

**AUSTRALIAN
GEOMECHANICS
SOCIETY**



A technical society of



**ENGINEERS
AUSTRALIA**

AGS SA-NT SYMPOSIUM 2019 TUNNELLING UNDER ADELAIDE

australiangeomechanics.org

NATIONAL WINE CENTRE
CORNER OF BOTANIC AND
HACKNEY ROADS, ADELAIDE

MONDAY 28TH
OCTOBER 2019
8.30AM–5.00PM

The South Australian-Northern Territories Chapter of the Australian Geomechanics Society (AGS) and the Australian Tunnelling Society (ATS) are pleased to announce the 2019 AGS Symposium titled “Tunnelling under Adelaide” which is to be held on Monday 28th October 2019.

The symposium forms part of the continuing programme of events organised by the SA-NT Chapter of the AGS and aims to provide the engineering profession with a comprehensive introduction to the geotechnical aspects of tunnelling in soil in urban areas, including best practice techniques and recent developments.

Keynote Speakers:

Michael King (MK Tunnelling Limited),
Oskar Sigl (Geoconsult Asia Singapore),
Address by Stephan Knoll (MP, Minister for Transport,
Infrastructure and Local Government),
Other speakers to be confirmed

Event Contact:

Abbas Taheri
abbas.taheri@adelaide.edu.au

CPD:

Engineers Australia (EA) members participating in AGS technical sessions can record attendance on their personal Continuing Professional Development (CPD) logs. Members should refer to EA's CPD policy for details on CPD types, requirements and auditing guidelines.

Overview of the 2019 Symposium

South Australia has seen significant investment in transport infrastructure in recent years. The development of a dedicated non-stop North-South Corridor for Adelaide is a direct result of a strategic objective to reduce Adelaide's urban road congestion. The North-South Corridor is one of Adelaide's most important transport corridors and is the major route for north and south bound traffic including freight vehicles running between Gawler and Old Noarlunga, a distance of some 78 km. Many of the associated projects involve complex geotechnical challenges.

The South Australian Government is currently considering the viability of tunnelling options for the remaining sections of the strategic North-South Corridor between River Torrens and Darlington. Design and construction of the remaining sections will be the biggest single infrastructure project in South Australia's history.

This symposium will present overviews of current design practice, state-of-the-art practices, novel technologies and innovative solutions, and case studies demonstrating applications of advanced techniques and cost-effective solutions in the design and construction of TBM tunnels in clay, with a focus on the geotechnical challenges associated with the completion of the North-South Corridor between the River Torrens and Darlington. The symposium will bring together professional engineers, researchers, specialist contractors, regulators, educators and students to share and discuss their experiences on the topic of the design and construction of TBM tunnels and their associated challenges and opportunities.

Topics:

Planning and Investigation

- Procurement models
- Risk management
- The role of ground investigation and Geotechnical Baseline Reports
- Ground conditions in Adelaide including geotechnical and hydrogeological hazards

Geotechnical Design

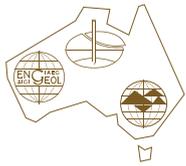
- Management of ground movements impacts on existing infrastructure
- Groundwater control in high risk urban environments
- Instrumentation and monitoring
- Ground treatment

Excavation and Construction Methods

- Large diameter TBM selection, design and performance
- Sprayed concrete lining and membrane construction
- Cross passage construction
- Crossover structures
- Waterproofing of cross passages, shafts and caverns
- The role of tunnel engineers during construction and the use of the observational method

Case histories

- TBM tunnelling projects in Adelaide, London and Auckland will be presented



About The Keynote Speakers



Dr Oskar Sigl Geoconsult – Asia Singapore

Dr. Sigl graduated as Diploma Engineer (MSc) in 1985 from the Technical University of Graz (Austria), in geotechnics and soil mechanics and in 1991 achieved the PhD in mining engineering at the Mining University of Leoben (Austria). Oskar's 30 years of experience cover a wide range of projects such as subways, railways, roads, power transmission cables, sewerage mains, underground storage schemes and caverns. Oskar has been working in Singapore since 1997, where he was involved in the detailed design of almost all major underground infra structure projects. This includes the MRT lines, high voltage transmission cable tunnels, underground expressways and deep sewer tunnels. Outside of Singapore, Dr. Sigl was involved in leading roles in the design of underground transportation systems in Dubai, Perth, Brisbane, Sydney, Hong Kong, Kuala Lumpur as well as the design of underground oil and fuel storage cavern schemes in Saudi Arabia, India and the UAE.

Presenting:

Design and construction issues which are critical but receive less attention.

The presentation is intended to highlight and discuss the solution to major challenges of planning underground projects in urban environments, which are not in the forefront of attention. This is related to the construction of entrances, cross passages and other critical structures, which very often do not receive the technical attention they would deserve. These discussions are presented in the form of examples from the viewpoint of a practitioner, who is deeply involved in the actual design for the implementation of such projects. Infrastructure in large cities is getting denser over time. Actual geotechnical challenges often relate to the application of innovative methods of construction in order to minimize potential construction impact or disruption. The presentation will focus on the application of "unusual" design considerations and construction methods and related design and construction challenges.



