

Construction WORLD

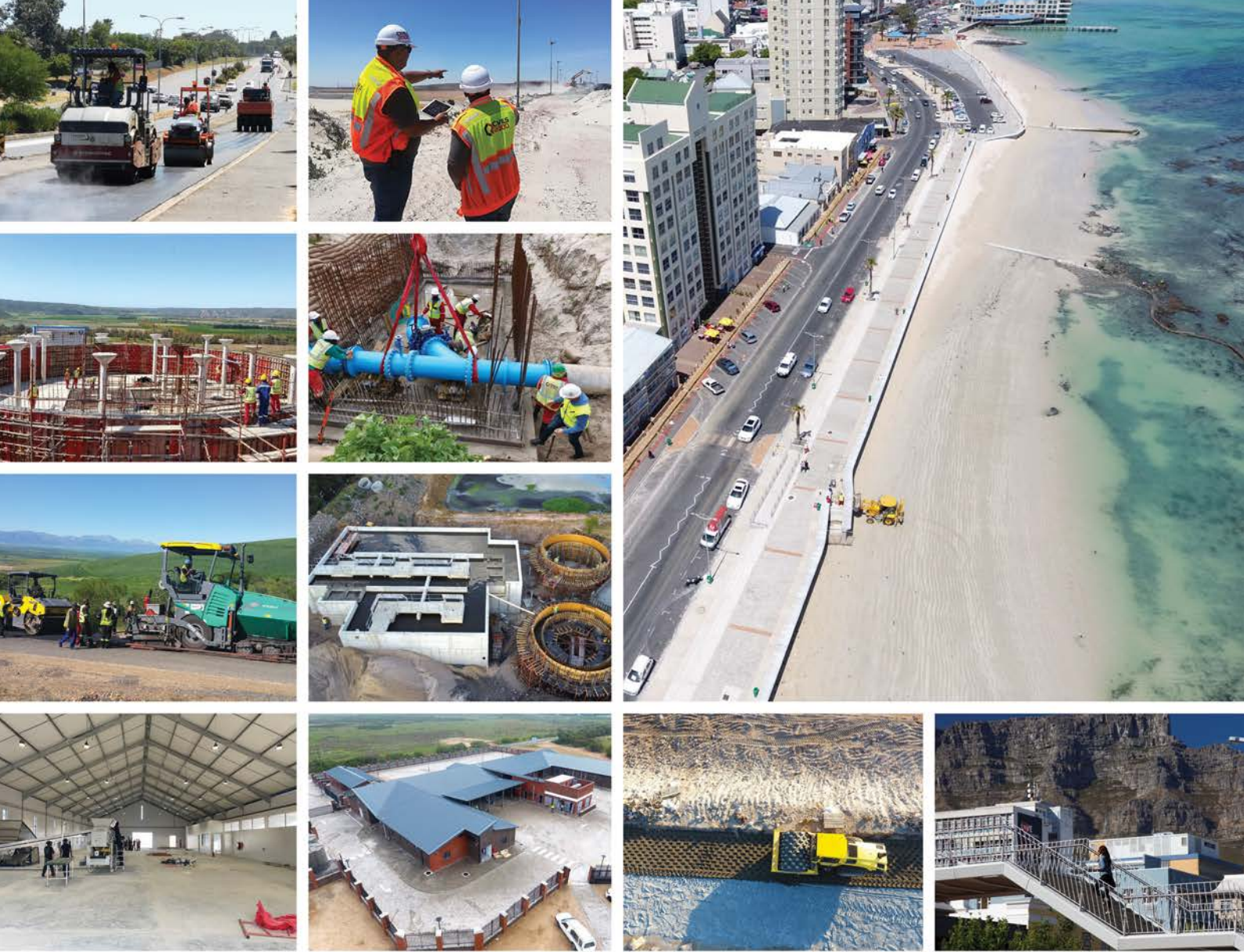


MTENTU BRIDGE
AFRICA'S TALLEST AND LONGEST
CANTILEVER BRIDGE IN THE MAKING

INFRASTRUCTURE HEALTH
Prevention is better than cure

Tshoxa 1
bridge redefines
sustainability in
infrastructure

**JET DEMOLITION AND EDIFICE ENGINEERING
AT THE 2023 WORLD DEMOLITION AWARDS**



DELIVERING CIVIL ENGINEERING INFRASTRUCTURE AND BUILDING SERVICE ACROSS SOUTH AFRICAN

**Road Construction
Water & Wastewater Facilities
Land Development
Bridges**

**Asphalting & Surfacing
Commercial Building
Pipelines & Structures
Plant & Equipment Hire**

**BUILDING A BETTER
TOMORROW TOGETHER**

NEXUS PLACE, CAPRICORN DRIVE, MUIZENBERG, CAPE TOWN, 7950
T: (021) 713-0129 E: info@civils2000.co.za Website: www.civils2000.co.za



FEATURES

04 Digital tools can help unlock the full potential of SA's declining freight rail system

Our flailing rail system needs significant investment to resurrect itself.

04



06 The vital role of dispute resolution in the civil engineering industry

This article sheds light on the importance of dispute resolution.

08 Concor CEO talks to *Construction World*

Jerome Govender answers our questions.

20 Asphalt milling machine of choice for contractors and road builders

The Roadtec RX600ex milling machine is powerful and versatile.

20



26 Mtentu Bridge: Africa's tallest and longest cantilever bridge in the making

This bridge is a shining example of how the N2 Wild Coast Toll Road will make a difference.

28 Engineering our roads for safety

SANRAL's multi-faceted approach to safety.



28

REGULARS

04 MARKETPLACE

14 ENVIRONMENT & SUSTAINABILITY

16 PROPERTY

20 ROADS AND BRIDGES

ON THE COVER

Representing global excellence in the demolition industry, Jet Demolition, in conjunction with Edifice Engineering of India, were declared runners-up in two categories at the 2023 World Demolition Awards (WDA). Currently in its 15th year and comprising 11 award categories, the WDA is part of the World Demolition Summit that took place from 17 to 18 October in Toronto, Canada. In partnership with Edifice Engineering, Jet Demolition entered the category of explosive demolition for the controlled implosion of the Supertech Twin Towers in Noida, Uttar Pradesh near the capital New Delhi on 28 August 2022. It marked Jet Demolition's second collaboration with Edifice Engineering, a leading demolition company based in Mumbai.

Turn to page 18



The year starts off on a positive note. In December 2023 Afrimat's Construction Index for the third quarter of last year was released and according to this index, the industry returned to real growth with six of the index's nine constituent indicators recording positive real growth when compared to the second quarter.

The general lethargy of the greater South African economy was not evident in the construction sector. The industry grew positively and added jobs, increased building material production and the value of wholesale trade of construction materials.

The index recorded 131,5 in the third quarter – compared to 120,3 in the previous quarter. This is the highest level since the fourth quarter of 2016 and there is hope that, if this momentum is maintained in the fourth quarter of 2023, it may indicate a sustained growth phase in construction.

The construction industry is one of the biggest employers of all industries in the country. In the third quarter of 2023, it recorded a healthy growth rate: 145 00 new jobs have been added since the start of last year. There has also been a 10% increase in the volume of building materials produced.

There are various factors that may play a role in boosting the Afrimat Construction Index even further in 2024. These include the progress made in the public partnerships in the area of repairing, maintaining and expanding the country's logistic infrastructure, progress in the gradual switch to renewable energy and closer co-operation between the South African Police Service and contractors to prevent undue criminal activity at building sites.

In this issue

This issue features an article about the Mtentu Bridge on page 26. This bridge is part of the South African National Roads Agency Limited's N2 Wild Coast Toll Road (N2WCTR). The project entails the construction of two mega-bridge structures, seven additional major river bridges and several interchange bridges, as well as new intersections,

interchanges, pedestrian walkways and agricultural under and over-passes. The construction of the Mtentu bridge near Lundini in the Eastern Cape will, when completed, be Africa's tallest bridge - 223 m high. With a length of 1,13 km, including a 260 m long main span, the bridge will also rank among the world's longest main-span balanced cantilever bridges.

Jason Lowe, SANRAL's lead engineer for Road Safety and Geometric Design (page 28) reflects on the multi-faceted approach needed for engineering roads for safety. This article makes it clear that collaboration between governments, engineering professionals and local communities is vital for any project to be a success.

I wish you a successful 2024.

Wilhelm du Plessis
Editor

EDITOR & DEPUTY PUBLISHER
Wilhelm du Plessis constr@crowm.co.za

ADVERTISING MANAGER
Erna Oosthuizen ernao@crowm.co.za

LAYOUT & GRAPHIC ARTIST
Katlego Montsho

CIRCULATION
Karen Smith

PUBLISHER
Karen Grant

PUBLISHED MONTHLY BY
Crown Publications (Pty) Ltd
P O Box 140
BEDFORDVIEW, 2008
Tel: 27 11-622-4770 • Fax: 27 11-615-6108

PRINTED BY
Tandym Cape



Scan for website



TOTAL CIRCULATION:
(Third Quarter '22)
15 719



Enter the
circular economy
and its virtuous circle



Quad



CHRYSO®Quad

With its range of **CHRYSO®Quad** admixtures and its dedicated **CHRYSO®Quad Lab** service, CHRYSO offers a response to the challenges of **sustainable construction**, the **circular economy**, and the **preservation of natural resources**:

- Analysis of new supply sources near your manufacturing site and identification of the corresponding admixture solution using the CHRYSO®Quad App.
- Implementation of a circular economy approach with the use of local aggregates or recycled concrete aggregates from dismantling.
- Optimizing production costs and improving the quality and performance of concrete using complex aggregates and sands.

Innovative Chemistry for Sustainable Construction

CHRYSO Head Office - 26 Malcolm Moodie Crescent, Jet Park - SOUTH AFRICA - Tel: +27 (0)11 395 9700 - www.za.chryso.com

DIGITAL TOOLS CAN HELP UNLOCK THE FULL POTENTIAL OF SA'S DECLINING FREIGHT RAIL SYSTEM



Chris Britz,
Director, Transport -
Africa, AECOM.

State-owned Transnet reported a loss of R5,7b in 2022-23 and a decline of 23,6 million tonnes in rail freight, down to 149,5 million tonnes. “The impact of such underperformance is having a knock-on effect on the economy due to the constraints it is placing on major mining and logistics companies. Its revenues are down, resulting in a reduction in potential tax collection. The government urgently requires the revenue to fund investment, economic growth and social development,” says Chris Britz, Director: Transportation and Leader of the Transportation Business Line in Africa at AECOM.

There are several reasons for this underperformance, notes James Anafi, Head of Rail, Africa at AECOM. A major contributor to the decline in rail freight traffic volumes is the poor state of rail infrastructure across the country. The rail network can benefit from solutions such as Enterprise Asset Management (EAM) to integrate the asset management activities of multiple disciplines within the rail environment. A well-functioning EAM system would guarantee, for example, that when addressing a track fault, any necessary interventions in the same line section are coordinated, reducing the need for more frequent line outages, which incur substantial opportunity costs resulting from loss of use of the asset.

Given the multidisciplinary nature of rail, EAM has been shown to be very useful to streamline the management of rail assets by harmonising assessments and interventions of the various disciplines involved in rail operations and management. It allows the various disciplines to collaborate effectively to deal with issues that affect the same section of track, while ensuring that each discipline's needs are met. This usually requires digital tools to aid in data acquisition, processing and managing the interaction of the various collaborating disciplines.

