

COVERING THE WORLD OF CONSTRUCTION

JUNE 2023

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# Construction WORLD



**TSK and Keller join forces for  
Kilombero Sugar Company's  
Expansion Project**





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## ON THE COVER

In a remarkable collaboration, TSK Group, a renowned global engineering, procurement, and construction (EPC) contractor based in Spain, has been appointed by Illovo Sugar to spearhead the expansion project at Kilombero Sugar Company in Tanzania. Recognising the complexity of the foundation requirements, TSK, in turn, has enlisted the expertise of Keller, a leading specialist geotechnical contractor, to undertake the vital piled foundations.

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*Despite the obvious challenges that exist in the construction industry, the general consensus is that the industry is slowly rebuilding itself. This rebuilding is not only to recover the ground that was lost due to the COVID-19 pandemic, but also to get the industry on an upward trajectory after it experienced a R36b contraction during the last five years.*



Afrimat's Construction Index (ACI) for 2022 sketched an industry that was in a state of decline. After returning to 2019 levels, the index dipped to below the 1,3% decline in GDP in the fourth quarter of 2022. When one compares year-on-year results though, the ACI improved by 1,9% to outperform the local economy.

The decline in 2022 hit the building sector especially hard and 94 construction companies closed down (according to Stats South Africa).

Looking ahead there are many factors that play a dampening role and forecasts are that 2023 will only be marginally better. Growth within the industry is expected to be between 3% and 5% (depending on what source one believes). The South African Construction Industry Report maintains that the industry will grow at 5% and the more realistic South African Construction Market Report forecasts growth to be 3% (over a four year period).

The budget in February (for 2023/24) committed R157b to infrastructure. This combines with the R2,2t

infrastructure investment plan to paint a very positive picture. However, budgeting is wishful thinking on paper and only some of these projects will come to fruition. Even so, the industry is in for a more positive trajectory.

### Opportunity in a crisis

The current energy crisis has forced government to make concessions around the roll-out of renewable energy projects. This includes the easing of red tape, a higher ceiling for private power generation, and an escalation of investment in renewables. Over the next 18 months, several large projects will come onstream.

Despite these positives, general business confidence in South Africa is dwindling. In February, business confidence, according to CEIC Data, reported a whopping 18,9% decline over the previous month. Loadshedding and SA's grey listing by the Financial Action Task Force (FATF) and other downgrades by ratings agencies are behind growing negative sentiment.

Ironically confidence in SA's construction industry is slowly

recovering with confidence levels reaching a six year high in the first quarter of this year.

Wilhelm du Plessis  
Editor

### BEST PROJECTS 2023

A reminder to enter *Construction World's Best Projects* awards. Turn to page 20 for an overview and download the entry form from our website. Entry is free. These awards have proved – over the last 22 years – that even in times of difficulty, the South African construction industry remains renowned for its excellence in planning and execution.



EDITOR & DEPUTY PUBLISHER  
Wilhelm du Plessis [constr@crowm.co.za](mailto:constr@crowm.co.za)

ADVERTISING MANAGER  
Erna Oosthuizen [ernao@crowm.co.za](mailto: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

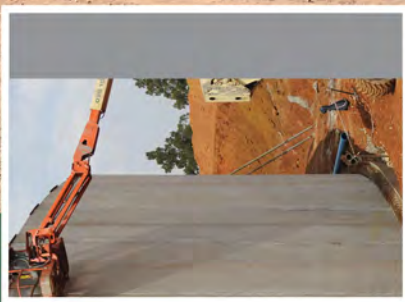


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**TOTAL CIRCULATION:**  
(First Quarter '23)  
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# INNOVATIVE PRECAST-CONCRETE SOLUTIONS FOR FAST, EFFICIENT AND COST-EFFECTIVE CONSTRUCTION OF SERVICE-DELIVERY INFRASTRUCTURE



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## SAISC NETWORKING EVENT

*Greater collaboration and engagement among sector representatives, as well as wider training across the entire steel value chain in South Africa, can play a role in alleviating issues across the spectrum, including that of the availability of steel.*

This was one of the themes of a recent industry breakfast networking session held in Johannesburg by the Southern African Institute of Steel Construction (SAISC). This was the first such breakfast event since the global COVID-19 pandemic.

The aim of the SAISC is to act as the custodian of the welfare of the steel value chain, promoting its usage and capabilities in the construction, manufacturing, mining and many other sectors; and to proactively promote the use of steel in current construction projects.

### The importance of industry-wide discussion and communication

“We were enormously pleased to host this event and invite members across the steel sector to join the discussion, which included topics such as how we can all work together to sustain a stronger, greener and more effective local steel industry,” explains Amanuel Gebremeskel (pictured right), the SAISC’s Chief Executive Officer (CEO).

“As the Institute, we have always taken pride in facilitating industry networking forums to promote greater communication, understanding, unity and diversity across the steel sector, thereby collaborating to solve common challenges and issues. One of the current major challenges, of course, is the availability of steel in South Africa, which is in fact not only a local but also a global issue.”

Members of the SAISC in attendance represented the entire spectrum of the steel value chain: steel mills, merchants, service centres, fabricators, contractors, architects and consulting engineers.

Gebremeskel opened his presentation with a brief overview of some of the challenges within the industry as they applied to specific sectors, before opening the floor to general discussion. He was joined by Adam Oldfield, Director and Structural Engineer: Cousins Steel International, who - as a new Board member of the Institute - gave his viewpoint on various aspects throughout the discussion from the perspective of being both a qualified professional, as well as a steel construction design expert.

### The critical importance of innovative research, training and ‘new thinking’

Gebremeskel highlighted the importance of ongoing research and innovative ‘new thinking’ with a brief overview of new research from the United Kingdom’s University of Birmingham which offers the potential to reduce steelmaking carbon emissions by 90%, through devising a so-called ‘closed loop’ carbon recycling system as an adaptation for existing blast furnaces.

“This incredibly ground-breaking and exciting development - which entailed significant research - reflects the increasing importance of being able to develop a greener and more environmentally-friendly steel industry,” he notes.

“Education and training - as well as research - are

critically important to ensure the future sustainability of the steel industry. In the same way that new research is able to change the chemical processes of steel-making, and to improve its environmental sustainability, so too is an increased focus on education and training - and communication. All these elements can change the outlook and prospects of the local steel industry for the better,” he enthuses.

### Challenges posed to different sectors of the steel industry

Gebremeskel posed a series of challenges which he believes to be key to different sectors of the local steel industry, as follows:

- For suppliers and merchants: How best to deal with the quality of the steel material on offer, as well as the ‘internationalisation’ of the industry, and the need to follow business procedures as outlined by global parameters, specifications and compliance.
- For fabricators and erectors: How to include technical capability in the fabrication of steel as a value-add.

Gebremeskel also shared updates from the Institute on a number of different initiatives, including the relaunch of the Institute’s popular ‘Blue Book’ via a digital platform.

“Working on a digital platform will offer a more interactive resource, which will address some of the challenges experienced by different sectors of the industry,” he explained.

The discussion was then opened up to the floor, with a lively debate ensuing around the key theme of the availability of steel. The presence of representatives from South Africa’s primary steel mill was regarded as being a particular value-add in these discussions.

### Engagement and training focus

Early engagement with various potential stakeholders, both up and down the steel value chain, was an important topic raised by a number of delegates. It was noted that changing traditional, more linear ways of operating could play a significant role in dealing with the challenges posed by the availability of steel.

“In addition,” noted Adam Oldfield, “increased stakeholder engagement at project inception, and a focus on training throughout the steel value chain, could also assist with alleviating pressures. The same is true of education and training - it is a vital part of ensuring the ongoing success of the steel industry, across the board and at all levels.

I believe that training can play a significant role in being more cost-effective and allowing for a more considered approach to steel construction issues, wherever one is in the steel value chain.

By ensuring that the professional team is communicating with the fabricators, who in turn are aligned to merchants, the flexibility in design approach can only benefit all parties.” ©

# COROBRIK STUDENT ARCHITECTURE AWARDS CROWNS ITS 36<sup>TH</sup> WINNER

*Describing it as “such a moment”, Luzuko Funda from Nelson Mandela University was declared winner of the 2022 Corobrik Student Architecture Awards. The Awards was held at a special in-person ceremony at Langhams in Johannesburg on 16 May and also live-streamed.*



Funda won a R70 000 grand prize and joins a prestigious list of Awards alumni. “I am deeply honoured by the recognition, as I am striving to make architecture accessible to all. I feel like I am already an inspiration for the next generation,” he said.

Ané Meyer from the University of the Free State received a Special Commendation and a R20 000 prize. “This year the judges felt it was such a close competition that they wanted to commend a student who delivered outstanding work,” commented Corobrik Chairman Peter du Trevou.

The finalists were selected from the eight major universities, based on architectural Master’s theses from the class of 2022. Each received a R10 000 prize and a chance to be in the running for the coveted top spot. For the first time since the COVID-19 pandemic, this year’s adjudication process was held in-person.

The judges were Wandile Mntambo from GASS Architecture Studios, Jodi Davids-Harber from TJA Architects, and Henry Pretorius from Typology Architects. The judges commended the eight finalists for the high quality of the work produced, which they said bodes well for the next generation of architects in South Africa.

Funda’s project, ‘The Design of Buildings for the Faculty of Agriculture at the University of Fort Hare in East London’, aims to revitalise the city surrounding the campus. It creates an ‘edge building’ that interacts with the public realm while lightly touching the natural landscape. It adapts the existing Old Miriam Makeba building on the site and uses modular systems to create a sustainable structure that fits the

context. Meyer’s project, ‘Ephemeral Skin: Towards a Reparational, Relational, and Respectful Engagement with the Temporal Environment’, involved the design of an algae research and manufacturing institute at Hartbeespoort Dam. The building will partly disappear over time, leaving a public park after the threat posed by hazardous algae blooms and the subsequent need for algae research is no longer dominant.

Speaking at the Awards ceremony, Corobrik CEO Nick Booth said the leading clay brick and paving manufacturer remains “steadfast and stalwart” in its support of the Corobrik Student Architecture Awards. Highlighting the dearth of awards and bursaries in the building and construction industry in general, Booth said “the lack of recognition of students and the excellent work they are doing is actually to the detriment of the built environment and the architectural profession.”

He added: “There is no doubt that the present economic environment in South Africa has had a deleterious effect on the building industry, which has not helped investment in future generations. Funding has also become a major driver for academia. That is why we need to continue to have events like this to recognise excellence. Corobrik remains committed to the Awards and to the architectural profession.”

“It is our pleasure to have hosted this event for the past 36 years to not only promote excellence, but to sustain the level of excellence that South Africa needs in industry and business today,” said Du Trevou. “We need bright young people who are prepared to work hard and give back to South Africa.”

MC Farai Mubaiwa, a Strategy Manager at Accenture, said the fact that 70% of Africa’s population is under 30 means the continent “finds itself at the intersection of an opportunity and a crisis. How do we transform Africa’s youth boom into an economic opportunity rather than an economic burden?” she questioned.

Mubaiwa said the highest-growth sectors in Africa, from construction to energy, water, and manufacturing, all linked back to architecture. “Architects play such an incredible role in how we shape an Africa that is inclusive and full of growth. Even more importantly, architects are part of the narrative of achieving this in a sustainable manner.”

Booth concluded: “Once again next year, in conjunction with all the major universities, we will host the 37<sup>th</sup> Corobrik Student Architecture awards.” ©

# ARE YOU PROTECTING YOUR BUSINESS AGAINST EMERGING WATER RISKS?

*Daily consumption by offices and their employees is as staggering. Office buildings consume almost half of municipal water supply (Stellenbosch Business School) and large office buildings use an average of 75 litres of water per square foot and 50 litres per employee (Commercial Buildings Energy Consumption Survey). This scope also extends to the external: community relations, environmental concerns, and something as simple as customers needing water to remain economically viable.*

**By Chetan Mistry, Strategy and Marketing Manager – Xylem Africa**

South Africans are currently experiencing the ongoing impact of electricity undersupply, which gives us a reasonable expectation of what could happen when water supplies fail to meet demand. But unlike energy or practically any other resource input that businesses rely on, there is a tendency to treat water access as reliable and thus without many nuances in monitoring or risk management.

That attitude has to change because the world is changing. Water sources are under growing stress, weather events are becoming more intense, and urbanisation has already changed general water access and consumption patterns. If we consider that without water, every organisation will soon cease or severely curb operations, managing water risks should be a strategic priority.

## Types of water risks

What are the water risks we should consider? Here are examples:

### **Are you spending too much on water?**

Your water consumption might be a significant cost centre, but only tracking general consumption hides nuances problems such as leaks or other wastage, not to mention old pumps and other legacy equipment.

### **Are you assuming a regular supply?**

Water is a human right, and events such as droughts or demographic changes can rapidly constrain how much water a business could access.

### **Are you contributing to worse water quality?**

Whether for Environmental Social Governance (ESG) requirements or impact on surrounding communities, if your actions reduce a region's water quality, you may face backlash and punitive harm.

### **Are you at risk of water-related damage?**

Floods, erosion, hail damage and drought can harm infrastructure and supply chains.

### **Can regulatory changes impact operations?**

Since water is a public resource, State policies can suddenly and rapidly reduce water access, particularly during droughts.

### **Is there a reputational risk?**

Poor water management can hurt your brands or corporate reputation, especially if customers link responsible behaviour to your business.

### **Are you exposed to climate change or urbanisation?**

Your risks will grow if you operate in regions at growing risk from extreme weather events or high urbanisation rates.

## Addressing water risks

The above are common examples. But water risks are often very specific, relating to a business's physical region, operations and supply chain. Knowing a business consumes X amount of water daily or weekly is insufficient. Companies must understand their reliance on water down to the specifics.

Fortunately, you only need a small group of actions to address the broad church of water risks:

**Do water footprinting:** Understand what types of water your business uses. At the highest level, a water footprint looks at your interactions with green (rain), blue (surface/underground), grey (usable but unfit for consumption) and black (contaminated) water. Water footprinting can show how much you rely on external sources and what mitigation options you have, such as recycling greywater or capturing rainwater.

