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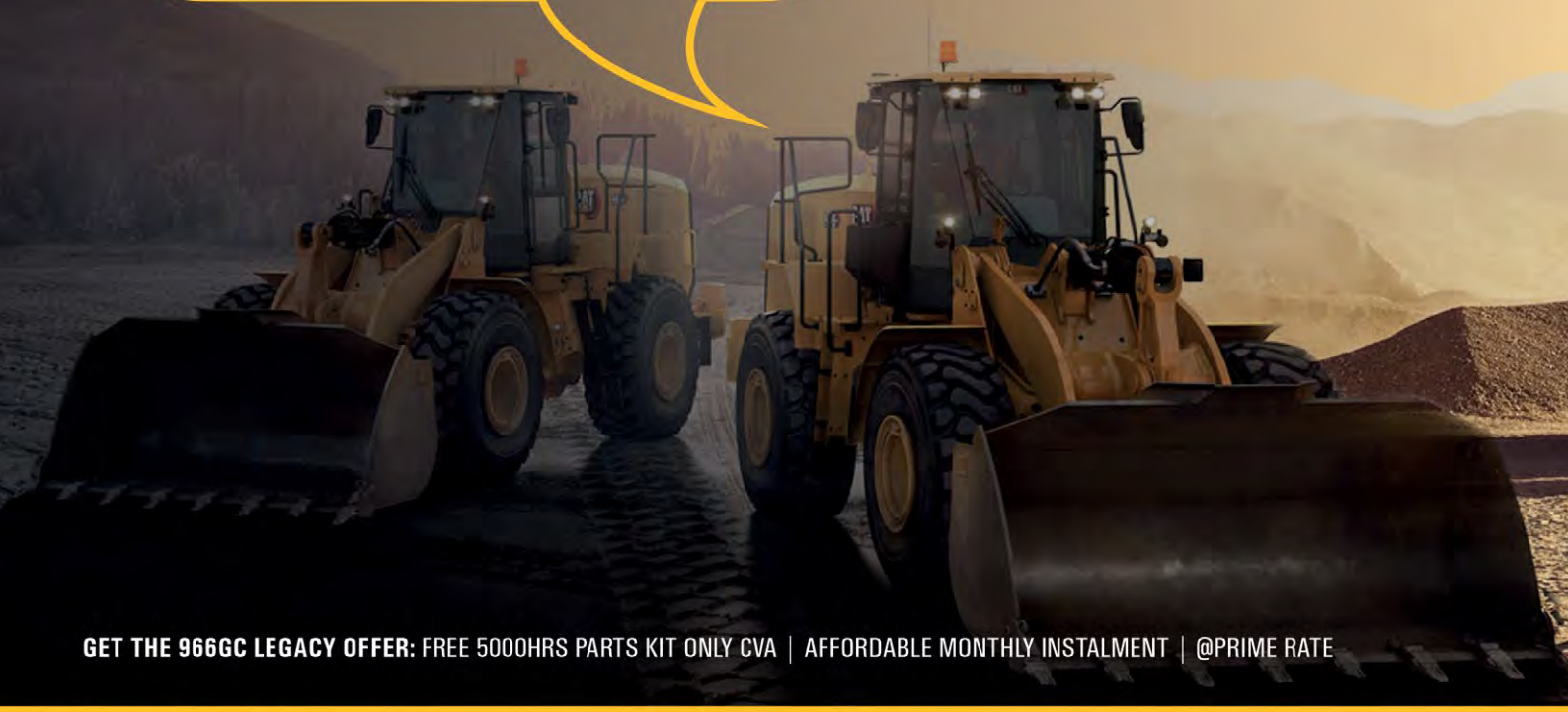

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ON THE COVER

Sika is all about innovation. It continuously develops new technologies to enhance its product range in the construction industry. This proactive commitment to research and development has led to Sika introducing a new and improved range of concrete repair mortars.

A key feature of this *Sika MonoTop®* range is its sustainable, low cement content which contributes to reducing Sika's carbon footprint. Sustainable construction has a multitude of benefits – an uncompromised population health, and increased productivity being key among them. The *Sika MonoTop®* range has FOUR different variations, each with a unique set of properties, thus setting them apart in the market.

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According to Statistics South Africa, the construction sector's value add was down 17,5% on a year-on-year basis in the first quarter of 2021. This followed the fall of 19,8% in the fourth quarter of 2020.

As normality returns after the COVID-19 pandemic, ResearchAndMarkets.com's report 'Construction in South Africa - Key Trends and Opportunities to 2025 (Q2 2021)', predicts that the country's construction sector is expected by grow by 6,2% in real terms. This comes after four years of successive decline.

In addition, the construction industry was also one of the country's most impacted sectors in terms of employment. The pandemic caused some 7,2 million individuals to lose their jobs in construction. This accelerated an already high unemployment rate that now stands at above 30%. Government has announced ambitious plans to plug the economy to the tune of approximately USD45,3bn for infrastructure development that will include infrastructure for energy, agriculture, transport, housing, water and sanitation and also for digital infrastructure.

Challenges to unlock the power of (especially) infrastructure development

Marginal growth
The expected growth of 6,2% over the next five years is not exactly ideal. Government and the private sector are going to have to find ways to attract investors to give the industry the boost it will need.

Lacklustre demand
In the short- to medium-term, the impact of the pandemic will reduce the demand for building especially. This is furthermore dependent on the rate of South Africa's vaccination process, and how the rest of the world manages the impacts of the pandemic.

Load shedding
Load shedding has been a reality for more than a decade and will be for years to come. The impact of load shedding on the economy and the industry is significant.

A cut-throat environment
The competition between companies to win tenders has already led to margin squeeze. The smaller demand for building services will cause companies to engage in even fiercer competition.

Corruption
Even though the governing party has made all the right sounds and moves towards clamping down on corruption and maladministration, it remains a serious problem. Within the construction industry this has led to tender manipulation and accepting bribes – something that is rife in civils especially.

Increased construction costs
The normal increase in the cost of materials and overhead costs has made matters worse in an already tough price environment.

Skills shortages
Finding skilled workers remains a challenge – despite the job losses. This is primarily due to the lack of accessible training. Skilled workers obviously also come with a price tag.

Despite these challenges, there is reason for optimism too. It is a known fact that infrastructure development is a basic driver of economic recovery. Government has committed to develop an array of infrastructure projects.

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CEO ROLES FOR TRATON GROUP AND SCANIA ARE MERGED

Effective 1 October, Christian Levin takes on changed role which merges his current role as President and CEO of Scania with the role as President and CEO of TRATON GROUP.

TRATON CEO Matthias Gründler and CFO Christian Schulz will leave the company on 30 September 2021. At the same time, the current President and CEO of Scania, Christian Levin is appointed to head TRATON SE as the new CEO from 1 October 2021. Annette Danielski, currently Head of Corporate Finance at TRATON SE, will become the new CFO as of 1 October 2021.

"I am honoured to take on the role as CEO of the TRATON Group while continuing as CEO of Scania. Looking ahead, focus will be on transforming business into new technology areas and geographies, whilst leveraging further synergies through modularisation and scalability, says Christian Levin, incoming CEO of TRATON Group and President and CEO of Scania.

Levin continues: "The evolution of the TRATON Group continues and builds on the TRATON strategy which the current management team established and which is now pushed into a different gear. The strategy includes a stronger focus on sustainability not the least through e-mobility, digitalisation and connectivity; continued integration of Navistar and growth in the North American market, as well as continued investments in China over the next few years.

"This change will comprise of several steps over time and by the end of the year a fuller plan will be presented."

On this next step of the TRATON journey, the strength, competence and business logic in each brand in the group – MAN, Navistar, Scania and Volkswagen Caminões e Ônibus – will continue to be leveraged. "We were able to implement the Global Champion strategy faster than expected. This means that TRATON is now on stable footing internationally. The task now is to lead TRATON into a sustainable future beyond conventional business models and ways of thinking. With Christian Levin at the helm, the TRATON GROUP can now benefit even more from its lead brand Scania. Christian Levin is exactly the right person for this task and I wish him and the entire TRATON team every success," said Matthias Gründler, CEO of the TRATON GROUP.

"I would like to expressly thank Matthias Gründler and Christian Schulz on behalf of the entire Supervisory Board for the work they have done and the mutual successes achieved. Both of them pushed the implementation of the Global Champion strategy massively and thus achieved major milestones for the TRATON GROUP in a short time. I see Christian Levin as a strong leader to execute on the next chapter for the group, he has my full support to lead the journey towards stronger profitability and growth.

Christian Levin and Annette Danielski will consequently implement the jointly developed new TRATON strategy," says Hans Dieter Pötsch, Chairman of the TRATON Supervisory Board. ⊙

"I am honoured to take on the role as CEO of the TRATON Group while continuing as CEO of Scania. Looking ahead, focus will be on transforming business into new technology areas and geographies, whilst leveraging further synergies through modularisation and scalability."

POST-PANDEMIC CONSTRUCTION INDUSTRY TO BE DRIVEN BY 4IR

Fundamental changes that are taking place within the construction industry will enable the sector to play a turnkey role in South Africa's post-pandemic recovery. ***By Bongani Dladla, acting CEO of the Construction Industry Development Board.***

The 4th Industrial Revolution, with its emphasis on technology-driven solutions and innovation, is already having a profound impact on the way in which the construction sector – both established and emerging participants – prepare itself for the future.

The Construction Industry Development Board (cidb) is strategically placed to provide leadership during this transition, in line with our mandate to facilitate and promote the contribution of the construction industry to South Africa's economy and society.

It is well-documented how the COVID-19 placed an initial serious damper on economic activity in the country. The construction sector experienced this slowdown most severely as building activities grounded to a halt and contractors were confronted with a new range of imponderables relating to occupational health and safety in addition to the uncertainties of when, and how, the economy will recover.

However, the initial pause in construction caused by the pandemic also provided the sector the opportunities to reimagine its future and to consider how the profound changes that are brought to the fore by the 4IR can lead to a more agile, responsive and transformed industry.

This is an important leap because globally, the construction industry has acquired a poor track record on issues as diverse as health and safety, ethics and malpractices, and lack of regard for the wellbeing of its workforce and stakeholders. It is characterised by low productivity and high unpredictability in both cost and quality and there are justifiable concerns about the lack of transparency which often leads to rampant corruption.

4IR offer strategic approaches strategic solutions to most of these issues and can lead to significant transformation in the way in which infrastructure is planned, procured, delivered and maintained.

Construction 4.0 – the integration of 4IR advances into the industry – will revolutionise processes across the entire spectrum of activities. Some of these innovations are already being deployed with great success in the South African industry.

Designers and building clients can have an advance look at the final product through 3D modelling. Robots can access areas of projects that may be unsafe for humans. Drones provide progress reports, thus reducing the cost of time and travel for project managers. Big data is increasingly being used to further reduce costs and increase access to information.

South African construction is not insulated from the factors that affect the global industry. Our aim must be to move along the leading edges of 4IR innovation and apply the knowledge gained through such research to transform our own build environment. Thus, we should be especially interested in the major advances made in materials technology which have brought to market a new range of building materials which can both improve efficiencies, reduce costs and mitigate the environmental impact of the industry.

