

COVERING THE WORLD OF CONSTRUCTION

JANUARY 2023

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Period	36	36	36

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*Various articles in this issue look back at 2022 as we look forward to 2023. The construction industry experienced tough times during the COVID-19 pandemic and 2022 started with optimism of a (potential) new dawn. The Afrimat Construction Index (ACI) is South Africa's most accurate indication of how the construction sector is faring – more so than individual barometers that often paint a worrying picture (as evident from some articles in this issue).*

The ACI is a composite index of the level of activity within the building and construction sectors and uses nine indicators to become a rather accurate barometer of activity in this sector.

The ACI for the third quarter of 2022 illustrates that the resilience of the economy was also evident in the construction sector. Statistics SA recently released the latest gross domestic product data which shows a real growth rate of 1,6% (quarter-on-quarter) for the economy as a whole. For the same period, the construction

industry showed a growth-rate of 3,1%. According to the ACI, only transport, storage and communication outperformed the construction sector in the period July to September.

The ACI has now virtually recovered to levels before the COVID-19 pandemic. The index value is 123,4 - 24,4% higher than the base period which was the first quarter of 2011. At its height, the ACI had a value of above 140 (third quarter of 2016).

Not everything about the ACI is positive though: it highlights the slow

pace of recovery of gross fixed capital formation in the economy – in fact capital formation in the third quarter represented only 7,1% of GDP. This is significantly lower than the global average of 26% and according to the ACI, not vaguely significant for a country of some 60 million.

Here's to a good 2023!

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## AUREX CONSTRUCTORS CELEBRATES 10 YEARS



*Aurex Constructors have been involved in the construction of over 580 MWp of utility-scale solar photovoltaic (PV) plants in South Africa over the past 10 years. Utility-scale facilities generate a large amount of solar power that feeds into the country's power grid. While the technology is similar to home or commercial solar systems, the magnitude of solar farms brings with it many challenges that address logistics, schedule, resources and stakeholder relationships, which have to be overcome.*

The first PV solar project undertaken by the company was the 75 MWp Kalkbult project in De Aar, South Africa which started construction in November 2012. This project was the first large-scale solar plant to be completed and connected into the national grid within South Africa's renewable energy independent procurement program (REIPP). The project was completed three months ahead of schedule with no injuries.

Since then, Aurex have constructed solar plants in some of South Africa's most challenging locations, succeeding despite inclement weather and less than ideal terrain. From clearing ground, constructing civil foundations and roads, executing electrical and mechanical installations, managing all construction activities to sign-off and commissioning. The team has also been performing the operating and maintenance of plants, including corrective and preventative maintenance issues and have been responsible for achieving the agreed percentage of plant availability and performance.

Whilst there were delays in the roll out between the REIPP rounds, Aurex built smaller scale solar plants within the private sector, that feed power directly or through Wheeling Agreements to customers. These plants ranged in size from 3.9 MWp to 10 MWp demonstrating Aurex's agility in its service offering and ability to customise its expertise to suit customer specific requirements.

CEO of Aurex, Stuart Kent says, "At a time when South Africans are facing consequences of loadshedding in businesses and our personal lives, the solar project in Kenhardt offers

some relief in the near future. For Aurex, being awarded this solar project is more than 'winning a project'. It enables us to be actively involved in mitigating the loadshedding risk and improving the country's economic outlook whilst it leans into the global strategy of achieving a net zero carbon economy.

We are proud of our reputation, built over the past 10 years in the industry as a leading construction partner for the execution of utility scale projects. We are excited about the future of renewables in our country and beyond and look forward to continuing to be a major contributor in this space." ☺

### ABOUT AUREX CONSTRUCTORS

Aurex Constructors is a key player in South Africa's construction, turnaround and maintenance industry with more than 40 years' experience serving a blue-chip customer base in the oil and gas, mining and metallurgy, infrastructure, petrochemical, and clean power sectors. Its two main service lines, construction and turnarounds and Maintenance, deliver structural, mechanical, electrical, instrumentation, piping, platework (SMEIPP), fabrication and management services for projects of all sizes and complexities. Aurex is 100% locally owned and managed with 51% black ownership and 30% black women ownership. The highly skilled workforce has a proven track record for delivering flexible, innovative, and relevant project management solutions tailor-made to customer requirements.

# ZIMILE CALLS FOR AN INCREASED PRIORITISATION OF ROAD MAINTENANCE

*South Africa-based engineering company, Zimile Consulting Engineers, has stressed the importance of scheduled road maintenance for safer and durable roads and has called for increased prioritisation of road maintenance, especially in rural areas.*

The two main types of road maintenance include routine road maintenance, which involves the day-to-day needs of the road, such as filling potholes, patching, crack sealing, mowing, road shoulders repairs and the cleaning of ditches and culverts. The other is periodic road maintenance, which involves resealing and overlays of road surfaces and reinstating road markings and signs.

“The current practice prioritises road maintenance according to usage – the more a road is used, the more regularly it will be maintained. While this process is not flawed, more focus should be directed towards roads outside of the national road system to ensure that it also remains safe and usable,” says Ntsika Mhlanga, Route Manager at Zimile Consulting Engineers.

“While our national roads are prioritised and well maintained, routine and periodic maintenance of the rural road infrastructure requires more attention.

More planning is required to ensure that rural roads receive the required maintenance. With Zimile’s experience and skills in road infrastructure, we can assist provincial governments as well as local municipalities in planning and scheduling routine maintenance activities. Proper planning will help reduce the growing maintenance backlog that results in major maintenance and that remains a challenge in most provinces.”

Mhlanga proposes a system where road data is captured and tracked per maintenance period. He adds that maintenance activities should be scheduled based on the need of each road to ensure the design and construction life span are maintained, while the roads enable convenient travel time and safety to the users. In addition, he explains: “The system should be able to identify fluctuations in road usage and assign road maintenance schedules aligned to a budget and a plan. We can also assist provincial departments in planning and road maintenance schedules.”

Mhlanga says: “We produce quality and inexpensive road maintenance without neglecting the maintenance on other roads. I call on fellow consulting engineers to consider safety and appropriate drainage systems in their designs to ensure safer roads with a longer lifespan.”

For example, in Piet Retief, Zimile Consulting Engineers is conducting routine maintenance on a road that is deteriorating rapidly, spurred on by heavy rains in KwaZulu-Natal. Therefore, the maintenance activities will increase the road's lifespan while ensuring it remains safe to use.

Another example is the completion of a project at an international airport, where Zimile rehabilitated the runways and taxiways using ultra-thin friction coarse (UTFC) products. “The UTFC



Ntsika Mhlanga,  
Route Manager at  
Zimile Consulting Engineers.

products enable, among other benefits, efficient water drainage and adequate friction. We are very proud of this project because it showcased our experience to deliver complex projects. We designed, planned, and executed this project with a strong focus on the safety and longevity of the runways, all while the airport was operational.”

Therefore, the increased prioritisation of road maintenance should lead to safer, durable roads that will improve the experience of all road users, Mhlanga concludes. ☺

*“While our national roads are prioritised and well maintained, routine and periodic maintenance of the rural road infrastructure requires more attention.”*

# AILING CONSTRUCTION SECTOR HOLDS OUT HOPE FOR INFRASTRUCTURE DEVELOPMENTS TO BE FAST-TRACKED

*Following a harrowing two years for the construction sector, 2022 started with cautious optimism amid promises that major infrastructure works would be fast-tracked, and the value of building plans passed by larger municipalities in 2021 rose by 37,5% as compared with 2020, which saw a decline of 33,5%. By Mohau Mphomela, Executive Director of MBA North.*

It was anticipated that the economy would rebound in 2022, with an expansion of 9,1% in real terms predicted. The sector hoped that if that was the case, it would be possible for the industry to stabilise at an average annual growth of 3,1% between 2023-25. Unfortunately, those forecasts were set back by factors such as the unsettled geopolitical climate, with the Russian invasion of the Ukraine disrupting global markets more than anticipated.

By the end of Q2 this year, Stats SA described the construction sector as being in the worst shape of all industries in terms of GDP real value added recovery from the impact of the COVID-19 pandemic, at 24% smaller than it was before the pandemic. By September, the industry growth rate was -2,4%, with civil infrastructure projects increasingly delayed.

Profit margins were weaker and turnover contracted by 9,8% year on year (nominal terms) to R72,4b in the first quarter of 2022, although smaller enterprises bucked the trend by almost doubling their turnover. Construction materials costs have surged above the inflation rate, while a competitive market has further eroded profits in the sector.

At the same time, liquidations continued, accelerating in the second quarter of this year, and increasing by 183% year on year, with the construction sector shedding a further 13 000 jobs between March and June this year. Only a handful of major construction companies are still trading – the others have diversified, gone out of business or are in business rescue.

On the brighter side, the industry has made some recovery from the dip experienced during the lockdowns. Although commercial building activity slowed this year, during the period June 2020 to May 2021, building plans were registered to the value of R6,3b per month on average, while during the same period a year later (June 2021 to June 2022), the monthly average was R9b.

## Smaller margins, greater risk

With margins in the single digits and few major projects underway, contractors are managing to achieve some growth in the residential and commercial markets. Unfortunately, while more of these projects are becoming available, unethical practices and the spread of so-called 'tender mafia' activities are threatening profits and putting smaller contractors'

futures at risk. The Bargaining Council for the Civil Engineering Industry (BCCEI) has stated that intimidation, extortion and violence on construction sites has reached crisis levels, causing losses of over R40b by 2020. As far back as 2019, it was reported that at least 183 infrastructure and construction projects worth more than R63b had been affected by these disruptions across the country, according to a report by the Global Initiative against Transnational Organised Crime.

Late payments and unethical business practices, such as amending contracts or forcing contractors to assume disproportionate risk, are further eroding profits and putting the sector at risk. While there are some grounds for optimism, contractors need to be very cautious going forward. Our government is aware of the sector's challenges, and the MBA has communicated with them at both CASA and MBASA level.

## All eyes on infrastructure

The sector's big hope for recovery rests in the infrastructure development plan, which has been slow in coming to fruition. With R6,6t in cumulative spend required by 2030, the government continues to insist it plans to invest heavily in transport, energy, residential, telecommunications and industrial projects. In particular, the construction industry will be underpinned by the investments associated with the government's infrastructure plan. However, based on past experience, it seems inevitable that these projects will not unfold as planned, and that tenders will take time to materialise and be adjudicated.

Two years ago, the MBA North welcomed the announcement that 88 investment-ready projects had been identified by the Presidency's infrastructure and investment head Dr Kgosientsho Ramakgopa and Public Works and Infrastructure Minister Patricia de Lille, but we noted that time was running out to turn these plans into reality. Progress has been slow since then. In fact, Standard Bank reported in May this year that almost a quarter of the country's R340b strategic infrastructure projects had been delayed or put on hold.

Yet again, the MBA North stands ready to work with the government to implement these plans, and yet again we note that ongoing delays will further reduce our ailing sector's ability to deliver on these ambitious projects. ☺

# 23 TIPS TO RUN YOUR BUSINESS BETTER IN 2023

*The end of a year and the beginning of the next is when thoughts turn to New Year's resolutions – time to lose weight, return to the gym, improve one's health. The same applies to small business owners, according to Denzil Steyn, president of the Durban Chapter of global peer to peer network, Entrepreneur's Organisation (EO).*

2022 has been a tough year and the perfect storm for businesses. The difficult recovery from the COVID-19 pandemic, the fallout from the Ukraine war, disruption of global supply chains, sky rocketing energy costs, the local Eskom energy crisis, political instability and climbing inflation are just some of the things that have impacted negatively on local businesses and their clients.

These are likely to continue, Steyn believes. However, he says business leaders need to avoid the muchquoted mistake of continuing to do the same thing but expecting a different outcome.

According to Statistics South Africa, the total number of liquidations in South Africa increased by 44,8% in August 2022 compared with the same period a year ago. The total number of liquidations increased by 18,8% in the three months ended August 2022 compared with the three months ended August 2021.