“We can assist rail organisations to rollout effective EAM and

other digital systems to improve their operations,” says Britz. AECOM, for example, stands to play a critical role in providing the necessary engineering expertise to affect a significant turnaround at Transnet. The globally trusted infrastructure consulting firm has broad capabilities in both freight and commuter rail and is ranked number one globally in transit and rail.

“We have successfully carried out significant work in the railway sector, in both passenger and freight rail globally. This includes sizable projects in Africa,” notes Anafi. It recently completed a feasibility study for one of the biggest rail projects on the African continent, a 1 522 km link between landlocked Ethiopia and Sudan. It is also currently involved in a large-scale mega project in the Middle East, where it is designing both passenger and freight rail systems.

“Our local experience and knowledge, combined with our global footprint, allows us to bring appropriate expertise and knowledge from all over the globe to our projects, which assists us to deliver a quality service for our clients,” says Anafi. He points out that the fundamental issues leading to the decline of rail freight in South Africa “have been experienced elsewhere and solved. We are aware of what has worked and what has not worked, which allows us to bring those useful solutions to bear



Rail freight underperformance is having a knock-on effect on the economy.

of real-time monitoring on the condition of the infrastructure and identify some of the safety risks and bottlenecks that must be prioritised.

“The simulations we can get from these digital tools and the Internet of Things (IoT) can help us to mitigate some of the challenges facing freight rail in South Africa, inclusive of vandalism, and try to tackle them proactively,” says Letlala. The application of digital tools will allow rail freight to continue to grow. “We must harness digital tools more as an immediate solution to upskill and improve the human capital index of the country.”

Anafi highlights that freight rail is a highly competitive means of transporting heavy and bulky goods over middle to long distances. “Our economy is very much dependent on the transportation of freight over significant distances due to the size of the country and our economic dependence on mining, manufacturing and industry, which all need to move bulky goods.” For example, iron ore mined in the Northern Cape must be railed over 800 km to the Port of Saldanha for export.

“Freight rail is a perfect means of doing that, and you can imagine the economic benefits we get from such an operation,” adds Anafi. Hence, freight rail needs to work well. South Africa already has a vast rail network, one of the largest in the world, which shows the significance of freight rail. It reaches every corner of the country.” However, a major challenge is its operating model of being run by a monopoly whose vertically integrated operations means that it controls the entire freight rail value chain. The fate of the country’s freight rail sector rests entirely in the hands of just one organisation.

“There currently is not significant private participation; instead, there is a state-owned monopoly that handles everything. This has obviously led to inefficiencies and over-concentration on some aspects of the business that are well suited to the current operator to the neglect of other also important aspects that could be better handled by private operators,” says Anafi. There has been a strong focus over the years on the transportation of bulk minerals like iron ore and coal, with less attention paid to other important aspects like general freight and agricultural produce, which have strict requirements in terms of delivery times and preservation.

While Transnet itself might not be well suited or interested in some niche rail freight sectors where it lacks required expertise and experience, these sectors stand to generate much-needed employment and economic growth if the operating model is upgraded to allow for private participants who can efficiently handle them. “It is a much better way to handle the situation so you can deploy expertise in these niche sectors to oversee them. It will unlock some of the growth potential inherent in the less utilised parts of the network,” says Anafi.

Letlala adds: “Freight rail contributes directly to the economy and therefore it is critical for it to be reliable and efficient. Our unemployment rate is skyrocketing, which is why we need the freight rail sector to achieve its full potential. It will also reduce the number of trucks we have on our road network and assist mining houses and other industries to get their commodities to port for export.”

“Freight rail has a good role to play in the transport mix in the country, especially in allowing other modes to be effective. If freight rail functions well, it will attract all the railway friendly freight away from roads, reducing bottlenecks caused by trucks and potential accidents,” says Anafi. He concludes that boosting the freight rail system will have a direct impact on the efficiency of South Africa’s ports, in addition to the wider ripple effect on all related infrastructure and the entire economy. ©

locally.” In working with clients, AECOM gets to know them thoroughly to establish their existing situation and understand where they need to evolve to. It is then able to formulate solutions to assist them achieve their aims. “Our solutions typically incorporate knowledge and experience gained through our global work. They are specifically tailored to suit a particular client and project,” says Anafi. A good example is the digital tool AECOM developed to enable site teams in Ethiopia and Sudan to conduct the necessary site reconnaissance safely and efficiently during a period of civil unrest in the region. “It enabled us to fulfil our client and project requirements in spite of armed conflict and insecurity in the region,” highlights Anafi.

“Typically, our designs are done digitally, so we have a digital design that allows us to simulate how it will function,” says Britz. “It shows the client what they can expect from the infrastructure. If they need any adjustments made, we can actually show them before the infrastructure is built what they are going to get.” As an extension of the digital design, a ‘digital twin’ of the infrastructure allows AECOM to simulate the behaviour after construction, which is important to give an indication of the lifecycle management of the assets.

It can even predict the behaviour of the infrastructure over time to determine its maintenance needs and diagnose the root causes of problems. “Using this digital approach is particularly useful because it allows us to manage the operation and maintenance of the assets without overly disrupting their use to carry out physical monitoring and inspection,” says Anafi.

A digital twin is particularly useful for freight rail, according to Kagiso Letlala, a former Transnet employee who joined the team this year as a senior railway engineer and brings significant experience from a public sector perspective. The consultancy continues to invest in its rail expertise, including William Makwela, a railway designer who has worked on major international projects.

Freight rail requires predictive maintenance to optimise its scheduling and reduce its downtime, for which a digital twin is an ideal solution. Other digital tools can also provide a means

The BCCEI's Dispute Resolution Centre plays a pivotal role within the civil engineering sector.



Merle Denson, Dispute Resolution Centre Manager at the Bargaining Council for the Civil Engineering Industry (BCCEI).

THE VITAL ROLE OF DISPUTE RESOLUTION IN THE CIVIL ENGINEERING INDUSTRY

In the fast-paced and dynamic world of civil engineering, disputes can arise at any moment, threatening the stability and fairness that are essential for the industry's smooth operation. To shed light on the importance of dispute resolution in maintaining equilibrium, we turned to Merle Denson, Dispute Resolution Centre Manager at the Bargaining Council for the Civil Engineering Industry (BCCEI).

Dispute resolution, as described by Denson, is a vital mechanism for solving conflicts without resorting to costly and time-consuming court proceedings. Effective dispute resolution is a cornerstone of good business management, helping companies avoid conflicts and prevent them from escalating. Denson also emphasises that having a clear grievance procedure, with minimal legal formalities, in place is not just a best practice but also a cost-effective way to address disputes.

The BCCEI's Dispute Resolution Centre plays a pivotal role in resolving disputes within the civil engineering sector. Denson outlined several key contributions of the DRC.

"Importantly as the designated bargaining council for the sector, the BCCEI Dispute Resolution Centre is accredited by the Commission for Conciliation, Mediation and Arbitration (CCMA) to handle disputes efficiently, ensuring they are resolved in accordance with the law and CCMA criteria," she explains. "This accreditation demonstrates the BCCEI's commitment to meeting industry standards and maintaining high levels of professionalism." The BCCEI Dispute Resolution Centre has appointed a panel of commissioners with extensive industry knowledge and experience. Denson says this ensures

that disputes are handled by experts who understand the complexities of civil engineering.

The civil engineering industry is characterised by project-based work across different provinces, and the BCCEI Dispute Resolution Centre prioritises accessibility by scheduling cases in the region where the dispute originated. "We believe this approach is important as it alleviates the financial burden on employees who may not have the means to travel to resolve their disputes," she says.

"In addition to this, we adapted to the challenges posed by the COVID-19 pandemic by offering online dispute resolution services. We have continued to offer this primarily because the shift to virtual platforms has improved efficiency and reduced costs, making dispute resolution more accessible and convenient for all parties involved."

The accessibility of the BCCEI Dispute Resolution Centre's services is ensured through a funding mechanism. Employers and employees within the BCCEI's scope contribute to the cost of dispute resolution through a monthly dispute resolution levy. This mechanism ensures that the services are available and sustainable for all parties involved.

When it comes to handling disputes referred to the BCCEI

Dispute Resolution Centre, particularly in dismissal cases, Denson outlines a structured process. This process involves a referral within 30 days of an unfair dismissal case, with the applicant serving the referral form on the employer and filing it with the BCCEI. The BCCEI then notifies both parties of the hearing date and time, typically through email or SMS. If conciliation fails to resolve the dispute, the applicant can proceed to arbitration by completing the request for arbitration form. In the event of a settlement, a commissioner drafts a settlement agreement that records the terms, and both parties sign it.

“The conciliating and arbitrating commissioners appointed by the BCCEI play pivotal roles in handling industry-specific disputes. They are accredited by the CCMA and undergo extensive training,” Denson says. “Their responsibilities include attempting to settle disputes, hearing evidence and issuing arbitration awards based on the merits of the case.”

The fairness of a dismissal in the arbitration process is determined by commissioners based on procedural and substantive factors. They assess whether the dismissal adhered to legal requirements and consider the evidence presented by the parties and witnesses.

In response to the COVID-19 pandemic, the BCCEI adapted its dispute resolution methods to ensure business continuity and safety. These adaptations ensure seamless administration and include a paperless system incorporating electronic signature technology. Where hearings are conducted online, the proceedings are recorded for future reference. “It is most evident that the work done by the BCCEI Dispute Resolution Centre plays a crucial role in maintaining fairness and stability

in the civil engineering industry. The dedication by our team to efficient and accessible dispute resolution mechanisms ensure that industry-specific disputes are handled with professionalism and expertise,” Denson concludes. ☺

About

The BCCEI's primary goals and objectives extend beyond dispute resolution as a bargaining council. Its responsibilities encompass concluding and enforcing collective agreements, preventing and resolving labour disputes, administering dispute resolution functions, establishing and managing funds for dispute resolution, promoting and initiating training and education schemes, developing proposals for labour policies and legislation, providing industrial support services and extending services to non-parties in the industry.



The BCCEI Dispute Resolution Centre has appointed a panel of commissioners with extensive industry knowledge and experience.



ENGINEERING EXCELLENCE

ENGINEERING SERVICES WE OFFER:

<ul style="list-style-type: none"> • Civil • Structural • Mechanical • Roads & Transportation 	<ul style="list-style-type: none"> • Electrical • Urban Development • Geotechnical • Petrochemical 	<ul style="list-style-type: none"> • Environmental • Contamination
---	--	--



Tel: 011 501 4760 - Website: www.kanteys.co.za - Contact: Warren Wiggill - Cell: 082 823 0846
 Email: WWiggill@jhb.kanteys.co.za
 Address: 410 Jan Smuts Avenue, 9 Burnside Island, Craighall

BRANCHES:-
 Johannesburg - Cape Town - Durban
 Port Elizabeth - East London - George
 Pietermaritzburg - Port Shepstone

The inverted Y-shape of the concrete pylons at the Msikaba Bridge project is strikingly elegant and will become a hallmark of this iconic structure.

CONCOR CEO TALKS TO CONSTRUCTION WORLD



*Jerome Govender,
CEO of Concor.*

In an enlightening conversation, industry veteran, Jerome Govender, who recently re-joined renowned construction and mining contractor Concor as CEO, sits down with Construction World for a Q&A session. This engaging dialogue delves into the intricacies of navigating the dynamic and challenging realms of the construction, building, civils and mining sector in South Africa.

Govender shares insights about the company's approaches to overcoming industry hurdles and the vision that propels it forward in the evolving landscape of South African construction.

What are the key factors on which Concor is navigating its future?