Modularisation and prefabrication can contribute to higher productivity and improve the quality of construction products. Automated equipment and robots can assemble prefabricated units which can significantly reduce the cost of buildings and improve industry occupational health and safety.

Emerging entrepreneurs are already benefiting from the knowledge gained by Construction 4.0. Two female entrepreneurs from Sasolburg, Kedibone and Kekeletso Tsiloane, have brought to market an innovative product which uses recycled plastic to manufacture bricks which are strong, durable, fire retardant and environmentally friendly.

Testing done by a facility accredited by South Africa National Standards have concluded that these bricks are stronger and less absorbent than cement bricks. Through their company, Ramtsilo Trading, the entrepreneurs purchase plastic from waste pickers and buy back centres and recycles all types of plastic, including those which usually ends up in landfills or the environment.

These types of innovations point towards the direction in which the South African construction industry should move. COVID-19 has placed additional constraints on already diminishing budgets for public infrastructure and there is an ongoing need for greater construction efficiencies and higher levels of productivity.

The cidb will continue to play a catalytic role to lead industry stakeholders in construction development. We will continue to promote uniformity in construction procurement, ensure efficient and effective infrastructure delivery and contribute to skills development which will lead to the transformation of the industry.

To accelerate the adoption of 4IR trends in construction the cidb has initiated a project to collate and analyse research that will add value to the industry. The first phase is the development of a database that documents all relevant research, both published and in-house.

This will be followed up by a database of educational programmes offered in the tertiary sector and an overview of 4IR technologies used by participants in the construction sector, from designers and project managers to facilities managers and maintenance practitioners.

Through this project the cidb will stimulate interest in the vast potential that 4IR holds for the transformation of the South African construction sector. And it will open further doors for new participants in an industry that will be critical to the country's ability to emerge in a post-pandemic environment. ⊙

cidb PROMOTES SECTOR TRANSFORMATION

The 2021 Empowerment and Recognition of Women in Construction (ERWIC) Awards held in August this year, celebrated the great strides that women are making in the sector. In order to further discuss how an enabling environment can be created for gender transformation within the construction sector, the Construction Industry Development Board (cidb) hosted a webinar on the 7 October in which winners of the Awards were joined by their counterparts to discuss what needs to happen within the industry to create an enabling environment for gender transformation.

"How ready are we as women to participate in government's 40% set aside – do you have the capacity and the resources?"

Dr. Julia Nkgomeleng Petla, CEO of Amedzo Trading and Projects.

Nombulelo Monyana, editor at 3S Media and host for the webinar kicked the session off by stating, "The construction industry has traditionally been a male-dominated industry; however, women are increasingly assuming positions once considered 'male' roles, overcoming outdated stereotypes and thriving and succeeding in the construction industry".

First to speak was Bongani Dladla, Acting CEO of the cidb who discussed, 'Supporting the Gender Agenda'. In his opening remarks, Dladla stated that he looked forward to engaging and learning from his fellow panelists. He went on to state: "The cidb has a mandate to both regulate and guide the industry and must be at the forefront of operationalizing government's 40% set aside for women owned businesses".

Dr. Julia Nkgomeleng Petla, CEO of Amedzo Trading and Projects discussed 'Overcoming challenges due to lack of access to projects' and stated that entrepreneurs needed to be resilient as the path to success is not easy. She added: "Women must embrace the power of collaboration versus competition – as a collective we can embrace greater opportunities." She went on to question, "How ready are we as women to participate in government's 40% set aside – do you have the capacity and the resources?" In concluding, she stated that women need to be aware of what government is offering and that more awareness needs to be created.

Lebogang Zulu, CEO of Tshitshirisang Construction and Projects, and multiple award winner discussed 'The Power of Networking and the impact of Innovation and Technology'. Zulu stated that it is important to be conscious of how we spend our time; the power of the collective and networking; and the importance of collaboration when gearing for opportunities. Zulu says, "We need to capacitate to become relevant by embracing 4IR and all of the technological advancements and embrace the disruptive technologies within our sector". She concluded by calling on the cidb to take the lead in becoming gender sensitive in relation to procurement policies.

Mark Mfikoe, National Director of ECASA and ERWIC Awards Judge discussed 'The Critical Role Men play in promoting Gender Diversity'. Mfikoe said: "The single most important element to ensure an enabling environment for women to succeed in the industry is access to market and work opportunities". He went on to state that the challenge is to change attitudes and perceptions, to challenge the stereotypes embedded in society.

Perseverence Mashale, MEO of Ke Nale Modisa Construction and projects, and award winner discussed, 'Striving for Success in a Male Dominated Industry'. Mashale stated: "The recognition received from the ERWIC Awards has been a call to commit to work harder and in the process pull other women up with me".

In a closing, it was agreed that women need to support each other, 'lift as we rise' and that empowerment of women in construction cannot happen without the contribution and collaboration of men in the sector. It was also agreed that dialogue and a collaborative approach between government, industry and society collectivism – is critical. ⊙

ENZA CONSTRUCTION WINS 2021 **MASTER BUILDERS SUPER LEAGUE AWARD**

Enza Construction companies has been awarded the 2021 Master Builders South Africa (MBSA) Super League Award for the work completed on The Steve Tshwete Hospital Project in Middelburg. The announcement was made on 20 September and follows the regional award win in the same category, which was awarded to Enza in August.

The Master Builders Association is widely regarded as one of the oldest and most recognised associations in the South African building sector. Their annual Health and Safety Competition has been running for over 40 years, celebrating the best of the best in the sector.

The competition provides a way for companies to benchmark their health and safety practices. This year's competition boasted a strong field of competitors, divided into categories based on project value, with the main 'Super League', category top of the prize list.
To win in this category means more than just leading health and safety performance on site – it also means that the site displays a strong safety culture, has a heightened focus on keeping its workers safe and is a leader in the industry.

"We are extremely thrilled and proud to be recognised for the remarkable work undertaken on the Steve Tshwete Hospital Project. It's a great achievement, especially considering the various challenges brought about by the global pandemic and the stiff competition we were up against. Our site team and the entire Enza staff complement have proved that they are flexible and showed tremendous agility during the pandemic still maintaining the highest safety levels, and to walk away with the most coveted award," says Chief Executive Officer of Enza Construction, Rowan Crowie.

For over two decades, Enza Construction has been a key player in the industry, driven by its commitment to unwavering quality and integrity, making it one of the leading, construction companies in South Africa providing civils, housing, turnkey design and construction solutions to the market. Enza is 100% Black owned and controlled, and is a Level 1 BBBEE Contributor.

PARTNERING FOR A PIPELINE OF FUTURE ENGINEERING PROFESSIONALS

Engineering skills are a crucial requirement in the delivery of infrastructure and, as such, will form a critical component of South Africa's economic recovery.

"Not only do they need to find jobs in order to build their experience but they also need to be supported with training and development, and mentored by more experienced engineers."

Greg Tucker, Managing Director of Lukhozi Consulting Engineers.

One of the biggest challenges in the civil engineering industry currently, however, is skills shortage. Not only does the country continue to lose qualified and experienced engineers to retirement and emigration but the shortfall is not being made up by graduates. This is primarily due to a limited number of candidates achieving sufficiently high marks to study civil engineering. This problem is exacerbated by the fact that once qualified, many engineering graduates struggle to find jobs due to the slowdown in infrastructure and construction spend resulting in many leaving the industry.

The South African Institution of Civil Engineering (SAICE), met with Lukhozi Consulting Engineers, to discuss opportunities that can be created from a strategic relationship between the two entities as a pipeline of experienced young engineers entering the industry is essential if South Africa is to meet its economic goals.

However, simply ensuring that sufficient numbers of engineers graduate each year is not enough, concedes Greg Tucker, Managing Director of Lukhozi Consulting Engineers. "Not only do they need to find jobs in order to build their experience but they also need to be supported with training and development, and mentored by more experienced engineers."

Lukhozi has traditionally invested in bursaries, training and development, and more recently, it has partnered with SAICE to assist in identifying suitable candidates for bursaries to study engineering. For its part, SAICE through the SAICE Academy, will provide mentoring and training to the bursary candidates and ultimately, help them on their journey to register with the Engineering Council of South Africa (ECSA).

"Given the significant under-capacity in the public sector as far as engineering skills are concerned, there is a huge need for qualified and experienced engineers to address service delivery issues at both a municipal and provincial level," explains Tom McKune, Head of Training at SAICE. "From the perspective of SAICE, we are communicating the value provided by civil engineering professionals in the public sector to ensure their own staff are professionally registered."

Civil engineering professionals are trained to solve problems, and as such, have the potential to provide solutions to the myriad challenges facing South Africa. In a bid to ensure the country does not lose critical engineering skills, SAICE is planning to introduce a two-day entrepreneurial and problem solving training programme to assist unemployed civil engineering graduates to establish their own businesses either in the civil engineering industry or to use their skills to become contractors and assist the public and private sectors.

"The proviso is that in time, each candidate that implements the insights from the training will fund another unemployed engineering graduate to attend the same programme, thus paying it forward," explains McKune. ⊙

MBA NORTH CONSTRUCTION FIRMS DOMINATE THE NATIONAL SAFETY AWARDS

The Master Builders Association North (MBA North) has hailed member companies who dominated the 2021 National Safety Awards competition, notably two construction firms that have consistently maintained a record of industry-leading safety practices.

Gerhard Roets, Health and Safety Manager at MBA North, says construction remains a hazardous profession, with health and safety further challenged by the COVID-19 pandemic over the past two years. "The fact that our members – and construction companies across South Africa – remained visibly committed to safety best practice amid the pressure of catching up on time lost during lockdown is commendable," he says.

"We are particularly encouraged by the example set by two of our members – Belo & Kies Construction and Tiber Construction – who have consistently led by example over the past decade."

Since 2010, Belo & Kies Construction and Tiber Construction projects have been placed in the top three every year. In 2021, Belo & Kies took first place for three projects – Sasol Garage Geduld, Co Space and Bethal Mall, with a total of 17 projects in the top three in the past 10 years. Tiber Construction took first place for two projects this year – Village Deep Plant Yard and Teraco JB4 Phase 1, with a total of 12 projects in the top three over the past 10 years.

In the 2021 National Safety Awards, MBA North members were placed first in 6 of 10 categories.

Category I – R750m plus
First: Enza Construction (Steve Tshwete Hospital)
Category G – R250m – R450m
First: Tiber Construction (Teraco JB4 Phase 1)
Category F – R100m – R250m
First: Belo & Kies Construction (Bethal Mall)
Category E – R40m – R100m
First: Belo & Kies Construction (Co Space)
Category D – R15m – R40m
First: Belo & Kies Construction (Sasol Garage Geduld
Category C – Less than R15m
Third: Washirika 3 Oaks (Life Health Care Parkland Hospital Springs)
Category B2 – Manufacturers
Second: WBHO Construction (Signage Manufacturing)
Category B1 – Allied trades
Fourth: Form-Scaff (Witbank Yard)
Category A – Plant and Storage Yards
First: Tiber Construction (Village Deep Plant Yard)

"We congratulate the winners for maintaining best practice during a particularly challenging period, during which adherence to COVID-19 protocols added a new dimension to the audits," says Roets. "Health and safety on sites remains a top concern for the construction sector, and the seriousness with which participants compete in both the MBA North regional competition and the national competition reflect this," he says.

