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ensure concrete
results in
water-related
structures**

**IPR's SlurrySucker ensures
long-term WATER STORAGE BY
SAFELY DESILTING DAMS**



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ON THE COVER

As TROTECH steps into 2025, the company reflects on a year marked by significant achievements and milestones. In 2024, the company delivered over 220,000 m³ of tank storage capacity, solidifying its reputation as the leader in the above-ground bulk storage tank industry. These accomplishments highlight the company's steadfast dedication to excellence, guided by the M&D Group's core values and the unwavering commitment of TROTECH'S skilled and experienced employees.

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South Africa's public infrastructure for especially water, is at risk of failure - largely attributed to government's continued neglect of maintenance and foresight. There is some hope though.

In August last year, President Cyril Ramaphosa announced legislation that has the aim of expanding the country's bulk water infrastructure and improving the management of existing water assets. This has the purpose of ensuring water security in the short term, but especially for future generations.

The South African National Water Resources Infrastructure Agency SOC Ltd Bill will establish a new agency that will be responsible for developing and managing national water infrastructure. Long given as the reason for the country's alarming water situation, this agency will be able to mobilise finance for new projects through innovative models.

The agency will increase investment in the maintenance and construction of water infrastructure and will aim

to increase water quality. It is in line with the recognition that stronger government involvement is needed in infrastructure development, maintenance, operation and management – both of existing and new water infrastructure.

Deindustrialisation's impact on construction

An aspect that is indirectly related to the construction industry, is industrialisation. Sadly, in South Africa, deindustrialisation has been happening at an alarming rate. In 1993, the industrial sector contributed 28% to the country's GDP as opposed to the just 18% in 2024. Even though the industrial sector comprises manufacturing, mining and the production of electricity, the contraction of this industry means that

no extra factories are built, or housing and access roads at mines. The impact is felt far and wide.

Even though there has been some progress to turn Transnet and its freight delivery capacity around, the progress has been incredibly slow and started too late with the result that the Minerals Council of South Africa missed its targets for mining exports by R50-billion. This was the result of both the poor performance of the country's rail system and the crucial lack of infrastructure and performance at ports.

The situation will only start to be rectified if Transnet moves to being on par with the government's Recovery Plan.

Wilhelm du Plessis
Editor

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

ADVERTISING MANAGER
Erna Oosthuizen ernao@crowm.co.za

LAYOUT & GRAPHIC ARTIST
Katlego Montsho

CIRCULATION
Karen Smith

MANAGING DIRECTOR
Karen Grant

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Construction sector needs collective **ACTION TO CURB HIV/AIDS**

As many as 10-13% of construction workers in South Africa are living with HIV/AIDS, potentially causing increased absenteeism, high staff turnover and a loss of valuable skills and tacit knowledge in the sector. Employers in the sector can help reduce risk and promote a healthy workplace by offering awareness programmes and support.

This is according to Mohau Mphomela, Executive Director at the Master Builders Association North (MBA North), who spoke at their World Aids Day event on 2 December.

Prof. Muzimkhulu Zungu, Head of the HIV TB in the Workplace Unit at the National Institute for Occupational Health, says: "In South Africa, approximately 5,9 million (17%) of adults aged 15-49 are living with HIV. While there is limited data specifically on construction workers, a study conducted by Bowen et al. (2012-2014) revealed that at least 10% of construction workers were HIV-positive. This figure was particularly notable among workers aged 30-49, with 13,5% living with HIV."

Prof. Zungu notes: "HIV, especially if left untreated, has a significant impact on workers and their families, business, governments, society and the economy, affecting productivity, healthcare costs and labour markets. It reduces workforce productivity as it primarily affects people in their most productive years, leading to higher absenteeism and turnover. HIV also increases healthcare costs, especially in regions with high prevalence like South Africa. The loss of skilled workers, particularly in the construction industry, hampers long-term economic growth and morale of workers. Stigma and discrimination against those living with or affected by HIV/AIDS can undermine fundamental workplace rights. Families and businesses face financial strain due to funeral costs, caregiving responsibilities and higher group risk benefits, which deepens poverty. Governments must allocate more resources to health interventions, diverting funds from other services. Thus, effective prevention and treatment programmes are essential for mitigating the negative effects of HIV in the construction industry."

Mphomela says: "In the construction industry, HIV is not considered an occupational disease, meaning that the work environment does not routinely expose employees to HIV through their job-related tasks. However, HIV is a disease of public health importance due to its widespread impact on individuals, families, and communities, as well as its potential to increase healthcare costs and burden the economy. Employers and workers should prioritise HIV prevention and support measures to ensure a healthy, productive workforce and reduce the stigma associated with the disease."

HIV/AIDS best practice

Gerhard Roets, Construction Health and Safety Manager at MBA North says that at a minimum, employers and



Mohau Mphomela, Executive Director at the Master Builders Association North.

workers in the construction sector should implement the 'Code of Good Practice on HIV/AIDS and Employment' as best practice. This provides guidelines for employers to create supportive and non-discriminatory workplaces for employees affected by HIV/AIDS. It encourages the protection of workers' rights, including confidentiality, non-discrimination and access to treatment.

He says: "The Code emphasises the importance of HIV prevention, education and awareness programmes, as well as offering reasonable accommodations for employees living with HIV. It also advises on how to manage absenteeism and ensure fair practices in relation to recruitment, promotions, and benefits. The goal is to foster an inclusive and healthy work environment, while ensuring that workers living with HIV/AIDS are treated with dignity and respect."

In the construction industry, safety has traditionally been the primary focus, often overshadowing health-related issues. However, Roets says MBA North recognises the crucial role that Occupational Health plays in ensuring overall well-being.

"In 2023, MBA North launched a dedicated campaign to raise awareness around HIV/AIDS, engaging with key stakeholders to promote education and understanding. Recognising the importance of ongoing awareness, MBA North is committed to making this initiative an annual event, helping to create a healthier, more informed workforce in the industry," he says.

World AIDS Day commemoration

MBA North partnered with key stakeholders, including the National Institute for Occupational Health and e'Pap, to raise awareness around the impact of HIV/AIDS in the construction industry at an event held in Midrand on 2 December. This year, the theme was 'Collective Action: Sustain and Accelerate HIV Progress', aimed to drive meaningful change to build a more informed and healthier workforce.

The programme included impactful presentations from notable speakers such as Prof Muzimkhulu Zungu from the National Institute of Occupational Health, Bulelwa Huna from the Department of Employment and Labour, and Carmen Naidu from Reality Wellness Group. A candle lighting ceremony took place to honour the lives lost to HIV/AIDS.

In addition, Daniel Kransdorff from e'Pap distributed over 150 complimentary nutrition packs to construction workers at a Gauteng building site, alongside a toolbox talk to educate and raise awareness around HIV and nutrition. ©

Afrimat Construction Index continues **UPWARD TREND IN THIRD QUARTER**

Afrimat, the JSE-listed mid-tier mining and materials company providing construction materials, industrial minerals, bulk commodities, and future materials and metals has released the findings of its Afrimat Construction Index (ACI) for the third quarter of 2024. The ACI is a composite index of the level of activity within the building and construction sectors and is compiled by economist Dr Roelof Botha on behalf of Afrimat.



“Similar to the reading last quarter, seven of the 10 constituent indicators comprising the index are in positive territory, but of particular note this time around is the significant improvement in three indicators this quarter,” said Dr Botha.

These include “Buildings Completed”, particularly in the metros and larger municipalities, which was up by 23,3%, “Employment in construction” up by 14,6%, and “Sales Values of Building Material” up by 5,9%.

Other indicators that recorded meaningful improvements on a quarter-on-quarter basis were the value of “Building Plans Passed”, the volume of “Building Materials Produced” and the remuneration of construction sector employees, as indicated in “Salaries & Wages – Construction”.

“However, compared to the third quarter of last year, i.e. 2023, it is clear that the general lethargy in construction sector activity has persisted, with the ACI declining by 1,3% overall since then,” commented Dr Botha.

He added that little doubt exists over the depressing effect that high interest rates continue to exert on the construction industry, most notably exceptionally high debt-servicing ratios and a persistent decline in the real value of credit extension, as also confirmed by several other key economic indicators. During the third quarter of 2024, South Africa’s real GDP only managed a 0,3% increase year-on-year and declined from the level recorded in the second quarter, whilst the latest Absa/BER purchasing managers’ index (PMI) for manufacturing has again slipped to below the neutral level of 50.

The residential property market also continues to lag, with the BetterBond Index of home loan applications having declined by 13% since the Monetary Policy Committee (MPC) of the South African Reserve Bank started to implement a restrictive monetary policy stance, resulting in the highest commercial lending rates in 14 years, despite the absence of demand inflation in the economy.

“On a positive note, the rate hiking cycle is reversing somewhat, although the two declines of 25 basis points

each since September are inadequate to assist the country’s quest for higher economic growth and employment creation. Hopefully, the MPC will lower rates further early in 2025, which is one of the most important triggers for reviving construction sector activity.”

Dr Botha said that another positive development has been the inaugural national summit for crime-free construction sites, held in Durban on 19 November. A spokesperson for the Master Builders Association, representing more than 4 000 construction companies, described it as “groundbreaking.”

“The declaration signed at the summit outlines a framework of interventions to combat criminality at construction sites, including the strengthening of industry legislation, developing structured policies, enhancing data systems, and establishing rapid-response mechanisms to expedite arrests and prosecutions for extortion.”

Afrimat’s CEO, Andries van Heerden, indicated that he was encouraged by the data in this ACI release. “We previously indicated that across the construction landscape, the Construction Materials segment enjoyed slightly elevated volumes from road, rail, and dam projects and we continue to experience demand for our aggregates.”

He added that the integration of the Lafarge businesses is proceeding extremely well and is being undertaken meticulously despite being one of the fastest the Group has done. “There are only a few more steps to reach full integration, and we are pleased to announce that the cement processing plants are now providing Afrimat branded product, with the first 32,5 N and 42,5 N bags of cement introduced into the market.”

Van Heerden confirmed that while the Group is not yet seeing a massive uptick in the infrastructure development and maintenance side of the economy, slowly but surely small pockets of demand are opening up. He went on to reiterate that South Africa needs improvement in the ports, rail logistics, and a generally higher economic growth rate, to stimulate the economy further and to help provide much-needed jobs. ©



Three South African construction **INDUSTRY FORECASTS FOR 2025**

Key shifts within the infrastructure development landscape mean positive tailwinds for South Africa's construction industry, with R322,2-billion currently planned for public infrastructure projects in 2025 alone.

According to Roelof van den Berg, CEO of the Gap Infrastructure Corporation (GIC), this comes as technological advancements and evolving market dynamics drive important innovations, new streamlined regulations for public-private partnerships (PPP) cut project approval times, and government turns its focus to transforming South Africa into a “construction site”.

“These changes mark the start of what former Finance Minister Tito Mboweni is said to have called the ‘infrastructure years’ – a period that could reshape the country’s built environment more dramatically than any time in the past decade,” he says.

“The benefit of this for communities could be exponential. Not only does it mean expanded service delivery, but the construction industry, as a major employer and economic contributor, will also thrive. A rapid influx of new projects supported and driven by public-private partnerships could act as the lever needed to accelerate economic growth.”

Looking to the year ahead, van den Berg points to three trends likely to shape and influence the industry:

Increased government investment and regulatory changes

Building on the reported 82 strategic integrated projects (SIPs) valued at R437-billion currently under construction, the industry anticipates substantial increases in public infrastructure spending, with significant implications for job creation and socio-economic development.

As outlined within the 2024 National Budget Speech, spending in the 2025/2026 financial year will strategically target specific developmental areas critical to progress. The top three areas of spending will be transport and logistics, with R115,1-billion allocated to strengthening port, rail, and road infrastructure; energy, with R70,5-billion; and water and sanitation infrastructure, with R57,6-billion.

Rises in public spending will be further complemented by the commitment reinforced in the recent Medium Term Budget Policy Statement (MTBPS), which promised far-reaching regulatory reforms to reduce complex red tape, stimulate infrastructure investments, and expedite project rollouts. Additionally, the Budget Facility for Infrastructure



(BFI) will shift from one annual window to continuous evaluation, ensuring a more regular and predictable pipeline.

