



Australian
Geomechanics
Society



ENGINEERS
AUSTRALIA

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GEOTECHNICAL INNOVATIONS AND CHALLENGES FOR TRANSPORT INFRASTRUCTURE



PROCEEDINGS OF THE 2017 AGS SYMPOSIUM
HELD IN
AUSTRALIAN NATIONAL MARITIME MUSEUM, DARLING HARBOUR, NSW
ON
NOVEMBER 10TH 2017

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Australian Geomechanics Society

Geomechanics is the application of engineering principles to the earth sciences to improve continually the accuracy, efficiency, cost-effectiveness and safety of construction projects both above and below ground, including the recovery of the earth's mineral resources. It remains an imprecise discipline due to the infinite variety of conditions in the earth's crust but correspondingly offers a fascinating and rewarding field of research and practice.

The Australian Geomechanics Society was founded in 1970. Its origins lie in the National Committee of Soil Mechanics of the Institution of Engineers, Australia, established in 1953 and the call for a corresponding society in rock mechanics. In 1973 the society was expanded to include the third discipline of engineering geology and has remained substantially unchanged since that date.

The society is affiliated to the International society of Soil Mechanics and Geotechnical Engineering (ISSMGE), the International Society for Rock mechanics (ISRM) and the International Association for Engineering Geology and the Environment (IAEG).

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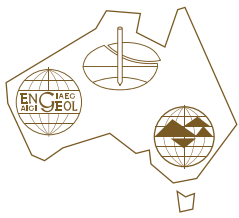
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TIMETABLE

8:00 Registration

8:45 Opening address

RISKS AND RESILIENCE OF TRANSPORT INFRASTRUCTURE (PART I)

9:00 Keynote Lecture

Natural hazards, risk, and the resilience of U.S. transportation infrastructure

*Scott Anderson
(BGC Engineering, formerly US Federal Highway Administration)*

9:40 Presentation

Slope Risk Analysis Following the 2016 Kaikoura Earthquake to Inform Recovery, Resilient Design, and Reopening of State Highway 1 in New Zealand

Timothy Mote (ARUP)

10:00 Presentation

Managing the Risks Associated with Acid Sulphate Rock in NSW Road projects

Nicholas Bridgement (RMS)

10:20 Questions

10:40 Morning tea

SOFT GROUND ISSUES (PART II)

11:00 Presentation

Ground Characterisation and Performance of A Sinking Motorway, Waterview Connection Project, New Zealand

Doru Bobei (AURECON)

11:20 Presentation

Design of Railway Embankment over Soft Ground

Theva Muttuvel (Coffey)

11:40 Presentation

Dealing with existing pipes under new infrastructure and the relevance of multi-layered stress analysis

Sarath Somasundaram (AECOM)

12:00 Questions

12:20 Lunch

INNOVATIVE SOLUTIONS AND CHALLENGES (PART III)

13:00 Keynote Lecture

Saving Millions on Retaining Walls and Revetments for Depressed Motorways in Stiff Unsaturated Clay

*Richard Herraman
(Department of Planning, Transport and Infrastructure of South Australia)*

13:40 Presentation

Novel Pile Design for Multi-Level Car Park above Twin Rail Tunnels

T. Miller (SMEC)

14:00 Presentation

Use of Temporary Anchors in Reinforced Soil Wall (RSW) Construction in M4 Motorway Widening

Tristan McWilliam (Golder Associates)

14:20 Presentation

Application of semi-rigid composite permeable pavements in road network

*Mahdi M. Disfani
(University of Melbourne)*

14:40 Questions

15:00 Afternoon tea

BRIDGE ABUTMENTS – DESIGN AND CONSTRUCTION INNOVATIONS (PART IV)

15:20 Presentation

Design and Construction of Transition Treatment for Bridge Approach Embankments

Jeff Hsi (EIC Activities)

15:40 Presentation

Impact from the construction of a working platform and girder lifting operations on pile/column displacements

Bosco Poon (GHD)

16:00 Presentation

Underpinning the Concord Road Bridge Under Traffic – WestConnex M4 East Project

Puvaneswary Rajarathnam (AECOM)

16:20 Presentation

Some notes on the design of pile foundations in sedimentary rock

Jim Yang (ARCADIS)

16:40 Questions

17:00 Closing address

17:20 Close



Canopy Tube installation at Wynyard Walk - Keller Ground Engineering



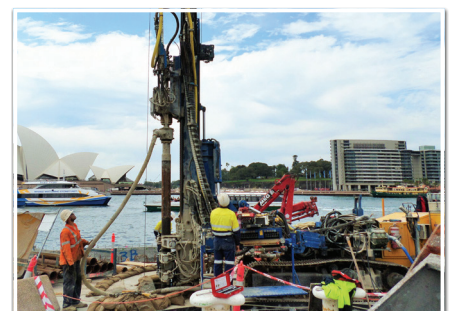
Dynamic Compaction and Wick Drains at Perth Stadium - Keller Ground Engineering



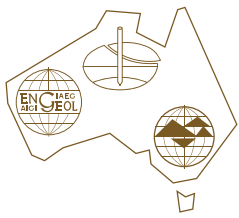
Jet Grouting over canopy of Brisbane tunnel - Keller Ground Engineering



