

Invest in the future

Martin Knights has been president of the International Tunnelling Association (ITA/AITES) since 2007. A civil engineer by training, he has 37 years' post-graduate experience in international civil infrastructure, predominantly gained in tunnelling and underground space projects. UK-based, he sits on the board of directors of infrastructure specialist Jacobs Ltd

What made you opt for tunnelling as your chosen speciality?

During my final year at university, there seemed to be plenty of jobs on offer from consultants and contractors. It was at the tail end of the late 1960s' 'white heat of technology' initiative of Prime Minister Harold Wilson and his technology minister, Tony Benn.

I chose to join Mott Hay and Anderson on the second Mersey road tunnel. It looked exciting and the SRE and RE (Cairncross and Dodds) seemed to me to be good men. Indeed, I stayed in tunnelling because of their example.

I was given an outrageous amount of responsibility and learned how to tactfully reject sloppy 10m-diameter ring-build at 3am in the morning, surrounded by hostile Welsh and Liverpoolian miners and fitters who were motivated by production and would cheerfully have murdered me, but for the support my bosses gave me.



wanted collectively. Our executive committee is more focused on achieving strategic aims.

The success of COSUF (operational safety committee) and the solid start for our Educational and Training Committee are being achieved by a motivated team. We know the demand for these committees is there and with the right leadership they will continue to flourish.

ITACUS (active promotion of underground space) is a committee with great potential, which will move into a higher gear this year. In the next 12 months I want to put things in place to bring new energy, efficiency and attractiveness to the working groups. Also, I would like to increase sponsorship and membership support of ITA, as well as encouraging more corporate membership.

What tunnelling projects have you worked on?

I have worked on a variety of projects. This includes design work on the Tyne and Wear Metro in Newcastle, England, (where I learnt to speak Geordie – the local dialect); design work on tunnels in Mecca, Saudi Arabia (where I was invited to convert to Islam in order to do site supervision); the Drakensberg pumped-storage scheme in South Africa (a great job for technical and management experience and lifelong friendships); the Third Nairobi Water Supply Tunnels; most of EDF Energy & National Grid's London Cable Tunnels (I started off the whole programme with Maurice Gooderham); and seven years' design and construction work on the CERN tunnels in Geneva (I could have written *Angels and Demons* better than Dan Brown).

But, the best assignment was two weeks looking for landfall tunnel sites for oil/gas shipment between San Diego and Mexico's Bahia coastline for Exxon. My worst moment was my consortium being beaten by an Italian Australian group to manage Sydney Harbour's storm-water tunnels in the late 1990s – a job I would have loved to have managed.

You have now been president of ITA-AITES for two years. What do you consider to have been your main achievements during this period?

I wanted to measure my performance against the achievement of our 2007 strategy. I was elected in 2007 and considered my mandate to comprise achieving what member nations

“I was given an outrageous amount of responsibility and learned how to tactfully reject sloppy 10m-diameter ring-build at 3am”

How should the tunnelling industry attract more civil engineers, whether at undergraduate or postgraduate level? And how is ITA-AITES working towards this?

We need more schools and university visits as well as active engagement. We can't leave this to governments that are increasingly looking to industry. It is industry, institutions and professions that can invest effectively in the future labour resource of tunnelling.

ITA has decided that it can do this through the university Masters courses that we are increasingly facilitating. Currently, we have one-year tunnelling courses in Lausanne, Madrid and Turin. Others will soon follow in Austria, the US, Germany and other centres. Coupled with the ITA CET training foundation that ITA is now creating, we believe that ITA has the right strategy to start attracting more talent.

How is ITA promoting best practice in tunnelling?

Through its working groups and increasingly through its committees. We now have our own reporting of working groups rather than relying on an external technical press. Increasingly, we are being asked to organise seminars on specific themes.

ITA can facilitate the gathering of international experts on subjects such as waterproofing, immersed tunnels, sprayed concrete, safety, etc. We are establishing a new ITA educational and training arm called ITACET, which will focus full-time on organising bespoke conferences and specialist seminars around the world.