Over the past 120 years of our existence, Concor and its predecessor companies have survived challenging times. In each instance, Concor emerged stronger than before. The company's strength was drawn from some key ingredients including supportive customers, supportive and capable suppliers, and most importantly, committed and capable management and employees. These fundamental ingredients are largely still in place at Concor. I have no doubt that the next year or so will continue to be challenging, but we will emerge stronger as we have done before.

What kind of challenges does Concor currently face?

It's no secret that the industry as a whole has faced significant headwinds over the last few years. As a result, financial institutions have been negative on the sector and skills have left the industry. Concor has managed to maintain support from financial institutions and this will improve as sentiment in the sector improves over time.

With regard to skills, I am pleased that Concor's core management and employees are still in place even as the sector has seen a flight of skills. However, with the increase in renewable projects and SANRAL tenders coming to market, Concor and the sector will have to find ways to develop new and additional skills.

What are your main focus areas to address current challenges?

Our current short-term priorities include implementing our current contracts successfully on behalf of our stakeholders. We are also prioritising the recruitment of urgently required

resources, and the securing of new work. We are ensuring that our tried and tested systems and processes are fully applied, especially those relating to safety, the environment and quality. I am also pleased to announce the appointment of our new CFO, Unathi Magwentshu. Unathi is a seasoned executive. She qualified as a CA (SA) at Deloitte and cut her teeth in the corporate and investment banking and petroleum sectors.

How would you rate Concor's reputation at present?

In my engagements with financial institutions, customers and suppliers, I am pleased that Concor is still seen as a credible, competent and reliable contractor. We will honour our commitments to these partners.

What is your future outlook for the industry?

There are generally positive signs for the market outlook with large road contracts coming through, a growth in renewable energy infrastructure and more Public-Private Partnerships. We are also attracting important clients through the quality of our work. Our success on the Trevenna Super Basement contract in Tshwane is a good example, earning us valuable industry awards.

What makes you confident that Concor will emerge stronger from current challenges?

This is not the first difficult period for Concor or the sector at large. As our heritage of more than a century has shown, we have the institutional resilience to work our way back from these and we are doing that again, right now. We also derive our strength from being passionate and committed to developing and delivering infrastructure, which is the backbone of South African social and economic development. ☺

SOUTH AFRICA NEEDS A PRAGMATIC, INTEGRATED STRATEGY FOR SUSTAINABLE TRANSPORT

South Africa needs a pragmatic, integrated strategy to promote sustainable transport, according to Vishaal Lutchman, Managing Director, Transport, at leading consulting engineering and infrastructure advisory practice Zutari. “We do not have a strategy around sustainable transport, yet we focused on granular technology solutions such as putting in the charging infrastructure for electric vehicles (EVs).”

Lutchman adds that while the emphasis tends to be on EVs in terms of sustainable transport, alternative fuel sources such as hydrogen offer potentially more cost-effective and viable alternatives. However, the viability is yet to be tested, especially as environmental considerations cannot be the only dimension of sustainable transport.

In mature economies, sustainable transport focuses on environmental concerns such as reduced emissions. A key focus in South Africa remains its socioeconomic and human impact. “For many developing countries in the Global South, transitioning to renewables may not be the number one item on their sustainability agenda. Rather, it may be how to raise employment levels while dealing with the systemic inequality inculcated by the colonisation project, which presents many legacy phenomena to deal with,” comments Lutchman.

He points out that the notion of sustainable transport is invariably raised without addressing it on any practical or easily implementable level. Sustainability is inevitably linked to the Just Energy Transition to reduce the country’s carbon footprint. However, transport is as much a management issue as it is about transformation.

For example, the taxi industry – which is responsible for transporting 80% of commuters in South Africa – is not only unsustainable but unregulated, resulting in clashes when alternative modes of transport such as e-hailing and passenger rail are introduced as part of a holistic, integrated transport plan.

“The taxi industry grew out of the need for a solution due to the lack of public transport to connect the bulk of the population to the mainstream economy. While it has fulfilled that need, the imbalance in the overall transport system means we have unsafe vehicles on the road posing a danger to commuters, who have no alternative but to use taxis,” says Lutchman. There needs to be options allowing for natural competition and keeping prices in check.

Sustainable transport also means affordable transport, and here the taxi industry in particular



is at the mercy of the volatile oil price associated currency risks which has seen fuel costs rise locally, adding further strain to commuters’ budgets in terms of transport expenses. Increased urbanisation, combined with a young, growing population, has also skewed South Africa’s commuter profile in favour of the taxi industry.

“It is a problem as the government of the day feels held hostage by the taxi industry and its demands. Drivers and commuters have a voice in scale and the capability to manipulate outcomes,” argues Lutchman. “The government is finding it hard to integrate the taxi industry into a national intermodal system, but it needs to be done. Ultimately it needs to be done decisively to meet the future transport needs of a developing economy, combined with a growing population, so that it can be sustainable.” The enabling issues are complex and must be dealt, such as an integrated plan, funding, and dealing with socio-economic initiatives.

Lutchman highlights: “The issues we are dealing with regarding transport are far bigger than an academic approach to sustainability. Our collective mandate is to deliver safe and reliable transport for ourselves (the public and private sector) with a government that has to lead its people towards pragmatic future-proofed solutions while dealing with current crises,” concludes Lutchman. ©

“It may be how to raise employment levels while dealing with the systemic inequality inculcated by the colonisation project.”

REASON FOR OPTIMISM AS SA INFRASTRUCTURE LAYS THE FOUNDATION FOR FUTURE GROWTH

*Much like building a skyscraper requires a sturdy foundation, infrastructure is often described as the backbone needed to build prosperous economies. With this in mind, there is reason for optimism looking ahead to 2024 and beyond as, much like China's example has demonstrated, government's focus on infrastructure development could serve as the catalyst needed to reignite economic growth. However, to be successful, the private sector must urgently step up to play its part. **By Roelof van der Berg, CEO of the Gap Infrastructure Corporation (GIC)***

Quality infrastructure is the driver of trade and commerce, facilitating the smooth transportation of goods, services, and people across regions both within and past a country's borders. It's likewise responsible for providing the energy needed to fuel industrial and manufacturing activities, and the modern communication networks required by digital economies. Furthermore, infrastructure underpins human and socio-economic development, improving access to educational and healthcare facilities, and economic opportunities.

Understanding the critical role of infrastructure as an engine for fuelling economic growth, infrastructure investment has formed a central pillar of China's economic strategy for decades. Between 2002 and 2016, the Chinese government tripled its infrastructure investment as a share of GDP from 8% to almost 24% - during which time the country experienced an average annual real GDP growth of 9,6%.

By contrast, the Infrastructure Consortium of Africa (ICA) estimates that poor and ageing road, rail and harbour infrastructure in African countries generally may currently be adding as much as 30-40% to the cost of goods traded across the continent. This is placing an undue burden on consumers and businesses, and strangling growth.

So, by continuing its diligent efforts to lift the various logistics constraints facing the country, as well as to roll out world-class national infrastructure to support the needs of South Africa's expanding population, government can achieve the 5% growth target needed to stimulate job creation and eliminate poverty and unemployment.

As a result, South Africans should be comforted that government has allocated R8,47b to Public Works and Infrastructure in the 2023/24 year as evidence of its commitment, as outlined in the Medium-Term Budget Policy Statement (MTBPS). Furthermore, an additional R1,18b was allocated this year for reconstructing and rehabilitating municipal infrastructure damaged by disastrous floods in KwaZulu-Natal, Eastern Cape, Limpopo and Mpumalanga.

The role of the private sector

Critically, however, infrastructure development and the task of reaching the 5% growth target cannot and should not be the responsibility of government alone. There is no denying that South Africa has suffered a difficult few year,

as the aftereffects of the pandemic, geopolitical shocks, and what the International Monetary Fund has described as a "limping" world economy have weighed heavily upon our own economy and the fiscus.

So, as government faces the enormous challenge of balancing the many urgent demands on its limited budget, the private sector must engage to seek where it can be of service in investing in vital infrastructure projects. Quality infrastructure acts to boost investment confidence in countries, which in turn attracts further investment in areas such as infrastructure. So, by leading the way in supporting infrastructure projects in South Africa, local investors can spark a virtuous economic cycle that benefits all.

Developers, too, have a role to play in nation-building by ensuring that infrastructure is delivered at a high standard, on time, and within budget. In many cases in the past, private companies have played a role in causing wastage and cost overruns in major projects. In response, the entire industry must make every effort to improve governance, transparency, and accountability in public infrastructure projects.

As the Gap Infrastructure Corporation (GIC), for example, we are proud to be leading the way through finalising a fully digital cutting-edge project management programme that will provide real-time dashboards for monitoring projects' progress. This will not only provide internal teams with greater insights and a holistic view of ongoing work but will also benefit government partners and other clients and stakeholders.

By embracing this type of innovative solution, GIC hopes to bolster confidence, attract infrastructure investment, improve living and working conditions for local communities, and support the public sector in positively changing lives.

Many governments across Africa have increased their infrastructure spending, and the Africa Finance Corporation has even described Africa as on the precipice of a 30-year infrastructure boom.

As the continent's most industrialised nation, it is encouraging to see South Africa's public sector and private developers at the forefront of this shift, working in tandem to address the formidable infrastructure and service delivery challenges in our path and unlock economic growth to enhance the welfare of our communities. ©

NEW!

RD10



RTxSC3



RD7



RD27



RC119



RD12



Rollers: We have all it takes for soil and asphalt compaction

No matter what the job site requirements, Wacker Neuson has the perfect roller to fit the job. Contact us or a dealer near you for more information today!



www.wackerneuson.co.za



+27 (0)11 672 0847



**WACKER
NEUSON**

all it takes!



Ignatius Sehoole, CEO of
KPMG in Southern Africa.

KPMG 2023 CEO OUTLOOK SURVEY – SOUTHERN AFRICA EDITION

While CEOs remain confident in the future of the global economy, there is a significant consideration for escalating uncertainty and rising global crises - which has forced a reset in strategic thinking, a consolidation of talent, a renewed focus on collaborative approaches as well as an eye on upcoming technology. This is according to the KPMG 2023 CEO Outlook Survey – Southern Africa.

This annual South Africa report, which KPMG compiled in partnership with Business Leadership South Africa (BLSA), draws on the perspectives of 60 CEOs mostly from South Africa, and six other countries, within the Southern Africa region. This follows on the back of the Global KPMG CEO Outlook Survey conducted among 1 325 CEOs across 11 markets which examined how CEOs are looking to tackle this complex set of emerging and converging challenges.

According to Ignatius Sehoole, CEO of KPMG in Southern Africa, Southern Africa retains significant long-term potential, with a growing human capital advantage, access to abundant mineral and natural resources, and pockets of excellence in institutions and infrastructure. “Emerging market economies are, however, also severely impacted by world events. As global capital remains risk-averse, smaller currencies and stock markets suffer, and the potential for foreign investment diminishes.”

BLSA CEO Busisiwe Mavuso noted that in South Africa, business confidence remains stubbornly pessimistic. Our population now sits at 62 million, with 19 million citizens dependent on government grants at an annual cost of R200b to the fiscus. The provision of essential services remains a challenge. Poverty and unemployment remain rife, increasing the fragility of the system and its susceptibility

to the effects of global crises.

“According to the survey, an approach that CEOs are adopting to tackle the confluence of global emergencies is to concentrate on micro decision-making and the factors under their control and to prioritise internal and external collaboration to improve resilience.

KPMG’s research also shows that CEOs in Southern Africa, like their counterparts around the world, are largely taking a consolidating, anticipatory approach, waiting to see whether our compounding crises will continue to escalate, or whether we might begin to see an easing of global tensions and a return to stability.

