House, Unit 7, Brassmill Enterprise Centre, Brassmill Lane, Bath BA1 3JN, UK

(*Orders*: Tel. +44 (0)1225 445046, Fax +44 (0)1225 442836)
Online bookshop: www.geolsoc.org.uk/bookshop

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library.
ISBN 978-1-86239-290-8

Typeset by Techset Composition Ltd., Salisbury, UK
Printed by Antony Rowe Ltd, Chippenham, UK

Distributors

North America
For trade and institutional orders:
The Geological Society, c/o AIDC, 82 Winter Sport Lane, Williston, VT 05495, USA
Orders: Tel. +1 800-972-9892
Fax +1 802-864-7626
E-mail: gsl.orders@aidcvt.com

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India
Affiliated East-West Press Private Ltd, Marketing Division, G-1/16 Ansari Road, Darya Ganj, New Delhi 110 002, India
Orders: Tel. +91 11 2327-9113/2326-4180
Fax +91 11 2326-0538
E-mail: affiliat@vsnl.com

Foreword

The main objective of the International Association for Engineering Geology and the Environment (IAEG) as an organization is to provide opportunities to its membership for exchanging ideas, developments and experiences and to learn from each other. Our three main means to accomplish this objective for the benefit of our (members, those from academia as well as the practitioners, are the publication of our *Bulletin of Engineering Geology and the Environment*, the organization of congresses, conferences, and symposia, and the work of our Commissions.

Our 10th International IAEG Congress in Nottingham in September 2006 was, therefore, an important milestone. The campus location in Nottingham provided the ideal space and atmosphere for real interaction between the Congress delegates from many National Groups. Our Commissions met in Nottingham and new Commissions were initiated there, some of them as Joint Technical Committees in the framework of our newly formed Federation of International Geo-engineering Societies (FedIGS), together with our sister societies the International Society for Rock Mechanics (ISRM) and the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE).

However, the main accomplishment of this Congress was the production of a large number of scientific papers for the Congress. An enormous amount of work has been done before and after the Congress with the involvement of many of our members from all over the world as contributors. The Proceedings cover 11 themes and represent our present knowledge and understanding with regard to the urban environment at the start of the 21st century, and so give a good impression of the state of the art of a wide number of topics in geo-engineering. This book contains the full text of the keynote lectures, the papers of the session rapporteurs and a number of special lectures presented during the 10th International Congress of IAEG, and a CD-ROM with the full text of all the delegate papers submitted to the Congress.

I would like to repeat here what I said at the closure of the Congress on behalf of the Executive Committee and the membership of IAEG: words of thanks for the immense amount of work done by our British colleagues. IAEG exists thanks to the activities of our National Groups and their members, and the organization of this Congress is completely the work of our British colleagues. A special word of thanks goes to the members of the Organizing Committee, and in particular to Martin Culshaw and his editorial team for the publication of this book, with the CD-ROM. With these Proceedings they have made a true and lasting contribution to the advancement of Engineering Geology, the main objective of the IAEG.

NIEK RENGERS
President of the IAEG 2003–2006

Preface

The majority of the world's people live in urban environments and the numbers are increasing year by year. As a result, the number of megacities (that is, those with populations greater than 10 million) is increasing too. Already there are probably around 25 megacities, most in the developing world. Engineering geologists contribute significantly to development and regeneration, not only as part of the construction process but also by providing essential expertise to land-owners, developers, financiers, land-use planners, civil and structural engineers, architects, surveyors, insurers and the general public. The engineering geologist's principal aim is to assure all who wish to use the land as a resource that our understanding of the geology is appropriate and adequate for the intended use. In this way, risks are better understood, and hence can be reduced, and unforeseen costs are minimized.

To help engineering geologists and their clients meet this aim, the International Association for Engineering Geology and the Environment (IAEG) decided to make the theme of their 10th Congress, held in Nottingham, UK in September 2006, 'Engineering Geology for Tomorrow's Cities'. The Congress attracted a large delegate audience from across the world, who submitted the 449 papers to be found on the CD-ROM that accompanies this book. These papers, together with the keynote and rapporteur papers published in the book, covered 11 themes ranging from climate change, geohazards and contaminated land to site investigation, underground space and infrastructure. An introductory paper discusses the engineering geology of the Congress's host city, Nottingham, and its environs. In addition, a special session was held on the future of engineering geology. This was held not because engineering geologists doubt the relevance of their discipline but quite the reverse. Engineering geologists believe that their contribution to the quality of life, particularly in urban environments, is vital if humanity is going to be able to cope sustainably with the environmental changes that are taking place driven by climate change, the legacy of past development, population growth and economic globalization. As a result, engineering geologists must communicate more effectively the contribution that they have to make if the impacts of change are to be beneficial.

This book and the accompanying CD-ROM provide a statement of the state of our knowledge and understanding with regard to the urban environment at the start of the 21st century. What is clear is that our science and its application continue to develop. Working standards are becoming internationalized, risk, rather than just hazard, assessment is driving decision-making, greater use of underground space is being made, and the relentless advance of information technology is providing new opportunities for us to interpret and visualize the subsurface. The world is also becoming smaller in the sense that engineering geologists in developed and developing countries are exchanging ideas and learning from each other in a genuine two-way process. The editors hope that this publication will contribute to that process.

In conclusion, the editors wish to thank the very large number of engineering geologists from around the world who reviewed the papers in the book and on the CD-ROM. There are too many to list individually but their efforts are very much appreciated. One of the editors, Tim Spink, developed a wonderful, interactive website that enabled the editors to manage the papers easily and without bureaucracy. Without it we would have been in chaos! Particular thanks are also due to the Session Chairs and Rapporteurs who ensured that the Congress ran smoothly, to the authors themselves, for following instructions and submitting their papers in a timely fashion, and, particularly, to Georgina Worrall and Louise Dyer of the Geological Society Conference Office, without whom there would have been no Congress. The work of the Congress Organizing Committee, over many years, ensured a well-organized and thoroughly enjoyable event that brought everyone together in a convivial atmosphere. We also very much appreciate the patience shown and the sound advice given by Sarah Gibbs, Helen Floyd-Walker and Angharad Hills at the Geological Society Publishing House during the long process of getting this book to press.

MARTIN CULSHAW
HELEN REEVES
IAN JEFFERSON
TIM SPINK

Acknowledgements

The 10th Congress of the International Association for Engineering Geology and the Environment (IAEG) was organized by the UK National Group of the IAEG, the Engineering Group of the Geological Society of London and the Conference Office of the Geological Society of London. It was sponsored and supported by a number of commercial organizations.

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