“These changes mean fewer barriers, predictable timelines, a healthier project pipeline, and more stable deals – all translating into stronger incentives and better margins for private infrastructure developers, as well as greater value for public sector clients,” notes Van den Berg.

Purpose-built homes for solar, and EV integration

In terms of innovations, the growing affordability of solar systems, and the rising emphasis on environmentally-friendly energy solutions, it’s likely that there will be a strong demand for “green” homes.

“In response, next year will likely see a more pronounced shift toward integrating renewable energy systems directly into the design and construction of new homes,” he states.

“Instead of owners adding solar panels and electric vehicle (EV) chargers after the fact, developers will increasingly integrate these features from the project’s outset. Expect dedicated wiring conduits, pre-installed charging ports in garages, inverters hidden in utility rooms, and roof angles optimised for peak solar capture.”

Additionally, as electric vehicles (EVs) enter the mainstream, forward-thinking developers will anticipate the charging needs of future residents. Integrated EV infrastructure in new builds will accelerate South Africa’s EV market by removing key adoption barriers – if a buyer knows they can charge at home without expensive retrofitting, opting for an EV becomes simpler and more cost-effective, making these homes more attractive to buyers.

Technology-driven efficiencies in construction

Under the weight of global supply chain pressures, rising material costs, and persistent inflation, the construction industry will be compelled to move beyond incremental improvements, and embrace new levels of technology-driven efficiency.

Statistics South Africa’s latest construction input price index (CIPI) reveals, for example, that while total costs rose an average of just 3,4% year-on-year in October 2024, a number of essential materials and inputs have seen substantial increases in expense. Construction pipes, tubes, and fittings surged 13,9% year-on-year, bricks by 7,9%, electrical components by 11,4%, and plants and equipment by 7,7%.

“Intense competition within the industry means that companies will have to rely more heavily on advanced tools and AI to streamline processes, optimise procurement, and protect profit margins. This shift will be crucial in delivering projects faster, more affordably, and with greater reliability,” explains Van den Berg.

For instance, firms can integrate digital procurement processes and logistics, automate operations with drones and machine-led fabrication, incorporate prefabricated components, and upskill teams to leverage real-time data analytics. These measures will reduce waste, accelerate delivery, enhance on-site safety, and enable continuous refinement of project strategies, helping South African developers meet intensified market demands more efficiently and cost-effectively than ever before.

“Ultimately, the general outlook for 2025 is optimistic and we expect enormous opportunities for the industry. Some risks remain, but if construction businesses and infrastructure developers remain agile and innovation-focussed, we may see a new boom in the industry with enormous benefits for the country as a whole,” he concludes. ©

CMA AWARDS RESULTS : BENCHMARKING THE STANDARD FOR SA'S PRECAST CONCRETE INDUSTRY

South Africa's top precast concrete producers are equal to the world's best; a bold statement but true. The evidence for this observation can be seen in the much anticipated results of the Concrete Manufacturers Association's Digital Awards for Excellence 2024 Competition, which are readily to hand in the winners book.



Open to all CMA members, the competition attracted 34 entries including two international projects, and such was the overall quality of the submissions that each of the competition's 15 entry categories attracted a winner.

"It's not often that there is a winner in all entry categories," said CMA general manager, Henry Cockcroft. "We have always operated on the basis of only conferring awards on merit, and if none of the entries in a particular category meet a standard worthy of an award, then no award is made."

The competition is judged on the basis of product and application excellence in two groups, Aesthetic Excellence and Engineering Excellence; there are seven categories in the former and eight in the latter. Awards certificates are presented to all category winners and the four best category winners are awarded a much-coveted CMA Awards for Excellence trophy.

This year nine, as opposed to seven, Aesthetic Excellence certificates were awarded, the reason being there were two winners in the Cladding/Large Panels category and two in Beauty for Life category.

Similarly, eight Engineering Excellence awards were made, again because there were two winners in one of the Product Innovation categories.

"The fact that there were two winners in three of the entry categories, further serves to highlight the high standard of this year's entries," said Cockcroft.

The judging, which was based on video productions of all the entry projects, was an all-day affair held at the beautiful Catello di Monte Hotel in Pretoria. The judges included media specialist, Andrew Meyer, precast concrete specialist, Louis Orffer, and CSIR smart mobility expert, Dr Karien Venter.

Once the judges had finalised the category winners, the four trophy winners were chosen on the basis of the points they had accumulated in their respective categories. There was one Engineering Excellence trophy winner and three Aesthetic Excellence trophy winners.

Rocla earned the sole Engineering Excellence trophy for the supply of HDPE-lined steel-band jacking pipes which were used in the construction of a new bulk outfall sewer system in Montague Gardens, Cape Town. The pipes were designed in accordance with very strict specifications for micro-tunnelling trenchless construction, a system which

has gained world-wide traction for the installation of precast concrete sewer pipes in urban areas.

Revelstone, C.E.L. Paving Products, and Cape Concrete Works were the Aesthetic Excellence trophy winners.

Revelstone, which also gained three Aesthetic Excellence awards, earned a trophy for supplying pavers for an extensive landscaping makeover at Erinvale Estate Hotel and Spa, a five-star sanctuary in Somerset West surrounded by the majestic Hottentots Holland Mountains. Entered in the Wet Cast Stone category, the project entailed replacing clay brick paving with cast-stone cobbles.

Approximately 3 500m² of Revelstone's 50 mm Kent Cobble and its Jura Cobble edging pavers were specified by the designer. The project was far from simple and the design and actual installation work required careful planning and detailing. The paving forms an intricate web of interlinked paths, tree and fountain circles which are interspersed among the estate's extensive indigenous gardens and Cape Dutch architecture.

C.E.L. Paving Products won two Aesthetic Excellence certificates. One, in the Beauty for Life category, involved the supply of paving blocks for the High Constantia Retail Centre in Cape Town and the entry was awarded one of the trophies. The prestigious site is steeped in history and the design team wanted to ensure that the finished product harmonised with the surrounding landscape and its past.

C.E.L.'s coarse exposed aggregate paver was used to pave all the parking areas in a double-mix concrete design which incorporates a dense cement-heavy 10 mm topping. Ten years on, the paving's beautiful aesthetic has withstood normal vehicular and heavy-duty traffic and looks as good today as when it was first installed.

Cape Concrete Works won a certificate and a trophy in the Cladding/Large Panel category for the cladding of the new Investec building at Cape Town's V&A Waterfront with large precast concrete panels. The building features 536 vertically installed panels in light and dark shades and in smooth and corrugated finishes.

Erected on the eastern and southern elevations, the precast concrete facades integrate seamlessly with the glazed facades on the western and northern elevations. The panels not only

offer low maintenance but are designed to age gracefully, providing the building with an authentic aesthetic.

This year's event was the CMA's second digital competition. And as in 2022, videos were made of all entry submissions and were posted on YouTube and other social media platforms. They provided outstanding levels of focussed exposure in the lead up to the judging.

"Our digital reach at 124 600 was nothing short of epic," said Cockcroft, "and our content interactions at 639 was a staggering 643% higher than in 2022. Our total watch time covered 21 days and 11 hours and our organic wow factor came in at 6 681, a jump of 54,8%.

"The fact that the entry videos achieved these remarkable results through our social media platforms, show that in addition to showcasing precast concrete, they contain information of real value to construction professionals. In fact, the competition is more to do with gaining exceptional visibility for the multiple applications of precast concrete than winning an award. It's about creating an informative resource for engineers, architects, property developers and other professionals, encouraging them to tap into the many advantages of precast concrete," concluded Cockcroft. ☺

Swinging into a new **CHAPTER WITH LTA AUTECON**

LTA Autecon, formerly known as Grinaker-LTA Mechanical & Electrical, hosted a golf day and dinner at the Glendowner Golf Club on 27 November to celebrate its first year in business as a rebranded and refocused SMEIPP industry stalwart.

As such, the company recently redefined its distinct identity and strategic positioning as a market leader in the SMEIPP construction sectors. With over 40 years of experience, LTA Autecon specialises in delivering an array of construction projects tailored to the oil and gas and mining sectors.

At the post-golf prizegiving and dinner, Managing Director Bheki Mdlalose welcomed over 65 clients, thanking them for their support during the first year of operations.

Mdlalose also thanked LTA Autecon's management and staff, whose unwavering support assisted with the transition of a company that is once again trading under the original and very well-known name used during the 1980s, but implementing a revitalised vision and organisational culture.

Those enjoying a day out on the greens represented a number of different sectors that are serviced by LTA Autecon's three distinct business units: Oil & Gas, Metals & Minerals and Electrical & Instrumentation; as well as the wholly-owned, independent subsidiary Grunwald Manufacturing, which manufactures electrical and instrumentation equipment for a host of vertical sectors which are typically not serviced by an SMEIPP business.

The prizegiving before dinner featured first, second and third four ball team prizes, as well as a fun prize for the golfer with the lowest

score, and for the one closest to the pin. Together with a bonus prize raffle, this rounded off a highly enjoyable event perfectly.

"LTA Autecon is looking forward to a very positive 2025, which will see us casting our net wider and impacting on several key vertical sectors," Mdlalose comments.

"The company has been known for many years in the mechanical and electrical sectors, and this year's relaunching and refocusing move has been a positive one. The outcome is a well-established SMEIPP business with a proud heritage, which is perfectly positioned to be the partner of choice managing projects for the oil and gas, mining and industrial sectors within South Africa and throughout Africa he concludes. ☺



PPC signs memorandum of agreement for cement **PLANT IN THE WESTERN CAPE**

The leading Southern African supplier of cement and related products, PPC Ltd (PPC), has signed a memorandum of agreement with Sinoma Overseas Development Company (Sinoma) for the construction of a new R3-billion state-of-the-art integrated cement plant in the Western Cape.

PPC and Sinoma, the leading cement equipment and engineering company in the world, entered into a strategic co-operation agreement in July 2024 to collaborate with each other to identify new projects and opportunities to improve efficiencies at PPC's operations.

The 1,5 million tons of cement per annum plant, which will replace and increase existing capacity, is planned to be constructed at one of PPC's current sites. The new plant will be equipped with the latest

technology, including a fully dedicated solar generation system, and will enable PPC to supply the lowest-carbon cement in the country. Overall, the technology will result in substantial improvements in energy efficiency, reduced coal consumption and lower emissions per ton of cement produced.

This will contribute to meaningfully lowering production costs, thereby making PPC significantly more competitive and profitable.

PPC CEO, Matias Cardarelli, said, "South Africa's changing cement market dynamic urgently requires modern and cost-efficient assets, and environmentally conscious producers.

At the heart of our "Awaken the Giant" turnaround strategy is the active pursuit of strategic opportunities and projects to ensure that we are successful in a more competitive future market context. With this new and most advanced energy and environmentally efficient plant in the country, we will be able to supply our customers with lower-carbon cement at a more competitive cost. It represents a major step in the sustainability of our business moving forward and will play a key role in achieving PPC's commitment to reduce its carbon emissions and to deliver value to shareholders."

While the feasibility studies for the plant have reached an advanced stage, over the next three months the parties will finalise the scope and final assessment of the new plant, as well as the associated turn-key engineer, procure and construct

Warning against deliberately flouting **IMMIGRATION, OHS REGULATIONS**

Following the George construction disaster, in which media reports claimed that several of the workers killed were illegal foreign nationals, construction firms have been warned that deliberately flouting immigration laws or occupational health and safety regulations could incur fines, imprisonment and reputational damage.

Gerhard Geysler, Director at Legricon, an occupational health, safety and environmental management compliance specialist and consultant to the Master Builders Association North (MBA North), says: "The Department of Employment and Labour has not made any official statements regarding the causes or liabilities associated with the George construction collapse that occurred in May 2024. Any discussions or speculations surrounding the incident are currently based on assumptions. The collapse is still under investigation by relevant authorities and statements on potential causes or liabilities are yet to be confirmed."

Penalties for non-compliance

However, he notes: "Anyone who knowingly employs an illegal foreigner or a foreigner in violation of the Immigration Act, No. 13 of 2002, commits an offence. On conviction, the employer is liable to a fine of up to R40 000 or imprisonment for a period not exceeding one year. For a second offence, the penalty increases to a fine of up to R80 000 or imprisonment for up to two years. For a third or subsequent offence, the employer faces imprisonment of up to five years without the option of a fine."