**Contextualise water use:** Know where your business uses water, such as consumption, cooling, dust management, or as an integral part of processes (cleaning vegetables, mixing chemicals, etc.). This context helps determine the different priorities water represents to your operations.

**Track water more directly:** A monthly water bill tells you nothing about where exactly all that water is going. Once you have a context for your business usage, measure key areas for a clear view of consumption. This is helpful for several reasons, such as knowing how to prioritise supply in the event of water restrictions.

**Do water life cycle assessments:** Water flows in and out of your business and connects it to the outside world. Water life cycle assessments are crucial to understanding surrounding environmental and community impact, and will inform ESG and regulatory decisions. You can conduct assessments that include water with other resources—just be sure water is a priority in those assessments.

These four actions can cover most, if not all, of your water risk insights, and there are several ways to tackle each of them. The World Resources Institute and WWF provide tools covering many regional water concerns. More directly, options such as the Water Alternatives Corporate Water Risks Framework and Xylem Water Loss Management can give direct insight into business water usage. Modern analytics using historical data, smart metres and artificial intelligence can bring significant granularity to water strategies. We mustn't ignore water-related risks to our companies. The more we rely on water to produce goods and services, the more severe the impact when that water supply runs low. But businesses can prepare and put measures in place. ☉



# A2X WELCOMES WBHO

*WBHO (Wilson Bayly Holmes-Ovcon Limited) listed on A2X on 11 April 2023. In the first 20 days of trading there were several days where over 10% of trade activity took place on A2X and a day with over 20%. The listing has allowed WBHO investors to transact at a better price and to trade larger quantities.*

Roads and Earthworks. WBHO's offices are located in Johannesburg, Cape Town, Durban and Port Elizabeth in South Africa and Botswana, Ghana and Mozambique.

In the UK, the Byrne Group is based in London, while Russell-WBHO operates from Manchester.

WBHO joins 127 other securities listed on A2X, including the likes of Absa, Aspen, Discovery, Investec, Mr Price Group, Naspers, Nedbank Group, Prosus, Sasol, Shoprite, Standard Bank and Woolworths.

A2X is a licensed stock exchange that provides a secondary listing venue for companies. It is regulated by the Financial Sector Conduct Authority and the Prudential Authority (SARB) in terms of the Financial Markets Act. ©

In line with European best practice, A2X produces market quality maps to assess the quality of the price discovery process in a share. This shows on which market the best price can be found most of the time and secondly, how many shares can be traded at that price.

A2X calculates this by taking a snapshot, once every second of the trading day, across A2X and the primary exchange of listing to create a national best bid and offer (NBBO). In the case of WBHO, 20 trading days have approximately 564,000 data points.

The data is then analysed using two key criteria:

- Time spent at the NBBO by market; and
- Liquidity available at the NBBO by market

This table reflects that WBHO shareholders are now able to transact at the best price on A2X, with greater liquidity, and achieve best execution.

“We are delighted to have WBHO trading on A2X. Having analysed the trading stats since joining our platform, the benefits are very clear,” said the exchange’s CEO Kevin Brady.

WBHO’s issued share capital remains unaffected by its additional listing on A2X. There is no cost, risk or additional regulation to secondary list on A2X. This listing allows WBHO shareholders to save money when they transact by taking advantage of A2X’s low fee structure, narrower spreads and increased liquidity.

WBHO is one of the largest construction companies in Southern Africa. Its activities cover the full construction spectrum and are divided into three main operating divisions – Building Construction, Civil Engineering and



## LABOUR INTENSIVE CONSTRUCTION TRAINING

LABOUR INTENSIVE CONSTRUCTION (LIC) TRAINING NQF 5 AND 7  
2023 Online Training Schedule

SAQA ID	COURSE DESCRIPTION	NQF	FROM	TO
114913	Develop and Promote Labour Intensive Construction Strategies	7	22/05/2023	26/05/2023
15162	Manage Labour Intensive Construction Projects	5	05/06/2023	09/06/2023
114913	Develop and Promote Labour Intensive Construction Strategies	7	19/06/2023	23/06/2023
114913	Develop and Promote Labour Intensive Construction Strategies	7	10/07/2023	14/07/2023
15162	Manage Labour Intensive Construction Projects	5	24/07/2023	28/07/2023
114913	Develop and Promote Labour Intensive Construction Strategies	7	14/08/2023	18/08/2023
114913	Develop and Promote Labour Intensive Construction Strategies	7	28/08/2023	01/09/2023
114913	Develop and Promote Labour Intensive Construction Strategies	7	11/09/2023	15/09/2023
15162	Manage Labour Intensive Construction Projects	5	09/10/2023	13/10/2023

For effective engagement between facilitator and learner, class sizes are limited per class. Please book early to secure your seat. For booking questions, and queries, please contact: Pat Pillay: 031 265 6007 or send us an e-mail to: [training@naiduconsulting.com](mailto:training@naiduconsulting.com)



# SOUTH AFRICA REMAINS WELL POSITIONED TO UNTAP ITS POTENTIAL

*Allianz Global Corporate & Specialty and the Insurance Institute of Gauteng (IIG) hosted a leadership forum for leaders within the financial services sector on 17 May 2023, at Melrose Arch in Johannesburg on the topic South Africa at a crossroads: exploring possible scenarios. The forum focused on possible scenarios for the South African economy and featured Ludovic Subran, Chief Economist at Allianz SE, and Professor Nick Binedell, Founding Director and Sasol Chair of Strategic Management of the Gordon Institute of Business Science.*

**B**inedell urged delegates to reflect and learn from activities that led to the end of apartheid by tapping into their corporate and professional network and experience to make a difference in the country. Subran presented economic scenarios for the country and guided brokers on how they can be more resilient to continue to protect businesses and enable them to grow sustainably.

## **Increase in trade**

Despite the geographic distance, capacity constraints and logistical difficulties, South African trade to the heavyweights in the Northern Hemisphere has increased over the years and remains a key driver in preserving a positive trade balance. “Regardless of the challenges ahead in the banking sector related to overall transparency and the regulatory environment, banks are better positioned and supervised than regional peers, insolvencies remain broadly stable (+1% year on year as of Q1 2023), and demand for B2B trade credit solutions is likely to increase,” says Ludovic Subran, Chief Economist at Allianz SE.

## **ESG-oriented approach**

The anticipated reduction in the global appetite for certain commodities can be offset through an ESG-oriented approach towards metals and critical raw materials, where South Africa is

already a leading producer. “Trade openness must be preserved, as the average weighted tariff for South African exports is already one of the lowest among the G20 and foreign direct investment amount to more than 40% of GDP, a percentage well above that of BRICS countries. The trade balance with non-BRICS countries was also positive by USD16b last year, compared to a trade deficit of USD6bn within the BRICS bloc – underscoring the need to maintain a wide and diversified business perimeter,” explains Subran.

## **The Ubuntu factor**

Historically, South Africa has been able to leverage its Ubuntu factor, positioning itself as a credible interlocutor for the continent at the G20 and maintaining a historically balanced approach to global issues. “This Ubuntu factor remains key in times of geo-economic fragmentation and widening divide between economies globally and within countries, as it can enable the much-needed technology and energy shift, increase connectivity, and preserve access to markets and investment flows that are crucial to managing South Africa’s just energy transition,” says Subran.

## **The just energy transition**

With 85% of the energy mix based on coal, the just energy transition can act

as the leading force to drive foreign direct investment, create a more inclusive labour market, and reinforce the social contract. Funds need to develop these new skills are limited and must be directed efficiently to bridge existing divides in labor and education.

Women account for 21% of the workforce in the coal sector and only 14% of employees in the renewables sector. However, female employees are usually better educated. For example, 67% of females at the electricity public utility Eskom hold a post-matric qualification against 49% of men.

“The investment into the just energy transition should then maintain above-average secondary school enrolment rates, reinforce qualified female labour participation, and ensure reskilling opportunities for those in need.

It should enable the country to maintain a higher rate of school enrolment and less brain drain compared to other countries in Sub-Saharan Africa (SSA). Equally, it should assist the country in increasing the female labour force participation, which is currently below that of SSA but elevated compared to other sub-regions.

Despite widespread and grounded negativity, several pre-existing conditions and South Africa’s Ubuntu factor may enable long-term economic growth and foster shared and durable well-being,” concludes Subran. ☉

# FOSTERING AN ETHICAL CULTURE FOR SOUTH AFRICA'S BUILT ENVIRONMENT IS AN IMPERATIVE

*A discussion on ethics was part of Consulting Engineers South Africa's (CESA) Presidential Function held in Gauteng, on 18 May. Inspired by a question from a young professional at the event, CESA President Olu Soluade explained that to change the current narrative of unethical practices in the built environment, required, at first, a change in the attitudes of individual professionals in the built environment.*

Unethical practices and corruption in the built environment continue to have a direct impact on the growth, social wellbeing and financial health of South Africa's economy. A sustainable future depends on the country's ability to develop leaders with the highest ethical values and individuals refusing to be part of any corrupt activity.

"We are at a critical time in South Africa's history, where we find ourselves at a crossroads as a nation. There is an urgent need to start putting plans into action as we work together by collaborating to make a difference, but that difference has to start at home, it has to start with the individual, either as client or service provider," added Soluade.

Guest speaker at the event, Realeboga Mahapa, Acting DDG for Health - Gauteng Department: Infrastructure Development, added that ethics should be introduced as a course into the built environment curriculum at tertiary education levels. "We have to develop a culture of ethics, and in doing so, assist in rooting out corruption. It may be an idea to even introduce higher CPD points for courses on ethics in the professional registration environment."

Philip Booyens, CESA Gauteng Branch Chairperson Elect, concurred and said that it was imperative to start lobbying our universities to introduce ethics as a course not just for engineers, but across all professions, to enable a culture shift of young adults who are the future torchbearers building and driving the country's economy.

However, the challenge of unethical practices and behaviour was not unique to the country's built environment, explained Chris Campbell, CEO of CESA. "While I support the introduction of courses around ethics at a university level and in the professional environment, I must emphasise the need for it to be inculcated at home and school long before that time - so as to create a generation that is able to distinguish 'right from wrong'. In doing so, we can reverse the current culture that seems to be prevalent in South African society."

Creating leaders for the future, also hinges on the professionalisation not just of the State, but of the Private sector as well, explained Dr Vishal Haripersad, a CESA Board Member. "Engineers in South Africa have such an important role to play not just in this country, but across Africa. We need to create a culture of African engineering excellence that will truly shape this continent. To do so, we need to pride ourselves as professionals, not just on paper - but in



*"We are at a critical time in South Africa's history, where we find ourselves at a crossroads as a nation. There is an urgent need to start putting plans into action."*

CESA President,  
Olu Soluade.

our behaviour, how we positively impact society and in the way we do business.

"With our strong belief in the capacity and capability of South Africa and African excellence, CESA is focused on ensuring that we continue to enhance the capacity of engineers, through the continued training and development of local talent. South Africa, and the Continent, has a young, enthusiastic and competent population, who should be included on the growth journey ahead - and each and everyone one of us, has a responsibility to help develop and enhance that journey," Haripersad concluded. ©

# AFRIMAT DELIVERS RESILIENT RESULTS

*Afrimat, a leading mid-tier open-pit mining company providing Industrial Minerals, Bulk Commodities, Construction Materials and Future Materials and Metals, recently released results for the year ended 28 February 2023, with revenue up 4,9% to R4,9b (2022: R4,7b).*

Group CEO, Andries van Heerden, said that Afrimat remains resilient, delivering satisfactory results supported by its diversification strategy. “Diversification, increased volumes from the mines coming online and efficiency improvement initiatives remain the cornerstone of our strategy and are used to counter macro-economic impacts beyond management’s control.”

He added that strategic initiatives which contributed positively to the Group’s performance included the successful commissioning of the Jenkins iron ore mine (‘Jenkins’), the turnaround of the Nkomati anthracite mine (‘Nkomati’) and ongoing continuous improvement initiatives at existing operations.

Detractors were the decrease in iron ore prices and the economic slowdown, which impacted the Construction Materials and Industrial Minerals businesses, exacerbated by a rise in input costs such as diesel, explosives and electricity.

## Financial results

Group revenue increased by 4,9% from R4,7b to R4,9b.

Operating profit decreased by 13,3% from R1,1b to R1b, resulting in the operating profit margin declining from 23,7% to 19,6%.

A rise in future volumes, as these mines reach a steady state, is expected in the coming year.

Headline earnings per share declined by 15,7% from 542,9 cents to 457,6 cents.

Net cash from operating activities of R1b was generated, as well as R680m from a successful equity raise during the year, resulting in the net debt:equity ratio decreasing from 12,1% to 4,4%, this is aside from the fact that R963m was advanced into various capital investments during the year.

The strong cash generation enables the Group to execute its growth strategy. Afrimat declared a final dividend of 110 cents per share.

## Operational review

Van Heerden explained that Afrimat’s operating units are strategically positioned to deliver outstanding customer service while offering efficient protection against volatile local business conditions. “Our product



range is wide, diversified and importantly, growing.”

The Bulk Commodities segment, consisting of the Demaneng and Jenkins iron ore mines, and the Nkomati anthracite mine, contributed 81,9% to the Group’s operating profit. This excellent performance was largely due to increased volumes from Jenkins coming into production, the successful turnaround of Nkomati, and cost-saving initiatives.

Nkomati has turned from initial start-up losses to being profitable and contributed 23,1% to the segment’s revenue for the year. It produces a high-quality product sold into the local market, as a replacement for imported anthracite, and is recognised as a consistent, reliable supplier of anthracite. During F2023, volumes at Nkomati amounted to 317 943 tonnes (F2022: 219 845 tonnes). An exciting new operational strategy is being implemented by the mine, which is expected to improve performance significantly in the near future.

