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Three of the articles in this month's issue allude to the fact that the construction industry, which has been creeping along for more than a decade, is showing signs of green shoots. The first is the observations of an industry stalwart, the second the upward tick in the Afrimat Construction Index, and the third the dramatic increase in the value of residential plans passed.

A positive move

The Department of Statistics recently released its quarterly labour force survey (Q2 of 2023) and it showed, for the first time in years, a downturn in the unemployment rate. South Africa's official unemployment rate has pulled back slightly, falling to 32,6% of the labour force in the second quarter of 2023 (a mere decline of 0,3%, but a positive sign). The construction industry, one of the country's biggest employers, added 104 000 jobs – 12 000 ahead of trade.

Eben Meyburgh, Chief Executive Officer at GVK-Siya Zama, says that although this is immensely encouraging for an industry that is - against all odds - still delivering the goods, caution is needed as the industry is still grappling with unsustainable markups, disproportionate risk and the rampant loss of skilled construction professionals to jobs abroad. To complicate growth in the construction

industry further, it is faced with fluctuating material prices. Contracts are seldom protected by in-contract escalation clauses. Even though this type of contract has been popular in the private sector, public sector contracts increasingly have no escalation clauses. The result is that the contractor is totally exposed to the risk of currency fluctuations.

This rather untenable situation is further exacerbated by the fact that an increase in projects highlights that there is a shortage of unskilled labour – as well as an increasing shortage of skilled labour, which has been lost due to emigration.

Another green shoot

The construction sector's resilience had an overall positive impact on the economy. Eight of the nine constituent indicators of the Afrimat Construction Index recorded positive real growth rates compared to the first quarter of the year. These indicators are

(i) employment in construction, (ii) wholesale construction trade, (iii) construction value add (this was the indicator that did not improve), (iv) building materials (sales), (v) retail trade sales (hardware), (vi) the volume of building materials, (vii) building plans passed, (viii) salaries and wages in construction and (ix) the value of buildings completed.

Building plans now reign supreme

The value of all building plans passed nationally rose by 84,1% between 2010 and 2022. The total value of residential plans increased by 129,8% last year. Non-residential building plans (including office, retail, industrial, religious and educational buildings), rose by 66,2% and building plans for alterations and additions rose by 41,5%.

Because of the robust increase in the value of residential building plans passed over the past 12 years, this sector now accounts for more than half of the total value of building plans passed nationally.

The entries for Best Projects are in

The number of entries for the civil engineering contractors and building contractors categories for the Best Projects Awards has been declining for the last decade – and so reflected what is a reality in the construction industry. In keeping with the uptick mentioned above, the number of entries this year for the civil engineering contractor category almost doubled, while the entries for building engineering contractors also increased. Judging of these awards happens in October and during a gala event in November, the excellence in an industry that has faced challenges for many years, will be announced.

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PUBLISHED MONTHLY BY
Crown Publications (Pty) Ltd
P O Box 140
BEDFORDVIEW, 2008
Tel: 27 11-622-4770 • Fax: 27 11-615-6108

PRINTED BY
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LIGHT AT THE END OF THE TUNNEL FOR SA'S CONSTRUCTION INDUSTRY DESPITE THE CHALLENGES

As South Africa celebrated an uptick in job creation following the release of the Department of Statistics' quarterly labour force survey for the second quarter of 2023, which indicated a 0,3% downturn in the unemployment rate, the construction industry, rightfully, shared in the moment after adding 104 000 jobs to the economy, outstripping trade by 12 000 new jobs.



Are these the green shoots of a turnaround after several years of turmoil and global upheaval?

Maybe, says Eben Meyburgh (**pictured**), Chief Executive Officer at GVK-Siya Zama, one of the largest privately owned construction companies in South Africa, but cautions that the industry is still bearing the yoke of unsustainable markups, disproportionate risk and the crippling loss of skilled construction professionals to jobs abroad.

Having joined GVK-Siya Zama some 18 years ago, after completing a work stint in the Middle East, Meyburgh became CEO in 2015. Today, he sees the industry through different eyes, noting that the 63-year-old company cannot rest on its laurels, but “must be innovative and remain at the cutting edge; adapt, make changes, reinvent and invigorate the business.”

Construction may be the second biggest employer, but in contrast to the taxi industry, for example, it is highly regulated and constrained by legislation, with little to no assistance from government. Help, he says, is not coming.

Since 2015, Meyburgh and his team have tripled the size of the business, which by his own admission, comes with many hard-earned lessons. One, he says, is to evaluate opportunities differently. “We all go through phases of chasing mega projects, which in today’s terms, would amount to R1b plus. We do it to make a mark in the industry, to assert our position and competence.” He goes on to say that a dire lack of skills in the local talent pool, unreasonable risk and exposure and sustained pressure on mark-ups have forced the business to reevaluate the way it does things.

Notwithstanding this caution, Meyburgh says the group recently completed construction of Sipetu District Hospital in rural Eastern Cape. His love for the industry is evident as he talks about building a first world facility, to the highest standards, in a town where people struggle to buy a Coke

and the nearest Wimpy is 100 km away. He commends the government for the facility as he enthuses about the permanent, meaningful, and sustainable employment created for nurses, doctors, cleaning staff, gardeners, cooks and many more.

The redevelopment of Cape Town station for Eris Properties is another feather in GVK-Siya Zama’s cap. “It is an immense honour to be involved in this landmark project with Eris. As visionary property practitioners, Eris is pursuing the growing market in student accommodation and we stand in awe of how this build will change the landscape in downtown Cape Town, adding life and vitality and much-needed

quality, modern accommodation for the city’s student population.”

Overcoming hurdles requires perseverance and agility

The construction dice is further loaded by fluctuating material prices that are rarely protected by in-contract escalation clauses. Fixed-price contracts have always been popular in the private sector, but are now becoming the norm in the public sector. It’s a trend that Meyburgh says adds undue risk to the contractor, given that currency fluctuations and global events have a significant impact on the price of materials.

Throw in largely unskilled or inappropriately skilled labour expected to deliver high standards of finishes, often way beyond their abilities, as well as site disruption and work stoppages caused by militant and often violent forces, and it becomes clear why the industry finds itself in such a difficult place.

Based on acceptable business fundamentals, the industry would indeed appear to be doomed. However, it remains the home for and passion of thousands of committed professionals, men and women who cannot ignore the lure of outdoor work and the thrill of seeing their projects rise out of the ground.

“Doing business and staying in business is a challenge for the brave, and the construction industry must continue to forge ahead and build on the foundations laid over many decades, provide opportunities to a committed and loyal workforce, and create new jobs.

The construction industry has always been an essential driver of economic growth and job creation in South Africa, and we must continue to innovate, adapt and persevere if we want to be part of the change our country needs to ensure its global success,” concludes Meyburgh. ©

WINNERS OF THE SANRAL SAICE NATIONAL AWARDS 2023

The South African Institution of Civil Engineering (SAICE) congratulates all the finalists and winners of the SANRAL SAICE National Awards 2023, a prestigious event that took place on the 7 September, in Fourways, Gauteng. The awards ceremony celebrated excellence in the field of civil engineering and infrastructure development, recognising individuals and projects that have made outstanding contributions to the industry.

SAICE's CEO, Sekadi Phayane-Shakhane, highlighted the organisation's long history of 120 years: "SAICE has been at the forefront of advancing civil engineering profession in South Africa for over a century.

"We are immensely proud of the legacy we've built and the role we continue to play in shaping the future of our nation. I would like to extend my heartfelt congratulations to all the winners and express our gratitude to our sponsors for their unwavering support."

She also emphasised the strength of collaboration within the industry and expressed gratitude to the South African Roads Agency Limited (SANRAL) for their continued support as the naming rights sponsor of the awards for the third consecutive year. SAICE also extends its gratitude to other key sponsors for their invaluable support including Reinforced Earth; Mariswe; Agreement SA; Afrimat Shared Services; PPS for Professionals; JG Afrika; and Leica Geosystems.

The President of SAICE, Steven Kaplan, emphasised the significance of acknowledging excellence in engineering, stating: "These awards reflect the dedication and ingenuity of our nation's engineers, technologists and quality projects." He recalled his advocacy for 'Making Engineering Great Again,' remarking that the awards exemplified this concept by showcasing South Africa's engineering excellence.

Kaplan highlighted the importance of engineers as essential decision-makers, particularly in the public sector, for a sustainable future. His message was clear: "We need all engineers to unite and push the sustainability agenda, making engineering truly great once again.

The winners of the SANRAL SAICE National Awards 2023 are as follows:

Individual awards:

Reinforced Earth Engineer of the Year:

- Winner: Gavin Wardle from Jones and Wagener
- Highly Commended: Avinash Menon from Koleko

PPS for Professionals Young Engineer of the Year:

- Winner: Charlotte Phasha from Bigen Group
- Highly Commended: Koketso Rammutla from WSP

Graduate Engineer of the Year

- Winner: Waseefa Ebrahim from JG Afrika
- Highly Commended: Janita Ramanlal from Maccaferri

Technologist of the Year:

- Winner: Zwelibanzi Mahlangu from Jones & Wagener
Young Technologist of the Year

- Winner: Kissandra Bridgmohan from Knight Piésold
Graduate Technologist of the Year
- Commended: Lebaka Lehobo from Zutari
- Commended: Massingita Maluleke from T3 Consulting

Afrimat Shared Services Project/Construction Project Manager of the Year

- Commended: Katlego Thakadu from Oitsegodira Trading

Witbe - Women in the built environment – awards:

- Knowledge Champion Winner: Khanyisa Mabasa – AECOM
- Most Engaged & Active Contributor – Winner: Nadine De Mink – BVi Consulting Engineers
- Most Valued Ambassador – Winner: Takalani Netshipale – Department of Health, KZN

Project awards:

Community-based Project:

- Winner: Mbokodweni Pedestrian Bridge – eThekweni Engineering Department
- Highly Commended: Shongweni 6 Mgl Reservoir – Naidu Consulting

Investigative/Report Studies Project:

- Winner: Wealth Creation Engineered through Waste Reduction: A Revolutionary Approach to Urban Solid Waste in Uganda – JG Afrika
- Highly Commended: Fire Safety Engineering Guidelines for Informal Settlements – Stellenbosch University Fire Engineering Research Unit
- Highly Commended: Hillside Aluminium Water Resilience Evaluation and Optimisation Study – JG Afrika

Leica Geosystems Technical Excellence Project of the Year Category

- Winner: Musina Ring Road – KBK Engineers
- Highly commended: Periodic Maintenance of MR27 and MR201 Wellington to Windmeul and Bainskloof Pass – ERO Engineers
- Commended: Hasso Plattner School for Design Thinking

Gridshell Roof – Leaf Structures

- Commended: SKA Meerkat Extension – Zutari

International Project:

- Highly Commended: Lumwana C3 Conveyor Repairs – Zambia – Resultant Consulting Engineers. ©

NEGLECTING INFRASTRUCTURE MAINTENANCE PUTS LIVES AT RISK, UNDERMINING ECONOMIC GROWTH

Infrastructure is an asset that is at the core of a functioning society; it shapes economic growth, enhances the quality of life of citizens, and provides the platform for a nation's growth. By Nyiko Chabalala, Building Services/Research & Development Engineer at Citadel.

Neglected and decaying infrastructure has far-reaching negative consequences, undermining both economic growth societal health and well-being while raising red flags for citizen's safety. Inadequate basic services impede commercial and public investment, hindering the potential for a thriving economy. To provide access to healthcare, education, and opportunities for all, the first premise is to ensure access to and protection of the assets that provide safe drinking water, proper sanitation, and functional transportation systems.

Maintaining essential infrastructure such as roads, water supply, sanitation and electricity should be a 'no-brainer' as besides providing a beneficial facility for so many citizens, it makes economic sense to maintain the asset rather than to rebuild and replace, avoiding costly disruptions. This long-term benefit is illustrated in life cycle costing – a process that informs and monitors overall project cost and strategically, when maintenance must occur.

Recognising the benefits of coordinated project implementation, monitoring, budgeting and planned maintenance, but also realising the complexity of the task, has led Citadel House of Technologies to develop its software program – Fortress. Fortress ensures effective inventory, maintenance management and operations as well as holistic lifecycle planning for today and for future generations in the organisation.

Having the ability to manage the project implementation, as well as the asset life cycle in a single application, provides the principal with a powerful tool, or a practitioner with a strategic advantage in that it enables them to offer a value-added service to their client. By initiating the project within Fortress, the principal or practitioner is able to start collecting data on the asset from the onset, which can provide insightful reports that enable easily made maintenance related decisions. For practitioners, it also makes it easy to transition the client into a continued maintenance contract within the Fortress system.

Numerous technical studies confirm that regular maintenance of assets results in a substantially longer lifespan of the asset. Furthermore, if the maintenance is carried out at optimal intervals, it results in much more cost-effective maintenance, leading to substantial savings for the asset owner.

Fortress can be utilised by every organisation or institution that has assets and maintenance operations. Besides national, provincial and local government assets, these include educational and medical institutions, private and commercial enterprises as well as data centre operations.

By using Fortress, organisations can ensure effective inventory, maintenance management and operations as well



“Having the ability to manage the project implementation, as well as the asset life cycle in a single application, provides the principal with a powerful tool, or a practitioner.”

Nyiko Chabalala,
Building Services/Research & Development
Engineer at Citadel.

as holistic lifecycle planning for the life of the asset.

With a bigger focus on asset maintenance and replacement planning, Fortress combines the planning and acquisition activities of the asset life cycle into a single module. These activities include vendor and service provider engagement, procurement planning, asset class definition management, and asset register management.

