



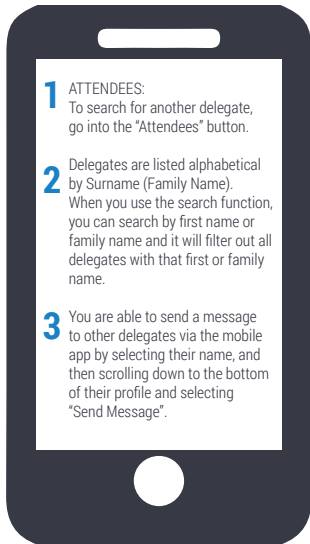
## 12<sup>TH</sup> Conference on Asphalt Pavements for southern Africa

13 -16 October 2019 | Sun City | South Africa

*“Leadership and innovation to  
preserve and enhance the value  
of the region’s roads within a  
rapidly changing world.”*

Programme

## MOBILE APP INFORMATION



- 1 **ATTENDEES:**  
To search for another delegate, go into the "Attendees" button.
- 2 Delegates are listed alphabetical by Surname (Family Name). When you use the search function, you can search by first name or family name and it will filter out all delegates with that first or family name.
- 3 You are able to send a message to other delegates via the mobile app by selecting their name, and then scrolling down to the bottom of their profile and selecting "Send Message".

### MOBILE APP

We encourage all delegates to install the 12th Conference on Asphalt Pavements for southern Africa mobile app. The mobile app offers you amazing functionality, including:

#### Communicate with other delegates

- Share contact details with other delegates / collect their details for download later
- Build your own agenda of the sessions you would like to attend
- Session surveys – let your voice be heard

To download the app, search for "The Event App" by EventsAir on your play store, or use the following QR codes:



Event code: **capsa2019**

Use your email address linked to your registration as your username and your app PIN was sent to you by email – if you cannot find it, visit the registration desk where they will be able to give it to you again.

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### ALERTS:

This is where the organisers will send notifications of changes to the programme or other important alerts.

An alert should appear on your mobile phone home screen, even if your phone is in locked mode.

### MY PHOTO:

This is where you can load your photo to your profile on the Attendees list so that other delegates know what you look like.

### AGENDA:

The full agenda for all tracks is listed by default in time order.

The tracks are colour coded as per the programme on the website and in the programme book. You can filter the agenda by presentation topic, date, track, location and time. Simply click on the filter button at the top right of the screen and make your selection. You can add presentations to your agenda – simply select the session, and then select "Add to my agenda" at the bottom of the session listing (scroll down if you are unable to see it).

### SESSION SURVEYS:

These will activate when the session starts and is an optional item. This means that not all sessions will have a session survey. Please complete the session surveys wherever possible to help the Programme Committee with valuable feedback.

### SPEAKERS:

This is where you can view information on each speaker – including their biography, times and dates of presentations and their abstracts. Speakers are listed alphabetically by surname (Family Name)

### EXHIBITORS:

A list of all exhibitors in alphabetical order showing their stand numbers, an email address and you can also send them a message via the mobile app.

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## Steering Committee Members

- Phil Hendricks (Chairman) – Aurecon (Pty) Ltd
- Steph Bredenhann – SANRAL
- Hazel Brown – SABITA
- Lee Cochrane – Rand Roads – AVENG Grinaker
- Gerhard Fourie – SANRAL
- Melanie Hofmeyr – Western Cape Government
- Kim Jenkins – Stellenbosch University
- Philip Joubert – Royal HaskoningDHV (Pty) Ltd
- Nkululeko Leta – AfCAP
- Mahendren Manicum – Naidu Consulting (Pty) Ltd
- Fillipus Masipa – Dust-A-Side
- Herman Marais – Much Asphalt (Pty) Ltd
- Duncan Mason – Royal HaskoningDHV (Pty) Ltd
- Piet Myburgh – Consultant
- Krishna Naidoo – SANRAL
- Wynand Nortjé – Shisalanga Construction (Pty) Ltd
- Deon Pagel – Tosas (Pty) Ltd
- Jonathan Pearce – Zebra Surfacing (a division of Martin & East (Pty) Ltd)
- Chantal Rudman – Stellenbosch University
- Saied Solomons – SABITA
- Wynand Steyn – University of Pretoria
- Arthur Taute – SMEC SA (Pty) Ltd
- Benoit Verhaeghe – CSIR



# Welcome

Honoured guests, conference delegates, companions and exhibitors, it is a great pleasure to welcome you to the 12th Conference on Asphalt Pavements for Southern Africa (CAPSA 2019).

CAPSA 2019 marks an exciting milestone as this will be the 50th anniversary of CAPSA. It is amazing to think that 50 years have passed since the very first CAPSA which was held in Durban in 1969. In this period, CAPSA has become entrenched as an international conference catering for technical debate. It provides a platform for practitioners from the public sector, academia, research environment, consultants and contractors to share the latest developments in the field.

The theme adopted for CAPSA 2019 entitled "Leadership and innovation to preserve and enhance the value of the region's roads within a rapidly changing world" is appropriate as our industry is not immune to the disruption that is being experienced across markets and companies due to a host of issues including the acceleration experienced in technology. The challenge will be to preempt such a state through strong leadership and the management of our technology leading to enhanced road value.

The response to the theme has been gratifying and a comprehensive programme has been set up which will include:

- A leading technical program worthy of CAPSA and catering for delegates to interact and share their professional knowledge with colleagues, including delegates from the subcontinent and abroad;
- Key note speakers globally recognised in the industry;
- An interesting exhibition area with stimulating and engaging exhibitors;
- A packed and interesting accompanying persons' programme;
- Lively and entertaining social events.

There are two new features that the Organising Committee has included this year. The first feature sees the introduction of a fully interactive audio-visual session allowing presenters the use of the latest technology to engage with their audience and take the old poster sessions to new heights. The second feature is the use of a dedicated event app for ease of navigating the conference and with access to the latest information and conference programme.

On behalf of the Executive and Steering Committees, we trust that you will be stimulated by the technical deliberations and discussions of CAPSA 2019 but also take the opportunity to renew old and make new acquaintances at the social events.

## **Welcome to CAPSA 2019!**

Phil Hendricks  
Chairman

# Programme Outline

Sunday 13 October		Monday 14 October 2019		
07:30 - 18:30	12 <sup>th</sup> CAPSA Registration Warriors Foyer	08:00 - 10:00	<b>Plenary P1-1</b> Opening and Keynote addresses <b>Session Chair: Phil Hendricks</b> Warriors Hall	
		10:00 - 10:30	Refreshment Break Superbowl (Exhibition Area)	
		10:30 - 12:30	<b>Plenary P1-2</b> Road Funding and optimal application of resources <b>Session Chair: Saied Solomons</b> Warriors Hall	
		12:30 - 13:15	Networking Lunch Superbowl (Exhibition Area)	
		13:15 - 15:15	<b>Speciality Sessions</b>	
			<b>SS1-1</b> Design of flexible pavements for best performance <b>Session Chair: Mahendren Manicum</b> Warriors Hall 1 - 2	<b>SS1-2</b> Green procurement <b>Session Chair: Chantal Rudman</b> Warriors Hall 2 - 3
		15:15 - 15:45	Refreshment Break Superbowl (Exhibition Area)	
		15:45 - 17:30	<b>Speciality Sessions</b> Design of bituminous layers for extended life	
<b>SS1-3</b> Design of asphalt mixes <b>Session Chair: Herman Marais</b> Warriors Hall 1-2	<b>SS1-4</b> Design of Bitumen stabilised materials <b>Session Chair: Fenella Johns</b> Warriors Hall 2 - 3			
<b>Ice breaker</b> Sponsored by: SABITA Marquee Gary Player Golf Course 18:30 - 22:00		<b>Beach Barbeque / Hawaiian Theme</b> Sponsored by: Actop (Pty) Ltd Valley of the Waves 19:00 - 23:00		