Business Outlook

While global CEO confidence in the growth prospects of their own companies over the next three years hit a three-year low at 77%, down from 85% in 2020, according to the KPMG CEO Outlook Survey 2023, Southern African CEOs are far more optimistic with 90% of respondents indicating confidence in their company’s growth prospects.

In addition, 96% of South African CEOs see their earnings increasing over the next three years with 20% of CEOs forecasting earnings growth of between 0% and 2,5%, 63% of South African CEOs forecasting earnings growth of between



2,5% and 5%, and 3 percent of CEOs forecasting growth of between 10% and 25%.

Disruptive emerging technologies

Despite the economic challenges in Southern Africa such as inflation, 71% of Southern Africa's CEOs are making GenAI a top investment priority for their organisations. Its prominence has positioned and geared it as among one of the top priorities to get right as a cutting-edge investment by CEOs. This finding is in line with the 2023 KPMG Global CEO Outlook report, with 70% of global CEOs noting their interest in the investment of such emerging technology.

With the willingness of businesses to adopt GenAI into the workplace, there are notable challenges and concerns that CEOs have also expressed. Accordingly, 33% of them believe that the main challenge they will face is securing the technical capability and skills required for their employees to benefit from GenAI in their everyday work.

Furthermore, the ethics of this emerging technology remains an ongoing discussion within the business, with 80% of Southern Africa's CEOs agreeing that a lack of current regulation for GenAI may become a barrier to the success of their organisation adoption. Considering how GenAI should be regulated, a common outlook of CEOs viewed this technology to be a critical topic of conversation for business going forward.

Talent

In the post-pandemic era, remote work was the most viable option at the time. However, this is slowly changing, with 72% of Southern African CEOs indicating that they support the working environment returning to in-person work within the next three years, while the remaining respondents believe in a hybrid or remote way of working. This finding is in line with Global CEOs, with the majority (64%), anticipating that there will be a full return.

What is interesting to note is that given technology advances through the rise of Generative AI, 73% of CEOs in

Southern Africa have expressed that they will be prioritising the placement of their capital investment into acquiring new technology rather than the upskilling of their workforce.

"However, 96% of South African CEOs have still projected a growing headcount over the next three years. The findings in the KPMG Report also pointed to the talent landscape evolving and that there is a definitive shift in leadership and management style. The majority of CEOs across Southern Africa (53%) agree that it will be through shared management and operational responsibilities that greater success will be enabled during this politically, socially, and economically unpredictable time," says Makgotso Letsitsi, Head of People, Transformation and Citizenship, KPMG in South Africa.

ESG: Corporate Investment and Delivering Impact

At a global level, there is increased recognition amongst CEOs of the imperative role that Environmental, Social, and Governance (ESG) plays in corporate strategy. Impact on brand, customers, and employees remains the focus of ESG strategy with a shared understanding that shareholder return is not where the greatest impact will be felt. In fact, 58% of Southern Africa's CEOs say it will take 3 to 5 years to see a significant return on investment. Some Southern African countries believe that it could take between 5 and 7 years. This finding agrees with that of global CEOs, as they believe that it will still be a few years before they see a return on their ESG investments.

According to Pieter Scholtz, Partner of KPMG South Africa and the KPMG lead for ESG in Africa, CEOs across Southern Africa agree that key investment priorities include governance models and transparency protocols as well as addressing environmental challenges and focusing on diversity, equity, and inclusion.

"While we know that CEOs, globally and in Southern Africa, agree that there's a connection between a strong ESG strategy and positive financial performance, given frequently changing ESG regulations - CEOs are also rethinking and resetting their ESG strategies as their understanding of the landscape continues to grow."

Furthermore, barriers remain to achieve a net zero climate goal for global corporations, including lack of appropriate technological skills, cost of decarbonisation, lack of skills to implement solutions, the complexity of decarbonising supply chains, and lack of internal governance/ controls to operationalise it.

"As we examine the KPMG CEO Outlook Report, we can see how CEO views on what risk factors they are facing in their businesses has shifted. The rise of generative AI, how talent management is viewed and high expectations in addressing ESG and Diversity & Inclusion have become topical business focus areas. CEOs are not only trying to understand how to operate in tomorrow's market, but how they can capitalise on new technologies, while nurturing their workforce through shared management and operational responsibilities and ensure their ESG initiatives gain traction," concludes Ignatius Sehoole. ☺

KEY TAKEAWAYS FROM THE 16TH GREEN BUILDING CONVENTION 2023

Green Building Council South Africa (GBCSA) held the 16th Green Building Convention in Cape Town recently, including the GBCSA Leadership Awards, celebrating remarkable achievements in the green building sector. Held from November 15-17, the gathering brought together industry leaders, experts, and stakeholders committed to advancing sustainability in the built environment. Lead sponsors, Rand Water and Nedbank partnered with GBCSA to make the convention another resounding success.

The event has grown into the largest and most significant built environment conference in South Africa, and hosted 700 professionals, featured more than 100 speakers, workshops, and discussions, showcasing innovative and sustainable initiatives that indicate an extensive commitment to a greener and more sustainable world.

But this needs to include everyone, says GBCSA CEO Lisa Reynolds (pictured), reflecting on the strong theme of inclusive sustainability running through many of the presentations: “When GBCSA was established, the goal was focusing on the ‘top 5%’, with the buildings achieving certification indicating a commitment to limiting their impact. But sustainability is no longer a luxury, it is a necessity. Anyone who lives in a building is now part of this movement – we are broadening the spectrum and I think that’s exciting.”

A significant milestone, GBCSA’s 1 000th certification, awarded to Stellenbosch University’s Visual Arts Building, was celebrated during the convention.

Mbuyiswa Makhubela, General Manager of Corporate Services at Rand Water, expressed appreciation for what he describes as a newfound focus on water, positioning it alongside energy in terms of its importance, and calling for partnerships to influence green building discussions.

Genevieve Naidoo, Divisional Executive: Property and Finance, described the convention as ‘one of a kind’ and commended its progressive approach, praising the quality of speakers, the depth of discussions, and the diverse range of stakeholders involved at the convention.

Polar Explorer Robert Swan, in a gripping keynote speech, stressed the urgency of the journey towards sustainability, with a focus on achievable goals and the necessity of collective efforts.

Dr Sara Candiracci, Associate Director at Arup, highlighted the need for creating inclusive spaces and discussed some of the challenges faced by cities. Huge emphasis was placed on the importance of finding solutions that cater to various age groups and socio-economic conditions.

Dominika Czerwinska, Director of Engagement and Networks at the World Green Building Council, launched the ‘Building a water-resilient future for everyone, everywhere’ paper, addressing the global water crisis and



calling for collective action in the building sector. Offering an interesting perspective on global warming, comedian and OGO Creative Partner in Strategy and Marketing, John Vlismas, says: “We cannot give people clean, limitless energy, as that will kill the planet. In the long run we are helping if we can educate children at a younger age, and if we can incorporate sustainability into the different professions.”

Executive Mayor Geordin Hill-Lewis celebrated Cape Town's A-ranking for climate action and transparency in the 2023 Cities A-List by the Carbon Disclosure Project (CDP) - the only city in Africa to achieve this ranking. He says: “We will be leading the charge, moving to a more decentralised, more cost-efficient, more carbon neutral power supply in the City of Cape Town.”

André Theys, Chair of GBCSA, reflecting on the convention's success, emphasising the importance of the GBCSA's mission amid the challenges of climate change denial and alarmism. He outlined plans for future initiatives, including a focus on existing building performance, a potential ‘Green Star Lite,’ and the development of a ‘sustainable home framework’. Despite economic challenges, Theys expressed the need to drive resource efficiency in the built environment and acknowledged the vital role of partnerships in achieving sustainability goals. ©

“When GBCSA was established, the goal was focusing on the ‘top 5%’, with the buildings achieving certification indicating a commitment to limiting their impact.”

candi solar FUELS GREEN ECONOMY GROWTH IN SA

Solar solutions provider, candi solar, offers an innovative financial model offering to companies who can't afford the often hefty startup capital cost of solar installations. This initiative addresses a pressing need in the South African market, where conventional financial instruments fail to effectively address more than 90% of companies, according to co-founder and Finance Director (pictured), Fabio Eucalipto. It's a gap that candi solar is eager to bridge.



Solar and battery storage as a load shedding solution?

It's been a challenging year for South African businesses with load shedding levels reaching record highs. In fact, 2023 has received more load shedding than the previous 10 years combined, making it clear that grid energy is simply no longer reliable. Many have been seeking alternative methods for keeping the lights on and solar installations are an obvious choice considering our abundance of sunlight.

The upfront capital, especially for small, medium, and micro enterprises (SMMEs), and finding reliable engineering, procurement, and construction (EPC) providers remain challenges in the market. candi solar not only provides flexible solar financing, they carry solar risk for customers by overseeing the installation, and the system's operations and management with their team of expert in-house engineers.

Addressing the financing gap

"The business case for solar is clear but the capital is missing. This is a key gap in the market which candi solar seeks to address," explains Eucalipto. Not a new player in the solar game, but a relatively new entrant in the South African market, candi solar offers customised solar and battery storage solutions. Originating in Switzerland, and backed by Swiss expertise and ingenuity, candi has already raised about USD80m in funding, out of which USD25m is earmarked for South Africa. They anticipate doubling this figure in the upcoming year, targeting the Global South (developing countries), notably India and South Africa.

Why focus on these two countries? India is the third largest consumer of fossil fuels in the world (behind China and the United States). South Africa also features in the global top 20. "You also see a big difference in the size of the companies in the Global South compared to the Global North," says Eucalipto. "In the Global South, most companies are SMMEs [more than 90% in South Africa], whereas in the Global North the economic power comes from large corporates. If you don't address the challenges faced by SMMEs, you're not addressing some of the key macroeconomic challenges in countries in the Global South."

What is Impact Investment and why is it important?

Conventional investment focuses on generating a financial return whereas 'impact

investment' achieves financial returns alongside social and environmental impact, typically aligned with the UN Sustainable Development Goals (SDGs), explains Eucalipto. Examples include achieving reduced carbon emissions and additional employment opportunities for women, among many other positive impacts. In essence, impact investment extends beyond the investor to provide greater returns for more stakeholders. "If you want to create development for the entire economy, you need to shift your focus from a conventional, financial-return focused investment point of view to a more holistic, impact-driven investment point of view," he adds.

When we invest in countries in the Global South, we help to stimulate productivity and profitability. The knock-on effects not only contribute towards an increased GDP, but also lead to a reduced dependency on fossil fuels, and a reduction in harmful environmental effects.

Candi's global solar success

The candi solar stable consists of 156 installations, equating to over 88 MWp in size. A global retail customer in India is currently saving up to 75% on the cost of electricity compared to using energy from the national grid. In South Africa, where our national grid is unreliable, it is consistent energy supply and cost savings that make solar a compelling alternative energy option. Pretoria-based, Menlyn Retail Park's 950 kWp system, which became operational in October 2023, provides just under 40% of the retail park's energy needs. It's expected to save a whopping R69m over the 25-year lifespan of the system, while mitigating the carbon impact of 4 105 commercial flights around the world. ©

"The business case for solar is clear but the capital is missing. This is a key gap in the market which candi solar seeks to address."



ABAQULUSI PLAZA REDEVELOPMENT COMPLETE

AbaQulusi Plaza, formerly Vryheid Plaza, has reopened its doors after an 18-month redevelopment programme. On 22 November 2023, Khehla Mkhwanazi, the Mayor of the AbaQulusi Local Municipality, officially opened the centre at a ribbon-cutting ceremony.

