

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

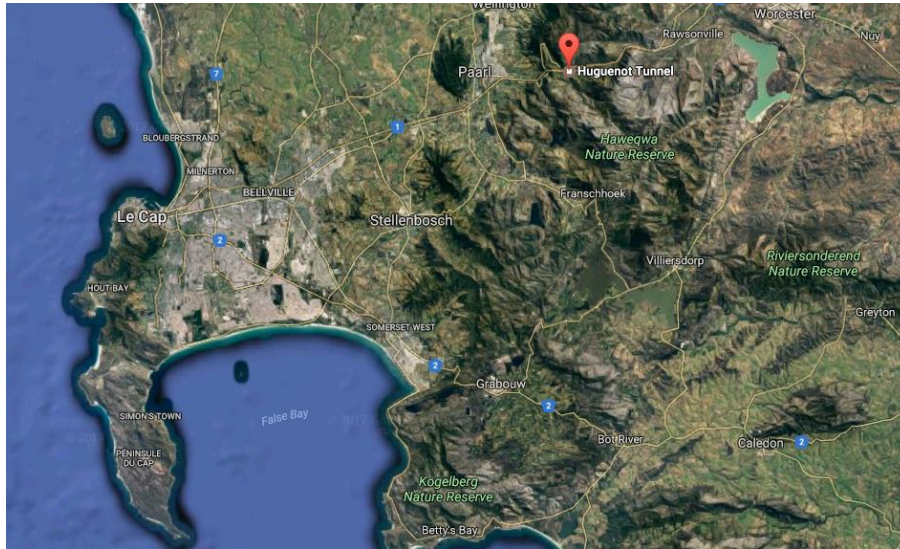
1st Announcement



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/>

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.

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

(+27)087 362 9676

Language:

The official language of the seminar is English.

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.,

Accommodations recommendations

Cape Royale Luxury Hotel

47 Main Road, Green Point, Cape Town

Tel: +27 21 430 0500

E-mail: 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@clhq.com

Website: <https://clhq.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

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 Portswood Hotel

Portswood Ridge, Portswood Road

Tel: +27 21 418 3281

Email: portswood@legacyhotels.co.za

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

The Commodore

Portswood Ridge, Portswood Road

Tel: +27 21 415 1000

Email: 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/>

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>

Tentative programme as May 2017 - First Day : 18th October
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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
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11:20 to 11:40: Mr Jorgen Holst, PIARC
Best international design standards and technology

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
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14:20 to 14:40: Mr Ronald Mante, PIARC,
Safety vs liability on poor tunnel maintenance

14:40 to 15:00: Mr Bernhard Kohl and George Mavroyeni, PIARC,
Hazard and dangerous goods in 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 done later



2. OFFICIAL DINNER

Detailed programme to be done later

Tentative programme as May 2017 - Third Day : 20th October
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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 for low and medium income countries

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,
Tunnel boring machines (TBM)

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
Presentation on 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