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CONTENTS

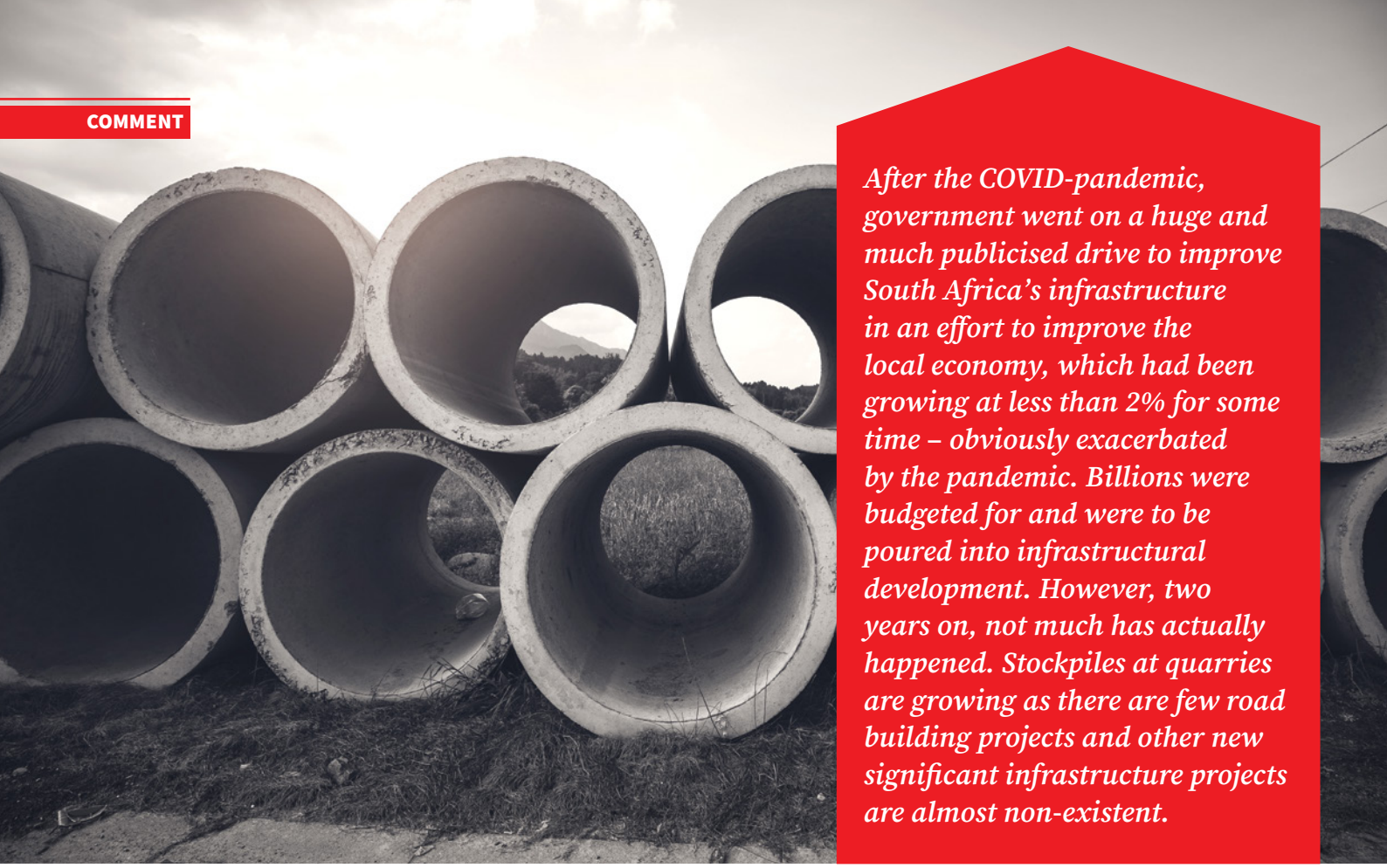
FEATURES

REGULARS

ON THE COVER

Nestled in the Contermanskloof and Vissershok valleys with its green landscapes and bright yellow canola fields, lies the mammoth Contermanskloof reservoir. The partially completed reservoir lay dormant from early 2018 until early 2021, when CSV Construction commenced with construction works for the balance of the civil water retaining structure, mechanical, electrical, civil pipe, road infrastructure, landscaping and buildings. *(Photo: Terry February)*

Turn to page 20



After the COVID-pandemic, government went on a huge and much publicised drive to improve South Africa's infrastructure in an effort to improve the local economy, which had been growing at less than 2% for some time – obviously exacerbated by the pandemic. Billions were budgeted for and were to be poured into infrastructural development. However, two years on, not much has actually happened. Stockpiles at quarries are growing as there are few road building projects and other new significant infrastructure projects are almost non-existent.

What is going on? On one hand you have President Cyril Ramaphosa's realisation that the only way to get South Africa's economy to grow, create jobs and boost private-sector investments after an extended period of decline, is by heavily investing in infrastructure. On the other, you have the absence of major infrastructure projects and an incorrect focus on only maintenance of existing infrastructure.

In October 2020, the Economic Reconstruction and Recovery plan was announced. Subsequently the Minister of Finance set aside a budget of R112,5b for an array of projects that included the delivery of water to communities, the building of bridges, hospitals, and towers for internet connection. However, the money being spent on infrastructure projects is nowhere near what was budgeted: in short, the money is not being spent because the projects are struggling to get off the ground.

Officially there has not been an explanation from National Treasury as to why the budget is not being spent and the assumption is that the status of Ramaphosa's Plan, will be revealed during the budget speech in February.

There are various possible reasons for the money not being spent. One is that the drive has thus far focused on the wrong kind of infrastructural projects – new buildings and the maintenance of existing infrastructure. Significant infrastructure projects are still absent. The country needs new roads, renewable energy plants and a renewed focus on its decrepit railway infrastructure. Only significant infrastructure projects will jumpstart SA's economy. But it seems that the government has an inability in capacity to break ground on such projects. This is possibly because there aren't the required engineers and project managers left to initiate these projects with the local and provincial government. And when there is an appetite from the private sector to bankroll such infrastructure, they are frightened off by debilitating laws such as the Municipal Finance Management Act and the Public Finance Act that may have the aim of curbing corruption, but make for an extremely bureaucratic process.

In the interim, the industry is battling on. Something has to give.

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SA CEMENT AND CONCRETE INDUSTRY TACKLING HUGE LOCAL AND GLOBAL CHALLENGES

The entire South African cement and concrete industry is threatened by multiple challenges of economic decline, the crisis in the construction industry, cheap imports and environment-related issues. Some 35 000 local jobs are on the line, together with ZAR billions of investments in the sector's long value chain. A key global challenge faced by the sector is its significant carbon footprint.

The climate change challenge to the industry's sustainability lies in the fact that cement manufacturing emits significant quantities of greenhouse gases, which impact South Africa's decarbonisation commitments as it moves towards Net Zero, within the framework of the Just Energy Transition Investment Plan (JET IP).

Cement and Concrete South Africa CEO, Bryan Perrie, comments: "As responsible stakeholders committed to playing our part in South Africa achieving its Nationally Determined Commitments (NDCs) in terms of the United Nations Framework Convention on Climate Change, the local cement sector has committed itself to 'Vision: Net Zero Carbon' by 2050.

"This includes an undertaking to decarbonise in accordance with the 1,5˚C global temperature increase pathway in the Paris Agreement and re-enforced at COP26 held in Glasgow last year. The local cement and concrete sector has set key milestones for 2030 in accordance with South Africa's Technical Reporting Guidelines and in line with the Inter-Governmental Panel on Climate Change reporting framework."

The industry has been under huge pressure due to a toxic cocktail of factors. In addition to the general economic downturn and decline in investor confidence, the sector was hit hard by the COVID-19 pandemic lockdown.

The construction industry is in crisis and is now confronted by the threat of construction mafias that have sprung up across the country which has a direct impact on the cement and concrete sector.

Local cement production capacity is around 20 million tons, but is currently producing just 12 million tons. In excess of one million tons of cement imports – the equivalent of an entire cement plant – enters our market annually.

Perrie states that the cement and concrete sector in South Africa is steadfast in its carbon greenhouse gas reduction commitment, "We are absolutely committed to our Vision: Net Zero Carbon, by 2050 and will measure this regularly against a series of time-bound metrics."

"With so much at stake, the sector is in discussions with the South African International Trade Administration Commission (ITAC) and the Department of Trade Industry and Competition to take positive action to prioritise its local cement industry. And while remain hopeful of a boost from the Sustainable Infrastructure Development Symposium (SIDS), this has not yet materialised."

Newly published government regulations do not require localisation of product such as cement and concrete, leaving this to individual departments and state-owned enterprises. Thus, Perrie urges that "More is required to secure the sustainability of a sector impacted by both the global pandemic and a decade long slowdown in South Africa's planned infrastructure build out." ⊙

IT'S TIME TO RAISE THE RELEVANCE OF THE ENGINEERING PROFESSIONAL IN SA

2023 is a year of opportunity for the South African Institution of Civil Engineering (SAICE) to actively raise the relevance or value of the engineering professional, as perceived in the public sector; as well as its own relevance as a 'thought leader' in the infrastructure environment and a fair arbiter of infrastructure evaluation. SAICE will encourage the public sector to position itself as the 'employer of choice' for engineering professionals. This is the sentiment expressed by the institution's new president Steven Kaplan.

Kaplan was welcomed into office at a special inauguration event late last year, which was attended both virtually and in-person at the Sandton-based Hilton Hotel, in the presence of SAICE members, stakeholders and members of the media.

For his presidential theme for 2023, Kaplan explained that his focus would be to showcase the value and relevance of the civil engineering professional – engineers, technologists and technicians - in the built environment.

"I have taken up the gauntlet to re-establish the value and relevance of the engineering professional in the public and private sectors. It is in this country's best interest for infrastructure development to be led by the experts – the engineering professionals responsible for the foresight and know-how into building infrastructure that will leave a positive legacy for generations into the future."

The Public Sector in focus

SAICE, he said, would be committed to establishing synergies and partnerships with the public sector to help build up the much-needed engineering expertise. "We want to work with the public sector and to position it as the "employer of choice" for engineering professionals." He explained that in a survey conducted in 2015 together with SAIEE, SAIMechE, CESA and WISA; 68% of 1367 engineering professionals surveyed were willing to work in the public sector and 50,3% in rural areas.

"To help address the unemployment challenge facing South Africa, we must create opportunities for engineering professionals who are underutilised or unemployed to mentor those young graduates in both the private and public sectors. Our SAICE members are here to provide expertise and guidance in the journey of professionalising the public sector, such as through establishing effective mentoring and coaching of graduates as part of the long-term succession plan for the public sector."