In his speech, Mkhwanazi commented that the shopping centre was an essential boost to the economy of Vryheid, citing the 100 jobs that Shoprite alone had created, as well as the employment opportunities the construction had provided.

Vryheid is the main service and retail hub for the AbaQulusi Municipality. As such, AbaQulusi Plaza, which is a convenience centre aimed at commuters, forms an integral part of the Northern KZN transport network with long and short distance taxis operating from the centre and a strong bus network to surrounding areas. The shopping centre is the last retail opportunity for homeward bound commuters.

The most significant aspect of the redevelopment was the expansion of the intermodal transport facility. The original taxi rank was relocated to the land adjacent to the centre, with the support of the AbaQulusi Municipality, taxi associations and bus service providers. It can now accommodate over 300 taxis and close to 100 buses per day. It includes furnished offices for the Taxi Association with wifi access, a boardroom that can seat up to 100 people and shower facilities for taxi and bus drivers. The costs to run these facilities will be covered by Fortress Retail, which demonstrates the landlord's commitment to working together to support the community.

A new bridge seamlessly connects the parking area, bus ranks, and taxi holding areas to the centre, ensuring safe and convenient access for all shoppers. Fortress Retail has committed to maintain the taxi and bus rank area on an ongoing basis to ensure that shoppers will continue to enjoy the facilities for years to come.

AbaQulusi Plaza is proud to welcome informal traders who previously operated outside the centre as official tenants. These plaza traders will now have kiosks to showcase their products and services in an inviting retail setting, with access to clean, secure indoor facilities.

"This ambitious project is not just a revamp of a shopping centre. It embodies a beacon of hope for the community, thanks to the partnerships we have developed with the local municipality, taxi associations and bus service providers. The inclusion of informal traders as tenants in the centre

demonstrates our commitment to the local economy and our understanding of the needs of shoppers who frequent the centre," said Steven Brown, CEO of Fortress Real Estate.

An expansion of Vryheid Plaza was on the cards for many years and was strongly supported by national retailers. This demand was driven by both existing tenants, who want larger shops, and new tenants who wanted to trade in the centre. The Caltex garage, Cashbuild store and Boxer store were the only stores that were not demolished in the redevelopment process.

AbaQulusi Plaza now has a retail GLA of 15 329 m² (an increase of 8 370 m² when compared with the previous centre layout). The total GLA of the expanded centre is 16 900 m² (including Cashbuild and Caltex) with an estimated 50 shops in total. This project demonstrates the effectiveness of the formal and informal retail sector coming together to operate alongside one another. The landlord has embraced informal traders as tenants and has invested in kiosks to allow them to trade in optimal conditions. The centre has been purpose built to provide backup power and backup water on site and offers free wifi to all its customers.

The roads surrounding the centre were upgraded: a new traffic circle and slipway was installed, and a dedicated motorised parking area was built. From an environmental point of view, the council stormwater drainage system around the centre was rehabilitated and the river that runs through the property was cleaned, upgraded and secured. There is a full waste management plan in place including recycling of waste generated at the centre.

Bulk earthworks started in June 2022, and the redevelopment was completed by October 2023 for store fit outs.

"We believe in the retail possibilities within the province, and we anticipate serving communities up to 60 km away. The redevelopment of AbaQulusi Plaza is aligned with our strategy of expanding and enhancing our best retail assets. Many jobs that have been created and community facilities have been upgraded, which we hope will revitalise the local economy," Brown concluded. ☺



BALLITO JUNCTION REFURBISHMENT CREATES MIXED USE PRECINCT WITH FLEXIBLE WORK SPACES

Nestled along KwaZulu-Natal's North Coast lies the new Ballito Junction, with the original building being a Mediterranean-inspired shopping centre that is being reconfigured and refurbished to offer a diverse range of amenities and experiences.

Nestled along KwaZulu-Natal's North Coast lies the new Ballito Junction, with the original building being a Mediterranean-inspired shopping centre that is being reconfigured and refurbished to offer a diverse range of amenities and experiences.

The refurbishment was conceptualised by MDS Architecture for owners Menlyn Maine and Flanagan & Gerard.

Pierre Lahaye, a partner at MDS Architecture, says that the design is a contemporary update, while maintaining a focus on community and functionality. "The reimagined development brings a lifestyle element to the broader precinct by offering an outdoor dining node. The aesthetic has been updated to complement the triple-storey, 80 000 m² regional mall to which it is connected." The rejuvenated centre will offer retail convenience, outdoor dining options and flexible workspaces when it opens on 30 November 2023.

Workspace synergy

Ballito Junction will house Workshop17's inaugural venture into KwaZulu-Natal and aligns with the rising demand for mixed-use properties and remote working options. Workshop17 is a leading provider of flexible workspaces.

Says Lahaye, "The concept offers flexibility for businesses and workers, while bringing higher foot traffic to the centre during the week. Restaurants benefit from daytime visitors, and those using Workshop17 overlook the piazza or mall area while enjoying a wide array of convenient options available for meetings and meals."

New lifts and a lobby link up the new mall and provide access-controlled lifts for Workshop17. From above, a screen has been used to demarcate the space and shield services from view.

Paul Gerard, Managing Director of Flanagan & Gerard Group, notes that large volumes of people in higher income brackets, including families semigrating from Gauteng, are relocating to

the north coast of KZN. They are attracted by the quality of life it offers, its world-class secure estate living and its easy access regionally, nationally and internationally.

"It is this growing movement that inspired the decision to introduce bespoke workspace solutions to the region. We felt the timing was perfect. Many professionals will now be able to have a quality work environment within the North Coast's premier shopping destination – Ballito Junction," says Gerard.

Piazza area redevelopment

Outdoor dining has always been an attraction at Ballito Junction, so one of the significant alterations is the demolition and reconfiguration of the existing restaurant area and the creation of a new restaurant node. This space has been redesigned around a piazza which entices guests to enjoy the outdoors.

A landscaped garden area that criss-crosses between the shops offers an enclosed pause area complete with indigenous landscaping. Several Workshop17 office suites overlook the piazza, while others look into the mall area. The courtyard area's fast food and restaurant dining options open out from the main shopping centre and integrate into the garden area. Certain suites have sea views.

The introduction of darker tones, in contrast to the original lighter palette, gives the space a sophisticated, contemporary feel. The flooring patterns were meticulously designed to maintain continuity with the existing tiles.

The refurbishment includes remedial works, waterproofing upgrades, and the installation of energy-efficient features. By repurposing existing elements and aligning them with modern design principles, Ballito Junction showcases a sustainable approach that balances history with progress.

This transformation redefines Ballito Junction as a vibrant, multifaceted hub where work, leisure, and community coalesce to shape a promising future. ©

JET DEMOLITION AND EDIFICE ENGINEERING AT THE 2023 WORLD DEMOLITION AWARDS

Representing global excellence in the demolition industry, Jet Demolition, in conjunction with Edifice Engineering of India, were declared runners-up in two categories at the 2023 World Demolition Awards (WDA). Currently in its 15th year and comprising 11 award categories, the WDA is part of the World Demolition Summit that took place from 17 to 18 October 2023 in Toronto, Canada.

In partnership with Edifice Engineering, Jet Demolition entered the category of explosive demolition for the controlled implosion of the Supertech Twin Towers in Noida, Uttar Pradesh near the capital New Delhi on 28 August 2022. It marked Jet Demolition's second collaboration with Edifice Engineering, a leading demolition company based in Mumbai.

The partially constructed Apex (103 m) and Ceyane (97 m) buildings occupied a footprint of over 2 600 m² on a parcel of land only 6 100 m² and 9 m from the 12-storey Aster-2 apartment building. Designed to withstand Magnitude 7 earthquakes and located within meters of a major arterial natural gas line, the towers presented unique challenges to ensure their successful implosion.

With heavily reinforced shear walls up to 10 m long, and box stirrups at 100 mm intervals around all vertical bars forming incredibly strong rebar cages, the buildings were highly resistant to rupture by blasting. Diamond coring was employed to achieve the highest practical levels of hole directional accuracy.

A total of 9 642 holes totalling more than 17 000 m were charged with 3 516 kg of detonating cord and emulsion explosives using a range of shock tube delay detonators. The buildings were successfully imploded within the exceptionally tight site footprint on 28 August 2022.

Citing the project as one of the most challenging ever undertaken by Jet Demolition, Director Joe Brinkmann says: "Edifice Engineering and India have joined the 100 m implosion club under extremely demanding conditions."

In the projects under USD1m category, the highly successful collaboration of Jet Demolition and Edifice Engineering entered the precision brownfield demolition of large coke oven infrastructure at the Tata Steel Jamshedpur Works (TSJW) in India.

During 2022, Tata Steel Jamshedpur Works embarked on a project to replace the entire infrastructure of Coke Ovens

5 and 6. This required demolition of both coke ovens and associated equipment, including two 110-m-high concrete chimneys and a 49-m-high, massive (>6 000 tonnes) elevated coal bunker known as the Coal Tower. Following extensive client discussions, it was decided to proceed with precision directional explosive toppling within the operational facility – a first for TSJW.

The main challenge was achieving fully assured, precise control of the toppling direction of the chimneys to prevent damage to operational plant assets from direct impact. It was decided to rely on a proven method based on fabrication and installation of large steel hinges, prior to blasting.

The fragile and thin concrete shells of the chimneys were reinforced to ensure that the hinges would function as planned, strengthened by way of inclusion of a heavily reinforced concrete haunch.

Following extensive preparatory works, a wedge was carefully blasted from the front of the chimney shells, together with a fine split line at the rear, inducing unrestricted smooth rotation of the chimney under force of gravity around the precision located hinges.

The chimneys landed within excavated reception pits onto lateral vibration reducing impact cushion berms, surrounded by 10-m-high debris catch curtains. The Coal Tower was successfully toppled using a rotational kickback design to bring it within direct reach for secondary mechanical demolition. This design functioned reliably, producing significant disintegration upon impact, to the full satisfaction of the client.

Jet Demolition is no stranger to international accolades, being crowned 'Best of the Best' at WDA 2020 and winning the explosive demolition category for the controlled implosion of the Bank of Lisbon building in Johannesburg.

In 2019, Jet Demolition won in the recycling and environmental category for the safe decontamination and



demolition of three redundant gold and uranium complexes. In 2018, it won in the industrial demolition category for the demolition of a coal-fired boiler and ancillary equipment at Duvha Power Station in Mpumalanga. In 2017, it won for its innovative implosion of the 14-storey HG de Witt Building in Pretoria.

The annual WDA summit is organised by KHL group magazine Demolition & Recycling International, in co-operation with the European Demolition Association and the National Demolition Association of the US. It is the top industry event for the demolition industry globally.

Recognising innovation, excellence, and best practice among demolition contractors and equipment

manufacturers globally, this year saw a record number of entries from leading companies representing four continents. The international panel of expert judges who whittled down the shortlist have over 300 years of accumulated industry experience.

Kate Bester, Project and Contracts at Jet Demolition, and Mohan Ramanathan, Founder Chairman of the Indian Demolition Association, presented a joint key note address at Demtech India 2023 from 28 to 29 September entitled the 'Past, the Present and the Future of Demolition'. Brinkmann, in conjunction with Edifice Engineering, delivered a presentation on 'Explosive Solutions to Challenging Demolition Projects'. ©



ASPHALT MILLING MACHINE OF CHOICE FOR CONTRACTORS AND ROAD BUILDERS

The Roadtec RX600ex milling machine is a powerful and versatile machine that can handle a variety of asphalt milling projects. Its features and benefits are increasingly establishing it as a viable option for contractors and road builders, says Philip Saunders, Astec Industries Africa and Middle East Regional Sales Manager for Construction machinery Solutions.