Tuesday 15 October 2019		Wednesday 16 October 2019	
08:00 - 10:00	<b>Speciality Sessions</b>		08:00 - 10:00 <b>Parallel workshop sessions</b> W2-W5 (see pages 14 - 22) Venues to be announced on Mobile App
	<b>SS2-1</b> Quality assessment of Bituminous binders <b>Session Chair: Steph Bredenhann</b> Warriors Hall 1-2	<b>SS2-2</b> Leadership and proficiency in technology development <b>Session Chair: Krishna Naidoo</b> Warriors Hall 3	
10:00 - 10:30	Refreshment Break Superbowl (Exhibition Area)		10:00 - 10:30 Refreshment Break Superbowl (Exhibition Area)
	<b>Speciality Sessions</b>		10:30 - 12:30 <b>Parallel workshop sessions</b> W6 - W9 (see pages 14 - 22) Venues to be announced on Mobile App
10:30 - 12:30	<b>SS2-3</b> Innovative practice in pavement materials <b>Session Chair: Kim Jenkins</b> Warriors Hall 1-2	<b>SS2-4</b> Deployment of resources to provide and maintain roads and OWLC <b>Session Chair: Arthur Taute</b> Warriors Hall 3	
12:30 - 13:15	Networking Lunch Superbowl (Exhibition Area)		12:30 - 13:15 Networking Lunch Superbowl (Exhibition Area)
13:15 - 17:30	Interactive Audio - Visual Session CRATER ROOM <b>Convener: Melanie Kemp Hofmeyr</b> (Refreshments will be served)		13:15 - 15:00 <b>Plenary 3-1</b> Global change drivers <b>Session Chair: Duncan Mason</b> Warriors Hall
		16:00 to 18:00 (see page 13) Speciality Workshop No.1: Pavement Design and performance: Testing and designing for asphalt fatigue	15:00 -16:00 <b>Plenary P3-2</b> Summaries, conclusions, resolutions and conference closure <b>Session Chair: Phil Hendricks</b> Warriors Hall
<b>Gala Dinner</b> Sponsored by: Much Asphalt (Pty) Ltd Kings Ballroom 19:00 - 24:00		<b>Closing Function</b> Sponsored by: Raubex (Pvt) Ltd Shebeen 18:30 - 22:00	

# Detailed Programme

## SUNDAY, 13 OCTOBER

07:30 - 18:30	<b>Registration</b>	Warriors Hall Foyer
18:30 - 22:00	Ice Breaker Sponsored by: SABITA	Greenhouse Marquee, Gary Player Golf Course

## MONDAY, 14 OCTOBER

08:00 – 10:00	<b>Plenary P1-1</b> <i>Opening and Keynote addresses</i> <b>Chair: Phil Hendricks (Chairman of CAPSA 2019)</b>	Warriors Hall
	<b>Prof Bill Buttlar</b> Glen Barton Chair of Flexible Pavement Technology, University of Missouri <i>Smart City – Innovation, connectivity and Integration of road infrastructure</i>	
	<b>Dr Thierry Goger</b> Secretary General FEHRL <i>On-ramp to innovation</i>	
	<b>Mr Drs Audny van Helden</b> Royal Dutch Shell General Manager Specialities, Europe & Africa <i>The outlook of the global bitumen markets</i>	
10:00 – 10:30	Refreshment Break	Superbowl (Exhibition Area)
10:30 – 12:30	<b>Plenary P1-2</b> <i>Road funding and optimal application of resources</i> <b>Chair: Saied Solomons (SABITA)</b>	Warriors Hall
	<i>Invited speaker: Funding Roads: Facing the challenge, exploring the options, Don Smith, IMC Worldwide</i>	
	<i>Invited speaker: Can stakeholders better influence or support government on road funding in South Africa</i> <b>Prasanth Mohan</b> , South African Department of Transport	
	<i>Paving the way to an optimal road surfacing policy in South Africa</i> <b>Ross &amp; Townshend</b>	
12:30 – 13:15	<b>Networking Lunch</b>	Superbowl (Exhibition Area)



13:15 – 15:15	<b>Speciality Sessions</b>	
	<p><b>SS1-1</b> <i>Design of flexible pavements for best performance</i> <b>Chair: Mahendren Manicum, (Naidu Consulting)</b> Warriors Hall 1 - 2</p>	<p><b>SS1-2</b> <i>Green procurement</i> <b>Chair: Chantal Rudman, (Stellenbosch University)</b> Warriors Hall 3</p>
	Impact of probability density function on indicators relating to pavement performance for flexible pavement structures – <b>Cromhout et al</b>	Advancing sustainable practice - finding a common voice and approach to sustainability for the South African roads sector – <b>Uken</b>
	Sensitivity of flexible pavement system response to truck speed: The case of thin surfaced granular base, cemented base and bitumen treated base pavement structures – <b>Mshali &amp; Steyn</b>	A study of change in the response of recycled concrete aggregate used in pavement layers when self-cementation occurs – <b>Rudman et al</b>
	A grading-based, performance-related classification of unbound granular material – <b>Theyse &amp; Kannemeyer</b>	Recycled High Density Polyethylene in Asphalt – <b>Nortje</b>
	Design and Construction of Enrobé à Module Élevé (EME) on the National Route 1, North East of Paarl in the Western Cape Province of South Africa – <b>van Heerden et al</b>	Performance of Bitumen Stabilised Materials using Recycled Concrete Aggregate – <b>Mazibuko</b>
15:15 – 15:45	<b>Refreshment Break</b>	
	Superbowl (Exhibition Area)	

## MONDAY, 14 OCTOBER (CONTINUED)

15:45 – 17:30	<b>Speciality Sessions</b> <i>Design of bituminous layers for extended life</i>	
	<b>SS1-3</b> <i>Design of asphalt mixes</i> <b>Chair: Herman Marais (Much Asphalt)</b> Warriors Hall 1 - 2	<b>SS1-4</b> <i>Design of Bitumen stabilised materials</i> <b>Chair: Fenella Johns (Rubicon Solutions)</b> Warriors Hall 3
	Performance testing at high service temperatures of asphalt mixtures for airfield pavements – <b>Botha &amp; Mooren</b>	Testing of granular/soil characteristics for the optimisation of pavement designs using reactive stabilising agents including “new-age” nano-technologies – <b>Jordaan &amp; Steyn</b>
	Evaluating the moisture susceptibility of hot-mix asphalt with recycled crushed glass – <b>George et al</b>	Evaluation of a nano-silane-modified emulsion stabilised base and subbase under HVS traffic – <b>Rust et al</b>
	A paradigm shift on permeability of thin asphalt surfacings – <b>Horak et al</b>	TG2 (2019) removes barriers and elevates the performance of bitumen stabilised materials (BSMs) – <b>Jenkins et al</b>
	The use of Superpave N300 gyrations minimum void specification as rut resistance measure: A critical appraisal – <b>Muller</b>	Sustainable road rehabilitation solution using reclaimed asphalt: Camps Bay Drive case study – <b>Llewellyn et al</b>
18:30 - 23:00	Beach Barbeque / Hawaiian Theme Sponsored by: Actop (Pty) Ltd	
	Valley of Waves	



## TUESDAY, 15 OCTOBER

08:00 – 10:00 <b>Speciality Sessions</b>		
	<b>SS2-1</b> <i>Quality assessment of Bituminous binders</i> <b>Chair: Steph Bredenhann (Consultant)</b> <b>Warriors Hall 1 - 2</b>	<b>SS2-2</b> <i>Leadership and proficiency in technology development</i> <b>Chair: Krishna Naidoo (SANRAL)</b> Warriors Hall 3
	Storage stability evaluation of homogenous polymer modified binders – <b>Kahaar et al</b>	Invited speaker: SANRAL innovation strategy and plans – <b>Dumisani Nkabinde</b>
	Development and implementation of performance grade specifications for asphalt rubber binder – <b>Jones et al</b>	Invited speaker: Key lessons for road authorities in institutionalisation and implementation of research activities - ReCAP Perspective' – <b>Nkululeko Leta</b>
	The change in the physical properties of asphalt binders with conditioning – <b>Rowe</b>	How the airport pavement research program is filling the voids in Australian airport pavement technology and practice – <b>White</b>
	Bitumen-rubber binder in the South African performance-grade specification – <b>Bredenhann et al</b>	
10:00 – 10:30 <b>Refreshment Break</b> <span style="float: right;">Superbowl (Exhibition Area)</span>		
10:30 – 12:30 <b>Speciality Sessions</b>		
	<b>SS2-3</b> <i>Innovative practice in pavement materials</i> <b>Chair: Kim Jenkins (Stellenbosch University)</b> Warriors Hall 1 - 2	<b>SS2-4</b> <i>Deployment of resources to provide and maintain roads and OWLC</i> <b>Chair: Arthur Taute (SMEC South Africa)</b> Warriors Hall 3
	Revision of TG3 - from asphalt reinforcement to subgrade stabilisation – <b>Gewanlal et al</b>	Talent management a focus in a transport infrastructure branch – <b>Hofmeyr</b>