Van Heerden explained that the long-term sustainable life of mine plan is being enhanced through the opening of two opencast pits and the continued development of the underground operations. “The first anthracite from these developments was extracted early in the new financial year. These planned new sources will enhance the mine’s production capacity significantly.”

He added that the Industrial Minerals businesses across all regions had delivered satisfactory results, given the current economic operating conditions. “However, the impact of the economic slowdown was exacerbated by electricity supply interruptions, resulting in a decrease in operating profit of 41,9% from R84,9m to R49,4m.”

The Construction Materials segment also felt the impact of the slowdown in economic activity. The overall reduction in construction activity and electricity supply interruptions caused operating profit to decrease by 17,7% from R157,5m to R129,6m.

Future Materials and Metals is the most recent segment to be added to the Group’s operational segments to support its diversification strategy. Glenover is the segment’s first project. It diversifies Afrimat’s exposure wider than ferrous metals and aligns it to global trends such as the advancement of technology for decarbonisation (through rare earth minerals) and food security (through fertiliser products).

“Glenover is a greenfield project that started its first production during the year and is currently in ramp-up phase. The project contains three essential businesses – fertiliser for agricultural applications; vermiculite for various applications from industrial to horticulture; and rare earth elements, supporting technological advancements such as high-strength permanent magnets and battery technology.”

Revenue of R25,2m was generated by the segment, with start-up losses of R11,4m. “Looking ahead, careful project implementation and the rollout of a well thought-through strategy for Glenover will be a top priority. This is expected to include vermiculite processing, optimisation of the high-grade phosphate project, and the implementation of the super single phosphate project. These product lines will add additional volumes in future.”

## Outlook

The Group is well positioned to capitalise on strategic initiatives and future opportunities, van Heerden indicated, adding that future growth would be driven by the successful execution of Afrimat’s proven strategy, recent acquisitions and a wider product offering to the market, with many exciting potential opportunities being investigated.

“We continue to focus on sustainable diversification in all five segments. In the new Future Materials and Metals segment, the priority is to ramp up the production of high-grade phosphate and to execute the next stages of the project as seamlessly as possible, while the Bulk Commodities segment has implemented an internal efficiency drive with new technology, which has proven to be highly successful. These solutions will now be implemented throughout the Group to improve efficiencies and margins further.”

He said these efficiency initiatives are aimed at countering inflationary mining cost increases.

Continuing, he indicated that the Group has Driehoekspan and Doornpan iron ore assets to bring online once Demaneng volumes begin to reduce. “This should be within the next three years. To optimise production, Nkomati is in the process of opening up two opencast mine areas as well as an underground access point. Volumes are expected to ramp up and the processing plant can take on additional production. Increased volumes from Nkomati and Jenkins, which are not exposed to international iron ore price volatility, effectively buffer us against potential downturns in export iron ore prices.”

In the Industrial Minerals and Construction Materials segments, market and product development continue to take place in response to customer needs. Operational efficiency initiatives aimed at expanding volumes, reducing costs, and developing the required skill levels across all employee categories remain key focus areas for the Group.

Van Heerden concluded by saying that while the operating environment in South Africa remains challenging, Afrimat continues to see value in its diversification strategy. “However, the structural decline in the public sector’s contribution to fixed investment and infrastructure remains a concern for the Group.” ©



The advertisement features the BCIMA Medical Aid logo on the left, which includes a stylized blue and green triangle with a white circle inside, and the text 'EST 1964 BCIMA Medical Aid'. To the right of the logo, the text reads: 'Need cover to keep your workforce healthy and productive? BCIMA understands your industry specific needs.' Further to the right, two options are listed: 'BCIMA'S BASIC OPTION STANDS FOR AFFORDABLE, UNEQUALLED HEALTHCARE COVER.' and 'BCIMA'S PLUS OPTION STANDS FOR FULL COVER, AT A PRICE THAT'S RIGHT.'

# KWAZULU-NATAL INDUSTRIAL TECHNOLOGY EXHIBITION

*The KwaZulu-Natal Industrial Technology Exhibition (KITE), being held at the Durban Exhibition Centre between 18 and 20 July 2023, provides the KZN market with access to a wide and comprehensive line-up of industrial technology products and services.*



“As companies move to embrace the benefits of Industry 4.0 (I4.0), finding providers of the technology and services necessary to maximise their adoption of 4IR (Fourth Industrial Revolution) trends, becomes a priority. Fortunately, we have made this process simpler and more efficient by bringing together the designers and providers of solutions focused on assisting organisations to implement changes that will, through automation, improve productivity, increase occupational health and safety, maximise profitability and operational uptime, and create sustainability of operations,” says Charlene Hefer, Portfolio Director at Specialised Exhibitions — a division of Montgomery Group.

## The right industrial technology to enhance your operations

Over 60 exhibitors are lining up a diverse range of products and services geared around optimising productivity and uptime, and assisting with future-proofing businesses for continued sustainability.

The SAF'IR Evolution, from 360 Degrees Safety (Stand E6a), is the industry's first handheld infrared breath alcohol tester, perfect for police enforcement. Able to withstand harsh conditions, this rugged evidential analyser is a reliable partner for any law enforcement official.

Integrated Air Solutions (Stand C12a) will be showcasing the ELGi LD Series. Ranging from 2.2-11kW, the ELGi LD Series is an innovation in piston air compressor technology catering to all industries looking for compact air compressors with high performance, low noise, and easy maintenance. United Scientific's (Stand F22) X-MET8000 range of handheld X-ray fluorescence analysers delivers the

performance needed for rapid alloy grade identification and accurate chemistry of a wide variety of materials (solid and powder metals, ores, minerals etc). The X-MET handheld XRF analyser (HHXRF) is practical, robust, and easy to use, to deliver results you can trust.

Established in 2004, Black Eagle General Engineering (Stand E13) specialises in conventional and CNC milling and turning, and light fabrication. The company prides itself on its quality of work, relationships with clients, and ability to take on smaller (prototype) jobs and mass production type jobs. Aberlink has launched a new range of CNC bridge-type CMM, named the Horizon. Utilising linear motors, it breaks new ground in CMM design. With an 800 mm and 1000 mm travel in the X axis, the Horizon completes Aberlink's range of bridge CMMs and will further extend their horizon into the high-end CMM marketplace. Visit the Caldeaz Manufacturing Technologies stand at KITE (D3) to view the Horizon.

With over 48 years of experience in the protective clothing industry, CHARNAUD® (Stand E8) continues to grow, with the cornerstones of its development being brand consistency and product quality. The CHARNAUD® SURVIVE-ARC® range of specialised products protects electrical workers against the life-threatening thermal hazards of an electric arc flash.

Point of Rental provides innovative rental and inventory management software solutions that empower businesses to streamline their operations and grow strategically, regardless of industry. OMRON Industrial Automation is dedicated to providing unrivalled automation products and customised expert solutions for any industry. The product portfolio includes factory automation, sensors and safety, mechatronics and drives, industrial components, and vision systems. ©

# EFFECTIVE SOCIAL AND STAKEHOLDER ENGAGEMENT ESSENTIAL FOR INFRASTRUCTURE DEVELOPMENT PROJECTS

*Behind every successful infrastructure project is an effective stakeholder engagement strategy. This can begin as early as during the design and even concept phase, says Amelia Visagie, Technical Director at leading consulting engineering and infrastructure advisory firm Zutari. Visagie, based in Cape Town, heads up Social and Stakeholder Engagement at Zutari, along with fellow Technical Director Tebogo Sebego (pictured), based at the Tshwane head office.*



“Our role begins with understanding the interests, values, concerns, perspectives, and needs of various stakeholder groups, as well as assessing the relative influence and power that different stakeholders have on the proposed project,” explains Sebego. The broad-based social benefit aspect of any major infrastructure project involves many stakeholders, including communities, government officials, non-governmental organisations, and traditional authorities.

“If we do not involve communities and stakeholders from the onset, it can pose a major risk, leading to most projects being stopped prematurely,” says Visagie. A rule of thumb is that if there is a need for conflict management, it is probably already too late. “This results in us having to undo what has already happened, whereas if we had been involved from the beginning of the tender and proposal phases, we could have worked together with the client and all stakeholders.”

When stakeholders’ voices are heard, their concerns and expectations can be addressed and managed effectively. This creates a sense of ownership and buy-in from stakeholders, increasing their commitment to the project’s success. Moreover, engaging stakeholders fosters better communication, transparency, and trust, which contributes to building a collaborative and positive working environment.

“We open up engagement and communication, but most importantly we stay with the project throughout its lifecycle,” notes Sebego. An early stage of construction should include establishing a steering committee and selecting community liaison officers. During the construction phase, Zutari undertakes extensive social monitoring, which is vital to the project’s success. “It is exciting to be upfront at the inception of any project,” says Visagie. She and Sebego lead the team of social and stakeholder engagement champions. This team specialises in assuring maximum economic sustainability on projects by reducing social risks and enhancing companies’ social licences to operate. These champions conduct perception surveys and asset mapping to ascertain the needs and aspirations of local communities. “We build on that understanding as a basis to co-create an impact in conjunction with the client,” says Visagie. Sebego adds that the process is both rigorous and scientific, using tools such as Social Impact Assessment to analyse, monitor, and manage the planned and unplanned

social consequences, both positive and negative, of proposed interventions and any social change processes created by those interventions.

“Once we are on the ground, we collect social or community intelligence which helps our team to understand the social dynamics, knowledge, experience, and attitude of the communities we work in. Such information equips us to know exactly how a community will act or react to the planned intervention. This informs how we plan our engagement in a manner that allows us to systematically identify, analyse, plan, and implement actions designed to ensure that we use the most effective strategy for the stakeholder engagement process,” says Sebego.

Visagie adds that such social intelligence is by itself “a pot of gold” for clients, as it is the result of powerful data that is collected. “We accumulate rich data to assist any client to mitigate project risks. It starts by establishing effective communication channels and listening to the voices of the community. It is not a top-down approach, and that is what makes such a huge difference. Instead of going in and just doing a tick-box exercise, we engineer meaningful and sustainable impact.” In today’s highly competitive business environment, having access to the right data can give clients and project managers a competitive advantage.

Listening to stakeholders is crucial to any project’s success. It ensures that their interests are aligned with the project’s objectives, builds trust and collaboration, and ultimately leads to better outcomes for all involved. The scope and demand for the value derived from the impact created by the social and stakeholder engagement team represents a major opportunity for Zutari in South Africa and as it continues to expand its presence into Africa.

International financing institutions such as the World Bank or European Investment Bank require that investors should appropriately assess the environmental and social impacts of development projects.

Zutari continues to partner with local consultancies in Africa to deliver successfully on internationally financed infrastructure development projects. “We capacitate and empower local consultancies by providing strategic guidance, advisory, and review of the final deliverables to ensure that they meet international best practice,” concludes Visagie. ©

# FINDINGS OF SAINT-GOBAIN'S FIRST INTERNATIONAL SUSTAINABLE CONSTRUCTION BAROMETER

*This year, Saint-Gobain is launching the Sustainable Construction Observatory, which aims to bring together the main stakeholders in the construction industry to promote the sharing of knowledge and accelerate the transformation of the sector worldwide.*

In this context, Saint-Gobain presents the findings of the first International Sustainable Construction Barometer, a study conducted by the CSA Institute with sector professionals, public officials, associations and students.

More than 800 stakeholders from 10 countries participated in this survey. Their feedback provides a snapshot of the development of sustainable construction around the world and identifies the expectations, drivers and trends needed to make sustainable construction a shared reference.

## **The Sustainable Construction Observatory: listen, inform and unite**

In the face of climatic, environmental, and demographic challenges, and at a time when the energy crisis makes comprehensive renovation efforts urgent, a strong mobilization of the construction sector can lead to a drastic and sustainable reduction of housing and construction-related greenhouse gas emissions, while preserving non-renewable natural resources and providing everyone with a decent and comfortable home.

“Saint-Gobain wants to be a benchmark, both a trendsetter and a driving force, to involve all stakeholders in the transition of the construction sector. To achieve this ambition, Saint-Gobain has created the Sustainable Construction Observatory, with the Barometer as a key component. The good news is that the first results show that sustainable construction is considered a priority by all parties in the main regions of the world. But we note that the full benefits of sustainable construction are not always considered and that the sector is not always clearly understood. We also identify the educational efforts to be made, the evidence to be provided and the action levers to be applied to convince the entire value chain of the need to accelerate,” explains Benoit Bazin, CEO of Saint-Gobain.

## **The Barometer provides an overview of sustainable construction worldwide**

This survey was conducted by the CSA Research Institute with more than 800 respondents (professionals, public officials, associations, students) from 10 countries (Brazil, France, Germany, India, Italy, Japan, South Africa, Spain, UK and USA). Their responses help us understand how these stakeholders perceive sustainable construction in a context of the fight against global warming, the need to preserve natural resources, the demographic explosion and increasing urbanization.

## **Sustainable construction: recognised worldwide as a priority issue, though not yet defines in a standardised way**

Some 88% of respondents say they know the concept of sustainable construction and 97% believe that the

implementation of more sustainable buildings is a priority or important.

However, the definition they give is mostly limited to environmental issues, without taking into account the social and human dimension i.e. the health or well-being and comfort of occupants.

In emerging countries, particularly in South Africa and India, which are more affected by climate problems and rapid urbanization, awareness of the importance of sustainable construction (building quickly and well from the start) is very high. It is approached with a balanced view, with greater recognition of the impact on health and well-being.

## **An operational reality that contrasts with an awareness of the urgency to act**

While sustainable construction is widely perceived as a priority issue, it is less visible in the field or in decision-making.

Thus, only 30% of the professionals surveyed have already



carried out projects that take sustainable construction into account, whereas 63% of them say that its implementation is a priority, and 57% estimate that more than half of their activity will be in the field of sustainable construction within the next five years.

While students are the most convinced of the urgency of developing sustainable construction, more than half (55%) of them say they would still accept a job offer in a company that is not invested in this sector. The question arises as to what leverage the public and private sectors should use to attract a young generation that is already committed and convinced of the urgency of action.