Citadel House of Technologies International specialises in designing and building various applications and developing software to enhance business efficiency. Its solutions aim to assist with planning and acquisition, deployment, analysis, and operations and maintenance. ©

WHICH IS BETTER FOR CONSTRUCTION PROJECTS PROJECTS - EPC OR EPCM CONTRACTS?

There is a swing away from the engineering, procurement, construction and management (EPCM) contracting model in South African construction and mining sectors. Instead, engineering, procurement and construction (EPC) contracts are increasingly being used, according to construction law specialist MDA Attorneys. By Natalie Reyneke, Director, MDA Attorneys, with Alex Goddard.

There is a difference and the consequences of choosing the wrong type of contract can be severe. While an EPC contract takes the form of a design and construction contract, the EPCM model can be regarded as a professional services contract. The EPCM contractor has a duty to ensure that the engineering and design of the project complies with the project's technical and functional specifications.

Natalie Reyneke, director at MDA Attorneys, says, "In the mining industry as well as plant design and build or upgrade projects, EPC contracts are being used more frequently due to unprecedented risks and opportunities in the current economic climate, a very competitive market and a shortage of skills among clients (owners of the project). Cost and time overruns are common, so clients try to avoid assuming risk, especially when it is unlikely that project savings can be achieved. On the other hand, construction contractors are grateful for work secured and sometimes overlook the risks involved."

Cost difference

In an EPC contract, the contractor needs to price and schedule for the entire project (design, engineering, procurement and construction services). The EPC contractor provides the tendered price and completion date, so clients are less likely to allow for any adjustments. Clients expect their projects to be completed in the time and within the costs calculated and supplied by the contractor. The client does not expect to take much risk and does not expect to pay any more than what was budgeted.

In contrast, the EPCM contractor provides a cost estimate and estimated duration of the work which are generally subject to contractual provisions, allowing for remeasurement and adjustment.

The client enters into multiple contracts on the advice of the EPCM contractor, so cost management is required on several contracts.

There are fundamental differences in terms of fixed price and remeasurable contracts, yet we are seeing EPC contracts being conflated by the insertion of 'estimated' budgets in pricing documents, while the conditions of contract are essentially an EPC lump sum contract. The two simply don't speak to each other.

The EPC contractor sees no harm in signing a remeasurable subcontract, believing that they can manage the budget. However, the EPC contract usually contains numerous restrictions on their ability to claim additional compensation or time. Adding to the risk, the EPC contractor must ensure that agreements with subcontractors follow suit, as any additional costs incurred by subcontractors cannot be claimed from clients.

What to look out for

Another anomaly that we often see is the insertion into the

pricing schedule of a 'contingency'. While it sounds like a good idea, the conditions of contract do not provide for such a concept. We also regularly come across the phrase 'fixed and firm' when talking about pricing. This could mean either that there is no escalation on the prices making up the lump sum, or it's intended to indicate the price of the project is a fixed lump sum and not subject to remeasurement.

Whose risk is it?

EPC contractors carry the risk of not completing the project on time and for the tendered price, whereas this risk is generally more evenly distributed between the client, the EPCM contractor and the appointed contractors or suppliers in an EPCM contract. It stands to reason that the EPC contractor is bound by the price and timelines it has offered to the client. It is the contractor who designs and builds the works, so EPC contractors also assume the risk for performance. In addition, EPC contractors must manage the procurement and administration of supplies, professional services and subcontracts.

On the other hand, EPCM contractors do not contract with the construction contractors nor suppliers – the client does, and EPCM contractors only take risks in relation to these contracts if problems have arisen due to a lack of skill and care.

Because EPC contractors include the assumed risk in their pricing, EPC contracts are more costly to execute. In addition, the EPC contractor very often stands to benefit from any cost savings occurring on the project. In this way a well negotiated, priced and executed EPC contract can result in significant benefits to the EPC contractor.

Expertise requirements differ

Under the EPCM model, clients usually appoint both an EPCM contractor (who provides professional services) and a construction contractor. Under the EPC model, the appointed contractor provides design, engineering, procurement and construction services. In addition, the EPC contractor appoints subcontractors to implement and complete the project.

Due to the nature of EPC contracts and client expectations for contractors to provide turnkey services, there is little involvement from the client and the projects are largely managed by the EPC contractor, who contracts directly with the suppliers and other subcontractors. Cost risk and control are weighted towards the EPC contractor and away from the client.

With in-house skills in short supply currently, the use of an EPC contract allows the client to limit its involvement in the contract.

While there are several issues for contracting parties to consider when entering into and executing an EPC contract, alleviation of risks can be achieved with a clear understanding of what they are, a well negotiated contract and a well-qualified tender submission. ☺



AFRIMAT CONSTRUCTION INDEX SHOWS POSITIVE REAL GROWTH IN SECOND QUARTER OF 2023

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 the Afrimat Construction Index (ACI) for the second quarter of 2023. The ACI, a composite index of the level of activity within the building and construction sectors, is compiled for Afrimat by economist Dr Roelof Botha.

According to Botha, the resilience of the economy during the second quarter of the year has been showcased by the construction sector, with eight of the nine constituent indicators of the ACI recording positive real growth rates compared to the first quarter of the year. “For the crucially important indicator of job creation, it is encouraging to note that construction took the honours on a quarter-on-quarter basis, adding more than 100 000 jobs and outperforming all other sectors of the economy, including those with much higher employment levels.”

The ACI recorded a level of 115,4 in the second quarter compared to 109,1 in the previous quarter.

“The quarter-on-quarter increase of 5,8% is higher than the increase in the country’s GDP and is a welcome improvement on the decline recorded in the first quarter. Unfortunately, the year-on-year increase was less than one percent, signalling the dire need for macro-economic policies aimed at encouraging the further expansion of construction activity in the country,” Botha added.

Over and above the sterling performance of new job creation in the construction sector, other highlights were the positive real growth in the category “Wholesale Sales

Values of Construction Materials”, the rebound in the “Value of Building Plans Passed”, and the increase in “Volume Of Building Materials Produced”.

“It should be pointed out that the construction sector component of GDP only includes the value added by contractors, whilst the ACI is based on a composite index of construction sector activity that includes another eight indicators, all of which are measured in real terms, i.e., adjusted for inflation. The ACI is therefore a very comprehensive barometer of the state of the construction sector.”

Botha explained that the results of the ACI in the second quarter are especially encouraging against the background of very high interest rates and a generally subdued macro-economic environment. “The positive trend has been influenced by the increase in the public sector’s spending on capital formation, which will hopefully continue and gather momentum over the next couple of years, as the damage done to the country’s infrastructure by state capture is addressed.”

He believes that the lethargy in the year-on-year performance of construction sector activity is, in the main,

the result of the South African Reserve Bank's hawkish monetary policy, which has resulted in the highest interest rates in 15 years. "Hopefully, interest rates will be lowered before the end of the year, which will go a long way to restoring consumer confidence and to lower the costs of construction-related projects, which are essential for the quest to restore the quality of the country's infrastructure.

Botha further noted that a new-found urgency is emerging within government on the dire state of South Africa's infrastructure, which promises to breathe some life into construction sector activity. "It is encouraging to witness evidence of closer cooperation between government and the private sector in the identification and design of crucial interventions to upgrade roads, harbours, freight railways and electricity supply."

Afrimat's CEO, Andries van Heerden, said that the Group remains exceptionally well positioned through a conscious and strategic strategy that diversifies between commodities and revenue streams. "Combined with stringent capital allocation, this enables us to weather economic and commodity shocks."

The Group has built a diverse portfolio of mature businesses, while also investing in new projects, establishing green fields operations, and underpinning operations with efficiency projects. "For most of the 2023 calendar year and in the period under review, we have heavily invested in projects that are expected to yield fruitful returns and further strengthen our diversity and competitive advantage in the future. Afrimat's successes are achieved on the foundation of a strong company culture, underpinned

by achieving excellent results with integrity, and a solid, diversified growth platform."

Strategic projects such as the Jenkins iron ore mine, Nkomati anthracite mine and Glenover are all progressing very well.

In the Construction Materials segment, the exciting acquisition of Lafarge South Africa Holdings (Pty) Ltd will add several well-positioned and resourced aggregate quarries, ready-mix batching plants, an integrated cement plant, cement grinding plants, cement depots, and high-quality fly-ash sources – an important extender in the cement industry.

"Fortuitously, the Construction Materials segment is experiencing a pickup in activity with concurrent demand for products in roads, building and infrastructure projects across South Africa, which aligns with the results portrayed in this quarter's ACI data. This, together with a sharp commercial strategy and efficiency drives we have in place, ensures that even a small volume increase can leverage a satisfactory performance. Again, this speaks to the way in which Afrimat does business – as a low-cost, efficiency-focused, and diversified producer," van Heerden said.

He concluded by saying that the integration of the Lafarge operations, once all conditions precedent have been met, will be critical to supporting the Group's ongoing growth: "This deal forms part of our ongoing diversification strategy and will increase Afrimat's offering in the construction industry by expanding our quarry and ready-mix operations nationally, as well as allow us to enter the cement value chain competitively." ©

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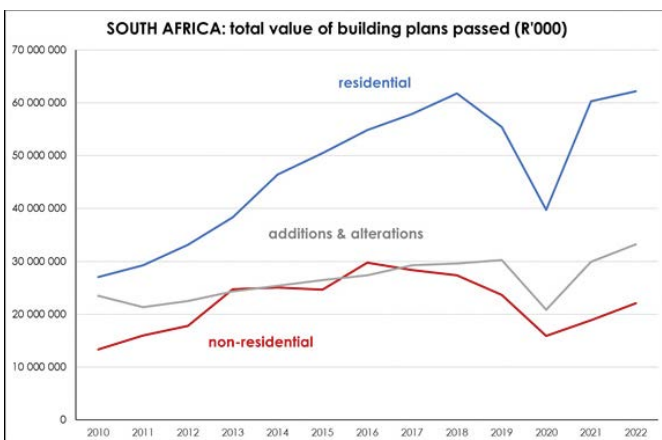
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IN VALUE, RESIDENTIAL BUILDING PLANS NOW ACCOUNT FOR 53% OF ALL BUILDING PLANS PASSED

Metrics recently released by Statistics SA, indicate that in 2022 the total value of residential building plans passed in South Africa had recovered to its pre-Covid record, albeit in nominal terms rather than in real terms.

While the value of all building plans passed nationally rose by 84,1% between 2010 and 2022, during the same period the total value of residential plans more than doubled, increasing by +129,8% to R62 191m last year. This compared with a more modest increase in the value of non-residential building plans (including office, retail, industrial, religious and educational buildings), which rose by +66,2% to R22 108m, and a +41,5% increase to R33 189m in building plans for alterations and additions.



SOURCE: Statistics SA

As a result of the robust increase in the value of residential building plans passed over the past 12 years, this sector now accounts for more than half of the total value of building plans passed nationally – up from 42% in 2010 to 53% in 2022. With residential plans passed accounting for alarger portion of total plans

passed, the percentage of both non-residential and, more notably, alterations and additions declined.

In terms of units, the residential building sector outperformed once again – even though the total number of residential plans passed in 2022 rose by just +3,9% compared to 2010 levels.

In contrast, non-residential plans passed decreased by -19,7%, while the number of alterations and additions slumped by nearly a third (-31,5%) during the same period. Residential building plans passed now account for 58% of the total number of plans passed nationally, compared with 48% in 2010.

Notably, just over 80% of the value of residential building plans passed last year (2022) were in the Western Cape, Gauteng and KwaZulu-Natal.

While only accounting for 6% of the total value of building plans passed last year, the Eastern Cape has seen significant growth in value of +218,7% during the past 12 years – one of only three regions registering growth of over 200% during this period.

The Free State registered the lowest increase (+12,5%) in the value of residential building plans passed last year relative to 2010.

The Western Cape accounted for just over a third (33,7%) of all residential plans passed in SA last year, followed closely by Gauteng (30,8%).

However, the robust growth in the value of residential plans passed in the Western Cape relative to Gauteng suggests that the Western Cape will increasingly dominate the new residential housing market in the years ahead.

In terms of units, the Western Cape, Gauteng and KwaZulu-Natal account for 79,7% of all residential

building plans passed in 2022. In 2010 they accounted for just 68.1% of all plans passed – suggesting that there has been a concentration of residential building activity in these three regions.

Once again, the Western Cape tops the list with the largest share of residential building plans passed and the second-highest increase over the past decade. Interestingly, the number of plans passed in the Western Cape declined sharply before Covid, fell further during the pandemic, but then rebounded strongly, quite possibly fuelled by the strong

semigration trend.

Gauteng, which accounts for the second-largest number of residential building plans passed, was experiencing strong growth until Covid, but has since failed to recover from the impact of the pandemic and passed fewer residential building plans in 2022 than in 2010.

While KZN remains in distant third spot it has registered a solid 51,1% increase in the number of residential plans passed since 2010 and a more than doubling (128,7%) in the value of plans passed over the same period. ☺

RESIDENTIAL value per region	Value building plans passed 2022 (Rm)	Growth in value 2010 - 2022	2022 value building plans passed % SA
Western Cape	20 947	+296,6	33,7
Gauteng	19 129	+73,1	30,8
KwaZulu-Natal	9 715	+111	15,6
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WOMEN SLOWLY MAKING THEIR MARK IN THE CONSTRUCTION INDUSTRY



The number of women participating in the US construction industry is at an all-time high of 14%, according to the Bureau of Labour Statistics. The figure is somewhat lower in South Africa, where women make up only 10% of the labour force; many other countries have similar levels of female participation in construction.