These escalating penalties underscore the seriousness with

which South African law treats violations related to employing illegal foreign nationals, Geysler says. "The Department of Home Affairs has actively pursued employers who fail to comply with these regulations. We have all seen the media reports of employer representatives such as construction managers being arrested in this regard," he says.

Hiring illegal foreigners can also impact brand reputation and engagement with local communities, he notes. "There is growing scrutiny from government authorities, the media, and the public on businesses that circumvent labour laws. Companies found employing illegal workers may face penalties, including hefty fines or jail time, as well as damage to their reputation. Negative publicity can lead to distrust among clients, investors, and potential business partners. South African firms that depend on local communities for their labour may also find that their relationships are strained if they are perceived to be prioritising foreign workers over local employment opportunities," Geysler says.

"Local communities, especially in areas with high unemployment rates, may view the employment of undocumented foreign workers as an unfair practice. Community backlash can

agreements. Subject to PPC's board approval, it is anticipated that the construction of the new plant will start in the second quarter of 2025 and will be commissioned by the end of calendar year 2026. The existing plants in the Western Cape will continue to operate during the construction and commissioning process, thereby providing funding support and a smooth transition.

Based on analyses done to date, management is of the view that the new plant robustly meets all PPC's capital allocation criteria. The funding structure is being finalised, but management believes that it can fund the new plant from debt facilities within its current two times net debt to EBITDA covenant. This is assisted by cash that will be generated by the existing operations during construction and a milestone payment structure agreed in principle with Sinoma.

Cardarelli concluded, "By substituting existing capacity with a more efficient, environmentally friendly and larger plant, we are securing PPC's competitiveness in a key market, by delivering to our customers the best value proposition in the region. This will better position PPC for sustained profitability for decades to come and will ensure the group's long-term future. It also represents commitment and support of

the national objective of economic growth and infrastructure development. The pursuit of this investment demonstrates the continued confidence in South Africa by the PPC board and management."

The Sinoma partnership continues to focus on other value enhancing initiatives across all PPC's plants and regions. ©



PPC and Sinoma Overseas sign the agreement for new R3-billion best-in-class cement plant. Left: Linhe Zhu (Chairman, Sinoma Overseas) and Matias Cardarelli (CEO, PPC).

affect a company's standing in the region, leading to protests, calls for boycotts, or a loss of local support. Additionally, the employment of undocumented workers may undermine broader efforts to create sustainable and lawful job opportunities for South Africans, exacerbating social tensions."

Risks to all stakeholders

Geyser says employers and illegal foreign nationals alike navigate a precarious environment fraught with legal, financial, and social challenges.

He explains: "In the South African legal framework, illegal foreign nationals are generally afforded the same protections and rights as citizens regarding remuneration and workplace-related rights, with the possible exception of medical cover. However, due to their lack of legal status, these workers are highly vulnerable to exploitation. Employers may pay them less than their South African counterparts, delay or withhold payments, or impose unfair wage deductions, knowing these individuals are unlikely to report violations due to fear of discovery or deportation. This leaves illegal foreign nationals financially insecure, with limited legal recourse to challenge such practices effectively."

Under the Compensation for Occupational Injuries and Diseases Act (COIDA), illegal foreign nationals are not explicitly excluded from coverage. However, Geyser notes that accessing benefits may be challenging due to the requirement of documentation such as proof of employment or wages, which many illegal foreign nationals lack. Consequently, they may bear the cost of medical expenses themselves if injured or ill.

In the event of an accidental injury, illegal foreign nationals are entitled to emergency medical care under the Constitution of South Africa and the National Health Act, ensuring treatment in life-threatening situations. However, he notes: "Visiting public healthcare facilities could expose them to the risk of being reported to the Department of Home Affairs, as healthcare

providers are required to ascertain patients' legal status under the Immigration Act."

"The most severe risk for illegal foreign nationals is arrest and deportation, as their presence violates provisions of the Immigration Act No. 13 of 2002. Section 34 of the Act allows for their detention and deportation if they are found to be in South Africa without the required documentation. This legal vulnerability amplifies the risks they face in accessing basic rights and protections," Geyser says.

Why firms take the risk

Geyser says there are several reasons construction firms might take the risk of hiring undocumented foreign workers. He says: "Compared to their South African counterparts, undocumented foreign workers could be willing to accept lower wages and may not require the same benefits or legal protections, such as UIF contributions or pensions. There is also a perception that foreign workers, especially undocumented ones, may be more willing to take on physically demanding or undesirable tasks, sometimes working longer hours and under harsher conditions. Some employers believe that these workers exhibit a stronger work ethic or a greater willingness to comply with labour demands due to their need to secure and maintain employment."

Ultimately, while employing illegal foreign nationals may offer short-term financial benefits, the long-term risks related to legal challenges, damage to reputation, and strained community relations outweigh these advantages, Geyser says.

In addition, when employers deliberately hire illegal foreign nationals, it is likely indicative of a broader disregard for the safety and well-being of all workers, as well as a lack of adherence to legal obligations, he says. "This attitude can create unsafe work environments and increase the likelihood of accidents, which may be more pronounced in workplaces where safety regulations are not strictly enforced." ©



TROTECH'S YEAR OF GROWTH, INNOVATION AND MILESTONES

As TROTECH steps into 2025, the company reflects on a year marked by significant achievements and milestones. In 2024, the company delivered over 220 000 m³ of tank storage capacity, solidifying its reputation as the leader in the above-ground bulk storage tank industry.

These accomplishments highlight the company's steadfast dedication to excellence, guided by the M&D Group's core values and the unwavering commitment of TROTECH'S skilled and experienced employees.

Central to TROTECH's success are five unwritten ground rules (UGRs), which are the foundation of the company's culture:

- Be Safe – Around here, safety begins with me!
- Do It Right – Around here, the right way is the only way!
- Find The Best Way – Around here, we find solutions!
- Do What You Say – Around here, you can count on me!
- Khula Nathi – Around here, we grow, you succeed!

These principles drive TROTECH's ability to consistently meet and exceed client expectations, ensuring the company remains a trusted partner for engineering, procurement, and construction (EPC) services in the above-ground bulk storage tank sector.

Safety: the cornerstone of success

Safety remains the company's highest priority, surpassing all other values and UGRs within the M&D Group. This "safety-first" culture has long been a strategic advantage, ensuring the health and well-being of employees while fostering safe and efficient operations across all project sites.

Testament to this commitment, the company's Tank Maintenance Team celebrated two years without a single recordable injury at the Astron Refinery in 2024.

"This established benchmark in safety inspires the entire M&D Group to aim even higher in 2025. This milestone is a reminder of what's possible when safety becomes a shared responsibility. It's proof that excellence isn't just a goal; it's a daily practice," says Lukas Brink, Managing Director of TROTECH.

2024/25 highlights: delivering excellence

Several key achievements in 2024/25 set the stage for continued growth:

TROTECH completed 20 tanks for a major South African tank farm operator. The initial scope was for the Engineering, Procurement, and Construction (EPC) of 18 off-storage tanks, built concurrently and in record time, showcasing the company's capacity to handle large-scale and complex assignments. The company's engineering and construction execution success led to the award of two additional 15,000m³ tanks, further solidifying its long partnership with an industry leader.

New projects underway:

- A major contract award is for securing the Engineering, Procurement, and Construction (EPC) of four 15 000 m³ tanks outside of South Africa's borders. The award has significant benefits to the country as this is part of its strategic fuel supply mandate and is poised to become one of the largest revenue-generating companies in the country. The contract was secured against international bidders from across the globe. The sizable tanks will be fitted with Internal Floating Roofs (IFRs) and Geodesic Domes whilst all Corrosion Protection will be undertaken by TROTECH.
- Once again, the company competed with international players and secured the Engineering, Procurement, and Construction of Five 15 000 m³ tanks at a major South African refinery. The scope includes turnkey operations from the tank construction, corrosion protection, and installation of Internal Floating roofs (IFRs) and Geodesic Domes to three of the tanks boasting self-supporting dome



roofs (first of a kind in South Africa at approx. 250 tons each).

- A significant internal achievement is that this is the first contact M&D and Trotech have collaborated within the Group and the client has reaped the benefits of not having to manage the associated interface risks.
- Six heated storage tanks for a major fuel storage company, underscoring TROTECH's ability to meet diverse client needs.
- TROTECH has launched a new Strategic Business Unit (SBU) dedicated to Depot Services, reinforcing its commitment to addressing clients' needs at both Capex and Opex junctures. This strategic move underscores TROTECH's agility and adaptability, as demonstrated by successfully securing four substantial repair contracts for fuel depots across the country.
- The Depot Services SBU offers a comprehensive range of services, encompassing civil, structural, mechanical, electrical, instrumentation, plate, and piping (CSMEIPP) solutions. This full-spectrum capability enables TROTECH to provide integrated, efficient, and tailored services to support the lifecycle of fuel depots nationwide.

These projects exemplify TROTECH's dedication to its core values of "Do It Right," "Do What You Say," and "Find The Best Way". By leveraging innovation and expertise, the company continues to set the benchmark for above-ground bulk storage tank construction in Sub Sahara Africa

Looking ahead

In the true spirit of "Khula Nathi" - which means "Grow with Us" - Brink extends heartfelt gratitude to his incredible team, dedicated partners, and TROTECH's valued clients. This philosophy of shared growth and collaboration has been the cornerstone of TROTECH's success, fostering lasting relationships and driving the company forward.

"Many of our clients and partners have journeyed alongside us from the onset, embracing this shared vision of growth and progress," Brink reflects. "Here's to a future driven by innovation, grounded in safety, and marked by continued success. With such strong collaboration and vision, the future for TROTECH shines brighter than ever."

Rukesh Raghbir, CEO of M&D Group, proudly reflects on the significant strides TROTECH has made since the TROTECH



acquisition by M&D Group in December 2022.

"M&D Group, in partnership with TROTECH, now offers a seamless, one-stop service offering for petrochemical tank farms," says Raghbir. "This integrated approach eliminates the challenges of managing overlapping scopes between multiple contractors. Such complexities often lead to disputes, delays, and redundant work—factors that disrupt schedules and drive cost overruns, and, potentially, compromising quality."

By consolidating work under a single contractor, M&D Group and TROTECH reduce duplications that inflate costs without delivering proportional value. "Having one contractor minimises legal exposure tied to multiple contracts. These legal gaps often surface only during defaults or breaches, leading to blame-shifting, delays, and additional costs. Moreover, a single contractor simplifies project management, reduces the risk of project collapse due to a non-performing or insolvent party, and provides peace of mind to political risk insurers for cross-border work," explains Raghbir.

This model optimises overhead costs, streamlines risk management, and enhances productivity. "In short, one contractor significantly reduces interface costs and risk exposure while improving project outcomes," Raghbir concludes. ©

Studies, monitoring ensure safe operation OF NUCLEAR POWER STATIONS

Eskom's Koeberg nuclear power station was recently licensed to operate its Unit 1 for another 20 years, with SRK Consulting playing a role in updating the site investigation reports – the Site Safety Report (SSR) required by the National Nuclear Regulator (NNR).

These studies were part of a range of updates undertaken by SRK, that need to be conducted every five to ten years, according to Derry Holmes, principal consultant at SRK Consulting. The work related to Eskom's Duynfontyn site, where Koeberg is located.

"Our work for Eskom included addressing comments by the NNR on the previous version of the Duynfontyn SSR, as part of the long-term operational licence application for Koeberg," said Holmes. Koeberg's Unit 1 is one of around 120 reactors worldwide that have safely continued operations beyond their initial 40-year life.

Stringent standards

Nuclear projects are governed by stringent local and international quality and safety standards, requiring a wide variety of aspects to be monitored, analysed and reported. SRK's work included technical studies in the fields of hydrology, geohydrology, geotechnology, and meteorology. It also looked at land, water and sea use, ecology, demography, water supply, as well as transport routes, nearby industrial and military facilities.

"Much of the work is conducted by our in-house professionals in specific disciplines, and other aspects are contracted out to specialist associates," he said. "Town planners, for instance, conduct the investigations on demography, land use, water use, adjacent sea use, and nearby transportation, industrial and military facilities."

The whole life of the nuclear plant must be considered, so it is important to be able to forecast population growth and movement over this expected lifespan, said Holmes.