To accelerate the development of sustainable construction, the respondents identify three main drivers.

### Competitiveness of solutions

For 70% of respondents, all profiles included, the perceived cost is considered as one of the obstacles to developing sustainable construction.

Yet, building sustainably is not more expensive in the medium or long-term. By considering the entire life cycle, from the design of a building to its renovation or demolition, sustainable construction solutions make it possible not only to conceive buildings that are very well insulated (direct savings on the energy bill), resilient to climatic hazards and modular (possibility of multiplying the uses of the same building over time) but also to reuse materials.

Sustainable construction also brings economic and social benefits through its impact on the well-being and comfort of occupants. At the same time, the ongoing industrialisation of sustainable construction solutions will result in long-term price reductions.

The financial sector, banks and insurers could contribute to positive change by actively supporting the initiators of comprehensive renovation or new and sustainable construction projects.

### The key role of public policy

44% of respondents believe that public institutions are

the most legitimate stakeholders to advance sustainable construction. However, even today, most elected officials never exclude from public contracts projects that do not take into account sustainable construction methods.

To accelerate the development of sustainable construction, 52% of students cite private companies. Regarding the role of elected officials, only 22% of students perceive them as legitimate in advancing sustainable construction.

Some 37% of respondents believe that increased regulatory requirements will accelerate the deployment of sustainable construction, which makes it the second most important factor identified, after funding.

### Better support for all stakeholders in the sector

One paradox: the Barometer reveals a gap between the importance given to the subject of training in sustainable construction techniques, which seems uncontested, and its expertise, which appears less certain. Thus, 38% of professionals say they do not feel adequately trained in sustainable construction.

Some 61% of students consider the lack of training and qualification of professionals as one of the main obstacles to the development of the sector. This feeling is widely shared in emerging countries:

A total of 71% of respondents from South Africa, Brazil and India, versus 50% of respondents from Europe, the United States and Japan. ☺

**The Barometer's findings are a strong signal for the entire sector:** collective mobilisation is essential to lead the transition to sustainable construction. This mobilization requires a clarification of the definition of sustainable construction, regulatory changes, political will and commitment of a value chain that unites students, local elected officials, project leaders, banks and insurance companies.

## NEAR PERFECT HEALTH AND SAFETY MILESTONE ACHIEVED

A strong safety culture is at the heart of achieving industry-leading performance in Health and Safety, with what is recognised as a 'near perfect' rating by industry standards, reports BTE Renewables. The company announced that during its 2022 year of operations, only one injury was recorded across all its projects sites, with nearly 800 000 hours worked – most certainly an astounding achievement.

"This exhibits our commitment to ensuring that all employees return home safely to their families every day, which is our ethos and in our DNA," said Robert Skjodt, CEO of BTE Renewables.

The renewable energy sector is generally considered to be a safe environment, however, workers still face occupational threats, many of which are universal to other power generation facilities.

The Total Recordable Injury Frequency Rate (TRIFR) is an indicator of the state of health and safety at any workplace and provides an idea about the organisation's efforts to protect the workers from work-related hazards. In the case of BTE Renewables, it accounts for a single medical case that occurred in 2022, over the nearly 800 000 hours

worked, across six power plants in South Africa and Kenya, which is considered to be exceedingly low, by both local and international standards.

This is one of the best health and safety milestones the company has ever achieved since the projects each entered commercial operations and exceeds both the company's target and what is recognised as 'near perfect' by industry standards. 'We weren't afraid to make drastic changes and committed financially to enable us to modernise our approach, which included moving to a 'Brother's Keeper' approach across all our sites instead of policing by management approach," explained Leticia Vos, Senior Health and Safety Manager at BTE Renewables.

She concluded, saying, "We have had a proactive approach to effectively mitigating, and continually improving, plus we don't allow non-conformance to our health and safety procedures, policies or any legislative requirements and are committed to continually improving our systems of operation, keeping our TRIFR as low as possible during our operations, so that we can nurture our 'Brother's Keeper' culture where we genuinely care for each other."

# GROWTHPOINT UNVEILS R352M REDEVELOPMENT FOR BAYSIDE MALL

*Growthpoint Properties has announced a major redevelopment project for Bayside Mall, the iconic Cape Town shopping centre located in the heart of the Table View and Parklands areas.*



The R352m project commenced last month (May 2023) and will introduce new retail choices, a revamped food court, improved shopper flows and better access to the centre – all with a refreshed, contemporary look across the mall.

As the mall's owner-manager, Growthpoint is applying its experience, environmental commitment and hands-on approach, together with significant capital, to ensure the sustainable success of this landmark retail asset.

"We're proud of our significant investment in this node and are actively working on the mall's strategic repositioning," says Neil Schloss, Growthpoint Head of Asset Management: Retail.

"Bayside Mall will boast a strong national retailer presence, all with their newest formats. Retailer interest is extremely positive, reinforcing our confidence in the project's success. The centre will be anchored by two strong supermarkets and will feature an upgraded layout offering, improved accessibility with optimised entry and exit points for both mall and parking areas. We continue to receive an enthusiastic response and interest from all participating retailers."

The update responds to significant changes in South Africa's retail landscape over the past few years, especially shifting shopping trends within the mall's immediate catchment area.

"Using insights gleaned from customer feedback, we are revitalising our space to create an experience that our customers can enjoy with their families," says Bayside Mall Centre Manager, Aadilah Rykklief.

The multifaceted development project includes repositioning the main anchor tenant, Checkers, and introducing Shoprite to the tenant mix. Locating each on opposite ends of the centre, like book ends, will provide greater balance to the centre. These two supermarket

anchors are scheduled to welcome shoppers to their new spaces by December 2023.

The project will also introduce more on-grade parking, add new vehicle access and egress points, and provide dedicated parking for taxis to ensure a good flow of all vehicles in the area.

Addressing operational challenges faced by all South African shopping centres and global environmental targets, electricity efficiency and security are key considerations in refreshing Bayside Mall.

The initial project allows for generators enabling the entire centre to be operational during load shedding, which is the first priority. As is Growthpoint's way, it will also upgrade energy-efficient lighting throughout the mall passages and common areas.

As a second phase, Growthpoint has already embarked on a study to add a significant solar component to the existing solar installation to further assist during load shedding.

The mall already harvests rainwater and will also use this water-smart system in the project's new bathrooms. As part of the initiative, Growthpoint's development team will also endeavour to salvage reusable items, such as taps and sanitaryware, to donate to charities in the community.

The redevelopment will be rolled out in phases over approximately 18 months to ensure an easy transition for tenants and shoppers alike.

Bayside Mall will remain open for trade throughout the redevelopment period and offer shoppers refurbishment specials and activities to excite, delight and thank loyal customers for their support throughout this exciting transition.

"We believe the end result will be a quality product that all stakeholders can be proud of, and shoppers will not be able to resist," Rykklief concludes. ☺

# CARNIVAL CITY TO EXPAND INTO A LIFESTYLE ESTATE

*Carnival City Casino, owned by Sun International, is partnering with LivRES to develop a dynamic, mixed-use lifestyle estate on vacant land at Carnival City in Ekurhuleni.*

Carnival City is a minority shareholder in this development that will offer safe, affordable and healthy living.

When complete, the 50ha R2,5-b Lifestyle Estate will comprise secure residential districts connected by commercial and lifestyle components. The current casino and hotel complex is situated on a 30 ha portion of land directly adjoining the new development.

Sun International CEO Anthony Leeming says, "Sun International purchased the land well over 20 years ago because the location was perfect for a casino, even though the parcel of land was larger than needed.

Over the years we have weighed up a number of options for the unused part of the property, including selling it off."

Leeming said that after the R1b Carnival City Casino and entertainment complex opened in November 2000 it instantly became the premier entertainment destination in the region, attracting greater development to the surrounding area.

This includes a Road Lodge which was built by the City Lodge Group. Sun International added the four-star Carnival City hotel in 2007.

Annemie Turk, Carnival City's General Manager says "Very little of what you see around you was here when we opened. Not even the nearby Mall existed back then, so Carnival City was very much a catalyst for development in this area.

Over time there has been growing market demand for a fully integrated community lifestyle experience, and this is backed up by our own research which indicates that the area will benefit from a new mixed-use estate. This influenced our decision to enter into a partnership with LivRES Property Developers"

The Carnival East Village Property Company was expressly formed to work in partnership with LivRES to manage the development and the estate, while the Carnival City Casino will focus on its core business which is running a casino and a hotel.

LivRES specialises in creating stylish, sustainable developments with modern amenities in vibrant destinations. They aim to offer homeowners and investors the ultimate residential lifestyle at impressively affordable price points.

"Our plan is to offer the convenience of lifestyle resort living, right here in the East Rand, by creating a people-centric neighbourhood complete with a range of housing, retail, business and office space plus amenities for leisure activities," says Tim White from LivRes

The modern exteriors of all the buildings will create a visually pleasing space, backed up by contemporary interior design. Buildings will also be equipped with solar and generator backup to future-proof the development against interrupted energy supply.

Emphasis will be placed on installing sustainable fixtures and fittings to save energy and water. The existing

wetland on the site will be turned into a peaceful green park, ideal for physical exercise and relaxation.

## Overall estate

Districts will be completed one at a time, and when complete it will contain:

- The existing Carnival City Casino's entertainment complex, with over 13 restaurants and multiple entertainment offerings, including live shows and entertainment for families and younger children.
- 3 000 new homes developed in separate villages across the property. Each distinctive village will offer either trendy upmarket apartments or freestanding homes in the East Village, West Village, Greenwich Village, Upper Westside and Upper Eastside.
- Commercial and retail opportunities in the business and commercial districts.
- A private school at the estate's western entrance, within safe walking distance of the residential districts. The school will offer primary and secondary level education.
- A lifestyle centre, 10 000 m<sup>2</sup> neighbourhood Market and a village-style retail centre.
- Central Park with a range of high-quality open space and recreation amenities, linked to the estate by a network of green walking and cycling trails, including the newly launched Carnival City Parkrun.
- Easy access onto the N17 highway linking the estate to Johannesburg, and less than a 30-minute commute to OR Tambo international airport.

Other modern amenities and attractions include security with a 24-hour guard, WIFI ready facilities, co-working spaces, children's play areas, a resort-style pool and clubhouse, a meditation garden and braai areas.

All properties will also allow pets and there will be a doggy park for residents to walk their pets.

## First development: East Village

The East Village will be the first to be developed within the greater estate. The 30 affordable residential units will offer a selection of stylish and sophisticated one and two bedroom apartment units.

Each three-storey block will be positioned to offer privacy in a fully landscaped setting with green walkways and ample parking spaces.

Each unit has been designed by LYT Architects, one of South Africa's leading architectural practices, to provide the perfect contemporary balance of high quality and comfortable living spaces with great finishes and sophisticated architecture. Unit sizes range from 39 m<sup>2</sup> to 72 m<sup>2</sup>.

The developers anticipate that construction of the first units will begin by April 2024, with the first apartments being ready for occupation by December 2024. ©

Ready mix truck delivering concrete to the piling rig.

# TSK Group and Keller join forces for Kilombero Sugar Company's Expansion Project

*In a remarkable collaboration, TSK, a renowned global engineering, procurement, and construction (EPC) contractor based in Spain, has been appointed by Illovo Sugar to spearhead the expansion project at Kilombero Sugar Company in Tanzania. Recognising the complexity of the foundation requirements, TSK, in turn, has enlisted the expertise of Keller, a leading specialist geotechnical contractor, to undertake the vital piled foundations. This partnership represents a significant milestone for Kilombero Sugar Company, as TSK and Keller join forces to pave the way for its ambitious growth plans. **By Roger Feldmann, Business Development Manager: Keller***

## Kilombero Sugar Company and its vision

Kilombero Sugar Company, a subsidiary of Illovo Sugar Africa, plays a pivotal role in Tanzania's sugar industry. The company's vision encompasses the expansion of its operations to meet the growing demand for sugar in the Tanzanian market. As part of this vision, Kilombero Sugar Company has embarked on a new expansion project, known as K4, which includes the construction of a state-of-the-art 420 t/h raw sugar cane factory. This new facility is specifically designed for the production of direct consumption brown sugar, catering for the discerning Tanzanian market. By investing in this expansion, Kilombero Sugar Company aims to solidify its position as a leading sugar producer and contribute to the economic growth of the region. The collaboration between TSK and Keller on this project is instrumental in turning this vision into a reality.

## Site location

Nestled in the picturesque Kilombero region of Kidatu, Tanzania, the new factory site sits adjacent to the existing Kilombero Sugar Company K1 sugar factory. Access to the

site is a scenic journey of approximately 350 km by road from the bustling port city of Dar es Salaam. The road trip, spanning around 9 hours, offers a mesmerising view of abundant wildlife along the way. However, it's worth noting that the challenging road conditions occasionally demand extra caution.

## Scope of work

Initially, the scope of work encompassed piling for vital structures, including the drying, process, evaporation, power turbines, tanks, mill building, shredder, boiler, and baggage storage, totalling 1 075 piles. As the project progressed, the scope expanded to include additional structures such as the warehouse. Keller successfully installed a total of 1 900 piles over a span of 12 months, deploying two piling rigs. This notable achievement positions this project as Keller's most significant piling contract in the region.

## Geological conditions

At the new K4 site the prevailing soil composition consists mainly of stiff black clayey silt at shallow depths, underlain

*The site was the scene of beautiful sunsets.*



by loose brown clayey sand. From a depth of 2 m to 30 m, soft to firm greyish black clayey silt dominates, succeeded by dense greyish white coarse sand. These geological conditions presented unique challenges in selecting the appropriate pile type for the project.