Clearly, in terms of gender representivity, the industry has a way to go. This disparity is founded in long-established social norms and cultural expectations. It's well accepted that in such instances, role models have a key role to play in changing perceptions and encouraging more women to pursue careers.

Two such successful women who are showing just how much women can achieve in the construction and adjacent industries are Tshidi Mndzebele (pictured) and Dr. Julia Petla. Both women are CEOs of their respective companies, AvenirHoldings and Amedzo. AvenirHoldings is an engineering consulting and project management firm, and also offers construction and facilities management, and training and development. Amedzo offers turnkey projects in various aspects of construction.

Both companies testify to the success of the women leading them. AvenirHoldings has worked on numerous high-value projects for clients like Transnet, Eskom, ArcelorMittal South Africa, LaFargeHolcim and many others. Amedzo's two highest value projects were for DeBeers' Venetia Mine and in the construction of the Musina Ring Road.

Mndzebele, a Professional Industrial Engineering Technologist and Certified Director, as well as a Master Builders Association North exco member, says that she was initially attracted to engineering because it was a male-dominated industry and she wanted to increase her probability of employment. "I saw it as an opportunity both to challenge myself and overturn the gender stereotypes in engineering and allied industries," she laughs. "I wanted to make my mark." Petla says, "Women definitely have to overcome the widely held view that construction work is better suited to men. Women in the industry have to work twice as hard to earn a seat at the table," she reflects, adding that the men don't make the industry one particularly welcoming to women.

Mndzebele says that after 20 years, things are still difficult for her in that she constantly has to find ways of subtly asserting herself. Like many women in business, she recognises the reality of imposter syndrome – the feeling that she's got keep on proving herself. Despite all her qualifications, which include an MBA from GIBS, she is currently working towards a PhD at Wits. "As women, I think we feel the need to have documentary proof

that we are entitled to be where we are," she says. "We have to learn to believe in ourselves."

Mndzebele is supported by her engineer husband who works happily in the business alongside her.

Networks are important platforms for success

Mentorship and building strong networks are both seen as key drivers of success in any industry, but particularly for women battling the establishment. "Building strong networks and finding mentors in the construction industry can help women access opportunities and navigate potential challenges," says Petla. "Why reinvent the wheel when you can take advantage of those who've completed the journey."

One of the hidden barriers women face in construction is the boys' club mentality that plays out on the golf course or at Friday end-of-the-week braais. Aside from anything else, women tend to be excluded from such events because of the difficult work/life balance they have to strike as the primary caregivers in most families.

Mndzebele says that women shouldn't restrict themselves to certain roles within construction – they are more than capable of taking on any of them. "Women have a unique contribution to make because they see things differently. Where men see things in black and white, we see a more complex, holistic picture, so our decisions are perhaps more measured," she argues. "From a transformational point of view – so important in a world that is changing so fast – female leaders are often better at bringing everybody along."

Petla agrees, saying that if you are passionate about something, you will be able to achieve it: "I always say that when all is said and done, passion is what will sustain you – even when things are looking at their bleakest."

Mndzebele says she wouldn't change a thing in her career – even the challenges and failures. She is clear that hardships are good learning experiences. "I'm grateful for the journey I've had; it's made me what I am," she says. "I feel a great obligation to play my part in providing a new generation of women in engineering and construction with the guidance and mentorship I benefited from." ©

"Mndzebele says that after 20 years, things are still difficult for her in that she constantly has to find ways of subtly asserting herself."

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SPEAR INITIATES R400M INDUSTRIAL DEVELOPMENT IN GEORGE

Spear REIT Limited, the Western Cape REIT, has announced the launch of a new industrial development in George. Located on the corner of the R102 and R404, adjacent to George airport, the development, to be known as GTX Park and situated within the Airport Business Park precinct, will comprise a total of 30 000 m² of light industrial space, split across nine sites. Commencement of phase one, bulk infrastructure is scheduled for end September, early October this year.

Spear's investment in this prime location further strengthens their focus on expanding their Western Cape property portfolio and will have a positive impact on the growth and development of the region. Spear's total development cost for GTX Park, over a 5-year period, inclusive of top structures, will be R400m.

Quintin Rossi, CEO of Spear, expressed his enthusiasm about the project, stating, "We are very pleased to launch GTX Park and bring this exciting development to the city of George.

"This expansion aligns with our commitment to creating innovative and sustainable spaces, and efficient operating solutions for businesses to thrive, as the entire Western Cape remains a viable investment opportunity for us."

The Eden District, where George is located, with its advantageous geography, has become an increasingly appealing place to live and work and has witnessed a surge in interest from various industries. Rossi highlighted the city's strategic location, saying that George is fast becoming the mid-way point between the Eastern and Western Cape – it is only a 25-minute flight from Cape Town and just one hour, 40 minutes from Johannesburg which makes it highly accessible and attractive for agri-logistics, oil and gas, logistics, residential developments, commercial ventures and call centres.

"The recent signing of a lease agreement for a 3 000 m² call centre further demonstrates the growing interest and potential in the area," adds Rossi.

The development will provide contemporary and

thoughtfully crafted light industrial spaces tailored for purposes like warehousing, cold storage, distribution, and other ancillary industrial activities.

The spectrum of warehousing solutions will encompass sizes spanning 300 m² to 10 000 m² and particular attention has been paid to the design, incorporating a variety of features such as varying heights from 10,5 metres to 15 metres. Additionally, the inclusion of spacious yard areas contributes to an all-encompassing and meticulously devised layout.

In line with Spear's commitment to sustainable development, PV solar infrastructure and water augmentation solutions will also be included in the development framework. Baker Street Properties will be appointed as the principal letting agents for GTX Park.

The uptick in development activity in George which has been absent for some time makes GTX Park and the greater Airport Business Park district an ideal location for businesses looking for strategic positioning with convenient access to transportation routes and key amenities.

Rossi emphasised the positive environment for business growth, remarking, "George benefits from a well-managed, municipal environment which has fostered real investment in infrastructure and development projects."

A new state-of-the-art medical facility by Mediclinic, which is expected to be completed within two years, further illustrates local government's commitment to investing in the overall development of the region and this commitment to progress makes it an attractive place for investors to establish and expand their businesses adds Rossi. ©

RENOVATING A BROWNFIELDS PROJECT IN NELSON MANDELA BAY

For Jade Barkhuysen, his journey into property development began ten years ago, when he purchased his first property in his hometown of Gqeberha and began building his property portfolio.

Bayside Lodge, located at 59 Green Street, North End in Gqeberha, is another first for him: it is the first project he has undertaken with the aid of TUHF.

Until now, Barkhuysen has learned the ins and outs of property investing primarily through self-study, through books, seminars, and coaches who showed him how to find good deals that he could renovate and sell for a profit or keep as an income generating asset. But Bayside Lodge is different, he explains, as it speaks to his passion for providing clean, affordable accommodation in the inner-city of Gqeberha. Bayside Lodge also stands out as Jade's first redevelopment of a property of this size, which is why he turned to TUHF for assistance.

Barkhuysen and his team took on the challenge of refurbishing this brownfields project and converted the old commune with 19 bedrooms into 17 efficient studio apartments (which range from 14 to 25 square metres), each with its own bathroom (with shower, basin and toilet) and kitchenette.

"The most important thing for property investors in Nelson Mandela Bay is to be able to efficiently manage their electricity and water expenditures, in lieu of ongoing loadshedding in the country and the persistent water shortages in the Nelson Mandela Bay area. The pricing for water in particular has skyrocketed, which has derailed many a property investor who didn't account for it in their plans," he explains.

The solution for Bayside Lodge was to ensure tenants had their own prepaid electricity and water meters and could be individually accountable for the utilities they use.

The property includes a communal laundry facility which is open to all the residents - who are primarily young professionals between the ages of 21 and 35. Providing fibre connectivity was more of a challenge, as fibre isn't yet available in the area. However, Jade is currently looking at how connectivity can be offered through another option.

What Bayside Lodge does have is its own borehole, which is particularly important given the water shortages in the area. "If there's ever a problem with either the municipal or borehole supply, we can always switch between the two. I think that does give this property an important advantage because the tenants know that they're always going to have water," he notes.

While the water from the borehole is regularly tested at a lab, and approved as being safe for cooking and washing, and even consumption, it is further safeguarded by a comprehensive filtration system as well. Additionally, in response to the critically low water levels in the area, all the taps and showerheads in the bathrooms have low-flow fittings. Solar power is also on the cards for the development within the next six to 12-months once it is fully leased and generating the requisite cash flow.

Almost every commercial project has some challenges, and according to Barkhuysen, Bayside Lodge had to face a significant one. Even though the land already had approved blueprints from the 1920s, it took three rejections for the



"The solution for Bayside Lodge was to ensure tenants had their own prepaid electricity and water meters and could be individually accountable for the utilities they use."

Jade Barkhuysen
Property Investor.

new building plans to be accepted. The approvals procedure caused two-week delays between each resubmission, which had an influence on acquiring finance. "That was quite a nerve-racking stage, because I needed the building plans to be approved before I could actually get the financing," he explains. Those delays ultimately lead to Jade having to take a leap of faith, buying the property himself for cash to prevent it from being relisted on the market and then refinancing it with TUHF.

"A key takeaway from this development is that it really is a collaborative team effort. As a developer, while you need to bring everything together, you don't have the individual skills to do everything yourself, and it is essential to have the support of a competent team of professionals and an organisation like TUHF," he stresses.

For other aspiring new-fledged property developers, Jade advises finding the right deals in areas in in-city and inner-city areas where TUHF finances, and then approaching them to work together. "Personally, I intend to continue following my passion for investing in the inner-city, because there's a unique fulfilment that comes from creating an environment where people can feel safe and live well," Barkhuysen concludes. ©

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Motor manufacturers can provide a much-needed boost to the economy.

After much economic gloom fuelled by consistently rising interest rates in South Africa, there was a brief respite for consumers, particularly in the manufacturing sector, when the interest rate was kept on hold last month.

Against the backdrop in which South Africa's economic conditions appear to have improved, according to the Reserve Bank, the longer-term outlook mirrors the uncertainty of the global environment. But there is room for optimism.

Amith Singh, National Manager for Manufacturing at Nedbank, says that while understanding the pain points of clients and providing solutions to the industry is vital, being mindful of the current economic climate provides impetus to help clients make sense of it all.

Singh adds that while there are global challenges, it is important to understand what is happening in the sector and what is keeping clients awake at night. Understandably, these factors are heightened by load-shedding, crime and economic conditions harming growth in the manufacturing sector.

However, there was good news from the motoring industry heavyweight naamsa last week. The Automotive Business Council indicated that last month's pause on interest rates after 10 hikes, totalling 475 basis points since November 2021, provided a respite for new-vehicle buyers.

So, when opportunities are evident from the latest reports from the motor manufacturing sector, one must consider the benefits to clients and the advantages to the economy, especially from a manufacturing perspective.

We understand that the South African automotive sector has been a trusted partner and dependable ally for

government to position manufacturing as a springboard for development and inclusive growth in the country.

Over the years this has been demonstrated by significant levels of automotive investments. The automotive sector has been one of the most visible sectors receiving foreign investments, with the 7 original equipment manufacturers (OEMs), according to naamsa, investing R7,3 billion in 2019 while also making investment commitments of R40 billion over the next 5 years.

Concurrently the component sector invested R3,5 billion in 2019, while expecting to invest a further R20 billion in domestically sourced components over the next 5 years, which will promote local value-addition.

One of the OEMs, Mercedes-Benz South Africa, has been in the country for 65 years and manufactures millions of vehicles from its East London plant, mainly for export purposes, employs 4 000 people and continues to invest in the country. And, considering the solid exports of Volkswagen, BMW and Ford, it is clear that the automotive industry can boost the South African economy.

Indeed, at a broader level, the welcome announcement in July of the much-needed collaboration between government and businesses after 115 private sector CEOs pledged to help government turn the tide on the South African economic challenges is a step in the right direction. It means that the automotive sector is integral to the recovery efforts in South Africa.

Nedbank Commercial Banking is premised on its understanding of the manufacturing sector's pain points and offers solutions with adequate support so that clients can better navigate the current difficulties facing South Africa. As such, Nedbank aligns with the industry optimism that while

challenges remain, the upswing of the hold on rates can lift the sector.

This is also the view of naamsa CEO Mikel Mabasa, who welcomed the South African Reserve Bank's decision to keep interest rates at 8,25% in July. According to Mabasa the unchanged rates and improvements in inflation rates bode well for the car market as the second-largest household investment cost for many South African consumers, considering the distressed borrowing patterns among households as the debt service costs share of disposable income remain high at 8,4% on average.

Mabasa said that naamsa is encouraged by the collaboration between government and businesses and added that the pledge will assist in achieving sustainable development and inclusive economic growth. 'Through the stewardship of Andrew Kirby, naamsa's Immediate Past President and Toyota's President and CEO, the auto industry will remain invested in supporting our country's recovery efforts and strengthening our investment story into the future.'

Adding to the encouraging – yet challenging – outlook, Singh said Nedbank has a clearly defined commitment to the manufacturing sector, creating solutions that align with its unique needs and expectations.

'We know that there is no such thing as a one-size-fits-all approach. It is important to understand the market in which our clients operate, their off-takers and their trade partners, and to provide services that suit their needs.'

While challenges remain, Nedbank is optimistic that the industry is resilient enough to weather the headwinds and continues to support the industry with confidence that manufacturing will continue to grow the economy and create employment.