## TUESDAY, 15 OCTOBER (CONTINUED)

	New crumb rubber technology - a life cycle extender for porous asphalt – <b>Mafuma et al</b>	A study into the skidding resistance of roads in the Province of Kwa-Zulu Natal - status quo and proposals for further investigation – <b>Lewis et al</b>
	An investigation into the best fit-for-purpose bond coat used between composite pavement layer on national route 2 section 1 – <b>Botes et al</b>	The employment benefits from sealing gravel roads in South Africa – <b>Townshend et al</b>
	Fatigue resistance properties of glass fibre grid reinforced EME – <b>Mulol</b>	Asset preservation through effective reseal programmes in Namibia – <b>van Zyl et al</b>
12:30 – 13:15	<b>Networking Lunch</b>	Superbowl (Exhibition Area)
13:15 – 17:30	<b>Interactive Audio-Visual Session</b> Refreshments will be served	Crater Room
	<i>Development of an ontology based expert system for determining the performance indicator of HMA pavements - <b>Abejide</b></i>	
	<i>Heavy duty asphalt pavements and IMO (International Maritime Organization) 2020 implications - <b>Beer</b></i>	
	<i>Impact of probability density function on indicators relating to pavement performance for flexible pavement structures - <b>Cromhout</b></i>	
	<i>The effect of ageing on bituminous seal binder rheology - <b>Engelbrecht</b></i>	
	<i>Extraction and recovery of bituminous binders from chip seal samples - <b>Goosen</b></i>	
	<i>The potential impact on locals through the road transportation sector - <b>Govender</b></i>	
	<i>Talent management a focus in a transport infrastructure branch - <b>Hofmeyr</b></i>	
	<i>Distribution of air voids in compacted hot-mix asphalt samples - laboratory vs field - <b>Komba</b></i>	
	<i>Cationic bitumen emulsion rheologically modified using high shear low flow technology - <b>Lambert</b></i>	

*Performance of proprietary French gap-graded high modulus asphalt on a heavily trafficked road in South Africa -*  
**Lewis**

*A generic framework for automating the asphalt construction process -*  
**Makarov**

*Adapting asphalt pavements to climate change challenges -*  
**Mokoena**

*Possibility of using Xenon arc chamber weatherometer as an aging calibration tool for bitumen binder -*  
**Mukandila**

*Towards the development of grey water resistant asphalt -*  
**Nel**

*The development of the delta TC and glover-rowe parameters for the control of non-load associated cracking -*  
**Rowe**

*Adapting asphalt pavements to climate change challenges -*  
**Mokoena**

*Training and Educating Pavement Engineer 4.0 -*  
**Steyn**

*Performance testing of enrobé à module élevé asphalt -*  
**Thomas**

*Asset preservation through effective reseal programs in Namibia -*  
**Van Zyl**

*Overview of rheological, fatigue, and fracture properties to evaluate fatigue and thermal cracking of asphalt mixtures in Northern United States -*  
**Zhang**

16:00 - 18:00 **Specialty Workshop Session**

**W1:** Pavement design and performance: Testing and designing for asphalt fatigue

19:00 - 00:00

**Gala Dinner**

Kings Ballroom

Sponsored by:

Much Asphalt (Pty) Ltd

## WEDNESDAY, 16 OCTOBER

08:00 – 10:00	<b>Parallel Workshop Sessions</b>	
	<b>W2:</b> <i>Regional and international research: Leadership, cooperation and program development</i>	
	<b>W3:</b> <i>Asphalt process control – using digital technologies to improve construction performance</i>	
	<b>W4:</b> <i>Selection of appropriate seal types and binder combinations</i>	
	<b>W5:</b> <i>Optimal design of asphalt</i>	
10:00 – 10:30	Refreshment Break	Superbowl (Exhibition Area)
10:30 – 12:30	<b>Parallel Workshop Sessions</b>	
	<b>W6:</b> <i>Research outcomes for cost-effective provision of low volume sealed roads</i>	
	<b>W7:</b> <i>Bituminous binder testing and standard</i>	
	<b>W8:</b> <i>Innovation in road maintenance techniques and procedures</i>	
	<b>W9:</b> <i>Recent advancements in innovative bituminous materials</i>	
12:30 – 13:15	<b>Networking Lunch</b>	Superbowl (Exhibition Area)
13:15 – 15:00	<b>Plenary P3-1</b>	
	Global change drivers	
	<b>Chair: Duncan Mason (Royal HaskoningDHV (Pty) Ltd )</b>	
	<i>Disruptors in transport – Treurnich</i>	
	<i>A generic framework for automating the asphalt construction process – Makarov et al</i>	
	<i>Adapting asphalt pavements to climate change challenges – Mokoena et al</i>	
	<i>The prioritisation and adaptation for climate change resilience of rural access roads – Paige-Green &amp; Verhaeghe</i>	
15:00 – 16:00	<b>Plenary P3-2</b>	
	Summaries, conclusions, resolutions and conference closure	
	<b>Chair: Phil Hendricks (Aurecon (Pty) Ltd)</b>	
	Bitumen emulsions in 2019: what's new?, <b>E Cornet</b> , Executive Director IBEF	
	Reports on parallel workshop sessions, <b>Philip Joubert</b> , Royal HaskoningDHV (Pty) Ltd, Convenor of Workshops	
	Conference conclusions resolutions and closure, <b>Phil Hendricks</b> , Aurecon (Pty) Ltd, Chairman of CAPSA 2019	
18:30 - 22:00	<b>Closing Function</b>	
	Sponsored by: Raubex (Pty) Ltd	

# WORKSHOP SYNOPSIS

## Speciality Workshop 1:

### **Pavement design and performance: Testing and designing for asphalt fatigue**

#### **Workshop Background**

Fatigue plays an important role in the performance of a pavement, especially when high loads, both in number and magnitude are considered. Unfortunately fatigue, as is currently practised, is also a time-consuming during the materials design phase. For the same reason it is also not a practical parameter to utilise for acceptance and quality control purposes. Methods are available to relate binder performance testing to asphalt mix performance that are far quicker to perform and is also obtained at lower cost. Will binder testing be enough to control the very important fatigue phenomena?

#### **Workshop focus**

The workshop is a speciality session for specialists in the field of asphalt fatigue. The focus of the workshop will be to discuss different fatigue tests and the time taken for testing during the materials design phase, to evaluate alternative approaches to incorporate fatigue in the asphalt design process, both materials design and pavement design.

#### **Short Presentations as Introduction to Workshop**

- **Andre Molenaar:**  
Fatigue Testing: Unfortunately, a time consuming and costly affair
- **Geoffrey Rowe:**  
Fatigue assessment of conventional and highly modified asphalt materials
- **Jo Sias:**  
Overview of Rheological, Fatigue, and Fracture Properties to Evaluate

Fatigue and Thermal Cracking of  
Asphalt Mixtures in Northern US

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#### **Workshop 2:**

### **Regional and international research: Leadership, cooperation and program development**

#### **Workshop Background**

Research, research and implementation (RDI) in South Africa, both public and private, is uncoordinated and fragmented. Uncertainty exists regarding the current funders and funding mechanisms, status of RDI programmes and available capacity for undertaking RDI. There is a need for systems to support and manage coordinated and cooperative RDI addressing rationally identified needs and encompassing:

- Leadership in technology development
- Identification and prioritisation of RDI needs
- Formulation of coordinated and cooperative RDI programmes
- Management of sustainable deployment of resources (funding, human capital and research infrastructure)
- Effective technology transfer, embedment and uptake of research outputs/outcomes

#### **Workshop focus**

Clarification of the current and medium-term (5 year) situation regarding roads-related research programmes, funding, facilities, human capital and knowledge management. The Workshop will focus on the following three main aspects:

- How best to coordinate national RDI activities (programmes and funding)
- How to re-capacitate and optimally mobilise research resources
- How to best deal with outputs/ outcomes of RDI (guidelines, norms and standards)

### Short Presentations as Introduction to Workshop

- **Benoit Verhaeghe:**  
Current RDI landscape in Southern Africa
- **Chantal Rudman:**  
Human Capital challenges in RDI
- **Melanie Hofmeyr:**  
Management of industry documentation: quo vadis

### Workshop 3:

#### Asphalt Process Control – Using Digital Technologies to improve construction performance

##### Workshop Background

Recent advances in construction machinery has seen several new sensors being added to asphalt construction equipment. Digital technologies such as GPS, infrared and other sensors, real-time process control and other communication systems enable tracking, visualisation and data mining of key process parameters during asphalt construction such as logistics, temperature homogeneity and compaction consistency. Yet, despite the availability of these technologies, implementation is slow and barriers to technology adoption remain an obstacle. Using the Netherlands as a case, this workshop will address SMART technology implementation for the asphalt construction industry, its benefits, challenges, complications and strategies to make it successful and sustainable.