### Selecting pile type

Given the complex soil conditions, constructing a sugar plant on a deep clayey silt layer necessitated a robust piled foundation solution. The Franki Driven Cast in Situ (DCIS) pile emerged as the optimal choice for this demanding setting. With the ability to be founded around 10 m deep, the Franki DCIS pile penetrates the silty clay layer, anchoring itself at the top of the gravel sand layer. Its distinctive bulbous base enhances both the end-bearing capacity and tension capacity of the piles, effectively addressing the absence of solid strata or rock at greater depths.

### Challenges on site

The Kidatu region experiences heavy rainfall, making rain a key factor in the construction programme. Rainfall progressively intensifies from November, reaching its peak in April, with an average of 309 mm during the month. While the rain did pose occasional challenges to the piling operations, delays caused by weather conditions were anticipated and mitigated through meticulous project planning.

### Quality standards

Both Keller and TSK are committed to upholding international world-class best practices, governed by the ISO 9001 quality standard. With quality as the cornerstone of their construction activities, Keller's work adheres rigorously to the stringent specifications and requirements set by TSK. Their dedication to meeting world-class standards ensures that the project is built on a foundation of excellence.

### Quality assurance

Ensuring the highest level of quality was paramount throughout the project. Keller implemented stringent quality assurance measures, including comprehensive testing of materials during pile casting. Concrete quality was consistently monitored, with rigorous checks conducted on incoming materials at the batch plant and during casting at the pile position.

Furthermore, physical static load tests were performed on representative piles, both in tension and compression, to confirm their load-bearing capacity and integrity. The performance of the Franki DCIS piles underlined their suitability for the project's challenging soil conditions.

### The expansion project and its significance

Kilombero Sugar Company's expansion project marks a crucial milestone in its growth strategy. The project aims to enhance the production capacity and efficiency of the existing sugar plant, enabling Kilombero Sugar Company to meet the rising demand for sugar in the region. The expansion project will not only create employment opportunities but also contribute to the local and national economy.

### TSK: Leading the transformation

TSK, an internationally renowned EPC contractor, has been entrusted with the responsibility of executing the expansion project. With a rich history and expertise in delivering large-scale engineering projects globally, TSK brings unmatched capabilities to the table. The company's commitment to sustainability and its reputation for delivering high-quality results align perfectly with Kilombero Sugar Company's aspirations.

### Keller's geotechnical excellence

TSK recognised the critical role of robust foundations for the project. Keller's extensive experience in geotechnical solutions and ground improvement techniques made Keller the perfect choice for this challenging endeavour. Keller's dedication to quality, safety, and innovative engineering ensures the success and longevity of the project.

### Collaboration for success

The collaboration between TSK and Keller represents a prime example of global expertise coming together to achieve a common goal.

By combining TSK's EPC proficiency and Keller's geotechnical excellence, the project is poised to overcome challenges and deliver exceptional results.

This partnership underscores the importance of collaboration and the synergistic effect it has on complex construction projects.

### Conclusion

The expansion project at Kilombero Sugar Company, led by TSK as the EPC contractor and supported by Keller's geotechnical expertise, promises to transform the sugar industry landscape in Tanzania.

With a focus on sustainable growth and a commitment to delivering high-quality results, this collaborative effort sets a benchmark for future projects in the region. Kilombero Sugar Company's expansion will not only strengthen its position in the market but also contribute significantly to Tanzania's socio-economic development. ☺



*Franki Rig SA 1084 standing proud on the Kilombero site.*

# 2023 TWENTY-SECOND BEST PROJECTS CALL FOR ENTRIES

**Construction World's** Best Projects showcases excellence in the South African building, civil engineering, supply and project management sectors. In its 22<sup>th</sup> year, the aim of **Construction World's** Best Projects is to recognise projects across the entire construction industry: from civil and building projects to professional services to specialist suppliers and contractors.

There are **SEVEN** categories in which to enter. Projects may be entered in several categories, provided they meet the prerequisites for entering each one, and meet the criteria.

**This competition is by submission only – it is judged solely by what you submit – so it is essential to take careful note of the entry requirements.**

## JUDGING

A panel of independent judges from the construction industry has been appointed. These judges represent ECSA, SAICE, MBA and CIOB.

Each criterion set out for the various categories, will be scored out of 10 – with 10 being the highest score and one being the lowest. It is therefore **VERY IMPORTANT** that the entry addresses the criteria for the particular category it is entering.

If a criterion is not answered, it will be awarded a medium of five points.

In each category a 'Winner' is announced as well as a 'Highly Commended Award'. A 'Special Mention Award' may be given.

## SPECIAL ISSUE

The December issue of **Construction World** is dedicated to the various winners and entries and is an overview of activity in the entire built industry during the past year.

Contact Erna Oosthuizen, the advertising manager, if you wish to advertise in this issue. Advertising here will associate your brand with excellence.



## How to submit entries

- Each entry must be accompanied by the **completed entry form**, available from [www.constructionworldmagazine.co.za](http://www.constructionworldmagazine.co.za) or by requesting it from [constr@crown.co.za](mailto:constr@crown.co.za).
- The maximum length for submissions is **2 000 words**.
- Each submission must clearly state which **category** is entered.
- **IMPORTANT** It is to the entrant's own advantage to address **ALL THE CRITERIA** as set out in the category being entered. If the criterion falls outside the scope of the contract, please state this. It is advantageous to use the criterion as subheader and then to address this directly.
- The written submission must be accompanied by up to **six high resolution** photographs with applicable captions.
- The photographs and copy must be submitted separately. The photographs must be .jpgs and the copy in Word (not PDF format).
- The submission must also contain a **summary of important project information** such as the client, main contract etc. – i.e. the professional team involved in the project.
- **Electronic submissions only.**

## Prerequisites for entry

All the categories have the same prerequisites (unless otherwise stated). These are:

- Only South African civil and building projects that are executed by locally based companies.
- Projects are eligible during the execution of the project and up to 18 months thereafter (within reason).
- Projects must be at least 50% complete at the time of entry.

## Awards evening

Information about the venue and date of the awards evening will be available in July.

## Entry form available on

[www.constructionworldmagazine.co.za](http://www.constructionworldmagazine.co.za)  
or by requesting it from [constr@crown.co.za](mailto:constr@crown.co.za)

## Contact

For more information contact the editor,  
Wilhelm du Plessis, on 011 622 4770 or [constr@crown.co.za](mailto:constr@crown.co.za)

<p><b>1</b> <i>Category</i> <b>Civil Engineering Contractors</b></p>	<p><b>2</b> <i>Category</i> <b>Building Contractors</b></p>
<p><b>Please address the following criteria:</b></p> <ul style="list-style-type: none"> <li>• Construction innovation technology</li> <li>• Corporate Social Investment</li> <li>• Design innovation</li> <li>• Environmental Impact Consideration</li> <li>• Health &amp; Safety</li> <li>• Quantifiable time, cost and quality</li> <li>• Risk management</li> <li>• Motivation facts about the project</li> </ul>	<p><b>Please address the following criteria:</b></p> <ul style="list-style-type: none"> <li>• Construction innovation technology</li> <li>• Corporate Social Investment</li> <li>• Design innovation</li> <li>• Environmental Impact Consideration</li> <li>• Health &amp; Safety</li> <li>• Quantifiable time, cost and quality</li> <li>• Risk management</li> <li>• Motivation facts about the project</li> </ul>
<p><b>3</b> <i>Category</i> <b>Civil Engineering and Building Contractors (outside South Africa)</b></p>	<p><b>4</b> <i>Category</i> <b>Specialist Contractors or Suppliers</b></p>
<ul style="list-style-type: none"> <li>• In addition to the common prerequisites, projects outside South Africa must be executed by a <b>South African</b> contractor.</li> </ul> <p><b>Please address the following criteria:</b></p> <ul style="list-style-type: none"> <li>• Construction innovation technology</li> <li>• Corporate Social Investment</li> <li>• Design innovation</li> <li>• Environmental Impact Consideration</li> <li>• Health &amp; Safety</li> <li>• Quantifiable time, cost and quality</li> <li>• Risk management</li> <li>• Motivation facts about the project</li> </ul>	<p><b>Please address the following criteria:</b></p> <ul style="list-style-type: none"> <li>• Construction innovation technology</li> <li>• Corporate Social Investment</li> <li>• Design innovation</li> <li>• Environmental Impact Consideration</li> <li>• Health &amp; Safety</li> <li>• Quantifiable time, cost and quality</li> <li>• Risk management</li> <li>• Motivation facts about the project</li> </ul>
<p><b>5</b> <i>Category</i> <b>Consulting Engineers</b></p>	<p><b>6</b> <i>Category</i> <b>Architects</b></p>
<p><b>Please address the following criteria:</b></p> <ul style="list-style-type: none"> <li>• Construction innovation technology</li> <li>• Corporate Social Investment</li> <li>• Design innovation</li> <li>• Environmental Impact Consideration</li> <li>• Health &amp; Safety</li> <li>• Quantifiable time, cost and quality</li> <li>• Risk management</li> <li>• Motivation facts about the project</li> </ul>	<p><b>Please address the following criteria:</b></p> <ul style="list-style-type: none"> <li>• Construction innovation technology</li> <li>• Corporate Social Investment</li> <li>• Design innovation</li> <li>• Environmental Impact Consideration</li> <li>• Health &amp; Safety</li> <li>• Quantifiable time, cost and quality</li> <li>• Risk management</li> <li>• Motivation facts about the project</li> </ul>
<p><b>7</b> <i>Category</i> <b>The AfriSam Innovation Award for Sustainable Construction</b></p>	<p><b>Construction</b>WORLD</p>
<p><b>Please address the following criteria:</b></p> <ul style="list-style-type: none"> <li>• Construction innovation technology</li> <li>• Corporate Social Investment</li> <li>• Design innovation</li> <li>• Environmental Impact Consideration</li> <li>• Health &amp; Safety</li> <li>• Quantifiable time, cost and quality</li> <li>• Risk management</li> <li>• Motivation facts about the project</li> </ul>	<p><i>Main Sponsor</i></p>  <p><i>Associate sponsor</i></p>   <p><i>Sponsor</i></p>  <p><b>Entry Deadline</b> Friday, 8 September at 17:00</p>

# a.b.e. HAS WIDE RANGE OF PRODUCTS FOR ESSENTIAL CIVIL ENGINEERING PROJECTS

*a.b.e. Construction Chemicals, major supplier of specialised construction products, has for many decades supplied a wide range of products for the construction and maintenance of essential civil engineering infrastructural facilities throughout South Africa.*

**a**.b.e. – established 91 years ago – is part of Saint-Gobain Africa.

Warren Trew, a.b.e.'s Regional Sales Manager General Construction Inland, says a.b.e. supplies a wide range of products – as well as professional advice – on many aspects of infrastructural maintenance and construction, covering aspects such as concrete crack injection, fairing, reprofiling, priming, mortar repair, and the rehabilitation of spalled concrete surfaces, all of which could save the owners and municipalities millions of rands.

Among a.b.e. products widely used for civil engineering projects are:

- epidermix 389 and 395 for concrete crack repairs;
- durarep ZR for the treatment of steel reinforcement bars;
- epidermix 344 as an epoxy primer;
- durabond GP and duralatex for acrylic priming/bonding; and
- durarep FMC, durarep FR and durarep FC for cementitious repairs.

“epidermix 389 is a solvent-free, low-viscosity modified epoxy injection compound to fill cracks, while epidermix 395 is the ideal product for fixing starter bars, or bolts, vertically down into concrete or rock. The fast-setting product is also suitable as a flowable grout or

bedding for areas with awkward access,” Trew says.

durarep ZR (zinc rich) is a single-component liquid epoxy resin, enriched with metallic zinc, that offers excellent corrosion protection properties, particularly for the rebar in concrete infrastructure. epidermix 344 is a solvent-free, polysulphide modified epoxy adhesive, particularly suitable for bonding fresh (plastic) concrete to existing concrete, and cementitious repairs to concrete structures where structural integrity is critical.

durabond GP (general purpose) is used as a primer/bonding medium for repairs to concrete elements while duralatex is a synthetic resin polymer designed to improve qualities of site-batched cementitious mortars and slurries.

Trew says the a.b.e. durarep high strength mortar range is widely used for structural cementitious repairs. “durarep FMC (fluid micro concrete) is a non-shrink concrete reinstatement grout with a migrating corrosion inhibitor; and durarep FR (fibre reinforced) is used for vertical, overhead and honeycomb repairs. durarep FC (fairing compound) is a thin film coating to aesthetically enhance and smooth concrete and

masonry surface imperfections and blowholes which are not trafficked.”

a.b.e. also supplies protective coatings such as duracote WB, a flexible aliphatic acrylic polymer coating with high crack-bridging properties, which acts as a contaminant barrier; and durasil SH, a highly effective water repellent with hydrophobic properties to protect concrete against chlorides and carbon dioxide ingress.

“The company’s wide range of duracure products have also nationally been specified for concrete pavings and external concrete handstands. All these products – individually or in combination – effectively ensure proper curing by reducing the water evaporation rate from concrete surfaces. The presence and retention of water in concrete are essential to ensure adequate strength development and minimise initial plastic shrinkage cracking.”

He says a.b.e. distributes Dowsil sealants – imported from Europe and renowned globally – that have been applied in many parts of South Africa for the sealing of concrete joints. Among the popular Dowsil sealant systems are self-levelling Dowsil 890SL for roadways, gun-grade Dowsil 888 for vertical and gradient surfaces, and Dowsil 902, a fast-



setting gun-grade sealant, particularly used for bridge joint sealing.

“Where applicable, these specialised sealants supplied for infrastructural

projects, comply with the global Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (ASTM) and have

highly impressive expansion/contraction features of plus 100% expansion, and minus 50% contraction. For example, if a Dowsil joint is 25 mm wide, it can expand 25 mm (12,5 mm on either side) and contract 12,5 mm (6,25 mm on either side),” Trew explains.

