



The British Tunnelling Society
Conference and Exhibition 2018
QEII Conference Centre, Westminster, London
October 9th – 10th, 2018

DAY 1 – Tuesday 9th October

SESSION 1

9am – 9.05am - Welcome

9.05am – 9.45am: Gus Klados, Kuala Lumpur MRT Tunnelling Director: 45 years of managing tunnelling risk on three continents

The presenter will demonstrate that risk management has existed and has been performed well before it became a “cottage industry” in tunnelling. He describes the way his tunnelling knowledge was accumulated starting from the lectures by Prof. Karl Széchy, the author of the Art of Tunnelling, the textbook used in the seventies in the Budapest Technical University which became the “bible” of tunnellers worldwide. Gus’ international career started with a short stint in Belgrade on the Vračar Tunnel and continued in Calcutta in building all the bored tunnels on the first line of Calcutta Metro. He was helped by the fame of the Channel Tunnel Project, where managing the inherent risks of mechanised tunnelling under the sea was a daily staple for all agents and managers. Gus moved to TCTA-20 of the Lesotho Highlands Water Project, where the biggest risk was sudden water inflow through dolerite dykes intersecting the sedimentary rocks. Next came the Lines 2 & 3 of the Athens Metro where the archaeological risks were misunderstood and the impact of tectonised peridotite and the Athenian shiest on large diameter, open TBM tunnelling was underestimated. On the T-05 Contract of the Deep Tunnel Sewer System in Singapore risk management was complicated by the extreme variability of the level of interface of granite and its residual soil, where tunnelling was performed with the added difficulty of two, wrongly specified EPBMs. A further – unforeseen - risk materialised when Gus’ employer, Philipp Holzmann went into receivership. On the SMART Tunnel in Kuala Lumpur, the risk of tunnelling in a city in karstic limestone to build a large diameter tunnel with 1D cover had to be mitigated. After a short stint in New-Delhi, Gus - after 28 years of absence - moved back to Hungary to manage the mostly contractual risks of the M4 line of Budapest Metro. The experience of tunnelling in karst came handy in preparing for the KVMRT Line 1 in Kuala Lumpur, resulting in the development and successful usage of the Variable Density Slurry TBMs as a prime risk mitigation measure. The refurbished VD TBMs are now in the process of being launched for Line 2, the SSP Line.

9.45am – 10.20am: Professor Arnold Dix – ITA EXCO Rep: Strategies to manage catastrophic failures in construction and operation as nations scramble to stretch the boundaries of underground solutions

The laws of physics dictate that everything from the variation of forces on a cutter head to dimensioning emergency ventilation vary as a complex function of increasing tunnel size. While the politics of project approval may demand showmanship - the demands of delivering functional underground infrastructure demands attention to detail. In a world with more and more projects - and no quantum change in methodologies - the stage is set now set for project failures. This presentation explores the challenges and suggests some pragmatic solutions."

10.20am – 10.45am: Sue Kershaw – KPMG Project Representative appointed to act as the Secretary of State’s Representative in HS2

The presenter will share her experiences in large-scale infrastructure delivery to date, and focus on her current activities as the Secretary of State’s Project Representative (P-Rep) on the High Speed 2 Programme - "effectively the eyes and ears of government embedded in the programme to progressively assure it will be delivered on time, will be affordable and provide good value for money and the beginning of the new rail system for the UK."

10.45am – 11am: Q&A

11am – 11.30am – Coffee

SESSION 2

11.30am – 11.50am: Miles Ashley: Project 13, Transaction to Enterprise, A New Approach To Infrastructure Delivery

Organisations from all levels of the supply chain agree that the infrastructure sector’s current operating model is broken. Too often projects are delivered over budget, past deadline and below par. Project 13, launched by ICE, is an industry-led response to infrastructure delivery models that fail not just clients and their suppliers, but also the operators and users of our infrastructure systems and networks. This presentation will explain how Project 13 seeks to develop a new business model – based on an enterprise, not on traditional transactional arrangements – to boost certainty and productivity in delivery, improve whole life outcomes in operation and support a more sustainable, innovative, highly skilled industry.

11.50am – 12.10am: Cedric Wong and Patrick Bravery: ITIG Code of Practice for Risk Management of Tunnel Works – Initial findings of the review and next steps

In February 2018 the International Tunnelling Insurance Group (ITIG) launched a survey with the aim of reviewing the penetration and effectiveness of the Tunnel Code of Practice (Code) around the world. The survey had real validity with over 120 respondents leaving in excess of 500 qualitative comments based on a range of positive and negative experiences of use of the Code, other Risk Management frameworks or indeed the lack of application of such.

The survey concludes that formal risk management processes are widespread and represent best practice on most projects and in most areas of the world. More than 90% of respondents reported that risk management has had a positive impact on the industry, supported by other initiatives such as Geotechnical Baseline Reports, Health & Safety legislation and the sharing of lessons learned. The survey also supported the suggestions of enhancing the Code’s consideration of Instrumentation & Monitoring and Digital Engineering methods (e.g. BIM). However, a key finding was that more effort is required to derive the full benefit of risk management at site level - to optimise the management of risk as the required actions arising from the Risk Management process. Patrick and Cedric will elaborate on the findings of the survey and expand on the current status of the project to review and revise the Code.