### Workshop focus

- Addressing variability in the asphalt construction process
- Digital technologies that will benefit the asphalt construction industry
- How to implement digital technologies efficiently and effectively
- How to overcome challenges of implementation, barriers to technology adoption and digitalisation
- Key organisations to involve in the implementation and sustainable adoption of digital technologies

### Short Presentations as Introduction to Workshop

- **Seirgei Miller:**  
Addressing challenges of variability and construction quality
- **Mahendren Manicum:**  
Digital Technologies – the answer to all our challenges?
- **Seirgei Miller:**  
First steps to be taken toward a Digital Technology Roadmap

### Workshop 4:

#### Selection of Appropriate Seal Types and Binder Combinations

##### Workshop Background

The primary modes of failure in surfacing seals are early stripping of aggregate and bleeding. These risks can be reduced by appropriate selection of binder and aggregate combinations (seal types), correct design and attention to detail during construction.

##### Workshop focus

The goal is to find the optimum solutions to produce low-risk, high performance seals. The workshop will focus on:

- Factors influencing the performance



and selection of seal type and binder combinations (low volume, high volume, airports)

- Exploring practical lessons learnt
- Improvement in design methods
- New technologies/products and research to enhance the performance of seals for various applications and environmental conditions.
- Updating of guidelines/manuals and specifications

### Short Presentations as Introduction to Workshop

- **Gerrie van Zyl:**  
Stripping of Seals in Southern Africa: Case Studies and Guidelines for an improved approach to mitigate it
- **Greg White:**  
A Standardised Sprayed Sealing Specification for Australian Airports
- **Gerrit Jordaan:**  
Evaluation of novel winter-seal applications

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### Workshop 5:

#### Optimal design of Asphalt

##### Workshop Background

The Asphalt Design Workshop is a follow up of the same workshop held at Capsa'15 where the aim of moving towards performance-based testing and the finalisation of TRH8 which has now been launched. The new design criteria is already specified in one City and on new Sanral contracts and it is believed that other client bodies will follow. A RPF Task Group on Manual 35/TRH 8 Implementation has been established that is looking at engaging with all client bodies to ensure broader implementation of the mix design manual.

### Workshop Focus

The focus of the workshop will be to engage with industry players on the implementation of the mix design manual and to get feedback on the value of the outputs of the newly adopted performance tests.

### Short Presentations as Introduction to Workshop

- **Joanne Muller:**  
Superpave 5.0
- **Wim Hofsink:**  
HWTT – Possible pitfalls
- **Steph Bredenhann:**  
Feedback from asphalt Fatigue workshop

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### Workshop 6:

#### Research Outcomes for Cost-Effective Provision of Low Volume Sealed Roads

##### Workshop Background

ReCAP has conducted research into the performance of low volume sealed roads that have been constructed using locally available materials that do not meet conventional specifications. A project titled 'Development of specifications for low volume sealed roads through back analysis' has produced exciting findings that show that these road sections have performed remarkably well over the design period in conditions of high rainfall and, in a number of cases, higher than expected traffic loading. These findings provide promising evidence for cost-effective provision of low volume sealed roads.

### Workshop Focus

- Review of performance data gathered from previous projects and combined with further studies on existing roads in 4 African countries
- Review complementary findings from

another ReCAP study on alternative surfacings for LVR in three West African countries as types of surfacing and their maintenance requirements have a significant bearing on the service life of sealed roads.

- Discussion of identified performance trends and lessons to be learnt
- Discussion of study conclusions with respect to specifications for material quality and pavement structures; traffic loading limits for LVSR; and use of thin amalgamated surfacings.
- Recommendations on fit-for purpose design guidelines for LVSR

#### Short Presentations as Introduction to Workshop

- **Andrew Otto:**  
Widening the scope of pavement materials for use in the provision of low volume sealed roads
- **Anton Hartman:**  
Alternative surfacings for low volume roads in West Africa
- **Matthew Townsend:**  
Assessment of Cost-Effectiveness of Alternative Surfacing for LVSR using Life-Cycle Costing Analysis

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#### Workshop 7:

##### Bituminous binders testing and standard

##### Workshop Background

Standards and the testing to ensure that standards are reached and maintained are very important issues. Quite often differences in laboratory testing during construction lead to disputes. To ensure consistent results it is necessary to follow a set of protocols. Laboratory methods also need constant scrutiny to assess appropriateness and to ensure that modern trends and materials are acknowledged and incorporated.

#### Workshop Focus

The focus of the workshop will be to discuss issues with standards and testing methods. Special emphasis will be put on protocols for testing.

#### Short Presentations as Introduction to Workshop

- **Estimé Mukandila:**  
Possibility of using a Weatherometer as an aging calibration tool for bitumen binder
- **Elaine Goosen:**  
Extraction and Recovery of Bituminous Binders from Chip Seal Samples
- **Ashiel Rampersad:**  
A proposed national protocol for performing frequency sweeps on bituminous binder

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#### Workshop 8:

##### Innovation in road maintenance techniques and procedures

##### Workshop Background

The current approach to road maintenance needs a rethink with heavy backlogs evident and the quantum being well known by RSA roads authorities and Political Leaders. There is no easy way to clear this backlog. A new approach could endeavour to arrest this system through the implementation of an asset management-based approach to ensure the efficient use of the funding provided. Road maintenance is currently used as a development tool in creating sustainable contractors (managed contracts, main contractor managing smaller contractors). National Treasury (NT) currently allows terms contracts, so there is no reason why not to engage NT with a proposal to ensure a sustainable and efficient methodology of outsourcing road maintenance.

There is also a question of the length

of the contracts, there are so many prospective tenderers who demands higher rotation in order to get their share. The debate is real when it comes to what is a sustainable duration for these contracts.

### Workshop Focus

- Elevation of maintenance in road provision.
- Procurement regime
- Different types of road maintenance models by road authorities / international organisations.
- The standalone management contract where the main contractor does not tender any rates for undertaking the works? Rates discrepancies between main contractor and subcontractors.
- Client centric (who is our clients).
- Realise the value proposition presented by the technology applications.
- Treasury requirement on the procurement and its consequences?

### Short Presentations as Introduction to Workshop

- **Douglas Judd:**  
The role of the PPP project in road maintenance
- **Marco Capazario/Ayanda Chagwe:**  
Digitising the entire road maintenance process
- **Ricardo Louw:**  
Term maintenance contracts – an international case study
- **Prasanth Mohan / W Maphakela:**  
Exploring National Treasury limits

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### Workshop 9:

#### Recent Advancements in Innovative Bituminous Materials

#### Workshop Background

The developments in bituminous and

other materials used in flexible pavement structures has grown significantly. Advances are linked to innovative materials, evaluation and testing, specialised applications, improved durability and performance. In particular, industry needs are being addressed through the innovation. This workshop focusses on 4 innovative products and technologies that are impacting on pavement performance. Strengths, challenges and barriers, advantages, disadvantages, developmental and implementation issues will be debated for these and other materials. Questions such as “So what?” and “What is needed for a conducive environment for innovation?” will be addressed and discussed.