SAICE – the 'go to' thought leader in the infrastructure space

He explained that SAICE's 2022 Infrastructure Report Card (IRC), launched in November 2022, is a testament to the expert research and insights available on the country's infrastructure.

"It is potentially the best, and currently, the only tool in the SAICE toolbox, which expresses the professional opinion of this learned society about the current condition of our infrastructure.

"During my tenure as president, I intend to push forward the 2022 IRC to reinforce SAICE as the "thought leader" in all things' civil infrastructure. This will be done by targeting the decision-makers in the public sector, and focusing the discussions on planning, design, construction, operation and maintenance of infrastructure."

He added that a "positive change towards improving the relevance or value of engineering professionals, and their representative professional institutions," is critical to the improvement of infrastructure development.

Opportunities abound

Kaplan remains determined to position SAICE as a leader in infrastructure research driven by acknowledged experts. "I am also committed to creating a platform for further engagements that will inform and influence macro-level planning; lobby for infrastructure funding; stimulate debate on the condition of infrastructure and the effect of that condition on quality of life and the economy; and to highlight the actions necessary to improve the condition of the nation's infrastructure."

"There is no doubt in my mind that enabling a positive change that enhances the relevance or value of the engineering profession and their representative professional institutions is key to the capacitation of public service institutions and the improvement of infrastructure in South Africa, which will best serve the public interest."

Kaplan's commitment and vision for SAICE is welcomed by outgoing 2022 SAICE President, Professor Marianne Vanderschuren, the third female to serve as the president of the SAICE. She has undertaken her tenure with a philosophy strongly underpinned by a 'sustainable livelihood' and a 'dare to care' approach, which aimed to push forward the importance of the civil engineering profession in building and maintaining South Africa's infrastructure.

Prof. Vanderschuren said: "SAICE remains on a path of success to enhance the civil engineering profession. I want to thank the SAICE membership, Council and Executive Board, as well as my family, friends, and the University of Cape Town for allowing me the space to pursue this memorable opportunity. I encourage all SAICE members to continue to give back while focusing on the sustainable livelihood approach in civil engineering. I wish Steven all the best during his tenure in taking forward SAICE's vision and mission in building a better South Africa for everyone."

The SAICE Presidential Inauguration also celebrated Francis Gibbons; Andrew Baird; Arthur Taute and Malcolm Mitchell – all recipients of the Honorary Fellow Awards, which recognise outstanding service and contribution to SAICE and the civil engineering profession at large. Taqueer Ahmed and Sharon Shunmugam were the winners of this year's President's Award owing to their significant service rendered to the institution and the civil engineering profession over a number of years. ⊙

ENCOURAGING ENGINEERS TO JOIN THE SA INSTITUTE OF STEEL CONSTRUCTION

As the only Institute of its kind in the region, the Southern African Institute of Steel Construction (SAISC) is uniquely positioned to service its current and prospective members, the steel construction industry, and individuals involved with and interested in steel construction – including engineers across the spectrum. One of the strengths that the Institute is particularly able to offer engineers as members lies in the value of the knowledge it is able to share.

Amanuel Gebremeskel **(pictured)**, Chief Executive Officer of the SAISC, explains: "It is a universal truth that having access to information does not necessarily mean having access to knowledge. In this regard, the world can often be seen to be 'information rich but knowledge poor'. The distinguishing factor lies in the recipient being able to understand and apply the facts, and not simply have access to the facts.

As the voice of the local steel industry for some 66 years, the SAISC is able to process and package the technical and market-related information which we have at our disposal and make it available as knowledge that is easily understood and – importantly – able to be constructively used."

Creating a more holistic offering by widening the membership pool

Denise Sherman, SAISC Marketing and Management Consultant, agrees, adding: "The Institute has built up an extensive pool of international knowledge, which we gladly share across the steel value chain. This includes our original member body, made up of steel mills, merchants and steel fabricators born out of the South African mining industry. Over time, we have noted that many engineers are also making use of our resources, but without necessarily being members of the SAISC.

We would like to encourage them to become members of the Institute in order to be able to tap into an even richer fabric of available knowledge, for the greater benefit of all role players across the local steel value chain."

Sherman adds that in a recent article in Business Tech online, South Africa's engineering capacity has dwindled at an alarming rate over the last decade. While factors such as emigration were cited, so was the need for increased mentorship, problem-solving skills and depth of knowledge from the engineering sector.

"This underlines an urgent need for the supportive and

INNOVATORS GATHER IN **SA FOR GLOBAL WORKSHOP**

Known for innovating solutions across multiple disciplines in the consulting engineering field, SRK Consulting held its intensive two and a half-day Global Innovation Workshop in South Africa recently. By ***Tracey Drew, Principal Environmental Consultant and SRK's team lead for innovation and data services.***

Leading up to this international event, SRK had held national workshops in recent years, as well as a global virtual innovation workshop in 2020. The workshop drew 36 delegates as well as senior SRK colleagues who were in the country for the bi-annual global practice leaders' meeting. In addition to the delegates from around South Africa, those present were from practices Australia, Brazil, Canada, Chile, India, Peru, the United Kingdom, Russia, India, China, Khazakstan and the United States.

We believe firmly that innovation doesn't just happen – it needs to be driven by passionate people. It is important to bring together these innovators – face-to-face where possible – and it was also great for SRK's leaders to be there to demonstrate support.

Among the VIPs at the venue to launch the event were SRK group CEO Tim McGurk, SRK South Africa managing director Vis Reddy, SRK director and principal consultant Andrew van Zyl, SRK South Africa chairperson William

inspirational resources such as those which the SAISC can offer to the engineering sector," she comments.

"In addition, we believe it is important for engineers to become members of the SAISC, as they are already an integral part of the steel construction landscape - for example offering design and technology input - and as specifiers of the products used by a number of our other members. A greater percentage of engineers as members would allow the creation of a more comprehensive and holistic industry body."

Repurposing and refocusing: the importance of sharing knowledge

Gebremeskel explains that since its inception, the SAISC has been able to play different roles across the industry, at different times. "The Institute's original core purpose was to curate and share knowledge," he explains. "However, over the decades since the 1950s, the need also arose to assist members by acting as an intermediary and lobbyist, assisting in resolving member- and industry-related issues. While this shift in focus has allowed the SAISC to maintain awareness, credibility and relevancy within the industry, we have noted a need to also return our attention and efforts back to the Institute's original core purpose: namely, the sharing of knowledge.

We believe that we have a particularly valuable offering in this regard for engineers, who are able to use our targeted and extremely knowledgeable resources and assistance in their professions in much the same way as a compass provides direction. We believe that we have much to offer civil and structural engineers specifically; however, we also receive queries from mechanical and electrical engineers."

Engineers and the Institute: a two-way street

With access to over 60 years' worth of local steel industry project case studies, and an impressive number of experienced and highly-qualified team members, the SAISC is well-known as a custodian of steel industry knowledge and standards. This includes the creation and sale of popular technical publications, training, and helping with technical queries relating to steel construction and structural engineering.

"The Institute is highly respected for its reservoir of authoritative technical knowledge, and is, in fact, one of only six Institutes of its kind in the world," clarifies Gebremeskel.

"As such, we are able to consult with engineers, specifiers and architects on design recommendations and offer experienced technical input. We have a great deal of resources that local engineers are already accessing. However, if they become members of the Institute, they would have access to even more – and to our targeted guidance and mentorship - as required. We would also encourage engineers to work with fabricators who are members of the SAISC.

We are able to offer discounts on various services and products, and we provide technical and marketing opportunities, including entering noteworthy projects in our annual SAISC Steel Awards. In short, through the wide network of relationships we are able to foster, we can offer even wider access to a community with which engineers can engage."

Being able to broaden the membership of the Institute to include more engineers would also benefit the SAISC as an industry body, notes Sherman.

"We are very keen to engage with more engineering members in order to access the market intelligence they are able to offer," she explains.

"For example, market intelligence regarding the steel structures and designs which engineers' clients are currently requesting. "We would also like to encourage future engineer members to share their knowledge in turn via the SAISC's technical talks and training; as well as the individual mentoring of young engineering students. In this way, the offering becomes a 'two-way street' for the greater development, empowerment and benefit of all role players within the local steel value chain," she concludes. ⊙

Joughin and SRK chief technology officer Mike Olsen. Drew noted that the delegates were just the 'tip of the iceberg' among the innovators across SRK's global network of engineers and scientists.

"This was a valuable occasion for us all to share innovations in the making, and to collaborate in solving challenges that the innovators are encountering," she said. "All delegates were required to deliver short presentations in formal sessions, and a selection of these were presented to the practice leaders at the end of the week."

Adding to the intensity, a panel of senior SRK 'Sharks' - including Mark Wanless, Principal Geologist and Partner at SRK Consulting South Africa; Thiago Toussaint Managing Director and Principal Consultant for SRK Brazil; Lindsay Linzer, Corporate Consultant: Geophysics at SRK Consulting South Africa; Martin Pittuck Corporate Consultant: Mining Geology at SRK Consulting Cardiff; and James Lake, principal Scientist and partner at SRK Consulting South Africa, attended the presentations, posing questions and giving 'wise-owl' input. The real value of the event, however, was bringing together like-minded people and stimulating their collaboration and solution-seeking.

"There was such an interplay of ideas, challenges and practical interventions, that some delegates had their innovation challenges solved at the event," she said. "Importantly, this engagement has created a strong basis for longer term communication and collaboration between SRK's practices around the world."

Digital innovation in particular makes a material contribution toward 'asset-based consulting'. By codifying and crystallising knowledge, consultants can leverage the combined value of their various disciplines – while continuing to drive the 'ideation' necessary to create and develop consulting assets.

The workshop was also a useful opportunity for innovation-driven consulting engineers and scientists to define more clearly the nature of the support they needed from the SRK network. These discussions gave the leadership constructive guidance on what resources would have the optimal impact.

It was clear from this global event that innovation is taking place rapidly all over the SRK footprint, but it is often the case that not everyone knows about it. By bringing our colleagues together, solutions are found more quickly and efficiently – and clients benefit from this. ⊙

SOUTH AFRICAN SMALL CONSTRUCTION BUSINESSES ARE REBUILDING AND PREPARING FOR 2023

South Africa's construction sector has shown great resilience in rebuilding and rebounding after the pandemic. All eyes are now on planning for 2023 and putting everything in place to ensure a successful year. This kind of planning is essential, even if the prospect of predicting the future could be daunting and intimidating for any SME owner.

A recent report painted a positive outlook for the construction sector. It found the sector would stabilise at an annual average growth rate of 3% from 2023 to 2026, supported by investments in transport, renewable energy, housing, and manufacturing projects.

"Growth over the past 11 months was largely supported by the restart of projects that were delayed due to the pandemic and its restrictions, together with an increase in the number of building plans passed in 2021," says Tom Stuart, chief marketing officer at SME funding provider Lulalend.