"One reason why this data is relevant is because of the plant's potential radiological impact," he said. "For purposes of emergency planning – such as determining an appropriate transport evacuation model – planners also need to know how many people are likely to be in the area in future decades."

Safe operation

Using the concept of 'pathways to humans', the specialists must consider all the possible ways that people can be exposed to radiological impact – through proximity, the food chain, water or other channels. The regulator is then in a position to ensure that the plant will – or continues to – operate safely at that geographic location.

While this work considers the potential radiological impacts of the plant on its surroundings, the site safety investigation also considers the impacts of the surroundings on the plant and its safe operation.

"These aspects include the geology and geohydrology of the ground on which the plant is built, as well as seismic risks to the integrity of the operation," he says. "This extends as far as identifying air traffic routes, considering the potential for aircraft-related accidents. The big question to answer with all this data is whether the environment poses a risk to site safety



Eskom's Koeberg nuclear power station was recently licensed to operate its Unit 1 for another 20 years, with SRK Consulting playing a role in updating the site investigation reports – the Site Safety Report required by the National Nuclear Regulator.

in which the plant can operate throughout its life cycle."

Many moving parts

In the face of identified risks, the studies also consider whether there are any impediments to creating an effective emergency plan – so that people can be evacuated from the area in the event of an incident. This includes considering not only the existing transportation infrastructure, but the likely future scenarios taking into account economic growth and urbanisation.

"The planning of nuclear power stations requires the gathering of considerable data, but also demands intensive engagement with stakeholders like local government," he explained. "While the planners must understand the spatial development frameworks of municipalities or metros, there must also be agreement between parties about what happens in the future."

This is because the power station must be able to make reasonable forecasts of where infrastructural and urban development is likely to take place in coming decades. Considering, for example, the impact if local government changes its plans in a way that could have an unexpected impact on the power station, he said.

SRK has been involved in site safety assessments and monitoring for possible nuclear power plants for over 18 years, said Holmes. This includes geohydrological water monitoring where the levels and quality of water are checked in dedicated boreholes, as well as meteorological monitoring of factors like temperature, wind, solar radiation and rainfall. The ecology aspects of an SSR can benefit from information originally gathered for a project's Environmental Impact Assessment (EIA).

"While the EIA assesses how the power station might impact the ecology, the SSR assesses how the ecological environment may affect the running of the plant," he said. ©

Ground Zero for innovation in **WATER RE-USE AND RECYCLING**

As Cape Town prepares for a major water re-use and recycling conference in March 2025, the City demonstrates to the world that it is ready to assume leadership in this critical and rapidly-evolving sector.

Cape Town's approach to Day Zero water supply in early 2018 created shock waves around the world. A water strategy based on the understanding that water security would have to become everybody's responsibility and that everybody's relationship with water would have to change going forward. The Strategy encompasses five commitments that inform safe access to water and sanitation for all; the management of water use; building additional resources; shared benefits and managed risks; and finally a slow transition towards a water-sensitive city.

As the example of Cape Town shows, and as water crises hit other major cities, it's becoming clear that existing means of water storage and delivery will not be enough to provide for a rapidly urbanizing population in an increasingly uncertain climate. "Depending on surface water resources and water from further and further away is not the solution," says Jay Bhagwan of the International Water Association (IWA).

One such city is Singapore, where the Changi Water Reclamation Plant has the capacity to treat up to 900 million

litres of wastewater daily – roughly equivalent to the water held by 350 Olympic swimming pools. "In the early 1960s, Windhoek became the first city in the world to produce purified drinking water directly from sewage water.

A permanent reuse scheme, the Faure New Water Scheme, is being planned and designed – one of the largest such facilities globally. "Under the Cape Town Water Strategy, we've looked at increasing our supply by about 300 megalitres per day by 2030, of which water reuse features quite significantly," says Michael Killick, Cape Town's director for Bulk Services, Water and Sanitation.

It's appropriate, then, that the 14 IWA International Conference on Water Reclamation and Re-use is being held in Cape Town. The IWA is an open platform for innovators and adopters of new technologies and approaches to bounce ideas and approaches off each other. IWA programmes develop research and projects focused on solutions for water and wastewater management, placing water on the global political agenda to influence regulation and policy making. ©

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Growthpoint R2-billion-plus mixed-use **DEVELOPMENT IN SANDTON SUMMIT**

Growthpoint Properties Limited, South Africa's leading real estate investment trust (REIT), recently announced it is commencing a landmark residential and retail development, Olympus Sandton, in partnership with leading luxury residential developer Tricolt.

Olympus Sandton will be situated in the mixed-use Sandton Summit precinct, anchored by the Discovery Head Office on the corner of Rivonia Road, where Katherine Street becomes Sandton Drive. This strategic investment aligns with Growthpoint's vision to create South Africa's premier walkable mixed-use precinct, capitalising on Sandton's status as Africa's leading financial district.

Growthpoint has been rolling out different elements of the Sandton Summit vision for over a decade now, and Olympus Sandton is its first development positioned to capture the increased demand for residential property in Sandton Central.

The R2-billion-plus Olympus Sandton development will comprise two towers. The first residential tower of 26 storeys will be the first phase of the development along Rivonia Road. It will include a premium dining experience from Marble Hospitality Group on one of the tower's upper floors, as well as its extraordinary Pantry convenience retail offering in Grade-A ground floor retail space. The second phase is a tower of at least 16 storeys, located east of the first.

Sandton Summit is situated at the crest of Sandton Ridge, which is the highpoint of the area. Olympus Sandton's 26-storey tower, although not the tallest building in the area, will become the highest in Sandton, offering unmatched views across Johannesburg and beyond.

Neil Schloss, Head of Asset Management South Africa at Growthpoint Properties, says: "We believe that commencing the Olympus Sandton development is well-timed for the reawakening of the powerhouse that is Sandton Central, and aligned with its accelerated transformation into a vibrant neighbourhood as it evolves with the trend of people wanting to live closer to workplaces and amenities, to offer an exceptional mix of

residential, office, retail and other types of properties."

Timothy Irvine, Growthpoint's Head of Asset Management for Offices, adds, "Sandton is experiencing a significant revival. After years of office downsizing, companies are now maintaining their physical presence and even starting to grow it again as return-to-office becomes standard practice. Vacancy rates in Growthpoint's office portfolio are declining nationwide, with Sandton - the country's cosmopolitan business capital - showing the start of a particularly promising recovery. Despite a slow initial post-pandemic resurgence, the district is adapting not only its office spaces to meet growing demand but its entire lifestyle, with more living and gathering spaces."

Growthpoint is among those leading Sandton Central into an even more vibrant future. Taking advantage of other opportunities arising from increased demand for residential property in Sandton Central, in line with the trend of living closer to offices, Growthpoint also recently sold its 151 on 5th building in Sandton to a residential developer. Growthpoint is also investing in taking Sandton into a new green era with its revolutionary e-co₂ solution launching at 10 Sandton office buildings in mid-2025. The e-co₂ scheme will provide tenants with access to wheeled renewable hydro, wind and solar electricity at fixed escalations, sharing the benefits of Growthpoint's milestone Power Purchase Agreement for renewable energy, with which it secured 195 GWh of green power.

This is one of several projects Growthpoint is undertaking that will make Sandton Central even more friendly for people, businesses and the environment.

The design of Olympus Sandton incorporates advanced sustainable building practices, including post-tension slabs and smart energy management systems, aligning with Growthpoint's environmental, social and governance commitments, including its 2050 carbon-neutral goal.

The Olympus Sandton development will target at least a 4-Star Green Star rating from the Green Building Council of South Africa.

"Pedestrianised mixed-use precincts have tremendous environmental benefits, particularly when they are so well located, by reducing carbon emissions as a result of less private vehicle travel and traffic. Olympus Sandton is the next step in bringing our vision for Sandton Summit to life and delivers on our commitment to creating sustainable developments that deliver exceptional amenities for their uses and long-term value for our stakeholders," says Schloss. ☺



STATE-OF-THE-ART SHOPPING MALL IN EMPANGENI

The landmark new Prince Buthelezi Mall in Empangeni, KwaZulu-Natal, the latest investment by lead developer Moolman Group with co-owners Twin City and Melta Capital, has officially commenced construction bringing this community one step closer to convenient, one-stop shopping in their neighbourhood.

Prince Buthelezi Mall was formerly known as Greenhills Mall; however, the developers and investors were honoured with the opportunity to rename this building after a remarkable figure in our history, reflecting a deep commitment to the community and its heritage.

The mall is scheduled to be completed in the next 18 months and transform Empangeni's retail landscape. It will introduce the first convenient and appealing shopping destination rich in retail amenities, variety and experiences under one roof when it opens its doors in April 2026.

Empangeni is sorely underserved by retail without a comprehensive shopping centre available in the area. Most of the town's retail activities are currently scattered between the CBD and surrounding suburbs, making it difficult for many residents to meet daily retail needs and satisfy their shopping and leisure preferences in one location. This is driving the demand for a larger shopping mall to cater to the needs of Empangeni's aspirational consumers. It's diverse consumer base, which spans all income categories, has meaningful spending power.

Prince Buthelezi Mall's one-stop shopping vision responds to this need in a modern, single-level and fully enclosed regional shopping mall with 37 000 m² of sought-after shopping choices.

The location of Prince Buthelezi Mall is unparalleled at the main crossroads of Empangeni. It is prominently positioned on the R102, right at its junction with the John Ross Highway. The R102 is a major thoroughfare route that links to the N2 and extends easy access to the surrounding area. It is also only 15 km from Richards Bay, 3,5km from the Empangeni CBD, and close to several residential neighbourhoods that are diverse in their needs, income, and spending patterns.

Beyond the prime location that will allow easy access for residents and commuters to Prince Buthelezi Mall, Moolman Group's Steph Beyers says the shopping mall will be transformative for the community of Empangeni. "An exceptionally enjoyable shopping environment and a hassle-free customer experience will distinguish Prince Buthelezi Mall as an excellent shopping destination."

Beyers adds that much thought went into designing Prince Buthelezi Mall so that it caters to its future shoppers.



The new shopping mall will feature a large new taxi rank, ample free parking, modern design and finishes, communal seating areas, and overall, a safe and air-conditioned shopping experience.

Ryno de Leeuw, Twin City CEO, says, "The development of Prince Buthelezi Mall will also see investments worth more than R100-million being poured into the community and economy of Empangeni. The

development has prioritised using local contractors. Beyond local employment opportunities and an incredible shopping experience, co-owners have also committed to upgrading major roads around Prince Buthelezi Mall, improving access in the area".

Prince Buthelezi Mall is being constructed on a former sugar cane field and designed by the award-winning MDS Architects team to reflect its setting and community while also representing world-class retail centre design.

Sihle Ndlovu, Melta Capital Executive Chairman, says the town of Empangeni remains a prominent business centre, distinguished by the sugar, cotton, cattle, and timber industries. "Prince Buthelezi Mall builds on the area's strong business traditions, creating a vibrant hub for connection and commerce. Yet, even with its modern development, Empangeni has retained its small-town charm, and locals are hospitable in true Zululand style. This signature hospitality will also be reflected in a welcoming and enjoyable mall experience."

The concept design for Prince Buthelezi Mall takes its inspiration from the rolling hills, natural landscapes, and sugarcane fields. The main entrance echoes the curved shapes of the rolling hills, with vertical green slats screening the entrances that echo the surrounding sugar cane. The rich textures of the abundant fever trees and earthy tones in the area carry through in the colour palette both on the exterior and interior of the mall.

Getting a project of this scale and significance to commencement juncture was no easy feat as it required careful planning and collaboration with numerous stakeholders. Fortunately, the mall's co-owners all have proven track records of partnering on and delivering highly successful property development projects, and the project received strong support from the uMhlatuze Local Municipality in getting the Prince Buthelezi Mall to this point. ©



IPR provides an effective solution to desilting water storage facilities with its locally manufactured SlurrySucker Dredging System.

IPR's SlurrySucker ensures long-term water **STORAGE BY SAFELY DESILTING DAMS**

Regular maintenance of dams and reservoirs is critical to ensuring their long-term functionality and water storage capacity. Over time, silt accumulates in reservoirs, significantly reducing their capacity and posing both operational inefficiencies and environmental risks. Ruaan Venter, Business Development Manager at IPR (Integrated Pump Rental) spoke to Construction World emphasising the importance of addressing this issue.

