

# **Technical Committee D5 "Road Tunnel Operations"**

**PIARC International Seminar on  
"Road Tunnels in Low and Medium Income Countries"**

**18 – 20 October 2017**

**TWO OCEANS AQUARIUM**

**AVENUE V&A Waterfront - Cape Town, South Africa**

**2<sup>nd</sup> Announcement**

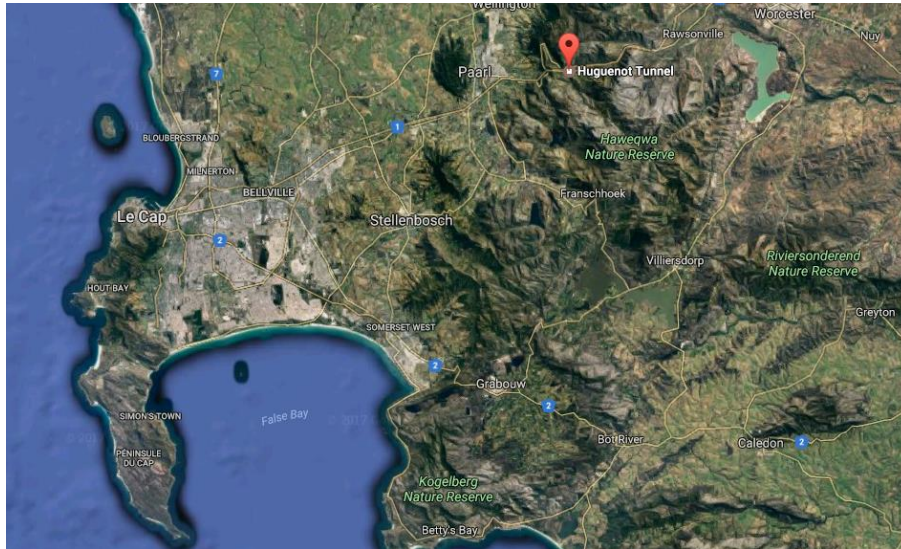
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# SEMINAR OVERVIEW,

## 1. A Brief History and Background of Huguenot Tunnel

The Huguenot Tunnel Project constitutes a major transportation link between the coastal plains of the Western Cape and the interior, and is one of the most strategic infrastructure assets of the National Road network in South Africa. The 3.917 km long tunnel reduces the distance between Paarl and Worcester by 11km, and eliminates a climb of some 500 m over the Du Toits Kloof Pass, which by its nature imposes severe constraints and safety concerns for the road user. The tunnel contributes significantly to the national economy in terms of savings in travel time and vehicle operating costs, and a reduction in accidents.



Following the early planning stages in the 1970's, which included geotechnical investigations and the construction of a 3 m diameter pilot bore on the proposed route of the North Bore, construction commenced in 1982 on the soft ground section of the South Bore, which included the western portal and the initial 150 m of tunnel. The hard rock section of the South Bore was completed in 1986, and after installation and commissioning of the tunnel equipment, was opened to traffic in March 1988. During 29 years of operations it has served over 85 million vehicles. Having been estimated initially for 3% annual traffic growth for all categories of vehicles, the current growth rate in heavy vehicles is in the order of 18%.



In terms of the contribution to national economy, by reducing the distance by 11 km in comparison with the existing Du Toits Kloof pass route (R101), the total travel time saved to date is approximately 24 million hours, assuming a single passenger per vehicle at 26 minutes per heavy vehicles and 15 minutes per light vehicle. The estimated fuel saved associated with the above shortened travel distance is of the order of 4.5 million barrels of crude oil, (at the price of R715/barrel in 2016 prices), which translates into forex saving for the country in the order of R1,224 million.



## **2. Current challenges for tunnel operations,**

Critical findings from some of the on-going studies have revealed the following:

### **2.1 Safety and Impacts of an Incident**

The projected traffic volumes in the South Bore will exceed the EU safety requirements for bi-directional tunnels in 2017, and this should be regarded as the absolute upper limit to the deadline for the introduction of the second bore to make it a twin bore unidirectional tunnel. Analysis in terms of other standards showed that volumes will exceed the requirements of British Standard BD 78/99 and the PIARC 2011 standard within four years. It is intuitive and an established fact that unidirectional tunnels are much safer than bidirectional tunnels. The standards referred to here set upper limits to traffic volumes at which bi-directional operations are regarded as being unsafe.