Apart from formally underscoring the much-quoted fact that this country has one of the highest SMME failure rates in the world, the University of the Western Cape's entrepreneurship specialist Prof Christian Freidrich (an extraordinary professor at UWC's School of business and profess at the University of Applied Sciences in Giessen, Germany) has dug a little deeper. He says that a massive research programme spanning the last 15 years has revealed that a smaller business can rise or fall on the decisions of the entrepreneur who owns it. This is because the owner is the source of action in a firm, makes the key decisions and deals with important customers, suppliers, and employees. <sup>1</sup>

Entrepreneurs need to think and act differently in 2023, not only through growing their business skills but by learning from successful peers who have ridden out and even grown during one of the most turbulent economic times, Steyn notes.

To close off 2022, EO Durban members have shared 24 tips which they believe are integral to running a successful business during 2023:

## **Denzil Steyn – CEO of Intellisec and president of EO**

- Build your team, set direction and execute systematically and passionately, in that order.
- Don't demand loss recovery from a chosen path. If it is not working, learn, let go and reset direction.
- Love what you are doing. If there is no love, figure out what is draining you and make the changes fast.
- It's tough and lonely at the top. Invest in membership of an organisation such as EO where you can enjoy the support of peers in the business arena.

## **Tarryn Tait, CEO of Basics and Beyond**

- Growth is not always linear. Sometimes to go

forwards, we have to go backwards.

- Focus on the things you are good at. When a teacher marks an exam and there is 1 wrong answer, they don't score it 1/10, they score it 9/10. Focus on the right metrics.
- Feelings achieve nothing, action = change.
- Communicate early and honestly.
- It's not the survival of the fittest, it's the survival of the most adaptable. Learn to adapt.

## **Bruce Rowe – CEO of MPowered**

- Having a company purpose gives you direction for any and all ideation and decision making.
- Have absolute clarity on what your 3 or 5 year vision is. Make it achievable and get buy-in.
- Establish a business operating system that your team uses to help keep the business moving forwards.
- Always be thankful for what you have and who you have around you.
- Stay focused and be disciplined.

## **Mark Essey – CEO of Capability BPO**

- Pay attention to what your gut is telling you. Even if it is a tweak, listen.
- It is all about cashflow, so many businesses close their doors with big profits on paper and not in the bank.
- Try not to let issues go unresolved. They always come back to visit when you can least afford them to.

## **Cindy Norcott – CEO of Pro Talent**

- Hire people better than you, treat them well and trust them and you will see your business grow to the next level.
- Move quickly and heed the saying that "It's not the big who eat the small, it's the fast who eat the slow". Be responsive to changes and react quickly.
- Always keep a close eye on costs because they creep up quickly. Go through every line item on your expenses column each month with the intention of reducing your costs by 10%.
- You will never save yourself into success. Success comes from sales. Make sure you are always in selling mode and that every staff member in your company understands that sales is part of their role.
- Never accept 'That's not my job' from any of your staff and always model a humble, can-do approach.
- In every transaction with clients, throw in extra value, whether it is a free smile, extra convenience, support, free advice, free shipping. Give people more than they have any right to expect. ☺

# THREE EMERGING DIGITAL TRENDS TRANSFORMING THE WORLD OF CONSTRUCTION

*Construction development in South Africa is speedily moving away from the traditional graph paper and pencil towards the digital. Most companies have already adopted laptops, mobile tablets, electronic measuring tools, and drones to simplify a myriad of onsite tasks which have, historically, been time consuming and often imprecise.*

But as the world at large grows more digitised and digitalised every year, the question is what will the future of construction and infrastructure development look like based on today's rapidly advancing technology?

As the Chief Executive Officer of Gap Infrastructure Corporation (GIC), a leading South African infrastructure developer, Roelof van den Berg predicts that the following three trends will become commonplace for construction businesses over the next few years:

## 1. Building Information Modelling

Although Building Information Modelling (BIM) has been around for some time, only a few larger construction and infrastructure development companies have recently begun using this technology to its full potential.

"BIMs are intuitive three-dimensional modelling computer programmes which allow all project members, from executive management to architects and engineers, to design and manage projects quickly, easily, and efficiently. This enables us to instantly share pertinent project information from anywhere, or manage the entire project throughout its lifecycle in one location," explains Van den Berg.

Continued advancement in cloud technology, coupled with BIMs, will also keep simplifying the way project stakeholders access and interact with real-time process information, enhancing transparency between provider and client.

BIM systems are largely used in construction and infrastructure projects for coordination or clash detection, visualisation, project planning, estimation, creation of virtual mock-ups, and prefabrication, among others.

GIC has gone a step beyond the basic BIM to employ a 5D BIM system which adds both time and cost related data to 3D BIM models, providing more value to both contractors and clients. With 5D modelling, the total cost of a project is easily determined by multiplying each component used by its cost, without requiring significant additional manual input from the contractor and saving time.

Van den Berg notes that the use of BIM systems will see a sharp rise over the next few years by not only large

companies, but will also be used more frequently by small to medium businesses.

"This is particularly as the technology advances, accessibility is improved, and BIM systems become a necessary tool in an increasingly competitive market," he says.

## 2. Enhanced surveyance technology

Projects are regularly delayed, and unexpected costs accrued during the groundworks phase of projects as construction crews happen upon unexpected underground geological features.

To detect subsurface obstructions before commencing with operations, cutting-edge enhanced surveyance technology such as light detection and ranging (LiDAR) scanning is used to create accurate 3D area models.

Combined with subsurface surveyance systems such as ground-penetrating radar (GPR), LiDAR is capable of mapping both above and underground features.

"Geologic mapping technology is rapidly advancing, providing us with clearer and more accurate images than ever before to prevent any surprises when we first begin digging on sites. Combined with drones and intelligent 3D modelling programmes, this can prevent unnecessary delays and thousands of rands going to waste."

## 3. Virtual and augmented reality

Once thought to be little more than a fad among tech-enthusiasts, virtual reality (VR) and augmented reality (AR) technology have advanced to the point that they are beginning to add immense value to the construction industry.

VR, which requires peripherals such as VR headsets or glasses, creates a traversable digital environment, such as a worksite or finished building, around the user. AR does not require a headset and can be used on any type of smartphone or tablet device, rendering environments or objects on-screen, layered over images of the real world by making use of the device's camera.

"While not yet in common use, AR technology makes it possible to digitally design a building, load it onto your phone as an AR programme, point it at the physical location where you want to build, and display it to your team or client," says Van den Berg.

"Likewise, VR can be incredibly useful for training workers to use complicated machinery or, by coupling the technology with advanced simulation programmes, preparing employees to react correctly in dangerous situations.

"Ultimately, the integration of advanced technology into the construction and infrastructure industry is unavoidable, but through continuous innovation, the value that digital technology can create for developers and clients is boundless," he concludes. ☉

# BOOSTING INTERNATIONAL RECOGNITION OF CONSTRUCTION PROFESSIONALS

*In a world-first collaboration, the South African Council for the Project and Construction Management Professions (SACPCMP) and Project Management Institute (PMI) have come together to offer construction-specific learning and development to those registered under the SACPCMP. The partnership will boost the international currency of South African construction professionals*

“This is the first time ever that a regulator has collaborated with PMI to create an opportunity for its industry professionals to improve the global currency of their registration,” said SACPCMP Registrar, Butcher Matutle. “The collaboration between the two entities will open the door for international recognition for SACPCMP Registered Persons, who will benefit from undertaking learning and development that is not only construction focused, but also recognised internationally.”

PMI earlier this year launched a suite of online courses and micro-credentials to address the unique challenges faced by construction professionals. The courses aim to improve project management skills in the construction industry and lead to PMI-CP (Construction Professional in Built Environment Projects) certification.

## Wasteful expenditure in the construction sector

“Annually, wasteful expenditure in the construction sector globally amounts to USD1,6t,” said George Asamani, PMI’s Sub-Saharan African MD.

“Our research of project management professionals working in the construction industry found that 70% of construction projects experience scope creep and a further 73% of such projects end over budget. These courses are designed to help construction professionals improve margins in the industry often plagued by cost overruns and project delays and is PMI’s first industry-specific solution designed for construction professionals.”

The collaboration between the two entities supports the mandate of the SACPCMP which continually looks to support learning and continuing professional development in the construction sector. It also opens an avenue for those registered under the Council to engage in globally recognised learning that could grow their international appeal as professionals.

## Global recognition for SA professionals

“We are excited by the multi-levelled benefits offered through this collaboration,” added Matutle. “SACPCMP professionals will be able to access this courseware at a preferential rate and continue to develop themselves in line with international best practices while maintaining their registration requirements.”

Matutle said that furthermore, SACPCMP applicants who need to develop their knowledge base to meet professional registration requirements will have the opportunity to do so through the collaboration: “Applicants can now select specific courses or modules that will address pinpoint areas they may need to

develop. The long-term benefit of this will not only result in a fully competent construction industry but also the development of additional career pathways for the Built Environment.”

PMI-CP comprises seven courses, three of which offer micro-credentials; each course explores a specific area of construction project management. The certification was developed in collaboration with construction industry leaders and consultations with project managers who face the twin challenges of balancing technology and talent.

## Adapting to change is essential

“As with many sectors, the construction industry is seeing change. Adapting to change is key and demands different skill sets to complete projects successfully. PMI believes that people and their skills are critical to improving project performance,” added Asamani.

“This partnership between SACPCMP and PMI, with each partner striving for excellence in their respective specialties will create a solid platform for the construction industry to deliver better outcomes.”

South Africa is no stranger to the difficulties facing the construction industry. However, to meet the demand of R812,5b worth of planned infrastructure projects over the next three years, proactive steps must be taken.

“If the South African construction industry is to leverage the massive infrastructure opportunity, it must accelerate the upskilling of construction professionals. The PMI is positioned to equip the sector with the competencies needed, and through the collaboration with the SACPCMP, we have built a platform to ensure that the industry is strengthened through professionals who can adequately address the complex nature presented by the construction sector,” said Matutle.

The agreement was officially signed by PMI’s George Asamani, and the SACPCMP President, Isaac Nkosi, and Registrar, Butcher Matutle in Gauteng on the 14th of November 2022. Tunde Ojo-Aromokudu, President of the PMI South Africa Chapter was also present at the signing. The agreement will facilitate access for SACPCMP Registered Professionals and applicants to PMI’s CP courses and certification at a reduced rate. Course credits will be recognised by the Council in various ways. PMI South Africa Chapter is a wholly volunteer-managed, non-profit organisation with the sole purpose to serve the local membership base and support the promotion and advancement of project management and related professions. Through its work, the Chapter supports the professional growth of the members, corporate organisations, and communities. It is one of the oldest PMI Chapters in Africa and was established in 2001. ©

# PPPS ARE KEY TO FILLING THE FUNDING GAP

*The government's National Development Plan 2030, which is aimed at eliminating poverty and reducing inequality by 2030, relies on the development of economic infrastructure that promotes economic activity as a key enabler to achieving its goals. Encouragingly, this year's budget allocated R812,5b over the next three years for infrastructure investment, and work on some major projects is already underway.* **By Robert Futter, Executive Director at Cresco Group Africa and Andy Tant, Director at Cresco Group Africa.**

**T**he economy's hope that these budget allocations are supported by real investment figures unfortunately show that the government's 'real' investment in public-sector infrastructure has been dwindling over the past few years compared to allocations.

## Need for private sector investment

However, the government cannot do this on its own as it does not have sufficient resources (technical, funding and structuring) to undertake all these targeted projects. Private Public Partnerships (PPPs) in various forms are considered the most achievable investment structure – with a concessioning approach being key to implementation risk reduction. South Africa does have some positive precedent from the early 2000s, with PPPs now reaching the end of the concession periods and obtaining follow up bids for brownfield expansion opportunities. Transnet National Ports Authority (TNPA) has issued a number of Request For Information (RFIs) and then Request For Proposal (RFPs) for port-related infrastructure upgrades (for example, tank storage, LNG, berth expansions, among others).

## Port expansion plans

TNPA is repositioning its Western Region ports to efficiently facilitate trade via a seven-year R16,1b infrastructure development programme at the ports of Mossel Bay, Saldanha and Cape Town.



The railway links to these ports will also be upgraded, providing further PPP opportunities.

Transnet revealed that it would cost R100b to expand its Durban port, over a 10-year period, while expansion plans have also been proposed for Gqeberha's Ngqura port.

It is encouraging to see that Transnet is finally doing what it has been talking about for years.