### Workshop Focus

- High priority needs of industry being addressed through material innovation
- New technologies that will benefit industry, communities and the environment
- New and novel ways of evaluation and performance testing
- How to implement the new technologies efficiently and effectively
- Key organisations to involve in the implementation

### Short Presentations as Introduction to Workshop

- **Wynand Steyn:**  
Evaluation of materials treated with organo-silane (nano) emulsion
  - **Bernhard Botes:**  
Fit-for-purpose tack coats
  - **Johannes Lambert:**  
High shear, low flow emulsion tack
  - **Mafuma Tafadzwa:**  
New crumbed rubber technology
-

# Workshop Programme

## TUESDAY 15 OCTOBER 2019

First Session (16:00 to 18:00)

### Speciality Workshop No. 1: Pavement Design and performance: Testing and designing for asphalt fatigue

**Workshop Convenor:** Steph Bredenhann

**Workshop Discussion Leader:** Steph Bredenhann

#### Presentations

- |                   |   |
|-------------------|---|
| 1. Andre Molenaar | Introduction: Fatigue Testing, unfortunately a time consuming and costly affair   |
| 2. Geoffrey Rowe  | Fatigue assessment of conventional and highly modified asphalt materials  |
| 3. Jo Sias        | Rheological, Fatigue, and Fracture Properties to Evaluate Fatigue and Thermal Cracking of Asphalt Mixtures in Northern US |

## WEDNESDAY 16 OCTOBER 2019

Second Session (08:00 - 10:00)

### Workshop No. 2: Regional and international research: Leadership, cooperation and program development

**Workshop Convenor:** Benoit Verhaeghe

**Workshop Discussion Leader:** Wynand Steyn

#### Presentations

- |                     |   |
|---------------------|---|
| 1. Benoit Verhaeghe | Current RDI landscape in Southern Africa        |
| 2. Chantal Rudman   | Human Capital challenges in RDI                 |
| 3. Melanie Hofmeyr  | Management of industry documentation: quo vadis |

### Workshop No. 3: Asphalt Process Control – Using Digital Technologies to improve construction performance

**Workshop Convenor:** Mahendren Manicum

**Workshop Discussion Leader:** Mahendren Manicum

#### Presentations

- |                   |   |
|-------------------|---|
| 1. Seirgei Miller | Addressing challenges of variability and construction quality |
|-------------------|---|

## WEDNESDAY 16 OCTOBER 2019 (CONTINUED)

- |                      |   |
|----------------------|---|
| 2. Mahendren Manicum | Digital Technologies – the answer to all our challenges?    |
| 3. Seirgei Miller    | First steps to be taken toward a Digital Technology Roadmap |

### Workshop No. 4: Selection of Appropriate Seal Types and Binder Combinations

**Workshop Convenor:** Gerhard Fourie

**Workshop Discussion Leader:** Gerrie van Zyl

#### Presentations

- |                   |  |
|-------------------|--|
| 1. Gerrie van Zyl | Stripping of Seals in Southern Africa: Case studies and guidelines for an improved approach to mitigate it |
| 2. Greg White     | A Standardised Sprayed Sealing Specification for Australian Airports                                       |
| 3. Gerrit Jordaan | Evaluation of novel winter-seal applications   |

### Workshop No. 5: Optimal design of Asphalt

**Workshop Convenor:** Herman Marais

**Workshop Discussion Leader:** Francois le Roux

#### Presentations

- |                     |  |
|---------------------|--|
| 1. Joanne Muller    | Superpave 5.0                          |
| 2. Wim Hofsink      | HWTT – Possible pitfalls               |
| 3. Steph Bredenmann | Feedback from asphalt Fatigue workshop |

Second Session (10:30 - 12:30)

### Workshop No. 6: Research Outcomes for Cost-Effective Provision of Low Volume Sealed Roads

**Workshop Convenor:** Nkululeko Leta

**Workshop Discussion Leader:** Nkululeko Leta

#### Presentations

- |                     |   |
|---------------------|---|
| 1. Andrew Otto      | Widening the scope of pavement materials for use in the provision of low volume sealed roads          |
| 2. Anton Hartman    | Alternative surfacings for low volume roads in West Africa  |
| 3. Matthew Townsend | Assessment of Cost-Effectiveness of Alternative Surfacings for LVSR using Life-Cycle Costing Analysis |

# Workshop Programme (Continued)

## Workshop No. 7: Bituminous binder testing and standard

**Workshop Convenor:** Georges Mturi

**Workshop Discussion Leader:** Steph Bredenhann

### Presentations

- |                     |  |
|---------------------|--|
| 1. Estimé Mukandila | Possibility of using a Weatherometer as an aging calibration tool for bitumen binder |
| 2. Elaine Goosen    | Extraction and Recovery of Bituminous Binders from Chip Seal Samples                 |
| 3. Ashiel Rampersad | A proposed national protocol for performing frequency sweeps on bituminous binder    |

## Workshop No. 8: Innovation in road maintenance techniques and procedures

**Workshop Convenor:** Krishna Naidoo

**Workshop Discussion Leader:** Dumisani Nkabinde

### Presentations

- |                                   |  |
|-----------------------------------|--|
| 1. Douglas Judd                   | The role of the PPP project in road maintenance          |
| 2. Marco Capazario /<br>A Chagwe  | Digitising the entire road maintenance process           |
| 3. Ricardo Louw                   | Term maintenance contracts – an international case study |
| 4. Prasanth Mohan/<br>W Maphakela | Exploring National Treasury limits                       |

## Workshop No. 9: Recent Advancements in Innovative Bituminous Materials

**Workshop Convenor:** Kim Jenkins

**Workshop Discussion Leader:** Kim Jenkins

### Presentations

- |                     |  |
|---------------------|--|
| 1. Wynand Steyn     | Evaluation of materials treated with organo-silane (nano) emulsion |
| 2. Bernhard Botes   | Fit-for-purpose tack coats   |
| 3. Johannes Lambert | High shear, low flow emulsion tack                                 |
| 4. Mafuma Tafadzwa  | New crumbed rubber technology                                      |

# Acknowledgements

The Committee wishes to acknowledge with thanks, the contribution by the following independent referees who took time to review the conference papers:

## Referees

Referee	Institution	Country
Prof Gordon Airey	University of Nottingham	United Kingdom
Dr Joseph Anochie-Boateng	CSIR Built Environment	South Africa
Prof Hussain Bahia	University of Wisconsin	USA
Dr Kirsten Barnes	Green Cape	South Africa
Mr Christi Botha	SMEC South Africa (Pty) Ltd	South Africa
Mr Steph Bredenhann	SANRAL	South Africa
Mr Riaan Burger	iX Engineers	South Africa
Mr Dave Collings	UCD Technology	South Africa
Dr John D'Angelo	D'Angelo Consulting	USA
Dr Morris De Beer	CSIR Built Environment	South Africa
Dr Erik Denneman	Puma Energy	Australia
Dr Louw Du Plessis	Gauteng Department of Roads and Transport	South Africa
Mr Gerhard Fourie	SANRAL	South Africa
Mr Robert Geddes	Civil Design Solutions	Mauritius
Mr Andre Greyling	BVi Consulting	South Africa
Mr Johannes Grobler	SMEC South Africa	South Africa
Mr Elie Hajj	University of Nevada, Reno	USA
Mr Darren Hazlett	University of Texas at Austin	USA
Dr Arno Hefer	Rubicon Solutions	South Africa
Dr Emile Horak	JG Afrika (Pty) Ltd	South Africa
Mr Deon Hyman	KBK Engineers (Pty) Ltd	South Africa
Mr Ivan Jacobs	SMEC South Africa	South Africa
Prof Kim Jenkins	Stellenbosch University	South Africa
Dr Fenella Johns	Rubicon Solutions	South Africa
Prof Gerrit Jordaan	GeoNano Technologies	South Africa
Mr Philip Joubert	Royal HaskoningDHV (Pty) Ltd	South Africa
Mr Douglas Judd	N3 Toll Concession (rf) Pty Ltd	South Africa
Mr Julius Komba	CSIR	South Africa