The Federated Employers' Mutual Assurance Company (FEM) statistics from the first half of 2021 noted that there had been a total of 1 308 accidents including 6 fatal accidents and 163 permanent disabilities not resulting in pension in the period under review. The accidents resulted in 2 980 lost days with an average cost per accident of R63 186. The majority of the accidents were struck by incidents (36,47%), followed by striking against accidents (12,39%), slip or over-exertion (12,31%), motor vehicle accidents (9,63%) and fall on to different levels (8,87%). Five hundred and eighty one COVID-19 claims were also lodged during the period.

Roets says, "It is important to note that the compensation amounts for accidents are relatively low. Given the pain and suffering involved, and the fact that most construction workers are the chief breadwinners, a safety-first policy is by far the best to follow."

"Despite the fact that the Department of Employment and Labour recently commended the construction sector on its high health and safety compliance rate, the FEM statistics indicate that there is room for improvement. We urge all stakeholders to continue their efforts to ensure all the necessary systems, structures and protocols are in place and strictly adhered to," concludes Roets. ⊙

BEAT THE HEAT: FIRE SAFETY MISTAKES THAT PUT BUSINESSES AT RISK

With the amount of hard work, determination and resources that go into building a successful business, one fire could see all that effort go up in smoke. Businesses simply can't afford to adopt an 'it will never happen to me' approach when it comes to fire and safety, risking injury and loss of life as well as expensive damage to assets and property.

"Some of the most common pitfalls with health and safety plans come down to human error and negligence, most of which are preventable with the correct measures and protocols in place," says Dean Gopal, Product Manager of Eaton's Life and Safety Division for Africa. "These mistakes can come with a huge financial cost for businesses and, more importantly, place the lives of employees at risk."

Dean Gopal, Product Manager of Eaton's Life and Safety Division for Africa.

Failing to adapt your fire safety plan to the business's changing needs

Although a fire safety plan may have been drafted on occupation of a site, office layouts may change over time, new equipment and furniture is bought, and staff numbers may also increase. That's why fire safety plans need to be updated regularly to ensure they meet the ever-evolving circumstances of a business, and its changing fire safety requirements over time.

These include revisiting specific instructions about which routes and exits to use in the event of a fire, as well as where to assemble special guidelines to meet the needs of vulnerable, disabled or elderly people.

Changing the system instead of repairing it

A worrying yet common problem is when faulty or ageing fire detection systems are simply disabled to prevent false alarms or sirens from constantly going off and disrupting the workplace, instead of technicians being called in for repairs and regular maintenance.

"The short-term irritation is taken care of – with the long-term result of putting lives and property at risk when the system doesn't do what it's designed to. Apart from risk to life, this could also lead to insurance claim repudiations," says Gopal.

Fire risk assessments will help organisations to mitigate fire risk as much as possible and should be conducted on an annual basis by a qualified assessor.

Overlooking the need for proper staff training

Fire safety training is crucial in ensuring the safety of the workplace and prevention of fires, as it equips employees on how to respond quickly in the event of a fire breaking out. A lack of adequate employee training means that small incidents could quickly become major disasters with devastating consequences, as people are more likely to panic and act without thinking, placing lives at risk.

Conducting fire safety training sessions throughout the year for new and existing employees is key, as are frequent and unscheduled fire drills to give employees a chance to put their learnings into practice. Drills also give management a sense of the strengths and weak points of evacuation plans.

Underestimating an emergency

One of the biggest risks facing businesses is the fact that employees often do not take fire alarms seriously enough. In many cases, people delay evacuations to quickly finish up some work, make a call or grab all their belongings before responding to warning sirens, because they don't believe there's any immediate threat to worry about.

"The more people ignore fire alarms and don't take drills seriously enough, the less prepared they will be in the event of an actual fire," says Gopal. "Failing to treat a drill seriously enough also means that they may mistake an actual emergency for a drill, which could cost them their lives and the lives of others too."

Innovations in fire detection and evacuation technology mitigate these kinds of risks and ensure a more communicative and efficient approach to fire safety and evacuation response. These include public address and voice alarm systems that alert people to the nature of an emergency and issue clear audio instructions to direct people away from danger and towards their designated or safest exit.

Addressing these fire safety mistakes will help prevent the crippling effects of fires on business operations and will help prevent serious injury and death. ⊙

EATON EMERGENCY VOICE COMMUNICATION SYSTEMS

VOCALL 16 DIGITAL EVCS - NETWORK

Eaton's VoCALL 16 is a high specification, digital, loopdriven, intelligent Emergency Voice Communication System, offering sophisticated functionality along with a simple and intuitive end user interface.

This network* version enables a system installation of up to 32 main panels (MX) and network panels (NX) in any combination (a minimum of 1 MX is required). With a maximum of 16 outstations per panel, a total system size of 512 outstations is possible, all connected and communicating via isolated fault tolerant loops.

The system also uses digital audio communication to achieve high audio quality and intelligibility when it matters the most. The use of isolated loops also reduces labour and material cost along with potential for wiring errors associated with traditional spur systems.

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  - Any combination of panels (MX/NX) possible
  - Any combination of outstations possible
  - Centrally controlled by a main panel
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Note: * Networking functionality can only be accessed by trained personnel

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GREEN HYDROPOWER FOR REMOTE COMMUNITIES

A University of Pretoria (UP) academic has helped to design and build an innovative small-scale hydropower plant to generate 50 kW of electricity for the remote rural village of Kwa-Madiba in the Mhlontlo Local Municipality, north-east of Mthatha in the Eastern Cape.

The new plant was handed over today (4 October 2021) at an official ceremony that was attended by senior officials of the Ministry of Higher Education, Science and Innovation, along with representatives of UP, the Water Research Commission (WRC), Mhlontlo Local Municipality and the Kwa-Madiba community.

"The Kwa-Madiba scheme borrows a small proportion of water flowing over the Thina River Falls by diverting it into a steep and narrow tunnel," said Marco van Dijk, a lecturer in UP's Department of Civil Engineering in the Faculty of Engineering, Built Environment and Information Technology, and principal researcher for several WRC projects. "This precious resource is then returned to the main river after its power has been harnessed to spin a turbine. This renewable energy is green because it does not generate fossil fuel carbon emissions that drive global climate change."

At Kwa-Madiba, a 450 mm diameter tunnel was drilled through the surrounding rock close to the Thina Falls to provide a penstock (a steeply sloped water passage that is used to divert water to spin the turbine). After passing through the spinning blades of the turbine, the water is then returned unpolluted to the main river. "Environmentally, the project will have minimal to no impact on the river environment due to the fact that only small amounts of river water will be rerouted through the turbine (then returned to the river almost instantly)," said Van Dijk, who received the WRC Knowledge Tree Award for Empowering Communities on 23 September 2021 for his role in steering the project to finality. Such run-of-river schemes are also unlike large-scale hydro-electric dams that can inundate large areas of fertile land, disrupt fish migration and create other environmental disturbance. The Kwa-Madiba project, which has involved UP, the WRC and the national Department of Science and Innovation, also created very little visual impact on the scenic value of the Thina Falls, because much of the piping infrastructure is underground, while the turbine is housed in a small, 6m-long shipping container.

Importantly, Van Dijk said, the project team was able to participate in the public consultation process of the General Authorisation (GA) scheme in terms of the National Water Act (1998). This means that the revised GA system now allows for the construction of small-scale run-of-river hydropower projects without the need for a full-scale Water Use Licence process – provided that these schemes do not exceed 300 kW and adhere to specific requirements. This is important, as the Water Use Licence process can be lengthy and costly, and act as a disincentive to the roll-out of similar cost-effective hydro projects.

"South Africa is a dry country compared to the rest of the world, but there is no reason why the country's water resources cannot be tapped to deliver green electricity to many isolated rural communities," Van Dijk explained.

While the government is committed to providing universal access to electricity, the reality is that many isolated communities will not be connected to the national grid for the foreseeable future due to the high cost of transmission and distribution infrastructure to the more remote parts of South Africa. However, Van Dijk said, there are several areas in the comparatively water-rich Eastern Cape, KwaZulu-Natal and Mpumalanga provinces where the Kwa-Madiba standalone scheme could be replicated or adapted with little difficulty, while other types of innovative small-scale hydropower schemes can be established in other provinces.

Van Dijk noted that South Africa has almost 4 500 registered dams and several weirs, transfer schemes and pipelines, many of which could be retrofitted to accommodate small-scale turbine systems nationwide – without reducing water yield or reliability of water supply. The Hydropower Research Group at UP is also compiling a national hydropower atlas for the country as part of another WRC-funded project.

This atlas, the first of its kind in South Africa, will help to identify areas where hydropower projects of different sizes can potentially be implemented. It will also provide information on the different technologies available. The researchers hope their efforts will provide policymakers with a way to address the current slow pace of small-scale hydropower development.

Researchers have indicated that there are several opportunities for retrofitted hydropower schemes across the country. Another advantage of retrofitted hydropower is that no new major infrastructure is required for energy generation. "What we are saying is: Let's harness the water resources that we have responsibly, for the benefit of all," Van Dijk said. "Small-scale hydropower projects like Kwa-Madiba have the potential to be integrated into a number of our river systems." ⊙

NEW INTERNSHIP PROGRAMME FOR ASPIRING SOLAR PROFESSIONALS

African solar training provider GREEN Solar Academy is going one step further in its commitment to preparing installers for a successful career in solar energy by launching an internship programme.

GREEN Solar Academy recognises that training is only the first step towards finding a job in the solar industry.

Together with Peak Power Solutions, a well-established solar company based in Pretoria, Gauteng, they will now offer practical experience alongside training on the job. Peak Power Solutions is headed by Willem van Schalkwyk, a GREEN alumni who started his career in the solar industry by participating in a GREEN training course in 2014, and who knows about the struggles new solar installers face. This collaboration is a pilot programme that will be rolled out with companies of other GREEN Alumni in the future.

GREEN's commitment to helping participants get started in a career in solar energy extends beyond the short, professional courses they provide and into extra services such as networking meetings and forums where new installers can learn from industry stalwarts and get direct access to wholesalers.

"We want to ensure that all doors to a successful future in solar are opened for our students, and that new and experienced alumni can make use of all the valuable resources that we have access to," explains GREEN Solar Academy Director, Antje Klauss-Vorreiter.

The feedback GREEN receives from the +3 600 people they have trained is that finding qualified staff is a bottleneck for the growth of the solar sector. Due to this fact, the demand for solar currently exceeds the supply available. And on the flip side, newcomers struggle to get up to speed to fill the available positions, making the jump from training into employment difficult. An intermediate step is needed where the new graduates have a safe space to put into practice what they learned in their training.

To facilitate this, GREEN is leveraging the relationships nurtured over 10 years of training and is turning to alumni companies like Peak Power Solutions, who started small and have developed into established SMEs, to transfer the responsibility of training new staff over to them. Willem van Schalkwyk explains why he opened his doors to the first interns: "Companies have to take responsibility in training as well; the industry is at a point where the demand for skilled personnel is so big that long-term staff planning and commitment to grow own staff becomes a requirement."