“If silt is allowed to build up unchecked, it can lead to serious consequences, from reducing water storage during droughts to causing structural damage to the dam itself. That’s why regular desilting is so important,” he explains.

IPR, part of Atlas Copco’s Specialty Rental Division within the Power Technique Business Area, provides an effective solution to this problem with its locally manufactured SlurrySucker Dredging System. This innovative technology efficiently desilts dams and reservoirs, ensuring they maintain their full capacity.

“The SlurrySucker allows us to remove silt quickly and without causing disruption to the dam’s infrastructure,” says Venter. “It is engineered to be adaptable, making it suitable for different types of projects, whether for quarrying operations or large municipal reservoirs.”

Silt accumulation isn’t just an operational concern; it poses environmental risks as well particularly in the quarrying sector where contaminants are often present in the silt. If not properly managed, these contaminants can seep into surrounding groundwater or travel downstream, causing widespread harm. Importantly, according to Venter, the IPR SlurrySucker system is designed to remove sediment without damaging dam liners or disturbing the environment. This helps mitigate the risks of contamination in a responsible and sustainable way.”

Maintaining the structural integrity of dams is another critical aspect of regular desilting. Over time, the weight and pressure from silt buildup can compromise the structure,

leading to cracks, leaks or even failure. “Desilting relieves that added stress on the dam’s infrastructure,” Venter points out. “By using the SlurrySucker, we ensure that the dam can function properly without additional pressure from sediment buildup.”

The impact of silt on water storage capacity is particularly concerning during drought conditions. As silt accumulates, it takes up valuable space in the reservoir that could otherwise be used for storing water. In regions prone to drought, maintaining maximum water storage capacity is essential. Regular desilting restores reservoirs to their full capacity, ensuring that water resources are available when needed most.

One of the key advantages of the SlurrySucker is its efficiency compared to traditional desilting methods, which often require stopping downstream operations or using non-customisable equipment. “The SlurrySucker is tailored to each project’s needs,” Venter says. “This makes it particularly effective, especially in challenging environments where specific conditions and flow requirements must be met.”

The frequency of desilting depends on the rate of silt accumulation, but regular assessments are vital for ensuring the dam remains in optimal condition.

Desilting large dams presents several challenges including the time required to complete the process and the logistical complexities involved in moving equipment. However, IPR’s experience in handling these challenges ensures smooth operations.

“We engineered the SlurrySucker to overcome these



Left: The SlurrySucker removes silt quickly and without causing disruption to the dam's infrastructure. Right: The IPR SlurrySucker system is designed to remove sediment without damaging dam liners or disturbing the environment.

obstacles," he says. "Its compact yet powerful design allows for easy transportation and deployment, and when necessary, we can scale up the equipment to speed up the desilting process."

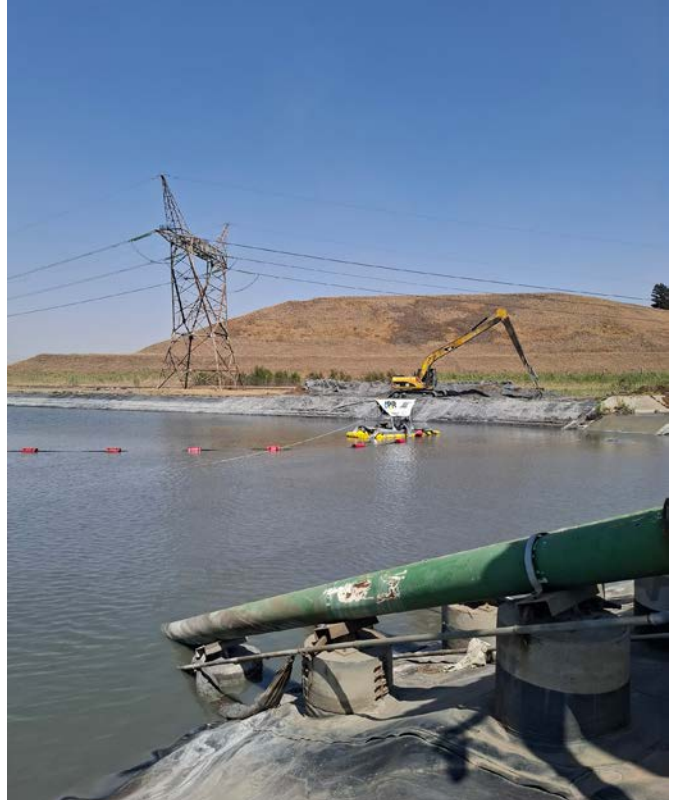
Significantly, the SlurrySucker is mobile and can be deployed without interrupting ongoing operations. In some cases, it can even be installed as a permanent solution, continually managing silt buildup much like a pool cleaner

In addition to its operational efficiency, the SlurrySucker is designed to be environmentally sustainable. By preventing damage to dam liners and avoiding disruptions to downstream processes, it ensures that desilting operations are conducted with minimal environmental impact.

"The cost of regular desilting is significantly lower than the potential costs of neglect, such as dam failure or reduced water supply, and neglecting desilting can lead to expensive repairs or water shortages, both of which can have serious financial implications," warns Venter. "By investing in regular maintenance, operators can avoid these costly disruptions and maintain continuity in their operations."

For water management authorities and operators, planning long-term maintenance strategies is crucial. Incorporating regular desilting into these plans is essential for ensuring the longevity and functionality of dams and reservoirs.

"At IPR, we are always ready to provide consultations and support to help authorities execute these critical tasks effectively," Venter concludes. ☺



The SlurrySucker Dredging System efficiently desilts dams and reservoirs, ensuring they maintain their full capacity.



The SlurrySucker is mobile and can be deployed without interrupting ongoing operations.



*Michelle Fick, BU Development
Manager Concrete Aesthetics at
CHRYSO Southern
Africa.*



*Patrick Flannigan, Technical
Manager of the Concrete
Business Unit at CHRYSO
Southern Africa.*

Admixtures ensure concrete **RESULTS IN WATER-RELATED STRUCTURES**

With better water management becoming a key priority for many African countries, concrete admixtures are playing a vital role in ensuring the durability and longevity of water infrastructure like reservoirs, water treatment plants and dams.

Water-retaining structures like these need to be built of concrete with very low permeability, for instance. According to Patrick Flannigan, Technical Manager of the Concrete Business Unit at CHRYSO Southern Africa, this means using as little water as possible in the concrete mix – but this can lead to challenges in workability.

“Concrete admixtures such as plasticisers and super plasticisers serve to improve workability when reducing water content,” explains Flannigan. “Plasticisers can reduce the water requirement by 5 to 12%, while super plasticisers can cut the water content even further – by 15 to 30%.”

The value of these admixtures in water-related applications, he says, is to help create a strong concrete which is also resistant against both cracking and water ingress. Water-retaining structures are often large in scale, requiring high levels of tensile strength, he says. This generally leads to them being heavily reinforced with steel, creating another potential challenge for the pouring and compaction of concrete.

“Where there is so much reinforcing, it can sometimes restrict the flow and access of concrete into all the cavities between the steel bars,” he explains. “A plasticiser improves workability so that no gaps remain unfilled during the pour.”

As a water reducer, admixtures ensure the optimal water-cement ratio to achieve the high strength necessary to withstand the considerable forces exerted outward by the weight of the water.

“At the same time, another important risk to alleviate

is water ingress into the concrete, mostly from the inside surface against which the water body is pushing,” he says. “A dense concrete is also required to prevent this ingress – so that water cannot reach the steel reinforcing and cause rusting. Once again, the reduction of water in the mix is essential to achieving this high density.”

Flannigan points out that most of the water in the concrete mix is lost during the hydration process, but there is still ‘free water’ which takes longer to evaporate. As it does this, it leaves voids and air pockets in the concrete, making the concrete more permeable. Having less water content in the mix helps to reduce these voids, and delivers a result that is denser and more impervious.

“For the durability of the structure, it is equally important that the concrete is not permeable to the outside elements, such as the outer layer of a reservoir wall,” Flannigan continues. “Among the key tests to prove durability is an oxygen permeability test – to check that oxygen cannot permeate the concrete and decay the steel reinforcing. A dense concrete will avoid this risk.”

Michelle Fick of CHRYSO’s Concrete Aesthetics Business Unit highlights the role of waterproofing agents like pore blockers such as CHRYSO® Fuge B. These admixtures further enhance concrete’s resilience against chemical attack, and reduce permeability.

“Another important waterproofing agent is crystalline admixture – such as CHRYSO® CWA 10 – which displays ‘self healing’ characteristics,” says Fick. “The ingredients of CHRYSO® CWA 10 react with moisture to form crystals deep within the pores and capillary tract of the concrete



CHRYSO admixtures are ideal for no-fines concrete, ensuring water flows away while maintaining stability in large water-retaining structure.



Admixtures ensure smooth concrete flow into tight spaces within steel reinforcement, vital for strength in large water structures.

structure.” This can transform an entire concrete structure into an impermeable barrier against water, with lasting integral waterproofing properties, she adds. It protects against moisture transmission, chemical attack and corrosion of reinforcing steel.

Returning to the challenge of cracking in concrete, she highlights the role of admixtures that reduce shrinkage in concrete – such as CHRYSO® Serenis. The mechanism at work here is decreasing capillary tension, a crucial factor in shrinkage.

“By reducing the volume changes that occur during the curing process, these admixtures help to prevent cracking that might lead to leaks or the exposure of reinforcing steel,” she says. “This can hold down maintenance costs and make for longer life of infrastructure.”

While steel is usually the primary reinforcing element in water-retaining structures, there is also a role for secondary reinforcement through the use of macro-fibres and micro-fibres, says Flannigan.

“Densely packed steel bars can make the pouring of concrete difficult, so macro-fibres can be a useful way of achieving the same flexural strength with less steel,” he says. “Micro-fibres add another layer of certainty to the solution, combating cracks.”

When it comes to the resilient design of large and heavy structures like reservoirs, it is important to ensure that water does not collect underneath or around the

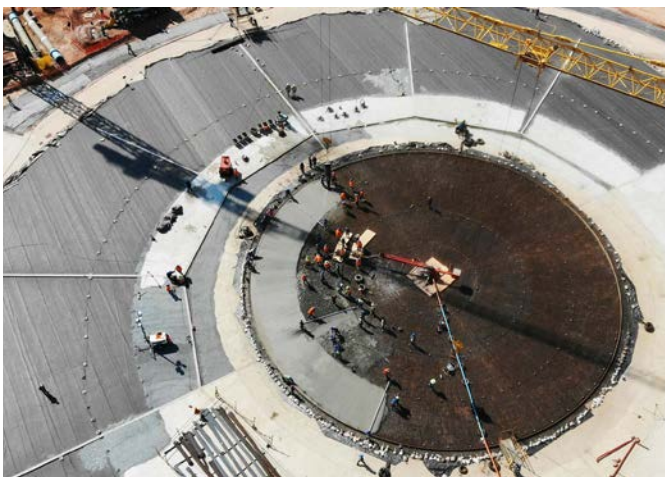
structure. This requires an efficient way of draining water away from the area, which can be achieved by installing a pervious base layer under the structure. Here, a no-fines admixture like CHRYSO® Easy Drain offers many benefits.

“A no-fines concrete is pervious and allows water to flow away without eroding the sub-base material,” says Flannigan. “The admixture coats the coarse aggregate to ensure a stronger bond between these particles and the cement-water mix.”

With continued population growth in southern Africa, it is likely that more water-retaining structures will be built – often in areas where the local construction material may not be ideal. Fick points out that concrete admixtures like the CHRYSO® Quad range make it possible to use challenging sands without compromising concrete performance.

“By enabling the use of local material, admixtures help contractors to reduce both the cost and the carbon footprint of their projects,” she says. “Instead of transporting more suitable material from a long distance away, CHRYSO® Quad admixtures overcome challenges such as complex aggregates – so that local material can be used.”

CHRYSO’s EnviroMix® range further supports sustainability by facilitating the use of supplementary cementitious material in concrete, concludes Flannigan, while still achieving early and late strength requirements. ©



Left: Plasticisers ensure optimal concrete workability, crucial for heavily reinforced structures like reservoirs. Right: Cracks in concrete can lead to costly and urgent repairs in water infrastructure, compromising both the structure’s strength and causing leakage.