Linked to the ports is brownfield concessions and the potential opening up of the market for old order land lease contracts for largely fuel storage and ancillary storage facilities on Transnet land. Land leases signed with existing incumbents some 25 years ago for key strategic areas are now coming up for renewable or new concessions. This may result in brownfield expansion for new 25-year lease periods or some churn in this market.

## Credit risk impacts/opportunities/mitigants

A distinction must be made between concessions that rely on government offtakes or support, and those that relate to market risk by the concessionaire – these clearly have different risk profiles and thus different levels of interest from prospective concessionaires or investors.

Certain infrastructure like gas opportunities (LNG ideas) and fuel storage are a clear opportunity without Government support, but partial support can be achieved for certain infrastructure projects to achieve a successful funding solution.

The prospect of PPP becoming unlocked in South Africa and the region is an exciting one, especially for project finance advisory companies who have the opportunity to assist private sector potential concessionaires with possible investments in these projects. ©

*A distinction must be made between concessions that rely on government offtakes or support, and those that relate to market risk by the concessionaire.*

# SOUTH AFRICAN CONSTRUCTION INDUSTRY BREATHES EASIER

Overall conditions in the South African construction sector in the third quarter of this year were little changed from those in the second quarter, yet there was an uptick, as depicted in the Construction Industry Development Board (cidb) Business Conditions Survey for the third quarter.

The small and medium-sized enterprises (SME) Business Conditions Index moved from 42% to 43%, and presented an improvement in activity, while confidence and activity were above the long-term average with order books looking healthier. Demand for new work increased while profits were better. The constraint for insufficient demand improved significantly and is now below its long-term average.

Sentiment improved both for the general building (GB) and civil engineering (CE) contractors. Skilled labour and building material constraints eased, however, access to credit became more difficult. Rising interest rates might be affecting building contractors.

These findings come from the quarterly SME Business Conditions Survey, conducted by the Bureau for Economic Research (BER) on behalf of the cidb.

“Recovery in the construction sector continues, albeit at a slow pace,” says Bongani Dladla, CEO of the cidb. The sector was grievously mutilated by the economic slowdown in South Africa, hit again by the COVID-19 pandemic and is suffering from the uncertainty brought on by load-shedding.

“There is no doubt that the third quarter has seen a continuing strengthening of the sector as a whole and is a hopeful indicator that better days lie ahead.” Dladla confirmed.

The BER has been conducting the quarterly business tendency survey on behalf of the cidb since 2008. It polls the opinions of senior executives in the building and civil construction sector in grades 3 to 8.

## Survey results varied across the overall sector

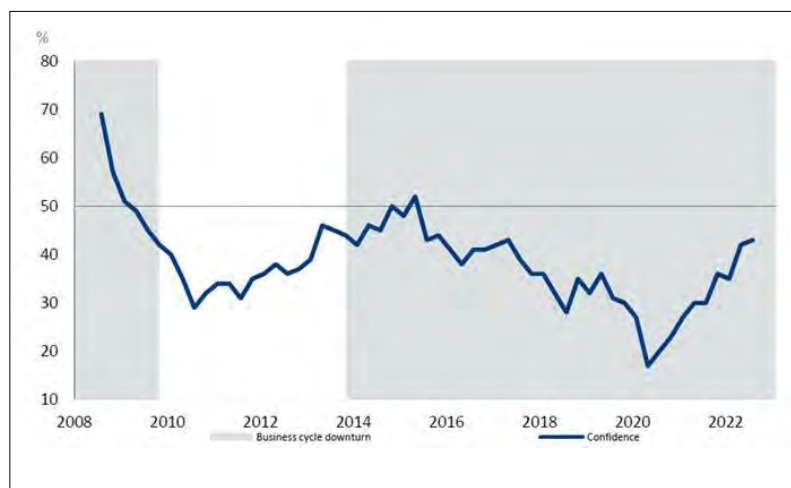
In the general building sector, more than half of the respondents were still dissatisfied by the present business conditions although the level of dissatisfaction is much better than the long-term average. Thus, confidence ticked up by two points to 46%.

Activity was better and is now just above the historic average, yet lower than a year ago, with a continuing shortage of skilled labour. Tendering competition declined to an all-time low – possibly due to more projects going out to tender or fewer contractors tendering for projects.

## A good indicator was that profitability is at its highest since 2018

In the civil engineering sector, confidence continued to rise, reaching a joint highest level in the last four-and-a-half years. This was supported by a significant increase in activity, plus employment and profitability at their best levels since the start of 2021.

Business conditions improved in the third quarter, but expected business conditions worsened, yet are still in line with those since the beginning of last year. Surveyed constraints eased insufficient demand, shortage of skilled labour and supply of building materials: the latter despite supply disruptions, which have improved. Inadequate access to credit declined,



nonetheless, it remains lightly above the historic average. “The civil engineering sector appears to have taken a positive step forward and it is a good omen for the future.” The contractors in the different grades experienced varying outcomes. Confidence in cidb grade 3 and 4, as well as 7 and 8, were well above their historic averages while grade 5 and 6 fared worse.

For grade 3 and 4, activity improved. The constraint for insufficient demand eased, while employment and profitability increased. For grade 7 and 8, a notable improvement in activity and profitability was behind the leap in confidence. Sentiment was at its highest since 2016. The same is true for profitability, albeit coming off a very low base.

For grade 5 and 6, the picture was different. Confidence declined as activity improved, even so, business conditions worsened, profitability deteriorated while tendering competition was keener and access to credit more difficult.

As with the grades, so with the provinces. In the Eastern and Western Cape, confidence fell while it remained unchanged in KwaZulu-Natal (KZN). It nevertheless, it soared in the Gauteng province. In the first two first cases, this was despite an increase in activity while in KZN, the opposite held, and yet confidence remained steady. Insufficient demand eased, possibly indicating healthier order books.

In Gauteng, there was a significant improvement in activity, although off a very low base and merely a recovery from the second quarter this year. Insufficient demand decreased, tendering competition was higher than elsewhere in the country - thus, it is possible that larger contractors are driving activity in Gauteng.

Dladla says: “The overall picture for the construction sector is improving, but there is still a long way to go.”

The cidb is established in terms of the CIDB Act 38 of 2000 to lead the development and transformation of the construction industry. ©

# SAICE'S 2022 INFRASTRUCTURE REPORT CARD

The South African Institution of Civil Engineering (SAICE) launched its much-anticipated 2022 Infrastructure Report Card (IRC) on Friday, 11 November. It reflects an expert view of the institution's reporting on the current condition of a broad range of public infrastructure. The 2022 IRC is the fourth report released by the SAICE and rates the overall condition of South Africa's infrastructure as a D, the lowest rating since the first IRC launched in 2006.



*“We also aim to stimulate debate on the condition of South Africa's infrastructure and its effect on the quality of life and the economy.”*

2023 SAICE President-Elect,  
Steven Kaplan.

2023 SAICE President-Elect, Steven Kaplan, explains that the overall goal of the IRC is to increase awareness and influence change for the better. “We aim to also stimulate debate on the condition of South Africa's infrastructure and its effect on the quality of life and the economy.”

The IRC team, led by Convenor Sam Amod and Research Leader Dr Kevin Wall, analysed large volumes of detailed information, and followed a rigorous process in preparing the IRC. However, being a condition and performance assessment, the IRC does not prescribe remedies to the findings.

Both Amod and Dr. Wall explain that in each IRC, SAICE has progressively widened the scope of its scrutiny. “In this report we introduce fire engineering, information and communication technology (ICT), oil and gas pipelines, and coastal infrastructure, and reintroduce fishing harbours to

the portfolio. Our comments also touch upon the impact of global warming and other environmental factors on infrastructure.”

## The scorecard in summary

The scorecard is based on a simple five-point scale - A (world-class), B (fit for the future), C (satisfactory for now), D (at risk of failure), and E (unfit-for-purpose) and features a snapshot of the current condition and performance of 32 subsectors of infrastructure. These include gradings for:

**Water:** The quality and reliability of water supply has decreased in small towns and rural systems. In contrast, the national water resources infrastructure system has been able to meet the demands for which it was designed.

- Bulk water resources: D-
- Major urban areas: C+
- All other areas: D-

**Sanitation:** (including wastewater) - 16% of households still need improved sanitation.

- Major urban areas: C-
- All other areas: E

**Solid waste management:** A slight reduction in the provision of refuse removal services in urban areas. In rural areas, there is a significant increase in indiscriminate dumping.

- Waste collection in the major urban areas: C-
- Waste collection in other areas: D-
- Waste disposal in metros: C-
- Waste disposal in other areas: D-

**Roads:** The consequences of the widespread underfunding of road maintenance and improvement is cause for great concern.

- National roads: B+
- Paved provincial roads: D
- Paved roads in the major urban areas: D
- Other municipalities' paved roads: D-
- Provincial and municipal unpaved roads: E

**Airports:** The impact of Covid-19 on ACSA and aviation has been severe, leading to significant financial and human resource losses. While aircraft and passenger safety were not compromised during this time, renewal and maintenance were.

- ACSA-owned facilities: B-

**Ports:** Well-developed standards and regulations govern infrastructure condition assessments and the maintenance,

repair, and rehabilitation system.

- Commercial ports: B-
- Fishing harbours: B

**Oil and gas pipelines:** B - The pipelines are inspected and maintained as rigorously as their location permits.

**Rail:** Safety and security have deteriorated quickly, and fewer trains are dispatched yearly due to infrastructure, process, and systems issues.

- Heavy haul freight lines: B-
- General freight lines: C-
- Branch lines: E
- PRASA passenger lines: E
- Gautrain: A-

**Electricity:** Peak demand for Eskom electricity has declined slowly over the last 10 years. It reflects the increasing unreliability of supply, increasing tariffs, and the increasing availability of alternative sources of electricity.

- Eskom generating infrastructure: D-
- Eskom transmission network: B
- Local distribution: D

**Healthcare:** The Ideal Clinic Programme has yielded positive results in some provinces over the past few years.

- Hospitals: D+
- Clinics: D

**Fire:** (no grading available) Municipal fire protection services are inadequate, and public sector buildings are not compliant with fire safety regulations.

**Education:** Dramatically increased student intakes have placed a severe burden on infrastructure. Also, considerable damage is caused by vandalism and student protests.

- Public ordinary schools: D
- Universities: C+
- TVET colleges: D+

**Information and communication technology:** B Although the general condition of physical ICT infrastructure in South Africa is good, theft and/or vandalism is cause for concern.

### The overall grade of South Africa's public infrastructure: D

Factors influencing the gradings include crime and non-payment for services, inadequate infrastructure management and maintenance, and weak institutions lacking appropriate skills and accurate data contribute towards a further decline in the overall infrastructure condition since the last IRC.

However the report indicates that there are reasons for optimism as many managers, professionals and skilled and unskilled workers persevere in their tasks to improve things. While increased access to improved sanitation, drinking water, electricity, and transport have increased. It has placed these systems under immense pressure.

SAICE President Professor Marianne Vanderschuren adds: "We strive to enable our members and the greater engineering industry to provide society with environmentally and economically sustainable infrastructure. We believe that the IRC is the most effective tool the institution possesses to uphold and advance the professional ethics of the civil engineering profession."

She says the institution will avail itself to the government and the public to discuss the findings in the IRC4 and engage developing the best solutions to help South Africa grow forward. Amod and Dr. Wall also express their hope that the IRC report will inform and influence all South Africans about the importance of protecting and enhancing the physical infrastructure that is so critical to daily existence and our common prosperity. "We hope that it contributes to the improved use of infrastructure funding, especially for preventative maintenance. We expect that it will stimulate debate on the matters raised herein by the professionals who grapple daily with meeting the infrastructure needs of a nation." ©





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# Nedbank partners with the automotive industry to drive competitiveness amid turbulence

By Amith Singh | National Manager: Manufacturing

The South African automotive industry, which generates around 18,7% of domestic manufacturing output, plays a significant role in our country's economy, with a GDP contribution comparable to that of mining and agriculture. The 2022 Automotive Export Manual, released by the Automotive Industry Export Council earlier this year, also revealed that vehicle and automotive component exports increased by 18,1% in 2021 to comprise 12,5% of total South African exports.