For more information email us at manufacturing@nedbank.co.za.

IMPORTANT RESOLUTIONS AT SA CONFERENCE ON CONCRETE PAVEMENTS

ConPaveStruc 2023, the 1st National Conference on Concrete Roads and Allied Structures, held recently as a collaborative event between Cement & Concrete SA (CCSA), the Council for Scientific and Industrial Research (CSIR), the SA Road Federation (SARF) and the SA National Roads Agency (SANRAL), saw more than 900 delegates registering to attend the conference online, while 120 delegates attended a parallel in-person event hosted by SANRAL in Pietermaritzburg.



Hanlie Turner, Business Development Manager of CCSA (left); with Bryan Perrie, CEO of CCSA, pictured at ConPaveStruc 2023 in Pietermaritzburg.

This conference was conceived when a gap was identified for a single platform to address the significant volume and extent of concrete pavements and related structures being built, particularly by SANRAL. Expected outcomes were to generate more knowledge, expertise, and capacity, to facilitate knowledge transfer and embedment, and to generate future research needs.

During his keynote address, Louw Kannemeyer, Engineering Services Executive for SANRAL, outlined SANRAL's commitment to ensure a safe and world-class road network for South Africa within the context of national and local challenges. Dr Imtiaz Sooliman, CEO of Gift of the Givers, urged the delegates to "claim ownership of our country and to address the issues within our sphere of expertise to ensure better living conditions for all".

The 25 presentations at ConPaveStruc 2023, focusing on the themes of Chemistry for Cement & Concrete, Pavements, Structures, Tunnels and Barriers, highlighted developments in cementitious materials, showcased current projects in South Africa, and presented international case studies and insights.

Most importantly, 15 resolutions were identified for focus and future research:

- That further research be undertaken on emerging supplementary cementitious materials, such as calcinated clays, to support energy saving and reduce CO₂ emissions.
- That achieving Net Zero by 2050 be actively pursued by the sector.

- That the COTO Standard Specifications for Road and Bridge Works for SA Road Authorities be updated to incorporate new cement types, whilst also allowing for a review of current specifications for concrete used in pavements.
- That research be undertaken to render South Africa's transport infrastructure more climate resilient.
- That, with respect to target reliability criteria set for serviceability of roads-related structures, the Department of Transport's Technical Methods for Highways TMH 7 be upgraded, focusing on target and service reliability, in particular.
- That active crack control be further investigated for implementation on Continuously Reinforced Concrete Pavements (CRCP).
- That the use of alternative (recycled and/or artificial) aggregate as well as Recycled Concrete Aggregate (RCA) crushed sand be investigated for application in concrete pavements in South Africa.
- That the use of RCA in other applications, such as backfills, unbound aggregate shoulders, cement-stabilised/lean concrete subbases and asphalt mixes be further explored.
- That non-technical regulations (resulting from lack of information) preventing the reuse of RCA be overcome by the provision of better access to information as well as technology transfer activities.
- That quality management plans be revisited and improved upon, and that additional tests, such as the resistivity test, be considered for inclusion in the quality control plan.
- That vibration technologies and techniques require urgent attention.
- That the development of a Technical Recommendations for Highways (TRH) guideline on tunnel design and construction be considered.
- That the pull-out test for assessing bond strength be further investigated to improve accuracy of the method, and/or that an alternative test be investigated.
- That improved guidance be provided regarding moisture conditioning of the substrate surface prior to the application of a concrete overlay on pavements.
- That all road restraint systems (barriers) should conform with the requirement of an appropriate standard (such as the international EN 1317).
- That hazards associated with untreated barrier ends be mitigated.
- The four industry bodies will prioritise critical resolutions for short-term research and application, and deliberate long-term goals for ConPaveStruc as a catalyst for research to practical implementation of best practices in South Africa. ©



AUREX CONSTRUCTORS LAUNCHES ITS RENEWABLE ENERGY ENGINEERING DIVISION

Renowned for its work in constructing utility-scale photovoltaic (PV) solar plants in South Africa, Aurex Constructors has positioned itself at the forefront of innovation. With a keen eye on the evolving renewable energy landscape and a commitment to meeting the country's ever expanding energy needs Aurex has made a strategic decision to integrate renewable energy engineering into its comprehensive portfolio of renewable solutions.

A key player in the renewable energy sector since 2012, Aurex has been actively involved in the execution of numerous PV plants as a sub-EPC contractor. Now, the company is ready to expand its contributions even further. This strategic expansion not only showcases Aurex's dedication to delivering holistic renewable solutions but also underscores its commitment to shaping the future of clean energy.

Marking a significant milestone, the Aurex engineering office secured its first contract to undertake fundamental design and cost analysis for three 75 MW PV plants in July this year. This project offers the possibility of ongoing work as the next phase of the project unlocks. This would include the detailed design and construction of these plants.

Stuart Kent, CEO at Aurex Constructors says, "We are excited to embark on this new chapter of our journey. We are focused on enhancing our renewable energy service offering to our customers and to actively foster growth in local communities through the creation of job opportunities and skills development. We are dedicated to leveraging our experience and expertise to create a more sustainable and greener future for all."

With its proven track record and a relentless pursuit of excellence, Aurex Constructors is well-poised to make a lasting impact in the renewable energy sector through its expanded service offerings. ☺

ABOUT AUREX CONSTRUCTORS

Aurex Constructors is a leading player in South Africa's construction, turnaround and maintenance industry with more than 40 years' experience serving blue-chip customers in the oil & gas, mining & metallurgy, infrastructure, petrochemical, conventional power, and renewable power sectors. The company offers a comprehensive range of services, including civils, structural, mechanical, electrical, instrumentation, piping, platework (SMEIPP), fabrication and management services, catering to projects of any scale and complexity.

As a 100% locally owned and managed company with 51% black ownership, Aurex takes pride in its highly skilled workforce, which has a proven track record of delivering innovative and customised project management solutions tailored to the specific requirements of customers.

SA BUILT ENVIRONMENT A STEP CLOSER TO ADOPTING NATIONAL BIM CODE

The South African built environment is seeing real progress towards adopting a national standard for Building Information Modelling (BIM) in South Africa, says Richard Matchett, Digital Practice Lead leading at consulting engineering and infrastructure advisory firm Zutari. “It is being done by the book. The estimates are that in anywhere from 18 to 24 months we will have a policy ready for gazetting. However, that is dependent on many factors aligning.”



Richard Matchett,
Digital Practice
Lead, Zutari.

Matchett co-hosted the inaugural BIM CODESA on 13 July 2023, an industry-wide workshop organised by the BIM Community Africa (BCA). “Industry is blaming the lack of a national standard for the lack of BIM adoption. In truth, it is a stumbling block. Without a standard, everyone does whatever they think is good. The really great aspect of the BIM CODESA was how we are starting to see some real movement towards getting a standard in place.”

The BCA advocates that BIM holds tremendous potential to boost delivery during all project phases to benefit stakeholders and, ultimately, the end users of those built assets. The required skills, processes, and technologies are widely used in South Africa. While the industry is poised and ready for wholesale adoption of this transforming approach to development, it lacks a national policy to create an enabling environment for all stakeholders.

The Construction Industry Development Board (cidb) has commenced work to develop a national BIM Policy for South Africa, aiming to have the policy gazetted by end 2025. The development of the policy will be supported by the BCA’s network of stakeholders, thereby broadening the source of contributions from interested parties in the built environment.

Matchett reveals that the BIM CODESA workshop session focused on the key drivers behind the process, which are the different roleplayers in the built environment, combined with the legal and political framework, and then looking for synergies to take advantage of any interconnections.

“We need to realise it is not just an engineering or an architectural point of view. Everyone in the built environment will be impacted by this policy. Its adoption

therefore needs to consider the value that all these different parties can derive from it and, in turn, bring to the table,” explains Matchett.

The ongoing process is likely to be influenced by legislation and economics, resulting in both a systems and a value chain perspective. “The built environment includes the client, quantity surveyor, architect, engineer, project manager, and a host of other players. The question is if we look ahead to a scenario where BIM is actually adopted and is now running full tilt, what will change about the way we work?”

Matchett adds that another key stakeholder is higher education and training. “We are having a conversation around curricula, training, skills development and accreditation, and how adopting BIM will bring about the need for a different skillset in the industry.”

The BIM CODESA is likely to be followed by compilation of a White Paper, sponsored by Autodesk, a global leader in design and engineering software. “We do not have a framework as of yet for the White Paper, but it is being developed,” says Matchett.

“We have to acknowledge the role of the built environment in this process and how the industry is driving awareness. The conversation has been democratised as much as possible, so it is not just a few isolated parties who stand to benefit. It has really become a mainstream conversation. We are also looking to ensure that the entry barrier is lowered in terms of focusing on information requirements rather than software type, so it is cost-effective and scalable for all players,” says Matchett.

Commenting on the impact of accelerating advances in Artificial Intelligence (AI) on BIM, Matchett predicts it will introduce the widespread systemisation of good quality data. “Good quality, structured data is the entry point for the meaningful integration of AI into any process. The BIM approach to project delivery facilitates the creation of consistent, organised data about build assets.”

As for current progress in South Africa on the BIM front, Matchett says that while there are pockets of excellence, some remain hesitant about its largescale adoption. “I think where it is being applied practically, we are up there with the rest of the world.” Autodesk recently reported that South Africa is, in fact, not lagging far behind the rest of the world when it comes to BIM adoption.

“We are not as advanced as Europe, which has a decade’s head start on us. What it means for South Africa is we have an opportunity to observe what is being done elsewhere successfully, keep track of the outcome, and then implement what is likely to work best for our built environment,” concludes Matchett. ☺

A FULLY SUSTAINABLE DEVELOPMENT **IN ZANZIBAR**

Bosch Projects has played an important role in the master planning of all phases of Fumba Town - the fastest growing real estate development in Zanzibar, Tanzania.



Bosch Projects. “This prestigious development – which will ultimately comprise approximately 5000 units – has been designed to support Zanzibar Town, catering for the high demand for homes, due to the strong population growth and a flourishing economy in Zanzibar.

“The objective was to provide contemporary infrastructure in a modern, secure and stylish environment, whilst integrating business, recreational, health and educational facilities, on a tropical island.

“In 2016, we completed the master planning for this project, which included bulk electricity, sewer and water treatment. In spite of challenges during the Covid-19 pandemic, construction continued and just recently, the

The Fumba Town development - located in Unguja, just south of the International Airport of Zanzibar on the Fumba Peninsula - comprises a mix of residential and holiday homes, as well as commercial developments, set on 600 000 m² with a 1,5 km sea front.

“The Bosch Projects team worked closely with property developers, CPS Live, to create Zanzibar’s first fully sustainable urban development, that is accessible to all. Fumba Town is based on permaculture concepts, to establish an ecologically sound living space, from budget-friendly apartments to luxurious villas,” explains Peter Tooley, Development & Roads Divisional Manager,

1 000th living unit was sold.

“Apart from attracting international buyers, this development has created local job opportunities and is encouraging the boost of business and entrepreneurial triumph on the island.”

The Bosch Projects team was responsible for critical services and to date, construction of approximately 3,2 kms of internal roads, 5,9 km of water mains and 5,7 km of bulk sewer mains has been completed.

There are more than 200 manholes and numerous stormwater rain gardens replace conventional stormwater inlets and piping. ☺

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SANRAL EMPOWERS THROUGH MSIKABA BRIDGE TRAINING

A one-year South African National Roads Agency SOC Limited (SANRAL) on-site Occupational Health and Safety training programme has assisted Busisiwe Ngcobo to become a registered Construction Health and Safety Officer (CHSO).

Ngcobo, 38, was part of a group of four candidates who participated in the training programme that started on 1 April 2022 and concluded on 31 May 2023. The training programme was undertaken at SANRAL's R1,65b Msikaba Bridge road infrastructure project in Lusikisiki.

One of four siblings, Ngcobo was born and raised at Ludeke Township in Bizana and completed her matric in Marelane Senior Secondary School in 2004. She completed an Occupational Health Safety certificate at UNISA, as well as SAMTRAC and ISO courses (ISO 14001 and Project Management LEVEL 4) through the National Occupational Safety Association (NOSA).

"In my youth I aspired to work in the construction industry as a businesswoman," said Ngcobo, who confesses to having been eager to seize the chance to participate in the training programme on the Msikaba Bridge mega project after spotting the advertisement on Facebook in 2021.

The Msikaba Bridge forms part of SANRAL's N2 Wild Coast Road (N2WCR) programme which entails a 410 km stretch of road from East London to the Mtamvuna River on the boundary of the Eastern Cape and KwaZulu-Natal provinces. It forms part of government's 18 Strategic Infrastructure Projects (SIPs). The N2WCR is SIP3, South-Eastern Node and Corridor Development, whose main purpose is to serve as a catalyst to bolster economic growth in the Eastern Cape and KZN provinces. SANRAL has contracted Concor Mota-Engil Joint Venture (CMEJV) to construct the bridge.

The 12-month training programme towards a National Certificate in Construction included modules such as Construction Regulations, Legal Liability, Incident Investigation, Traffic Safety, Working at Heights, First Aid, Fire Fighting and practical training.

"I now have expertise and knowledge in Occupational Health and Safety. I am grateful to SANRAL, to the Concor Mota-Engil Joint Venture, my manager and my mentors who have played a significant role in my successful journey," remarked Ngcobo.