Mass Soil Mixing at NCIG - Keller Ground Engineering



Overseas Passenger Terminal permanent anchors - Keller Ground Engineering



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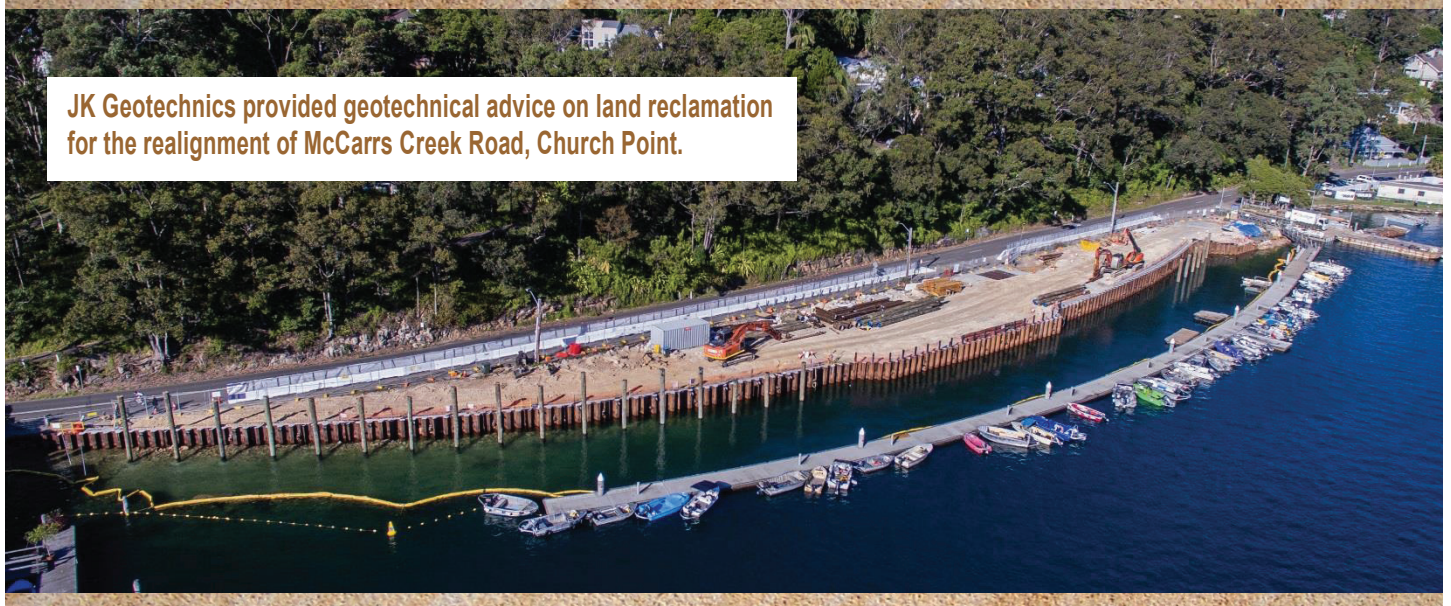
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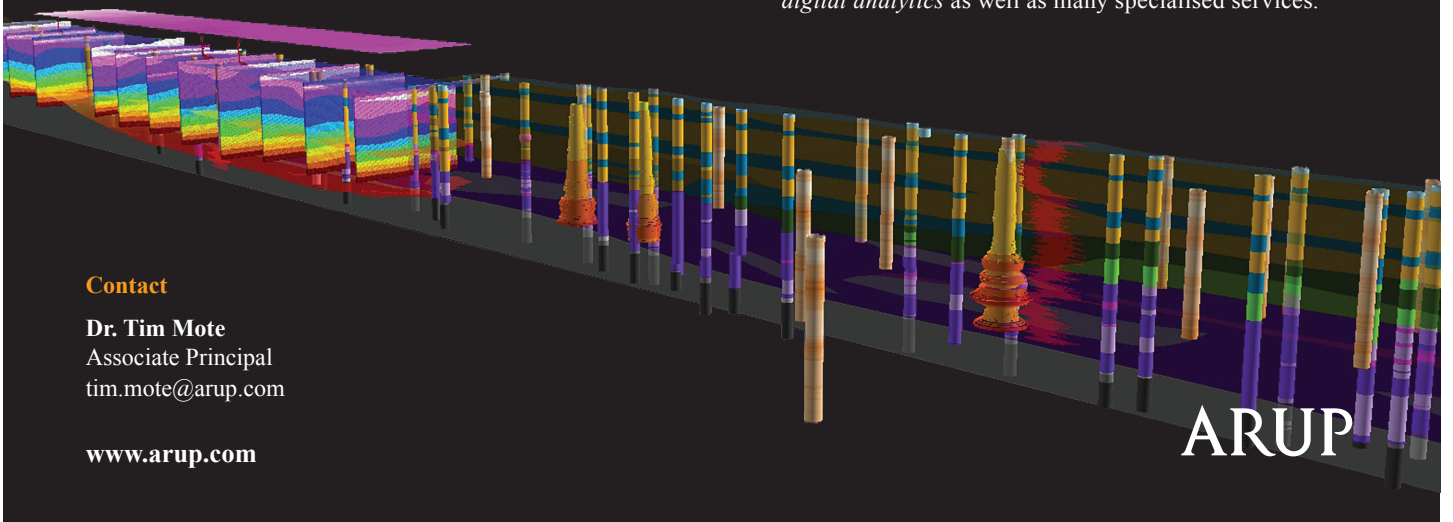