One of the main advantages of the Roadtec RX600ex is its ability to cut up to 330 mm deep with a width of 1,9 m, 2 m, or 2,184 m. “This means that the machine can remove various thicknesses of asphalt in a single pass, reducing the number of passes and the time required to complete a project. The machine also has the option of a variable cutter system that allows it to cut at widths of 610 mm, 914 mm, 1 219 mm, and 1 524 mm without changing the cutter housing. This gives the operator more flexibility and efficiency in adjusting the cutting width according to the project specifications,” Saunders explains.

Easy to transport and operate

Another benefit of the Roadtec RX600ex is its light weight and manoeuvrability. The machine weighs in at 28 800 kg (Shipping Weight) and has a turning radius of 2,032 mm, which makes it easy to transport and operate in urban situations. It has a two-stage front load-out conveyor with a 60-degree swing to either side, which provides ample loading capacity and allows the operator to discharge the milled material into a dump truck from any angle. The machine also has a travel speed of 5 km/h and an operating speed of 50 m/min, which enable it to move

quickly between cuts and across the job site.

Saunders outlines some of the Roadtec RX600ex innovative features that enhance its performance and safety: “One of these features is the automated control of elevation (ACE) system, which automates the machine's elevation through grade and slope sensors. The operator and the ground crew can easily adjust the grade and slope parameters in real time, and the depth and slope are continuously displayed on the control panel. The ACE system can also be coupled with the auto-cut system, which automates the machine's rear elevation as it enters each cut. These systems ensure that the machine maintains a consistent and accurate cutting depth and slope throughout the project.”

Enhanced air quality, visibility and safety

The Roadtec RX600ex's dust extraction system is also noteworthy, he states. “The system removes dust and debris from the milling operation through a hydraulic fan at the primary conveyor. The dust is ejected at the end of the secondary conveyor into the dump truck, where it is mixed with the milled material. This feature coupled with the dual water spray bars as standard, reduces the amount of dust and noise

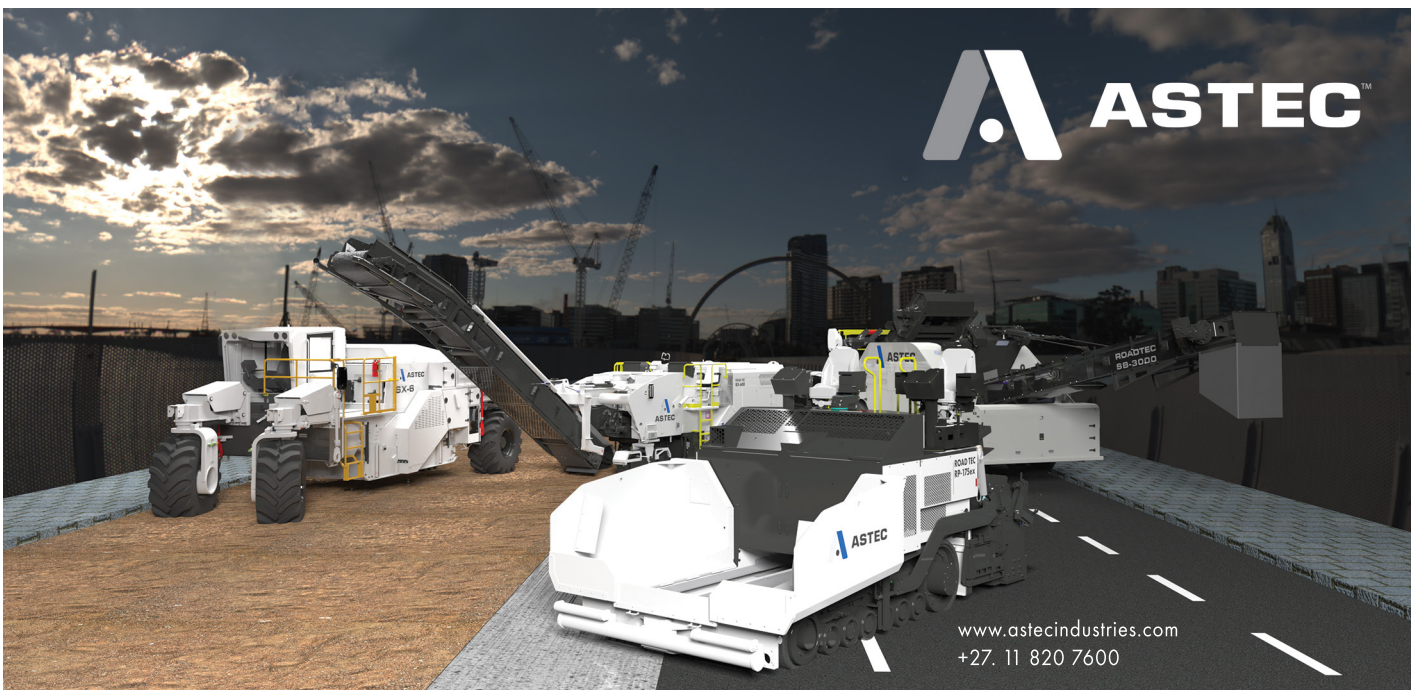


generated by the machine and improves the air quality and visibility for the operator and the crew. The machine also has a rear object detection system, which stops the machine if a person or object is behind it while it is in reverse. This system prevents accidents and injuries caused by the machine's blind spots.

“The Roadtec RX600ex milling machine is a state-of-the-art machine that offers many benefits and features for asphalt milling projects. It is powerful, versatile, efficient and safe. It can handle a wide range of cutting depths and widths. It is also light and manoeuvrable, with innovative systems that automate and enhance its performance. The Roadtec RX600ex is a machine that can deliver high-quality results and customer satisfaction,” Saunders concludes. ©

ABOUT ASTEC

Since 1972, Astec has been connecting communities by providing innovative rock to road solutions for our customers. United by our purpose - Built to Connect - Astec is a leading global manufacturer of specialised equipment for asphalt road building, aggregate processing and concrete production. Operations are divided into two primary business segments: **Infrastructure Solutions** includes road building, asphalt and concrete plants, thermal and storage solutions. **Material Solutions** includes aggregate and other material processing solutions. For more information, visit astecindustries.com and follow us on social media.



www.astecindustries.com
+27. 11 820 7600

SANRAL KICKSTARTS MULTI-BILLION RAND ROAD CONSTRUCTION PROJECTS

The South African National Roads Agency SOC Limited (SANRAL) resumed procurement for road construction projects early in December as 86 tenders were expected to be advertised. SANRAL's Chief Executive Officer, Reginald Demana, has announced that the national roads agency is getting back to business after tenders worth billions of rands were stalled due to a legal impasse between SANRAL and some construction companies.

High priority tenders

Demana said as part of the retender process, SANRAL has reprioritised some of the less complex previously advertised tenders related to consulting engineer appointments and contractor appointments for asset preservation projects. These were subjected to a shortened retender period to enable their closing by 14 December 2023, thus enabling SANRAL to commence with tender evaluations during the December period so as to get projects back on track as fast as possible.

“We are making good on our promise to the road construction industry and the South African public that we

would move as fast as possible to overcome the legal challenges to our Preferential Procurement Policy (PPP) and get the industry back on track,” said Demana.

Why SANRAL is here

The readvertisement of tenders, scheduled to start from today, is the first step toward getting the road construction industry back to normal after all SANRAL tenders were cancelled following the SANRAL Board's withdrawal of the Preferential Procurement Policy (PPP) which it had adopted in May 2023.

The SANRAL Board announced on 24 October 2023 that it had withdrawn the PPP after several construction companies launched legal challenges against the policy.

The withdrawal of the policy was informed by SANRAL prioritising business continuity as it was clear then that with the mounting legal challenges, SANRAL could not put out any work to tender without attracting same. In the interest of avoiding protracted legal battles – which could easily derail SANRAL from fulfilling its core mandate of building and maintaining national roads – and ensuring that the construction industry continues to work, SANRAL Board's decided to withdraw the policy while at the same time committing the roads agency to move speedily to consult interested and affected parties on a proposed interim PPP.

It also needs to be said that following the Constitutional Court ruling of 16 February 2022, the determination of a procurement policy was firmly placed within the domain of the individual organs of state – something which in the first place gave rise to SANRAL coming up with the procurement policy that became the subject of court challenges.

Commitment to transformation

SANRAL has been at pains to emphasize that the withdrawal of the policy was no sign of capitulation. It was a pragmatic decision taken to ensure that the procurement of goods and services and service delivery are not interrupted. Themba Mhambi, SANRAL's Board Chairperson, said: “Our democracy is underpinned by transformation. If there



is no transformation, we will fail as a country and organisation. The only way to achieve equality is for SANRAL to make purposeful moves to expand wealth-creation opportunities among black businesses.”

Public participation process

Following the withdrawal of its PPP, SANRAL conducted a series of countrywide public consultation sessions during which numerous verbal and written submissions were made to the roads agency to consider in the formulation of its interim PPP. After considering the inputs of interested and affected parties during the public consultation process which ended on 21 November, the SANRAL Board yesterday adopted the interim policy (which is available on the roads agency’s website www.nra.co.za).

“The SANRAL Board is satisfied that it has taken into account the necessary considerations for the adoption of the Interim PPP, with meaningful, targeted and deliberate consultations with interested and affected parties across the country. We have heard the cries for more aggressive transformation from black business and noted the objections and push-back from other fronts. We remain steadfast in our resolve to ramp up wealth-creation for black contractors, while at the same time being mindful of the importance of working with the big construction companies as we collectively develop South Africa’s economy,” said Demana.

The roads agency started with the public consultation roadshows, which included both contact and virtual sessions, in the Western Cape and Northern Cape on 31 October 2023. It then hosted consultations in the Eastern Cape, Free State,

KwaZulu-Natal, Limpopo, Mpumalanga, North West and concluded in Gauteng on Friday 17 November 2023, with written comments on the draft interim policy extended to 21 November 2023.

The public consultations were well attended and all oral input as well as the 162 written comments received were considered in determining the way forward, to enable SANRAL to move forward on the much-needed road infrastructure projects across the country.

The advertising and adjudication of tenders will continue whilst SANRAL will also be forging ahead in pursuit of a final Preferential Procurement Policy. This will require further consultation with the industry and SANRAL remains committed to giving effect to this process.

Public Procurement Bill

Meanwhile, SANRAL said it has taken note of the Public Procurement Bill deliberations currently unfolding before Parliament’s Standing Committee on Finance.

“The Treasury revisions and submissions on the Bill, in particular the measures through which an organ of state can provide for preference, resonate with SANRAL. These measures include setting aside specific contracts for preferred groups, applying a points system to provide for preference, using sub-contracting as a condition of tender, applying thresholds for local production and content, and making set-asides mandatory. Some of these elements were contained in our contested procurement policy. We hope the Bill will soon be finalized and we will all have a clear understanding of the broader framework within which we must procure,” said Demana. ☺



WHEN QUALITY FINISHES RELY ON QUALITY PRODUCTS FOR QUALITY AESTHETICS!