Unfortunately, the industry has been hit hard by recent global and local events, including global supply chain disruptions and operational levels at South African ports being at well below international standards, further exacerbated by riots and cyberattacks. More recently, the flooding in automotive-intensive KwaZulu-Natal and onerous load-shedding schedules resulted in the manufacturing production figures released for April 2022 showing a substantial decline of 7,8% year on year.

With most of these setbacks hopefully behind us, and efforts being made to stabilise electricity supply and improve the situation at our ports, savvy automotive manufacturing firms should consider the five trends that Deloitte's 2022 manufacturing industry outlook highlighted. With business agility critical for organisations to operate through unprecedented turbulence, the report identifies key strategies to drive competitiveness.

These include embracing technology to create more connected, reliable, efficient and predictive processes; carefully reviewing cyberdefences and resilience in the event of cyberattacks; and closely monitoring the fast-evolving environmental, social and governance (ESG) landscape and adjusting operations accordingly. Proactive approaches to these challenges will help automotive manufacturers mitigate setbacks while creating a competitive advantage.

Nedbank's deep understanding of the manufacturing industry has enabled it to develop tailor-made solutions in this field, making it the expert strategic banking partner to grow its clients' businesses. The bedrock of our manufacturing portfolio is the deep, lasting and value-adding relationships we develop with our clients and key industry stakeholders. These solutions are underpinned by our continuous drive to innovate in our financial and administrative functions, enabling you to take your business to the next level.

Through this profound insight we provide bespoke, innovative financial solutions to help grow our clients' businesses and strengthen their competitiveness in the market. For example, because we know that current macroeconomic challenges coupled with power supply issues lead to having cash flow constraints that could prohibit delivery and growth, we have a range of solutions to mitigate that risk.

Similarly, as the green bank, we offer a comprehensive range of solutions to promote the sustainability of our clients' businesses, giving them the competitive advantage that is so vital in the market.

Our vast experience in global trade enables quicker, more efficient cross-border transactions when importing and exporting, and easy access to funds smooths out cash flow fluctuations between production cycles, enabling clients to take advantage of discounts and bulk offers.

But the real value we offer is our partnership approach, which means clients benefit from a committed partner with industry expertise who will advise on growth, investment and financial strategies based on their deep insight into each client's unique financial situation.

For more information about our specialist manufacturing services, email us at [manufacturing@nedbank.co.za](mailto:manufacturing@nedbank.co.za).

Singh is Nedbank Commercial Banking's national manager for the manufacturing sector. He holds a degree in business management from the University of Cape Town, a postgraduate degree in sales management, and is a qualified Neethling Brain Institute practitioner. He has been in banking for 19 years.

**NEDBANK**



# SUN INTERNATIONAL EXPANDS POPULAR GRANDWEST HOTEL

*Sun International has announced it is investing an initial R122m to increase the size of GrandWest Grand Hotel, currently the busiest in the Group.*

**S**un International's investment is the first phase of a master plan that envisages developing a separate 250-room, 4-star conference hotel at GrandWest.

The Cape Town casino and leisure complex is the largest in South Africa so customer demand to stay at its existing hotel is high. However, for over 21 years the 4-star boutique hotel has operated at a 99% occupancy with its 39 rooms booked long in advance.

The first phase of the new development will add an additional 68 additional rooms to the Grand Hotel, bringing the total to 103.

A sod-turning ceremony to mark the occasion was officiated by the Mayor of Cape Town, Geordin Hill-Lewis and Ndavi Nokeri, Miss South Africa 2022.

Speaking at the event, GrandWest General Manager Mervyn Naidoo said, "Until now we have been unable to market our hotel because it is always fully booked. Having a 99% occupancy would be a happy problem for any hotel, but we look forward to October 2023 when we can welcome even more guests."

The current Grand Hotel is a recreation of an older hotel that used to grace the corner of Adderley and Strand Street, originally built in 1894 and demolished in 1951. When the existing hotel was constructed, architects used a scaled down version of the first Grand Hotel's 100-year old plans.

Naidoo said one of the challenge for architects now has been to keep the extension consistent with the original architectural

plan and style. "Uniquely, all of GrandWest's facades are scaled down recreations of old Cape Town buildings - the much-mourned Tivoli Music Hall (demolished in the 1930s) and the even more sorely missed Alhambra Theatre (demolished in 1970); the Old Railway Station (1905 - 1968); and Cartwright's Corner, that now-vanished Adderley Street landmark."

Sun International's Development and Infrastructure Manager, Anton Steenkamp said, "To respect the existing architectural style the design is based on developing two identical three-story wings positioned symmetrically on either side of the existing entrance and porte cochere, which will remain largely unchanged. A new access road will give visitors direct access to the hotel."

The two new wings will connect the existing hotel on the north and south corners and the new offering will include presidential suites, ordinary suites, double and twin rooms and inter-leading family rooms. A gym, spa and pool are proposed for the ground floor of the southern wing.

According to Steenkamp another enormous challenge for the development team has been adding a new lift and constructing within an active environment as the Salon Privè and existing hotel operations are ongoing. Impact on customers such as dust, noise and vibration has had to be carefully managed.

Naidoo said, "We apologise to all of our hotel and casino guests for the inconvenience, but a year from now when the new hotel is complete, we are sure they will agree that it was worth it." ☺



# COMMERCIAL PROPERTY SECTOR 2022: WHERE HAS THE GROWTH COME FROM?

*Against all odds, the commercial property sector has fought back and is showing positive signs of growth and recovery for 2022. The sector's rebound is clearly illustrated in GrowthPoint's latest financial results, with the company reporting a 8,5% decrease in group vacancies.*

## Why logistics and why the Western Cape?

Rode's Report on the South African Property Market for Q3 2022 detailed a nominal rental growth of 5,3% for spaces of 500 m<sup>2</sup> (compared to Q3 2021). The report further states that the market was boosted by low vacancies and demand for logistics warehousing.

"2020 was a defining year for industrial property and this trend continues. Today, we are going as far as to use industry contacts to secure stock before they are listed," says Cowan.

While there is significant growth and uptake across the country, the Western Cape province has outperformed the rest. "With barely any industrial sites on offer, clients are clamouring for space. This creates a unique opportunity for investors and landlords."

Rode's Report seconds this, noting that 'Cape Town is looking as fresh as a daisy'. "Nominal rentals for prime space of 500 m<sup>2</sup> is up by 6,7% from Q3 2021."

In the office sector, Cowan comments that various companies are relocating their head office to the Western Cape in a sustained semigration movement.

Cowan says that 2022 will forever be defined by some of the largest logistics property deals that the industry has experienced in recent history. "In Gauteng, prominent brands such as Isuzu, Media24 and Crusader Logistics in expanded and found new premises in 2022. In the Western Cape, Truworths, The Foschini Group and Media24 Logistics were some of the frontrunners in securing new premises while in KwaZulu Natal, Zaccpack led the way."

"Deals concluded in this sector equate to north of 500 000 m<sup>2</sup> in 2022. We are pleased to be showing positive growth and I believe that the same can be said for majority of the industry at large," Cowan concludes. ☺

While the sector continues to fight against uncontrollable odds such as inflation and interest rate hikes, Wesley Cowan, Director of Galetti Corporate Real Estate (**pictured**) believes that the industry has weathered the worst of the storm in the short-term. "The industry has transformed over the past few years and we are optimistic about the future."

While high vacancies in the office sector cannot be denied, the logistics property sector is a firm frontrunner and has contributed to a large portion of the sector's growth for 2022. "Demand from the logistics property sector for warehousing and vacant land in industrial areas is leading the way," he comments.

"Interestingly, there are few vacant industrial premises on offer – particularly in the Western Cape - giving rise to a seller's market." Cowan adds that the major uptake in space can be largely attributed to the growth of eCommerce. "As an example, Takealot.com has acquired an additional 35 000 m<sup>2</sup> of space and has extended its existing premises by 15 000 m<sup>2</sup>."

Property developers have also noticed the uptick and are cashing in. "While developers still welcome the opportunity to develop warehouses for a confirmed tenant, there has been a notable upsurge in the development of speculative warehouses, and developers are filling these successfully prior to completion."

*"With barely any industrial sites on offer, clients are clamouring for space. This creates a unique opportunity for investors and landlords."*

# SUSTAINABILITY FOR THE NEXT CENTURY: LOOKING BACK TO MOVE FORWARD

*The idea of sustainability has evolved a lot since Royal HaskoningDHV started operating in Southern Africa 100 years ago. By Keketso Motjuwadi, Sustainability Lead for Southern Africa at Royal HaskoningDHV.*



Initially, it was all about the environment, recycling, and reusing. But sustainability has evolved over the century to encompass aspects both natural and built, philosophical and practical and the relationship between them all. Sustainability has become a

buzzword since its popularisation in the early 2000s. Due to the frequency and looseness of its use, it means different things to different people. People have become sceptical and fatigued by the concept at a time when we should be rallying behind the global effort to take responsibility for humanity's actions.

If we're to achieve true sustainability, we need a different mindset and inclusive approach.

## Looking back to move forward

When it comes to adaptation and mitigation, the buck gets passed around between industry, government, and the consumer. Ironically this manner of linear thinking mimics the interdependent connections of the global network.

In the past, people, planet, and profit were seen to be connected linearly, but social inclusion, economic growth, and environmental protection are all more complexly interconnected.

We need to start recognising these inter- and intra-relationships because true sustainability is about achieving balance: Industry requires government

funding, consumer revenue, and regulations to advance. Governments require industry innovation and public buy-in to economically support these innovations. And consumers need more information on products and more sustainable options.

## A balanced way to think about sustainability

Let me be clear, we all have a role to play.

## It is in businesses' best interests to operate within a sustainable framework

Companies can make intentional changes to their products, services, and processes to generate long-term social and environmental benefits while still generating profit, rather than simply offsetting their negative impacts.

Engineering firms are no different – we must advocate for sustainable innovation in all projects, going 'beyond the brief' and educating collaborators and stakeholders on the benefits of approaches like nature-based solutions and biomimicry. There is no shortage of inspiration from nature, and seeing is believing. Once people begin to see the benefits for themselves, they will be motivated to change their perspectives.

## It is the responsibility?

Investing in sustainable practices often takes a back seat in public sector planning because there are always other, more "visible" challenges competing for attention, such as ageing water infrastructure, service delivery backlogs, and – in South Africa – an electricity sector in crisis.

## ENVIRONMENTAL ASSESSMENT HAS A MAJOR IMPACT ON CONSTRUCTION PROJECTS

*As the legal tussle between Amazon and local government in the Western Cape shows, there is no doubt that erecting a building involves a great deal more than merely organising a labour force, permits and meticulous project management. Added to the mix is the Environmental Impact Assessment (EIA) tool and in fact, this has the power to make or break deals in commercial enterprise construction says Morag Evans, CEO of Databuild.*

At the heart of the EIA tool is sustainability. The EIA tool is a mechanism by which stakeholders in the building construction industry can effectively identify and evaluate the impacts of a potential construction project. Of equal importance is the tool's second function – based on a comprehensive critique of the positive and negative

impacts, it enables stakeholders to develop plans to mitigate risks and secure the benefits.

EIA comes into play the moment a project is identified as likely to have a significant effect on the environment. One of the major benefits and justifications for the EIA tool is that it helps to manage the resources required

However, the public sector has demonstrated that policy changes can be made relatively quickly when there is an urgency to do things differently. President Cyril Ramaphosa recently announced the government's new energy plan, which aims to accelerate the procurement of new generation capacity, increase private investment in generation, and enable businesses and households to invest in rooftop solar.

Governments should also cultivate stronger relationships with the private sector, which is ready and willing to execute on the ground.

It's interesting to note that although 75% of countries view climate change as their biggest threat, 64% believe many of the world's problems can be solved by working together and learning from other countries. Teamwork makes the dream work, anyone?

A perfect example of this in engineering is the International Water Association's (IWA's) Digital Water Programme, which aims to facilitate the journey of the water industry towards digital uptake through access to knowledge and best practices on the application of digital approaches to improve water utilities' capacity and performance.

### **Technology is not the silver bullet many believe it to be**

Artificial intelligence (AI) and digital twins can do much of the thinking that humans have traditionally done to solve sustainability challenges.