Referee	Institution	Country
Mr Etienne le Bouteiller	COLAS S.A.	France
Dr Davide Lo Presti	University of Nottingham	United Kingdom
Mr Renaldo Lorio	SANRAL	South Africa
Prof Joe Mahoney	University of Washington	USA
Prof James Maina	University of Pretoria	South Africa
Dr Martin Mgangira	CSIR	South Africa
Mr Pieter Molenaar	Royal HaskoningDHV (Pty) Ltd	South Africa
Mr Georges Mturi	CSIR	South Africa
Dr Estime Mukandila	Wsp Group Africa (Pty) Ltd	South Africa
Mr Kym Neaylon	Centre for Pavement Engineering Education	Australia
Mr Wynand Nortjé	Shisalanga Construction (Pty) Ltd	South Africa
Mr Johan O'Connell	CSIR	South Africa
Mr Paul Olivier	JG Afrika (Pty) Ltd	South Africa
Dr Philip Paige-Green	Paige-Green Consulting	South Africa
Dr Manfred Partl	EMPA	Switzerland
Mr Barry Pearce	Learning Matters Etc	South Africa
Mr Jonathan Pearce	Martin & East (Pty) Ltd	South Africa
Mr Michael Pinard	Infra Africa Consultants	Botswana
Prof Jorge Prozzi	The University of Texas	USA
Mr Dennis Rossmann	Consultant	South Africa
Dr Geoff Rowe	Abatech Inc	USA
Dr Chantal Rudman	Stellenbosch University	South Africa
Mr Les Sampson	Consultant	South Africa
Mr Saied Solomons	Sabita (Pty) Ltd	South Africa
Prof Wynand Steyn	University of Pretoria	South Africa
Mr Arthur Taute	SMEC South Africa	South Africa
Prof Gabriele Tebaldi	University of Parma	Italy
Dr Elias Twagira	University of Rwanda	Rwanda
Prof Martin Van de Ven	Delft University of Technology	Netherlands
Mr Jacques Van Heerden	Tosas (Pty) Ltd	South Africa
Mr Gerrie Van Zyl	Mycube Asset Management	South Africa
Mr Robert Vos	AAPA	Australia
Mr Alan Wills	Awanda	South Africa
Dr Herman Wolff	Western Cape Government	South Africa



# Focus Area Coordinators

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**Road funding and optimal application of financial resources**

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Saied Solomons

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**Deployment of human resources and road provision and maintenance at OWLC**

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Arthur Taute

---

**Leadership and proficiency in technology development**

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Krishna Naidoo, Benoit Verhaeghe

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**Design of flexible pavements for best performance**

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Mahendren Manicum

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**Quality assessment of bituminous binders**

---

Steph Bredenmann

---

**Materials testing and standards**

---

Steph Bredenmann

---

**Design of asphalt mixes**

---

Herman Marais

---

**Design of bitumen stabilised materials**

---

Fenella Johns

---

**Chip seal design**

---

Gerhard Fourie

---

**Construction and maintenance**

---

Wynand Nortjé  
Jonathan Pearce

---

**Innovation in pavement materials**

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Kim Jenkins

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**Green procurement**

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Chantal Rudman

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**Worker wellness, safety and employment**

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Lee Cochrane  
Jaco Swindon

---

**Global change drivers in flexible pavement provision and maintenance**

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Duncan Mason

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**Convenor of Workshops:**

Philip Joubert

---

**Convenor of Interactive Audio-visual session:**

Melanie Kemp Hofmeyr

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# List of Papers Accepted for the Conference

All papers were peer reviewed and are listed in author surname order.

- Development of an ontology based expert system for determining the performance indicator of HMA pavements (Abejide, et al)
- Heavy Duty Asphalt Pavements and IMO (International Maritime Organization) 2020 implications (Beer)
- A Comparison Between Sustainability Practices in Road Construction (Bennett, van Wijk)
- Fatigue assessment of conventional and highly modified asphalt materials with ASTM and AASHTO standard specifications (Blankenship, Rowe)
- An investigation into the best fit-for-purpose bond coat used between composite pavement layer on National route 2 section 1 (Botes, et al)
- Performance testing at high service temperatures of asphalt mixtures for airfield pavements (Botha, Mooren)
- Bitumen Rubber Binder in the South African Performance-Grade Specification (Bredenhann, et al)
- Impact of Probability Density Function on Indicators Relating to Pavement Performance for Flexible Pavement Structures (Cromhout, et al)
- Design and Construction of state of the Art Durable Asphalt Surface and Ensuring Predictable Handling Characteristics on Kyalami Race Circuit (du Preez, et al)
- The effect of ageing on bituminous seal binder rheology (Engelbrecht, et al)
- Evaluating the Moisture Susceptibility of Hot-Mix Asphalt with Recycled Crushed Glass (George, et al)
- Formulating a Master Curve using one DSR Isotherm and BBR Data (Gerber, et al)
- Revision of TG3 - From Asphalt Reinforcement to Subgrade Stabilisation (Gewanalal, et al)
- Extraction and Recovery of Bituminous Binders from Chip Seal Samples (Goosen, Jenkins)
- The Potential Impact on Locals through the Road Transportation Sector (Govender, et al)
- Increasing pavement structural capacity through the use of an asphalt geogrid: A case study (Hartman)
- A Benchmarking Study of Anionic Bitumen Emulsion Properties for Slurry Seals (Hawes, et al)
- Talent Management a focus in a Transport Infrastructure Branch (Hofmeyr)

# List of Papers Accepted for the Conference - continued

- A Paradigm shift on permeability of thin asphalt surfacings (Horak)
- TG2 (2019) removes barriers and elevates the performance of bitumen stabilised materials (BSMs) (Jenkins, et al)
- Evaluation of the Suitability of the Automated Mixing Test in Determining the Workability of Slurry Surfacing Mixes (Johannes, et al)
- Development and Implementation of Performance Grade Specifications for Asphalt Rubber Binder (Jones, et al)
- Testing of granular/soil characteristics for the optimisation of pavement designs using reactive stabilising agents including “new-age” nano-technologies (Jordaan, Steyn)
- Storage Stability Evaluation of Homogenous Polymer Modified Binders (Kahaar, et al)
- Distribution of air voids in compacted Hot-Mix Asphalt samples – laboratory vs field (Komba)
- Cationic bitumen emulsion rheologically modified using high shear low flow technology (Lambert, et al)
- A study into the skidding resistance of roads in the province of Kwa-Zulu Natal – status quo and proposals for further investigation (Lewis, et al)
- Performance of proprietary French gap-graded - high modulus asphalt on a heavily trafficked road in South Africa (Lewis, et al)
- Sustainable Road Rehabilitation Solution using Reclaimed Asphalt: Camps Bay Drive Case Study (Llewellyn, et al)
- New Crumb Rubber Technology - a life cycle extender for Porous Asphalt (Mafuma, et al)
- Qatar Initial Experience using Increased Reclaimed Asphalt Content to Produce Recycled Asphalt (Maina, Khnaizer)
- A Generic Framework for Automating the Asphalt Construction Process (Makarov, et al)
- Performance of Bitumen Stabilised Materials using Recycled Concrete Aggregate (Mazibuko, et al)
- Adapting Asphalt Pavements to Climate Change Challenges (Mokoena, et al)

- Fatigue Testing - Unfortunately a time consuming and costly affair (Molenaar, et al)
- Sensitivity of flexible pavement system response to truck speed: The case of thin surfaced granular base, cemented base and bitumen treated base pavement structures (Mshali, Steyn)
- Possibility of using Xenon arc chamber Weatherometer as an aging calibration tool for bitumen binder (Mukandila, Steyn)
- The development of a method for evaluating adhesion promoter dosage level and effectiveness in asphalt applications (Muller, Mafuma)
- The use of Superpave N300 gyrations minimum void specification as rut resistance measure: A critical appraisal (Muller)
- Fatigue Resistance Properties of Glass Fibre Grid Reinforced EME (Mulol)
- The influence of the characteristics of emulsifying agents on the stabilisation of granular materials using nano-silane modified bitumen emulsions (Murphy)
- Towards the development of grey water resistant asphalt (Nel, et al)
- Rehabilitation of salt-damaged asphalt surfacings with bitumen-rubber and other seals (Netterberg, Bergh)
- Elongational Rheology of Bitumen Film Samples as a Fingerprinting Technique (Nkuna, et al)
- Recycled High Density Polyethylene in Asphalt (Nortje, Seforo)
- The prioritisation and adaptation for climate change resilience of rural access roads (Paige-Green, Verhaeghe)
- Does a national proficiency testing scheme assist in improving the confidence in laboratory test results? (Pearce)
- Influence of On-Paver Spraybar Technology on Bond Strength of Asphalt and Pavement Life (Pienaar, et al)
- Understanding Binder Replacement and the Impact it has on Asphalt Recycling (Rajkumar)
- A proposed national protocol for performing frequency sweeps on bituminous binder (Rampersad, et al)
- Paving the way to an optimal road surfacing policy in South Africa (Ross, et al)
- The employment benefits from sealing gravel roads in South Africa (Ross, et al)
- The change in the physical properties of asphalt binders with conditioning (Rowe)
- The development of the Delta TC and Glover-Rowe parameters for the control of non-load associated cracking (Rowe)