Major projects for which a.b.e. has already supplied concrete repair and protection products and consultation include:

- Grasmere N1 toll road;
- Umdloti main road;
- N14 Bridges between Hartbeespoort and Lanseria;
- OR Thambo concrete aprons and hardstand areas;
- Gqeberha airport runway;
- Gautrain viaducts;
- Fish Water Flats sewage works, Gqeberha;
- Kanengo Silo Project, Malawi;
- Mondi Chipper plant, Richards Bay;
- Omnia fertiliser tank bases, Sasolburg;
- Savana City reservoir, Sebokeng, Gauteng;
- Northam Plats Mine cooling towers; and
- Coal Tippler Project concrete repair, Richards Bay harbour. ©

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## BETTER GRID MANAGEMENT CAN DELIVER MORE POWER SOONER

*As our country grapples with ongoing power cuts and the threat of a dark winter becomes a likely reality, energy specialists continue to work on possible solutions to deliver more power as quickly as possible.*

The hurdles are endless, and although solar and wind power plants can be built in a fraction of the time, when compared to thermal power, currently the grid itself doesn't have the capacity to bring power from where it's generated to where it's needed.

Accepting this reality is perhaps the first step to finding the solution in exploring ways to better manage the current grid, getting us closer to energy security. This will, in essence, buy the country some time, while the State Utility and government defined the best model to build a new transmission system, which may very likely include a combination of public and private operators, says independent energy company, Enertrag South Africa. The company has been operating various clean energy technologies as a comprehensive energy system, in other parts of the world, and demonstrates that consistent energy supply from renewable sources is possible and that grid frequencies and volatility can be managed effectively.

"Right now, we need more connecting points on the grid to alleviate pressure, especially in the Northern, Eastern and Western Cape, which are the provinces that are most constrained. Hence, the first step is to decide where we can locate grid infrastructure, and then to explore the possibility of repurposing transmission infrastructure located at power stations that are set to be decommissioned. Plus, another feasible option, is to explore co-locating renewable technologies, and in the case of South Africa, the most viable options are wind and solar PV, and perhaps hydro," explains Mercia Grimbeek (**pictured**), Head of Project Development for Enertrag South Africa.

Looking at renewable energy technologies, solar PV is an easier resource as it is available across most of the country, but it doesn't fit the consumer's power demand profile. However, by building wind and solar power plants alongside each other,

a single transmission connection point can be used more effectively, meeting baseload demand.

"By co-locating a wind and solar facility the network operator could in effect have a more consistent uptake of electrons at a particular connection point on the grid. For example, if one were to construct a 200 MW wind farm adjacent to a 200 MW solar farm, this does not mean 400 MW injected into the grid all the time. Instead, the wind production is likely to happen in the late afternoon, throughout the night and in the morning, whereas the solar production happens during the day and hence, the combined energy production happens more consistently at a single connection point," says Grimbeek.

Since the technologies (wind and solar PV) do not compete with each other for grid access, this is a very feasible option to maximise the existing grid and the inclusion of battery storage further increases the consistency of supply.

Independent Power Producers (IPPs), are likely to find this a viable business model, as studies indicate a small overlap. "As a developer, we would consider an overlap of between 3% and 7% reasonable, provided that there is a mechanism to recoup the cost of the overlap from the grid operator," added Grimbeek.

Although co-location has not yet been proposed in South Africa, ENERTRAG SE (Germany), has extensive experience in system optimisation and grid management in Europe. The company is currently in the process of constructing a solar facility adjacent to an existing wind facility in the north of Germany. In addition, it has been operating battery technology since 2019.

"Operating the various technologies as a comprehensive energy system has taught us that consistent energy supply from renewable sources is possible and that grid frequencies and volatility can be managed effectively," concluded Grimbeek. ©

# ARCHITECTS: CREATORS OF THE FUTURE

*Many people think of architecture as work that happens on paper (or in a computer program), but the thought process starts well before pen gets put to paper (or designs get created onscreen), says Landseer Collen, Principal, Director and Founder of BPAS Architects.*

“If architects only operated in a paper world, we would never get our buildings evolved beyond paper,” he says. “Architects must be dreamers, visionaries, explorers and entrepreneurs. The principle of avant-garde architecture whereby architecture is innovative, radical and always progressing, becomes the focus in urban development when an architect designs for the future. To be able to take a commission from a client and translate that into a drawing, you first must be able to create a vision of the future. It takes imagination – plus the cognitive development of being able to think in a 3D environment.”

He says that architects not only translate a client’s need into an image, but have to be able to play with it to see what’s possible. For example, renowned architect Frank Gehry, known for iconic buildings such as the Guggenheim Museum Bilbao in Spain and The Museum of Pop Culture in Seattle, USA, created the Dr Chau Chak Wing building, at Sydney’s University of Technology, based on the idea of a crumpled paper bag.

He was also said to have designed the Walt Disney Hall in Los Angeles by simply crumpling up a piece of paper and saying “there’s the design”. He told CNN that this story was just a gag invented for the TV show The Simpsons and that his process is far more involved. Like Collen, he says it begins with gaining a deep understanding of what the client is looking for and the parameters of the job (from the budget to the specific site). Function comes first, but then the architect also has the opportunity to bring something special to the project that goes beyond an understanding of the engineering and technology – that will “engender an emotional response.”

Collen describes this quality of architects as “a necessary sense of playfulness” and says architectural professionals navigate the fine line between dreams and what is possible. “We have to be visionaries to understand what we’re designing – to interrogate not just the moment in time we’re being asked to design for, but the long-term vision for a building and how it will work 50 years in the future.”

This means that architects can’t view their buildings in isolation but must understand the community and environment in which they are located and be constantly thinking about how society is changing and what that means for the built environment.

“Architecture is science translated into art,” he says. “You can’t separate those two disciplines out if you’re an architect – you need them to work together in symbiosis. It’s a collaboration



between the creative and physical environment. We must push boundaries to explore what’s possible. If we don’t, we’re no longer designing the future, we’re just a tool to replicate the same things in the now. We should not blindly accept limitations.”

He says that architects are by nature problem-solvers and innovators, which is something that is often overlooked by those outside the profession. For example, during the worst of the COVID-19 pandemic, BPAS turned its architectural skills to a medical need, creating a carton cubicle that could be used as an isolation space for a COVID patient wherever it was set up. “If that person tragically died, the box could be folded into a temporary coffin for transportation of the body without risk of contamination for anyone else, thus maintaining dignity,” Collen explains.

“We couldn’t help with the epidemiology or economic issues because those things are not our areas of expertise, but we can contribute to society with the skills we have. I think the contribution of architects to society is still undervalued, but we continue to work to show that we have an important role to play.” ©

*“We must push boundaries to explore what’s possible. If we don’t, we’re no longer designing the future we’re just a tool to replicate the same things in the now.”*

# GASS ARCHITECTURE STUDIOS WINS FOUR AWARDS

*Bespoke architectural design studio GASS Architecture Studios brought home a whopping four awards from the 2021/2022 Corobrik SAIA Awards of Merit and Awards for Excellence, which were held in Johannesburg on Wednesday, 26 April 2023.*



The Corobrik-SAIA Awards of Merit and Awards for Excellence programme is held biennially as part of a two-stage process that alternates between regional and national awards, recognising unique talent and excellence in the field of architecture. According to SAIA, “Stage one sees the regional awards for architecture presented by the nine regional institutes affiliated to SAIA. In Stage two, the national awards, the winning regional projects receive either a Commendation, an Award of Merit and/or an Award for Excellence. This follows a vigorous adjudication and shortlisting process. The national group of adjudicators is independent of the regional awards process and is selected

Jewel City and The Onyx each received an Award for Excellence and an Award of Merit. According to a statement by SAIA, “The Awards for Excellence recognise exceptional achievement in the field of architecture.”

Jewel City is an inner-city precinct in Johannesburg’s eastern CBD, adjacent to Maboneng, that involved the redevelopment of six city blocks, transforming a pre-existing industrial complex that housed Joburg’s precious metals and diamond trade into an open, vibrant mixed-use precinct.

It comprises 1 100 apartments and 20 000 m<sup>2</sup> of commercial space, including retail space, offices, schools and medical facilities, as well as plenty of open public space with lawns and play areas, sports, recreation and public art. While much of GASS Architecture Studios’ intervention involved repurposing the existing industrial buildings, The Onyx is a new 13-storey residential building that opens onto a large public square and urban park animated by fountains and public art.

Founder and director of GASS Architecture Studios Georg van Gass said, “We are delighted that this remarkable project, developed by Divercity, has received recognition from our peers at the South African Institute of Architecture. We believe that the architectural profession has an indispensable role to play in the improvement of living conditions and the life of the city in general though thoughtful and ambitious design interventions, and welcome the opportunity to exercise our craft in this area.”

SAIA President and Corobrik-SAIA Awards Convenor Amira Osman says. “The SAIA awards are an important event in the South African architectural calendar. They are an opportunity to recognise and celebrate excellence in a profession that has a profound impact in shaping our homes, neighbourhoods and cities, thus adding value to our daily lives and experiences.”

by the SAIA President in their capacity as Convenor.”

The judicial panel’s report remarked that, although Jewel City is a private development, it achieves “meaningful social upliftment” and comments on its “intentions that expand beyond the commercial”.

It continues: “The architects and urban design team have made great strides in providing a crucial template. This template can be used as a lens to critique and learn from other city infrastructures that have not managed this level of integration and activity. As urban infrastructure, the project shifts perceptions of how people can be provided for without compromising the fiscal value and benefit for developers. These decisions make for resilient inner-city social and urban spaces.”

The panel remarks that the Onyx – with its 348 bachelor, 226 one-bed and 91 two-bed units – “is an ambitious inner-city housing proposition”.

“The architects have worked intensively to find creative architectural solutions to consistently transfer the benefits to the user whilst addressing the pressing need for more and accessible affordable gap housing,” it continues.

“The building can be read as a manual in design efficiency while still creating quality living and socialising environments. The result is an overall responsible and sustainable housing solution designed and detailed to exact economic standards. Its overall execution is a positive departure and deep critique of similar housing models and projects within the city and elsewhere and is executed superbly.”

Last year, the Jewel City Precinct was also awarded top honours in the “Transformation” category and The Onyx was winner of the “Residential Developments” category South African Property Owner Association (SAPOA) Awards. ©



## QUAD RANGE FROM CHRYSO UNDERPINS COMMITMENT TO SUSTAINABILITY

*Once again, CHRYSO is the first out of the starting blocks, having introduced its CHRYSO® Quad range of concrete admixtures to the market in 2022 – helping customers to promote sustainable practice in their use of challenging sands.*

According to Patrick Flannigan, Technical Manager in the Concrete Business Unit at CHRYSO Southern Africa, the use of crusher or manufactured sand in construction has been prevalent for many years as it is a cost effective and more readily available alternative to natural sand.

“There have, however, been issues with grading which often prompts contractors to supplement with natural sand from sources such as rivers and dunes,” he explains. “This is where the challenges lies with less availability of natural sands which increases costs as well as the presence of clays which means that less of this material can be used or it has to be excluded completely.”

“Our CHRYSO® Quad range allows customers to reduce their use of natural sand while making better use of crusher sand, without compromising the quality of their concrete mixes, and successful laboratory trials have already been concluded with customers in various market segments are already realising the benefits,” Flannigan continues.

“Working with customers such as contractors, readymix suppliers and precast manufacturers, CHRYSO is making significant contributions to industry sustainability and reduced carbon footprint,” he says.

He highlights that using less natural sand gives the industry a lower environmental impact on sources like rivers. Where natural sand is still being used, CHRYSO® Quad CLEAR® (Clay

Enabling Admixture Response) allows a wider choice of sources – even challenging sand that contains swelling clay. This can allow contractors to source from locations closer to site, reducing the carbon footprint and cost of transporting sand over a long distance.

“The challenge is that swelling clays absorb newer generation plasticisers, thereby preventing them from delivering benefits such as water reduction or slump retention,” he says.

CHRYSO Southern Africa also offers the quick and innovative CHRYSO® CLEAR Test to identify where these swelling clays could present a problem for concrete users. Where they are identified in the source material, CHRYSO® Quad CLEAR® can be added as a liquid to the relevant plasticiser.

Another important contribution to sustainability in the construction and concrete manufacturing sectors is CHRYSO® Quad GRAFT® (Gap Gradation Fixing Technology), he notes. This can solve the challenge of an excess or lack of fines in source material – which often occurs in crusher sand.

“The industry is seeing the environmental benefit of moving away from natural sand and more toward crusher sand, but this product often has varying levels of fines,” he says.

“In the past, this could have compromised the performance of concrete, but CHRYSO® Quad GRAFT® now solves this challenge.” ©

# AGILE WORKING ALLOWS AECOM TO INCREASE ITS DIGITAL FOOTPRINT

*As its involvement with international projects increases, globally trusted infrastructure firm AECOM is making use of the hybrid approach to afford its employees the flexibility to spread their work time between working in the office and from home. This model is an offshoot of the COVID-19 pandemic and associated lockdown, which saw AECOM take advantage of the digital strategy it had already implemented a few years prior.*



Coupled to the hybrid approach is the concept of the agile workplace. It means employees do not have permanent desks but use an app-managed hot desking system whereby they can also book meeting rooms as and when they need them, explains James Anafi (**pictured**), Associate Director – Rail, Africa at AECOM.

The hybrid approach is ideal for the rail team as it is virtually doubling in size year-on-year as it grows to match the expanding work demand. Team members have the flexibility to work some days at home and other days in the office for in-person team interactions that also aid quick assimilation of new members.

“The approach suits what employees want to achieve when they are in the office, so it is good for the overall team as well,” says Anafi. For example, employees can book desks next to each other if they need to collaborate. In addition, social areas are available, while there are also

quieter secluded areas for more intensive work that requires dedicated concentration.

“Agile work practices offer employees greater freedom to choose when, where and how they want to work, combined with the flexibility of working remotely. This is invaluable in terms of work scheduling, as our projects are often based in other parts of the world and in different time zones,” says Anafi. For example, client meetings often need to be scheduled outside of what are considered normal working hours in South Africa to accommodate international clients.