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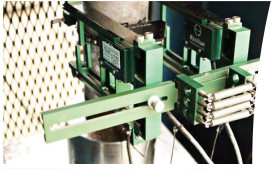


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AGS Symposium – Friday 10 November 2017

Geotechnical innovations and challenges for transport infrastructure

Ground Stabilisation Techniques for Problematic Soils and Unstable Rocks

PREFACE

This document contains papers for the 21st annual symposium organised by the Sydney Chapter of the Australian Geomechanics Society. It is hoped that the symposium will keep practicing geotechnical engineers, engineering geologists, and other engineering professionals informed of recent developments in this field. It also recognises the need to gather together the experience of those practicing throughout Australia and to allow transfer of knowledge and sharing of their experiences.

These symposia continue to be one of the best forms for bringing together the key stakeholders of the Australian geological and geotechnical community. The main objective of the symposium, held on 10 November 2017, is to present overview of current transport infrastructure challenges, state-of-the-art practices, innovative technologies, new research results and case histories demonstrating applications of advanced techniques and cost effective approaches in the construction and design of transport infrastructure.

This symposium is the cooperative effort of many authors and qualified reviewers. The editors and organising committee wish to thank the authors, who have generously contributed their time to prepare the various papers and the colleagues of the authors, who have assisted with time, secretarial, drafting and other facilities. Appreciation is also extended to our sponsors for their support. Without them the Symposium would not be possibly the best ongoing forum for the Australian Geomechanics and groundwater community.

Sam Mirlatifi, Cholachat Rujikiatkamjorn, George Vorobieff, Hadi Khabbaz, David Airey, Ali Parsa, Adrian Hulskamp, Henk Buys and Karen Oj

On behalf of the AGS Symposium Organising Committee,
The Australian Geomechanics Society, Sydney Chapter

Annual Seminars of AGS Sydney Chapter

No.	Date	Topic	Chairman & Organising Team
1	1997	Pavement Design Beyond 2000	A Leventhal
2	1998	Recent Developments in Piling Practice in Sydney	P Andrews
3	1999	Flexible Retaining Walls: Design to Prevent Failure	P Andrews and P Hewitt
4	2000	Computer Methods	P Hewitt and J Carter
5	2001	Excavation Retention	T Walker and P Hewitt
6	2002	Landslide Risk Management	B Walker and T Walker
7	2003	Geotechnical Instrumentation and Construction Works Compliance Testing	G Scholey and T Walker
8	2004	The Engineering Geology of the Sydney Region – Revisited	G Scholey, M Parmar, G Young and G McNally
9	2005	Geotechnical Aspects of Tunnelling	H Buys and T Gourlay
10	2006	Soft Ground Engineering	H Buys, R Moyle and P Hewitt
11	2007	Engineering Advances in Earthworks	R Moyle, R Lindbeck and H Liu
12	2008	Foundation Design and Construction	R Moyle, R Lamont and B Ewers
13	2009	Geosynthetics – New Materials for Modern Infrastructure	B Ewers, H Buys and H Liu
14	2010	Seismic Engineering- Design for Management of Geohazards	C Rujikiatkamjorn, J McIlveen, R Lamont and M Haysler
15	2011	Coastal and Marine Geotechnics- Foundations for Trade	C Rujikiatkamjorn, J McIlveen, G Blumberg, J Smith and C Y Tey
16	2012	Advances in Geotechnical Aspects of Roads and Railways	H Khabbaz, C Y Tey, O Stahlhut and C Rujikiatkamjorn
17	2013	Retaining Structures: Recent Advances and Past Experiences	H Khabbaz, C Rujikiatkamjorn, M van Uden, C McColgan and S Mirlatifi
18	2014	Resilient Geotechnics	H Khabbaz, C Rujikiatkamjorn, S Mirlatifi, C McColgan and M van Uden
19	2015	Recent Developments and Experiences with Groundwater and Excavation	C Rujikiatkamjorn, S Mirlatifi, Katarina David, A. Hulskamp, and M van Uden
20	2016	Ground Stabilisation Techniques for Problematic Soils and Unstable Rocks	C Rujikiatkamjorn, S Mirlatifi, A. Hulskamp, T McWilliam and H Khabbaz
21	2017	Geotechnical innovations and challenges for transport infrastructure	S Mirlatifi, C Rujikiatkamjorn, G Vorobieff, D Airey, A Parsa, A Hulskamp, H Khabbaz, H Buys and K Oj,

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[All papers have been refereed in accordance with the full DETYA (Department of Education, Training and Youth Affairs) review process, unless stated otherwise.]



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