The crucial role of demolition **IN DAM MAINTENANCE**

Demolition plays a crucial role in dam maintenance by facilitating the repair, renovation, or removal of structures to ensure the dam's integrity, safety and functionality. Years of applied demolition research has enabled Jet Demolition to offer an integrated approach to dam rehabilitation.



Over time, dams can develop structural issues such as cracks, weakened spillways or compromised foundations. Demolition of damaged sections allows for the safe removal of deteriorated materials, making way for repairs or replacements. For example, partial demolition of a spillway may be necessary to replace it with more durable materials or to upgrade its capacity.

Dams built decades ago may not meet current safety standards or operational requirements. Demolition of outdated components such as control gates, overflow structures or auxiliary buildings is often necessary to modernise the dam. This process enables the installation of new technologies such as automated control systems or enhanced flood control measures.

Hybrid solutions are developed to suit specific, on-site conditions while protecting the structural integrity of the remaining concrete. Rehabilitation of dam walls usually

requires demolition of redundant portions of monolithic blocks. “Judicious selection of demolition methods and their application techniques are vital to a controlled and productive project,” comments Kate Bester, Contracts and Project Manager at Jet Demolition.

In certain instances, explosive demolition may be possible and appropriate. Various drilling and coring methods are then applied to generate blast holes of pre-determined depths, diameters, and alignments, in strict accordance with our in-house blast-design, where the nature of the works to be undertaken warrants controlled blasting of spillways and structural elements.

Detonation causes both shock wave and gas penetration energy transfer to concrete structures. Therefore, it is critical to ensure physical separation of the elements, combined with careful and considered selection of blasting applications, to ensure reliable and predictable results, without residual

damage to the remaining concrete. The company has successfully completed numerous dam wall demolition projects, both by explosive and mechanical means. Its range of dam-specific services include vertical and horizontal drilling and coring, blasting, diamond wire rope cutting and mechanical breaking using specialised demolition tools.

When a dam reaches the end of its useful life, or if it poses safety risks, full or partial demolition is required to decommission the structure safely. This process can involve the controlled explosive or mechanical removal of key components such as spillways or retaining walls to reduce the dam's height or eliminate its water-retaining capabilities. Proper decommissioning through demolition ensures that the site is returned to a safe and environmentally stable condition.

Some older dams can negatively impact local ecosystems by disrupting natural water flows and fish migration patterns. In such cases, selective demolition can create openings for fish passage or restore natural riverine environments. This type of demolition is carefully planned to minimise ecological disturbance while achieving environmental restoration goals.



In response to changing environmental conditions or increased risk of natural disasters, demolition may be necessary to modify a dam's structure, such as reinforcing its base or adding new spillways. These safety enhancements ensure the dam can withstand extreme events and continue to protect downstream communities. ©

Reimagining today's infrastructure for a sustainable tomorrow.

Jet Demolition delivers safe and controlled demolition of damaged or outdated dam sections, making way for essential upgrades that maintain structural integrity and align with modern safety standards.

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Citi-Con ensures **WATER-TIGHT RESERVOIRS**

Citi-Con's waterproofing expertise is being successfully deployed to build watertight reservoirs. This is an extremely specialised and complex aspect of new reservoir construction that Citi-Con has perfected over many years.



Left: There is no reason that a well designed and built concrete reservoir that is also appropriately maintained should not continue functioning as intended for many years. Right: At 39 m in diameter and 5,5 m deep, the new reservoir was constructed using a conventional reinforced-concrete design.



For this reason, the company is the preferred provider of these specialist services for many principal contractors tasked with constructing these structures. A case in point is the recent successful waterproofing of a new 5 Mℓ reservoir in Langebaan, Western Cape, that was built by Rawucon. Citi-Con executed this aspect of the work scope with high precision.

Leaking reservoirs compromise water security. Even a small amount of water lost from a reservoir can be costly especially in a water-scarce country such as South Africa. This is also a significant risk during times of drought which recently affected many areas of the Western Cape, again emphasising the need to use scarce water resources efficiently. The country ranks as one of the 30 driest countries in the world with an average rainfall of about 40% less than the annual world average rainfall. Moreover, leaking reservoirs are expensive and time-consuming to correct. Bear in mind that many South African municipalities are cash strapped and, therefore, have to use limited resources efficiently. Downtime while reservoirs are being repaired can also seriously inconvenience large areas at a time.

Meanwhile, in the same way that these structures need to retain drinking water, they also need to keep contaminants out to ensure a reliable and clean supply of water.

The challenge is that most concrete eventually cracks due to curing, shrinkage, settling and seismic activity, among other factors. This can result in the leakage and contamination of concrete water-retaining structures.

“The best way to reduce the likelihood of these problems occurring in the future is to select the best waterproofing system for concrete reservoirs. Research and plan ahead to avoid future problems or simply deal with an expert right from the outset. There is no reason that a well-designed and built

reservoir that is also appropriately maintained should not continue functioning as intended for at least 100 years,” Andre Vermeulen, Managing Director of Citi-Con, says.

At 39 m in diameter and 5,5 m deep, the new Oliphantskop reservoir was constructed using a conventional reinforced-concrete design. It operates alongside a 2 Mℓ reservoir on site with matching top and bottom levels to significantly augment water-storage capacity in the town. The pipework also makes provision for a second 5 Mℓ reservoir for future needs. Bear in mind the rate at which Langebaan is expanding. It is currently one of the largest growing parent towns in the country.

The state-of-the-art waterproofing system consists of among the best products on the market, of which Citi-Con is an approved applicator. This enables the company to guarantee its workmanship for the maximum term available. Citi-Con is a proud approved applicator of Sika South Africa; Mapei; a.b.e Saint Gobain; StonCor Africa; Pro-Struct; and Urochem Trading's quality waterproofing products.

Based on plasticised polyvinylchloride and manufactured in specific profiles, quality waterstops were used to seal joints. These particular waterstops were selected because they provide long durability when installed by a skilled and experienced contractor.

As Vermeulen notes, joints between pours are some of the most vulnerable areas of reservoirs. If these products have not been installed correctly, water-retaining structures will leak. A competent waterproofing contractor will avoid common mistakes such as installing waterstops too close to steel reinforcement; misalignment; and roll ends overlapping but not welded or spliced together. Issues also arise when waterstops have been installed adjacent to poorly consolidated concrete

and when it extends on flanges that have not been removed before the second concrete pour.

Curing to form a durable rubber like seal, a two-component sealing compound based on a polysulphide polymer blended with fillers and chemical curing agents was used as a joint sealant. Citi-Con selected a sealant that is resistant to ultra-violet light and ozone making it particularly well suited for sealing drinking water reservoir joints.

He explains that joint design is critical. For water retaining structures and where shear movement is anticipated, a 2:1 width to depth ratio should be maintained. This ratio provides the optimum geometry to allow movement to occur within joints without placing excessive force on their faces. These should be parallel and their width at least four times the maximum anticipated movement. When placing the sealant, Citi-Con made sure that joint openings were central to their maximum compression/expansion cycles.

Surface preparation and priming must also be undertaken correctly. All surfaces need to be clean, sound and dry, as well as free of all laitance before being primed. Citi-Con also pays particular attention to voids and hollows and allows for at least 30 minutes for the solvent to evaporate before applying the sealant. Repriming is undertaken where primer has lost tack after three hours. Furthermore, the primed surface is protected from dust and dirt which can interfere with sealant adhesion.

To complete the process, the company then installed a high quality Hypalon bandage system over the sealed joints to reinforce the waterproofing.

“For this application, we selected a high-performance joint and crack sealing system. It allows variable and high levels

of movement in one or more directions, while maintaining a high-quality watertight seal. The product consists of a modified flexible Polyolefin waterproofing tape with advanced adhesion properties,” Vermeulen says.

Various quality waterproofing systems were also used to waterproof the reservoir’s internal wall and floor slab.

This included a high two-component cementitious mortar that seals hairline cracks already present on substrates.

Also approved for use in potable water systems, a flexible slurry based on a special synthetic resin dispersion and a blend of selected cement mixed with carefully graded aggregate was then deployed.

In addition, an additive was used to waterproof the cement mixes, improving bond of subsequent treatments. The various waterproofing layers were also reinforced with alkali-resistant glass fibre mesh and associated textiles.

A high-quality bituminous membrane was applied to the concrete floor slab to complete the process.

Again, Citi-Con followed the recommended techniques for bitumen waterproofing. This included the use of the appropriate tools to ensure an even and consistent coverage. The company also applied the membrane according to the recommended thickness and overlapping requirements to achieve optimal waterproofing results.

“Bitumen is highly valued for its excellent waterproofing capabilities by forming a durable and impermeable barrier. The material’s inherent durability makes it an ideal choice for this and other water-proofing applications. It can withstand extreme weather conditions; temperature variations; and heavy loads, providing long-lasting protection,” Vermeulen concludes. ☺

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EXTENDING THE LIFECYCLES OF SILOS

Silos are among the most critical assets in mining, manufacturing, and agricultural operations, forming the core infrastructure for storing bulk materials and ensuring operational efficiency. Silos originated in the 18th century as simple wooden or earthen pits designed to store grain, protecting it from pests and spoilage. As agriculture and industry grew, the limitations of wood – prone to fire, rot, and pests – led to the adoption of concrete in the late 19th century. The first concrete silos emerged in the 1890s. Their durability, fire resistance, and capacity to handle larger quantities revolutionised storage.

Yet, like any other structure, silos are subject to wear and degradation over time. Solvocore offer repair, rehabilitation, and - if necessary - demolition services for silos.

“A neglected silo is a ticking clock,” says Wayne van der Westhuizen, director of Solvocore. “The longer repairs are delayed, the higher the cost implications. It’s not just about

materials; it’s about safety and downtime.”

The hidden costs of delaying repairs

Engineers and industry professionals know that downtime is a cost no operation can afford. However, the real expense often lies in underestimating the rate of structural degradation. Minor problems can escalate into major compromises if left untreated.

Van der Westhuizen emphasises: “Early intervention is key. A repair job today might cost a fraction of what it would three to five years later. Delays compound the structural, financial, and safety risks.” Solvocore’s expertise spans the full lifecycle of silos. From inspections and diagnostics to repairs and safe demolition, its goal is to extend the life of these critical assets and ensure performance meets operational demands.

Rehabilitation in action

One of Solvocore major successes involved a silo at a major mining operation that had suffered years of neglect.

The structure showed severe spalling, exposed rebar, and cracking. Using advanced diagnostic techniques, including ground-penetrating radar (GPR) and ultrasonic testing, Solvocore’s team pinpointed the areas needing intervention without compromising the rest of the structure.

Through concrete repairs and protective coatings, it restored the silo to safety standards – all while minimising downtime. “Every day saved on repairs is a day gained in production,” Van der Westhuizen explains.



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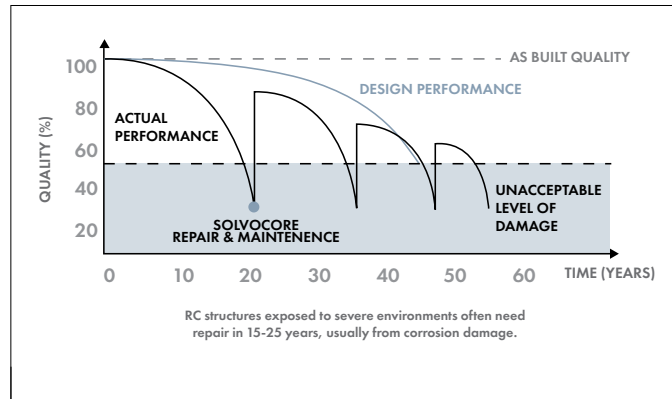
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Modifications of structures

Modifications to concrete silos are often carried out to incorporate new technologies, support mining expansion, and meet increased load demands.

These upgrades include enhancing storage capacity to handle larger material volumes. The process uses state-of-the-art concrete cutting equipment, ensuring safety and efficiency.

Solvocore has provided a range of services to ensure the structural performance of concrete silos, including:

- Structural condition assessments using GPR and ultrasound scanning.
- Concrete repairs for cracks, spalling, and damage.
- Concrete ingress protection through surface impregnation and coatings.
- Strengthening silos to enhance bearing capacity.