Interns will be exposed to all facets of solar installation, from monitoring inventory for upcoming projects to the physical mounting of racking, modules and electrical equipment of both residential and commercial systems. In addition to securing invaluable on-the-job experience, incumbents will attend ongoing training sessions on new products, methodology and safety. At every stage, the installer company pledges to offer guidance and support with the intern's personal development as a qualified PV installer.

The partnership benefits both parties, in that the intern may well go on to secure permanent employment with the internship company, and the industry gains another solar professional with solid experience.

The initiative will become a permanent value-added service offered by GREEN to its alumni as part of their solar training, connecting suitable staff with eager solar companies. At least one alumni will be welcomed onboard as an intern with a partner company every three months, and this number is set to increase as more alumni companies sign up to the initiative and make capacity for interns.

The internship programme is open to all GREEN alumni, an alumni being a graduate of one of our training courses, and will partner recent graduates of our trainings with the established companies of other GREEN alumni.

"We live in a country with a depressingly high unemployment rate. Here are all these entrepreneurs, who have invested in themselves with professional solar training, and all they require is some hands-on experience and guidance. And our internship programme will provide that," says Klauss-Vorreiter.

The first round of applicants has already been interviewed and a candidate has been selected. GREEN Solar Academy alumni – both those seeking experience and those able to accommodate new talent – are invited to visit the GREEN website for more details on the scope of the first opening and the application process. ⊙

NEW RESEARCH REVEALS HOW TO BUILD A CITY WHERE PEOPLE AND THE ENVIRONMENT CAN THRIVE

Location, location, location. This real estate mantra is considered the key to successful property development. Now, a ground-breaking South African study reveals that the location of housing development is also the key to lowering carbon emissions – significantly so.

A new quantitative study on the impact of the location of housing development in Johannesburg on carbon emissions – by the research partnership of Divercity Urban Property Fund and the Green Building Council South Africa (GBCSA) – shows that where and how housing is built in the city has a massive effect on its residents' carbon footprints. Against the backdrop of near-universal recognition of the importance of reducing carbon emissions, the findings of this research are particularly significant.

Titled 'Does location matter?' and conducted by leading consulting engineering firm Arup, the research highlights a growing gap between the lower carbon emissions generated by living in the well-connected amenity-rich urban core and higher emissions from living on the disconnected amenity-poor urban periphery. This chasm is so vast that, should all new housing be built on the urban periphery, by 2050 it could reach 224MtCO_2e – a startling 10-times the total annual carbon emissions of the entire city of Johannesburg in 2016.

South Africa has committed to addressing climate change under the Paris Agreement. Supporting this, Joburg's new Climate Action Plan aims for the city's emissions – primarily from transportation and stationary energy – to peak by 2030 and then decline towards net-zero by 2050 and, as a member of the network of C40 Cities addressing climate change, it is developing policies to shift to a lower carbon built environment. But if these pledges are to become a reality, the research shows that we need to act now and change how we develop housing in Johannesburg.

Joburg is urbanising rapidly. It is expected to become a megacity by 2030 and needs more housing to meet current and future demand. Right now, the dominant mode of affordable housing delivery in South Africa confines lower-income households to the urban periphery – far from economic opportunities and essential services such as healthcare, schools, jobs and parks. The study compared carbon emissions from an urban periphery housing development model to those generated by housing development in the urban core. Researchers also looked at two groups of housing residents – lower and mid-income occupants. They considered the carbon emissions of the housing's construction and operation over a 60-year design life period, with ongoing operation accounting for 72% of the total carbon a residence will generate. The report also analysed the transport emissions of residents associated with living in

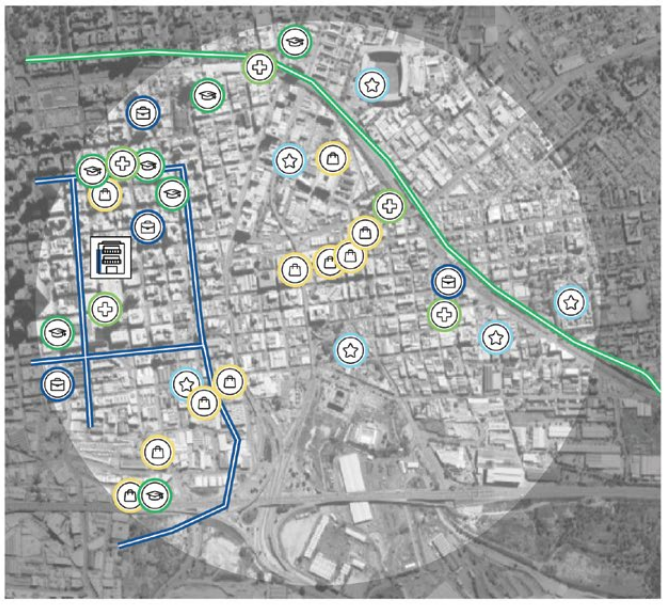


Figure 11 Typical spatial map for Urban typologies

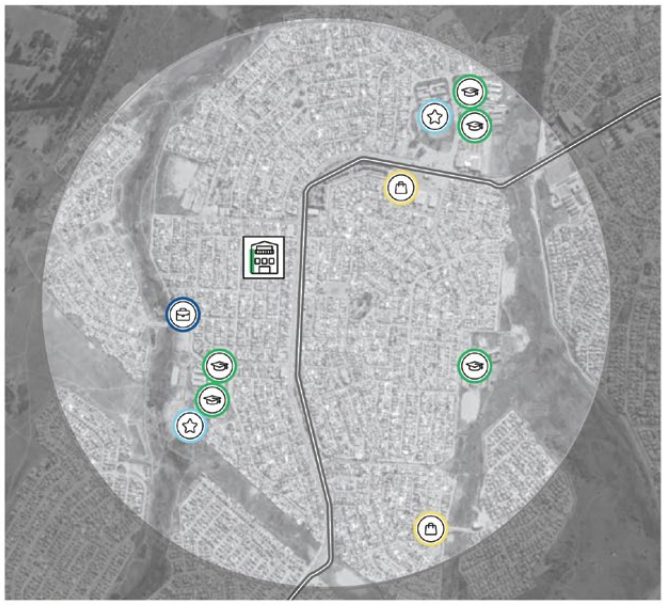
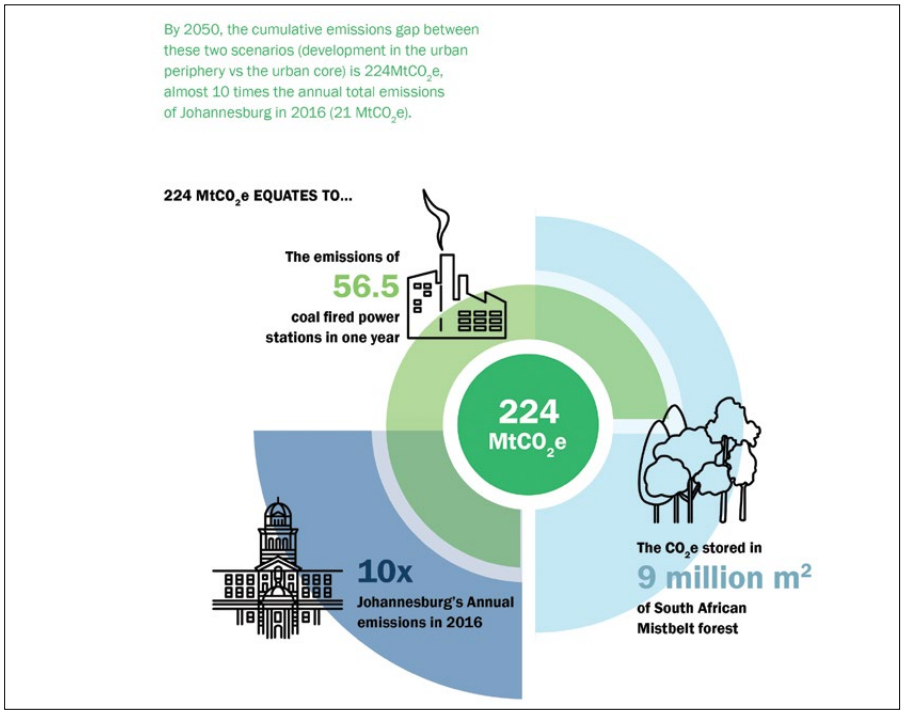


Figure 12 Typical spatial map for Periphery typologies

each location. Middle-and lower-income families living on the urban periphery travel similar distances each day, but mid-income families, who rely on private cars, generate three times the emissions of lower-income families, who typically use public or shared transport. This trend was the same in urban core households. But, viewed together, a mid-income family in the urban core still generates fewer transport emissions than a lower-income family living peripherally to the city.

In short, the research proves that the current dominant model of affordable housing delivery in South Africa generates significantly higher carbon emissions and counteracts the aims of Johannesburg's Climate Action Plan and South Africa's climate change commitments. In light of this finding, the study shows that urban sprawl, reliance on private car travel and long car trips should be discouraged through spatial planning. In its place, urban densification, access to opportunities, and fewer, shorter private car trips should be encouraged. This approach, notes the research, will help connect people to economic opportunity, break apartheid spatial patterns and retrofit existing settlements.

"The way in which we build housing today will have profound social, environmental and economic impacts on their residents for decades, and the urban form it creates will impact the carbon emissions of their cities into the next century. Divercity is proud to partner with the GBCSA and Arup to produce this new research designed to support the city, property developers and the greater community of built environment professionals to make choices that meet the needs of current and future generations of Joburg citizens. Locally relevant research is an invaluable resource to inform and inspire responsible, sustainable development.



We want to collaborate to produce more empirical insights to guide even better developments in future," says Carel Kleynhans, CEO of Divercity.

"This research highlights the crucial role played by spatial planning and associated transport networks in shaping cities that work for their citizens and the environment.

The results correspond with the findings of similar studies in other countries around the globe. To mitigate and adapt to future climate change, we must pay special attention to the broader impacts of urban planning decisions on carbon emissions and look not only at how we can develop greener buildings but also how buildings connect to communities, amenities and opportunities," says Georgina Smit, GBCSA's Head of Technical.

So, what can we all do to make sure that we minimise carbon emissions while creating excellent places for people to live and thrive?

- The public sector can implement policies that align property development with climate goals, encourage this with incentives, and manage it with regulations and standards.
- Property developers can take care to build better located housing that minimises lifestyle related carbon emissions.
- Built environment professionals can champion the low-carbon development and operation of urban spaces.
- Town planners can design connected cities, neighbourhoods and spaces that improve equity and access to economic opportunities.
- Urban economists can advocate for integrated thinking, including carbon emissions, air pollution, the cost of lost time during commuting, and other external costs. ⊙

SEMIGRATION AND THE REINVIGORATION OF THE PROPERTY MARKET

While COVID-19 dealt South African tourism a sucker punch with international travel obliterated overnight, we're finally starting to see – while not quite a light – a glimmer of something at the end of the tunnel that points towards recovery. And the city most anticipated to lead this charge? None other than South Africa's official legislative capital and not-so-official-but-indisputable beauty capital; Cape Town. ***By Jacques van Embden, MD at property development firm Blok.***

As a Mother City-based property developer, I admittedly have somewhat of a vested interest in our city's bounce-back, but there are enough indicators to leave me feeling cautiously optimistic. Cape Town has an incredible value proposition and getting people back won't require too much convincing.