### **2.2 Ventilation and extraction capacity**

The existing semi-transverse exhaust ventilation system does not comply with the requirements of the EU Directive, and is not capable of extracting the desirable volume of air at an incident

location to provide the critical velocity required to prevent back-layering of smoke, which has been the cause of fatalities at a number of tunnel incidents in other parts of the world.

### **2.3 Traffic Operations**

The current daily traffic volumes in the tunnel are in the order of 12,000 vehicles. On the basis of an analysis of the current traffic in the South Bore in terms of the Highway Capacity Manual provisions, technical reports have shown that traffic demand during the highest hours of the year will reach the capacity of the tunnel within the next two years.

### **2.4 Electrical and Mechanical Systems Condition**

Due to the extended time of 29 years of operation, several of the electrical and mechanical systems are in urgent need of replacement as a requirement to achieve compliance with the EU Directive, as they are obsolete and/or they have reached the end of their design life. Some of the upgrading elements will require closure of the South Bore for a minimum period of six months. This takes into account that scaffolding will have to be erected in the tunnel to carry out the work.

## **3. Gautrain**

The Seminar will also provide an opportunity to share experiences about the rail tunnels developments in South Africa currently being done by the Gautrain in Mpumalanga Province.



Gauteng, the country's economic hub, is currently experiencing traffic congestion on its major routes, especially between Pretoria and Johannesburg. The current transport facilities and services between these two cities are mainly road based. The land required for a rapid rail system is far less than that of a road system. Apart from alleviating the severe traffic congestion, economic development will be stimulated by the rapid rail system and it will have distinct environmental advantages over other forms of transport.

More information about Gautrain is available on <http://www.gautrain.co.za/about/>

## 4. Seminar Topics

The Seminar provides an opportunity for speakers to address both technical and management issues broadly based on the following topics:

- *Best international design standards/technology,*
- *Safety standards for tunnel operations,*
- *Safety vs liability on poor tunnel maintenance,*
- *Incident detention mechanisms,*
- *Hazard and dangerous goods in tunnel*
- *Cost benefit analysis/studies,*
- *Optimizing operating costs,*
- *Funding options for low and medium income countries*
- *Tunnel boring machines (TBM)*

The Seminar will feature:

- Plenary presentations by national and international speakers;
- Plenary panel discussions
- Facilitated theme-specific workshop
- Daily plenary conclusion and resolutions
- Technical tour

Social events to enable networking and further opportunities to explore topics discussed during the various sessions will be arranged to maximize the benefit that all delegates will get from attending seminar.

## 5. Seminar venue

The seminar will take place from 18 October to 19 October 2017 at the **Two Oceans Aquarium, AVENUE V&A Waterfront Conference Centre**, 40 Dock Road, Cape Town, 8001, South Africa

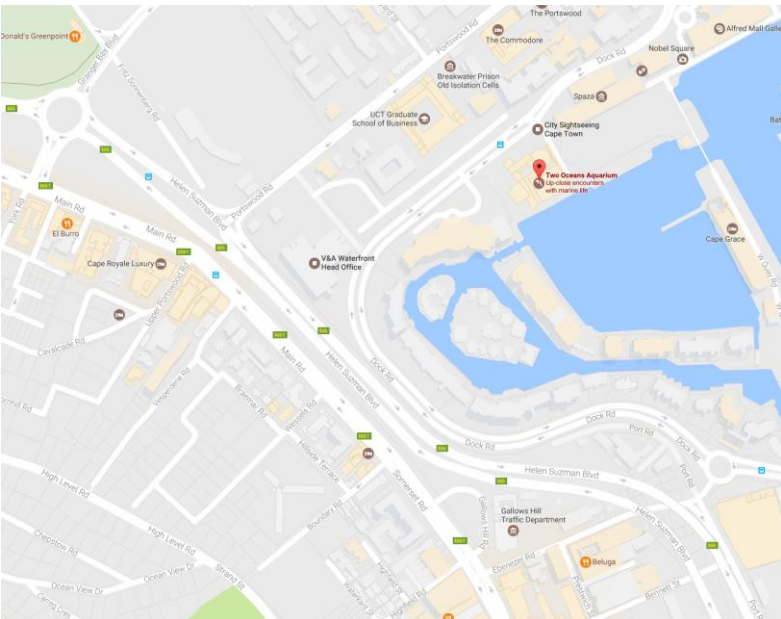






[www.avenuecapetown.com](http://www.avenuecapetown.com)

(+27)087 362 9676



## 6. Language

The official language of the seminar is English.