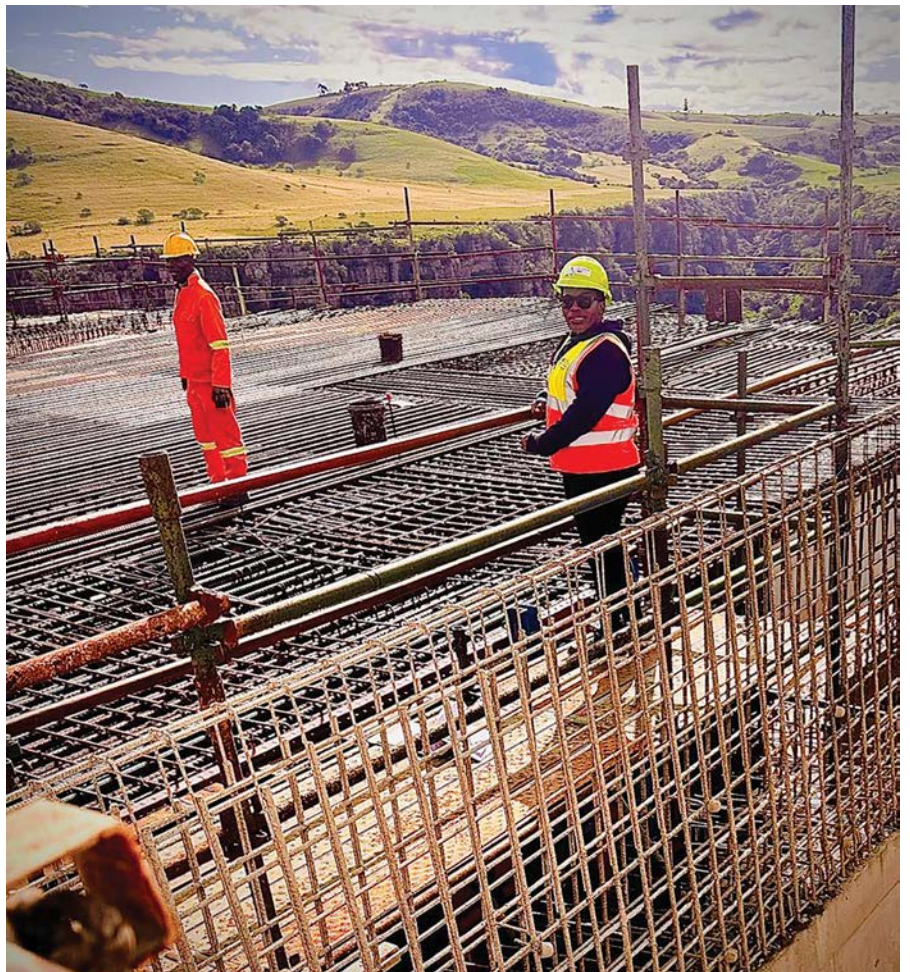
Ngcobo, now a qualified safety officer, has through the assistance of SANRAL, become registered with the South African Council for the Project and Construction Management Professions (SACPCMP) as a Construction Health and Safety Officer.

"I look forward to permanent employment so as to explore the knowledge, experience and skills I have acquired from the training," she added,

explaining that when one is enthusiastic about something they love, it is possible to achieve it. "Consistency is key. We need more women in the construction health and safety industry. Women, especially from rural areas like myself, must grab these opportunities," she said.

SANRAL Regional Manager in the Southern Region (Eastern Cape), Mbulelo Peterson, said that SANRAL is on a drive to intensify its training and skills development efforts in the region, to help communities to sustain themselves beyond SANRAL's road infrastructure projects.

"As SANRAL we are intentional about upskilling of communities where we work. We do this through interventions such as training and skills development programmes to ensure the rapid development, growth and participation of black women, young people, people with disability and other previously marginalised groups in the construction industry. It therefore is reassuring to see beneficiaries of our programmes advancing in this regard," he said. ☺



Busisiwe Ngcobo on site at Msikaba Bridge.

LANGA COMMUNITY EMPOWERED WITH NEW IDAYIMANI MONTESSORI PROJECT

BPAS Architects, a leading multidisciplinary architecture and interior design firm, is proud to announce that the Idayimani Montessori Academy project, nestled within the vibrant and historically significant township of Langa, Cape Town, is nearing completion.



With an unwavering commitment to the betterment of the communities they operate in, BPAS has selflessly offered their expertise to create an inspiring and safe learning environment for the children of Langa, where the need for nurturing educational spaces has long been recognised.

As an architectural practice with extensive experience in the educational sector, BPAS enthusiastically embraced the opportunity to give back to the community and infuse a fresh design into this well-known setting.

Addressing a long-standing gap in quality early childhood education within Langa, The Idayimani Montessori Academy proudly stands as the first privately funded Montessori school of its kind in the area.

The project called for a safe learning environment, and BPAS rose to the occasion by designing a spectacular building located on the south-east quadrant of a large vacant plot. The academy features five classrooms arranged around a central courtyard, thoughtfully catering to different age groups of learners. Partitions between two of these spaces offer multifunctionality for larger gatherings and events, ensuring the academy serves as a hub of community engagement.

The services, including caretaker facilities, administration offices, and a kitchen, are strategically located on the street side, forming a buffer between areas accessed by the public and the school for both noise reduction and safety purposes. BPAS expertly navigated the project's complexities, considering heritage and traffic aspects as part of the application process due to the size of the plot.

The Idayimani Montessori Academy aims to provide the Langa community with access to premium quality early childhood education in a modern, sustainable, and safe learning haven. In addition to fostering academic growth, the academy ensures the well-being of its students by providing them with nutritious meals daily. For working parents,

the academy also offers a valuable after-care service, creating a supportive environment for both children and families.

Beyond its immediate impact, the academy also demonstrates a forward-thinking approach by empowering and supporting local women as entrepreneurial Montessori Directresses, who can operate their own schools, generate income, and provide vital support to their families. This initiative not only enhances the educational landscape but also uplifts the community economically, catalysing a cycle of progress and self-sufficiency.

The impact of the Idayimani Montessori Academy on the community has been nothing short of transformative. Kissmea Adams

from Idayimani, expressed her appreciation, stating, "We are immensely grateful to BPAS Architects for their exceptional work on the Idayimani Montessori project. Their passion for creating a safe and empowering learning environment is evident in every aspect of the design. This academy will enrich the lives of children within the Langa community and ensure all tools and skills are available for a successful educational facility."

BPAS Architects joined the Idayimani Montessori project in early 2019 during the initial planning stages. Despite pandemic-related delays, the project continued with determination and dedication, and construction began in September 2022 after receiving council approval, leading to the timely completion of the academy.

The multi-million rand project is a significant investment that reaffirms BPAS's commitment to uplifting local areas for the greater good of the community and nurturing the potential of young minds.

Commenting on the success of the project, Landseer Collen, principal director and founder of BPAS Architects said; "We continue to spearhead projects that make a difference, our involvement in the Idayimani Montessori project stands as a testament to our ethos of giving back to society and putting the community at the heart of our endeavours." Top of Form. ☺

Addressing a long-standing gap in quality early childhood education within Langa, The Idayimani Montessori Academy proudly stands as the first privately funded Montessori school of its kind in the area.



WSP HELPS BRING THE ROHA ADVANCED MULTI-SPECIALITY HOSPITAL TO LIFE IN ADDIS ABABA

As the pressing need for fully functioning healthcare across Africa, and globally, continues to draw attention, healthcare providers are rising to the challenge. One such provider is Roha Health Inc, which has embarked on an ambitious, multimillion dollar project in Addis Ababa, Ethiopia. WSP is providing a broad range of engineering services, including civil, structural, electrical, mechanical, fire, electronics engineering, wet services and sustainability consulting.

When complete, the Roha Advanced Multi-Speciality Hospital will comprise of 350 beds with a total gross floor area of 40 000 m² and a centralised utilities block to house all engineering services.

The facility will firstly provide critically needed services to Ethiopian citizens in an affordable way. It is also intended to serve as a leading healthcare destination for Africa, where Roha Advanced Multi-Speciality Hospital will be a JCI accredited facility and will offer a range of advanced specialties and employ state of the art technology. Furthermore, it will consist of various centres of excellence including Oncology, Dialysis, dedicated Mother & Child floor, dedicated C-Section Theatre, Paediatrics, eightx Operating Theatres, twox Cat labs, etc.

Advanced digital approach to design and delivery

WSP has long advocated that digitalisation has changed how projects are conceived and delivered. As a global leading professional services firm, it has been pushing the boundaries of BIM to create service offerings that include digital design, engineering analysis, 4D and 5D simulation, and asset

management, and more. Building on top of this, WSP recently established an Integrated Design Delivery (IDD) sector in response to continuing to advance on how its teams deliver multi-disciplinary projects. Adri Metzer, Director: Integrated Design Delivery (Sector Lead), WSP in Africa, says: “Our IDD team has been involved in the Roha Advanced Multi-Speciality Hospital project from the onset of the conceptualisation phases. While IDD serves as an internal design and project coordination function and does not replace the project management or principal agent role on a project, it certainly boasts significant value-added benefits through integrating technology, capturing data, and turn it into actionable insights for project teams and clients, alike.”

Sustainable to the core

A key factor in the construction of the Roha Advanced Multi-Speciality Hospital is that it will be built using sustainable building principles. The project is targeting an EDGE (Excellence in Design for Greater Efficiencies) certification, which focuses on three major areas of sustainability: energy, water and embodied



wards will enable different levels of illuminance depending on the time of day. Furthermore, lighting in storerooms and areas that are not frequently occupied will be switched on and off using occupancy sensors. In the future, Roha intends to introduce renewable energy in the form of a solar PV system with battery energy storage to reduce its reliance on the grid.

Built for healing

A core tenet of sustainable construction is designing a building centred on the needs of those who will occupy it. This is even more relevant in a medical environment where healing is the primary focus.

“Sustainability is about so much more than green building principles, carbon footprints and the race to achieve net zero. Sustainability is also about addressing people’s needs, and that without improving access to care for rural communities, even the most spectacularly designed facilities can be deemed unsustainable,” says Jabulile Nhlapo, Director & Healthcare Lead, WSP in Africa.

Natural light has been shown to be a significant influence on healing, while ample fresh air levels ensure that air borne germs are diluted and extracted, providing healthier air. To leverage on Ethiopia’s favourable climate and introduce more fresh air, the facility will boast Ethiopia’s first Thermally Activated Building Structures (TABS) system. TABS uses the super structure as a thermal reservoir for comfort cooling and climate control by running chilled water at high temperatures through the building to increase the resultant coefficient of performance (COPs).

Patient care, and the quality of patients’ experience at Roha Advanced Multi-Speciality Hospital, is also crucial to the project. An integrated Hospital Information Systems (HIS) environment will be implemented to ensure patients have an efficient experience, while digital signage and screens throughout the facility will ensure both staff and patients have effective access to information. The facility will boast another first in Ethiopian patient care - an IP-based nurse call system.

The Roha Advanced Multi-Speciality Hospital is amongst a growing number of medical precincts being developed in Africa as we emerge from the global pandemic, which at its peak stretched medical services to their limits.

“The aim is that Roha Advanced Multi-Speciality Hospital, and other medical precincts like it, will reduce the number of Ethiopian citizens travelling out of the country, or continent, for major procedures and treatment. At the same time, being a regional centre of excellence and providing multi-speciality expertise, opens opportunities to attract more medical tourism through increased intracontinental specialist healthcare provision,” says Nhlapo.

“Roha Advanced Multi-Speciality Hospital sets a benchmark for mixed-use healthcare facilities in Africa. From concept to implementation, this development is underpinned by the vital role that access to health and medical care plays in the lives of communities,” concludes Nhlapo. ©

energy of materials. To achieve the minimum predicted savings of 20% in each of the three areas - when benchmarked against a local standard hospital - WSP aims to engineer a facility that provides the highest standards of healthcare without wasting resources. As Addis Ababa lies in a temperate location, energy saving is a high priority, and both the design and construction of the facility will be executed with that in mind. This will be accomplished, firstly, through the careful selection of materials used in construction.

Hospital forest and park

To embody the concept of a healing environment, Roha Health Inc planted a forest comprising of approximately 12 000 indigenous trees. This forest was planted in mid-2022 to be more than human scale grown when the hospital opens. This forest together with an accompanying park will offer a relaxing healing environment to hospital patients and visitors in a never seen before offering in sub-Saharan Africa. The forest and park were designed by a team of specialist landscape designers led by Alaap Group (India) and use a special planting methodology called the Miyawaki method. This method allows forest to grow to levels traditional forest can reach in decades, with a few years.

Green power

Furthermore, the Roha Advanced Multi-Speciality Hospital will integrate water conservation methods and utilise alternative power sources. For example, water conservation will be implemented using low flow taps and showers, and all toilets will have a dual flush function. The main objective of water conservation throughout the hospital will be to reduce water consumption, and reuse water wherever possible.

From a power point of view, energy efficient light fittings will be installed throughout the hospital. Zoned lighting in patient

GENERAL INFORMATION

Internationally accredited medical precinct

- **Architect:** A3 Architects
- **Civil, Structural, MEPF and ELV Engineering Services:** WSP
- **Sustainability Consultant (Edge Certification):** WSP
- **Local Consultant:** Bigar Builders and Developers PLC
- **Cost Management:** MACE YMR
- **Main Contractor:** Elmi Olindo & Co
- **Landscape Consultant:** Alaap Group.

ECOMONDO 2023, ECOLOGICAL TRANSITION HAS ITS OWN ECOSYSTEM

Six themed macro-areas, a single ecosystem for ecological transition. Ecomondo, Italian Exhibition Group's international trade show for industrial technologies and services for the circular economy, will be opening the doors of its 26th edition from 7 to 10 November at Rimini Expo Centre with a new payoff: The Ecosystem of the Ecological Transition.