The numbers serve as evidence. According to WESGRO's research into Western Cape Tourism Recovery, visitors to the participating Western Cape attractions reached 343 727 in December 2020, a 35% recovery rate when compared to December 2019. In terms of flights, passenger arrivals through Cape Town International Airport domestic terminal saw a 51% recovery rate in March 2021, when compared to March 2019. Outdoor attractions such as Koggelberg Nature Reserve were extremely popular, with many having already exceeded 2019 visitor numbers in the November 2020 - March 2021 period.

Domestic tourism is on the up, which is encouraging but not surprising – people can no longer travel internationally, and so we're now grabbing every possible opportunity to get away and see more of our beautiful country – and if there's a bit of outdoor activity in the mix, then even better.

But particularly interesting to me is the changing working paradigm, which is set to catalyse a wave of what has been dubbed 'semigration'. The protagonist of this trend is the digital nomad, who is essentially an individual who is able to work remotely and travel or live wherever they choose, for as long as they choose.

Covid has shown employers that people can work remotely and still get the job done, and many companies are moving towards a hybrid work model, which is anticipated to hang around long after the virus has packed its bags. Employees are happy because they finally have the flexibility they've been craving for ages, and employers are happy because they no longer need to shell out for pricey office rentals.

Cape Town, which was recently listed in the 'best cities for remote working' list by Big 7 Travel, has long been a favourite with digital nomads, "yet this is almost our best kept secret," said Alderman James Vos, Mayoral Committee member for Economic Opportunities and Asset Management, recently. "Targeting digital nomads as part of our overall destination marketing strategy will become part of the City's new

international campaign when the time is right and when it is safe to do so."

And already we are seeing signs of this intent. The Western Cape provincial government has formally requested the introduction of a 'remote working' visa, which will allow international visitors to stay longer and work remotely while travelling in the country.

Consider the cards in the city's favour. Cape Town is already multi-cultural, meaning you are able to find talented staff across the language spectrum. The minimal time difference between South Africa and Europe promotes a healthy and flexible work environment, meaning people can successfully connect with their teams without working late at night or before dawn.

For the swallows who chase the summer, we also offer an attractive climate that is counter to the northern hemisphere, making us an ideal destination for the gloomy winter months. And then of course, there is the lifestyle that South Africa – and specifically Cape Town – offers; especially when buoyed by a salary earned in Euros, Pounds or Dollars. The ease of living in the city really makes plugging in so attractive, with the full range of living experiences available on our doorstep.

Yet what interests me as a developer is what this all means for the property market.

For investors, particularly those buying in Cape Town, this means a highly attractive value proposition. Anecdotal evidence mirrors this: in the first three months of 2021, mortgage originator BetterBond saw a 49% year on year increase in the number of people looking to buy properties in the Western Cape. I expect a full recovery in the short-stay letting market, or the 'AirBnB economy', as it has been dubbed.

We're also seeing a more fluid model of property ownership favoured by the nomadic resident. Co-buying will be increasingly attractive, especially among younger buyers seeking a cost-effective timeshare-like arrangement with a friend or family member in another province or country.

Those looking to buy want a good investment, but they still want flexibility. Buyers may choose to live in their home some of the time in-between travel, so they want a space that delivers on location, offering them a fantastic lifestyle, but that is also easy for them to lock-up or let-out, as needed.

Personal space is less important (who needs a large four-bedroom house when you're always on the go?) but a functional work set-up is very important, if you are going to be working from home more often than not.

Within Cape Town, the Atlantic Seaboard area is anticipated to shine once we enter a period of recovery, and deserves special mention. Surprisingly – or perhaps not so surprisingly, when you consider what the seaside suburb offers – is that there is a 4,5 times higher occupancy rate, in the Atlantic Seaboard (versus Cape Town's Central Business District (CBD), pointing to the desirability of the high-rise apartment living suburb. Last but not least, is the reemergence of community. After a period of being apart, we want to come together, and a location that offers a sense of community and connectedness is key. With the promenade on its doorstep and easy access to lifestyle centres, eateries and fitness centres, the Atlantic Seaboard delivers on this.

These factors informed our new Sea Point-based development, ONE26 ON M, which will be built over the next two years and which offers the remote worker a perennially attractive investment and lifestyle destination. We've designed each home so that there's a workspace as part and parcel, while the apartment block offers communal features such as shared meeting rooms and a roof deck with pool, which facilitates social connection. We've been really purposeful in what we have designed, building our product around the buyer of the future. ⊙

PROPERTY DEVELOPERS RECOGNISED AT AWARDS

Cape Town Property Developers AVIEW were recognised at the Africa & Arabia Property Awards in an online virtual ceremony on 7 October for their latest development project, upmarket retirement lifestyle village Wytham Estate.

AVIEW will compete against the best property professionals across the Africa and Arabia regions to be recognised in both the Best Residential Estate for South Africa Category and the Best Developer Website Category for Wytham Estate.

Located in leafy upper Kenilworth in the Southern Suburbs of Cape Town, Wytham Estate boasts superior 'age in place' medical care and state of the art comforts, including an in-house restaurant, bar, coffee shop, library and gymnasium. "We're thrilled to have our hard work on bringing Wytham Estate to life recognised," says AVIEW CEO Gus van der Spek **(pictured)**. "The fact that this recognition comes from the largest and most prestigious industry awards in the region is an additional source of pride for our team." The Africa & Arabia Property Awards are judged by an independent panel of over 80 industry experts and the panel is chaired by Lord Caithness, Lord Best, and Lord Waverley, members of the House of Lords in the UK Parliament.

"Judging focuses on design, quality, service, innovation, originality, and commitment to sustainability – all areas that we put huge emphasis on in the conceptualisation process and eventual construction of Wytham Estate," Van der Spek explains.

The Africa & Arabia Award Winners were announced on 7 October, and the top winners in each region automatically entered into the overall international awards, culminating in a glittering awards ceremony at the end of the year. ⊙

JUST ADJUST IT

WITH THE REQUIRED AMOUNT OF WATER

NEW ADDITIONS TO SIKA MONOTOP® RANGE

Sika is all about innovation. It prides itself by continuously developing new technologies to enhance its product range in the construction industry. This pro-active commitment to research and development has led to Sika introducing a new and improved range of concrete repair mortars.

A key feature of this Sika MonoTop® range is its sustainable, low cement content, which contributes to reducing Sika's carbon footprint. Sustainable construction has a multitude of benefits – an uncompromised population health, and increased productivity being key among them. The Sika MonoTop® range has FOUR different variations, each with a unique set of properties, thus setting them apart in the market:

Sika MonoTop®-1010 is an improved rebar corrosion protection mortar. It is also a bonding primer, tested for application under live dynamic loads in conjunction with Sika MonoTop®-4012. A reduced carbon footprint of approximatly 25%, compared to an equivalent mortar, makes it a first-choice amongst the best. It is a slurry that has reduced dust formation during mixing, comprises corrosion inhibitors, provides excellent resistance against water and chlorides, all enhancing the protection to the steel rebar. It's great adhesion to concrete and steel rebar, ultimately promotes the adhesion between an existing structure and any new concrete repair mortar.

Sika MonoTop®- 4012 is a cementitious, fibre reinforced concrete repair mortar. An innovative product that contains recycled waste material therefore reducing its carbon footprint. It is a versatile, quality product that can be used to repair all types of reinforced structures as well as structures that require a class R4 mortar. SikaMonoTop®-4012 is easy to apply by both hand and wet spray method and in most cases does not require a bonding primer. It has an A1 fire rating making it ideal for restoration work, structural strengthening and for preserving or restoring passivity.

Sika MonoTop®-3020 is an improved, high-performing and sustainable smoothing and levelling fairing coat mortar for concrete repair and protection. Easy to work with – just add to water and it is ready to mix – it is suitable for both hand and wet spray application. With a 15% lower carbon footprint contributing to sustainability, it also provides reduced dust formation during mixing, a low cracking tendancy and an enhanced mechanical performance.

An exciting recent innovation is **Sika's MonoTop®-4200 Multi Flow**. It is a unique product in that it provides for a versatile repair option. By simply adjusting the water ratios, the required consistencies for the specific application can be attained, thus providing a choice of a hand applied mortar for vertical or overhead applications and a self-smoothening consistency for horizontal applications. It has a low cracking tendency, is resistant to sea water and sulphates, and has a low carbon footprint. Given its all-round performance capabilities, Sika MonoTop®. 4200 Multi Flow can be used for restoration, strengthening and protection work. Its easy-to-use nature, makes it available to professional and non-professional markets alike.

SIKA CORPORATE PROFILE

Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing, and protection in the building sector and automotive industry. Sika has subsidiaries in 100 countries around the world and manufactures in over 300 factories. Its 25 000 employees generated annual sales of CHF 7,88bn in 2020.

The project consisted of a newly-built preparatory school.

PARAGON ARCHITECTS COMPLETES MAJOR UPGRADE AND EXTENSION

The recently completed Pecanwood College project at Hartebeespoort in the North West Province has allowed the school capacity to expand by an additional 350 scholars. Pecanwood College is a brand of ADvTECH, Africa's leading private education provider. The upgrading of existing facilities and infrastructure has transformed the space into a welcoming and exciting learning environment ready for future generations.

Paragon Architects was tasked with the conceptual design of the new build at the end of last year. Construction commenced on 25 March 2021, with the project handed over for practical completion at the end of August, reports Project Lead David Cloete. The Paragon team included Director Estelle Meiring and Student Architect Tayla Summerton.

The project consisted of a newly-built preparatory school and 'learn-to-swim' pool, as well as renovation of the high school entrance, conversion of dormitories into new apartments and the upgrading of existing dormitory facilities. The development included 14 new on-grade parking bays and a drop-off area, a sportsfield, JoJo tanks and signage.

The design aimed to preserve the existing architectural aesthetic of the school, namely face brick band base, covered connecting corridors and tiled pitched roofs, while incorporating modern fixtures and finishes to create an enduring learning environment. The use of tactile materials and the integration of indigenous landscaping, surrounding views and natural light throughout the scheme creates a sense of connectedness to the outdoors.

"There were no real challenges posed by preserving the existing architectural heritage. However, due to the sloping topography of the site and design layout of the new preparatory school, which corresponded with the existing school's layout, we had to break the new development up into different levels, and add gradual ramps between them. This, in turn, resulted in a stepping roof system as well," explains Cloete.

The 2 085 m^2 new preparatory school consists of 13 classrooms, all with storage facilities; a laboratory, entrance atrium, office spaces, staffroom, staff ablutions and ablution facilities for junior and senior boys and girls. Interconnecting covered corridors create central courtyard spaces. The entrance atrium is enclosed with performance glazing shopfronts with charcoal aluminium that demarcates the entrance of the new development.

The central 8-m-wide corridor extends from the entrance atrium towards the new sportsfield, accentuating views towards Hartbeespoort Dam and the mountainous landscape in the distance. The new structure is established along the street frontage for maximum exposure to any passersby.