Michael R King Director - MK Tunnelling Limited

Michael King is an independent consultant who has been involved in tunnelling projects for over 35 years, including segmentally lined tunnels, sprayed concrete linings and diaphragm wall and piled structures. He has worked directly for both contracting and consulting organisations and has also been seconded into Client organisations on major projects. His international project involvement includes the Channel Tunnel (UK/France), the Arrowhead water project (USA), Lisbon Metro (Portugal), Los Angeles Metro (USA), Sao Paulo Metro (Brazil) and the Jubilee Line Extension (UK). Mike has also been involved in Expert Witness cases and recently completed 7 years as Head of Underground Construction on the Crossrail project. In 2019 Mike was awarded the James Clark Medal for his contributions to, and achievements in tunnelling by the British Tunnelling Society.

Presenting:

Crossrail tunnelling in the London Clay formation

The Crossrail project in London (UK) spent 7 years excavating and lining tunnels and shafts within the London Basin. Construction activities encountered and dealt with a range of geological strata, including recent deposits of Made Ground, Alluvium and River Terrace Gravels, over-consolidated London clay, variable mixed sediments of sands gravels and clays, uniform and fine-grained sands, and the underlying sedimentary Limestone (Chalk). Approximately 42km of segmentally lined bored tunnel were completed using pressurized Tunnel Boring Machines (TBM), and over 12km of tunnel were supported utilising Sprayed Concrete Lining (SCL) with spans of up to 17m, along with sprayed concrete, diaphragm wall and piled shafts and underground structures.

This presentation provides an outline of the project, concentrating on the central tunnelled section. The broad geological/hydrogeological setting of the central tunnelled area is described, with an examination in more detail of the perception and reality of tunnelling in the over-consolidated London Clay. This material has often been described as the ideal tunnelling material, but it is variable and not risk free, and offers challenges for both design and construction. The London Clay has been compared with the similar Keswick and Hindmarsh Clays that underlie much of the Adelaide city area. Tunnel construction utilising TBM and traditional excavation coupled with the use of SCL for support through the London Clay will be discussed. The presentation will consider in particular the influence of the historical experience of tunnelling in London Clay on modern approaches and risk perceptions.

Sponsorship

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AGS SA-NT SEMINAR 2019 TUNNELLING UNDER ADELAIDE

australiangeomechanics.org
ABN: 89 615 696 393

REGISTRATION FORM & TAX INVOICE

 **When:** Monday 28th October 2019

 **Where:** National Wine Centre, Corner of Botanic and Hackney Roads, Adelaide

Please return one registration form per delegate.

FORM SUBMISSION

Please complete the registration form and return to Peter Robinson via:
secretary@australiangeomechanics.org



PERSONAL INFORMATION

Gender: Male Female

Title: First Name:

Address:

State: Post Code:

Ph/Mob: Email:

Are you a member of the Australian Geomechanics Society? Yes No

Are you a full time student? Yes No Tertiary Institution:

Please advise of any dietary requirements:

Organisation:

Surname:

Suburb:

Country:

Member No:

Expected Completion Date:

REGISTRATION FEES & PAYMENT

* The cost of AGS membership is \$220 annually, please refer to: <http://australiangeomechanics.org/membership/> All prices quoted are in Australian Dollars (AUD) and inclusive of Goods and Services Tax (GST). Please complete one form per person.

Fees (including GST)	Early Bird Fees	After 28/09/2019
Presenter	FREE	FREE
Author (non-presenter)	\$150.00	\$200.00
AGS or ATS Member	\$300.00	\$350.00
Engineers Australia Member	\$450.00	\$500.00
Non Member* (AGS membership fee: \$220 / year)	\$520.00	\$570.00
Member - Full time Student / Concession† (Availability is limited, up to 20 persons)	\$100.00	\$150.00
Non Member* - Full time Student / Concession† (AGS membership fee for Undergraduate Students: Free) (AGS membership fee for Postgraduate Students / Retired: \$110 / year)	\$200.00	\$250.00

* Use this link to be an AGS member: <http://australiangeomechanics.org/membership/>. † Proof of being full-time is student required. Please note that the venue capacity is approximately 100 persons.

Total Payable: \$

I enclose my Cheque/Money Order payable to:

**Australian Geomechanics Society
PO Box 955, St Ives NSW 2075**

Electronic funds transfer (EFT):

CBA Bank, BSB No.: 062 910 Account No.: 1001 3510

Please quote your name in the comment space, (eg: **AGS SYD-S-2019- name**) and email the remittance advice with this registration form to: secretary@australiangeomechanics.org

Please ensure your full name is included in the email.

Please charge my credit card: (Diners and AMEX are not accepted)

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