## 7. Delegates to the seminar

The organizing committee anticipates that there will be strong attendance at the seminar with representation from:

- Member of World Road Association Technical Committee on Road Tunnel Operations;
- Regional experts from South Africa and Southern Africa;
- ASANRA
- Representatives from GAUTRAIN
- Representatives from consultants, contractors, etc.,

## 8. Accommodations recommendations

### **Cape Royale Luxury Hotel**

47 Main Road, Green Point, Cape Town

Tel: +27 21 430 0500

E-mail: [reservations@caperoyale.co.za](mailto:reservations@caperoyale.co.za)

Website: <https://www.caperoyale.co.za/>

### **City Lodge Hotel Victoria and Alfred Waterfront**

Corner Dock and Alfred Roads, Cape Town

Tel: +27 21 419 9450

E-mail: [clva.resv@clhg.com](mailto:clva.resv@clhg.com)

Website: <https://clhg.com/hotels/180/City-Lodge-Hotel-Victoria-and-Alfred-Waterfront->

### **Park Inn by Radisson Cape Town Foreshore**

29 Heerengracht Street, Cape Town, Foreshore

Tel: +27 21 427 4800

E-mail: [info.capetown@rezidorparkinn.com](mailto:info.capetown@rezidorparkinn.com)

Website: <https://www.parkinn.com/hotel-capetown>

### **Hilton Cape Town**

126 Buitengracht St, Cape Town City Centre

Tel: +27 21 481 3700

Website: <http://www3.hilton.com/en/hotels/south-africa/hilton-cape-town-city-centre-CPTCCHI/index.html>

### **The Portwood Hotel**

Portwood Ridge, Portwood Road

Tel: +27 21 418 3281

Email: [portwood@legacyhotels.co.za](mailto:portwood@legacyhotels.co.za)

Website: <http://www.legacyhotels.co.za/en/hotels/portwood>

### **The Commodore**

Portwood Ridge, Portwood Road

Tel: +27 21 415 1000

Email: [commodore@legacyhotels.co.za](mailto:commodore@legacyhotels.co.za)

Website: <http://www.legacyhotels.co.za/en/hotels/commodore>



## **Protea Hotel Cape Town Waterfront Breakwater Lodge**

Portswood Road, V & A Waterfront Cape Town 8001 South Africa

Tel: +27 21 406 1911

Website: <http://www.marriott.com/hotels/travel/cptbr-protea-hotel-cape-town-waterfront-breakwater-lodge/>

## **9. Currency**

The South African currency is the Rand. Numerous exchange offices and automatic teller machines are available near the meeting places.

Visitors may request tax refunds. Please check with airport authorities.

## **10. Tourism**

For tourist information, visit <http://www.southafrica.net/za/en/landing/visitor-home>

## **11. Transportation**

Flying from a foreign country to Cape Town, South Africa

- Arrival at Cape Town International airport
- Transportation options:
  - Metered taxis Excite Taxis R9 per Km +27 21 448 4444,
  - Rikkis Taxis 0861 745 547 or +27 21 447 3559
  - Cape Town International Airport Shuttle Services
  - Magic Transfers +27 21 505 6300, 24 hour Services +27 83 386 8160
  - More Taxis available within the Airport Complex
  - MyCiTi bus service from the airport to Cape Town central. MyCiTi is Cape Town's safe, reliable, convenient bus system. It is the perfect way to connect with the city from the Airport and to explore some of the destinations Cape Town has to offer. MyCiTi operates up to 18 hours a day, depending on the route, so you can enjoy the city's many attractions from early morning to long after sunset.
- Get your card : Myconnect cards  
No cash is accepted on MyCiTi buses. Buy your myconnect card for R30 from the Airport, Civic Centre and other MyCiTi stations and load it with enough money for your stay.
- Single-trip cards 2016/2017  
Instead of a Myconnect card you can also buy a R90 single-trip card. This allows you to make one journey anywhere on the MyCiTi network, including transfers to or from the Airport.
- Uber is also safe and convenient to use in Cape Town. Ensure that the Uber smartphone application is loaded on your cell phone.