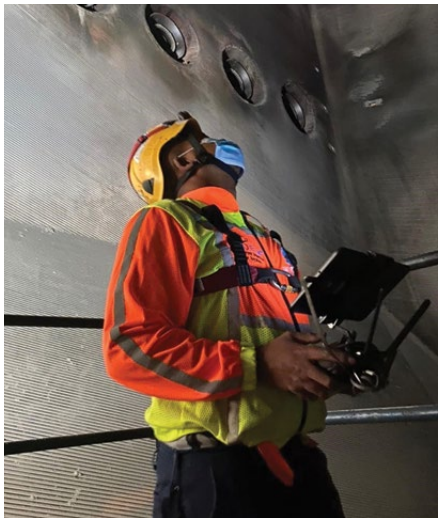
The high school entrance renovation consisted of enclosing the entrance atrium space with high-performance glazing shopfronts and louvres for natural ventilation. The newly-enclosed area created additional waiting space for visitors. Placing illuminated signage featuring the school's logo at the entrance of both the high school and new preparatory school clearly defines the structure's entrances at night.

The new 'learn-to-swim' pool consists of a covered, 1,4-m-deep, 5 m x 10 m pool with a surrounding walkway, ablutions, changerooms and a pathway connecting to the existing pre-primary school area. A Clear-Vu fence surrounds the new development to ensure safety at all times.

On the ground floor of the boys' dormitory building, the renovation saw construction of ten dormitory rooms housing 21 scholars, a collaborative study area, boys' and girls' ablution facilities and a connecting four-bedroom apartment. The renovation included an additional entrance, modern fixtures, finishes and joinery. On the first floor of the boys' dormitory structure, the renovation saw the conversion of three existing classrooms to two apartments, namely a one-bedroom and a three-bedroom apartment respectively.

While the architecture and interior architecture firm is more widely known for iconic corporate offices such as 144 Oxford Road, Discovery Place and the new Sasol head office, Paragon Group has a number of educational facilities under its belt, such as the Torah Academy Girls High School in Johannesburg, as well as student accommodation projects like Hatfield Square in Pretoria. ⊙

DRONE MAKES LIGHT WORK OF BOILER INSPECTION AT MAJOR POWER STATION



The benefits of using advanced drone technology for inspecting boiler internals at a power station were on full display when rope access specialist Skyriders recently undertook a project in the Nkangala district of Mpumalanga.

The Elios SkyEye drone clearly demonstrated not only how accurate and efficient this technology is, but also highlighted its safety aspects, as there is no need to erect expensive and cumbersome scaffolding to gain access in order to carry out a manual inspection.

"Our drone technology is specifically suited for visual inspection in indoor environments like the large coal-fired boilers and ducting at power stations. Traditional drones cannot use GPS tracking and stability when indoors," explains Skyriders Marketing Manager Mike Zinn. Elios SkyEye, on the other hand, is collision-tolerant for flexible and highly accessible remote visual inspection.

The drone incorporates a full HD camera, a thermal camera and an onboard LED lighting system with remotely-adjustable intensity. This means that an array of onboard tools is available for any lighting conditions. A cutting-edge wireless communications system with a live video feedback means that the drone can be brought into usually inaccessible places up to many hundred metres beyond the line of sight.

The Elios Ground station comprises a remote controller, a tablet and a purpose-designed ground-control application, providing the pilot with live data, an SD live video stream captured by the drone. All the information and controls are on hand for efficient and safe remote operation. In addition, the drone is dust- and splash-resistant and can operate in environments from 0°C up to 50°C.

"Our boiler inspection work has a huge amount of experience behind it. There are other companies that carry out boiler maintenance, but they lack the seasoned piloting capability of our drone team. Our team is really brilliant in ensuring that the deliverable is clean and stable footage, affording them the necessary time as well to carry out a thorough inspection," highlights Zinn.

"Our drone pilots are just so good at what they do. That fantastic imagery we have access to, and which we then use as the basis of our inspection reports, really sets us up for continued success in this important sector." Another key differentiator for Skyriders is that it has been issued with a Remote Operating Certificate (ROC) from the South African Civil Aviation Authority (SACAA). This means it is now certified to deploy its SkyEye drones outdoors within civil airspace, thereby dramatically extending the scope of its inspection services for clients.

Zinn is confident that the project at this large coal-fired power station will secure additional work for the Elios SkyEye drones. The application of the latest inspection technology is a fitting capstone to Skyriders' long involvement with various power stations. ⊙

BRIDGING THE BIM KNOWLEDGE GAP

Modern-day construction design and management tools hold much potential to drive an innovative construction industry in South Africa. However, a gap in knowledge and industry expertise has the potential to slow down progress. In light of this, the South African Institution of Civil Engineering (SAICE) recently hosted its second, free CPD-accredited webinar about Building Information Modelling (BIM) in partnership with Baker Baynes.

"Improved digital information management has shown to improve team member collaboration as well as reduce reliance on paper documents."

Jani Viljoen, Director of Professional Services for Baker Baynes.

Facilitated by SAICE's Nthabeleng Lentsoane, the webinar was titled Bridging the Gap: BIM knowledge & Industry Expertise. The session highlighted new career paths that technology has created as well as bridging this gap and helping the civil industry embrace technology.

The informative webinar kicked off with an opening by Vishaal Lutchman, SAICE CEO, who explained how BIM careers offer opportunities for our youth. "Youth make up the majority of our people in Africa, and they are increasingly tech-savvy with a great ability to learn with technology – and to collaborate through technology." He said that young people's ability to learn by discovery positions them well to fill the jobs created by BIM workflows and or similar technologies, which is only the tip of the iceberg of new technologies to come. "Weaving technology, learning and innovation presents a significant opportunity, especially to youth, to address entrepreneurship, niche service offering, efficiency, and cost competitiveness as we progress towards building our nation."

BIM is defined as "a highly collaborative process that allows architects, engineers, developers, contractors, manufacturers, and other construction professionals to plan, design, and construct a structure or building within a 3D modelling environment". It has enabled architecture, engineering, and construction (AEC) professionals to efficiently capture, design, construct, and model the as-built environment. However, the civil industry has stagnated in its processes, resulting in a gap between academic knowledge and innovative infrastructure delivery and technology adoption.

Shuaib Yunos – BIM Technical Specialist: Civil Infrastructure & Mining for Baker Baynes – presented on how BIM skills, combined with civil engineering expertise, form a window to new opportunities, and can steer the South African civil engineering industry towards achieving the perfect symbiosis between innovation and academia, leading towards futurism. "BIM affords us innovative ways to overcome challenges frequently experienced in the project lifecycle. With all these benefits, there are many countries which have mandated its use – and BIM is sure to revolutionise the way work in South Africa." He said that while there is no legislation yet mandating the use of BIM in SA, this may change and in the meantime, "BIM is here to stay".

"I encourage you to be proactive rather than reactive, and embrace the change as well as the new solutions available to solve recurring problems in the construction sector. Applying BIM processes and technologies today will set you up to be awarded bigger projects in the future, and give you a competitive edge which will see your business thrive," said Yunos.

Jani Viljoen, Director of Professional Services for Baker Baynes presented on the use of BIM for improved information management. "Improved digital information management has shown to improve team member collaboration as well as reduce reliance on paper documents," she said. Considering the often chaotic construction project lifecycle, improved information management stands to offer massive benefits to project delivery on even the simplest projects. "This shows that BIM has value before one even considers the full scope of its capabilities – its inherent benefits for information management make BIM worthwhile. But where does one begin their BIM journey?" asked Viljoen.

She said it starts with assessing your current business processes, and ensuring that your BIM implementation is focused on optimising these processes. "Everyone's BIM journey is going to look different, start in a different area, and may need to achieve different outcomes. My advice is to start by making the most of technology you have access to, and focus on addressing organisational issues," she concluded. ⊙

Bosch Munitech provides specialist utility services, which include underground utility detection, 3D laser scanning and leak detection. Bosch Munitech undertakes a 3D laser scan at the sugar terminals in Durban.

SPECIALIST UTILITY MANAGEMENT SERVICES
ENSURE A BETTER LIFE FOR EVERYONE

Bosch Munitech provides specialist utility services, which include underground utility detection, 3D laser scanning and leak detection.

"The company's professional, solutions-driven team works closely with clients to balance sustainable and technical requirements, in both the private and public sectors," says Keshan Moodley, Director, Bosch Munitech.

The company's Underground Utility Detection (UUD) division includes advanced detection and mapping services, that are essential for providing accurate information of underground infrastructure.

UUD – which requires expert skills, using non-intrusive methods to locate the exact type, size, position and depth of buried utilities – is critical in reducing risk and ensuring efficiency and safety in every excavation or construction project.

These services are custom-designed to suit the specific Underground Detection requirements for consulting engineers, environmental specialists, construction and mining companies, municipalities, petroleum and industrial plants.

The Bosch Munitech team uses advanced equipment, including electromagnetic locators, ground penetrating radars and sonde equipment, to locate buried services. These include water pipes, storm water and sewerage drains, as well as electrical, telecommunications and fibre optic cables.

Key benefits of utility detection include accurate utility drawings for design purposes, less damage caused to essential services during excavation, reduction of costs caused by services damage, re-designs and interruptions and a safer working environment for field staff.

Bosch Munitech also offers 3D laser scanning and 3D modelling technology, to enhance engineering projects. The company has made a substantial investment in laser scanning that uses the latest technology for detailed measurement purposes, to create topographic maps, meshes, point clouds or drawings, based on the real-world.

The highly skilled team utilises the scanner to provide quick, accurate and relevant data.

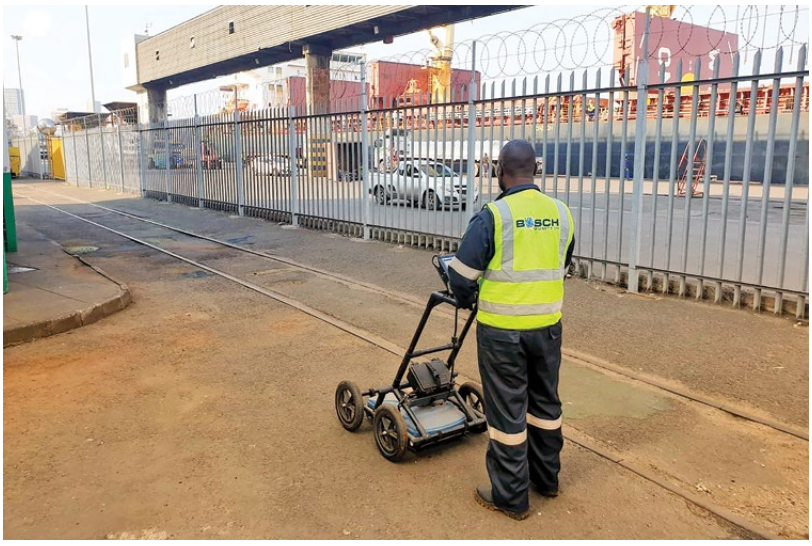
Clients are able to view 3D-illustrations virtually and problems can be identified before construction commences, without having to physically visit the site, which is an advantage during the COVID-19 pandemic. Parts and equipment can be easily changed and moved around, eliminating the need for incurring labour costs.

Bosch Munitech's specialist leak detection services and the repair of aging infrastructure, have become increasingly important as the country faces growing pressure on water resources.

Managing a leak from detection, through the repair process, to quality control of the repair, are key to a successful water loss management programme. Careful planning of leak detection sweeps and accurate management of field data resulting from these sweeps, are also crucial.