It has the potential to accelerate global efforts to protect the environment and conserve resources by detecting energy emission reductions and CO<sub>2</sub> removal and by assisting in the development of greener transportation networks, monitoring deforestation, and predicting extreme weather conditions. And Digital Twins assist us in making smart decisions about infrastructure investment.

But humans will ultimately be responsible for deciding which solution best fits the context and for implementing it.

We must not, however, forget that technology doesn't work on magic. It interacts with the natural environment: Massive volumes of water are required to

for the project and channel these resources effectively to address core issues that may or may not arise. These include pollution, demolition or destruction of natural habitat and much more.

Evans explains that as is the case with any system, there are strengths and weaknesses that stakeholders need to be aware of. In the building construction industry, there is a fine line between right and wrong, and ignorance can be very costly.

"Our market research shows that irrespective of where your interests lie in building construction, it is all a balancing act really. We've noted strengths linked to EIA as being that it is relevant and applicable to all sized projects, it helps to set the right foundation for a project in terms of eco-consciousness, socio-economic impact and other critical factors, and it is a public demonstration of intent – companies who prescribe and apply the assessment show that they have more than the bottom line in mind," says Evans.

However, there are pitfalls, warns Evans. "It is

cool data centres, and blockchain is energy-intensive and contributes to greenhouse gas emissions.

Building Information Modelling (BIM) and Digital Twins provide virtual mirrors of real-world assets and systems, providing insights into how the system behaves and responds under various simulated conditions.

These ecosystems increase efficiency, reduce costs, and enable engineers to create more informed solutions to today's major societal and environmental challenges.

### **More conscious of decisions**

Hyper-consumption is arguably among the most significant obstacles to sustainability.

Our decisions have consequences. Long-term sustainability will be impossible to achieve unless human behaviour changes dramatically.

When I find myself overwhelmed as a single person in the global push toward a more sustainable and equitable society, I am reminded of a quote from David Mitchell's *Cloud Atlas*, "What is an ocean but a multitude of drops?"

### **Join the movement**

After 100 years of enhancing society together with our clients and stakeholders, we've learnt two things: History repeats itself, but humans have a short memory.

We don't have to look too far back into history to find things we've forgotten about, such as Day Zero in Cape Town, floods in KwaZulu-Natal, and drought in the Eastern Cape. Even after devastating events, we move on relatively quickly—especially if we are not directly impacted or affected.

Floods and droughts will occur again, becoming more frequent and severe. And unless we begin to take sustainability seriously and change how we do things across all areas, we will become increasingly ill-equipped to deal with and recover from the effects of living unsustainably.

Businesses, governments, and engineering firms are made up of citizens, of you. You, who can shift the narrative of your organisation and effect change. You have a say in leaving a legacy to be proud of.

We've already begun. Join. There is space for everyone. ☺

interesting to look at a website like Bizfluent.com, which lays out nicely for browsers what it feels are the good points and what are the pain points. For example, the website offers a detailed description of how much the system relies on technical information and that EIA spells delay for any project of any size, at any phase."

An EIA is a process, which means that it requires due diligence and complete evaluation is required for the whole undertaking to mean anything. There are a number of online resources that outline the relevance of due diligence, evaluation and follow-up. Tandfonline.com offers the reader a thorough perspective in terms of independent verification and outlines an interesting argument under the heading "EIA follow-up frameworks that may influence independence requirements of verifiers".

Evans adds that with so much at stake and so many stakeholders involved, it is essential to have a clear strategy and environment conducive to negotiations and mutual benefit. ☺

# CONCOR PROTECTS PLANTS AND WILDLIFE AT MSIKABA

*One of the most spectacular civil engineering projects currently underway in South Africa is the Msikaba Bridge near Lusikisiki in the Eastern Cape. A 580 metre long cable-stayed structure, it spans the 198 metre deep Msikaba Gorge and will rank as the third highest bridge in Africa after the Bloukrans Bridge and the still-to-be-built Mtentu Bridge. Both Msikaba and Mtentu form part of SANRAL's N2 Wild Coast project.*



**W**hile construction of the Msikaba Bridge has presented multiple technical challenges to the contractor, the CME JV (Concor – Mota-Engil Joint Venture), the project is also involving a range of measures designed to protect the natural environment which will set new standards for the civil engineering industry.

“Part of our work, in collaboration with the environmental consultants, Simply Enviro JV, has involved an ambitious plant search and rescue programme, which has seen 14 788 plants being rescued,” says Bruce Paul, Concor’s Group Environmental Manager. “They were relocated to two on-site plant nurseries, will be monitored for several years and then re-planted within carefully selected ‘no-go’ natural areas within the vicinity of the bridge which would not be affected by construction activities.”

He stresses that care was taken to ensure that all plant species requirements were considered and that plants were only relocated to habitats that matched those where they were found.

Protected and endangered species to benefit from the programme include Stanger’s cycad, the forest cycad, the Oribi spear-leaf conebrush, the bugle lily, the fence aloe and the mountain vygie.

A colony of rare Cape vultures – between 170 and 190

breeding pairs that regularly nest in the cliffs of the gorge – also needed to be protected. The Cape vulture, also known as the Cape griffon, was listed in 2015 as a regionally endangered species and the Msikaba colony has been identified by experts as a conservation priority in the Eastern Cape. “We had to make sure that we did not unduly disturb the breeding pairs and special care had to be taken to ensure there were no chicks in the nests during blasting,” says Paul. “We monitored the colony over a period of a year while blasting for the roadworks and bridge foundations was in progress. No disturbance of the colony was observed, indicating that the control measures implemented were very effective.”

Concor and its partners also had to remove and relocate many snakes, both venomous and non-venomous, encountered at the site. The most common snakes to be relocated were puff adders, night adders, boomslangs, twig snakes and spotted bush snakes.

“Rarely have we been involved in a project where such a range of natural flora and fauna has to be protected on a single site and we are extremely happy with what has been achieved thus far,” says Paul. “The project provides an excellent example of how construction can be carried out responsibly, even in the most environmentally sensitive areas.” ©

# SLEW OF TOP ACCOLADES FOR ZUTARI IN 2022 AS IT CELEBRATES ITS 90<sup>TH</sup> ANNIVERSARY

*Celebrating its 90<sup>th</sup> anniversary, leading consulting engineering and infrastructure advisory firm Zutari has received accolades from some of the leading professional associations in South Africa throughout the year. “This recognition from the industry and our peers is important to us as it underpins our theme of ‘impact engineered’. There is no way Zutari would have won these accolades alone as such projects are always team efforts. These awards are also a testament to the hard work and collaborative spirit between our employees and our clients,” comments CEO Teddy Daka.*

At the 50<sup>th</sup> CESA Aon Engineering Excellence Awards, Zutari won in the category of Projects with a Value Between R250m and R1b for the TASEZ Cluster 2 Ford Frame project. The Ford Frame hub is a 100 000 m<sup>2</sup> facility that consolidates offices and warehouse space for Ford and its suppliers, as well as a chassis E-coating, waxing facility and assembly line. Zutari was appointed Structural Engineer for the building.

It also racked up the much coveted for Best International Project award for the Golomoti Solar PV and Battery Energy Storage project in Malawi. This the first utility-scale, grid-connected hybrid solar and battery energy storage system in sub-Saharan Africa. As Engineer, Zutari was extensively involved throughout site identification, concept development, tender development/procurement, preliminary design and detailed design through to project execution. Golomoti also received a Commendation in the Engineering Technology and Innovation category.

In the category of Projects with a Value Between R50m and R250m, Zutari sealed another win for the RMB 8 Merchant Place project. Identifying the need to improve the quality of its employees’ work-life balance, private bank RMB consolidated various employee well-being offerings into one integrated lifestyle facility building within its existing Merchant Place Campus in Sandton. The building was awarded a 4 Star Green Star certification under the Public and Education Building scheme of the GBCSA. Occupants’ health and well-being and optimal building performance are central to the design of the building.

Various Zutari employees were winners at the SAPOA Property Awards for Innovative Excellence 202 on 29 September: Jaco de Villiers in the Commercial Office category for 35 Lower Long Enriching the Foreshore, and in the Mixed-Use category Bridgewater, Century City, and Brandon Huddle and Yovka Raycheva-Schaap in the Interiors category for the Anglo American Head Office.

At the 21<sup>st</sup> Construction World Best Projects Awards on 9 November, Zutari received a Special Mention in the Civil Engineering Contractors category for the Omaruru

River Bridge project in Namibia. It also received a Special Mention in the AfriSam Innovation Award for Sustainable Construction for RMB 8 Merchant Place. The Golomoti Solar PV and Battery Energy Storage Project in Malawi was declared winner in the Consulting Engineers category.

Zutari also won the Best Project Award 2022 for Clairwood Logistics Park from the Geosynthetics Interest Group of South Africa (GIGSA). The application of geofoam as a lightweight fill solution for road construction at the site in Durban is a first for South Africa. In addition, Zutari provided a unique geocell solution for the founding and pavement design of the container yard. The success of these innovative solutions was through close collaboration between the design team, client, contractor and all stakeholders.

Zutari’s Business Communication Team regularly engages in opportunities where its work is evaluated against global best practice standards. It recently received two Awards of Excellence from the International Association of Business Communicators (IABC). These achievements signify its adherence to global standards and best practice communication principles.

Zutari’s ability to achieve all these outcomes is primarily a result of the trust clients place on the firm to come up with impactful solutions. “We know our markets are constantly changing, and we know the needs of our clients are constantly changing – which is why we cannot afford to not continuously evolve and grow.”

In the past, engineering focused mainly on the design and construction of assets. Zutari deliberately connects assets to strategy for improved decision-making. “We see better results when the designer of an asset advises clients how to plan, operate, optimise and repurpose their assets,” says Daka. Over the last 90 years, the company has demonstrated strong resilience and impressive agility to constantly reinvent itself. “Congratulations to all the winners and everyone who worked on these exemplary projects, often under difficult and challenging conditions,” concludes Daka. “We remain humbled by this recognition.” ©

# DBI CONSULTING IS A STANDOUT IN THE INFRASTRUCTURE ADVISORY MARKET



*The infrastructure consultancy market is not sufficiently differentiated, according to DBI Consulting MD Monty Ditibane, Pr Eng (Tech), B Eng (Civil), MBL. Ditibane is an entrepreneur in the infrastructure, engineering services, energy, finance and technology sectors and founder of a range of engineering and technology businesses. “Our vision is to build a Tier One infrastructure consultancy that will outlive the founders and influence and effect change in the country,” he asserts.*

DBI Consulting was established as a fit-for-purpose, Pan African business aiming “to change the lives of people on the ground and anchor sustainability.” Ditibane notes this entails a major responsibility for management and is not to be taken lightly. “The current situation is that any person who acquires professional engineering status can open a consulting engineering firm,” he notes.

“In order to differentiate ourselves in the existing market and also to complement it, we strive to create simplicity, add value for our clients and use time as a competitive advantage in terms of delivery,” says Ditibane. Another key differentiator is DBI Consulting’s extensive footprint in all nine provinces.

“While it is important not to reinvent the wheel, there are a lot of inefficiencies at the local government level that we can eliminate by forging strategic alliances with the nearly 300 municipalities in the country,” adds Ditibane. “Our differentiated approach to infrastructure consulting is therefore maintaining a highly networked business.”

An existing gap that DBI Consulting looks to fill is in the arena of turnkey solutions. “This allows us to be the owner’s or client’s advisor and implementing agent at the same time,” notes Ditibane. While it entails high risk, the opportunities presented are commensurate. “We like to think we are wired differently in this regard as it allows us to perceive opportunity that the rest of the market is blinkered to.”

In terms of inhouse capabilities, DBI Consulting offers project management and planning and value engineering and pre- and post-feasibility studies, including bankability. It also has specific skillsets in civil, structural, electrical and mechanical engineering, geotechnical, water, transportation and geoscience. More specialised or non-core services are outsourced, including quantity surveying, cost management, architecture and instrumentation and automation.

“Our main value proposition is that we offer our clients genuine value for money because we are such an agile business. We are not stuck on tariffs and can adjust to the client’s affordability level if it addresses the risk profile for all stakeholders.