*“The approach suits what employees want to achieve when they are in the office, so it is good for the overall team as well.”*



**Isak Malherbe, Associate Director – Surface Water Management, Africa at AECOM.**

Isak Malherbe, Associate Director – Surface Water Management, Africa at AECOM has a local team spread out over multiple offices in Cape Town, Centurion and Durban that needs to collaborate on projects as a single unit. “In terms of agile or flexible working, as we refer to it, the overriding principle is that it works for the client, the company, the team and its individual members. It is important to strike that balance and accommodate the needs of all at the same time.”

The autonomy engendered by agile working “means the company does not focus on where you work, but on what you are producing and the time and effort expended to achieve a deliverable,” explains Jeyrisha Stagman, Digital Solutions Business Analyst at AECOM.

“Personally, it has helped me create and achieve that work-life balance. A lot of us have families and other responsibilities. Just being able to create a schedule where you can juggle different tasks and responsibilities is beneficial in terms of your overall well-being. It also allows you to give of your best in every single one of those different avenues.”

Stagman adds that agile working teaches employees the value of being able to work independently, and to be accountable for their own targets and output. “That has definitely been a move in the right direction since the coronavirus pandemic,” highlights Stagman.

She adds that, more importantly, AECOM has the tools in terms of technology to be able to deploy agile working effectively across the entire business.

Anafi highlights that agile working reflects the AECOM culture of global collaboration and interaction. “It is precisely because of this capability that we can participate fully in international projects. We are not confined to set hours and the team is exposed to different technologies in terms of remote working. We can see things happen real-time in different parts of the world. That flexibility allows us to work across different regions simultaneously, which is a definite advantage.” This business model immediately makes AECOM attractive and highly sought after for a range of international projects in diverse locations and industries.

Stacie Moorhead, Technical Director at AECOM in Cape Town, says her team focuses predominantly on largescale global projects in different geographies. “The ability to be agile is twofold. Growing a team from scratch is difficult without any

in-person time, so having set days in the office is actually very important to catch up as a team. However, at the same time, having more time to devote to personal wellbeing is equally important.” A typical example of this is that agile working effectively mitigates the stress and dead time associated with the daily commute to and from the office.

Malherbe says the main benefit for clients is that AECOM’s curated expertise and experience are available globally and virtually instantaneously wherever is needed. “Communication channels are more open and adaptable, which expedites the work itself. If a team is fixed in one physical location and is unavailable at any point, it impacts on our ability to service our clients. From that perspective, agile working is essential, particularly when clients rely on our ability to respond rapidly, including multiple requests from multiple clients at the same time.”

Another consequence is that clients no longer need to depend on one AECOM office in a particular region but have access to its global operational base. Agile working allows projects to be allocated strategically to different offices around the world, with the focus on a single outcome for the client.

“Our tactical approach to international projects is to involve several regions for around the clock collaboration. This is invaluable from a client perspective as it speeds up the delivery time and output significantly. It works seamlessly for us, and we can even be called into a meeting anywhere in the world to discuss anything we need to with the client.

There is no longer any restriction in terms of time or geography on the service that AECOM delivers globally,” concludes Malherbe. ☺

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*Consulting engineers are essential to maintaining standards of excellence in project planning and execution.*



## SUSTAINED GROWTH VITAL TO RETAIN ENGINEERING SKILLS

*Although the mining sector is currently buoyant, it is hoped that public sector spending on infrastructure will rise and stabilise – providing a firmer foundation for South Africa to maintain and develop the depth of its expertise in consulting engineering.*



*SRK Consulting Managing Director, Andrew van Zyl.*

According to SRK Consulting Managing Director Andrew van Zyl (**pictured**), recent years have been busy for the company due largely to its long history in the mining sector. However, it is really only a sustained and upward trajectory of growth that will secure South Africa's vital skills base in the consulting engineering sector, argued Van Zyl.

"In any country, the quality of its consulting engineering industry relies on the steady growth of experience across multiple disciplines over decades, not just years," he said. "Here in South Africa, we have been struggling to generate and retain these skills; many specialisations are in high demand internationally, so we are also competing with other countries for these scarce skills."

He pointed out that the cyclical nature of the mining industry tended to create challenges of its own, as demand for specialised consulting engineering input regularly fluctuates. It was therefore important that other sectors of the economy were also vibrant, so they could help even out the highs and lows of the commodity cycle.

"For consulting engineers like SRK, recent years have been very busy on account of buoyant commodity prices –

even creating scarcity in some disciplines," he said. "At the same, though, the construction and infrastructure sector has been subdued – along with its demand for consulting engineering services."

He highlighted that both the public and private sectors are heavily reliant on consulting engineers to advise on how to plan and implement quality engineering solutions for a modern economy. The disciplines underpinning these solutions take decades to nurture, and invariably demand some of the best students that the educational system can generate.

"To cultivate these skills and interests among the country's best students is a necessity for the growth of the economy – which means supporting students and mentoring graduates," he said. "In practice, though, this can only be successful in a growing economy that can make full use of this expertise, and where careers can be built."

Consulting engineers are essential to maintaining standards of excellence in project planning and execution, he noted, as they delivered highly specialised technical and strategic services to various industries. Their status



the international stage,” he said. “Only by keeping up with these global benchmarks can South Africa’s economy remain competitive and aligned with the expectations of investors and regulators.”

In recent decades, the spotlight has been shone on various new aspects of consulting engineers’ mandate: not only must engineering structures be technically sound, cost-effective and safe, they must also be environmentally and socially responsible. This has become part of the foundation on which key industries can operate at globally competitive levels.

“It also ensures that economic development takes place within a sustainable and responsible framework – including complying with legal regulations and other compliance requirements,” he said. “All these factors contribute to building an economy that is inclusive and job-creating, while attracting investors through being transparent and predictable.”

He noted that this had led SRK to build its expertise in the environmental, social and governance (ESG) field, including issues like climate change resilience, water stewardship, decarbonisation. Consulting engineers have also embraced the opportunities offered by digital technologies; SRK itself has invested substantially in its data science capabilities to enhance the application of its scientific and engineering skills.

“Technology does not take the place of an engineer or scientist, but does give them more capability to find answers – and more quickly – to our clients’ various challenges,” he said.


Despite the difficult economic conditions and the long period of underspending in public infrastructure, he was confident of an upturn. ©

as independent experts are a vital economic pillar that underpins project quality and value for money, which are essential outputs for the public and private sector alike.

“An aspect of consulting engineers’ role that is often overlooked is that they drive the implementation of global best practice in a range of sectors that must compete on



*Not only must engineering structures be technically sound, cost-effective and safe, they must also be environmentally and socially responsible.*



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# M&D ACQUIRES LEADING SPECIALIST BULK TANKAGE CONTRACTOR

*M&D Construction Group has acquired 100% of Efficient TROTECH, the country's leading supplier of bulk tank design, procurement and construction services to the petrochemical and energy industries.*

Established in 1993, Efficient TROTECH is the only recognised, local bulk tank builder in the country, boasting its own engineering, draughting, quality control and inspection capabilities, together with hydraulic jacking and boiler making resources. These capabilities are harnessed to both construct new, as well as repair and rebuild existing tanks that will conform to API 650, API 653, API 620 and EN 14015.

With this acquisition and its existing civil, mechanical and pipeline infrastructure capabilities, M&D is strategically positioned to play a key role in the development and construction of facilities that are needed to store the significant quantities of clean fuel that will be imported into the country in the foreseeable future. Only a small number of refineries will be able to comply with the new CF2 regulations that stipulate that sulphur levels in petrol and diesel must remain below 10 parts per million. These new regulations which were initially planned to come into effect in 2017 have been delayed several times with the latest extension to 2027.

Newly branded TROTECH will continue to operate as a stand-alone company and will be supported by the M&D Group to drive efficiencies and deliver better value to its clients. Ralph Wilson will continue to lead the company as Managing Director. Wilson has more than 40 years of bulk tank construction experience. He helped TROTECH to develop its bulk tank design, procurement, and construction capabilities and to grow its presence in the petrochemical and energy industry.

The company's extensive skills and experience are currently being harnessed by the majority of the oil majors and tank terminal operators in the country.

The company is proud of its many contracts in the industry, in particular:

- Providing world-class tank engineering, procurement and construction services to Royal Vopak for its expansion in South Africa. The company constructed 10 new tanks with a combined capacity of 162 000 cbm at the Vopak Terminal Durban in KwaZulu-Natal.
- A long professional relationship with Astron Energy. The company has remained Astron Energy's preferred tankage refurbishment contractor for 11 years. This tank maintenance contract was recently extended for a further three years reaffirming Astron Energy's confidence in the company's abilities.
- The company recently secured an award to supply engineering, procurement and prefabrication services and construction for five large clean fuel storage tanks for

Sasol. The construction phase of this contract will be completed at the end of 2024.

"I believe we are well positioned to secure two more large contracts for which we have tendered together with M&D. With the close collaboration between M&D and TROTECH, the next few years are going to be very interesting, and will provide significant potential for growth, allowing us to better serve the petrochemical and energy infrastructure market," Wilson says.

TROTECH's competitive edge remains its ability to self-perform, maximise efficiency and ensure reliability on all of its projects, irrespective of their size, duration and complexity.

The use of automated welding equipment improves quality, bolsters productivity and reduces costs.

TROTECH has also developed a significantly safer method of constructing storage tanks. TROTECH is the only company in South Africa to reverse build tanks. The tanks are built at ground level and then jacked to their final height one stroke at a time after the various components have undergone intense quality inspection and control. Apart from being a much safer way to build tanks, it significantly reduces the amount of scaffold required inside and outside the tanks, while also freeing up valuable space in the built-up areas where these projects are usually undertaken.

The company deploys Magnetic Flux Leakage (MFL) scanning for the non-destructive examination of tank floors. MFL uses a magnetic field to detect corrosion and pitting in carbon steel. The biggest benefit of the technology is that it enables the location and estimation of defects over large areas in a quick and efficient manner. Scans only have to be undertaken on one side of the material and the technology, with TROTECH's expertise, requires minimal set-up time.

Wilson credits most of the success of the company to strong design and construction teams consisting of loyal and dedicated people, a number of whom have been with the



company for many years and, in some cases, decades.

In addition, the company continues to attract the best skills to bolster its ranks. TROTECH is particularly pleased with the recent appointment of Lukas Brink as Operations Manager. The registered Professional Engineer brings extensive experience in both the design and construction project management of refineries. Brink has a deep knowledge of the maintenance of pipelines including, pigging, defect assessment and rehabilitation.

Rukesh Raghbir, M&D Group CEO, says that TROTECH's expertise enhances M&D's cutting-edge multi-disciplinary construction services, and allows it to expand its offering to existing clients, whilst attracting new customers.

"TROTECH is a strategic fit, complementing the services offered by the various M&D Divisions. The company has very similar core values to M&D, which include 'being safe', 'doing it right', 'finding the best way' and 'doing what we say'. Notably, TROTECH also comprises a team of loyal employees who have contributed to the company's continued success over the years. Now part of the M&D Group, TROTECH is set to embark on its next growth trajectory.

The M&D, TROTECH association will enhance both companies' capabilities and will offer the petrochemical and energy industry a single point of contact for world-class multi-disciplinary construction services. This contracting strategy will make our clients' lives easier by removing all interface risks between different disciplines of work when building a tank farm," Raghbir says.

M&D and TROTECH have already collaborated on two successful projects. The most recent was the construction

of fuel tanks for Total South Africa at its fuel depot in Alrode, Gauteng. Each of the two catch-pot tanks, which hold 11 200 m<sup>3</sup> of ULP95 petrol, are 18 m high, with a diameter of 28,2 m. The outer skin diameter of the tanks is 32,2 m and a total of 627 t of steel was erected on the project. This was the first time that catch-pot tanks were reverse constructed for Total South Africa and the method has set a precedent for future projects within the company. All civil works and piping (BOP) for the project were undertaken by M&D.

The importation of clean fuels will require considerable port docking infrastructure and pipeline networks, both of which can be provided by M&D together with its marine subsidiary, M&DPLC Marine Africa which it jointly owns with PLC Contracting LLC of Dubai, which has 25 years' experience in marine construction.

To better facilitate the use of resources and to enable rapid response to client enquiries, TROTECH, M&DPLC Marine Africa and an M&D team are housed in one office at the APEX Building in Century City, Cape Town.

"M&D is now even better positioned than before to continue growing its presence in the petrochemical and energy infrastructure market. This includes new areas of focus, such as the storage and delivery of liquid-natural gas and hydrogen as countries diversify their energy mix to 'greener' technologies.

At the same time, the interest shown in liquid petroleum gas as a means of reducing energy poverty and improving the health and safety of South Africans bodes well for the group. We are very excited by the potential that M&D's increased capacity has to offer," Raghbir concludes. ©

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## RAISING OF A MAJOR DAM WALL WILL PROVIDE **WATER SECURITY FOR KOKSTAD**

*Zimile Consulting Engineers is at an advanced stage of a project to raise a dam wall, which will satisfy the short-term and future potable water demand requirement and improve the economic growth prospects in Kokstad and surrounding areas in KwaZulu-Natal (KZN).*

The appointment arose due to a comprised surety of water supply in Kokstad, which led to the imposition of water restrictions after the town experienced drought conditions.

The project was awarded to Zimile in March 2020 and comprised all relevant investigations, facilitating all legislative requirements, preparing, and awarding of tender for construction, construction supervision and project close-out.