- Waterproofing and internal cleaning for long-term durability.
- Internal lining to prevent erosion and protect interiors.
- Silo modifications, including openings for feed conveyors and hopper replacement.

These services help silos remain durable, functional, and adaptable to evolving operational demands.

When repairs aren't enough: safe demolition

"Demolition is a last resort, but when it's needed, it must be done safely and efficiently," says Van der Westhuizen.

Solvocore's team ensures minimal disruption to operations and recovers as much value from the process as possible. Whether it involves carefully engineered plans, often non-explosive or manual dismantling in high-risk areas, each step is guided by a dependable engineering time. ©

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Water infrastructure and equipment maintenance: **A STRATEGIC NECESSITY**



Proper maintenance of infrastructure and equipment is essential to prolong the usable life of these assets. With the right strategic approach, it also becomes a cost-effective solution.

As companies and municipalities face challenging economic times, they are required to get more out of their water infrastructure and equipment. By extending replacement cycles for pumps, filters, mixers, and other components, the costs of replacements are deferred. However, without regular maintenance, this approach can backfire – leading to underperformance, breakdowns, and eventually, expensive catastrophic failures that will necessitate replacement.

“Anyone who has driven an under-maintained car knows it's a case of diminishing returns,” says Chetan Mistry, Strategy and Marketing Manager at Xylem Africa. “Fuel consumption goes up, performance declines, and once one thing breaks, it often triggers a domino effect of other issues. Similarly, with water systems, under-maintenance invites trouble, but unnecessary scheduled maintenance has its own drawbacks. The key is to strike a balance that ensures both longevity and cost-efficiency.”

This balance is why more private and public water system managers are turning to preventative maintenance agreements (PMAs).

The maintenance conundrum

Water infrastructure and equipment requires regular upkeep. For instance, filters and tanks may need annual inspections, while other components – though durable for several years,

benefit from frequent checks. General inspections are also critical to discovering emerging issues such as leaks or component wear.

Despite its importance, maintenance is often seen as a grudge purchase. It involves costs, disruptions, and logistical headaches. Many site managers adopt an “if it's not broken don't fix it” attitude towards maintenance to avoid these difficulties, but this approach ultimately proves costly.

Poor maintenance practices guarantee failures and reduces the life of equipment. According to the Water Research Council, annual maintenance of infrastructure like pipelines or pump stations can cost less than 1% of their replacement value. By contrast, poor maintenance can reduce a pump's lifespan by 30% to 50%. The cost of failure extends far beyond the direct cost of repair and replacement of equipment and include secondary impacts, such as contamination and service interruptions.

Underperforming water systems pose significant risks, especially in industrial settings. For example, low water pressure can compromise fire prevention, and failed dewatering systems can endanger fragile areas. To address these challenges, a suitable maintenance strategy needs to be adopted to ensure cost effective reliable operations.

The shift away from reactive maintenance (operate to fail)

to condition based maintenance provides owners of water infrastructure and pumping equipment an opportunity to reduce maintenance costs while extending the usable lifespan of their assets efficiently.

Implementing such systems with limited resources and expertise can become overwhelming. This is where preventative maintenance agreements stand out.

How PMAs reduce costs and improve reliability

A preventative maintenance agreement (PMA) is a supplier-managed solution that provides structured, cost-effective maintenance.

A well-designed PMA offers numerous benefits, including:

- Predictable maintenance budgets
- Detailed equipment status reports after each inspection
- Priority service from authorized technicians
- 24-hour emergency response guarantees
- Unlimited telephone support
- Extended warranty protection for equipment

Original equipment manufacturers (OEMs) are uniquely positioned to deliver high-value PMAs. By auditing a site's equipment and tailoring maintenance plans to its budget and scope, OEMs can offer solutions that meet both operational and financial needs.

Cost-Effectiveness of PMAs

PMAs save costs in three key ways:

- **Proactive Issue Resolution**
By addressing potential problems early and using OEM

replacement parts, PMAs reduce the likelihood of failures.

- **Fewer Site Visits**

With lower failure rates, inspection intervals are tailored to the equipment in use and the specific site conditions. Inspections may vary from 4 to 1 inspection per year.

- **Access to Skilled Technicians**

PMA clients benefit from expert technicians who complete tasks efficiently, without incurring additional costs for critical repairs or advanced workshop services.

"Maintenance is resource-intensive, requiring staff, money, and time," explains Mistry. "While some tasks can be handled by on-site teams, they often have competing priorities. Unexpected or critical repairs can become prohibitively expensive. A PMA alleviates this burden, providing predictable costs and ensuring equipment up-time."

Versatility beyond OEM products

PMA benefits are not limited to a specific vendor's products.

Leading OEMs, such as Xylem, have the expertise and resources to service third-party equipment. This flexibility ensures that all systems on-site remain productive, allowing staff to focus on other priorities while managers maintain cost predictability and uptime.

Conclusion

A well-designed preventative maintenance agreement delivers value by ensuring water infrastructure and equipment remains reliable and cost-effective.

By planning for maintenance rather than reacting to failures, companies and municipalities can navigate economic challenges with confidence, extending the life of their assets and avoiding costly disruptions and service delivery challenges.

When it comes to maintaining water systems, the right PMA ensures equipment keeps doing its job – efficiently, reliably, and within budget. ☺





Welded mesh adds a **NOVEL GABION DIMENSION**

The traditional role of gabions in constructing engineered systems, like mass gravity retaining walls, is now increasingly crossing over into parallel applications outside the mainstream civils industry that include landscaping and architecture.

One of the key drivers locally and internationally is the ongoing refinement of square welded mesh panels, which provide a flat finish particularly well suited for wall cladding and feature walls,” explains Cheyne. “The natural appeal of the rock fill used to form gabions has also been a key influencer for landscapers and architects, along with durability and aesthetic benefits.”

Conventional hexagonal double-twisted woven mesh gabion systems can achieve the same effect, but their performance characteristics are different. Welded mesh is intentionally rigid, whereas woven mesh is designed to flex. The latter is particularly important for applications like submerged riverine retaining walls, where welded mesh would fail. However, both woven and welded mesh can be specified for land-based mass gravity retaining walls, but choosing the hexagonal woven mesh option is the logical choice given the lower cost at scale, unless there’s a specific design requirement.

Dimensional wire tolerances

Therefore, the starting point for choosing a woven or welded option is dependent on the application and thereafter the ultimate result required, which comes down to the accepted dimensional wire stretch tolerances.

Welded mesh panels – given their intentional rigidity – must comply to industry standard tolerances in a range from

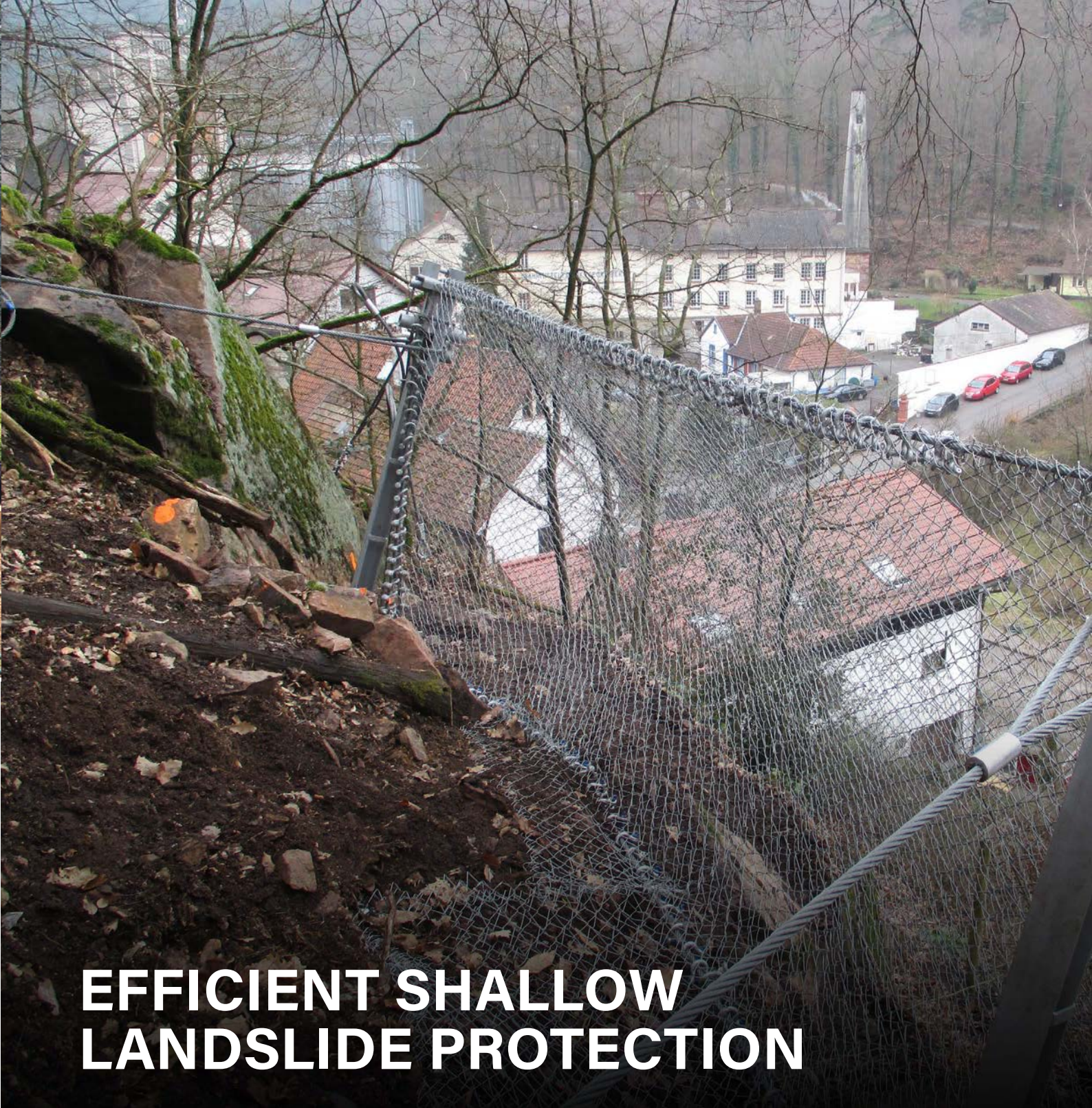
0,5 mm to 0,10 mm. However, with woven mesh the acceptable variance is greater at a threshold of around 5%. The reason for this is the need to make provision for the inherent nominal expansion and contraction of woven mesh systems when bracing and tensioning baskets during installation.

“In our view, however, 5% is too high, and our woven mesh systems and design recommendations make provision for a maximum 2,5% variability,” Cheyne continues. “This of course is dependent on correct installation and rock filling techniques. When perfectly executed, the geometry all comes together, whether it’s a gabion staircase, a weir or a retaining wall. For predominately non-engineered structures, welded mesh takes this a step further.”

Welded mesh diversification

Historically, Gabion Baskets first entered the welded mesh market with a 75 mm x 75 mm panel product composed of 3 mm diameter Class A galvanised wire. This was followed by 50 mm x 100 mm, and 50 mm x 50 mm panels to meet growing demand. In all cases, products can now be specified either with 3 mm or 4 mm diameter wire within a tensile strength range of 350 to 550 MPa.

“A thicker wire specification provides far greater rigidity and lends itself to the creation of new product lines. For, example, our new gabion barrier systems – employed for tasks like flood



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emergency mitigation and military protection – use a 75 x 75 mm panel with a 4 mm wire. Lined with a geotextile basket sock, these barriers can be filled with any material, including sand, and are quick to deploy thanks to their prefabricated modular concertina design. Since they fold flat into a compact space, they are also easier to transport and store,” Cheyne explains.

Another key advantage is that welded mesh gabion wire panels may be rigid in term of tolerance dimensions, but that doesn’t stop them from flowing with the curves. “Rounded shapes and corners are a major trend globally, and we’re adding our own unique interpretation locally through an upgrade in our manufacturing lines,” says Cheyne.