From exploiting waste to make further resources to the regeneration of soil and agro-forestry and food ecosystems, from energy obtained from biomass to the use of waste as secondary raw materials. And more still: the entire integrated water cycle and environmental monitoring, protection of the seas and aquatic environments in their essential function for human sustenance and economic activities. This is the exhibition layout with which IEG will be presenting the most innovative technologies for sustainable competitiveness to the market and it is also the first edition in which Ecomondo will occupy the entire Rimini Expo Centre premises since renewable energies have now found their independent position on the calendar of sector expos with K.EY, which took place back in March.

The water supply chain and SAL.VE for ecological service vehicles

Waste as Resource, Sites & Soil Restoration, Circular & Regenerative Bio-economy, Bio-Energy & Agroecology, Water Cycle & Blue Economy, Environmental Monitoring & Control: these will be the themed exhibition areas at Ecomondo 2023. Two sectors will be highlighted from among and alongside these: the specific "Water" area and the new edition of SAL.VE. In the former, visitors will find the entire water resource supply chain: from capture to restitution and reuse with a focus on digital transformation, which is now a key element in improving its management. Top national and international utility service companies and trade associations, including Utilitalia, will be featuring in this area with a programme of seminars. In the biennial

SAL.VE area, organised in partnership with ANFIA, leading manufacturers will be exhibiting vehicles for ecological waste collection and disposal services as well as urban sanitation. Test drives will be available outside.

Districts for 'beacon' circular economy projects

Ecomondo will provide space at the Expo Centre for three industrial districts for which the Ministry for the Environment and Energy Security (MASE) has given the go-ahead with a contribution to 160 "beacon" projects for the circular economy. Rimini will therefore feature the WEEE District with a specific focus on repowering technologies and new systems for recycling waste from electrical and electronic equipment, photovoltaic panels and wind turbine blades. In the PAPER District, the focus will be on systems for the collection, logistics and recycling of paper and cardboard in cooperation with COMIECO. Lastly, a themed itinerary will be dedicated to the production of plastics with a focus on recycling systems and marine litter.

Textile waste, ecodesign and supply chain sustainability

The textile industry has been identified as a key value chain for which the European Union has foreseen actions to promote its sustainability, circularity, traceability and transparency. Key factors are eco-design requirements, producer responsibility schemes and labelling systems. In Rimini, ample emphasis will be placed on the entire supply chain: from production to post-consumption. The objective of all stakeholders is to provide answers to these challenges by providing information about ongoing projects

and ultimate goals as well as promoting new business models in order to outline the state of the art of textile waste management in Italian municipalities. There will be a debate and exhibition area with all stakeholders: waste producers, managers, consortia and associations, research and development institutes, textile treatment and valorisation plants, without forgetting the second hand sector.

Bio cities: circular and healthy

Ecomondo and K.EY have parted company on the trade show calendar, but the smart city, which is traditionally the falling point of renewable energies, can also be categorised under “sustainability” and “healthy”. The Circular and Healthy Cities project does just that by regenerating the city, making it greener and more efficient in the way it manages water, food, waste water and waste.

Ecomondo and start-ups, mission: to innovate

Ecomondo as an incubator and facilitator of innovative projects: the Start-Up and Scale-Up Innovation area in the new East entrance will be back and further extended. Companies and investors will have a new and larger platform for dialogue in order to cultivate the new generation of innovative businesses. More than 50 start-ups are expected in Rimini for the 2023 edition. IEG and ITA-Italian Trade Agency are promoting the initiative with ART-ER (Territorial Appeal Research, Emilia-Romagna's regional agency) and Confindustria as their main partners, in addition to collaboration with ANGI (National Association of Young Innovators), to promote all-round innovation.

Blue economy: circular and regenerative

From fishing and aquaculture to the regeneration of ports and coastlines and seawater desalination technologies: the blue economy will include all traditional and emerging economic sectors linked to the development of Italian and Mediterranean marine resources.

Ecomondo, an evolving event

For the 2023 edition, Ecomondo will explore frontline themes. Millennials and Generation Z are showing considerable sensitivity towards environmental protection and IEG's event acts as a platform of ideas to give shape to today's technological research and create tomorrow's jobs. Exchange of knowledge, access to research tenders

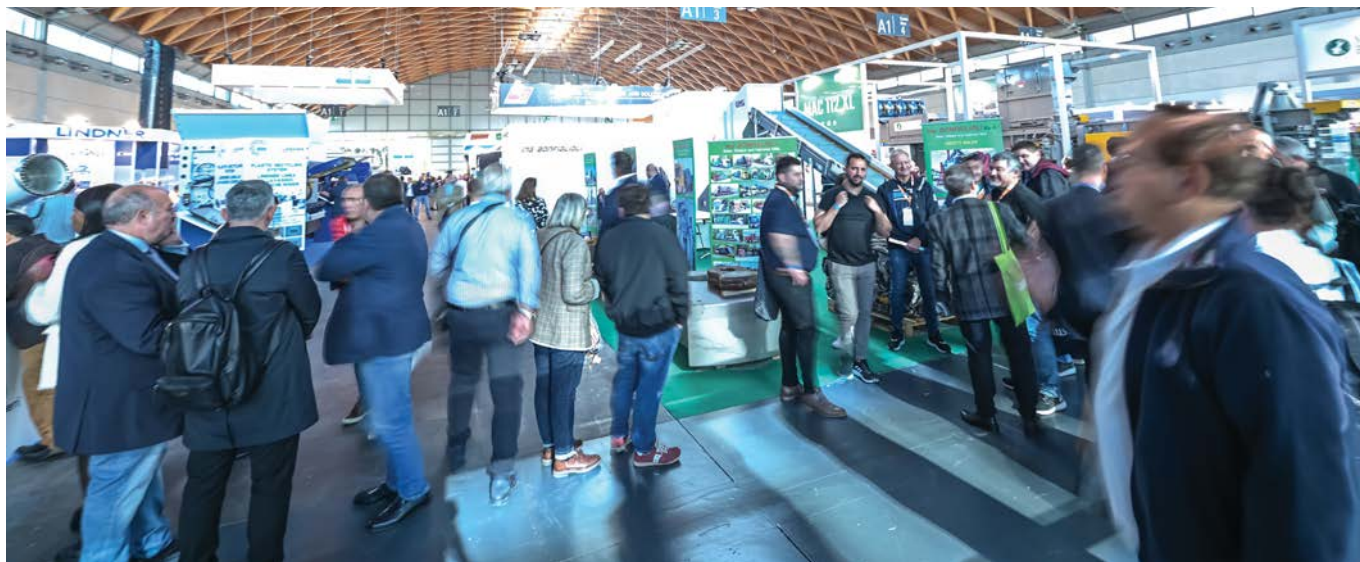
and European funding: Ecomondo addresses the new generations so that they can participate in the ecological transition. But there is also a new way of doing business, which the Rimini event will pay attention to and whose good practices will be shared in an area dedicated to B-Corps and their regenerative and socially responsible business model. The languages of sustainability and responsibility in corporate communication and journalism are also priorities for Ecomondo.

The conference programme and events

Ecomondo will offer its community a full programme of conventions and conferences organised under the aegis of the Technical-Scientific Committee, directed by Professor Fabio Fava from Bologna University, in collaboration with the event's main institutional and technical partners, together with the international board that includes experts from the European Commission, OECD, FAO, UfM, EEA, ISWA. Top topics will be dealt with in an attempt to transmit even more knowledge transmission to the Ecomondo community: the priorities of the European Green Deal, the circular economy, the regeneration of polluted areas and ecosystems, the protection of soils and seas and of the Mediterranean in particular. Case studies, public policies, public funding available for businesses, citizen engagement. The TSC and stakeholders will put together a calendar over the months to come that will create even more engagement between universities, research, industry and institutions to match, if not exceed, the +15% attendance at last year's conferences compared to 2019.

Further push towards internationality

With a 58% increase in foreign visitation compared to 2021, the involvement of profiled operators from the Balkan area, non-EU Europe, North Africa (Egypt, Morocco, Tunisia), Senegal, Ivory Coast, Angola, Ghana, Rwanda, the Middle East, as well as Canada, Latin America, the United States and China will continue for the next edition. The second edition of the Africa Green Growth Forum will be staged thanks to the contribution of prestigious international agencies, inter-governmental institutions, such as the Union for the Mediterranean and UNIDO, non-profit organisations, including Res4Africa, Business Council for Africa, which will present the technological framework and opportunities for growth and development in the African continent. ©



TRIO OF LHWP II MAJOR BRIDGES UNDER CONSTRUCTION

The Lesotho Highlands Development Authority (LHDA) completed the construction procurement for the remaining two major bridges to be built under Phase II in late August, awarding the M511 500 000 contract to the Concor-Nthane Brothers M&K Bridges Joint Venture.

Work on the contract commenced on 29 August and the two bridges across the Mabunyaneng and Khubelu rivers are expected to be completed towards the end of October 2025.

The JV is comprised main partners Concor Construction (South Africa) and Nthane Brothers (Lesotho) and subcontractors: Post Tensioning and Structural Solutions (South Africa) and Bridge Joints and Rehabilitation Contractors (Lesotho).

The construction contract of the biggest of the trio of bridges – the Senqu Bridge – was awarded in late 2022. At the Senqu Bridge site construction of the temporary site facilities is well progressed and excavations have started for the massive pier and abutment foundations necessary to support the 825 m long and 90 m high bridge.

The three major bridges, when complete, will provide access to Mokhotlong town across the reservoir even at full supply and retain connectivity to the national road network along the A1, the main road between the Mokhotlong district in the mountainous north-east of the country and the capital, Maseru. “The impounding of the Polihali

reservoir will submerge existing roads and tracks, affecting communities in the valleys and tributary catchments of the Senqu, Khubelu, Mokhotlong, Moremoholo and Sehonghong rivers. The major bridges along with a network of feeder roads and the main access roads to the project area all contribute towards minimising this disruption and help to restore community access to healthcare facilities, schools, shops and markets,” said Gerard Mokone, Manager of the LHDA’s Polihali Branch.

As in the case of the Senqu Bridge, the design of the Khubelu and Mabunyaneng bridges has taken into consideration the challenging, high altitude construction conditions and the Mokhotlong highlands’ long, cold and harsh winter conditions. The health and safety of workers on the bridge construction is of particular importance.

The Khubelu Bridge will be approximately 270 metres long with nine 30 m spans and two abutments. Mabunyaneng Bridge, the smallest of the three major bridges will be approximately 120 m in length and has four 30 m spans and two abutments. The bridges will both be 13,55 metres wide.

“The trio of bridges will not only form part of the safe





and efficient road infrastructure network constructed under Phase II but will be a major tourist attraction contributing to long term benefits in stimulating sustainable economic growth,” Ntsoli Maiketso, Phase II Divisional Manager, stated.

Work on the design of the Mabunyaneng and Khubelu bridges started in 2018, led by Zutari, formerly Aurecon Lesotho. Zutari also designed the Senqu Bridge and is supervising the construction of the three bridges.

Phase II of the the Lesotho Highlands Water Project entails the construction of the Polihali Dam, the 38 km Polihali Transfer Tunnel, the associated infrastructure and a hydropower scheme at Oxbow.

It builds on the successful completion of Phase I in 2003. The LHWP delivers water to the Gauteng region of South Africa and utilises the water delivery system to generate hydroelectricity for Lesotho. Phase II will increase the current supply rate of 780 million cubic metres per annum incrementally to more than 1 270 million cubic metres per annum.

At the same time, it will increase the quantity of electricity generated in Lesotho and is a further step in the process of securing an independent electricity source to meet Lesotho’s domestic requirements and reducing the country’s dependence on imported energy. ©

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HOW COMMERCIAL DEVELOPMENTS CAN MITIGATE THE EFFECTS OF WATER SHORTAGES

While South Africa struggles under the burden of almost constant loadshedding, another problem, a shortage of water, is increasingly manifesting itself, creating headaches not only for consumers but also the commercial sector, particularly large commercial developments.



“Many South Africans are becoming familiar with the phenomenon of watershedding, where municipal water supplies are cut off for extended periods of time,” says Dr Gunter Rencken, Technical Director at WEC Projects, a local EPC contractor specialising in engineered solutions for water and wastewater treatment. “There are a number of causes behind this, including deteriorating infrastructure; equipment theft; damage to pumping and treatment systems due to load shedding; extended loadshedding which sees reservoirs empty without being refilled due to pump outages; reductions in water quality etc. These challenges are creating a perfect storm for commercial developments, traditionally heavy users of water, as it directly affects the viability of their businesses. It is not hard to imagine the problems created in a large development such as a shopping centre, office building or hospital when there is no water for toilets, human consumption or fire suppression systems.”

According to Dr Rencken, the solution to this challenge is similar to that used to alleviate loadshedding – an uninterruptible or backup water supply that can operate until normal service is restored. “At its very basic level, installing backup water tanks onsite provides a simple solution to the problem. Another solution is to separate the plumbing system into potable drinking water and non-drinking water. After appropriate treatment, the waste (grey) water is then recycled for use in non-drinking water applications (toilets, irrigation etc). Yet another option is rainwater harvesting where rainwater is used for non-drinking water usage as well as potable water with the proper filtration, treatment and disinfection system in place. Borehole water is also an option in areas where there are sufficient, high quality groundwater resources. As an option for non-potable use, they are generally cost-effective (depending on factors such as depth and sustainable yield of borehole). In addition, with the integration of a treatment system, borehole water can be brought up to potable standards.”