The location of underground leaks is an exacting process, which requires professionally trained, motivated and well-equipped staff to execute each task effectively.

The Bosch Munitech team consults with municipalities and the public and private sectors throughout southern Africa, to enhance the efficiencies of essential utilities for urban and rural communities. ⊙



Bosch Munitech undertakes an underground survey to detect cable network.

PARKLANDS COLLEGE's NEW 'INNOVATION CENTRE'

Over the past several years, schools around the world, including South Africa have begun to embrace new modes of learning. This shift has emerged as a result of technological advancements, new ways of accessing and disseminating information, as well as a pedagogical shift towards collaborative or blended learning. Parklands College, an Apple Distinguished School in Cape Town, is at the forefront of innovative education techniques in the country and uses these methods to develop global competencies and skills in its learners so they can build their own futures. In aid of this, the College recently expanded its campus to include a new 'Innovation Centre' designed to accommodate a variety of teaching methods all within an innovative, technology-based environment.

Parklands College, along with development partner Milnerton Estates, commissioned multidisciplinary design studio dhk Architects to tackle the project based on the firm's sound track record and mutual interest in the future of forward-thinking education spaces. The brief was to create a substantial addition to its existing campus, dedicated entirely to spaces that facilitate these progressive teaching techniques and philosophies.

A progressive approach to problem-solving spaces

A key focus area involved creating spaces to facilitate group work and classes that combine subjects (such as science, technology, engineering and mathematics) and art-based subjects into creative problem-solving activities. Additionally, as a local leader in the emerging field of robotics, another focus area was on creating workshop-style learning spaces to facilitate soft entrepreneurial- and vocational-based skills training. Furthermore, themes of interconnectivity, transparency and movement were vital to the ethos of the centre. When considering what sort of 'spatial instruments' could facilitate such new modes of learning and how they might deviate from traditional environments, dhk conducted a series of workshops with the College and professional team, testing a range of configurations which balanced the need for stimulating and physically connected spaces with the need for moments of quiet focus, or careful acoustic control; spaces that balance a sense of containment with a feeling of connectedness. The solution was ultimately found in clusters of interconnected spaces of varying sizes, often adjacent to or connected by circulation spaces, which have the opportunity to become recreational areas or extensions of the learning environment.

Facilitating flow with a sympathetic extension

Conceptually, the building was envisioned as two solid rectilinear wings separated by courtyards; the southern wing responding to the College quadrangle and the gently bending northern wing providing a distinctive, striking backdrop to the playing fields. The two wings are simultaneously split and bound together by a large, steel-and-glass double-volume recreational atrium aptly named 'Grand Central', which forms the nucleus of the building. Not only does the atrium serve as a central movement hub, but it is also used for activities such as informal gatherings, impromptu performances, self-study and immersive digital experiences.

Overall, the architectural design is contemporary and elegantly simple. It makes a distinct departure from the existing style of the campus buildings, yet remains sympathetic to the overall, orthogonal planning. The form of the building was strongly driven by optimising spatial relationships while adhering to the basic tenets of good environmental design - particularly internal environmental comfort.

Building for wellbeing

Research has shown that without natural daylight, fresh air, good acoustics, and good thermal comfort, the ability to

engage meaningfully and the opportunity for deep learning are compromised (we consider connection to the outdoors to be equally vital.

Therefore, the use of brick and concrete for the primary learning spaces which face north and south were driven predominantly by the need for thermal mass to stabilize temperature fluctuations. The north façade was given a playful, modular articulation by creating an irregular pattern using large windows, deep reveals and light shelves. The central atrium, being predominantly a movement and recreational space, was made distinct by the use of steel and glass, shrouded by a bespoke aluminium sunscreen.

The building also 'breathes' on its own; all the larger rooms are fitted with $C0_2$ sensors and automated window opening systems which measure the air quality and automatically open the windows incrementally to optimise it and eliminate the need for air-conditioning. Furthermore, acoustic performance was given significant priority and the specially designed system, integrated with the lighting, is vital to the success of the learning spaces.

Flexible spaces foster individual and group engagement

Collectively, forming the southern and eastern wings of the building are three large collaboration rooms, each with a series of smaller break-away pods clustered along their flanks. Adjustable and versatile, the rooms are designed to accommodate up to 150 learners but can also be adapted via sliding screens to become two to three smaller learning spaces for 30 to 40 learners. A series of several small breakaway 'pods' feed off the larger collaboration rooms and allow learners to engage in smaller groups or quiet self-study.

These back onto two inner courtyards which separate them from the northern wing; a string of non-specific classrooms intentionally designed square to ensure that there is no front or back. Two larger workshop-style learning spaces occupy the ground floor of the northern wing and are dubbed the 'Robotics Lab' and 'Experium' (Maker Space).

The idea is for these spaces to provide learners with opportunities to prototype solutions to real-world problems using digital electronics, design, crafting and building. On the upper level, breakaway pods are expressed as suspended boxes that hover above the courtyards, clutched only by the top and bottom of the concrete walkway. Lastly, a continuous circulation route loops through the entire building in a three-dimensional figure '8' and is actively populated with a variety of incidental 'hangout moments'. The circulation route was designed to ensure the free movement of large numbers of learners while simultaneously providing visual connections between the building's various spaces.

Meaning and innovation embedded in the design

Throughout the building, there are several playful details. One is the distinctive, perforated aluminium screen which bathes the atrium in dappled light. The embedded pattern on the screen is a subtle reference to the concept of coding, where holes of different sizes create a sense of openness but also form vertical streams of light spots which reveal words reflecting the ethos of the building – 'discover' and 'innovate'. Additionally, the DNA-inspired pendant light-fittings in the atrium remind learners of the human code within us.

Importantly, these big leaps in flexibility and multi-functionality are made possible not only by the architecture but also through innovative furniture and clever storage which play a significant support role in mode shifting. These include mobile furniture items that can be quickly arranged in various permutations, whether by virtue of lightness or manoeuvrability courtesy of wheels.

This could be storage that doubles as seating or inviting nooks and perches to engage in a variety of different activities. Another example is colourful smart acoustic panels that house screens, Wi-Fi points and other technologies. Increasingly, the need to move, sit, stand, and even lie down and learn, is being facilitated via bar counters, poofs, ottomans, large staircases, and cave-like nooks.

While the pandemic put a pause on the building's opening year, the new centre was praised when learners did return to the campus. The adaptable spaces allowed teachers to increase the floor area of their classrooms to ensure social distancing without needing two classrooms and two teachers for each lesson. Also, the digital connectivity including the green screen breakaway rooms allowed learners to connect easily and stay at a distance from teachers but also remain engaged in the content (and allowed teachers to pre-record lessons). Lastly, all teaching spaces and breakaway rooms have excellent acoustics, natural light and cross ventilation without glare, which made the spaces ideal for using of technology while remaining in collaboration.

Parklands College's 'Innovation Centre' is the 2021 winner of the prestigious SAPOA (South African Property Owner's Association) Awards 'Other Category'. ⊙

A Metso Lokotrack® ST2.8 mobile scalping screen screening construction and demolition waste.

SA MUST UP ITS GAME IN RUBBLE RECYCLING

The pressure on South Africa's landfill sites is one reason why the construction sector needs to recycle more of its rubble, but this practice could also bring down costs for contractors.

"Most developed countries are in fact well ahead of South Africa on the recycling of construction and demolition material – with the necessary laws in place and the systems to implement these effectively."

Fernando Abelho, Pilot Crushtec's Export Manager.

The industry lags seriously behind global best practice in terms of rubble recycling, according to Pilot Crushtec's export manager, Fernando Abelho. While policy and enforcement could play a role in rectifying this, Abelho emphasises that contractors could gain immediate benefits from taking this route.

"Through the application of mobile crushing and screening machines, demolished structures can be reprocessed and used in the rebuild process where fill is necessary," he says. "This means less removal of rubble and hauling in of new material, which saves significantly on costs."

He adds that just having a primary crushing circuit on site could reduce operational expenditure on haulage. By reducing the particle size of material, trucks can carry more per load and the haulage cycles could be cut by as much as a third.

"As distributors for the world-class Metso range of crushers, we have the ideal equipment for recycling construction waste in urban areas," he says. "The Lokotrack Urban LT106, for instance, is mobile and has a compact footprint for any construction site; specially suited for working in built-up areas, it also has enhanced capacity to reduce noise and dust emissions."

Beyond the construction site, there are plenty more reasons why the country should be recycling construction and demolition rubble, argues Abelho. Even though it is one of South Africa's largest waste streams, there has been little progress to date in diverting it from landfills.

When dumping at landfills, contractors are often encouraged to dump clean C&D waste by not being charged for clean material. However,

due to poor enforcement contaminated C&D material is often dumped – illegally – with clean material, meaning it's only useful as a cover material.

With ongoing urbanisation, South Africa's urban landfills are taking strain and recycling is becoming imperative. This is particularly the case in the metropolitan areas of Gauteng, which have dense populations and limited space for new landfill sites.

"This waste material from construction can even be crushed and screened at the landfill sites themselves," he says. "This will create a useful product that can actually be sold, while reducing the amount of space required for dumping at the landfill."

He also highlighted the importance of properly processing – or separating – construction and demolition waste, which would allow the various categories of waste to remain uncontaminated

"Rubble cannot contain foreign material if it is to deliver a final product of high enough quality," he says. "This will need separation at source as well as better enforcement on dumps – as a great deal of construction waste is not suitable for the production of general aggregate."

He notes that recyclers are losing out on large volumes of potential feed material of relatively high value, and are having to accept lower prices for fill material of poorer quality. There is also the problem of illegal sand mining is some areas, driving down the cost of sand and undermining the position of legitimate producers.

"Most developed countries are in fact well ahead of South Africa on the recycling of construction and demolition material – with the necessary laws in place and the systems to implement these effectively," says Abelho. "It is time that we updated our legislation accordingly, and facilitated the regular reporting of recycling performance."

The country's reuse of construction and demolition waste is currently not well monitored or systematically recorded. Increasingly, however, responsible construction companies are paying more attention to waste recycling as part of their sustainability agendas.

"The crushing and screening of rubble at source would be a valuable contribution to these efforts, he concluded. ⊙

A Metso Lokotrack® LT106 Urban enables up to 60% better noise protection and cuts dust emissions remarkably.

Concrete, construction and demolition waste being screened.

A Metso Lokotrack® LT106 Urban™ series revolutionises crushing in densely populated environments such as city centres.

NOT JUST WASTE: THE JOURNEY TO SUSTAINABILITY IN CONSTRUCTION

The way contractors deal with their waste reflects their approach to their people and their planet – and Concor has long been a pioneer in charting practical strategies to reflect its vision of environmental responsibility.

Left: ***It is important to carefully manage waste on site, ensuring each category remains uncontaminated.*** *Right:* ***It is important that waste is uncontaminated, and this requires ongoing training of subcontractors.***

Among the company's recent projects embracing this commitment are its string of successes at the Oxford Parks mixed use precinct in Rosebank, Johannesburg. South Africa's largest black women-owned construction firm, Concor has completed four Green Star-rated buildings here and is busy with a fifth.