That is a unique selling proposition for us in the market.” Ditibane explains that if a project is deemed unviable, DBI Consulting can conduct its own risk modelling and assessment. “If the indicators on the risk profile do indeed reveal that such a project is feasible, we will commit to it.” Here the main benefit for clients to entrust their projects to the company is its accountability to its own delivery mandate.

“We pride ourselves on being the best communicators in the market as we can flag any problems that may arise at an early enough stage so they can be mitigated successfully. We are even able to communicate problems on the fly and walk the client through the entire spectrum of potential solutions. This means there is a huge level of confidence between us and our clients.”

Despite ongoing challenges such as tight margins and non-payment, DBI Consulting still delivers on its value proposition. “The fact that we have consciously diversified the business means that our own risk profile has been reduced,” stresses Ditibane. “We are not orientated towards specific clients or sectors but are multi-sectoral and capable of participating in all market sectors.”

This includes a regional focus as well, with DBI Consulting’s reach extending as far afield as Zimbabwe, Zambia, Democratic Republic of Congo and Namibia. “Being able to diversify and expand is essential. We can guarantee our value proposition to our clients because at the end of the day our risk is so highly diversified.”

Looking to the future, Ditibane says his vision is to transform DBI Consulting into an IPO-ready business within a decade. “We will decide upon listing when we reach that point, but first we must ensure we have end-to-end systems in place to drive the business forward,” he concludes. ©

*“We are not orientated towards specific clients or sectors but are multi-sectoral and capable of participating in all market sectors.”*

# GROWING RIGHTS FOCUS ON DUE DILIGENCE FOR LENDERS

*After more than a decade since the United Nations Guiding Principles on Business and Human Rights was ratified, the impact of mining and other industrial projects on human rights has become a centre-stage risk for financial institutions. By Vassie Maharaj and Dr Vidette Bester, SRK Consulting.*



Beyond a general concern with how the private sector upholds human rights as part of its environmental, social and governance (ESG) commitment, the issue is increasingly pinpointed in due diligence studies and impact assessments. The studies we conduct often require a ‘deep dive’ into the question of human rights.

Many segments of society have become increasingly mobilised around human rights, labour practice, environmental compliance and anti-corruption measures. This has raised the potential for stakeholder concerns to boil over into the serious disruption and delays, and even collapse of projects.

It is little surprise, then, that lenders are today much more alive to a slew of human rights-related risks that project developers must carefully analyse and mitigate. A key aspect of identifying and addressing these risks is stakeholder engagement. This is seen, for instance, in the Global Industry Standards on Tailings Management (GISTM), which was fast-tracked in response to the catastrophic tailings dam failure in Brumadinho, Brazil in 2019.

The very first principle in the GISTM requires mining companies to respect the rights of project-affected people and meaningfully engage them at all phases of the tailing facility life cycle. Engagement with communities and other stakeholders – to really hear their voice – has become a vital element of respecting human rights.

Aspects like gender equality were gaining importance in the sustainability space. These concerns relate, for instance, to the reality of women often having less secure land rights. This makes them particularly vulnerable to land grabs, eviction and dispossession that are still associated with some large-scale developments in the extractives and agricultural sectors.

Any injustices in the treatment of project-affected people can raise warning flags about the project’s lack of sustainability – or at least certain strategic weaknesses.

These are, of course, of great concern to everyone who wants the project to succeed, including funders – for whom there are considerable financial interests at stake.

A human rights focus is not new to environmental and social impact assessments (ESIAs).

In many ways, people’s rights have always been embedded in our work as ESIA practitioners. When looking at environmental impacts such as water quality, air emissions or noise pollution, we consider how these will impact people’s health and basic needs – essentially their rights.

Lenders will frequently require SRK to include an in-depth

assessment of human rights impacts within a due diligence or other study or review. One of their growing concerns is the reputational risk related to borrowers’ non-compliance with key industry benchmarks like the UN’s Guiding Principles and the International Finance Corporation (IFC) performance standards.

Among the foundational principles of the UN’s Guiding Principles is that business enterprises should have in place policies and processes appropriate to their size and circumstances. These would include a policy commitment to meet their responsibility to respect human rights, and a human rights due diligence process to identify, prevent, mitigate and account for how they address their impacts on human rights. There should also be processes in place to enable the remediation of any adverse human rights impacts that a business causes or to which it contributes.

The growing focus on human rights goes well beyond the operational realm into the project’s entire upstream and downstream supply chain, said Dr Bester. In Europe, the RE-SOURCING initiative is already paving the way for a common understanding about responsible sourcing between mineral producers and their Europe-based customers.

This project, in which SRK is involved, arises from decades of global concern about issues like child labour, slavery and unethical behaviour in the mineral supply chain. RE-SOURCING strives to promote both strategic agenda setting and coherent application of practices for responsible sourcing.

This work links strongly to lenders in the mining sector, for example, as there are minerals like cobalt that are increasingly important to the future of battery and renewable technology. With concerns about human rights in the artisanal mining sectors of countries like the Democratic Republic of Congo – where much of the world’s cobalt is mined – lenders to mining projects need to be fully informed about how projects plan to deal with these issues. ©

# AECOM NOTCHES UP INDUSTRY AWARDS AND ACCOLADES



*Duard Erasmus was Highly Commended in the Young Technologist category, SANRAL SAICE 2022 Awards.*

*Globally trusted infrastructure firm AECOM has received various awards and accolades from some of the leading professional associations in South Africa. This is testament to its multidisciplinary approach and capabilities. “I do not think anyone else has the breadth of services and expertise that we have, which stands us well in delivering sustainable legacies for our clients,” comments Africa MD Darrin Green. “We believe that infrastructure creates opportunities for everyone.”*

At the SANRAL SAICE 2022 National Awards on 1 September, Duard Erasmus was Highly Commended in the Young Technologist category. Erasmus is currently an Associate Technologist at AECOM in the structural engineering division and manages the Bloemfontein office. He has overseen many largescale and diverse projects, including Stadia Olympia Lepereng (SOLL) and Skyvest.

At the 50<sup>th</sup> CESA Aon Engineering Excellence Awards on 28 September, Tim Ter Haar was recognised for his contribution to the development and promotion of the consulting engineering industry with the Lifetime Industry Achievement Award, presented to him posthumously. It was with great shock that last year the engineering industry tragically lost a well-respected member with the untimely passing of Tim on 18 May 2021 at the age of 52.

The citation stated: “We do not just want to honour the memory of a dear colleague with this Lifetime Industry Achievement Award, but for it to showcase an incredibly dedicated engineering career and use it to inspire young engineers and how they can make a difference in this valuable and rewarding industry.”

Green adds: “Tim was a leader, colleague, mentor and friend. He was a valued member of AECOM for almost 30 years and his contributions to the business, as well as to the industry, were vast and influential.”

In the category of Projects with a Value Between R250m and R1b, AECOM received a commendation for the Rehabilitation of 13,4 km of Trunk Road 31 2 from Ashton to Montagu through Cogmanskloof, including the New Ashton Arch Bridge, for the Western Cape Government’s Department of Transport & Public Works, Roads Branch. The latter also received an award for Visionary Client of the Year.

The project aimed to reconstruct parts of the Trunk Road 31 Sections 2 and 3 from Ashton to Montagu, start of the important tourism Route 62, with more than 8 000 vehicles travelling through Ashton and 4 000 vehicles through

Cogmanskloof Pass toward Montagu every day.

Traffic and pedestrian safety were enhanced and the flood capacity of bridges and resistance of the overtopping of the road at several problem locations were improved. This included upgrading the historic Cogmanskloof Pass, originally completed in 1877 by the renowned road engineer Thomas Bain. The New Ashton Arch is South Africa’s first concrete tied arch bridge constructed using a transverse launching method. The uniquely constructed bridge also won two Fulton Concrete Awards 2022 earlier this year.

At the *Construction World* Best Projects Awards on 9 November, AECOM was highly commended in the Consulting Engineers category for upgrading of National Route 7 (N7) Section 1 from Atlantis south to Kalbaskraal (Phase 2). Undertaken by the South African National Roads Agency SOC Limited (SANRAL), it links Cape Town with the international Namibia border towards the north.

The entire section of the N7 in the Western Cape between the Melkbos Interchange just outside Cape Town and the town of Malmesbury has now finally been upgraded to a dual carriageway freeway in line with recommendations made in various traffic studies done. This section of the N7 was divided into three project phases, with AECOM the successful bidder for all three consulting engineering services appointments.

AECOM has capability in architecture, electrical, ICT, plumbing, structural and mechanical engineering, civils, cost management and control, quantity surveying, building fitout and control systems, geotechnical engineering and even environmental and sustainability advisory services.

“We are truly a kind of one-stop shop, which I do not believe anyone else can lay claim to locally. We are strong in each of those disciplines. A multidisciplinary approach is critical to large, complex infrastructure projects such as the ones recognised by our peers,” highlights Green. AECOM also has access to global expertise and best practice. ☺



# 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, Principal Engineering Geologist at SRK Consulting (pictured), 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. ©



## THE SLOPE STABILISATION AT SIR LOWRY'S PASS

*This civil engineering construction project involved the stabilisation of cut slopes on the eastbound side of the N2, Section 2, between km 12,06 and km 12,31, at Sir Lowry's Pass, near Somerset West in the Western Cape.*

The design was undertaken by Zutari's Cape Town geotechnical and highway teams and Naidu Consulting were appointed to oversee the project management and construction monitoring aspects.

Civils 2000 of Cape Town partnered with GeoCiv (formerly Mega Pile Inland) to form the C2KMPI Joint Venture. These teams brought more than 50 years of combined experience to the project.

The scope of works included the stabilisation of 250 m of road cutting on Sir Lowry's Pass. The 13 m high cuttings were unstable and there had been many instances of rock falls endangering the passing traffic.

The existing road accommodates two lanes in each direction and was reduced to one lane in each direction to provide working space during the soil nail drilling operations. The work zone was further protected by concrete NJ barriers with access into the work zone strictly controlled by the dedicated traffic management subcontractor.

The initial activities involved the clearance of alien and loose vegetation and debris from the work faces and the barring down of loose boulders and rocks from the cut faces. The drilling and installation of soil nails and small diameter drain pipes followed and was completed by Civils 2000's JV partner, GeoCiv.

Once the soil nailing had been completed GeoCiv moved offsite and Civils 2000 continued with the construction of 100 m of 2 m high gabion in Zone A along the toe of the slopes, 90m of gabion buttresses ranging in height from 11 m to 13 m. GeoCiv installed and grouted 84 15m long soil nails and 488 10m soil nails.

The work was completed by the construction of a stone pitched open drain along the top of the slope to intercept runoff, the installation of drainage chutes, channels, and drainage structures and the revegetation of areas damaged by the works.

This project presented several unique challenges in that the existing road width had to be reduced to achieve the drilling and yet traffic flows were to be maintained during the works. In addition, the nature of the work required thinking 'out of the box' to solve the problems of access to high steep slopes and working on the slopes in dangerous elevated positions while eliminating risks to those below, including traffic. These challenges were met and the project completed very successfully.

### Construction Innovation Technology

The removal of loose boulders from the upper reaches of the slopes presented a challenge because access and the safety

concerns. Access was difficult due to the steep terrain and because there are no access tracks above the cutting. An innovative solution was arrived at by employing rope access experts. Establishment of access scaffolding from road level to the upper slopes provided access to the top of the cuttings where abseiling lines were installed. Catch walls with water barriers were installed along the mountain ridge. The climbers were able to hook into the lines and descend to the cut faces where they dislodged the loose boulders and material.

To enable construction of the stone pitched drains high up the slope we utilised a cargo netting system to transport two tons of gabions stone at a time to a height of 36 metres from the road surface and up 20 metres away from crane.

To assist with the requirements of 24-hr traffic management the traffic accommodation team utilised Dashcam video devices to capture a full record of traffic conditions on site at all times.

### Corporate Social Investment

SANRAL are committed to promoting the sourcing of local services and the participation of women and youth through subcontracting, training and employment on road construction and maintenance projects across South Africa. To assist that process SANRAL provided a 14-point plan for structured engagement with stakeholders and local communities. In addition, both Civils 2000 and GeoCiv both have substantial experience of working with local communities and the site management team worked with an existing local project liaison committee (PLC) and project liaison officer to identify opportunities for local SMMEs and job opportunities.