These are solutions that can be integrated into building plans at the design stage of a commercial development but, in many cases, this is simply not economically or physically possible for existing installations. Such water backup systems require considerable space for the storage tanks and there is also the issue of the additional plumbing required to integrate it into the building’s existing water reticulation system. While

it is possible to integrate such solutions into existing buildings, factors such as size and design of building, floor space, number of users, and overall water consumption need to be considered to determine its economic and physical viability.

On-site sewage treatment, i.e. treatment systems which feature small footprints and low operating costs, can also be considered for new and existing developments. At the outset it requires differentiating potable and non-potable water use. WEC Projects offers a wide range of biological treatment options such as trickle filters, activated sludge and membrane biological combination systems as well as treatment and disinfection systems, e.g. sand filtration, activated carbon filtration and ultraviolet disinfection etc. A segregated system sees water from wastewater sources recycled for use in toilets and other non-drinking applications. Such systems can be used on a continual basis (not just when water supplies are interrupted) and can realise considerable savings in overall water consumption, particularly in larger developments. However, such savings have to be compared to the design and installation costs, particularly on an existing commercial development, before deciding to implement such a solution.

Wastewater can also be recycled and treated for re-use as potable water, but this requires a more sophisticated multi-barrier treatment system, including deodorisation and disinfection in order for the water to comply with applicable standards for consumption. This concept is gaining traction in Africa due to the low quality or scarcity of water in many regions. Such systems employ coagulation, flocculation, sand and/or activated carbon filtration and ultrafiltration membrane technology for the removal of particulate matter, organic compounds, microorganisms and viruses.

Advanced oxidation processes (AOPs) are an emerging technology that can be used for the degradation of pollutants in wastewater. In a broad sense, AOPs are designed to remove organic and sometimes inorganic materials in water and wastewater by oxidation with hydroxyl radicals. They are also very effective in destroying harmful bacteria and viruses. While AOPs can achieve the result of producing safe potable water, they are still regarded in many quarters as an extreme solution that is expensive.

Adds Dr Rencken, “Like loadshedding, watershedding is a reality for South Africa. While the larger metropolitan areas are usually spared the extremes of water outages, many small to medium municipalities are buckling under the twin challenge of power and water outages which places a heavy burden on the commercial sector’s economic activities. WEC Projects offers commercial users looking to mitigate the water shortage problem comprehensive advice and guidance in determining the viability of a solution, whether it be a simple storage or recycling system or a complete treatment plant for recycling and producing potable water. In addition, the company can develop a complete solution from design and engineering to construction, installation and operation according to particular requirements.” ☉

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Vis Reddy – Chairman of SRK Consulting in South Africa.

LOWER EMISSIONS NOW A SUSTAINABILITY AND COST IMPERATIVE

The enforcement of South Africa's carbon tax is adding to the focus by mines and industry on greenhouse gas emissions, raising the interest in the potential for converting methane into energy.

According to Vis Reddy, chairman of SRK Consulting in South Africa, the company's established expertise in air quality management has broadened to integrate with its climate change focus.

"Traditionally, air quality management was part of environmental impact assessments – and this remains an important compliance aspect for our clients," said Reddy. "The field of air quality and emissions today, however, links directly to climate change concerns and even energy security imperatives."

He pointed to the example of methane emissions, a powerful greenhouse gas that has 21 times the global warming potential of carbon dioxide, in trapping heat within the earth's atmosphere. As companies look to improve their sustainability ratings, many are considering generating energy from the methane they produce. This is now more easily achieved, as they can take advantage of South Africa's recently relaxed private power generation regulations.

"Industry can now explore these options without needing to clear onerous regulatory hurdles that used to prevent private energy production," he explained. "It is becoming an exciting opportunity for companies to reduce their carbon footprints. The case to be made is not only strategic but makes financial sense in terms of reducing carbon tax liability and addressing the rising cost of electricity – and unreliability – of the country's grid energy."

In the context of South Africa's predominantly coal-fired power infrastructure, the environmental benefits of substituting grid power with gas-fired energy are enhanced. Companies making better use of their own methane emissions will also see their carbon footprint improve from drawing less from the national utility. There are other impacts related to coal-fired energy – such as the mining of coal – that are also avoided in a scenario where companies are more self-sufficient in energy. Among the industries where SRK is seeing more interest in these options are those dealing with biomass

waste – which could be from animals or crops. There could also be potential in sewage treatment works, as sewage emits considerable quantities of methane.

"SRK has responded to these trends by establishing a focused group of professional scientists and engineers who are specialised in providing solutions for air quality challenges in the context of climate change," said Reddy. "We can now give clients a very focused offering in these sectors, where we see increasing demand."

With the global move toward responsible sourcing of commodities, and greater public awareness of sustainability, the drive towards lower carbon emissions is being felt across the board, he argued. This has put the spotlight on the mining sector, for example, but equally on retail products that must respond to consumer sentiment.

"Mines in South Africa have been among the leaders in developing renewable energy capacity, and this will have significant impacts on its greenhouse gas footprint," he said. The waste management industry also have opportunities to capture methane emissions generated in bio-digestors and this can be used to generate electricity for in-house consumption or sale to other users connected to the grid – although there was little sign of movement in this sector.

He pointed out that the air in the country's economic heartland, Gauteng, remains among the most polluted in the world especially during winter – reflecting a broader air quality issue that directly affects public health. The factors behind this are numerous but rapidly rising electricity prices and loadshedding may drive households to use more wood and coal again primarily for space heating purposes.

"This is a setback, as there had been progress in improving the air quality in cities like Johannesburg, as more residents migrated to using electricity as their primary energy source during the 2000's," he said. "As electricity has become more expensive and supply more disrupted, this trend looks like being reversed." ©



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CESA AON ENGINEERING EXCELLENCE AWARDS 2023 WINNERS

The CESA Aon Engineering Excellence Awards, once again, did not disappoint this year as companies and individuals in the consulting engineering industry walked away with top honours at the ceremony held at Vodacom World, in Midrand, on 16 August. Now in its 51st year and hosted in partnership with platinum title sponsor, Aon South Africa, the Awards celebrate innovation, quality, outstanding workmanship and professionalism which was evident in the entries for each category.

CESA Chief Executive Officer, Chris Campbell congratulated the winners and finalists whilst stating that amidst economic challenges and sluggish growth, it is essential to recognize the pivotal role of consulting engineering. “While external factors may pose obstacles, our focus on delivering excellence must remain unwavering.”

Aon South Africa Chief Executive Officer, Dr Nolwandle Mgoqi said, as a long-standing sponsor of the awards, Aon has had the privilege of witnessing the significant contributions made by the engineering industry to our economy and every facet of our society. “Despite challenges and risks, the engineering industry continues to epitomise modernity and progress.”

Winners

John Robin Williamson’s contribution to the consulting engineering industry did not go unnoticed as he was honoured with the Lifetime Industry Achievement Award.

In the category, Projects with a Value Between R250m and R1b, KBK Engineers were announced winners for the N1 Musina Ring Road for the South African National Roads Agency Limited (Sanral).

Zutari was named winner in the Projects with a Value Between R50m and R250m category for the Square Kilometre Array Meerkat Extension for the South African Radio Astronomy Observatory (SARAO). Two commendations were awarded in the category with Bigen Africa receiving a commendation for the East London Industrial Development Zone Electrical Upgrade and Zutari receiving a commendation for the Groote Schuur Estate Refurbishment for the COEGA Development Corporation.

In the category, Projects with a Value Less Than R50m, the Naidu Consulting, MSW Consulting JV was the winner for the Tongaat Water Treatment Works Emergency Remediation Works for the eThekweni Municipality. Zutari received a commendation for the Compilation of

the 15-Year Western Cape Integrated Drought and Water Response Plan. The winner of the Best International Project was ARQ Consulting Engineers for Yusufeli Dam for Limak Construction SA for DSI, the Turkish State Hydraulics Works. Two commendations were awarded in the category with AECOM receiving a commendation for the ABSA Head Office in Zambia; and MPAMOT Africa receiving a commendation for the Beitbridge Border Post Upgrade and Modernization for Zimborders.

In the category Engineering Technology and Innovation – HVAC Building Systems Design Excellence, Maninga Engineering received a commendation for the Test and Examination Centre: Part 1 – Flower Hall for the University of Witwatersrand.

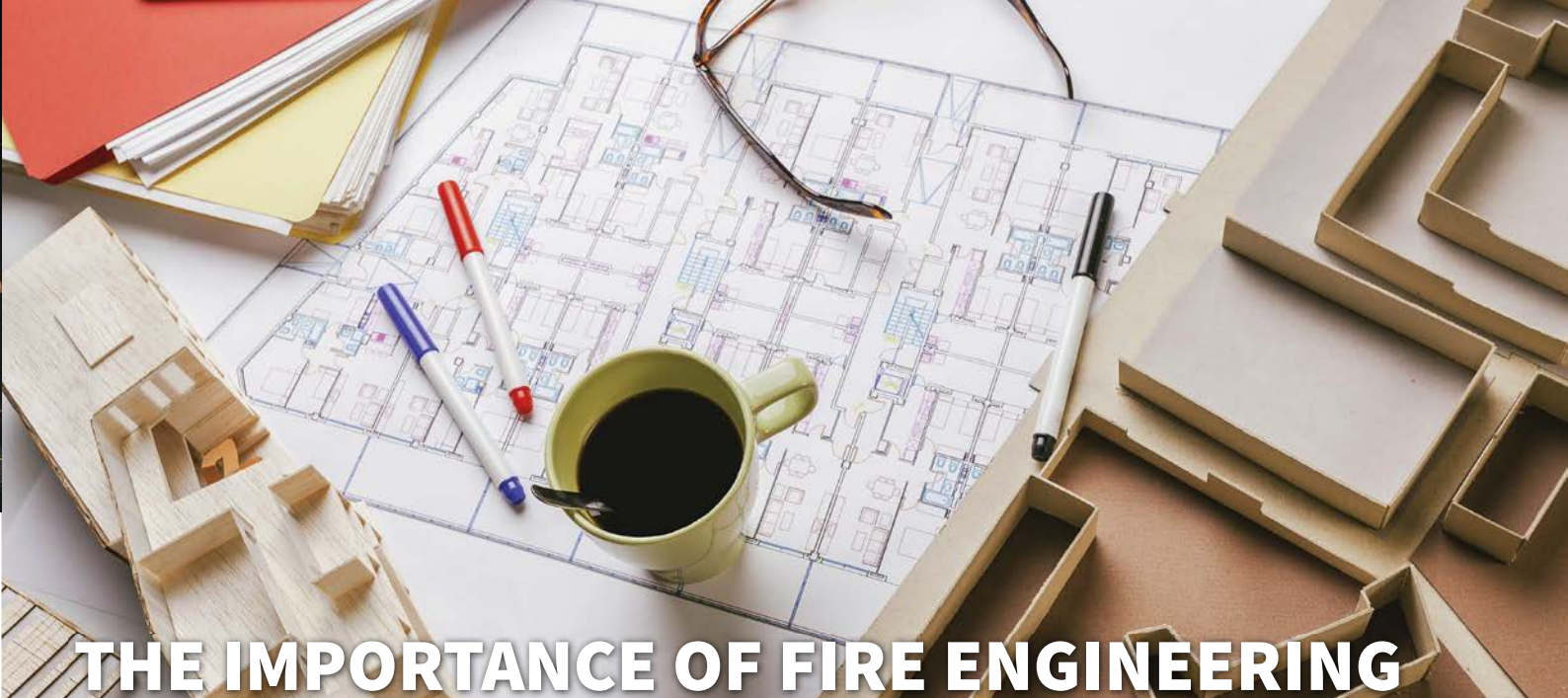
In the category Engineering Technology and Innovation – Water, Sanitation, and Hygiene (WASH), Zutari received a commendation for the Groote Schuur Estate Refurbishment for the COEGA Development Corporation.

BVi Consulting Engineers won the Business Excellence Award, while Koleko Solutions walked away as winners in the Small/Medium Company of the Year category. For the Mentoring Company of the Year award, Naidu Consulting, received a commendation.

Winner of the Mentor of the Year Award was Herman Cronje from SMEC South Africa. In the category Young Engineer of the Year, Mareli Botha was named winner while Darren Pillay and Stephen Rose received commendations.

Publisher of the Year - Trade Publications category went to the Civil Engineering Magazine published by the South African Institution of Civil Engineering (SAICE); while the Publisher of the Year - Daily News category was awarded to Independent Online News (IOL).

In the CESA Job Shadow Initiative and Poster Competition, BVi Consulting Engineers were announced winners. Mariswe was named the first runner-up with PRDW announced as second runner-up and AECOM being named third runner-up. ©



THE IMPORTANCE OF FIRE ENGINEERING CONSULTING, PLANNING, AND DESIGN

ASP Fire provides holistic, proactive, and preventative fire solutions based on integrated fire risk assessment, training, and consulting, along with the installation and maintenance of fire detection and suppression systems that meet SABS, NFPA, FPASA and SAQCC standards,” explains CEO Michael van Niekerk.

Established in 2013, ASP Fire provides fire engineering and HVAC consulting and turnkey fire engineering services across Africa. It adds value to its clients by focusing on the prevention, detection, and suppression of fires in key areas by:

- Conducting on-site client fire risk assessments and fire investigations.
- Drafting deemed to satisfy fire protection plans and performance based rational designs.
- Designing mechanical HVAC and wet services for buildings.
- Ensuring cost-effective designs by eliminating high-cost elements at the design phase where possible.