According to Stats SA, the total value of recorded building plans passed by larger municipalities rose by 28% year on year.

Stuart says SMEs need to be ready to tap into the opportunities that exist in the coming months. A key aspect of this forward planning is securing one's cash flow, and this includes both the December shutdown period as well as the year ahead once you reopen in January.

Access to working capital allows SMEs in the industry to cover fixed costs and overheads while the business shuts down over the holiday period.

The appropriate capital levels will also help increase opportunities for small and mid-sized construction businesses. They can then better grasp opportunities created by diversification, for example, when a company decides to tap into the solar energy and renewables market.

"Small construction businesses are under renovation and need access to funds that will help them adapt and grow. They need this kind of financial access within days and not only after a drawn-out application process. This is why we offer SMEs the opportunity to get funding which only requires repayments starting in January."

The application process is fully online and paperless, requires no collateral, and Lulalend offers flexible repayment terms with no hidden fees."

"It's essential for small construction businesses to have access to a reliable line of funding that enables them to plan for future growth with confidence while being able to face any challenges that may arise," says Stuart. ⊙

SLAVA VILLAGE: MAKING RESIDENTIAL LIVING SAFE AND AFFORDABLE

An affordable and secure residential village is in the works for the Boksburg CBD and will be ready for occupation in the beginning of 2023. Property entrepreneur Leroy Slava (pictured), together with TUHF, is following on the previous TUHF funded project, @Fourteenth, and this time converting a retail mall to a residential village.

When complete, the property will have capacity to house about 200 people across 52 flats, 27 of which will be one-bedroom units, 18 two-bedroom units and 7 two-bedroom apartments that will feature spacious lofts, made possible by the high ceilings of the property. The residential mix is envisioned as spanning from young professionals and families to older couples.

"When I completed @Fourteenth, I started receiving a number of requests for two-bedroom apartments, which @Fourteenth didn't have many of, so this should fill that gap," Slava explains.

Slava's ambition to grow his portfolio in an area of the city that he knows well – Boksburg - meshed well with TUHF's vision of uplifting areas and fostering urban regeneration.

Slava Village is well on its way to completion, as construction has been ongoing since late July, and already, eight of the apartments are complete. There are presently parking bays for about 20 cars, which may be extended further to accommodate closer to 100 cars.

TUHF provided financing to the value of R13,3m for purchase of the property as well as construction, refurbishment and professional fees to complete the conversion in full, payable over 15 years.

Slava enthuses that the residential village is aimed at being secure, affordable and family friendly. To this end, Slava Village's security will include electric fencing, security cameras, a security guard, and armed response.

As it is directly opposite @Fourteenth, it shares that building's ready access to transport and proximity to the Municipality's Customer Care Centre, Boksburg Public Library and retail facilities.

While not yet confirmed, Slavic Village may also feature a laundromat and a coffee shop. Essentials that are confirmed include fibre optic Internet and Wi-Fi access as well as DSTV.

Of particular interest given the current power constraints is that Slavic Village will be sustainable, with solar power deployed in three stages across the village, and a borehole to ensure constant water supply.

Electricity and water will be on prepaid meters, and low flow taps and showers will be installed throughout to ensure water is sustainably managed. ''In terms of my long-term vision, my goal has always been to grow a big portfolio of properties, which thanks to TUHF, I am on my way to realising," he concludes. ⊙

SOUTH AFRICA'S FIRST INDOOR SKYPARK OPENS AT WILD COAST SUN

With its year-round temperate weather, unspoilt beaches, golf course, casino and water park, Wild Coast Sun in Port Edward remains a perennial favourite in the Sun International stable, and the Resort is constantly upgrading to ensure it is a family destination of excellence.

In the past year, the Resort has seen multi-millions spent on upgrades to new and existing facilities, following improvements made leading up to Wild Coast Sun being lifted from a three to a four-star resort, in 2020.

"We are always looking at new and exciting ways to thrill our guests, and this means refreshing dining options as well as making sure we provide great entertainment both indoors and outdoors," said Wild Coast Sun General Manager, Peter Tshidi.

"COVID-19 is a distant memory as the Resort is seeing a better demand than 2019's same peak period. Wild Coast Sun was already fully booked by October for the festive season, with a maximum capacity from 16 December 2022 to mid-January 2023, showing that you need to book early if you don't want to miss out."

The Magic Company upgrades, including first indoor Skypark in South Africa

The Magic Company, which operates the bowling alley, arcade games and kiddie rides, has invested R6,4m in South Africa's first indoor Skypark facility – ideal to boost adrenalin levels and tire out busy kids aged seven to 70. The structure, which is over 18 metres high, has 21 rope obstacles on a skytrail and a built-in zipline skyrail.

"Used by some of the world's top family entertainment centres and cruise lines, the Skypark has world class safety features that prevent customers unhooking themselves during participation," said Magic Company regional manager for Natal, Kim Sismey. Up to 30 people can use the structure at a time.

The Magic Company has also relieved unemployment in the area by hiring an additional eight permanent and four casual staff to operate the Skypark. In addition, the company has added 45 additional games in the area under the Skypark.

Dining upgrades

Keeping up with changing food trends and styles, Wild Coast Sun opened two new franchised restaurants this

year, in Barcelos, the home of flame-grilled chicken, and Maltos, a Mediterranean restaurant reminiscent of the Greek isles, located overlooking the hotel pool. With a focus on fresh seafood, Maltos, which can seat up to 180 diners, has a vast menu offering incorporating sushi, tapas, pizza, grills and pastas. "We offer a cocktail bar, and a choice of two dining options, from casual to a more stylish, upmarket dining area," said Maltos Wild Coast Sun General Manager Graeme Blignaut. Maltos employs 30 staff members, 80% of whom are drawn from local communities. Wild Coast Sun's popular breakfast and private function restaurant, Chico's, has had a R5,5m make-over, with the beautiful new dining floor and bathroom area in shades of the ocean it overlooks, opening in December 2022.

The Palms, new convenience shop

For all visitors' daily essentials, from over-the-counter medicines to sunblock and nappies, to cigarettes, snacks and drinks, The Palms convenience shop has opened to ensure guest comfort during their stay, without having to leave the Resort.

Mangwanani Spa upgrades coming in 2023

What holiday is complete without a relaxing massage or rejuvenating facial, and Mangwanani Spa caters to all guests, big and small, even offering manicures and pedicures for children. "We are also excited about improvements being made at Mangwanani Spa during 2023. Wild Coast Sun is always a work in progress as we strive to please our guests, and we have some big news in the pipeline for next year," Tshidi said. ⊙

FUTUREGROWTH'S COMMUNITY **PROPERTY FUND ACQUIRES ANOTHER PRIME RETAIL SHOPPING CENTRE**

The Futuregrowth Community Property Fund has acquired KG Mall, which brings the Comprop portfolio to 23 shopping centres, with a total gross lettable area of more than 392 000 m^2 valued in excess of R6,6b.

KG Mall is a quality shopping centre situated at the entrance to the Kwa-Guqa township in Emalahleni, which is approximately 95 kms east of Pretoria in Gauteng. The 21 483 m^2 shopping centre consists of a single-storey main internal mall with a central Shoprite anchor, as well as a number of line shops and a Cashbuild that trade onto an expansive parking area which includes a KFC and a McDonald's drive-thru.

KG Mall is easily accessible via Mathews Phosa Street, which is located off the N4 and via the main Kwa-Guqa taxi rank. A pedestrian crossing allows for easy access for customers on foot from the taxi rank and the neighbouring community.

Smital Rambhai, the Fund Manager of Comprop said: "The acquisition of KG Mall fits in with our long-term strategy of acquiring dominant quality shopping centres with strong national tenants that will have strong sustainable income growth over the long term for our investors."

Comprop is a flagship fund among Futuregrowth Asset Management's suite of developmental investments. All Comprop's shopping centres are located in prime locations within townships and rural areas around the country. ⊙

UPMARKET OCEANS MALL BOOSTS BROLL'S ASSET MANAGEMENT PORTFOLIO

The new Oceans Mall in Umhlanga, KwaZulu-Natal, has increased Broll Property Group's total space under management to 8,8 million m² and boosted its assets under management to R117b.

The new Oceans Mall in Umhlanga, KwaZulu-Natal, has increased Broll Property Group's total space under management to 8,8 million m² and boosted its assets under management to R117b.

The commercial property services company has been involved in the 36 000 m² retail component of the R4,3b mixed-use project when it was appointed as exclusive leasing agent for the development in 2014.

The project is made up of the Radisson Blu Hotel, Oceans Mall and Oceans Apartments. While the hotel and retail components are complete, the apartments are expected to be complete in/by the next xxx.

The retail leasing team played an instrumental role in ensuring Oceans Mall was 97% let at opening.

Notably, the mall has two large, state-of-the-art anchor tenants, Woolworths and Checkers Fresh X, as well as an additional 120 tenants made up of a compelling mix of sought-after local and international brands.

Broll Property Group's Head of Retail Leasing, Sandy van Staden, says the flagship Checkers Fresh X, which offers customers exclusive private label brands such as Forage & Feast, is a first for KwaZulu-Natal, as are many of the international fashion brands.

The Retail Leasing Team was tasked to create a Platinum Walk, which will be a first for KZN, offering the discerning customer a range of luxury brands to choose from. The Platinum Walk will launch as phase two of the Development, opening their doors in March 2023. These iconic brands include Dolce & Gabbana, Burberry, Versace, Jimmy Choo, Michael Kors, Hugo Boss and Emporio Armani, amongst others."

The team has also collaborated with proudly South African luxury brand Maxhosa SA, who will feature amongst the International brands in the Platinum Walk. Several other unique eateries such as BLACK, Perere, Signature, Brown Sugar and Coco Safar, which was carefully selected to form part of the tenant mix will deliver an elevated dining experience for customers.

Van Staden says securing tenants for Oceans Mall was challenging at first, as we were competing with other malls that were being upgraded or expanded. We also had to overcome resistance from tenants, as a result of the Covid-19 pandemic, which was understandable. The vision was clear and with the full support of the Co-Owners Vivian Reddy, Rob Alexander and the PIC, our task became easier and we quickly signed up our first eight luxury fashion brands."

Divisional Director of Broll Retail Leasing and Property Management, Theresa Terblanche, says in September this year Broll Property Group was also appointed as the managing agent of the mall over the next three years.

"Our initial task was to assist with hosting a successful launch and opening day. In addition, as the property management company for Oceans Mall, we are responsible for making sure that the development

complies with Occupational Health and Safely (OHS) requirements and adheres to all building by-laws.

"Our team at Broll has the passion, skills and expertise to manage snags, support tenants and deliver exceptional service to the property owners. We had six weeks to prepare for the opening, an operation that would normally take about three months to complete," she adds.

