



South African National  
Committee on Tunnelling



## Tunnel Boring in Mining and Civil Engineering

This year's biennial symposium of the South African National Committee on Tunnelling (SANCOT) was hosted in November in the university town of Stellenbosch at the Wallenberg Conference Centre @STIAS (Stellenbosch Institute for Advanced Study). Needless to say, the setting in itself presented its own attraction, and soon enough we'll have new tunnelling developments in the region to draw a second occasion!

There is yet another, more specific reason to couple the beauty of the Western Cape winelands, and the richly concentrated resources of a world class university and research institution to that of exploring tunnelling advancements. Aside from the obvious burgeoning and burning need for urban infrastructure development, this is additionally juxtaposed on that of global consciousness on sustainable development and protection of the environment. Sustainable solutions to the exploding problems associated with those indelible effects of our human footprint on this precious planet mean that not only are we bound to seek short-term results to accommodate ourselves, but an imperative to find long-term results that future generations can live with.

At the risk of expanding on a cliché, it is through tunnelling that this will be achieved – is already being achieved, and has been largely entrenched into urban development strategies globally. Underground infrastructure development provides a means through which we foresee a lasting offset to environmental impacts as a result of urbanisation. And for the Sub-Saharan region, this SANCOT symposium held special significance. In the near future, water shortages, roads, rail, urban networks, access to raw materials through mining, the establishment of storage facilities to hold grain, for underground cultivation or waste disposal, will become imperative to accommodate the approximately 2.5 billion people projected to occupy

the African continent by 2050, less than 30 years from now.

The theme of the conference 'Tunnel boring in civil engineering & mining' therefore spoke directly to these challenges. The pressure not only to deliver the results, but to do so safely, fast and efficiently informs those technological advancements so desperately required.

Many tens of thousands of kilometres of underground tunnels have historically been developed, by conventional drill and blast methods, but this is changing; slowly, but ever more steadily and rapidly, as technological advances for mechanised tunnelling and tunnel boring in mining are gaining traction – literally and strategically.

The SANCOT 2022 Symposium was attended by a selection of globally representative delegates from Europe and the Americas, as well as a significant contingent of South African delegates.



*Microtunnelling in Cape Town*

*Photo courtesy: Du Toit Carstens et al, WSP Group Africa, CSV Construction and City of Cape Town*

Symposium presentations, in keeping with the conference theme, included:

- Microtunnel boring in the Cape Town Metropolitan;
- Design and construction considerations for the Lesotho Highlands Water Project Phase 2 diversion and transfer tunnels;
- Challenges and trends with the excavation of long tunnels using tunnel boring machines (TBM);
- Use of special ground support and reinforcement;
- Navigating adverse ground conditions, ground characterisation and reinforcement;
- Novel tunnel boring projects in mining;
- Hydropower; and
- Technical visit: Huguenot North Bore Tunnel

For more information, see:

[https://www.saimm.co.za/media/com\\_eventbooking/SANCOT%20Symposium%20Final%20Programme-19102022.pdf](https://www.saimm.co.za/media/com_eventbooking/SANCOT%20Symposium%20Final%20Programme-19102022.pdf)) (select images and snapshots from presentations included herein)

The SANCOT group, as well as its parent body, the ITA (i.e. International Tunnelling Association), provides that unique meeting point to bring together the benefits of experience and resources from both the civil and mining engineering sectors. Our aim as SANCOT is to continue to provide a forum where technological advances in tunnelling are shared and discussed, thereby facilitating the development of skills and resources in support of safe tunnelling best practices, in South Africa, Sub-Saharan Africa, and the African continent.



*Drill and Blast tunnel viz. with Mobile Tunnel Bored tunnel  
Photo courtesy: Anglo American – Carstens and Van Rooyen*



*Huguenot North Bore Technical Visit  
Photo courtesy: SANCOT Committee*

Information on SANCOT and its activities can be found at the SAIMM site page here:

<https://www.saimm.co.za/about-saimm/saimm-committees/south-african-national-council-on-tunnelling-sancot>

Information on ITA and its activities can be found here: <https://www.ita-aites.org/>

The lunchtime series on sustainability and carbon neutral underground can be found here: <https://www.itacet.org/>

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