ASP Fire is able to design automatic sprinkler suppression systems, water mist suppression systems, fixed spray automatic deluge suppression systems, gaseous suppression systems, fire detection systems, smoke control ventilation systems, stairwell pressurisation systems and compartmentalisation systems.

“We operate across the entire continent from our Gauteng base, providing professional, accredited fire risk management and support to our clients. We design, install, and maintain a full range of fire detection and suppression equipment suited to your needs,” explains van Niekerk.

The ASP Fire team have been directly involved in a number of diverse fire engineering projects, either as lead engineer or as a part of a professional team. Its client base centred in South Africa covers continental Africa and includes companies from Blue Chip listed multinationals to owner-managed micro enterprises.

ASP Fire has several well-developed operational nodes within Southern Africa that have evolved around strong client relationships. Locally, it focuses on Johannesburg, Pretoria, Meyerton, and Vereeniging in Gauteng, Secunda, Nelspruit, and White River in Mpumalanga, Brits, and

Rustenburg in the North West Province, and Tete and Maputo in Mozambique.

ASP Fire has a development programme for young, black Africans registered with the Manufacturing Seta, MERSETA, through which talent is fostered by means of bursaries, skills development, training, coaching, and mentoring. ASP Fire is funding the studies of a female African engineering student at Wits University through the ASP Fire bursary programme.

“To conduct a fire risk assessment or rational design, a fire risk consultant visits your premises to undertake a comprehensive evaluation of all areas of your property, looking at all factors in terms of fire safety and risk in detail. Sound fire engineering principles are applied to ensure that the design complies with the life, property and environmental fire safety objectives required by law,” says van Niekerk.

Upon completion of the fire risk assessment and drafting of a rational design report, ASP Fire recommends practical actions to be followed to ensure compliance. The report comprises a detailed and documented fire risk assessment, as well as fire engineering calculations where required, covering all aspects of fire risk and safety.

This guides you to protect your business, employees, and customers by providing prioritised recommendations for your action to rectify problem areas and strengthen existing fire safety procedures. It ensures you comply with fire safety regulations for the protection of life, property, and the environment.

“We also work with you and your insurance broker or underwriter to address your fire risk based on the outcomes of the fire safety risk assessment report. It assists in preventing damage to property and products, loss of life, financial loss, consequential loss of profit, loss of productivity and insurance repercussions,” concludes van Niekerk. ©

MAJOR BETHLEHEM HOSPITAL PILING CONTRACT FOR FREE STATE PILING

Free State Piling, a division of Gauteng Piling, has secured a contract for the provision of foundation piling for extensions to the Dhlabeng Regional Hospital in Bethlehem in the eastern Free State.



Free State Piling – established in 1997 and now under the leadership of Gauteng Piling founder, building industry veteran, Nico Maas – was appointed for the project by Ruwaccon Construction, the main contractor.

Free State Piling, as Gauteng Piling subsidiary, has handled several high-profile contracts in the Free State province including the Mediclinic Hoogland hospital in Bethlehem and

the SAPS premises in Welkom. Keoatlaretse Tema, contracts manager for Free State Piling, who is in charge of the Dhlabeng Regional Hospital piling project, says the company was contracted to provide 550 auger piles in three phases for the hospital extensions: the first has already been handled, the second was scheduled for completion in August 2023, and the final phase will be tackled in June next year.

“The piles being installed for the second phase range in size from 300 mm to 900 mm, depending on the loads designed to carry. Steel reinforcement cages of between 200 mm and 750 mm are being installed in the piled foundations to support the weight load and prevent structural collapse.

“Our piling project will provide foundations for three new blocks planned for the Dhlabeng Regional Hospital extensions. The first two-storey block is 1 200 square metres in extent, the second also over 1 200 square metres with four floors and a basement, and the final structure has two sections covering 1 097 and 1 137 square metres, respectively. This block will also have four floors plus and a basement,” Tema states.

Gauteng Piling is using its trusted Williams Digger LDH drilling rig to excavate the auger piling foundations. Auger cast piles are foundations drilled to the final depth in a continuous process using a flight auger. “Versatile Williams rigs are the benchmarks for auger piling worldwide and can efficiently handle piles of up to 1 000 mm,” Tema explains. “The main challenge for the rig on this project has been soft rock encounter at a relatively shallow depth, which has to a certain extent slowed down progress, but we have successfully dealt with the problems”

The Gauteng Piling Group – a Level 2 BBBEE contributor - has a wealth of experience in its 27 years of operations and has several impressive high-profile projects to testify to its expertise including, for example, the provision of the foundation for Africa’s largest single-phase retail centre, Mall of Africa in Midrand; the expansion of the Fourways Mall and Cresta Shopping Centre; as well as additional and challenging extensions to the Market Theatre complex, all in Johannesburg. ©

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ROLE FOR CONSULTANTS IN VARIOUS ASPECTS OF RENEWABLE ENERGY

As South Africa moves toward installing renewable energy generation capacity, consulting engineers and scientists are applying their professional expertise in a range of fields.

The aspects that are relevant to multi-disciplinary groups like SRK Consulting vary from strategic and environmental issues to technical concerns like ground conditions. According to SRK Consulting (South Africa) managing director Andrew van Zyl, permitting and public participation are key.

“While technology specialists focus on the technical aspects of transitioning to renewable energy, consulting engineers like SRK work with clients to manage the contextual opportunities and risks,” said Van Zyl. “Our skills in the environmental, social and governance (ESG) field, for instance, allow the necessary environmental permitting and stakeholder engagement that renewable energy initiatives would require.”

Van Zyl adds that the energy infrastructure for solar farms or wind turbines require geotechnical investigations and civil engineering designs, as well as water management and engagement with communities and other stakeholders.

SRK has been extensively involved in geotechnical work on the country’s renewable energy projects. This includes wind farms and solar projects from the Western Cape to Limpopo, according to Daniell du Preez, engineering geologist at SRK Consulting. Du Preez is often one of the first people on site – and in the case of the often-remote location of these projects, this presents various challenges.

Wind farms in inhospitable areas

“The country’s wind farms, for instance, are often in remote, inhospitable and mountainous areas,” he explained. “Heavy machinery like drill rigs or excavators are usually necessary when investigating ground conditions, so we first need to create the

roads so that this equipment can get to site – a process that can take weeks.”

On a wind farm, the turbines are usually some distance apart, so the travel distances even on a single site can be significant. Ground conditions on these projects are vital to fully understand and address, as wind turbines exert huge forces on their base and appropriately designed foundations must be expertly engineered. Wind turbine manufacturers have specific site investigation requirements which need to be followed in collaboration with the project developer, design engineer and EPC contractor. SRK designs a geotechnical investigation programme according to these specifications.

Working in phases

“The geotechnical work will generally be approached in various phases – with the first phase being a preliminary investigation, which includes a desktop overview and site investigation, test pitting, geophysical surveys, laboratory testing and reporting, while the second is a detailed or design investigation phase, which involves infill testing and drilling at each wind turbine, including a continuous surface wave (CSW) test, where applicable,” he said. “The next phase is when construction takes place, and where we assist with foundation inspections.”

Drilling provides engineers with a geological profile to identify a competent founding horizon which is based on various geotechnical parameters such as load bearing, and settlement. If the foundation is in rock, the rock-quality designation, fracture frequency, joint spacings and other factors are also considered.

So undeveloped are many of these sites that there is seldom



easy access to water – which is necessary for various operational purposes including the drilling operations. He pointed out that collaboration with local farmers is often necessary to overcome the myriad practical challenges.

Final designs

Once the ground conditions are analysed and SRK Consulting gives its recommendations, final foundation designs can be confirmed.

“As with all our work, SRK Consulting adheres to quality guidelines and practices of local and international relevance (Eurocode 7 – EN 1997),” he said. “An important reference here is the Site Investigation Code of Practice South African Institution of Civil Engineering’s Geotechnical Division.”

This code requires that, at development phase or feasibility phase, a geotechnical data test point must be gathered from the site of each wind turbine structure. As the project develops through to detailed design phase, further test points might be required. The contractor can also use SRK Consulting professionals for turbine base inspections before the casting of concrete – to ensure that the correct levels, depths and other criteria have been achieved before formwork and concrete work begins.

Photovoltaic installations

With South Africa’s high solar radiation index – a daily average of 220 watts per square metre compared with 150 for parts of the USA and about 100 for Europe – photovoltaic (PV) installations are proving to be valuable contributors to the energy mix. The key geotechnical elements of planning most of these PV projects relate to the stability of the posts holding the solar panels. Acknowledging that various installation methods exist, the most feasible method is generally the pile post method. This usually involves pre-drilling and piling to secure the posts, but it is not always that simple, he explained.

“Where possible, we advise clients to take a phased approach, as it is not always exactly clear in advance what the ground

conditions will be,” he said. “Rather than mobilise a full fleet of drilling equipment from the start, it is usually more cost effective to begin with a test pitting phase – as you might discover that there is bedrock or competent founding conditions at shallow depth.”

Test pits to drill rigs

Du Preez therefore prefers going to site initially with an excavator (or backhoe) and Dynamic Probe Light (DPL) equipment, to conduct test pits and DPLs across the site – down to three metres or earlier refusal – to find the suitable founding horizon. If a competent founding horizon is not encountered by these means, then a second phase can be initiated, using a Dynamic Probing Super Heavy (DPSH) rig and even a drill rig to conduct core drilling and standard penetration test (SPT). The DPSH rig and SPT testing is specially designed for testing the in-situ consistency of soil, to provide a measure or indication of the ground conditions i.e., establishing stiff or softer soil layers at depth. “Even if bedrock is not encountered, there may be a competent horizon at shallower depth – which may allow piling without any pre-drilling,” he said. “While it may still be worth applying DPSH technology to these conditions to determine skin friction and to complement the DPL results, this approach could save considerable unnecessary cost.”

A pull-out test is generally considered as the last phase which is a valuable intervention to prove the skin friction and stiffness of the post. This data will assist the design engineer to ensure that the posts are well mounted and stable.

Specialist studies

With its multi-disciplinary approach and range of in-house skills, SRK Consulting’s work on renewable energy projects extends well beyond geotechnical work, and includes Environmental Impact Assessments (EIAs) and associated specialist studies, such as in-house groundwater, surface water, air quality and visual impact studies, as well as ecological, avifauna, aquatic ecology, noise, heritage and socio-economic studies.

The latter assesses how a project affects local communities, aiming to minimise negative impacts and leverage the positive spin-off in terms of local job creation and skills development. ©



MIXED PATTERN TERRAFORCE® WALL DESIGN, FOR EASY PLANTING OF A STEEPLY INCLINED WALL

May 2022, KCE Consulting planned a Terraforce wall design that allows successful interfacing with the environment, by creating space for vegetation in the near vertical terraces and “shelves” with plant pockets constructed by turning the L12 blocks round face outwards at regular intervals. Installed by Terraforce Recommended Contractor, Decorton Retaining Systems.

The project is located in the north-eastern quadrant of this new residential development by Balwin Properties in Richwood, Western Cape. The retaining wall acts as the buffer between the engineered platforms on the lower level and the protected nature conservation area to the east. Says Nigel Barr, KCE Consulting Engineers: “The residential scheme of De Aanzicht in Atlantic Hills nestles up against a large Rhenosterveld reserve. With slopes of up to 12 m high which included soft rock outcrop, creating a “soft” interface required the use of an undulating retaining system - Terraforce - combining access, planting and stormwater management. When finished this slope treatment will disappear behind planting - hiding the “under the skin” engineering of soft soil anchors, tied back foundations and the clever use of the mixed pattern Terraforce block facings.”

Barr elaborates on the design of the overall retaining system: “In order to create the embankment required within the restricted footprint area, KCE designed and detailed a two-part system to adequately secure the embankment whilst taking great care to avoid encroachment into the environmental buffers and restricted no go zones around the conservation area.”

“A series of soil nailed terraces with the front faces stabilized with a gunnite shotcrete was created as the initial lateral support system for the embankment, with a series of terraced Terraforce retaining structures constructed in front of the lateral



support, providing the aesthetics and landscape friendly portions for the face of the embankment.

The Terraforce walls act as a cladding for the otherwise harsh and rustic finish of the lateral support system whilst also providing planting pockets, accessible terraces and maintenance access routes throughout the embankment area.”

When asked why Terraforce was chosen, Barr highlighted that, “Terraforce is the ‘go to’ block for almost all the gravity solutions throughout the region. The aesthetics appeal of the rock face finish blocks suited the overall environment and blends into the surrounding landscape with ease. The blocks are both familiar, proven and readily available making it the obvious choice for this job. The design and engineered flexibility the Terraforce system provides was also a huge plus - to suit the intricate nature and shapes of the terraced embankment.” A total of 1620sq.m of Terraforce walling was installed, and planting of the wall was completed early 2023. The vegetation is establishing well and already creating the desired effect. ☺



L13, L18, L22



Terrafix



Terracrete



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L11, L12, L15, L16

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HEADER: PROJECT TEAM

- Client: Balwin Properties
- Architect: dhk Cape Town
- Engineer: KCE Consulting Engineers (Civil & Structural engineers on project)
- Quantity Surveyor: Balwin Properties in house
- Main Contractor: Balwin Properties
- Sub-Contractor: PK Civils (Civils and walling contractor)
- Sub-Contractor: Geociv Group (Lateral support contractor)
- Installation by Terraforce Recommended Contractor **Decorton Retaining Systems**
- Blocks supplied by Terraforce licensed manufacturer **Klapmuts Concrete**

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