Managing a new mall differs significantly from taking over the management of an existing mall. "As the property managers of a new development, we have to ensure there is agreement on trading hours, parking tariffs and entrance opening and closure times.

"The scope of work is vast and complex. We need to get to grips with the generator and electrical systems and conclude tenders for cleaning, security, aircon and generator services, as well as negotiate service level agreements for all service providers," adds Terblanche.

Van Staden says the tenants have stepped up in delivering on the vision of a luxury mall. "There is no other shop like Checkers Fresh X in the province. The tenants have really invested and delivered exceptional stores. The aspirational mall will boost the local economy through the provision of 6 000 jobs during the construction phase and 2 500 permanent jobs post-construction, while its luxury-focused tenant mix is expected to be a strong drawcard for tourists.

Van Staden adds that the aim of Oceans Mall is not only to service its primary and secondary catchment areas, but to encourage tourism in the greater province. "We conducted in-depth studies to ensure the viability of the tenant mix and found that a very high percentage of international brand shoppers are Durban-based. Now they don't have to travel to Johannesburg or Cape Town to find the brands they are looking for. They can get them at Oceans Mall.

Terblanche concludes by saying that Oceans Mall presents an excellent opportunity for growth and experience in the property management sector in South Africa. "Only Sandton and V&A boast a similar tenant mix. The expectations of international brands are exceptionally high. We need to ensure we remain a step ahead of market trends, that our service levels are exceptional and that we constantly elevate our game." ⊙

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THE EXTENSION OF THE EPC DEADLINE MEANS THAT EPCs ARE HERE TO STAY

On 25 November, the DMRE announced a three-year extension of the EPC deadline, from 7 December this year to 7 December 2025. ***By Frikkie Malan, head of the Remote Metering Solutions (RMS) EPC Inspection Body.***

The property market welcomed this announcement as no more than 600 buildings were certified in the first two years since the DMRE enacted these regulations on 8 December 2020. An estimated 200 000 to 300 000 buildings need to obtain and display an EPC in terms of the regulations. So, in the first two years, less than 0,5% of buildings are compliant, with thousands of buildings still needing an EPC.

With an extension of the deadline, there is now a bit of breathing space that will allow property owners, inspection bodies (the issuers of an EPC), and the regulator to take stock of the lessons learned in the first two years and to move forward with vigour towards compliance with the EPC regulations.

RMS is an active participant in the EPC market. We are one of the SANAS-accredited EPC Inspection Bodies. The latest EPC statistics by SANEDI showed that the RMS Inspection Body issued about 60% of all EPCs in the first two years.

We have issued Energy Performance Certificates for various listed property funds, private property owners, universities, and schools. This broad range of EPC experience that we gained this year helped us understand how to help property owners with their certifications and the value of an EPC certificate.

Here are four of the more important lessons that we learned:

Lesson 1 – The extension means EPCs are here to stay

In the first two years of the EPC regulations, those property owners who started the certification process early managed to get their buildings certified, even before the original deadline. Starting the certification process means appointing an inspection body, identifying those buildings that need to be certified (the inspection body can assist with that), and gathering the information required for certification (again, the inspection body can help with that).

Don't wait for the next deadline If there is one lesson we can take away from these last few months is that three years from now, there will be ANOTHER mad rush to be compliant. Whether we can expect another deadline extension is up for speculation, but the chances of a 2nd extension are probably less than this first one!

Lesson 2 – Certifying a building is about much more than just compliance

While an EPC is, for many property owners mostly about compliance (and a grudge purchase at best), a building certification offers much more. An EPC informs decision-making regarding efforts to improve the energy performance of a building. An EPC is useful at a building level but becomes even more valuable for a portfolio of buildings. Most listed funds will use the data from an EPC program to make more informed decisions on the journey toward "net zero".

Lesson 3 – There is a real business case for an EPC

For many property owners, an EPC is a grudge purchase, and the sole purpose of this cost is to achieve compliance and avoid possible legal consequences of non-compliance. However, other property owners have used their EPCs to unlock significant value. Firstly, since an EPC is a benchmark of a building's energy performance based on a national standard, the fact that a facility (or a portfolio) is certified can contribute to an improved ESG rating. Then, by interrogating the meaning (and causes) of a particular rating, a property owner can identify solid business cases to reduce the operational cost of his buildings. And finally, since an EPC is based on all the energy sources a building uses, a property owner can use the data for climate disclosure and integrated reporting.

Lesson 4 – It is possible to get the certification done, and it is not that difficult

Many listed property funds completed the certification of their entire portfolios. For most of these funds, this meant getting tens of buildings certified; for some, this number went well above a hundred. A property owner can achieve the certification of a portfolio with the right EPC inspection body as a certification partner. At present, a property owner can choose from at least 10 EPC inspection bodies, and finding the right certification partner is not the challenge it used to be when the regulation was first published.

Lesson 5 – Get the information needed for certification ready as soon as possible

Lesson 2 stated that it is not that difficult to achieve

certification. That is true, provided that a property owner can provide the information the inspection body needs to issue a certificate. For example, property owners must gather measured consumption data at the building level, floor plans, occupancy data, and any information that will inform how much other energy sources were used (like diesel, gas, and solar PV) in the building. The three-year extension allows a property owner to get his house in order if this information is unavailable.

In the first two years, the market was slow to react to the regulations published in December 2020. For one, there was very few (in fact, only one) accredited EPC inspection body for most of the first year of the regulations being in effect. But this was not the only reason for the slow uptake of EPCs. Many property owners were unaware of the regulations and did not know about this legislation until closer to the initial deadline of this December. Even those property owners who knew about the regulations did not necessarily understand how this relates to their building portfolio.

Now, two years in, the general understanding of EPCs and what is required to obtain an EPC has improved substantially. In addition, there are many sources of EPC-related information – the EPC inspection bodies (there are ten now) all have informative websites; many articles have been written and published in the mainstream press about EPCs, and the regulator has done much to create awareness about EPCs.

The three-year extension creates a bit of breathing space, especially for public sector buildings, which represent less than 20% of all the current facilities that have been certified to date. Property owners must not let this breathing space go to waste and get caught in another frenzy of EPC activity as the next deadline approaches in 2025. Property owners who are not yet compliant with the regulations should maintain their current efforts (if they have started the process). In addition, those property owners who have not yet started the certification process should get the process going to ensure a relatively easy and stress-free process. ⊙

BUILDINGS AND CLIMATE CHANGE – THERE IS A MASSIVE CONTRIBUTION TO BE MADE

Many building owners, operators, developers and financiers are still not fully aware of the myriad solutions available to make buildings, old and new more sustainable and well as the resultant value and investment returns. ***By Mark Freeman, Offer Manager – Digital Buildings at Schneider Electric***

To improve awareness and help decision-makers – from end users to real estate owners – better evaluate such investments, Schneider Electric, alongside Accenture and the World Economic Forum, in 2022 developed a Building Value Framework.

Part of the wider Net Zero Carbon Cities initiative, this includes a practical operational checklist spanning a set of recommendations to future-proof building investments – whatever the building's size, use, or geographic location.

The decarbonised, smart building

The most obvious action point is to avoid the use of fossil fuels (heating with oil or coal, for example, or cooking with gas), and use electric alternatives instead. Electricity is not only more efficient (less energy wasted), but also cleaner (less carbon released into the atmosphere).

On the digitisation front, building operators can sharply increase energy efficiency via sensors and automation systems that ensure heating, cooling, and lighting are only provided when and where needed.

Digital also enable building managers and tenants better monitor energy consumption, giving them insights on behavioural changes that might improve energy usage. Deploying building management systems (BMS) on top of this data allows the building to use its energy most efficiently, as well as flagging to building staff and tenants any issues for improvement. Finally, digital twins can help developers optimise a building's efficiency right, minimising costs and waste from the design and construction stages, and reaping efficiency benefits right through to the day-to-day operations.

The system effect

Decarbonising and digitising individual buildings are only two steps, albeit important ones. Building can go one step further – when their energy and resource management capabilities are integrated into the wider power, transport and EV-charging ecosystems around them. Doing so can help stabilize cities' energy supplies and accelerate the transition to net-zero.

Again, concrete examples of what this looks like exist: in Järvenpää, Finland, a logistics centre operated by the retailer Lidl, harnesses the heat captured from its cooling operations through an energy management system, then sells this heat on to the local grid for use in heating the neighbouring district.

The buildings transition is possible today

Sustainable, resilient, and people-centric buildings can be achieved today. It can go a long way in addressing the twin challenges of climate change and soaring energy prices. These buildings must become commonplace in towns and cities around the globe. It's not a case of inventing new technologies, but of adopting it, fast. ⊙

AfriSam's Slagment operation was established in 1955 and has supplied product to many flagship projects such as the Gariep Dam.

CHAMPIONING THE USE OF SLAG TO REDUCE CLINKER FACTOR

Hannes Meyer, Cementitious Executive at AfriSam.

The use of extenders in AfriSam's composite cements has, over the years, resulted in a substantial reduction in its clinker factor without compromising the quality of products. Blast furnace slag, a by-product of the steel industry, remains central to the company's efforts to substitute clinker in its products.

Since 2008, the South African cement industry has seen a year-on-year reduction in emissions per ton of cement, largely driven by the increased focus on clinker substitution. According to the Association of Cementitious Material Producers (ACMP), clinker substitution rose from 12% in 1990 to 23% in 2000 and a substantial 41% in 2009. The industry is pressing for a 60% rise by 2030.

Over the years, AfriSam has accelerated its efforts to substitute clinker through the development of composite (extended) cements. In 2000, the company launched Project Green Cement to increase the use of extenders to promote more sustainable products. The use of extenders, says Hannes Meyer, executive cementitious at AfriSam, has resulted in a substantial 20% reduction in the company's clinker factor since 1990.

Composite cements, he explains, contain not only clinker, but other cementitious materials such as pulverised fly ash (PFA) from coal-fired power stations and ground granulated blast-furnace slag (GGBS) from steel-making plants.

GGBS has been used in the manufacture of cements since the second half of the 19th century. Back then, the practice was to intergrind the blast furnace slag with clinker. However, in the 1950s, AfriSam's slagment operation pioneered the use of separately ground slag for the construction industry.

The use of this product has grown steadily in South Africa, with AfriSam among the frontrunners. The company's slagment operation plays a crucial role in the production of its composite cements. Established in 1955, the plant was previously owned by three companies, before AfriSam acquired 100% shares in 2004. The raw material is sourced from steel producer, ArcelorMittal South Africa, which is strategically located some few metres away from the plant.

Blast furnace slag has good cementitious properties, providing enhanced strength and durability. By evolving its chemical and mechanical activation methods, AfriSam has achieved a more reactive product allowing the company to progressively replace more and more clinker while retaining high cementitious quality and strength performance.