- Bonding Agents
- Chemical Anchors
- Concrete Bonding
- Concrete Crack Repairs
- Concrete Release Agents
- Concrete Repair Mortars
- Curing Compounds
- Epoxy Adhesives
- Epoxy Grout
- Joint Sealants
- Non Shrink Grouts
- Pre Cast Repairs
- Water Proofing

- Tel: + 27 11 822 2320
- Fax: + 27 11 822 2354
- e-mail: cindy@ashak.co.za

CREATING CONCRETE SOLUTIONS





6944 ASHAK CONST. CHEM. 1/20 PUBL. OCT '23 CONSTR. WORLD

CHOOSING THE CORRECT BITUMEN MEMBRANE

Bitumen has been a popular roofing material choice for thousands of years, and with good reason. The benefits of the sticky substance include versatility, durability, and cost-effectiveness. Above all, however, bitumen is highly waterproof, which makes it an ideal system for roofing projects.

The Sika Group has not been around for thousands of years, but they do have over a century's worth of waterproofing experience. The chemical giant also recently acquired a majority stake in Index Construction Systems and Products – a leading manufacturer of roofing and waterproofing systems near Verona, Italy. Index is known for its superior range of quality bitumen membrane solutions, and the resultant combination of products allows Sika to become a comprehensive, full-range supplier of cutting-edge technologies.

Whether you are an architect, roofing applicator, or anyone involved in selecting bituminous roofing, Sika is perfectly placed to help you choose the perfect product, however, there are several factors to be taken into consideration when choosing a bitumen membrane:

Where will the product be supplied?

Temperature, exposure, and local weather should be factored in when selecting the type of compound type, be it elastomeric, plastomeric, elastoplastomeric, or oxidized bitumen.

What is the intended use?

The surface of the membrane is chosen according to where and how it will be applied. Typically, smooth surfaces such as talc, sand, and PE foil are indicated for ballast systems, or as a base sheet in a multi-layer system. Covered membranes such as granulated surfaces, on the other hand, protect the compound and can be used as an exposed layer.

What are the requirements?

Performance requirements must be provided to select the reinforcement – be it polyester which increases strength and elongation, glass fibre which increases dimensional stability, or aluminium which works as a vapour barrier.

The type of reinforcement also defines the system build-up and whether the membrane should be applied in a single or double layer.

What is the life expectancy?

Aging tests are strongly recommended. A good quality indicator is the bitumen membrane's flexibility at low temperatures. The lower the flexibility, the higher the durability due to the volume and quality of polymers. Additional tests to check the thermo-oxidization are also advisory.

Are there any other limitations?

Each project possesses unique requirements or limitations,

which could include fire performance, local approvals, certifications, required anti-root materials, and safety considerations during the application process. Each should be assessed individually, and the best solution obtained prior to installation.

Once these project needs have been specified, there are a few key variables of bituminous membranes that require consideration to ensure an appropriate system is utilised.

Cold flexibility

The flexibility of the bitumen membrane at lower temperatures is an important indicator of quality because it is directly related to weather conditions and the life expectancy of the membrane.

Reinforcement

Responsible for mechanical properties such as strength (tensile force), elongation, and tear-and-shear resistance, reinforcement value is a critical component of the bituminous membrane. These values should be in accordance with the features of the building to ensure resistance against movement and applied loads. Some of the most popular reinforcement materials include glass fibre, glass fleece, aluminium, non-woven polyester, and polyethylene foil, all of which are available in the Sika Index bitumen range.

Top surface

The Index range includes both smooth and self-protected surface options. Smooth surface examples include polyethylene foil, sand, Talc, and HDPE. These surfaces ensure bonding of the overlying layer and would be used primarily for non-exposed roofs, below-ground applications, and as the under or immediate layer in multi-layer systems.

Examples of self-protected surfaces, on the other hand, are granules, aluminium, and geotextiles. These surface options protect the membrane against UV rays and would be best used on exposed roofs and for the upper layer in multi-layer systems.

Whatever decision is made regarding the perfect bitumen membrane for a particular project, one thing is certain. Bitumen membranes remain a significant component of waterproofing solutions so long as bitumen continues to be a firm favourite roofing solution.

And with over 100 years of waterproofing experience, and a proven and innovative product range behind them, there's no reason why you shouldn't choose Sika as your preferred waterproofing partner. ☺

‘QUANTUM SHIFT’ FOR INFRASTRUCTURE DELIVERY WELCOMED BY CONSTRUCTION INDUSTRY

In a sobering update on the state of South Africa’s financial status quo two months ago, finance minister, Enoch Godongwana, blamed the country’s weak economic outlook on power cuts, poor performance of the logistics sector, high inflation, rising borrowing costs and a weaker global environment.

With a 4,2% growth rate, the construction industry was amongst a handful of sectors to show positive signs of growth in the first half of 2023.

The minister stated that investing in infrastructure is central to supporting higher economic growth and better access to basic services and announced government’s plans to facilitate a quantum shift in the quantity and quality of delivery in the infrastructure industry by mobilising private sector financing and technical expertise at scale.

He did, however, note that the infrastructure ecosystem is beset by challenges that undermine its efforts to fast-track delivery, including a lack of a credible pipeline to attract

funding, lack of sustainable financing arrangements to crowd-in private finances, and poor contract and project management to manage cost and schedule overruns.

“While talk of a quantum shift in infrastructure delivery is good news for the construction industry, boosting investor confidence and getting projects off the ground, requires proof that funds will be invested effectively and result in value for money,” says GVK-Siya Zama CFO, John de Sousa (**pictured**).

He says growth in the industry over the past six months can largely be attributed to it coming off a low base, and taking into consideration that the industry has been in decline since 2016.

“The construction sector is one of the largest creators of employment in our country, and for our economy to start recovering and growing, it is imperative that this sector continues to grow. While government spend does continue, it is at a slower pace than is ideal. Notably, the private sector has also picked up, especially in respect of renewable energy projects.

“That said, we know that treasury must maintain a delicate balance between spending and debt. However, continued focus by government on infrastructure spend, as well as private sector investment, is the only way the sector can thrive and help turn the economic tide in South Africa.”

He says the industry also welcomes government’s plans to amend Treasury Regulations and key elements of municipal legislation that are aligned with recommendations emanating from the completed review of the Public- Private Partnerships (PPP) framework.

“It is clear from the current medium term budget update that government alone will not be able to fund the required infrastructure spend. For a long time now there has been much talk about PPPs as a mechanism for government, in conjunction with the private sector, to unlock projects that have been held up, either through funding or the required expertise on the ground.

“We previously suggested that the regulatory framework relating to public private partnerships needs reform. It is too early to say what these reforms will look like, but it is clear that government now realises this is the only way forward in terms of keeping up with the growing infrastructure requirements in the country,” adds De Sousa.

He says government’s intention to widen the scope for concessional borrowing by creating new mechanisms for private-sector investors and multilateral institutions to co-invest with government on selected infrastructure projects could be a feasible solution to addressing the cost of borrowing, which has reached new highs because of the country’s credit downgrade – assuming it can result in a win-win for both parties. ©





MTENTU BRIDGE: AFRICA'S TALLEST AND LONGEST CANTILEVER BRIDGE IN THE MAKING

South African National Roads Agency Limited's N2 Wild Coast Toll Road (N2WCTR) serves as a shining example of a catalytic infrastructure project that combines socio-economic benefits and engineering ingenuity. The N2WCTR, which stretches from the Gonubie Interchange in East London to the Mtamvuna River near Port Edward, will shorten the current travel distance by 85 km resulting in a time saving of up to three hours. The project has created thousands of new jobs, as well as opportunities for SMMEs, women and youth – the benefits of which can and will be seen locally and regionally.

The ambitious project entails the construction of two mega-bridge structures, seven additional major river bridges and several interchange bridges, as well as new intersections, interchanges, pedestrian walkways and agricultural under and over-passes. Among the remarkable feats planned within this programme is the construction of Mtentu Bridge near Lundini in the Eastern Cape province. Once completed, Mtentu Bridge

will be Africa's tallest bridge at a staggering 223 m high. With a length of 1,13 km, including a 260 m long main span, the bridge will also rank among the world's longest main-span balanced cantilever bridges.

In August 2023, construction work on Mtentu Bridge commenced following a four-month ramp-up period. As the appointed bridge designers, SMEC South Africa and HVA JV



to aesthetic and cost-effective principles. Given the bridge's location in a valley with steep sides, different vertical grades for the approach roads, ranging from 4% to 6%, were evaluated to optimise the alignment and reduce the bridge's length. More than seven alternatives were assessed, all aimed at decreasing wind and seismic forces, reducing the size of the foundations, and employing well-established and uncomplicated design and construction methods. The optimisation process factored in cost, schedule, visual appearance, environmental impact and design and construction risks.

Several structural designs were considered, including long-span cable-stayed spans with 480 m main spans, a balanced-cantilever design with five spans, and a combination of a balanced-cantilever main span with incrementally launched approach spans. The last option was selected for detailed design.

The final bridge design consists of three balanced-cantilever spans with a 260 m main span. The approach spans are incrementally launched with 66 m spans, resulting in a total deck length of 1 133 m. The deck accommodates four traffic lanes, shoulders and two separate 1,4 m wide sidewalks. The bridge's horizontal alignment is straight, while the approach spans follow vertical sag curves, necessitating the incrementally launched spans to follow a vertical arc. The main spans maintain a consistent gradient and all foundations are spread footings on rock, with main piers reaching heights of 148 m and approach span piers up to 80 m.

The deck is continuous, with expansion joints only at the abutments. This required the main piers to support significant loads during construction and seismic events while accommodating temperature-induced deflection. To achieve this, the main piers were constructed as twin-bladed hollow box sections. The deck's cross-section at the front face of the main piers for the balanced-cantilever spans is supported on bearings, and these piers are also constructed as hollow box sections. The deck's cross-section for the main spans varies from 15 m deep at the piers to 5 m deep at mid-span, while the approach spans are 5 m deep.

Mtentu is the second mega-bridge in the N2WCTR project and, together with the cable-stayed Msikaba Bridge, will form part of the 112 km of new highway between Port St Johns and Port Edward. SMEC South Africa was closely involved in the design of the Msikaba Bridge and is currently providing construction monitoring and technical support services for the project. ©

partners CH2M and Axis, have played a pivotal role in the Mtentu Bridge project since its inception. The team is now involved in the construction monitoring and technical support services for the project. During the concept and preliminary design stage, the team faced the challenge of creating a bridge that minimised environmental impact while adhering



ENGINEERING OUR ROADS FOR SAFETY

*The South African National Roads Agency SOC Limited (SANRAL) is responsible of over 23 000 km of South Africa's national roads network. As the country focused on Transport Month in October, the Agency reflected on the multi-faceted approach needed for engineering roads for safety. **By Jason Lowe***

Road transportation is vital in promoting any country's economic growth, trade, and social development. However, the safety of roads and transportation systems remains a significant concern, particularly in Africa.

And while Africa is recognised as the least motorised continent in the world, it has the most dangerous roads, with 44% of fatalities on the roads being pedestrians and cyclists. In recent years, the continent has witnessed a rise in road accidents and fatalities, posing a threat to the lives of millions of people.

South Africa is not spared from this increase in accidents and road fatalities. According to the Road Traffic Management Corp (RTMC), 12 545 people died in road accidents in South Africa in 2021. That was 25,8% more than 2020. In 2010, it was just under 14 000.

The need for engineering roads for safety is imperative to establish a robust transportation infrastructure that safeguards human lives, enhances mobility, and contributes to sustainable development.

Road infrastructure planning and design

Road safety requires the participation of everyone who uses the road network, from pedestrians to heavy-duty truckers, but also from the planners, designers and engineers who build the roads. Effective road infrastructure planning and design are fundamental elements in engineering safe roads. Engineering professionals must consider factors such as road geometry, visibility, and traffic flow patterns while designing roads to minimise the risk of accidents, incorporating well-defined lanes, appropriate signage, and safe intersections can enhance road safety.