12.10am – 12.30pm: Tim Jones, Project Director, The Lower Thames Crossing: A new road and tunnel connecting Kent, Thurrock & Essex

The presentation will provide an overview of the scheme, the crucial milestones in the development of the project and look at the opportunities and challenges that lie ahead for the team delivering this once-in-a-generation project.

12.30pm – 12.50pm: Fabian Bonke, Lawyer/Associate at Hogan Lovells: The FIDIC "Emerald Book" – a new contractual standard for the tunnelling industry

Without doubt subsurface construction projects require specialist contractual frameworks. Within these contractual frameworks it is key to manage specific risks such as uncertainties regarding the geological, geotechnical and structural performance of the subsurface space. For underground tunnelling contracts the Conditions of Contract provided by the International Federation of Consulting Engineers (FIDIC) are already widely used. To better accommodate the specifics in the tunnelling sector, FIDIC together with the International Tunnelling and Underground Space Association (ITA) is currently developing specific Conditions of Contract under the working title "Emerald Book". The presentation will give an overview on the envisaged new concepts and provide practical advice on contract management.

12.50pm – 1pm Q&A

1pm – 2.15pm: Lunch Networking and Exhibition

SESSION 3

2.15 – 3.15pm: International CLIENT PANEL (Kershaw/Klados/Jones/Zurlo) hosted by - Bill Grose

How well do tunnelling contractors, designers and suppliers understand their clients and deliver what they need? Do the contracts between them help or hinder? Does the tunnelling industry and its clientele have a shared vision of the future? How differently are projects run in the UK to other countries and are there lessons to be learned?

Hear the opinion of senior figures from client organisations for tunnelling projects, both in the UK and internationally, during a free-ranging discussion about these and other topics. The session will be chaired, and the audience will be invited to put questions to the panel either in writing or orally.

3.15pm – 3.45pm: Coffee

SESSION 4

3.45pm – 4.05pm: Thibaut Lockhart and Greg Berger, Bouygues: Doha's IDRIS - New technology on the Qatar sewage tunnel

The DSSI-MTS1 project, located in Doha (Qatar), consists of 16.4km of sewer tunnels, 11 shafts, 9 mined galleries and connections between these elements. The tunnels have been excavated by 2 EPBMs, operated jointly by Bouygues Travaux Publics and Bessac, in the specific geological context of the Qatar peninsula, consisting of soft to medium sedimentary rock. Due to durability requirements, a HDPE membrane has been cast on the intrados of the segments, which brings specific constraints to the tunnel construction. Additionally, the alignment of the tunnels is governed by hydraulics, with stringent tolerances.

The shafts have been excavated using a variety of techniques: NATM, D-Walls and the innovative Vertical Shaft Machine; some are crossed by the tunnels, others are offset and linked to the tunnels by a mined gallery, which leads to a variety of different types of junctions, all different and tridimensionally complex.

The purpose of this article is to describe the Design and Construction of this challenging project, and highlight the innovative solutions that have been developed to meet the requirements as efficiently as possible. From early stages of value engineering, through all steps of Design, to the final implementation on site, the major aspects of this comprehensive showcase of underground works will be illustrated.

4.05pm – 4.25pm: Andy Thompson, Mott MacDonald: Undersea transport links – a bored tunnel in a major shipping lane

The 42' / 12.8m diameter steel fibre reinforced concrete (SFRC) Parallel Thimble Shoals Tunnel (PTST) is projected to improve transport links across the Chesapeake Bay between the mainland United States and the Delmarva Peninsula. Local space constraints require the construction of the tunnel through berms and submarine sediments and organic material, leading to consolidation settlements of the tunnel bedding after construction. The use of the Thimble Shoals channel as a major shipping lane triggers the necessity to consider ship impacts as well as loading from sunken ships. This presentation will illustrate the safety concept substantiating the design and focus on key challenges in the design of one of the largest segmentally lined tunnels relying solely on steel fibre reinforcement”

4.25pm – 4.45pm: Andreas Raedle, Arup: Tunnelling in South East Asia Region

The presentation will give an insight of design and construction aspects of several on-going challenging major underground infrastructure projects in Singapore, Malaysia and Thailand. Furthermore in the future, planning and design for more challenging projects in the South East Asia Region will require innovative technologies. Lessons learned from tunnel projects that have employed technical innovations such as large diameter tunnel segment design, accessible cutterhead, high density slurry face support, cutter instrumentation and geophysical exploration technology will be shared and their applicability to upcoming South East Asia tunnel projects will be discussed in detail.

4.45pm – 5.05pm: Charles Allen, OTB Concrete: Biogenic corrosion in sewer tunnels – new approaches and solutions in Singapore

The attack of concrete linings by biogenic corrosion in sewer pipes and tunnels is well documented. As populations grow, new sewer infrastructure is required and many cities are now investing in the construction of large diameter, long, gravity fed sewer tunnels. With sewage becoming more concentrated, retention times in large diameter tunnels becoming longer and global temperatures becoming warmer, the attack of concrete tunnel linings by biogenic corrosion is becoming more prevalent than originally thought.

A proactive approach to tackling this problem has been taken by the Public Utilities Board in Singapore in the construction of its Deep Tunnel Sewer System Phase 2. More recently, a similar approach has been taken in New Zealand.

5.05pm – 5.15pm: Q&A

6.00pm – 7.30pm BTS Evening Meeting – The Brenner Base Tunnel: Construction and Risk management Raffaele Zurlo, the Italian CEO of BBT SE

7.30pm - Drinks Reception for delegates, exhibitors and pre-registered visitors

in partnership