"Re-using waste products from other industries reduces the amount of limestone that we have to mine and clinker that we have to produce, thus reducing carbon emissions from those processes, as well as minimising waste to landfill," says Meyer. "We are therefore constantly searching for new extenders and additives to further reduce our carbon footprint and our impact on the environment at large. The end result is less clinker produced per ton of each final product, resulting in less CO_2 generated from our operations." ⊙

> *"Re-using waste products from other industries reduces the amount of limestone that we have to mine and clinker that we have to produce."*

SURFACE MINERS GET ENERGETIC NEW LEADER

*New ASPASA director, Letisha van den Berg **(pictured)**, is living her dream as she takes the helm of the association from the beginning of this year, bringing a positive new dynamic to the well-established and respected surface mining organisation.*

She recalls a conversation several years ago when she startled Collin Ramukhubathi, who had been interviewing her for a position at Afrimat, revealing that her ambition was to head up ASPASA one day. As an up-and-coming multi-skilled manager that was evidently not the answer her soon-to-be colleague and mentor had expected.

Now, having fulfilled most of her ambitions in various roles, including various managerial safety roles within some of the smallest and medium mines locally, she could not turn down the opportunity to apply when her name was put forward as a possible candidate by her peers. And her successful application is penned in history.

Fighting fit

It would be hard to ignore the passion for ASPASA that exists within Van den Berg. Since her first interaction with the then newly established association in 1998, she has attended hundreds of meetings and workshops along the way and become known for her in-depth knowledge of everything surface mining as well as no-nonsense approach to issues that affect the industry.

Those who have misjudged her petite stature and friendly smile when dealing with controversial topics or challenges to the sustainability of the industry have done so at their peril. Van den Berg is a fighter when she needs to be, but is otherwise known as a keen strategist, hard worker, industrious leader and a fair and uncomplicated character.

These traits will surely be displayed when she takes on the new role and gets to grips with all the opportunities and threats the industry is facing and will face in years to come.

Solid foundation

"I plan to build from the strong base that was laid before me. We will assess where we stand in terms of our members and how we can add more value and broaden our appeal to the surface mining market including smaller role players.

"Having started my career on a small mine I understand the challenges and how difficult it is to reach compliance with limited resources and being measured with the same legislation and processes. We need to find the small non ASPASA members and get them onboard. Cost is also a factor for these mines and we will relook at the levy model so we can make it affordable at all levels.

"Lobbying on behalf of the industry and ensuring we always compete on a level playing field still remains a priority. We will intensify our efforts in dealing with issues like illegal mining, technicalities regarding the payment of Royalties and other issues. Importantly, we want to ensure that legislation is written specifically for our mines rather than the current one size fits all approach as this has a direct impact on members abilities to comply.

Team work

"To do this ASPASA will work closely with state, tripartite structures nationally and regionally to make our voice heard. I also plan to work more closely with related industry bodies such as the Institute of Quarrying, Minerals Council, construction industry bodies and others.

"Once we have reviewed our services and communications we will also look at regions including the tripartite forum of the Mine Health and Safety Council. There will be more collaboration with members including roadshows and visits - I like getting my boots dirty.," Van den Berg says.

"Developing SMMEs and bringing up-and-coming youngsters will also be a focus. Plans are already being developed to package compliance and quality documents that will assist SMME's to meet requirements. Simultaneously, the development of the next generation of surface miners is being planned with learnerships already being investigated and planned for the near future."

Challenging times

She continues, there are many challenges that still need to be met and many opportunities that need to be covered and made available to ASPASA members. The safety of women in mining, one size fits all mines legislation and the tough economy spring to mind, as well as opportunities that exist in working with Government and industry to unlock upcoming construction contracts.

"I am bringing in a lot of energy and want to incorporate the expertise of every generation into our organisation to share information and build knowledge for the future. With the interaction of all role-players in the association we will grow from strength-to-strength." ⊙

WHY PROJECT SPONSORS SHOULD BE WARY OF FINE-GRAINED SAND

When engineers need to improve the in-situ density, the occurrence of very fine-grained sand can present a serious challenge. In fact, developers and contractors need to specifically check for this fine sand as early as possible in a project's preparation.

This is the view of Brent Cock **(pictured)**, Principal Engineering Geologist at SRK Consulting, who has witnessed these conditions on various occasions in his career to date. The grain size that raises the most concern is below 150 microns in diameter – or 0,15 millimetres.

"Proper compaction is a key aspect of ensuring the integrity of geotechnical conditions in road building and other construction activity," said Cock. "Where there is very fine-grained sand on a project site, the developer needs to identify this early on, and understand the significant implications."

He explained that the central problem lies in the fact that the particle size falls very close to the boundary of silt-size particles. This is generally 0,075 mm though the British Standard marks the boundary at 0,06 mm. Silt is known to be moisture-sensitive and exhibit potential contractive behaviour (loss of strength under shear) and so, too, fine sands. This is the same process that occurs during compaction which, coupled with a narrow optimum moisture content range, makes the soil extremely difficult to compact. "Proper compaction is a key aspect of ensuring the integrity of geotechnical conditions in housing projects, road building and other related construction activity," he said. "Where the soil is present on a project site, the municipality or developer needs to identify this early on to mitigate against and understand the potential implications."

The early identification of silty, very fine-grained sand needs to include appropriate laboratory tests, over and above proven field tests conducted by an engineering geologist, that will determine the percentage of the problematic grain size within a soil horizon. Professional testing is important, he highlighted, because although the soil often looks and feels like 'sand' its behaviour during construction could be quite different.

"Where compaction is attempted, the desired density is typically not achieved often due to inappropriate moisture content. This leads to a potential increase in the soils compressibility. Walking on this surface feels rather like an air mattress – such is its sponginess," he said. "If you are not aware that this soil type is on your site, it could create considerable extra costs for the project down the line."

"The presence of a soil horizon with a high percentage of very fine-grained sand is not necessarily a project-stopper, though it will affect a project's capital requirements," he said. "At least, if the problem is picked up early, appropriate remedial measures can be incorporated into the engineering design which will feed into the final capital requirements for the project."

The extra costs could be considerable, he warned. In some cases, it will be necessary to remove this material altogether, and to replace it with something more suitable. Alternatively, it may be possible to rework the material and stabilise it with cement, said Cock. Another option may be to apply a rockfill layer, on which gravel layers can be laid. This is an effective solution if the soils are wet. The most cost-effective option will be determined by the conditions on site.

"Geotechnical assessments would consider the available geological mapping, and may require more intrusive interventions like test pitting or boreholes."

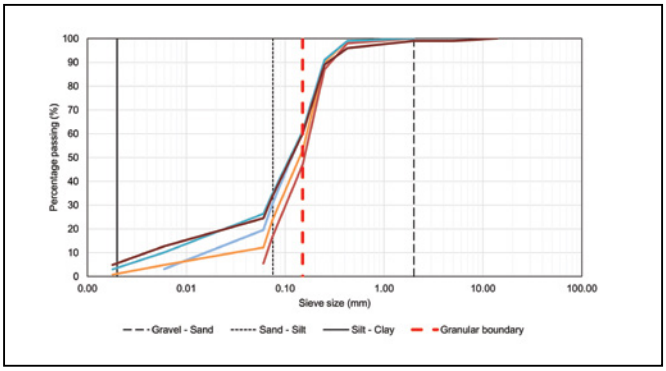
A professional engineering geologist can undertake a physical on-site inspection, and investigate in more depth with laboratory test results. The value of doing this upfront is difficult to over-estimate, he said, as it can prevent considerable project disruption and delay if fine sand is discovered too late.

Ground movement may even cause cracking that affects the integrity and safety of a building.

"The risks can be mitigated and appropriate engineering solutions derived with a comprehensive site investigation at an early project stage – certainly well before the contractor is deployed to site," he explained. The value of doing this upfront cannot be overstated, he said, as it can prevent considerable project disruption and delay if this soil type is discovered too late. Structures from homes to roads demand solid ground conditions, he emphasised, and the cost of remediation after project completion can be high, often by orders of magnitude and can cause considerable project delays.

"It is also vital to consider how good geotechnical information on ground conditions can benefit engineering design. The aim being to bring the cost of the project and an optimal engineering design as close as possible," concluded Cock.

A lack of appropriate geotechnical information at a site can add considerably to the construction cost, as the margin of safety must be higher leading to a more conservative design. With a more detailed and accurate assessment of ground conditions, the engineering design can potentially lead to more cost-effective execution. ⊙



AECOM OFFICIALLY HANDS OVER THREE SPU CAMPUSES IN KIMBERLEY

Globally trusted infrastructure firm AECOM has officially handed over the three Sol Plaatje University (SPU) campuses in Kimberley in the Northern Cape, one of the largest infrastructure projects undertaken in South Africa in recent times, where it provided programme management services. Project Manager Chris de Billot, who is currently managing the final building projects being handed over, will remain on-site for the next year to oversee the final defects period.

"Over the last three-and-a-half years we have completed 75 individual projects, spread over the three campuses, deploying eight project managers and a massive support team. At any one time, we had 20 to 25 projects running simultaneously," highlights Project Delivery Manager Toit Scheepers, who has been involved with the project since 2019.

The SPU precinct comprises a North, Central and South campus. The North Campus contains most of the administrative buildings, while the South Campus is mainly a residential and sports precinct. "We are currently completing what is known as Framework 2," adds de Billot.

There is a remaining erf that will be developed for Framework 3 at a later stage. Due to the sheer scale of the project, it has been a unique showcase for AECOM's programme management capabilities. Describing it as a "paperwork intensive project," Scheepers says AECOM's involvement with the longstanding project finally came to an end when it was recently handed over.

In a framework context, the client – in this case, SPU – issues a framework agreement, following which AECOM managed the procurement process, whereafter SPU appointed the necessary contractors and consultants. As a Greenfield project, a project manager was involved with every single project. As there was no infrastructure to service what was outlined, the service buildings containing the chiller plants and standby generators, water purification plants, fire booster pumps and water tanks came first. At the same time, all bulk services such as non-potable water, data, Thermally Activated Building Structures (TABS) and greywater and roads were installed.

"We had to look holistically at the precinct. Our task as programme manager was to oversee the bigger picture, refine it and then hand over individual projects as completed," says Scheepers. "It was a massive, complex and very busy programme."

The project was guided by a masterplan compiled by an urban landscape architect, based on the central idea of having a 'university city' within Kimberley itself and aligned with the principles, standards and processes of the Department of Higher Education and Training. This thinking guided the decision to split the precinct into three main campuses.

The programme management methodology, adopted by AECOM, followed a block design, whereby every framework with its distinct facilities and buildings was signed off. "Our task was to look at the sequencing and ensure it remained within budget, while at the same time adhering to the requirements of the masterplan," says Scheepers.