Deleana Naidoo, Water Technologist at Zimile explained that the work carried out thus far has involved:

- Prepare feasibility study: Includes all necessary specialised studies required for the development of the dam and prepare business plan for the securing of funding.
- Technical Feasibility Report and Preparation of Business Plan: Preparation of a technical feasibility report to highlight the preferred option for implementation and preparation of business plan to secure funding for the dam project. The preferred option was to raise the existing dam wall. The current dam wall height is 4 m and will be increased to a height of 7,8 m, as a result the Kokstad-based dam will supply a total of 12,32 Mℓ/d, this, combined with Crystal springs and groundwater sources will provide a total of 14,55 Mℓ/d for Kokstad.
- Carry out an Environmental Impact Assessment: As well as other related studies and acquire the relevant water use license and registrations with regulatory bodies.
- Conduct all necessary specialised studies and application of licenses: Environmental Impact Assessment (EIA), Geotechnical Investigations, Surveying, application for Water Use License, land evaluations for compensation to affected landowners.
- Preliminary and Detail Designs: Carry out all designs relating to the development and construction of the dam and other related infrastructure necessary for the operation and maintenance of the dam.

“Currently underway is the documentation and procurement phase of the project, where Zimile have prepared the

contract and tender documentation and is assisting the municipality in the facilitation of contractor’s procurement processes including the administration of the contract,” she continued.

“The raising of this specific dam was not without its challenges including obtaining permission from the landowners, as raising the dam wall means that the flood lines would extend into these areas.”

Meanwhile, she added: “The processes of obtaining the authorisations proved to be challenging. There were various requirements requested from the Department of Water and Sanitation (DWS) and the Department of Economic Development, Tourism and Environmental Affairs (EDTEA). Zimile worked closely with the Environmental Assessment Practitioner (EAP) to resolve all queries and requests received.

“The processes for the environmental authorisation commenced in 2020 and the application for water use license commenced in 2021, with both only being authorised in year 2022. The local municipality assisted to fast track these processes to secure the authorisations and avoid further delays.”

“Apart from the construction of the dam being a benefit to the people and businesses of Kokstad, this project has provided key exposure for Zimile’s young engineers including myself. The project included critical engineering tasks that form part of the eleven outcomes required for professional registration with the Engineering Council of South Africa,” explained Deleana.

“This is one of Zimile’s larger projects for this specific municipality in KZN and encompasses our vision to inspire engineering while developing aspiring young engineers by exposing them to various stages in a project.

“This project has opened doors in both the technical and project management areas and will continue to provide exposure in site supervision, monitoring and contracts administration and management during the construction phase,” she concluded. ©

# THE ROLE OF DEMOLITION IN DAM REHABILITATION

*Dam walls may deteriorate over time or sustain damage from natural disasters such as floods or earthquakes, posing a safety risk to nearby communities and the environment. To prevent catastrophic failure, partial demolition may be called for.*

In other instances, reducing the height or capacity of a dam wall could be necessary to restore a river or waterway to its natural state or accommodate changing land-use patterns. Older dams may have outlived their original purpose or been rendered obsolete by advancing technology, and here it could be more cost-effective to demolish a dam wall than to maintain it.

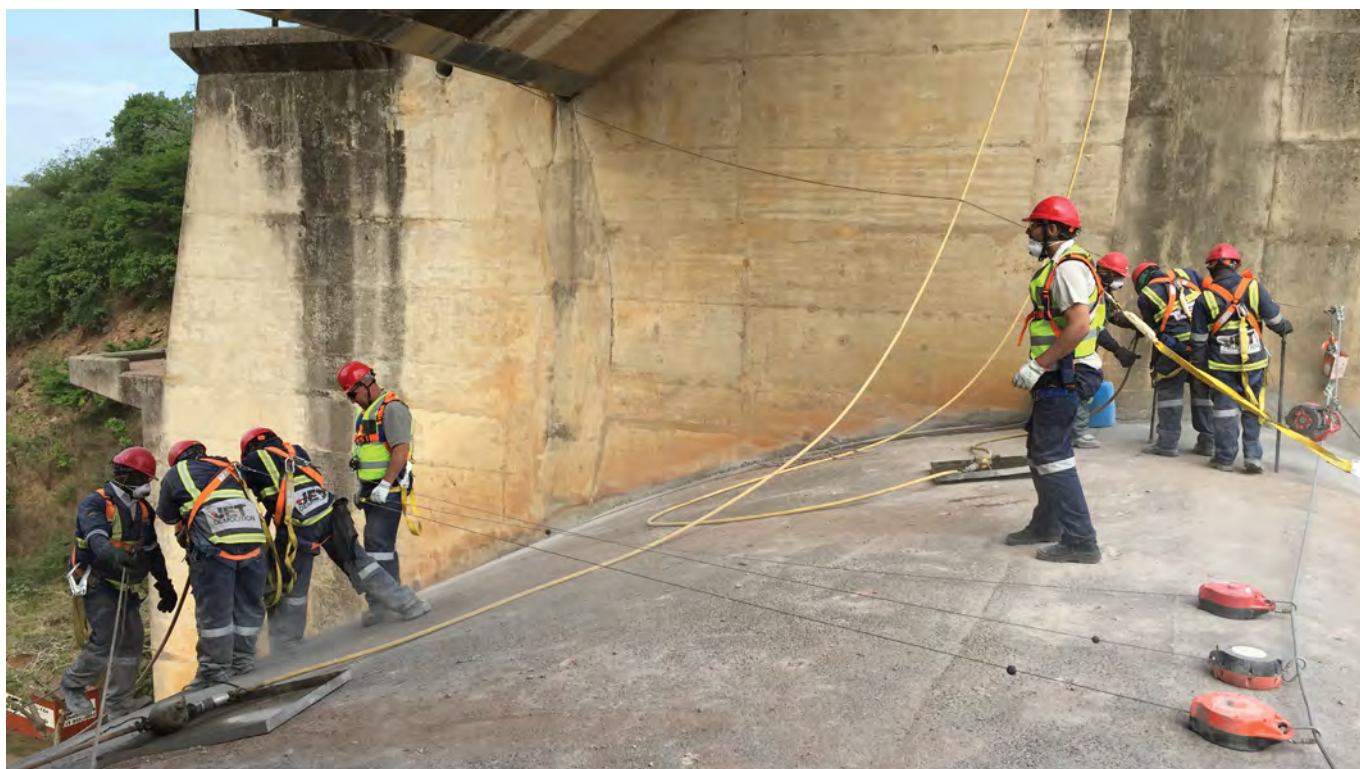
Refined blasting techniques have been developed specifically to retain the structural stability of dams themselves, with no wasted effort. Such projects call for highly controlled, cautious, partial demolition techniques. “Our work on large water-retaining dams consists some of the most important projects we have undertaken to date,” comments Jet Demolition Contracts and Project Manager Kate Bester.

Rehabilitation of dam walls usually requires demolition of redundant portions of monolithic blocks and associated concrete structures. Dynamic energy imparted by the demolition process has the potential to cause damage to concrete located just across the demolition boundaries and beyond. While it is essential to avoid damage to remaining concrete, it is also important to carry out the demolition works in a productive and cost-effective manner.

Informed and judicious selection of demolition methods and their application techniques are vital to a controlled and productive project, which is where Jet Demolition’s

extensive experience stands it in good stead. Dam demolition calls for meticulous planning and execution to minimise the environmental impact, especially releasing debris and sediment downstream.

Demolition techniques range from controlled explosives to cutting or breaking the dam wall into sections so the material can be removed. Following demolition, the site can be restored to its natural state or repurposed for recreational use or hydroelectric power generation. ☺



# RADIO TELEMETRY NETWORK ENABLES BETTER SERVICE DELIVERY FOR DAMS

Remote monitoring specialist Omniflex has completed a system revamp of legacy radio monitoring equipment for Lepelle Northern Water, a state-owned enterprise (SOE) responsible for providing potable water to South Africa's Limpopo province. In 2018, Omniflex was engaged to replace an obsolete radio telemetry system used to monitor reservoirs and control remote pumps across the region with the latest generation License Free Teleterm Remote Terminal Units (RTUs).

The legacy system prior to Omniflex's involvement used analogue radio over license-band frequencies, on now-obsolete equipment. The Durban-based automation and control engineering company supplied and installed a digital, license-free radio network capable of communicating bidirectionally between multiple outstations across the region.

These compact, fully radio-integrated units have universal inputs and outputs servicing analogue and digital signals from twelve up to hundreds of I/O. Flexible communications ports allow direct connection to field devices such as water meters or variable speed drives using Modbus. A working power range from 9 to 30 Vdc makes them the ideal product for battery-backed applications, enabling status reporting of mains power to the site and reservoir levels even during power outages. "We took advantage of a high site, a secure

area that sits atop an old mine dump, as the main repeater station," explained Ian Loudon, international Sales Manager at Omniflex. "It was the line of sight from this structure that enabled us to transmit at 868 Mhz, a license-free frequency in South Africa: enabling us reach all the intended targets and provide unrestricted options to add any new sites as and when required using the Teleterm range of products."

The region's water is sourced from the Olifants river, next to which sits the region's water treatment plant. At this site, Omniflex installed a large human-machine interface (HMI) and integrated the radio network to a supervisory control and data acquisition (SCADA) system. This allows management of all the water pumps, reservoirs and bulk water usage meters in the system, as well as historical record keeping.

"We also offered to incorporate an SMS solution to monitor the river level further upstream the Olifants," said Loudon.

Radio monitoring systems of this sort have applications across the utilities industries that have service delivery commitments to consumers. Just as equipment failure in drinking water supply chains must be planned for and mitigated, power supply networks must also be monitored to allow swift action should a sub-station trip, and residential and industrial areas lose electricity. ©

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# CUTTING CARBON EMISSIONS WITH CEMENT EXTENDERS

*The science of substituting clinker in cement with a portion of alternative cementitious materials has paved the way for substantial gains in decarbonisation.*



According to AfriSam process engineer, Marieta Buckle, the company has reduced its carbon dioxide emissions per ton of cement by 33% since 1990. An important factor in this sustainability journey has been the use of extenders – mainly fly ash and granulated blast furnace slag.

“We have been on this journey for many years before buzzwords like ‘net zero’ were in common use,” says Buckle. “Our Project Green Cement began in 2000, involving significant research and development being invested; among the outcomes, we were able to launch our Eco Building Cement in 2010 as the lowest carbon footprint product.”

AfriSam became arguably the world’s first construction materials supplier to ‘carbon footprint’ all our production operations, including cement, aggregate and readymix concrete, she notes. Its carbon dioxide rating system indicates each product’s carbon footprint relative to Ordinary Portland Cement (OPC).

Buckle explains that producing clinker is the most energy intensive aspect of cement manufacturing – and is therefore a prime driver of carbon dioxide emissions. A central strategy at AfriSam has therefore been to promote decarbonisation by reducing the portion of clinker in cement while maintaining its strength and other properties.

As an added advantage the utilisation of extenders also enables formulation of cement products that have improved

characteristics specific to the application.

“AfriSam’s extensive research and development effort has been able to develop a cement mix that comprises up to 70% of alternative materials,” says Buckle. “Such a mix would contain only 30% of clinker while still providing the required cementitious properties for the application. Importantly, it consumes less energy – and generates fewer carbon emissions – in the production process.”

Its ongoing achievements in this field are reflected in the statistics. AfriSam’s carbon emissions per tonne of cement produced is – at 598 kg in 2021 – is considerably lower than the 671 kg average among South African cement producers, measured in 2016. It is lower, too, than the global average of 642 kg of carbon emissions per tonne of cement.

“By using what are essentially waste materials like fly ash and slag, we can leverage the energy that has already been consumed in generating them as by-products,” she says. “Apart from the value of recycling a waste product, we can make our cement production gradually more sustainable by reducing the energy that is required.” ©

*“We have been on this journey for many years before buzzwords like ‘net zero’ were in common use.”*

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## FOCUSING ON VITAL GOAL OF NET ZERO CONCRETE

*Representatives of more than 75 renowned academic institutions and businesses from across the world have gathered in New Delhi, India, to take part in the Innovandi Global Cement and Concrete Research Network (GCCRN) Spring Week. They are meeting to help drive critical research and innovation towards decarbonisation of the world’s most used man-made material, concrete.*

The GCCRN brings together more than 450 researchers and scientists from more than 40 leading universities and institutions, including EPFL (Lausanne), South East University (China), University of Toronto, Indian Institute of Technology Delhi, University of Cape Town, Imperial College London, as well as 35 cement and concrete manufacturers and their suppliers.

They all work together on initiatives focused on achieving net zero concrete, including sourcing and improving alternatives to clinker, the carbon intensive element of cement, work on calcined clays, concrete recycling, its carbonation and durability, as well as kiln electrification and carbon capture, usage and storage (CCUS).

Claude Loré is Innovation and ESG Director at the Global Cement and Concrete Association (GCCA). She said: “Global Innovation collaboration and research will help unlock our industry’s decarbonisation mission. Spring Week is the key date in the GCCA’s Innovandi calendar. It provides an opportunity for our partners to meet face-to-face, exchange ideas, run workshops, and measure progress on key research projects in line with our industry’s 2050 Net Zero Roadmap. Our industry and our key partners are stepping up to the challenge and it’s fantastic to see the progress on some of the 75 PhD candidates supported by the GCCRN.”

In addition, those attending the Spring Week will also

get an opportunity to hear about progress being made by projects involved with the Innovandi Open Challenge. The global initiative matches start-ups with GCCA member companies from around the world, to help scale up research and technical innovation.

Claude Loré added: “Everyone’s really excited to hear about the remarkable progress made by start-ups involved in the Innovandi Open Challenge. A key priority of our 2023 Open programme is sourcing start-ups in Asia. So, we’ve organised an in-person event specifically here in India to encourage more start-ups and members to apply.”

Two of the six start-ups selected last year in the first ever Innovandi Open Challenge, which focused mainly on carbon capture and utilisation, have already gone to pilot stage. Applications for the 2<sup>nd</sup> Challenge, which focuses on low carbon concrete, close on 15 May.

The GCCRN was set up by the Global Cement and Concrete Association, a not-for-profit organisation, representing more than 80% of the world’s leading cement and concrete manufacturers, outside of China.

All GCCA member companies are committed to decarbonising the industry by the mid-21<sup>st</sup> Century, in line with the GCCA’s Concrete Future 2050 Net Zero Roadmap – the first global ‘heavy’ industry to set out such a detailed plan. ☺

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