For this project a two-month mobilisation period was provided by the client at the beginning of the project to allow time for engaging with the local communities, negotiating work packages with local SMMEs and appointing workers.

Despite this contract requiring a large proportion of the work to be done by specialists a number of jobs were created with 40 people from the local Sir Lowry's Village and Lwandle communities employed (17 female, 23 male), of which 28 were youth appointments.

Another positive contribution to the upliftment of the local labour force was achieved by first undertaking a skills assessment from which training needs were identified and a structured skills development plan put into action. Training was provided for flag-persons (17), banksman (1) and three workers were given training in first aid, basic firefighting and the responsibilities of health & safety representatives. In addition to this training Civils 2000 sent five 'Go for Gold' students on first aid and health & safety representative training courses.

SANRAL provided further training opportunities for the local community through onsite training in environmental aspects by the Environmental Control Officer (ECO), providing first aid training (8), basic firefighting (10), stone pitching (12), brush cutter operations (11) and arranged for 12 places on a 'Manage Personal Finances' training course.

For local SMMEs five subcontract work packages were tendered by Civils 2000 and approved by the client for award. These five work packages were successfully completed by two 100% black female owned SMMEs, two 100% black owned SMMEs and a 51% black owned SMME.

Ultimately 29% of the contract spend went to targeted enterprises and 6% to local labour, exceeding the Client requirements.

### Design Innovation

C2KMPI JV were not required to carry out design of any permanent works. Designs required were for temporary works only although the large access scaffolding was significant and risks from strong winds and falling risks presented some challenges to the scaffolding supplier.

### Consideration of Environmental Impacts

SANRAL appointed an Environmental Control Officer (ECO) who conducted frequent environmental site audits and monitored the impact of construction activities and compliance with statutory requirements. In addition to these duties the ECO also trained workers on various environmental aspects including environmental impacts (actual or potential) caused by work activities and prevention and mitigation measures.



C2KMPI JV appointed a project Designated Environmental Officer (DEO) from Civils 2000 to monitor environmental impacts and ensure implementation of the requirements of the EMP. The DEO prepared environmental method statements addressing environmental aspects and impacts of the construction work and developed impact prevention or mitigation measures to apply to the construction activities. The DEO then ensured controls were in place for waste generated by the construction activities and site offices, use of construction water, the impacts of vehicles and construction plant, erosion following site clearance and excavation, water pollution from runoff, preparation of an emergency procedure for controlling spills, maintenance of spill containment kits, and monitoring noise and dust from the drilling rigs.

### Health & Safety

The risks from rock falls, falls from elevated positions and live traffic were well managed on site. Ultimately only one medical injury case was recorded and 20 motor vehicle accidents -17 inside road closure, 3 outside lane closure and of the 20 recorded as MVA, 3 of these were in fact truck breakdowns.

### Time, Cost and Quality

The initial contract duration was extended due to additional work required towards the end of the contract. The critical path for this project initially flowed through the soil nailing operations and subsequently the construction of the gabion buttresses. Projected completion of 29/07/2022 was pushed out slightly to 02/08/2022 due to physical site constraints and the road was fully open by 12/08/2022.

The Civils 2000 quality management system was adopted by the JV teams and applied to the site works and construction management processes for the project. A Quality Plan was developed for the project and approved by the Engineer. The basic approach involved development of detailed method statements for each activity.

Quality control inspections were undertaken and the completed work inspected by the RE for acceptance on behalf of the client.

### Risk Management

The project risks were addressed prior to commencement with a full risk assessment and determination of mitigation measures developed. A risk register was prepared and the risks to achieving the required milestones and standards, health, safety, environment and the achievement of the employer's considered by the site team.

With a pre-construction ADT of 14 566 vehicles per day the disruption to and safety of road users was a major risk and the provision of concrete NJ barriers ensured the live lanes were kept clear and vehicles were not at risk of being struck by boulders. Rock falls and debris coming off the slope and endangering the safety of workers and road users or causing damage to vehicles and construction plant.

The stability of the existing slopes was a risk uppermost in the site team's assessment of risks and the Engineers had identified problem areas in three of the five construction zones.

With the N2 to remain open to traffic at all times, albeit with occasional lane closures, the possibility of slips and rock falls from the slopes was a significant hazard and the risk to passing traffic was monitored throughout the project. Working space, particularly for the telehandlers, MEWPs and the soil nailing rig, was a concern however SANRAL permitted a lane drop to provide working space for this particular activity. This caused some traffic delays but these were well managed by the specialist traffic control subcontractor.

The varying nature of the in situ material in the cut slopes also meant that runoff due to heavy rainfall had to be closely managed. This was achieved by cutting temporary interceptor drains along the top of the two cut slopes in the position of proposed permanent concrete and stone-pitched cut-off drains. The team was lucky with the weather and this risk was not fully realised.

Strong winds were a constant issue for the site teams and protocols were enforced to ensure site staff exercised care at all times, especially in exposed positions on the slopes.

Working at heights, particularly when barring down loose material was a significant risk but the installation of life lines and the rope access team meant the risks were mitigated to acceptable levels. ☺





**PROJECT INFORMATION**

**Client:** SANRAL

**Start date:** 26 October 2021

**End date:** 2 August 2022

**Main Contractor:** C2KMPI Joint Venture

**Project Manager:** Naidu Consulting

**Consulting Engineer:** Zutari



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## MSIKABA ADVANCES ON MULTIPLE FRONTS

*Construction of the Msikaba Bridge near Lusikisiki in the Eastern Cape – which started in earnest in late 2019 – continues to make good progress. The bridge’s four huge anchor blocks are now nearing completion, over 50% of the concrete for the bridge’s two 127 m high pylons has been poured and the complex deck construction phase of the project is about to start.*

**O**n the safety front, the project has a superb record, with 3 million LTI-free hours being notched up on 21 October 2022. This is a major achievement for a technically demanding project which has a large workforce (more than 500 people currently), who have mainly been recruited locally and who, for the most part, had no formal sector work experience of any kind prior to recruitment.

The Msikaba Bridge, which forms part of the South African National Roads Agency Limited’s (SANRAL) N2 Wild Coast project, is being constructed by the CME JV, a partnership between Concor and MECSA, both 100% black owned Grade 9CE South African construction companies. Along with the still-to-be-built Mtentu Bridge, Msikaba – which will span the spectacular 198-m deep Msikaba River gorge – will drastically cut travel times for vehicles travelling between the Eastern Cape and KZN with the time saving being up to three hours in

the case of heavy freight vehicles. Commenting on the Msikaba Project, Concor’s Laurence Savage, who is Project Director, says “the cable-stayed bridge, which will contain 48 500 m<sup>3</sup> of concrete and 2 900 tonnes of structural steel, is probably the most complex structure of its type ever to be built in South Africa and probably in Africa, and particularly when you understand the remoteness and logistical challenges faced in an environment where two weather systems confluence resulting in substantial wind challenges.”

“Msikaba will be a truly iconic structure,” he says. “At 580 m in length, it will be the longest cable-stayed bridge – in terms of main span – in Africa and it will have the second longest main span of any bridge on the continent. At 192 m above the floor of the gorge, it will also rank as one of the highest bridges in Africa, only exceeded by the Bloukrans Bridge at 216 m and, once it is completed, Mtentu at 223 m.” Cable-stayed designs



*A view from the South pylon across the Msikaba Gorge to the North pylon.*



*A view over the South pylon.*



*Steel fixing of the bifurcation lift soffit slab in October 2022.*



*A bird's eye view of the steel fixing on the bifurcation lift soffit slab.*

are well-known for making aesthetically pleasing bridge structures and Msikaba is no exception. As Savage says, “The bridge, which will accommodate a dual two-lane carriageway, has an extremely slender design which will make it very pleasing on the eye. Moreover, it does not disturb in any way the natural environment of the gorge.”

The bridge is being built from both the north and south banks of the gorge and comprises two identical ‘halves’, each spanning 290 m, which will meet mid-point over the gorge. Each half is supported by 17 pairs of cables attached to 127 m high inverted Y-shaped concrete pylons, one on each side of the gorge, which are essentially tapered circular shafts that straddle the roadway by means of inclined legs. The pylons are back-stayed into the anchor blocks by 34 pairs of cables – 17 for each half – which are positioned 130 m behind each pylon.

Commenting on progress on the project thus far, Savage says that an important milestone was reached in April 2022 when the south pylon legs were hydraulically jacked apart. These two legs make up the first 20 m of the pylon and were built without any lateral support as free cantilevers. The jacking apart of the legs countered the bending moment at the bases of the cantilever structure placing them into a ‘straight’ position before they are joined together.

With both pylon legs and the bifurcation section above the legs now completed, the focus is now on the construction of the pylon spires and the first lift on the south spire started in November 2022. The JV is utilising a custom-designed 15 m high climbing formwork system for spire construction. This provides four levels for concrete, fixing, curing and cleaning. It



*The South area preparing for the arrival of the deck segment in November 2022.*

also accommodates the complex geometry of the spires, which start with a diameter of 6 m but taper to 4,5 m diameter at full height. The pylons are both expected to be fully complete in September 2023.

Discussing the anchor blocks, Savage describes these as the “unsung heroes of the structure”. Each block has a length of 49 m, a width of 10 m at the base (narrowing to 4 m on the spine of the structure), a depth of 17,2 m, and a mass of 21 500 tons.

“These blocks are critical parts of the bridge and yet are not very prominent as they are contained in huge excavations – of 100 MPa rock. These anchor blocks were one of the first elements that we started constructing, recognising the volume of work required to meet programme,” he says. “The excavations were achieved by means of restricted blasting in 2 m stages and for each stage lateral support was installed to the excavation walls using rock anchor rods, drape mesh and shotcrete to ensure that the excavations remained safe during construction.”

He adds that on completion of the bulk excavations intensive dental excavation and finishing work was required. This involved the hand excavation, and the cleaning of crevices before the placing of mass concrete as a blinding layer for the structural foundations. The dental cleaning of the crevices and concrete blinding ensured stability and security of the integrity of the foundations.

All four anchor blocks will be fully complete in Q1-2023, opening the way to another critical part of the project – the construction of the steel-concrete composite deck over the gorge. This is an exercise which – among many other challenges – has to consider the significant wind conditions that occur at the site. The first 24 m of the deck on either side of the gorge is a reinforced concrete ladder deck that is cast into the first steel deck segment, known as deck segment zero, DS0. Because of crane access restrictions, DS0 will be slid laterally into place

before reinforcement is installed and concreted. The remaining segments, DS1 through to DS17 on either side, will be installed using the free cantilevering method, with each segment being installed in sequence.

To place the decks in position, two gantries, specially designed and manufactured by Freyssinet, the sub-contractor for the cable-stay system, will be used. These are large 160-ton assemblies, each 30 by 15 m by 7 m high, which are able to launch the deck segments – which have an average weight of 84 tonnes – over the gorge, rotate by 90 degrees, lower and align them with the previous segments.

Once a segment is in position, the next steps would be to weld the segment to the previously placed segment; installing the stay cables and applying initial tensioning; installing formwork and reinforcement; casting the 250 mm thick concrete deck slabs; and final tensioning of the cables. The launch gantry is then positioned for the launch of the next segment.

Underdeck gantries on either side are required to facilitate welding, the installation of deck formwork and the movement of materials. They will outlast the construction phase and be used for routine maintenance inspections and maintenance once the bridge is in operation.

“The gantries, which have come from Europe, are expected on site shortly as are the first steel deck elements, which we are sourcing locally,” says Savage. “We will start launching the deck segments in early 2023 at a rate of two segments (one from either side) every two to three weeks, with this speeding up to around a segment every second week from either side by Easter. We are expecting to substantially complete the deck in 2023 with closure at the mid-point being achieved in Q2-2024. Commissioning of the bridge will follow later in 2024.” The scope of the CME JV’s work at Msikaba includes not just the bridge itself but also what are known as four tributary structures that lie outside the bridge construction site. These



Left: General aerial view of the two tower cranes on site. Right: Preparation for the deck segments.

are concrete structures bridging tributaries of the Msikaba River. They are all structurally complete with only some earthworks outstanding.