"It was a bit of a juggling act given the scale, and some of the plan was modified as we progressed. However, there was constant interaction between us as the programme manager, the rest of the professional team, the client and other stakeholders."

Scheepers says AECOM was even able to introduce value engineering elements such as a common specification that guided the professional design teams to have standardised finishes and services on all buildings. This assisted in ensuring the future maintenance of all facilities will be similar.

Project Manager Natasha Pillay, who attained her professional registration while working on the SPU precinct, says that community upliftment in terms of AECOM's Sustainable Legacies strategy played a critical role. "We placed a great emphasis on involving all local stakeholders. From day one we involved the local community to create a pool of labour from which the contractors could meet their requirements and select people to be further upskilled. We managed to employ 80% local people for the project duration, which ensures a tangible legacy of skills for the community."

Commenting on the successful outcome of the SPU precinct, Scheepers concludes: "There are always hiccups on a project of this complexity. Of the 75 projects we undertook, only three experienced issues. However, we managed them, and they all came through at the end of the day and we delivered a remarkable, socially important project for this area of South Africa." ⊙

COMPLETION OF THE 100 Mℓ CONTERMANSKLOOF RESERVOIR AND SERVICES

Nestled in the Contermanskloof and Vissershok valleys with its green landscapes and bright yellow canola fields, lies the mammoth Contermanskloof reservoir. The partially completed reservoir lay dormant from early 2018 until early 2021, when CSV Construction commenced with construction works for the balance of the civil water retaining structure, mechanical, electrical, civil pipe, road infrastructure, landscaping and buildings.

The reservoir design entails a precast hollow core roof slab, supported by post tensioned beams on in-situ concrete walls and columns approximately 9 m high. The reservoir receives water directly from Voëlvlei Dam and deposits water through 900 mm and 1 000 mm pipelines that feed Melkbosstrand and Plattekloof. The water is treated on site for E.coli as it enters the pipelines.

With a 60-week construction period, there was no time to waste. The scope of works consisted of the excavation of 30 000 m^3 soil, the casting of 10 000 m^3 concrete of in-situ flat and sloped floor slabs, columns and walls, cleaning and the re-using of 80 tons reinforcing, 5 500 m of joint sealant, 14 500 m^2 of precast concrete roof slabs and 108no precast beams.

Works outside the reservoir structure included 2 638 m of electrically welded steel pipes with polyurethane coating and concrete lining between 900 - 1 000 mm in diameter, imported filling of 13 600 m^3, re-surfacing of existing access roads, the new Melkbos tie-in, utility and other building and full electrical installation.

Innovation Technology

The reservoir's floor slabs are flat and sloping, and cast on no-fines blinding concrete. Casting the sloping slabs were quite challenging due to the incline of approximately 22 degrees. This required an innovative approach to achieve durability of the concrete in the reservoir. Water retaining structures need to stand the test of time, and to be water tight for decades to come.

To achieve this CSV Construction designed a formwork system to shutter the sloped slabs to ensure achieving proper compaction and consistent thickness of the placed concrete to slopes. Large sectioned steel beams were welded together to create the same angle as the required sloped slab. These beams extended all the way from the top of the slab to the bottom without interim support. This formed the basis of this formwork system of which the main purpose was to carry the weight of the girders and shutter panels that created an inverted slab shutter. This meant that concrete would not have to be struck off and could be placed and properly compacted without compromise.

Pockets of concrete placed strategically in the blinding allowed CSV to place a dywidag bar in the concrete to hold the steel beams in place. Formwork girders were placed in between the steel beams to create a floating formwork system that was easy to dissemble and re-installed. This ensure that a cast could be doene every second week.

The following sequence where followed in constructing the sloped slabs:

- Blinding cast to the correct levels (pockets created for holding down bars – DYWIDAG bars)

- 500 mm Micron DPC placed
- Steel fixing – top and bottom steel to the correct heights
- Steel beams placed in position
- Formwork added in between the beams with correct cover to the steel
- Inspection and cast

The major advantages of this system was

- Proper compaction could be achieved
- Perfectly even surface levels
- Uniform slab thickness
- Steel reinforcing remained in place since no workers could walk on the steel
- Concrete would not slump at the bottom of the slab

Precast roof

The precast roof was a combined effort between CSV Construction and Cape Concrete. A total of 108 post-tensioned precast I-beams, weighing 13 tons each, were placed using a 440 ton mobile crane. Working from outside the reservoir was challenging. The crane is one of only two 440 ton mobile cranes in South Africa with a reach of 65 m that were capable of lifting these precast beams into place.

An in-situ concrete topping covering 14 500 m^2 was placed on top of 1 358 prestressed hollow core slabs on top of the precast concrete beams. The precast roof design meant that the roof could be constructed quicker than a typical suspended slab and without the disruption of support formwork on the floors below.

Construction technology and quality

The contractor and design team had utilised Autodesk BIM 360 Field for coordination, quality control and record keeping of project communication. At least 14 000 documents were uploaded or tickets raised within the BIM 360 cloud system during the construction period. Documentation includes all quality control documents, health and safety documentation, drawings control, Request for Information requests, material approvals, method statements, etc. ⊙

PROJECT INFORMATION
Client: City of Cape Town
Start date: 8 February 2021
End date: 5 August 2022
Main Contractor: CSV Construction
Consulting Engineer: WSP Africa

REDSTONE SOLAR THERMAL POWER PLANT

The Redstone Solar Thermal Power Plant (Redstone CSP) has been developed to meet the increasing electricity demands in South Africa, and forms part of the South African Renewable Energy Independent Power Producer (REIPP) Procurement programme. It is the first and largest CSP-financed molten salt central receiver project in South Africa. The project owner is ACWA Power, Eskom is the off-taker, and SEPCOIII Electric Power Construction Co Ltd is the EPC Contractor for this project.

CHRYSO is the admixture supplier and Scribante Concrete is the concrete supplier for the project. Scribante Concrete's mobile batching plant was erected at the site. This project site is located on the remainder of the farm 469, The Hay District (Administration District), approximately 5 km south east of the groundwater community and 30 km east of Postmasburg and falls within the jurisdiction of the Tsantsabane Local Municipality of the ZF Mcgawu District in the Northern Cape Province. The project's scope includes engineering, procurement, construction, commissioning and maintenance.

Construction innovation technology

The Redstone Solar Thermal Plant construction is considered one of the largest innovations of 2022. Located in the Northern Cape Province of South Africa, the Redstone CSP project will be equipped with a 12-hour thermal storage system that will deliver clean and reliable electricity to nearly 200 000 households around the clock. Commencement of operations is scheduled for Q4 2023.

Reference: https://www.solarpaces.org/100-mw-redstone-solar-with-12-hours-daily-thermal-energy-storage-closes-financing/

Corporate Social Investment

In addition to efficiently delivering clean energy to the national grid, the Redstone project will offer tangible socioeconomic value through utilising local supply chains and creating job opportunities: the project will reach close to 44% local content on procurement during the construction period; create more than 2 000 construction jobs at peak, with about 400 from the local community; and create approximately 100 permanent direct jobs during the operating period.

Design innovation

The first of its kind in Africa, the Redstone Solar Thermal Power Project features molten salt energy storage technology in a tower configuration with the capability to support South Africa's demand for energy when it's needed most – day and night. The 100 MW project with 12 hours of full-load energy storage will be able to reliably deliver a stable electricity supply to more than 200 000 South African homes during peak demand periods, even well after the sun has set.

Fuelled completely by the sun, with no backup fuel required, the project also features dry cooling of the power generation cycle as an important element to minimise water use. With the lowest delivered electricity price of any CSP project in the country to date, the Redstone project will generate more than 480 000 megawatt-hours per year. This annual output is more than twice that of other technologies per MW of capacity, such as photovoltaics (PV) or direct steam solar thermal.

Reference: https://sr.energy/redstone/

Environmental Impact Consideration

Redstone CSP will offset an estimated 440 metric tons of CO_2 emissions per year while also providing value-adding ancillary services to Eskom, and it is the first renewable energy project to offer ancillary services in the country. The project is certified under the Climate Bonds Standard and Certification Scheme and aligned with the goals of the Paris Climate Agreement which seeks to limit global warming to under 2 degrees Celsius.

The concrete mix made use of a CHRYSO water-reducing plasticiser which effectively reduced the initial water content and cement content by 20%. By reducing the need to add extra water, the plasticiser increased the durability of the concrete and reduced it's permeability.

Reference: https://www.solarpaces.org/100-mw-redstone-solar-with-12-hours-daily-thermal-energy-storage-closes-financing/

Health & safety

Through the implementation, maintenance and continual improvement of the Safety, Health and Environmental Management System, the Redstone Solar Thermal Power Plant boasts a record of zero injuries to staff and others on the project to date.

The key to Occupational Health & Safety performance is the

establishment of a participation and consultation framework where all employees actively engage in matters concerning their own health and safety and that of others. The success of this framework is owed to a culture of accountability that has been adopted at all levels of the project.

Quantifiable time, cost and quality

ACWA Power, is a leading Saudi developer, investor and operator of power generation and water desalination plants in 13 countries and the lead shareholder in the Redstone Concentrated Solar Power (CSP) plant.

At R11,6b in total investment, the Redstone project is the largest renewable energy investment in South Africa to date.

Through the successful mobilization of international project finance, Redstone CSP has facilitated approximately R7b in foreign direct investment to fund and support the strategic energy transition goals of the country.

Reference: https://www.afdb.org/en/news-and-events/press-releases/south-africas-largest-renewable-energy-project-redstone-csp-achieves-first-debt-draw-down-49098

Reference: https://www.solarpaces.org/100-mw-redstone-solar-with-12-hours-daily-thermal-energy-storage-closes-financing/

Risk management

Scribante Concrete Redstone Solar Thermal Power Plant has adopted a formalised proactive organisational risk management system that addresses the optimisation of our processes, the calculation of uncertainties and their influence on the business, operational continuity, professional reputation and economic resilience in an unstable economical environment.

The risk management model is tailored to provide the project team with a continuous and disciplined process that includes the identification of risk and the establishment of risk management structures to support other risk mitigation measures such as planning, organisation, cost control and budgeting.

The risk management framework addresses both external and internal risks at all levels and departments within Scribante Concrete and includes the analysis of resources including human, operational, infrastructure, financial, management processes, structures and organisational knowledge.