Growing entry points

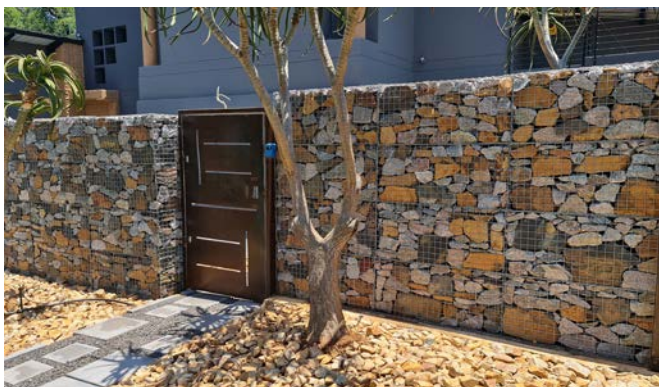
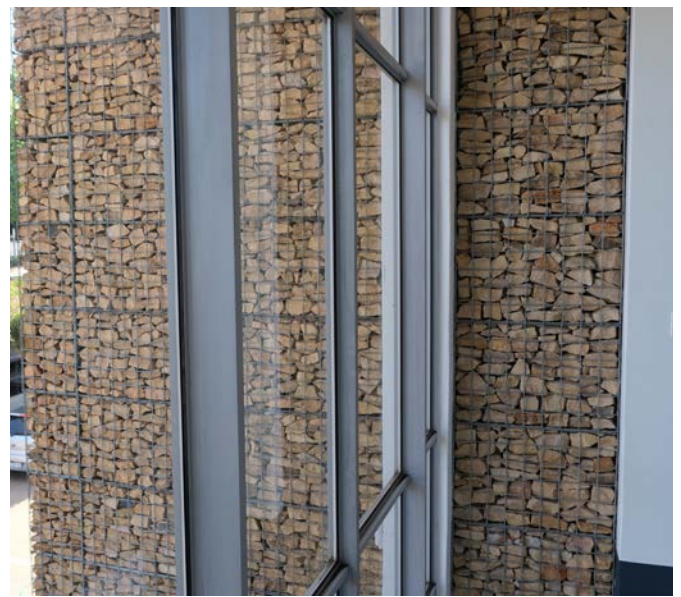
Either way, whether it’s for a commercial, industrial or residential project, Cheyne says the rising volume of welded

mesh enquiries from built environment professionals, as well as private clients, is remarkable. These include enquiries for garden terraces, boundary walls, freestanding walls, barrier protection, building cladding, as well as commercial signage. The latter is one of Gabion Baskets’ new product lines.

“Climate change impacts are a constant reminder that our fragile ecosystems are under increasing threat and need to be countered with greener initiatives.

Gabions are a natural response from an environmentally engineered perspective, as well as from a sustainability standpoint, plus there’s tremendous comfort in being interconnected with natural stone – whether it’s ultimately a welded or woven solution,” adds Cheyne.

“Full engineering design and on-site practical installation training is offered to assist in using these product lines,” Cheyne concludes. ©



UNDERWATER INSTALLATION OF TERRACRETE™

A Terraforce® Terracrete™ installation has been successfully completed underwater at a Keurbooms river slipway.

John Bozman of JB Civils explains: "This Terraforce® Terracrete™ project was part of the stabilisation of the existing river revetment, which we upgraded from timber poles to Gabion Reno mattresses. The slipway also needed a much overdue repair.

"To start, we cast concrete anchor beams, to which we connected to anchor cables for the blocks, then placed the beams in the water at the required depth. From there we fed the blocks down the cables, creating a Terracrete "mat", laid onto a base of rip rap rock fill and gravel."

Bozman adds: "The foundation under the blocks was laid using dump rock and an excavator, pressed in until refusal. Then a geofabric layer was placed on top of it and the layer levelled out using 19mm stone. The foundation of the anchor blocks was laid using an excavator and chains. The levels are preset at low tide, also on top of the dump rock. The concrete anchor block was then lowered into place and levelled accordingly.

"This worked out very well and the clients love it, because the slipway is no longer slippery. Also, should there be another storm that disturbs the area, the Terracrete mat will settle instead of break - unlike a solid concrete ramp."

Terracrete supplied by Terraforce licensed manufacturer, Southern Cape, Mobicast. ©



PROJECT TEAM
Main Contractor: JB Civils



L13, L18, L22



Terrafix



Terracrete



4x4 Step



L11, L12, L15, L16

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UMHLANGA RIDGE – SUPER BASEMENT

GeoCiv Group was invited to tender for the construction of a super basement for the new head office of Hollywood Bets within the Umhlanga Ridge precinct. The tender required a geotechnical contractor that could execute the project on a full turnkey basis including all relevant bulk earthworks, civils works, retaining structures and piled foundations accordingly.



The scale of the project was apparent with a total of 90 000 m³ of cut to spoil, lateral support walls of up to 17 m tall with a final tally of 550 structural foundation piles.

Design innovation

The Umhlanga Ridge area along the coast of KZN and Durban North generally consists of soil conditions called a Berea Red formation. These soils are made up of a red, clayey sand with a low bearing capacity. When constructing lateral support walls in these conditions, the lateral support walls consist of a combination of soldier piles, post-tensioned anchors and shotcrete arches that create an ‘active’ system that will limit lateral movement when removing earth support to adjacent and neighbouring buildings and structures, in this prestigious business park.

The lateral support piles were installed for the purpose of preventing bearing capacity failure of the Berea Red soils in the temporary condition, albeit becoming a permanent part of the lateral support wall for a loadbearing purpose on the extremities of the structure.

Self-drilling anchors (SDA’s) are designed to be installed in soils that would collapse during normal air flushed borehole methods.

While introducing the Self-drilling Anchor (SDA), into these soil conditions, the better consolidation of the soils allowed us to significantly reduce the quantity of anchors required for these high walls.

To complete the lateral support system, shotcrete is applied in an arch shape between piles that span the pressures of the soils between each anchor position.

Quantifiable time, cost and quality

With the use of Self-drilling anchors (SDAs), and the revolutionary spacing design of these anchors, a large area of support can be completed daily. This method allowed us to commit a single drilling crew for the installation and produce average productions exceeding 250 m of SDA drilling per day. No delays are encountered waiting for curing of pressure grouted anchors that need stressing

Risk management

The position of the Devin Properties basement in proximity to the surrounding office buildings was the main concern during

construction of the Lateral Support and Super Basement construction. Excessive lateral movement when constructing a lateral support wall is exponentially increased as the height of the wall increases. Lateral movement of the lateral support system can cause cracking and settlement of the surrounding buildings.

Construction innovation technology

With piled lateral support walls, the system works in a combination of three elements, namely soldier piles, anchors and shotcrete arches to ensure the stability of the wall. GeoCiv’s design differs from the norm by looking at the function of each element separately and implementing each of the three for a more ‘Innovative’ approach.

These anchors have advantages that are generally overlooked when used due to the high cost of the material. These benefits include speed of installation, the consolidation of soils while grouting and a substantial increase in the friction bond between the tendon and in situ soils. When these benefits are analysed, the high cost of the materials become negligible, and the resultant product becomes an irreplaceable tool in our innovative Lateral Support design.

Health & safety

The scale of this project was truly remarkable, taking six months to complete. Such a technically demanding project brought numerous challenges, particularly in managing sub-contractors and GeoCiv’s own workforce

A dedicated team of approximately 60 professionals, skilled, semi-skilled and unskilled workers worked on-site to execute the tasks, with strict adherence to compliance being a top priority. GeoCiv collaborated closely with the client’s safety agent, consistently performing well during monthly compliance audits and weekly inspections.

Environmental impact consideration

In recent years, the KZN area experienced abnormal rainfall figures which led to major flood damage. Many active construction sites did not cater for the excess stormwater runoff which would transport silty soils from open construction sites into built-up areas and, in many cases, causing flood damage and leaving many homes and business structures with irreparable damage and flooding.

Stormwater management was a big concern during construction of the Devin Properties basement. Before excavations commenced, the cleared site posed a similar risk due to the natural slope of the site and many existing office buildings in the La Lucia Ridge Office Estate. We implemented temporary silt barriers and stormwater catch pits to control unwanted silt buildup to areas we knew it could be managed. An ongoing effort was made to keep existing stormwater systems free of silt buildup. Existing roads were continuously kept clean and maintained to ensure no blockages could form in the system that may have caused flooding. ☺

NEXT LEVEL

GEOTECHNICAL SOLUTIONS...

GEOCIV GROUP has been a leading specialist in Geotechnical Works, Piling and Lateral Support in Gauteng, South Africa and other SADC nations since 1996. Services and products are on a full design and construct, or construct-only, basis. GeoCiv Group's ability to project manage entirely in-house has enabled us to secure major government and private contracts in the Commercial, Industrial and Residential spheres. It is GeoCiv Group's objective to further develop our experience, growing in a sustainable, controlled manner, and expanding in terms of both geographical coverage and product offerings.

GeoCiv Group management have a combined sectorial experience of more than 100 years in the piling & geotechnical works field. GeoCiv Group operates in a highly specialised market with a vision of being the most efficient **GEOTECHNICAL** company in the Southern Africa region. The business consists of an excellent team of motivated, experienced and highly skilled professionals.

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THE ROI OF BREATHALYSER TESTING IN THE WORKPLACE

Alcohol abuse in the workplace poses a significant threat to safety, productivity, and overall company morale. Oftentimes, the reason companies want to start testing is because they've had an incident or noticed employees coming in potentially intoxicated. By Rhys Evans, Managing Director at ALCO-Safe

Implementing breathalyser testing programmes can effectively mitigate these risks, creating a safer and more efficient work environment. By identifying and addressing alcohol-related issues proactively, businesses can reduce the likelihood of accidents, injuries, and associated legal liabilities, ultimately leading to substantial cost savings.

The high cost of alcohol-related incidents

The financial consequences of alcohol-related workplace incidents can be staggering. Accidents, injuries, and property damage not only result in direct costs but also lead to increased insurance premiums, lost productivity, and potential legal battles. With 20% to 25% of injuries in the workplace involving employees under the influence of alcohol, it's clear that this should be an area of concern for businesses, not just those in high-risk industries.

Quantifying the benefits in more than Rands and cents

While the financial advantages of breathalyser testing in the workplace are undeniable, the benefits extend far beyond mere monetary savings. By reducing accidents, enhancing productivity, and fostering a positive work environment, breathalyser testing programmes contribute to a company's overall success and well-being.

The workplace becomes safer, with reduced accidents and injuries. Regular testing helps identify employees who may be under the influence before they cause accidents, significantly reducing the risk of workplace injuries. This not only saves on medical expenses and lost wages but also fosters a safer and more secure environment for all employees.

The workplace also becomes more productive. Alcohol abuse can lead to increased absenteeism, affecting productivity and morale. By addressing alcohol-related issues, businesses can improve employee attendance and create a more focused and productive work environment. This in turn boosts morale, as a workplace free from the negative impacts of alcohol abuse is characterised by increased job satisfaction and higher productivity. Beyond the bottom line, breathalyser testing can contribute to a positive company image, as a company that prioritises

employee safety and well-being projects a positive image to stakeholders, including customers, investors, and the community.

The importance of a fair and transparent workplace policy

From a legal standpoint, breathalyser testing is one of the most effective means to mitigate risk. Where alcohol-related incidents can result in costly legal battles, breathalyser testing programmes provide evidence of a company's commitment to safety, mitigating the risk of legal liabilities and associated costs.

The successful implementation of breathalyser testing programmes depends heavily on having a well-defined and transparent workplace policy on alcohol consumption in the workplace.

This policy should clearly outline the company's expectations regarding alcohol use, the consequences of violating these expectations, and the procedures for conducting alcohol testing.

A fair and transparent policy helps to promote a culture of safety by sending a strong message to employees that the company values their safety and well-being.

Invest in safety today, reap the rewards tomorrow

To ensure accurate and reliable testing results, it is essential to invest in high-quality breathalyser equipment and consult with experienced providers. These experts can assist in developing effective testing policies, training employees, and ensuring compliance with relevant regulations.

While the initial investment in breathalyser equipment and related services may seem costly, the long-term benefits in terms of cost savings and improved safety can far outweigh the upfront expenses.

Implementing breathalyser testing programmes in the workplace is a strategic decision that can yield significant benefits. By reducing the risk of accidents, injuries, and legal liabilities, businesses can improve safety, enhance productivity, and ultimately achieve substantial cost savings. ☺



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