As ITA is a respected international organisation, we can broker the attendance of experts to give three-hour seminars on the important aspects in the field of tunnelling. This is very powerful and we are being actively encouraged to get these courses on the road. There is a lot of interest in China for this service, for instance.

Do you think that tunnelling conferences such as WTC overemphasise the technical aspects of tunnelling at the expense of 'softer' topics, such as education, contractual matters, bid processes and insurance?

No. Most of the international conferences such as ITA, WTC, RETC, NAT and STUVA have multiple and concurrent sessions. These cover hard and soft issues, from planning, management, risk and scientific to technical, construction and operations.

You can take your pick as to what interests you the most. WTC is very conscious to maintain diversity of subject matter and has an influential role in the planning of each of its conferences.

However, conferences are essentially what you want them to be. You get out of WTC what you put into it to make it work for you.

However, I detect that WTCs are receiving more papers on the 'softer' issues and perhaps this reflects the demands of our delegates who want to know what makes projects tick, rather than the technical information that is contained in the proceedings.

Softer issues are often the essential ingredients that differentiate success in tunnel projects and can stimulate more interest at conferences than prosaic technical litanies.

Given current technology and modelling capabilities, do you think the phrase 'unforeseen geological conditions' has become a byword for lapses in engineering? Or do we just accept that there will always be an unknown element in tunnelling that can fox even the best minds?

'Unforeseen' and what was 'foreseeable' will always be debatable and thus forever earn our legal brethren future fees. Reference conditions such as baseline geo reports are the way forward. This will mean that the best endeavours of the site investigation and interpretive experience can be embodied in a single source,

"Tunnelling is attracting new blood because it is a great industry and we've all been doing our stuff to attract that talent. We can offer better money and varied career opportunities"

which then becomes the basis for the bidding of construction contracts.

As far as insurers are concerned, tunnelling and coastal engineering encompass the riskiest unknown influences in infrastructure projects – with the variables of geology and climate.

We are getting better at predicting ground and weather, but there will always be 'known unknowns' however foreseeable we aim to be.

Are tunnelling projects of such importance to economies that they remain largely unaffected by economic downturns?

If only! We have recently experienced the effects of the current downturn in our industry, and in the US there are two projects that I can think of now in Michigan and Nevada that are being scaled down for affordability reasons. In the UK, the Conservatives have said that they would

review London Crossrail costs if they were returned to power next year.

London's River Thames Tideway project still has to demonstrate value for money to the regulator, and issues of funding and value can bring a new dynamic when assessing affordability. Whether it will exist in its current form in this economic climate is debatable.

In command/control economies, such as China and Singapore, governments are able to stimulate the labour market in times of economic need, and bring forward infrastructure spending to relieve unemployment and conveniently invest.

President Obama is striving to do this in the US to improve bridge and tunnel infrastructure, though the process is slow in making money come onstream.

Which aspect of tunnelling (any) do you find most inspiring at present?

In attending conferences and tunnelling get-togethers, I see more younger people coming into our industry. At one time I thought that the average age of our industry was increasing by one year every year. But, it is changing.

Tunnelling is attracting new blood because it is a great industry and we've all been doing our stuff to attract that talent. We can offer better money and terms, as well as varied career opportunities.

Also, more women are joining the industry, and we are beginning to reflect the diversity and cultural variety of society. That is the most inspiring aspect because this new blood reflects our future.

How can the tunnelling press best satisfy the needs of tunnelling professionals?

I'd say the tunnelling press is pretty good worldwide. There are some great journals, all with their different styles and readership. But accurate and meaningful journalism is the key.

Readers do not want a chronological description of a project. They want the journalist to home in on the essential key features and problem-solving in a tunnel project.

Sensationalism is frowned upon. Mercifully, our journalists know what makes the reader tick and they attend the tunnel gatherings and mix with the industry to earn trust, and to understand the contemporary issues that affect the industry.

The best press headline I saw recently in *The Times* (London) in response to the solutions required to end the financial crisis was 'Bankers tunnel their way out of banking crisis'. My response was that bankers should read the ITA Working Group report on risk management, published five years ago before trying to do so.