In addition to risk response, the risk management system includes the identification and evaluation of opportunities to further enhance the operations and risk management structure. They continue to demonstrate the effectiveness of their risk management system at the Redstone Solar project through a proven track record of zero major operational delays, financial losses, reputational harm and planned contingencies for unforeseen events. ⊙

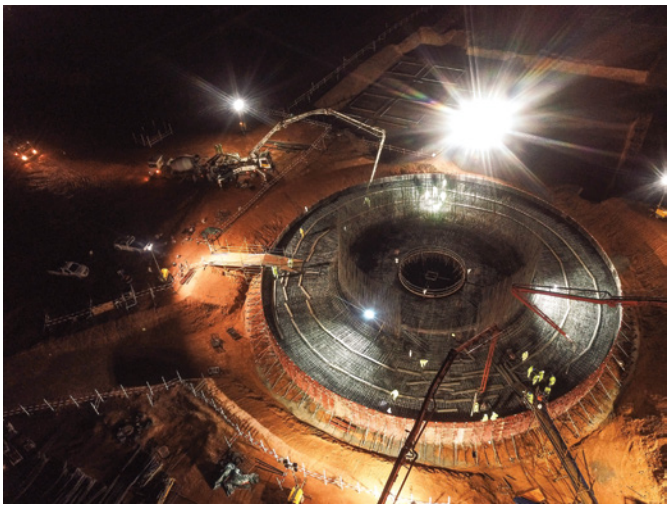
KEY PROJECT BENEFITS

- No requirement for natural gas or oil backup – completely emissions-free
- Supports South Africa's renewable energy programme with the most advanced solar technology, delivering clean energy, day and night
- Energy storage capabilities provide non-intermittent electricity supply to meet peak demand requirements
- Supports South Africa's growing demand for generation capacity stimulated through economic growth
- Significantly reduces the use of water for cooling by using an efficient, low-water dry cooling system

ECONOMIC BENEFITS

- **Financing:** Equity investment and debt provided by local and international lending institutions including DFIs, with a significant Black Economic Empowerment (BEE) shareholding
- **Tax Revenues:** Project forecasted to contribute more than R7b in income tax to the fiscus over the first 20 years of operation
- **Operating Expenses:** During the more than 30-year operating life, the project will expend over R150m per year in salaries and other operating costs, including land, insurance, and maintenance activities, much of this spent in the region
- **Job Creation:** More than 4,000 jobs during the construction phase including craft workers on site as well as jobs related to equipment supply, manufacturing, engineering, transportation and other services; during operations, there will be over 80 full-time, permanent jobs
- **Localisation:** A significant proportion of procurement and labour will be derived from South Africa, growing from the experience and supply chains developed through the construction of the two PV projects at the same location
- **Preferential Procurement:** During construction, in excess of 43% of capital costs will be spent on South African content.

  Reference: https://sr.energy/redstone/



Pierre van Vuuren, Contracts Manager at Concor.

STREAM DIVERSION ALLOWS ASH DUMP EXPANSION AT KENDAL

Preparing the way for expanding the Ash Disposal Facility (ADF) at Eskom's Kendal power station, a 3 km stream diversion has been completed by a joint venture of Concor and Lubocon Civils.

The new stream is about 30 metres wide and three to five metres deep.

Construction of the stream saw over 4 100 gabion baskets and some 42 000 t of rock being used.

The stream diversion will channel clean water around the ADF area.

The diversion was part of the joint venture's contract to add 65 hectares to the ADF footprint, giving the power station the necessary ash disposal capacity for the future. According to Concor contracts manager Pierre van Vuuren, the new stream is about 30 m wide and 3 to 5 m deep – channelling clean water around the ADF area.

"It was a massive undertaking, with the installation of over 4 100 gabion baskets and almost 2 000 Reno mattresses lining the waterway," says Van Vuuren. At 300 mm deep, the wider dimensions of the mattresses make them ideal for creating a stable floor for the stream. The more square-shaped gabion baskets were used mainly for the stream slopes, especially where faster water flow was expected to cause erosion.

Being filled with rock, the stacked gabions and mattresses form a monolithic structure, while the rock fill allows water to flow through the structure. At the same time, soil is retained between the rock, providing the necessary relief from hydrostatic pressure.

"Each basket was three cubic metres in volume, and they were all filled by hand," he says. "This required more than 42 000 t of rock, and took about 120 workers over 19 months to complete."

The rock was sourced from local quarries and crushers. A key concern of the design was to ensure the necessary robustness of the structure, so that it can withstand a 1-in-100-year flood. Sustainability is also an important aspect of the design, making sure that the new stream will be conducive to the natural vegetation of the wetland that it replaces.

"The base of the stream comprises wetland material, which we took from the wetland itself, while the sides are layered with topsoil," he explains. "This is allowing the rapid revegetation of the stream with reeds and other aquatic life."

The addition of biodegradable hydro mulch blankets on the sides helps to prevent erosion for the first six months after completion, and a seeds spray fosters the growth of grass as a ground covering. Almost 70 000 square metres of geotextile was applied to the subsoils and stream diversion.

To accommodate the topography of the landscape and predicted flow rates of the stream, the diversion is comprised of four different 'sections', each with their own design characteristics. The Type A section is lined with gabion baskets and a biodegradable blanket, prioritising the stability of topsoil to prevent erosion while facilitating the rapid growth of plants. Type B is the flatter portion of the stream, while Type C comprises 17 steps where the stream descends more steeply and water flow accelerates. Type D, similar to Type A, has wetland material at the bottom and topsoil on the sides.

The diversion of the stream has been a central aspect of the ADF expansion at Kendal, requiring the work to be carefully scheduled in accordance with environmental regulations. These rules specified that certain activities on the new ADF area could only proceed once the stream diversion was complete.

"Every aspect of this project is conducted with priority being given to the environmental aspects," concludes van Vuuren.

A SMOOTHER ROAD AHEAD FOR THE INFRASTRUCTURE INDUSTRY IN 2023

It has been a long and arduous road to recovery for the construction industry from the serious downswing brought about by the pandemic.

According to statistics aggregator Trading Economics, South Africa's construction industry contracted by as much as a quarter over three years, decreasing from nearly R140b in the second quarter of 2019 to R105b in Q2 of 2022.

"The past few years have been a trial by fire for many South African companies involved in construction and infrastructure development. The industry has been forced to overcome several major issues including an unstable market, wildly fluctuating input costs, and industry-wide material and employee shortages," says industry expert **Roelof van den Berg, CEO of the GAP Infrastructure Corporation (GIC).**

"However, there are glimmers of light and there is no doubt that 2023 will be filled with opportunities. The sector finally has a chance to shake off lockdown fatigue and hopefully resolve some of the pressing supply chain issues we faced this year.

"As a company, GIC also looks forward to welcoming new and skilled workers into our business and the industry and taking on more impactful infrastructure projects."

Based on his 14 years of industry knowledge and experience, Van den Berg believes that sector growth in 2023 will depend on the following three key factors:

- **Increased government spend**

Government is South Africa's biggest infrastructure spender, and in June 2020, it announced that it would be investing more than R2,3t over the next ten years into infrastructure projects, creating an estimated 1,88 million employment opportunities. However, state budgets were reallocated to aid in relief efforts during the COVID-19 pandemic and the various lockdowns that followed, diverting crucial funds away from the construction sector.

"This said, many of the infrastructure projects that were put on hold in 2020 and 2021 were reinstated in 2022, with the bulk of postponed projects set to commence in early 2023," notes Van den Berg.

"This capital injection has already helped to boost the sector over the past year and will further assist to stabilise the industry and get its head above water in 2023. The added benefit of this spending, above and beyond job creation and economic stimulus, is that we will be able to provide the public with crucial infrastructure development."

- **Supply chain issues**

During lockdowns, the industry keenly felt the effects of production slowdowns in key construction materials. Since then, the price of basic materials has remained highly volatile, according to Van den Berg.

"The ongoing conflict in Ukraine, its disruption of global trade, and its effects on the infrastructure development industry have created a highly erratic market environment for the trade of construction materials.

"We have seen material costs increase in 2022, while also experiencing difficulties in sourcing the right amounts of specific materials. Additionally, increases in fuel prices have made the transportation of the necessary materials and products significantly more expensive."

But although recovery is slow, the construction material industry is gradually resolving supply issues and catching up production backlogs that go as far back as 2020. This means that supply chain disruptions should largely be resolved, and prices will see a discernible decline back to normal levels throughout the year, he estimates.

- **Skills shortages**

While the supply of low-skilled workers has seen a sharp rise in the past few years, a shortage of skilled workers is slowly started taking root. But Van den Berg is confident that 2023 will see a marked upsurge in educated workers as an increase in projects and funding leads to better employment opportunities.

"We've seen a major skill drain over the past three years as many trained and highly educated workers have left the country or switched industries in search of greener pastures. But our hope is that, with an injection of capital from government next year and the resolution of other issues hampering the industry, those workers will return.

"It's crucial that we place the right people back into key positions to ensure that important infrastructure projects receive the care and attention they need."

To beat the persistent skills shortage, industry leaders and experts also need to focus on inspiring and mentoring others to follow in their footsteps, he notes.

"It's our duty to ensure the continued improvement and transformation of our industry for decades to come," he says. "I would strongly encourage my fellow industry leaders to focus on our youth, and promote careers in the Science, Technology, Engineering and Math or STEM fields among high school learners, especially in infrastructure development. We also have a clear shortage of students opting to study engineering, architecture, and project management at the tertiary level." Van den Berg is still optimistic about the future of the industry, noting that although infrastructure development and construction may continue to face unforeseen complications in the coming year, the industry will be strong enough to resolve them and remain on a more positive growth trajectory. ⊙

Gauteng Piling on site.

COST-CUTTING IS ADDING TO BUILDING SECTOR'S WOES, WARNS PILING EXPERT

If the building industry does not stop cutting corners to save costs, its already tarnished reputation could suffer further damage, cautions ***Nico Maas, Chairman of Gauteng Piling.***

Maas, who founded Gauteng Piling in 1996 and is a former Master Builders SA as well as MBA North president, says the piling industry, for one, has become a victim of this 'penny wise-pound foolish' attitude as it encounters growing apathy and ignorance regarding the need for proper geotechnical investigations to ensure durable – and cost-effective - foundations.

A member of MBA North, Gauteng Piling has in the past 26 years completed over 1 850 piling contracts for the construction of hundreds of houses as well as major commercial and industrial structures, notably 500 piles the company provided – following geotechnical soil tests - for the construction of the massive Mall of Africa in Midrand in 2016.

Maas says structural engineers should base the design of a building, including its foundations, on detailed geotechnical investigations. These tests - conducted by geotechnical engineers or engineering geologists - provide invaluable information regarding the physical properties of soil and rock on a site, and determines whether a structure will need normal, piled, or raft foundations.

These tests - conducted by geotechnical engineers or engineering geologists - provide invaluable information regarding the physical properties of soil and rock on a site.

Gauteng Piling handling challenging stabilising piling in Irene.