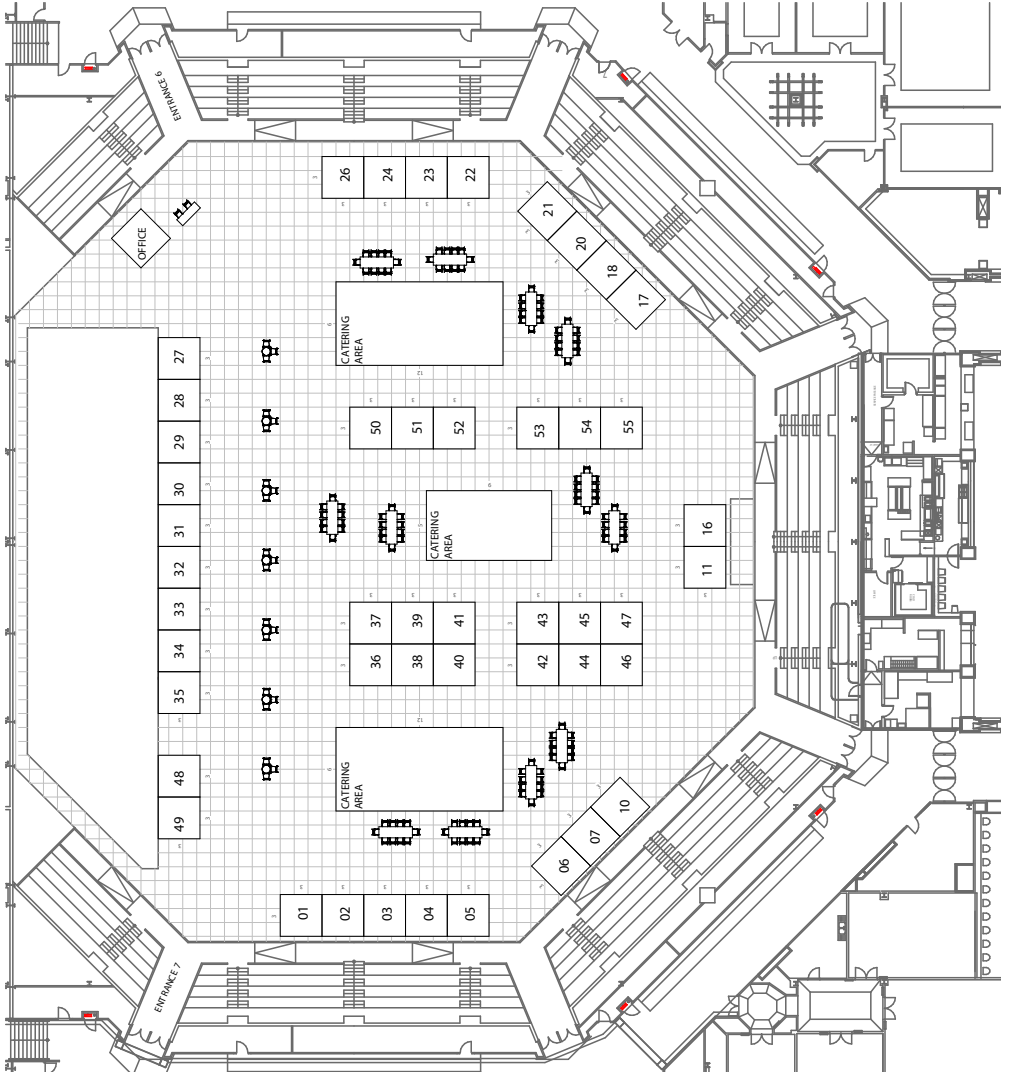
# List of Papers Accepted for the Conference - continued

- A study of change in the response of recycled concrete aggregate used in pavement layers when self-cementation occurs (Rudman, et al)
- Evaluation of a nano-silane-modified emulsion stabilised base and subbase under HVS traffic (Rust, et al)
- Evaluation of novel chip seals applications during periods of low temperatures (Steyn, et al)
- Training and Educating Pavement Engineer 4.0 (Steyn)
- Cellular Confinement System Reinforcement – Innovation at the Base of Sustainable Pavements (Strahl, Alexiew)
- Gussasphalt (GA) as steel deck pavement for Africa's longest suspension bridge in Maputo (MZ) (Swanepoel, et al)
- A grading-based, performance-related classification of unbound granular material (Theyse, Kannemeyer)
- Performance Testing of Enrobé à Module Elevé Asphalt (Thomas, et al)
- Waterbound Macadam Construction on the N8 Truck Stop at the Maseru Border Post: A Case Study (Tsemame, et al)
- Disruptors in Transportation (Treurnich)
- Advancing sustainable practice - finding a common voice and approach to sustainability for the South African roads sector (Uken, et al)
- Design and construction of Enrobé à Module élevé (eme) on the National route 1, North East of Paarl in the Western Cape Province of South Africa (Van Heerden, et al)
- Asset preservation through effective reseal programs in Namibia (Van Zyl, et al)
- Stripping of seals in South Africa: Case studies and guidelines for an improved approach to mitigateIT (Van Zyl, et al)
- A Standardised Sprayed Sealing Specification for Australian Airports (White)
- How the Airport Pavement Research Program is filling the voids in Australian Airport Pavement Technology and Practice (White)
- Overview of Rheological, Fatigue, and Fracture Properties to Evaluate Fatigue and Thermal Cracking of Asphalt Mixtures in Northern United States (Zhang, et al)

# Exhibitors

Stand	Stand
<b>11</b> 3S Media	<b>3</b> Nouryon
<b>41</b> Actop Asphalt (Pty) Ltd	<b>33</b> Nu Tech Calibration Services (Pty) Ltd t/a 3C Technologies
<b>20 &amp; 21</b> ARRB Systems South Africa Pty Ltd	<b>45</b> PaveTesting Ltd UK
<b>52</b> Aurecon South Africa (Pty) Ltd	<b>42 &amp; 43</b> Reliance Laboratory Equipment (Pty) Ltd
<b>26</b> BMK Consulting Engineers	<b>39</b> Road Material Stabilisers (Pty) Ltd
<b>38</b> Bitumen Supplies & Services (Pty) Ltd	<b>28</b> Roadlab Laboratories (Pty) Ltd
<b>4 &amp; 5</b> BVi Consulting Engineers (Pty) Ltd	<b>6</b> Royal HaskoningDHV (Pty) Ltd
<b>22 &amp; 23</b> Colas South Africa (Pty) Ltd	<b>32</b> RubberChem ADCOAT (Pty) Ltd & LCY
<b>36</b> Ennis Flint Africa (Pty) Ltd	<b>24</b> Sabita (Pty) Ltd / S A Road Federation
<b>49</b> Geonano Technologies (Pty) Ltd	<b>10</b> Sasol Chemicals, a division of Sasol South Africa LTD
<b>7</b> Huesker Synthetic GmbH	<b>50</b> Shell Downstream SA (Pty) Ltd
<b>31</b> IMP - Supplies of Asphalt Testing Equipment	<b>48</b> Shisalanga Construction (Pty) Ltd
<b>53</b> Industrial Oleochemical Products - a division of AECI Limited	<b>35</b> Specialised Road Maintenance (Pty) Ltd
<b>37</b> Ingevity	<b>16</b> Specialised Road Technologies (Pty) Ltd
<b>27</b> Kaytech Engineered Fabrics	<b>34</b> Specialised Testing Laboratory (Pty) Ltd
<b>17 &amp; 18</b> LABCO Southern Africa (Pty) Ltd	<b>46 &amp; 47</b> The Dow Chemical Company
<b>40</b> Maccaferri SA (Pty) Ltd	<b>29 &amp; 30</b> Tosas (Pty) Ltd
<b>51</b> MC IT (Pty) Ltd	<b>1 &amp; 2</b> Wirtgen Group South Africa (Pty) Ltd
<b>54 &amp; 55</b> Much Asphalt (Pty) Ltd	