Leah Nwedamutswu, Quality Assurance and Quality Control (QA/QC) Officer at Concor, spoke to *Construction World* and highlights how the company applies strict waste management policies and procedures on all sites.

"We have developed our waste hierarchy system over many years to ensure that our site waste is reduced, reused and recycled," says Nwedamutswu. "This is a vital component of our mission to prioritise health and safety on site, and to respect the finite natural resources that we consume in construction."

By carefully managing waste on site, potentially negative impacts such as pollution and litter are also controlled. A key aspect of the process is to separate waste at source, immediately after it is created, she says. This involves a dedicated, full-time official who checks that waste is appropriately sorted and allocated to the relevant skip – such as building rubble, wood, steel or plastic.

"It is vital that each category of waste is uncontaminated, so that it can be safely stored and efficiently recycled," she says. "A specialised and certified service provider is chosen to transport the waste from site and deliver it to the relevant downstream process service providers."

The integrity of the waste management supply chain is also important, she notes, so Concor checks the service provider's weighbridge documentation against its own records. This confirms that the different categories of waste reach their pre-planned destinations.

Given the large numbers of subcontractors on site, Concor's corporate waste management approach must be well communicated to all on-site partners in each project, she says. While the more experienced subcontractors may already have good waste management practices, there are still many who have not built this into their working culture.

"Our projects generally engage a number of small to medium-sized companies from the local area, to whom we can sub-contract various tasks," says Nwedamutswu. "Many of these require some training and mentoring from us, as part of our normal induction or supplier development programme. We also make them aware of how important it is to manage waste responsibly."

She emphasises that as developers aim for Green Star ratings on their buildings, they increasingly expect all stakeholders to demonstrate responsible waste management as part of their environmental, social and governance (ESG) values.

"By leading the way with our own best practice and policies, we able to share this awareness with subcontractors and ensure that waste recycling becomes ingrained at all levels of the sector," she says.

Specialised and certified service providers collect the separated waste from site and deliver to relevant downstream process service providers.

AFRISAM'S ROCK SOLID FOUNDATION FOR QUALITY AGGREGATES

With a heritage spanning more than eight decades, AfriSam's footprint of quarries nationwide is supported by quality systems that ensure customers reliability and consistency of aggregate supply.

With a heritage spanning more than eight decades, AfriSam's footprint of quarries nationwide is supported by quality systems that ensure customers reliability and consistency of aggregate supply.

"The value of the right aggregate for the task cannot be overstated, as it affects all aspects of project success – from safety and longevity to cost-effectiveness and reputational risk," says Amit Dawneerangen, General Manager Sales and Product Technical at AfriSam.

The company's strong product technical department ensures that all facilities and products comply with the necessary standards and quality specifications. Standard quality control testing is conducted regularly on each aggregate stockpile at every operation, and annual testing is also conducted by independent SANAS-accredited laboratories.

"This is all vital to assuring the customer that our aggregate helps them to meet the design engineer's specifications for their contract," he says. "Without these quality systems and processes, the construction value chain can be compromised and cause various negative impacts for stakeholders down the line."

Glenn Johnson, General Manager Construction Materials Operation Aggregates at AfriSam, highlights that ongoing planning and investment ensures that the company's quarry reserves are in place for future sustainability.

"There can be no quality aggregate supplied if there are not well-planned and compliant quarries to mine," says Johnson. "We have therefore invested extensively in finding, licencing and establishing quarries with suitable geology and mineralogy; of course, these must also be close to markets – hence our wide national footprint."

Based on these facilities, AfriSam's range of offerings ensures that it can provide consulting engineers and contractors with every project requirement. According to AfriSam Regional Sales Manager Shaughn Smit, this also means meeting the stringent demands of Committee of Transport Officials (COTO) and South African National Standards (SANS) specifications.

"By applying the ISO 9001-2015 standards framework internally, and by applying our various quality systems at all our operations, we give customers peace of mind in terms of compliance and best practice," says Smit. "We can provide this regardless of whether the aggregate application is in road building, readymix, concrete product manufacturing or asphalt production."

This avoids the many risks that accompany the use of cheap, sub-standard aggregate, including its impact on the longevity and safety of structures, and the added maintenance and repairs required when structures fail prematurely.

"Our focus on quality is cost effective as it ensures value for money over time," he says. "It also means that contractors and their clients reduce the considerable reputational risk that project delays or challenges can cause."

Dawneerangen says AfriSam's depth of expertise and experience has made it a valuable partner to the consulting engineering sector, as it shares its knowledge and insights on the application of aggregate.

"Especially with large and complex projects, our specialists are able to provide insights to assist project design at an early stage," he says. "Where aggregates are specified for a project but are not available in the area, we can even step in to produce custom aggregates that suit customer needs." ⊙

WARNING TO OPERATORS OF PROCESS DAMS TO DESILT AS SOON AS POSSIBLE

As the rainy season approaches, Integrated Pump Rental has issued a dire warning to operators of water storage and process dams to make sure that these are desilted as soon as possible and ready to accept additional rainwater.

Managing Director, Lee Vine says that the progressive build-up of silt over time would have caused many of these facilities to reach close to critical volume and excessive rainwater could have major implications.

"While it is critical to ensure that water storage dams, settlement ponds and similar reservoirs are kept at their required storage volumes at all times, it is just as important to regularly clean and desilt these to avoid any environmental occurrences should these facilities become overfull due to heavy rainfall," Vine says.

Vine says that increased demand has already been seen for the company's innovative and effective SlurrySucker desilting solution with many operators becoming more proactive than in previous years. He says this applies across a range of industry sectors where water is stored either for recycling or as part of the process such as settlement ponds.

He is quick, however, to point out that while desilting or cleaning of settlement ponds may seem like a simple task, it is not always as straightforward as it would initially appear. Cleaning these facilities can become an onerous task, as it involves the pumping of high solids materials from the facility being desilted and should an incorrect system or equipment that is not fit for the task be specified this can cause issues including environmental harm.

"Historically many operations have used manual excavation methods for desilting and cleaning, but our established track record with proven references has proved that this is not only inefficient, but it often fails to remove the required volume of sediment," he says.

There are several ways to accomplish effective desilting, but it has to be done effectively and cost efficiently, and this is where Integrated Pump Rental's skilled and experience team come into play. The best option, according to Vine, is a site visit to assess the application requirements and conditions.

"In some instances, it is possible to pump the high solids material to another nearby dam or reservoir. However, this is sometimes not possible and in this type of scenario we implement an alternate solution such as capturing and storing the content in specialised geotextile bags while the water is separated from the solid material," he explains.

Once the actual condition of the dam or pond has been assessed the decision can be made as how to proceed. The SlurrySucker itself needs sufficient volume of water on which it can be floated, and should there be areas where this is not possible, then a hydro-mining solution is applied to these drier areas.

The SlurrySucker is equipped with a high performance pump capable of moving high solids volumes so it can dredge quickly and cost effectively over the full area. Where necessary monitoring guns are used to blast the drier slurry towards the discharge point.

In addition, specialised pumps with chopper blades can also be deployed in instances where required. An example would be where dislodged reeds or other plant materials are present in the dam.

Locally engineered and manufactured by Integrated Pump Rental, the SlurrySucker is designed to deal with a range of high solids material including coal slurry, general silt and sand.

In conclusion, Vine says that the opting for the SlurrySucker option is also far safer as the barge itself can be operated remotely from a defined distance away from the dam or pond edge.

This is much safer than having equipment and personnel on the dam. ⊙

JOHN DEERE MACHINERY TOUCHES AFRICAN SOIL FOR THE FIRST TIME

Since the announcement in March 2021 on the expansion of its construction equipment into Sub-Saharan Africa, John Deere has added an additional nine machines to its line-up of already existing 17 machines it offers to the market.

In addition to its 315SL Backhoe Loader, which is an excellent machine suited for operations in confined spaces, John Deere has also added the 310L Backhoe, a more general-purpose machine. The 310L runs a 63 kW engine, 4 speed PowerShift Transmission, with a digging depth of 4,2 metre, loading height of 3,1 metre and a bucket capacity of 0,96cu.m.

The 744L Wheel Loader, an addition to the current five models already offered to the market, is designed with the mining and quarry customer in mind. This model runs a 236 kW engine, 3,8 to 5,25 cu.m bucket capacity range and an operating weight of 25,3 tons. This large-scale wheel loader delivers the performance, reliability, and comfort you need to stay productive.

Alongside the John Deere 850J-II Dozer, the OEM has added the 750J-II, which both run in the same playing field. It did not hold back this time, and is also introducting the 950 K and 1 050 K Dozer models.

These machines are designed big enough to handle mass-excavation and road-building tasks, its equally adept at fine grading and site development. Customers will get more done without a lot of extra effort due to the dual-path hydrostatic (HST) transmission, which will allow them to push a full load through turns without losing material, unlike with torque-converter transmissions.

John Deere has also added the 312GR and 318G Skid Steer to the portfolio. These general-purpose machines might be small in size, but big in results. If you are seeking a bigger, more powerful machine, opt for the 318 G with a vertical lift. With more than 100 John Deere attachments available on these Skid Steers, it will enable you to service a wider spectrum of applications.

Saving the biggest for last - the John Deere manufactured Articulated Dump Trucks (ADT's), are built with our customers' needs in mind. Due to specific features that these machines are equipped with, John Deere can proudly say that its machines are built for the long haul. Not only does John Deere offer advanced machines, but they offer tools that help better manage fleets and help improve productivity. JDLink™ is the John Deere telematics system which allows owners and managers to remotely connect to their machinery to help monitor and track operations and productivity.

John Deere announced in July 2021 that subscriptions to JDLink™ is free of charge to users. ⊙

MINI-SUBSTATIONS FOR MOTOR PLANT
BOASTS DRY-TYPE TRANSFORMER

Dry-type transformer specialist Trafo Power Solutions will supply two custom-engineered mini-substations to a significant motor plant expansion near Pretoria.

The two units will be located outdoors, serving to power the lighting system and security requirements of the facility, as well as other loads. While most mini-substations are equipped with conventional oil-cooled transformers, these units have dry-type transformers – delivering a number of benefits to the customer.

David Claassen, managing director of Trafo Power Solutions, says these include security and environmental factors.

"Used by both the private and public sector, mini-substations must often be located in unprotected areas, making them vulnerable to vandalism and theft," Claassen says. "The oil-cooled transformers are often targeted for the copper in their windings, as well as the oil for the cooling system."

The dry-type transformer's windings, by contrast, are cast in resin so the copper or aluminium cannot be readily accessed. There is also no oil to harvest, further reducing the incentive for criminals to destroy the structure.

"In terms of environmental considerations, the dry-type transformer does not require any additional protective structure such as walls or bunds to contain leaking oil or fire," he says. "These units also require very little maintenance, easing the managerial and technical burden on the owner."

While these two transformers are manufactured in TMC Transformers' world-class facility in Italy, the design and manufacture of the balance of the mini-substation is carried out in South Africa. This gives Trafo Power Solutions a high level of control over the quality of the final product, says Claassen.

"This also allows us to fully test the equipment locally before it is delivered, installed and commissioned on site," he says. "We embrace the opportunity to manufacture locally as much as we can, to support local industries and

"In terms of environmental considerations, the dry-type transformer does not require any additional protective structure such as walls or bunds to contain leaking oil or fire."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