Several countries – including South Africa, Sweden and the Netherlands – have adopted what is referred to as the "Safe System" which recognises the role of the engineer to:

- Design in anticipation of human error and attempt to limit crash dynamics to mitigate fatalities and severe injury
- Adopt proactive, continuous and comprehensive road network improvement and maintenance programmes
- Seek safety programme solutions throughout the system, rather than just assigning blame
- Aim for zero deaths/serious injuries without any compromise.

The work of SANRAL takes a holistic approach that goes beyond just building safely engineered roads and rests on its four strategic pillars: Roads, Road Safety, Stakeholders and Mobility.

The Road Safety pillar focuses on implementing programmes to improve attitudes and behaviour, extend education and awareness programmes, strengthen law enforcement and regulation partnerships, and implement technology and



innovation solutions that influence road user attitudes and behaviour. This pillar focuses on several elements that support road safety.

Overloading

Overloading heavy vehicles is a significant problem on South African roads and takes a toll on road damage and safety risks. The South African National Roads Agency (SANRAL) has set up weighbridges on national routes nationwide and works with local law enforcement authorities to impose penalties for overloading.

In 2021/22, there was an approximate increase of 15% in freight traffic due to the easing of COVID-19 lockdown regulations, resulting in improved economic activity. Approximately 7,3 million vehicles were screened using weigh-in-motion devices at weighbridges. A total of 1,73 million vehicles, possibly overloaded, were directed for weighing on the static scale.

Vehicle safety inspections

A total of 10 016 vehicles were tested at vehicle inspection facilities, and 6 541 failed one or more vehicle fitness tests. A total of 642 vehicles were deemed unroadworthy and issued with discontinue notices.

Smart mobility

It is important to contextualise and redefine smart mobility in South Africa. This strategy achieves this through ongoing stakeholder engagement and needs identification from various role-players within both the private and public sectors. The purpose of the smart mobility strategy is to align interventions to the needs of South Africa and its citizens.

Intelligent Transportation Systems (ITS)

The Road Safety pillar includes research and data collection



on collisions, public awareness and road safety education, improved road incident management systems, development of engineering standards for safe roads and strengthening of partnerships for law enforcement.

ITS leverages advanced technologies to enhance safety and efficiency in road transportation. Integrated systems that employ real-time traffic monitoring, accident detection, and management can significantly reduce response times and improve road incident management.

Furthermore, deploying ITS solutions such as dynamic message signs, traffic signal coordination, and smart lighting can enhance road safety, minimise accidents and minimise our impact on non-renewable energy sources.

Road maintenance and repair

Regular maintenance and repair of roads are crucial for ensuring their long-term safety. Poorly maintained roads pose significant risks to drivers and pedestrians alike. Regular inspections and necessary repairs contribute to maintaining road quality and safety. Additionally, using durable materials, especially in vulnerable areas such as bridges and culverts, is essential to prevent structural failures and minimise road accidents.

Safety plans focus on fundamental design flaws and those inherent in existing roads and are proactive in identifying where serious road accidents are likely to occur.

Road Safety Audits (RSAs) and Netsafe (road network safety prediction software) offer proactive road infrastructure safety management approaches. SANRAL includes RSAs as a precondition to all road projects at the design and construction stages.

The Agency also continuously explores improved road management systems, leading and participating in road safety research and development programmes.

Public awareness and education

SANRAL's Horizon 2030 strategy recognises road safety as a national priority, and its road safety education and awareness programmes target a broad range of South Africans, from learners and parents to teachers and community members.

Addressing social cohesion and safer communities, 12 road safety audits were completed in 2022/23, and road safety educational and awareness programmes were conducted at 30 educational sites near our projects. These promote responsible driving behaviour, highlight the risks associated with reckless driving, and educate road users on safety measures that foster a safe road usage culture.

Conclusion

SANRAL's roads have a net asset value of around R450 billion, making the national road network one of South Africa's most significant assets. This network continues to grow as SANRAL builds new roads and takes over roads previously managed by provincial authorities.

Engineering roads for safety, therefore, is a priority in South Africa (and the continent) to mitigate the rising number of road accidents and enhance transportation systems. South Africa and Africa can make significant strides in improving road safety by adhering to international standards, implementing effective road infrastructure planning, deploying intelligent transportation systems, ensuring regular maintenance, and creating public awareness.

Collaboration between governments, engineering professionals, and local communities is vital for executing these strategies to create a safer road network that protects the lives of millions of people, facilitates economic growth, and fosters sustainable development. ©

Jason Lowe is SANRAL Lead on Engineering for Road Safety and Geometric design, as well as Project Manager for its Eastern Region covering KwaZulu Natal and Free State provinces.



TSHOXA 1 BRIDGE REDEFINES SUSTAINABILITY IN INFRASTRUCTURE

A sleek new road bridge stands proudly on the western edge of Qonce, formerly known as King Williams Town, in South Africa's Eastern Cape province. The Tshoxa 1 Bridge, commissioned by the South African National Roads Agency Limited (SANRAL) and constructed by WBHO, is a testament to the versatility and elegance of concrete in modern infrastructure projects.

This 140 metre long bridge stands 18 metres above the Tshoxa River and a railway line with a railway bridge, forming a crucial part of a broader road improvement project. SANRAL's initiative aims to enhance the safety and efficiency of transportation in the region by upgrading key roads' alignment and infrastructure. These improvements will not only facilitate logistics and trade but also make driving safer, quicker and more cost effective.

The Tshoxa 1 Bridge's sustainability is highlighted by its innovative concrete mix design. Cement from AfriSam and readymix from Stutt Group's batch plant near Daleview Quarry were used to create a sustainable W specification concrete mix. This mix reduced the environmental impact by eliminating dune sand from the mixture, saving approximately 13 800 tonnes of sand. Additionally, the inclusion of fly ash as a cementitious supplementary material significantly reduced

the carbon footprint. Construction on the broader road project began in 2021, with the Tshoxa 1 Bridge's construction commencing in April of that year. While the bridge itself is complete, the entire contract is expected to be finished by April 2024.

Mariswe served as the consulting engineering company overseeing the contract, with Gibb handling the engineering designs. Stutt Group supplied the readymix for the bridge, using approximately 750 tonnes of HSC 52.5N CEM1 cement from AfriSam. This choice aligns with the government's policy of using locally manufactured cement for publicly funded projects, reducing reliance on imported cement.

The Tshoxa 1 Bridge reflects the successful integration of concrete's functionality and aesthetics to enhance the quality of life through infrastructure development. It blends seamlessly into its rural surroundings while boasting an elegant concrete

Construction on the broader road project began in 2021, with the Tshoxa 1 Bridge's construction commencing in April of that year. While the bridge itself is complete, the entire contract is expected to be finished by April 2024.



This 140 metre long bridge stands 18 metres above the Tshoxa River and a railway line with a railway bridge, forming a crucial part of a broader road improvement project.



The Tshoxa 1 Bridge reflects the successful integration of concrete's functionality and aesthetics to enhance the quality of life through infrastructure development.



The concrete mix design addressed challenges posed by the region's natural sand quality by replacing it with carefully selected quarry dust.

finish, further enhancing its visual appeal.

This project's environmental sustainability extends beyond its visible aspects. The concrete mix design addressed challenges posed by the region's natural sand quality by replacing it with carefully selected quarry dust. This not only reduced the carbon footprint but also minimised the need for potable water from the local municipality, saving 690 000 litres in total.

The innovative use of admixtures, including plasticisers and superplasticisers, lowered the cement-water ratio, resulting in less cement consumption. Compared to a standard 40 MPa pump mix, the Tshoxa 1 Bridge's concrete mix reduced carbon emissions by 28,6%, amounting to only 210 kg/m³ of emissions.

The project's sustainability extends to its supply chain. The proximity of Stutt Group's Daleview Quarry to the batch plant and the bridge site reduced transportation distances, saving time and diesel in operations. Additionally, strategic planning ensured adequate supplies of aggregate, water, and concrete pump equipment, mitigating risks associated with large pours.

The concrete placement, rate-of-pour, mix composition and formwork resulted in an exceptional off-shutter finish. Quality assurance measures, including accurate batching, concrete testing, strength evaluations and slump testing, were rigorously applied to meet project specifications. The durability panels, exposed to real-time elements on-site, provided valuable data on concrete performance.

Managing variable weather conditions, from extreme temperatures to downpours during the rainy season, required expertise and adaptability. The project team's careful handling



The Tshoxa 1 Bridge project made a significant impact on the local community by directing 30% of its contract spend to local subcontractors and suppliers.



The concrete placement, rate-of-pour, mix composition and formwork resulted in an exceptional off-shutter finish.

of moisture levels in the concrete stockpiles and meticulous quality control ensured consistent concrete performance.

The Tshoxa 1 Bridge project made a significant impact on the local community by directing 30% of its contract spend to local subcontractors and suppliers. Over 200 project labourers were sourced locally, providing employment opportunities for residents. The project also engaged local subcontractors for specific tasks, promoting economic development.

In addition to its sustainability efforts in concrete mix design, the project demonstrated a commitment to environmental care.

Regular water quality testing in the Tshoxa River, temporary concrete walls to channel water during heavy rainfall and

responsible cleaning practices ensured minimal environmental impact. The project's environmental consciousness extended to landscaping, where topsoil was carefully stockpiled for use in rehabilitation efforts.

The batch plant's water conservation practices including settlement ponds and material recycling, further reduced its environmental footprint.

The Tshoxa 1 Bridge is a testament to the power of sustainable and innovative engineering, showcasing how concrete can be both functional and environmentally friendly.

This project not only enhances the region's transportation infrastructure but also leaves a positive impact on the community and the environment. ©



The Tshoxa 1 Bridge is testament to the power of sustainable and innovative engineering, showcasing how concrete can be both functional and environmentally friendly.



HIGH POWER BREAKERS

● HM1812

Electric Breaker

- Soft start for suppressing start-up reaction
- Improved switch mechanism to provide enhanced durability against dust
- LED light indicates carbon brush replacement
- Optional dust extractor attachment
- Soft grip provides more control & less hand fatigue
- Recess lifting handles for easier lifting
- Vibration absorbing housing

Specifications:

Continuous Rating Input	Vibration Level	Impact Energy	Blows (b/min)	Noise	Hex Shank
2,000W	6.5m/s ²	72.8J	870	107dB(A)	28.6mm

**SOFT
NO LOAD**



● HM1802

Electric Breaker (without AVT)

Specifications:

Continuous Rating Input	Vibration Level	Impact Energy	Blows (b/min)	Noise	Hex Shank
2,000W	14m/s ²	71.4J	870	106dB(A)	28.6mm



72.8J

Bit Sold Separately



MakitaPowertoolsSA



MakitaToolsSA

For more info. or your nearest Makita dealer contact Rutherford:
JHB: 011 878-2600 • CT: 021 932-0568 • DBN: 031 717-6400

www.makita.co.za





► Commercial Banking

Make Nedbank Manufacturing your next big move.

If you are looking for an industry leader who understands the sector, then partner with a bank that sees the bigger picture. We have designed a bespoke offering that will support your manufacturing business needs, and our dedicated team has the knowledge and expertise to help your business grow.

So, why not partner with Nedbank Manufacturing?

Think bigger.

Think Nedbank Commercial Banking.

For more information about our bespoke offering, scan the QR code or e-mail us at manufacturing@nedbank.co.za.

Joe Public 35111



see money differently

NEDBANK