# Floor Plan





# Sponsors

## PLATINUM

Colas South Africa (Pty) Ltd  
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ARRB Systems South Africa  
BMK Consulting Engineers  
Bitumen Supplies Services (Pty) Ltd  
Industrial Oleochemical Products - A division of AECI Limited  
Ingevity  
Maccaferri SA (Pty) Ltd  
Nouryon  
PaveTesting Ltd UK  
Royal HaskoningDHV (Pty) Ltd  
Wirtgen Group South Africa (Pty) Ltd

## SUPPORTING

Aurecon South Africa (Pty) Ltd

## ICE BREAKER EVENT

SABITA

## BEACH BARBEQUE

Actop Asphalt (Pty) Ltd

## GALA DINNER

Much Asphalt (Pty) Ltd

## CLOSING FUNCTION

Raubex (Pty) Ltd

## MEDIA PARTNERS

3S Media  
IMIESA

# Useful Information

## Social Programme:

### Sunday 13 October, ICE BREAKER EVENT – Sponsored by SABITA

<b>Time:</b>	18h30 – 22h00	Function
<b>Theme:</b>	Around the World ... experience the fusion foods and networking with colleagues while stopping by different food stalls.	
<b>Venue:</b>	Greenhouse, Gary Player Golf Course	
<b>Access Control:</b>	CAPSA2019 delegates, exhibitors and registered accompanying persons	
<b>Dress Code:</b>	Casual. This function is in a glass marquee overlooking the Gary Player Golf Course. PLEASE BRING A LIGHT JERSEY	
<b>Transport:</b>	Catch a shuttle from your hotel to Gary Player Golf Course	

### Monday 14 October, BEACH BARBEQUE "HAWAIIAN THEME" – Sponsored by Actop (Pty) Ltd

<b>Time:</b>	18h30 – 19h00	Welcome Drinks @ the Monkey Spring Plaza
	19h00 – 23h00	Function
<b>Theme:</b>	Enjoy a relaxed evening 'at the beach' with a DJ and a typical South African braai.	
<b>Venue:</b>	Valley of the Waves, access via the Conference Centre	
<b>Access Control:</b>	CAPSA2019 delegates, exhibitors and registered accompanying persons	
<b>Dress Code:</b>	Casual or dress Hawaiian style. This function is outside... under the African skies. PLEASE BRING A LIGHT JERSEY	
<b>Transport:</b>	Catch the shuttle from your hotel to the conference centre	

### Tuesday 15 October, GALA DINNER – Sponsored by Much Asphalt (Pty) Ltd

<b>Time:</b>	19h00 – 19h30	Welcome Drinks
	19h30 – 24h00	Function
<b>Theme:</b>	Prepare yourself for an evening of good food, lots of laughter and wonderful entertainment	
<b>Venue:</b>	Kings Ballroom, Conference Centre	
<b>Access Control:</b>	CAPSA2019 delegates, exhibitors and registered accompanying persons	
<b>Dress Code:</b>	Smart-Casual	
<b>Transport:</b>	Catch the shuttle from your hotel to the conference centre	

### Wednesday 16 October, CLOSING FUNCTION – Sponsored by Raubex (Pty) Ltd

<b>Time:</b>	18h30 – 22h00
<b>Theme:</b>	The next CAPSA will only be in 4 years' time. This is the last opportunity to informally network with old and new friends and review presentations and discussions of the last 3 days.
<b>Venue:</b>	Shebeen
<b>Access Control:</b>	CAPSA2019 delegates, exhibitors and registered accompanying persons
<b>Dress Code:</b>	Casual/Traditional
<b>Transport:</b>	Catch the shuttle from your hotel to the Shebeen

### Onsite Registration and Help Desk

Registration will take place in the Warriors Foyer, Conference Centre, Sun City

The registration and help desk times are as follows:

#### Sunday, 13 October 2019

07h30 – 18h30 (CAPSA19 Registration)

#### Monday, 14 October 2019

07h30 – 18h30

#### Tuesday, 15 October 2019

07h30 – 18h30

#### Wednesday, 16 October 2019

07h30 – 18h00

Please note that delegates and accompanying persons will need their registration badges to get access to the Ice Breaker Function. It is therefore advisable to register before the function. Registration closes at 18h30 on Sunday.

### Speakers Preparation Room

The Speaker's Preparation room is Juveni room.

All speakers are to report to the Juveni room one day prior to the presentation, during the following times.

Sunday 13 October 12h00 – 18h00

Monday 14 October 07h00 – 17h00

Tuesday 15 October 07h30 – 17h00

Wednesday 16 October 07h30 – 14h00

The presentation will be checked by the technician and sent to the technical desk.

### Identification and Access

Access to all conference venues, functions and the exhibition area will be strictly controlled through the appropriate name tag being worn. Individuals are strongly encouraged to wear their name tags to conferences areas and functions at all times.

## Companion Programme

Please remember: *All registered accompanying persons have to collect their accreditation badges on Sunday 13 October at the Conference Centre.*

### Capsa 2019 Opening Session and Closing

#### Session:

All registered accompanying persons are invited to attend the opening session on 14 October from 08h00 – 10h00 and the closing session on

16 October from 15h00 – 16h00. Please remember to wear your accreditation badges.

#### Lunches:

Tuesday 15<sup>th</sup> and Wednesday 16<sup>th</sup> October 2019  
All registered accompanying persons are invited to join delegates for lunch in the exhibition hall. Please remember to wear your accreditation badges. Please refer to the programme on-site for the final times for lunch

#### Social Evening Function:

All registered accompanying persons are invited to attend all CAPSA2019 Social evening functions. Please remember to wear your accreditation badges.

#### Demo Kitchen:

Monday 14<sup>th</sup> October  
12h00 - 16h00

Meet at the Palace – Pool deck

**Transport:** Catch a shuttle from your hotel to the Palace Hotel.

**Dress:** Casual/Cocktail

#### Game Drive:

Tuesday 15<sup>th</sup> October  
08h30 – 09h00

Check in at the Welcome Centre

09h00 – 12h00 — Game Drive

**Transport:** Catch a shuttle from your hotel to the Welcome Centre.

**Dress:** Casual (please check weather and dress warm if necessary) – don't forget your cameras!

## Transport Onsite

A shuttle service will be operational from all hotels to the conference centre.

## Conference Proceedings

The Conference reviewed papers are available on the memory stick provided at the Conference. The Powerpoint presentations, conference summary, conference resolutions and summaries from the workshop sessions will be available on the conference website for all registered delegates.

## CPD Points:

CAPSA2019 has been accredited with 3 CPD points for 3 Days (14 – 16 October 2019).

Separate sign in sheets will be made available for CPD signing every day at the registration desk. The onus is on the delegate to ensure that he/she signs the form.

## Cellular Telephones

As a matter of the courtesy to other delegates, all cellular telephones must either be on silent or be turned off during the conference sessions and social events.

## Emergencies

For emergencies please contact your Hotel Reception, the nearest security, the Registration Desk or you can contact the security control room on 014 557 1115.

## Internet Access

Wireless internet will be available throughout Sun City and the Conference Centre.



## Liability and Legal Obligations

Registration fees do not include insurance for participants against personal injuries, sickness, theft of property damage. This applies to any event associated with CAPSA19. Neither the Committee nor the sponsors or committee members assume any liability for loss, injury or damages to persons or belongings, however caused. In the event that the CAPSA19 Conference is postponed, cancelled or abandoned by reason of war, fire, storm, explosion, national emergency, labour dispute, strike, lock-out, civil disturbance, inevitable accident, force majeure, the non-availability, either wholly or partially, of Sun City or any other cause not within the control of the Committee, the said Committee shall be under no liability to the sponsors, exhibitors or delegates in respect to any actions, claims, losses (including consequential losses) costs of expenses whatsoever which may be brought against or suffer or incurred by sponsors, exhibitors or delegates and their partners as a result of the happening of any such event(s).

## Non-Smoking Policy

The Conference venues and exhibition areas are non-smoking areas.

### Enquiries

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