While construction of Msikaba from a technical point of view is demanding, in some ways the managing of relationships with surrounding communities is equally so. "We have worked very hard – and at considerable cost – to ensure that the project has the full support of surrounding communities and that the benefits stemming from construction are localised to the greatest extent possible," says Savage.

Not only has the CME JV recruited about 70 % of its workforce locally – all of whom have been subjected to intensive on-site training – but it has also identified and supported a host of local SMMEs, around 40 in all, who have

been appointed as sub-contractors and suppliers.

"The work allocated to them ranges from the fairly simple and straightforward, thatching for example, to quite major tasks," Savage observes. "Some are supplying and operating 'yellow metal' and run fleets that include 30 ton excavators and 10 m3 trucks while others run steel-fixing teams, supply and operate batch plants or undertake road rehabilitation. We assist them with training and we also ensure they work safely."

Summing up the Msikaba Project, Savage says that the final product will be a world class bridge showcasing the abilities of Concor and its JV partner MECSA. "We are proud to be part of this landmark project, which is uplifting local communities and which is also expected to have a substantial effect on economic growth in the Eastern Cape and KZN," he concludes. ©



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# WHEN QUALITY MATTERS



# PIPES HELP REPAIR FLOOD DAMAGED QUEEN NANDI DRIVE IN KZN

The damage to infrastructure in KwaZulu-Natal (KZN) as a result of flooding has certainly taken its toll. Queen Nandi Drive was no exception with damage that included the main sewer line. Rocla was commissioned to supply Rolling Joint Spigot and Socket Pipes with Dolomite Aggregate for the repairs to the main sewer line.

“Rocla supplied 41,48 metres of 1 350 mm Rolling Joint (RJ) Spigot and Socket pipes with 19 mm layer and Dolomite Aggregate to the project to repair the main sewer line.” commented Ritesh Singh, Sales Consultant for Rocla based in Newcastle, KZN.

“Rocla is well-known for its expertise when it comes to concrete infrastructure products, and it was this word of mouth recommendation that put our products on site. The RJ Spigot and Socket pipes, which are always used in sewer systems, were manufactured at our Roodepoort, Johannesburg factory who had sufficient stock to meet the project’s requirements, and were

delivered to deadline in KZN” said Singh.

Rocla offers a range of infrastructure concrete products such as stormwater pipes, culverts, jacking pipes, concrete poles, manholes and sanitation units, many of which have won industry awards for their quality, innovative design and longevity.

Rocla’s technical engineers are also available to assess what product will provide the solution for any infrastructure requirement, and if needed can custom design for the client.

Rocla is part of the IS Group which also includes Technicrete. ©

*“Rocla is well-known for its expertise when it comes to concrete infrastructure products.”*

## TWO STEPS AHEAD: THE VÖGELE DASH 5 ROAD PAVERS

*Road construction companies are equipped for the future with Vögele’s latest-generation SUPER 1900-5(i) and SUPER 2100-5(i) Road Pavers and AB 500 and AB 600 Extending Screeds. Highway Class pavers are perfectly at home whether on highways or handling other demanding large-scale projects. The SUPER 1900-5(i) manages pave widths between 2,55 m and 11,5 m, the SUPER 2100-5(i) up to 14 m. Both Dash 5 pavers are convincing products featuring a flexible, modular system which takes particular account of economy and sustainability as well as of ease of use and process automation.*

### More convenience and safety for users

As usual, Vögele has made user requirements a key focus of development, resulting in further optimisation of the ErgoPlus operating concept which, with its touchscreen and smartphone shelf, delivers even greater convenience for digital road construction. The new Paver Access Control (PAC) function enables Dash 5-generation pavers to be equipped for work on the job site more quickly, more conveniently and more safely. The control unit positioned on the screed allows all the initial steps - such as switching on lights, starting the diesel engine, booting up the machine control system, putting up the hardtop and locking it in position, as well as lowering the screed - to be performed safely and conveniently from ground level. This promotes safety and saves time, as the paver operator cannot forget to lock the hardtop in position and can start heating the screed as soon as he has arrived on the paver operator’s platform.

The combination of PAC and Light Package Plus provides

additional convenience and safety. The integrated lighting provides even illumination of the whole working area. As the lighting is permanently integrated in the hardtop design, it is not necessary to transport separate lights to the job site and fit them there.

### Into the future with automation

The automation of processes has been intensified in the SUPER 1900-5(i) and SUPER 2100-5(i) road pavers using assistance and control systems. Process automation not only prevents paving errors, it considerably increases efficiency as well as paving quality. Examples of this are AutoSet Plus, already tried and tested in the market, as well as two new Niveltronic Plus functions, Assist and Edge Control. The AutoSet Plus feature of the Dash 5 generation simplifies handling even further and new functions have been added. Niveltronic Plus Assist helps the paver operator pave the road accurately in predefined cross-sectional profiles. Paving



parameters can be entered on the display and the progress of construction monitored accordingly. Edge Control now also makes it possible to control screed width, as well as to steer along a tensioned wire.

The physical reference is detected with the aid of a sonic sensor for this purpose. Measurement of screed width in the hydraulic cylinders delivers a precise position signal for what in future will be fully automatic screed width control on the basis of 3D data.

### **Quickly ready for operation, profitable whilst being economical**

Given the rise in raw material prices, economy is also becoming more and more of a factor in the success of road construction, which is why with its Dash 5 pavers, Vögele has ensured reduced setup times, improved logistics and increased machine availability. In addition to the new Paver Access Control (PAC) function, the intuitive and further optimised ErgoPlus 5 operating concept and the AutoSet Plus automatic function, optimised material handling, too, improves profitability.

The new material handling control prevents load peaks and facilitates an optimum head of mix in front of the screed throughout the entire paving process. Whilst the benefits here are particularly obvious at relatively large pave widths, the Power Tunnel available as an option demonstrates its strengths primarily in paving jobs involving the extending screed without bolt-on extensions. The hydraulically extending limiting plates for the auger tunnel ensure an optimum level of material in front of the screed, even with hydraulic extensions fully extended.

Retraction and extension of the Power Tunnel can be controlled together with screed width adjustment. Permanent availability without the need for assembly combined with an optimum flow of material save time and money and secure a high level of paving quality.

### **Optimised Vögele EcoPlus low-emissions package**

Both pavers are equipped with a powerful, liquid-cooled 6-cylinder diesel engine from John Deere. This ensures that in line with our motto "Close to our customers", road construction companies get services from a single source. The SUPER 1900-5(i) has an output of 149 kW at 2,000 rpm, whereas the engine of the SUPER 2100-5(i) delivers 187 kW at 2,000 rpm. ECO mode, which is adequate for many jobs, reduces costs and facilitates particularly low-noise operation. The new Dash 5 pavers are also equipped with a further optimised Vögele EcoPlus low-emissions package. The tried and tested functions of the Dash 3 generation, such as the splitter gearbox, the energy-optimised tamper drive and the controlled hydraulic oil temperature circuit, can still be found in the Dash 5 machines. Overhauling the speed-controlled fan, additional noise insulation measures and optimised material handling have made the new machines much more efficient, powerful and quiet - all with increased performance.

### **The latest-generation screeds**

Vögele has the right screed for every application, all with outstanding reputations. The new AB 500 and AB 600 Extending Screeds of the Dash 5 generation start right here, with simplified handling on the job site reducing setup times, for example. More powerful heating rods lead to quicker screed heating. The Dual Power Shift function, hydraulic tamper stroke adjustment, ensures even greater time savings and process optimisation. This technology is already proven in the SB 300 and SB 350 Fixed-Width Screeds of the Dash 3 generation. There is now no need at all for mechanical adjustment of tamper stroke, enabling operators to set the ideal tamper stroke for the paving task in question perfectly simply at the touch of a button. Design optimisations have furthermore helped generate a significant reduction in noise and vibration. ©

# MAKING SUSTAINABLE ROAD CONSTRUCTION TANGIBLE

*'The Future in Roadbuilding – Smart. Safe. Sustainable'. This was the motto of the joint appearance by the Wirtgen Group and John Deere at Bauma 2022. With more than 97 exhibits – including 37 world premieres – and dedicated exhibition spaces covering digital system concepts and sustainability, the Group showcased trailblazing road construction solutions.*



## Innovation power: e-machines and other product innovations

The sustainability focus of the Wirtgen Group was a central theme throughout the exhibition booth. Consequently, the spotlight among the world premiere machines and innovations was on battery-electric tandem rollers from Hamm, the battery-electric mini road pavers from Vögele, and the all-electric impact crusher from Kleemann. The two Wirtgen compact milling machines with comfort cabin, the Vögele Dash 5 generation road paver, and the Benninghoven REVOC system, a catalytic converter for asphalt mixing plants, also caused quite a stir.

## Production systems with ecological and economic savings potential

In addition to the individual machines, the Group also presented production systems providing complete road construction solutions. It is in the sum of these solutions that the greatest ecological and economic potential lies – solutions that cover everything from cold recycling and asphalt recycling to emission-free applications in cities and other sensitive locations, as well as large-scale rehabilitation measures and small-scale, municipal work. Users benefit not only from the coordinated Wirtgen Group machine portfolio, but also from the synergies generated by the alliance with John Deere.

This also applies to the processing of quarry and recycling materials, where John Deere wheel loaders together with Kleemann crushers and screening plants form an integrated production system.

## Sales of John Deere wheel loaders also in Europe

In future, John Deere will offer two wheel loader models in selected European markets. The 744 P-Tier and 824 P-Tier were launched in Germany and Great Britain at the start of Bauma on 24 October. Both wheel loader models will be offered through the Wirtgen Group sales network.

## Digitalisation as a driver for greater sustainability in road construction

In the Technology Zone, the Wirtgen Group presented digital solutions for its product brands that already make it easier for users to operate the machines and enable job site documentation. These solutions include the Wirtgen Performance Tracker, the new Wirtgen AutoTrac satellite-based steering

system for wheeled soil stabilisers and wheeled recyclers, the new Smart Compact digital compaction assistant from Hamm, as well as the Vögele documentation and process optimisation tools, WITOS Paving Docu and Paving Plus.

In addition, the Operations Center provided a glimpse of how entire jobsites can be planned, monitored and analysed in the future.

The aim is to deliver real added value to customers with the help of telematics solutions, enabling them to implement their projects even more efficiently.

## Sustainability as a cornerstone of the corporate strategy

The Wirtgen Group is a pioneer in achieving greater mobility in road construction. And sustainability is a cornerstone of the Group's corporate strategy – something that was clearly demonstrated in the exhibition space dedicated to this topic. The innovations showcased at Bauma also underscored efforts to increase the availability of battery-electric product models and to offer alternative drive technologies, ranging from low-emission to carbon-free.

Furthermore, the new, leading-edge machine and technology solutions are also in line with the Wirtgen Group value proposition: 'close to our customers'. With its sustainable solutions, the Group wants to support its customers not only in satisfying the growing demand for infrastructure in a rapid and cost-efficient way, but also in already fulfilling the mounting requirements with respect to environmental protection as well as to safeguarding nature and humanity. ©

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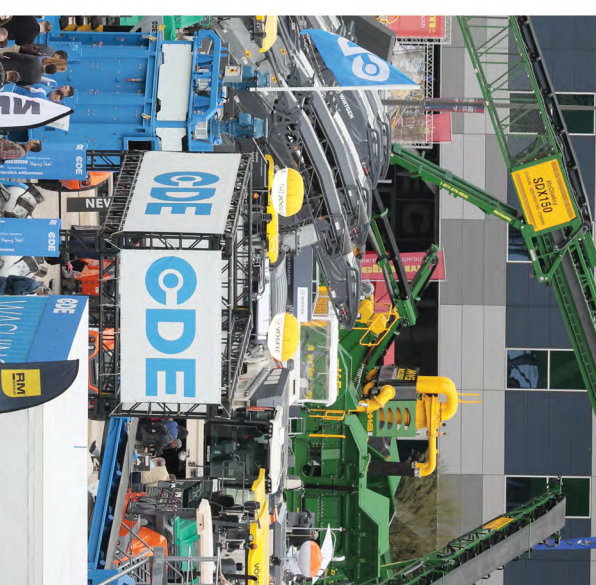
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