"However, because of the current economic crunch in the building industry, clients far too frequently regard geotechnical soil tests as a luxury – a factor that can either be watered down, or totally eliminated, to save costs. This attitude almost inevitably leads to increased costs later when it is discovered that suitable material is not present to secure the founding. Then the client faces a total re-design - and substantially increased cost," he explains.

"It has been shown over and over that if clients are not prepared to spend money upfront for geotechnical investigations to decide how a structure will be founded, further down the line they will face heavy compensation for not having done the preliminary investigation. The problem is that contractors, struggling to find and retain clients in the current slump, are reluctant to offend developers or property owners by insisting on initial soil investigations to determine the correct foundations.

"For the piling operator, such reticence makes quotations a hit-and-miss affair. We are expected to guess how deep each of what could be 100 or more piles have to be. In the private sector, particularly, there is shocking ignorance about the need for soil investigations. A client once suggested that a rod could simply be hammered into the ground to avoid paying for proper geotechnical tests."

Maas believes that structural engineers should also carry the blame for not insisting on investigations to test soil conditions before foundations are provided. "Structural engineers vitally need soil investigations to arrive at cost-saving designs for any structure, be it a new house or a major shopping centre. On a R200m project, sufficient geotechnical investigations could cost just R200 000.

That's surely a small price to pay if you consider what the cost - and other more serious - consequences could be if durable foundations are not provided," he adds. ⊙

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The Vlakfontein reservoir design included a permeable groundwater drainage system comprising three layers of 15 MPa no-fines concrete.

Armand van Vuuren, Commercial Manager Export at CHRYSO Southern Africa.

GETTING CONCRETE PERFECT FOR DAMS AND RESERVOIRS

Ensuring the integrity and constructability of key water infrastructure in the region, CHRYSO® Southern Africa is contributing its admixture solutions to make the most challenging projects a success.

This is according to Armand van Vuuren, Commercial Manager: Exports at CHRYSO Southern Africa who says that among these are two path-breaking reservoirs in South Africa's Gauteng province: Vlakfontein reservoir, which is the largest cylindrical post-tensioned concrete reservoir in the country; and Khutsong reservoir, with Africa's first round, prestressed raft floor to deal with dolomitic ground conditions. CHRYSO® Southern Africa is also working on the multi-million Euro project to reshape the plunge pool at the base of the Kariba Dam wall.

Vlakfontein reservoir

With an internal diameter of 154 m – about the length of one and a half football fields – the Vlakfontein reservoir holds over 210 Mℓ of potable water. The outer concrete walls are almost 12 m high, reaching about three storeys. It has a 200 mm thick floor slab layer that consumed 1 800 m^3 of 35 MPa concrete. This had to be pumped in 13 separate pours of between 250 m^3 and 36 m^3 each.

Van Vuuren says the project made use of CHRYSO® Plast Omega 178, a high-performance water reducing plasticiser, in all its concrete mix designs. "This reduced the water content of each mix to 175 ℓ/ m^3 while ensuring workability and strength," he explains. "This admixture also increases the slump – or flow – without affecting the water content of the mix."

The concrete in the reservoir's floor slab, wall footing and roof slab was augmented with CHRYSO® Serenis shrinkage inhibitor – to reduce shrinkage of the concrete. CHRYSO® CWA 10 crystalline integral waterproofing agent is also used to reduce the permeability of the concrete in the floor, walls and columns.

"When moisture is present, this agent creates a reaction

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The Khutsong reservoir is Africa's first round prestressed raft floor to deal with dolomitic ground conditions.

The presence of dolomite in the area's geology meant that sinkholes were common and the design had to accommodate the possibility of a five metre wide sinkhole occurring under the Khutsong reservoir.

– creating long narrow crystals that fill and plug the pores, capillaries and hairline cracks of the concrete mass. These crystals prevent water penetration into the concrete, protecting the concrete and reinforcement against corrosive groundwater and chemicals," Van Vuuren explains.

The reservoir design also included a permeable groundwater drainage system comprising three layers of 15 MPa no-fines concrete. To achieve the right consistency in these challenging mixes, CHRYSO® Easydrain was introduced at 140 g/ m^3 of concrete. CHRYSO® Easydrain mechanically and hydraulically binds the aggregates with a uniform cement paste coating. Once dried, the bonded aggregates will not loosen. The additive also fluidises the concrete, which assists with a homogeneous mix and improves curing to reduce the chances of cracking.

Khutsong reservoir

"While the Khutsong reservoir was much smaller – at just 30 Mℓ capacity – its concrete demands were equally complex," van Vuuren says. The presence of dolomite in the area's geology meant that sinkholes were common and the design had to accommodate the possibility of a five metre wide sinkhole occurring under the reservoir. This led to Africa's first round, prestressed reservoir raft floor being constructed. This design option involves applying pre-compression to the raft floor, providing additional resistance to crack-inducing tensile stresses.

Van Vuuren explains that to achieve this innovative result, the concrete mix design was a critical factor and that the timing of the stressing and the profile of the cables were also vital, to achieve the necessary performance from the 450 mm thick raft floor slab.

"A careful balance had to be found between acceptable shrinkage, permeability, workability and early strength gain, and CHRYSO's shrinkage compensating admixture, CHRYSO® Serenis, was used to achieve a suitable water cement ratio and the required permeability," he says.

A CHRYSO water reducing plasticiser ® Plast ZA 1559 also proved an effective plasticising admixture to ensure workability after 80 minutes – while also providing early strength gain.

CHRYSO Southern Africa, together with Mart Solutions, has made a range of technological contributions to the construction of the Kariba Dam plunge pool project.

Construction of one of the seven Kariba Dam pier bases to be submerged under water.

Pouring of the concrete had to be completed within 24 hours to ensure the homogeneity of the concrete under early stressing. The site's location demanded close collaboration between the contractor and readymix partner. The final plan made use of three batch plants, 32 mixer truckers, standby plant and personnel, back-up power and water plants.

Kariba dam

At the world-class Kariba Dam project, where contractors are working to stabilise a plunge pool at the base of the wall, CHRYSO® Southern Africa is making a range of technological contributions, working with Mart Solutions.

Before the pool could be emptied, a coffer dam had to be built – requiring a concrete foundation to be placed underwater. Van Vuuren says that contractors minimised the washout and segregation of fresh concrete underwater by adding the innovative admixture CHRYSO® Aquabeton ZA.

Another CHRYSO solution being applied in this contract is CHRYSO® Omega 162 superplasticiser, an important component of the concrete mix design for the seven piers of the coffer dam. These large pier structures will range from 250 tonnes to 700 tonnes in weight. CHRYSO® Omega 162 reduces the need to add extra water, thus increasing the durability of the concrete. The admixture also improves cohesion and lowers viscosity in the concrete mix, leading to improved homogeneity and superior off-shutter finishes.

CHRYSO® Fuge B, which is a pore-blocking permeability reducer for mass concrete, is also being used for the piers – as they are in contact with water all the time. This product reduces the size of the capillaries to prevent the penetration of water under pressure. CHRYSO® Southern Africa is also providing admixtures for the shotcrete being used to stabilise the walls on the haul roads into the plunge pool as it empties. ⊙

RED TAPE, COST-CUTTING HAMSTRING INFRASTRUCTURE DEVELOPMENT

Infrastructure is the basic fabric that supports the economy. Without roads and transportation, energy, and water, the rest of the economy simply cannot operate. Infrastructure is also an economic multiplier and always the first mover in a recovery cycle, providing stimulus and employment that leads to further investment.

However, infrastructure development in South Africa is being hamstrung by fundamental problems that need to be resolved urgently. “The industry is being decimated and we will shortly face a crisis in construction and consulting capacity and skills,” warns **Darrin Green, Africa MD at globally trusted infrastructure firm AECOM**.

South Africa’s existing infrastructure must be operated and maintained at municipal, provincial and national government department levels. Here the low-hanging fruit are the projects and programmes already identified. “However, the problem lies in the capability to procure and manage the spend. It is not happening consistently to enable skills growth and retention,” highlights Green.

Due to the push on price, there often is not a lot of leeway for innovation. “In the public sector, it is lowest price wins. Now that is never going to allow for any kind of innovation or optimisation,” says Green. He adds that the “bare minimum” is being done and older designs recycled that are no longer fit-for-purpose. This, in turn, has a major impact on futureproofing and climate resilience of new and existing infrastructure.

“That takes a bit more effort and time. Clients are not looking at the lifecycle cost of that infrastructure,” says Green. Spending more upfront improves operation and maintenance, in addition to improved closure outcomes and reduced construction costs across the board. The issue is compounded by the fact that while price is the dominant criterion in the public sector, some private sector developers hand infrastructure over without considering operation and maintenance.

Developers are invariably on the hunt for the lowest-priced design. However, design is a negligible 1% to 2% of the total construction cost.

Looking at the government’s planned infrastructure rollout to promote fixed capital investment and economic growth, Green says this has been “frustratingly slow” to date. “There is some work trickling through, but it is not enough to make any difference. Our construction and consulting industry is teetering on the edge, particularly construction. We are losing skills hand over fist; we are losing recently qualified and registered young engineers monthly. It is significant that we are not attracting new people into the industry.”

Despite the prevailing situation, government or public sector infrastructure remains a cornerstone of the construction and consulting industries.

“We are well meaning in wanting to root out corruption, but we also do not want to create entry barriers for smaller players. It is smothered in red tape and the cost of bidding is exorbitant, whereas it should be stratified. AECOM does not want to bid for small projects, which should go to the emerging sector. There is also no consistency in the documentation. There should be one central approach for all compliance documentation so it can be submitted once to all government departments, instead of us having to reinvent the wheel and fill out all these forms in slightly different formats every time,” explains Green.

Another issue is low functional or quality-based criteria in the bidding process itself, which is skewed towards the lowest price and therefore the quality of the outcome could be compromised. “While competition is necessary, quality is very much part of that process,” says Green.

Here the procurement cycle simply takes too long: Six months for a prequalification, followed by requests for proposals and an eventual bid that can take a year to award and a further six months to contract. “This means we are already two years down the line for urgent infrastructure,” points out Green.

In terms of balancing out all these constraints against moving the company forward, the main concern is that the current workflow is insufficient for a sustainable profession, let alone its individual players. “It is going to remain lumpy for some time. Our industry is always cyclical. Everything around the 2010 FIFA Soccer World Cup was a boom period. We are now at the bottom of a bust cycle for our industry. I do not see that changing quickly. That unfortunately affects business confidence and investment levels,” says Green.

“We still fundamentally have very good skills in this country in engineering that, honestly, are world-class. We do not have to stand back for anybody. But how are we going to retain that? For me it is about balancing out the peaks and troughs that we have in our workflow here in Africa with work from the global business. That is part of our strategy for at least the next two years while the socioeconomic situation stabilises.” ⊙

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