## **12. Additional information and pre-registration**

For registration forms, fees and other information, please go to the below link:

<http://sanral.hashtagtickets.co.za/RegistrationTicketFree.aspx>

<b>Tentative programme as May 2017 - First Day : 18<sup>th</sup> October</b>
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09:00 to 09:30: Registration

**09:30 to 10:30: Opening session**

09:30 to 10:00: Welcome and seminar opening by the South African and PIARC Authorities  
Mr Skhumbuzo Macozoma, CEO SANRAL, SA First Delegate  
Mr Joe Maswanganyi, Honourable Minister of Transport SA,  
Mr Tiago Massingue, PIARC Technical Committee D.5 SA member  
Mr Marc Tesson, PIARC Technical Committee D5 President

10:00 to 10:30: Mr Marc Tesson,  
*PIARC and its Road Tunnel Operations Technical Committee*

**10:30 to 11:00: Coffee break**

**11:00 to 12:30: Session 1: *Safe design and operations of tunnels (Part 1)***

11:00 to 11:20: Mr J C van der Walt, SANRAL Regional Manager, SA  
*Huguenot Tunnel: design and construction*

11:20 to 11:40: Mr Jorgen Holst, PIARC  
*Planning and Design of Modern Road Tunnels*

11:40 to 12:00: Mrs Kristin Van der Auwera, PIARC  
*The European Directive: an Integrated Approach for Tunnel Safety*

12:00 to 12:30: Questions and answers

**12:30 to 14:00: Lunch**

**14:00 to 15:30: Session 1: *Safe design and operations of tunnels (Part 2)***

14:00 to 14:20: Mr Tiago Massingue, Project Manager SANRAL, SA & PIARC  
*Huguenot Tunnel: operation, maintenance and planned upgrades*

14:20 to 14:40: Mr Ronald Mante, PIARC,  
*Balancing safety and cost in maintenance*

14:40 to 15:00: Mr Bernhard Kohl and George Mavroyeni, PIARC,  
*Transport of dangerous goods through road tunnels*

15:00 to 15:30: Questions and answers

**15:30 to 16:00: Coffee break**

**16:00 to 17:00: Session 1: *Safe design and operations of tunnels (Part 3)***

16:00 to 16:30: Mr Randall Cable, Manager of the Cape Town FMS, SANRAL  
*The Cape Town Freeway Management Systems and its interface with the Huguenot Tunnel*

16:30 to 16:50: Mr René List, PIARC,  
*Incident detection mechanisms*

16:50 to 17:20: Questions and answers

**17:20 to 17:45: Summary of day discussion & Practical information concerning the Technical Visit**

## 1. TECHNICAL TOUR

### The Huguenot Tunnel

*Detailed programme to be provided later*



## 2. OFFICIAL DINNER

*Detailed programme to be provided later*

<b>Tentative programme as May 2017 - Third Day : 20<sup>th</sup> October</b>
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**09:00 to 10:30: Session 2: Sustainable funding for safe tunnels**

09:00 to 09:20: Dr. Barry Standish, SA  
*Funding options in SA: Case Study – Winelands Project*

09:20 to 09:40: Mr Bernard Falconnat, PIARC  
*Cost benefit analysis/studies*

09:40 to 10:00: Mr Jean-Claude Martin, PIARC,  
*Optimizing operating costs*

10:00 to 10:30: Questions and answers

**10:30 to 11:00: Coffee break**

**11:00 to 12:30: Session 3: Tunnel construction choices**

11:00 to 11:20: Mr Ron Tluczek, Chairman of SA National Committee on Tunnelling (SANCOT)  
*150 years of Tunneling in South Africa*

11:20 to 11:40: Mr Tony Boniface, GAUTRAIN  
*Reason for use of Tunnel boring machines (TBM)*

11:40 to 12:00: Mr Ingo Kaundinya, PIARC,  
*Recommendations for the selection and application of Tunnel Boring Machines*

12:00 to 12:30: Questions and answers

**12:30 to 14:00: Lunch**

**14:00 to 15:00: Session 4: Cases studies: Part 1: The Huguenot tunnel**

14:00 to 14:30: Mr Tiago Massingue, SANRAL  
*The Huguenot tunnel*

14:30 to 15:00: Questions and answers

**15:00 to 15:30: Coffee break**

**15:30 to 16:30: Session 4: Cases studies: Part 2: The Gautrain tunnels**

15:30 to 15:50: Mr Jack Van Der Merwe, GAUTRAIN,  
*Lessons learned from PPP process for GAUTRAIN*

15:50 to 16:10 Mr David Marx, GAUTRAIN  
*Commercial aspects of GAUTRAIN*

16:10 to 16:30: Questions and answers

**16:30 to 17:00: Closing session**

16:30 to 16:40: Seminar evaluation by participants: answer to the PIARC questionnaire

16:40 to 16:50: Mr JC van der Walt & Mr. Tiago Massingue, SA,

16:50 to 17:00: Mr Marc Tesson, PIARC Technical Committee D5 President

**17:00 to 17:30: Friendship drink**